National Cervical Screening Programme

Monitoring Report 45

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About the authors

The authors are based at Cancer Research Division at Cancer Council NSW, Sydney, Australia. They are part of a research group (led by Prof Karen Canfell) which has as its core research focus the epidemiology of cervical cancer, cervical screening and human papillomavirus (HPV) vaccination. This research group has established an extensive track record both in research publication and in successful completion of commissioned projects related to national cervical screening programs in New Zealand, Australia and England. The group has extensive experience in the analysis of descriptive data from cervical cancer screening programmes. The team also has a range of related skills in the analysis of linked datasets, systematic review and meta-analysis, biostatistics, health economics, and advanced statistical modelling techniques.

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1. Executive Summary

Purpose

This report provides data on performance indicators of the National Cervical Screening Programme (NCSP) for the period National Cervical Screening Programme Monitoring Report 45 1 January to 30 June 2016.

Key points on performance/trends

Indicator 1 — Coverage

Indicator 1.1 — Three-year coverage

Target: 80% of eligible women screened within the previous three years by 30 June 2016.

- Among an estimated 1,195,818 eligible women aged 25-69 years at the end of the monitoring period, 917,164 (76.7%) had a screening test in the previous three years.
- The coverage target was not met nationally (80% of women aged 25-69 years screened in the previous three years).
- The coverage target was met for specific five-year age groups between 45-59 years.
- Three of 20 DHBs met the coverage target.
- Nationally, coverage targets were met for European/ Other women (81.9% screened within the previous three years), but were not met for Māori, Pacific, or Asian women (63.6%, 75.5%, 65.5% respectively screened within the previous three years).
- Five-year coverage among women aged 25-69 years exceeded 80% in all DHBs, in Pacific and European/ Other women, and in women in all five-year age groups between 25-69 years.
- Three-year coverage among women aged 25-69 years (76.7%) is similar to that reported in the previous monitoring report (76.8%). It has increased in Māori, Pacific and Asian women, and has decreased for European/ Other women.
- Three-year coverage has increased in some age groups, with small increases in women aged 30-49 and 60-64 years.
- Three-year coverage decreased in 11 of 20 DHBs.
- Five-year coverage among women aged 25-69 years (90.3%) is slightly less than that reported in the previous monitoring report (90.5%).

Screens in women aged less than 20 years

Target: None

- In the three years to 30 June 2016, 6,924 women had a cervical sample taken when they were aged less than 20 years. This is less than in the previous monitoring period (7,299 women).
- This represents 0.7% of all women (of any age) who were screened in the three-year period (the same as the previous monitoring period).

- Most of these women (89.5%) were aged 18-19 years at the time of their cervical sample.

Notes

- The estimates for the number of women eligible for screening were updated in the previous report (Report 44) to use projections based on the 2013 Census. While this should have resulted in more accurate estimates of coverage, this change means that differences compared to reports prior to report 44 should be interpreted with caution, as these may partially reflect differences in the population estimates.

Indicator 1.2

Regularity of screening

Target: Not yet defined

This indicator is not assessed in this report. Data for this indicator is provided annually and this indicator was last assessed in Report 44 and will be next assessed in Report 46.

Indicator 2

First screening events

Target: None

- There were 24,364 women who had their first screening event during the current monitoring period – an increase compared to the previous monitoring period.
- First screening events generally occur among young women (median age 25 years).
- Asian women appear to have their first screening event at a later age (median age of Asian women with a first screening event 31 years) and women with a first screening event make up a higher proportion of all women screened for Asian women, compared to women in other ethnic groups.

Indicator 3

Withdrawal rates

Target: Zero between ages 20-69 years

- There were 22 women aged between 20-69 years who withdrew from the NCSP Register during this six-month period. This is slightly higher than the number of women in this age range who withdrew during the previous monitoring period (19 women).

Indicator 4

Early re-screening

Target: Not yet defined

Currently reporting on the percentage of women in routine screening (previous smear negative and recommended to return in 36 months (3 years)) who returned for a smear within 30 months (2.5 years) of their index smear.

- 15.3% of a cohort of women with a recommendation to return at the routine interval had at least one cytology sample within 30 months of their index cytology sample.
- Early re-screening varies widely between DHBs, from 8.6% in West Coast to 19.9% in Auckland.
- Early re-screening occurs in all ethnic groups, but is most common among European/ Other (15.7%), and least common among Pacific women (11.0%).
- Early re-screening occurs in all age groups, but is most common in women aged 20-24 years at the end of the period (20.1%) and least common in women aged 65-69 years at the end of the period (9.8%).
- Early re-screening has slightly increased since the previous report, from 15.0% to 15.3%.

Indicator 5 — Laboratory Indicators

Indicator 5.1 — Cytology reporting

Unsatisfactory cytology

Target: 0.1 - 3% for LBC

- The target for the percentage of LBC samples reported as unsatisfactory was met by all six laboratories, and was met nationally (1.2%).
- The rate of unsatisfactory LBC samples is slightly lower since the previous report (1.3%).

Negative cytology

Target: No more than 96% of satisfactory cytology samples

- The target for the percent of samples reported as negative was met nationally and met by all six laboratories.
- Nationally, the percent of samples which are negative (92.7%) is slightly higher than reported in the previous period (92.6%).

Abnormal cytology

Target: No more than 10% of satisfactory cytology samples

- The target for the percent of samples reported as abnormal was met nationally and by four of six laboratories.
- Nationally, the percent of samples which are abnormal (7.3%) is slightly lower then reported in the previous period (7.4%).

HSIL cytology

Target: No less than 0.5% of satisfactory cytology samples

- The target for the percent of HSIL samples was met nationally and by met by all of the six laboratories.
- Nationally the percent of HSIL samples (1.1%) is the same as the previous report (1.1%).

Indicator 5.2 Cytology positive predictive value

HSIL + SC

Target: 65% - 85% of HSIL+SC cytology samples should be histologically confirmed as high grade

- Five of seven laboratories met the target range for HSIL + SC.
- Nationally, the positive predictive value of HSIL + SC was lower for this monitoring period (80.4%) than in the previous report (83.4%).

Other cytological abnormalities

Target: None

- Nationally, the positive predictive value of ASC-H has decreased compared to the previous report (45.6% in this report, 46.6% in the previous report).
- Nationally, the positive predictive value of the combination of ASC-H + HSIL + SC is similar compared to the previous report (69.4% in this report, compared to 69.3% in the previous report).
- Nationally, the percent of glandular cytological abnormalities identified as histological high grade has decreased since the previous report, from 47.7% to 39.2% (however this measure is generally based on a comparatively small number of samples; 181 with histology in the current report).

Indicator 5.3 Accuracy of negative cytology reports

Among cytology slides within the 42 months preceding a histological diagnosis of high-grade/invasive disease originally reported as negative, benign/reactive or unsatisfactory:

Target: Not more than 10% identified as HS1, HS2, SC, AIS or AC1-5 (HSIL+) on review

Target: Not more than 20% identified as ASC-H, HS1, HS2, SC, AG4-5, AIS or AC1-5 (ASC-H+/AG4+) on review; aim for less than 15%

This indicator is not assessed in this report. Data for this indicator is provided annually and this indicator was last assessed in Report 44 and will be next assessed in Report 46.

Indicator 5.4 Histology reporting

Target: None

- 14,002 histology samples were taken during the current monitoring period. 483 (3.4%) of these were insufficient for diagnosis.
- Results for most severe histology from 11,744 women with samples which were sufficient for diagnosis are presented.
- 53.2% of women had histology samples which were negative/ benign.

- 21.5% of women had CIN2/3 or HSIL histology results.
- 70 (0.60%) women had histology results indicating adenocarcinoma in situ (AIS).
- 58 (0.49%) women had ISCC histology results, 39 (0.33%) women had invasive adenocarcinoma (not endocervical type) and 9 (0.08%) had adenocarcinoma of the endocervical type histology results, and 3 (<0.05%) had adenosquamous carcinoma histology results.

Indicator 5.5 Turnaround times

Cytology

Target: 90% within seven working days; 98% within 15 working days

- The seven-working-days target for cytology was met nationally (95.1% samples were reported within seven working-days), and was met by four of six laboratories.
- The 15-working-days target was met nationally (98.6% samples were reported within 15 working-days), and was also met by five of the six laboratories.
- Performance against the seven-working-days target is similar to that of the previous report (95.0% in the previous report and 95.1% in the current monitoring period).
- The overall percent of cytology samples reported within 15-working-days (98.6%) is similar than in the previous monitoring period (98.7%).

Histology

Target: 90% within 10 working days; 98% within 15 working days

- Turnaround time target for histology was met nationally for reporting within 10 working days (90.6%). The target was not met for reporting within 15 working days (95.5%).
- Targets were met by 8 of 15 laboratories (10-working-day target) and six of 15 laboratories (15-working-day target).
- The overall proportion of histology samples reported within 15 days (95.5%) is slightly lower than the previous report (94.5%).

Low grade cytology with associated HPV triage testing

Target: 98% within 15 working days

- There were 2,867 cytology samples with associated HPV triage testing in the current monitoring period.
- Turnaround time was 0.9% above the target: 98.9% were reported on within 15 working days.
- Four of the six laboratories met the target.
- The proportion reported within 15 working days for this subgroup of cytology (98.9%) is higher than for cytology reported overall (98.6%), particularly at LabPLUS and Southern Community Laboratories (although the former laboratory performed only a small number of cytology with accompanying HPV triage tests).

Notes

Turnaround time performance may be an underestimate due to limitations in the report date recorded on NCSP Register.

Indicator 6

Follow-up of women with high grade cytology – histology

Histological follow-up

Target: 90% of women should have a histology report within 90 days of their high grade cytology report date; 99% should have a histology report within 180 days of their cytology report.

- Targets were not met nationally (for either 90 days or 180 days).
- 80.4% of women had a histology report within 90 days of their high grade cytology report; 87.6% of women had one within 180 days.
- No DHBs met the target for histological follow-up within 90 days or for 180 days.
- Nationally, the proportion of women with histological follow-up within 90 days has decreased since the previous monitoring period (from 82.7% to 80.4%), as has the proportion with follow-up within 180 days (from 88.5% to 87.6%).
- Compared to the previous monitoring period, the proportion of women with follow-up histology within 90 days has deceased for Pacific women (from 75.2% to 69.1%), Māori (from 77.6% to 72.7%), Asian (from 77.4% to 76.1%) and European/ Other women (from 85.2% to 83.4%).
- The proportion of women with follow-up histology within 180 days increased for Māori and Asian women and decreased slightly in European/ Other women. A substantial decrease was found in Pacific women with a 9.3% decline in 180 day follow-up histology (from 89.0 to 79.7 in the current monitoring period).

Any follow-up tests

Target: None

- Nationally, 251 (10.2%) women have no follow-up test report (colposcopy, subsequent cytology, histology, HPV test) within 90 days of their high grade cytology report, and 142 (5.8%) women have no follow-up test report within 180 days.
- Nationally, the proportion of women with no record of a follow-up test report has increased slightly since the previous monitoring period at 90 days (from 9.3% to 10.2%) but is similar at 180 days (from 5.9% to 5.8%).
- Compared to the previous monitoring period, the proportion of women with no follow-up test recorded at 180 days has decreased for Māori (from 11.3% to 8.6%) and Asian women (from 8.6% to 7.1%), but increased somewhat for European/ Other women (from

4.2% to 4.4%) and increased to a greater extent in Pacific women (from 6.4% to 14.6%).

Indicator 7 Colposcopy

Indicator 7.1 Timeliness of colpscopic assessment – high grade cytology

Target: 95% or more of women who have evidence of clinical suspicion of invasive carcinoma, or a suspicion of invasive disease (TBS codes HS2, SC, AC1-AC5), receive colposcopy or a gynaecological assessment within 10 working days of receipt of referral. 95% or more of women who have other high-grade smear abnormalities (TBS codes ASH, HS1, AG1-5, AIS) receive colposcopy within 20 working days of receipt of referral.

- There were 2,453 women with high grade cytology results who were not already under specialist management.
- This comprised 82 women with high grade results indicating a suspicion of invasive disease and 2,371 women with other high grade results.
- Nationally, the proportion of women with accepted referrals recorded on the NCSP Register is slightly higher compared to the previous report (from 87.7% to 87.8%).

Suspicion of Invasive Disease

- Among the 82 women with high grade cytology results indicating a suspicion of invasive disease, 47 had an accepted referral; 63.8% of the women were seen within 10 working days of their referral being accepted; 72.3% were seen within 20 working days of their referral being accepted. This is lower than in the previous report at 10 working days (76.2%), and at 20 working days (85.7%).
- A colposcopy visit is recorded for 70 (85.4%) of the women with high grade cytology results indicating a suspicion of invasive disease up to 30 June 2016 (follow-up time of at least six and up to 12 months).

Other high grade cytology (no Suspicion of Invasive Disease)

- Among the 2,371 women with other high grade cytology results, 2,106 had an accepted referral; 63.9% were seen within 20 working days of their referral being accepted. This is lower than the proportion seen within 20 working days in the previous monitoring period (67.8%).
- A colposcopy visit is recorded for 2,232 (94.1%) of the women with other high grade cytology results up to 30 June 2016 (follow-up time of at least six and up to 12 months).

Indicator 7.2 Timeliness of colpscopic assessment – low grade cytology

Target: 95% of women who have persistent low-grade abnormalities or a low-grade abnormality and positive HPV test, must receive a date for a colposcopy appointment within a period that does not exceed 26 weeks of the colposcopy unit accepting the referral from the smear taker.

- At present, this indicator reports on aspects of follow-up, but not specifically on timeliness in relation to the standard, as the date of the first scheduled colposcopic appointment is not yet available in the NCSP Register for all women referred.
- There were 4,207 women with persistent low grade cytology or low grade cytology and a positive HPV test collected the 6-month period ending 12 months prior to the end of the current monitoring period (i.e. between 1 January – 30 June 2015).
- Subsequent accepted referrals are recorded for 3,519 (83.6%) of these women, and subsequent colposcopy (by 30 June 2016) for 3,752 (89.2%) of these women.
- Nationally, 75.2% of women attended for colposcopy within 26 weeks of their accepted referral.

Indicator 7.3 Adequacy of reporting colposcopy

Target: 100% of medical notes will accurately record colposcopic findings including visibility of the squamocolumnar junction, presence or absence of a visible lesion, and colposcopic opinion regarding the nature of the abnormality.

- Based on 13,733 colposcopy visits recorded on the NCSP Register, no DHB nor the aggregate of colposcopy visits to private practice met the target of 100% completion of all recommended fields.
- The degree of visibility of the squamocolumnar junction was documented for 97.4% of colposcopies.
- Presence or absence of a lesion was documented for all colposcopies.
- Colposcopic opinion regarding abnormality grade was documented for 91.5% of colposcopies where appearance was abnormal or inconclusive.
- All of these items were completed for 92.4% of colposcopy visits.
- The type of recommended follow-up was recorded for 96.5% of colposcopy visits, and the recommended timeframe for this follow-up was recorded for 95.9% of colposcopy visits.
- Colposcopic appearance was reported as abnormal in 56.4% of colposcopies, and inconclusive in 5.2% of colposcopies.
- Completion of most recommended fields is broadly similar to what was reported in the previous monitoring period.
- Overall completion (92.4%) had slightly decreased to what it was in the previous monitoring period (92.8%).
- The number of colposcopies recorded on the NCSP Register has increased by 43.6%, however this follows an unusually low number of colposcopies recorded on the NCSP Register in the previous report, because several DHBs were unable to report colposcopy data for the full monitoring period in the previous report. Colposcopy volumes are now similar to those reported in Report 43, and so the apparent increase in number of colposcopies recorded is consistent with a return to normal reporting from DHBs to the NCSP Register.

	• The number of DHBs reporting colposcopy data electronically to the NCSP Register increased from 13 to 17 during the current monitoring period).
Indicator 7.4	<u>Timeliness and appropriateness of treatment</u> **Target:** 90% or more of women with HSIL should be treated within eight weeks of histological confirmation. • 64.0% of 2,597 women with HSIL histology (CIN2/3) during the period 1 July to 31 December 2015 have a record of treatment within eight weeks of their histology report. • The proportion of women with histologically confirmed CIN2/3 treated within eight weeks of their histology result being reported has increased slightly since the previous monitoring period (from 62.3% to 64.0%). • No DHBs met the target.
Indicator 7.5	<u>Timeliness of discharge following treatment</u> **Target:** 90% or more of women treated for CIN2/3 should have a colposcopy and smear within the nine-month period post treatment. • Based on NCSP Register records, 1,478 women were treated for high grade lesions in the period 1 January to 30 June 2015. • 74.9% of women treated have a record of both colposcopy and cytology within the nine months after their treatment visit. 76.2% have a record of at least a colposcopy visit (with or without cytology) in the same time period. • Two DHBs met the target for follow-up within nine months post-treatment. **Target:** 90% or more of women treated for CIN2/3 should be discharged back to the smear-taker as appropriate. • There were 1,076 women who met the criteria for appropriate discharge within 12 months of their treatment (72.8% of women treated) – that is, they had a record of colposcopy and cytology following treatment, and their cytology result was negative. Of these women, 892 (82.9%) were discharged to their smear-taker within 12 months. • Five DHBs met the target of discharging 90% or more women who were eligible for discharge within 12 months.
Indicator 8	<u>HPV testing</u>
Indicator 8.1	<u>HPV triage of low grade cytology</u> **Target:** None set.

HPV triage

- Nationally, 94.1% of women aged 30 years or more with an eligible ASC-US cytology result, and 95.0% of women aged 30 years or more with an eligible LSIL cytology result are recorded as having a subsequent HPV triage test.
- Small numbers of HPV triage tests occur in women aged under 30 years (in 1.8% of women with an ASC-US result, and 0.9% of women with an LSIL result; 35 women in total).
- The proportion of women aged 30 years and over who were eligible for HPV triage of low grade cytology who subsequently received a triage test is less than that in the previous monitoring period for women with ASC-US results (94.1%, compared to 96.0% in the previous report) and for women with LSIL results (95.0%, compared to 96.8% in the previous report).

Positive triage tests

- Among women aged 30 years or more with valid HPV triage test results, 22.8% of women with ASC-US results and 57.2% of women with LSIL results were positive for high risk HPV.
- Positivity for high risk HPV varied by laboratory (from 12.1% to 28.2% for ASC-US, and from 28.6% to 63.5% for LSIL, although all labs but one were in the range 51.9 to 63.5% for LSIL).
- Positivity for high risk HPV generally decreased with increasing age.
- The proportion of women whose HPV tests were positive was less in the current monitoring period for ASC-US (22.8%, compared to 24.2% in the previous period), and also for LSIL (57.2%, compared to 59.1% in the previous period).

Histological outcomes in triage positive women who attended colposcopy

- Among women with ASC-US cytology and a positive HPV triage test in six-month period one year prior to the current monitoring report, 91.9% of women have a record of colposcopy and 65.2% have a record of histology within 12 months of their triage test. The corresponding percentages for LSIL are 90.2% with colposcopy and 67.8% with histology within 12 months.
- Among women with colposcopy recorded within 12 months of a positive triage test, 14.3% of women with ASC-US cytology and 14.6% of women with LSIL cytology had a histological outcome of CIN 2 or a more serious result (CIN2+). For both ASC-US and LSIL, this is around four percentage points lower than in the previous report.
- Among women with histology recorded within 12 months of a triage test, 20.2% of women with ASC-US cytology and 19.4% of women with LSIL cytology had a histological outcome of CIN 2 or a more serious result (CIN 2+). For both ASC-US and LSIL, this is around four percentage points lower than in the previous report.

Indicator 8.2 HPV test volumes

Target: None set.

- Nationally, 20,143 cervical samples were received at laboratories for HPV testing during the current monitoring period.
- Nationally, 13.8% of HPV tests were taken for follow-up of women treated for confirmed high grade squamous abnormalities in the previous four years, 38.5% were taken to manage women with high grade squamous cytology or histology more than three years ago (historical testing), 4.4% were taken at colposcopy (potentially to assist in resolving discordant results), and 13.6% were taken for HPV triage of low grade cytology in women aged 30 years or more.
- Of the remaining HPV tests (5,972 tests in total; 29.6% of all HPV tests), a large proportion may have been for follow-up of historical high grade abnormalities outside guidelines as there was no specific abnormality recorded on the NCSP Register (1,915 tests in total; 32.1% of the 5,972 remaining HPV tests; 9.5% of all HPV tests). This may have occurred, for example, because the abnormalities pre-date either the NCSP Register or the woman's enrolment on the NCSP Register or because the abnormalities occurred overseas. A smaller proportion appear to have been related to follow-up of other abnormalities outside of guideline recommendations, for example non-squamous abnormalities, or low grade abnormalities in cases where the guidelines recommend referral to colposcopy rather than triage (1,556 tests in total; 26.1% of the remaining HPV tests; 7.7% of all HPV tests).
- The proportion of HPV tests which are invalid is very small (0.3%).
- Overall HPV test volumes have decreased by 1.6% since the previous monitoring period.

Indicator 8.3

<u>Historical HPV tests for follow-up of women with previous high grade abnormality</u>

Target: None set.

- This analysis followed up 49,579 women who were eligible for historical HPV testing as at 1 October 2009 to ascertain how many women had received an HPV test for management of their historical (more than three years prior) high grade squamous abnormality.
- There were 30,029 women (60.6%) with a Round 1 historical HPV test recorded, and 22,841 women (46.1%) with a Round 2 historical HPV test recorded.
- The proportion of women who had received a historical HPV test varied by DHB, from 44.9% to 77.5% for Round 1 tests and from 28.0% to 68.2% for Round 2 tests.
- There was comparatively little variation by age in the proportion of women who had received a historical HPV test. For women aged 25 to 69 years this varied from 47.2% (25-29 years) to 62.8% (60-64 years) for Round 1 tests, and from 28.4% (25-29 years) to 49.7% (60-64 years) for Round 2 tests. No women aged less than 25 years at the end of the current monitoring period, were eligible for historical HPV

testing (these women generally would have been aged less than 18 on 1 October 2009).

- The proportion of women who had received a historical HPV test varied somewhat by ethnicity, from 41.5% (Pacific women) to 62.9% (European/ Other women) for Round 1 tests and from 28.6% (Pacific women) to 48.8% (European/ Other women) for Round 2 tests.
- The proportion of eligible women with an HPV test recorded has increased since the previous report from 57.4% to 60.6% for Round 1 tests, and from 43.5% to 46.1% for Round 2 tests.

2. Background

An organised National Cervical Screening Programme (NCSP) was established in New Zealand in 1990, to reduce the number of women who develop cervical cancer and the number who die from it. The Programme recommends regular cervical screening at three-year intervals for women aged between 20 and 69 years who have ever been sexually active. Part 4A of the Health Act 1956, which came into effect in 2005, underpins the NCSP's operations to ensure the co-ordination of a high quality screening programme for all women in New Zealand.

Ongoing systematic monitoring is a requirement of an organised screening programme. Such monitoring allows the performance of the Programme to be evaluated and corrective action to be taken as required. Monitoring is carried out through a set of key indicators which cover all aspects of the screening pathway, including participation by women, their clinical outcomes, NCSP provider performance and the Programme overall.

Monitoring reports were produced quarterly from December 2000 to June 2007 (Report 27); and six monthly thereafter. The audience for these monitoring reports includes the general public, NCSP providers, and the Programme itself.

Technical information on the indicators are available from the Ministry of Health on request.

From Report 30 onwards, monitoring has been undertaken with the technical assistance of researchers based at the Cancer Research Division at Cancer Council NSW, Sydney, Australia. This has coincided with the use of a new reporting format, incorporating more explicit definitions and utilising data from the newly developed NCSP Register, so earlier reports are not fully comparable with Report 30 onwards.

The development of these reports has been ongoing, however it is anticipated that from Report 44 going forward, there will be minimal further changes to the indicators, since the NCSP is expected to transition to primary HPV screening after 2018.

NCSP biannual monitoring reports are reviewed by a multidisciplinary advisory and monitoring group, representing NCSP providers and consumers. The group may make recommendations to the NSU for follow up actions.

Further information about the NCSP Advisory Group and the monitoring and performance of the NCSP is available on https://www.nsu.govt.nz/health-professionals/national-cervical-screening-programme/independent-monitoring-reports and on request from the NCSP:
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3. Methods

Data used

The analyses in this report are based on data extracted from the NCSP Register on 18 August 2016.

Age

Unless otherwise specified, age is defined as the woman's age at the end of the monitoring period, i.e. the women's age at 30 June 2016.

Hysterectomy-adjusted population

Measures such as coverage require an estimate of the population eligible for cervical screening. This is approximated by applying a hysterectomy-adjustment to the estimated New Zealand female population, to exclude women with a hysterectomy from the eligible population. This is an imperfect adjustor of the proportion of the population eligible for screening, since women with a hysterectomy may or may not require further cervical smears, depending on the type of hysterectomy that they received.

The hysterectomy-adjustment used in this report uses estimates of the hysterectomy prevalence (both total and partial) in the New Zealand population, modelled by Alistair Gray [1], and are the adjustors recommended by the Health and Disability Intelligence Unit within the Ministry of Health. Hysterectomy incidence was estimated by fitting models to observed data on hysterectomies obtained from public and private hospital discharge data and estimates of the usually resident female population from Statistics New Zealand. The resulting estimates of hysterectomy incidence and survival in single-year age groups by calendar year were then used to estimate the prevalence of hysterectomy by five-year age group (among women aged 20-69 years) and calendar year (1988 to 2017). The 2016 estimates were employed in this monitoring report. A known limitation of these estimates of hysterectomy prevalence is that they do not take into account deaths or women who leave New Zealand after they have a hysterectomy (which would tend to result in an overestimate of hysterectomy prevalence), nor women who migrate to New Zealand who have previously had a hysterectomy (which would tend to underestimate hysterectomy prevalence). These limitations may be mitigated by the fact they are working in opposite directions, and that some women who emigrate from New Zealand do return later in their lives. Further information about the hysterectomy prevalence methodology can be found in the document '*Methodology for estimating hysterectomy prevalence in women 20-69*' (14 September 2011) by A. Gray.[1]

The hysterectomy prevalence data were applied to New Zealand population estimates from Statistics New Zealand so that estimates of the number of women in the New Zealand population (by age and ethnicity) who had not had a hysterectomy prior to were obtained. Hysterectomy prevalence figures for the whole population (the denominator) were not available by DHB or ethnicity, so age-specific hysterectomy adjustments were applied equally across each DHB and ethnicity grouping. These adjusted population estimates were then used

as the denominator in the hysterectomy-adjusted calculations. The estimates used for the New Zealand female population were the female 2013 Census population, projected to 30 June 2016.

Ethnicity analysis

The analysis by ethnicity considered four groups – Māori, Pacific, Asian, or European/ Other, based on women's prioritised ethnicity derived from level two ethnicity codes recorded on the NCSP Register. Women for whom ethnicity information was not available were included in the "European/ Other" ethnicity category. The data download used for the current analysis (NCSP Register data as at mid-August 2016) contained ethnicity codes for approximately 98.8% of women on the NCSP Register.

Ethnicity data in New Zealand is collected during encounters with the health system, such as registering with primary care, during an admission to hospital, or during surveys. The Ministry of Health has undertaken a number of activities to improve the quality of ethnicity data, including the development in 2004 of protocols for the collection and recording of ethnicity data.[2] Coding of ethnicity on the NCSP Register follows the classification used by the Ministry of Health.[2, 3] The NCSP is continuing with work to improve the accuracy of ethnicity recording on the NCSP Register. This has included matching women's NHIs for which there is no ethnicity on the register with the Ministry of Health's NHI register to include ethnicities. This matching is done every three months.

Calculating NCSP coverage

The methods developed for calculating the indicators used to monitor the NCSP are reviewed and revised approximately every three years, consistent with other international programmes. In addition, revisions to calculations are made in accordance with changes to New Zealand statistics, such as the population census data and ethnicity recordings. These changes reflect Statistics New Zealand modifications to methods for estimating population statistics. Any changes to methods for numerators or denominators are discussed with and supported by the NCSP Advisory Group. These changes are then approved by the National Screening Unit.

Until Monitoring Report 30 (1 July to 31 December 2008), coverage was calculated for women aged 20-69 years at the end of the monitoring period. However, this includes some younger women who were not eligible for screening for the entire three years because they were aged 22 or less at the end of the three-year screening period (i.e. were aged 17-19 years at the start of the three-year period). This means that previously there may have been slightly underestimated coverage overall. Accordingly, a change to the method for measuring coverage was discussed and agreed on with the NCSP Advisory Group. The revised approach was to report coverage for women aged 25-69 years at the end of the monitoring period (which therefore includes women aged 22 and over at the beginning of the three-year period but excludes women aged 20 or 21 years at the beginning). This approach is consistent with best practice in Australia and England. In England, until 2003, the target age range for screening was 20-64 years, but coverage was calculated for women aged 25-64 years, to ensure only women eligible throughout the period were included. Similarly, in Australia, women are eligible to start

screening from 18 years, but coverage is measured among women aged 20-69 years. The difference between the starting ages (two years) is the same as the recommended screening interval in Australia.

Beginning with NCSP Monitoring Report 31 (1 January to 30 June 2009), coverage has been reported using the revised method but estimates using the old method (20-69 years at end of period) are also included for comparison with reports prior to 2009.

The difference between the new (25-69 at end of period) and the old (20-69 at end of period) estimates is small (about 1-2%). However, the advantage of the new method is that it provides a fairer estimate of coverage (by excluding women who are not eligible for the full three-year period) and allows international benchmarking with important peer group countries, including Australia and UK.

In addition to three-year coverage, (discussed above) we also report five-year coverage (as is also done internationally). The change in method is even more important here as women aged 20-24 all need to be excluded as they are not eligible for screening for the full five years prior to the end of the assessment period. Restricting the coverage estimate to the 25-69 age group rather than the 20-69 age group is even more advantageous with respect to the five-year coverage indicator than the three-year coverage indicator.

As with all indicators, coverage indicators and the statistics on which they are based continue to evolve and further changes in the construction of these indicators are to be expected in the future. Changes currently in progress include better methods for hysterectomy adjustment and ethnicity identifications.

4. Biannual NCSP Monitoring Indicators

Indicator 1 – Coverage

This indicator includes two sub-indicators – three-year coverage (Indicator 1.1) and regularity of screening (Indicator 1.2). Indicator 1.1 also describes participation at longer intervals (five-year coverage). These two sub-indicators complement each other, in that the first allows monitoring of women who are versus are not screened over various timeframes; whereas the second (regularity of screening) allows more detailed monitoring of the timeliness among women who have attended for screening.

This is a re-structure compared reports prior to Report 44, where only three-year (and five-year) coverage were included in the biannual monitoring reports, and regularity of screening was included in the annual reports.

Indicator 1.1 – Three-year coverage

Definition	The proportion of all 25-69 year old women who have had a screening event (cytology sample, HPV sample or histology sample) taken in the three years prior to the end of the monitoring period. This definition restricts the measure of coverage to the five-year age groups who were eligible for the entire duration of the three-year period, i.e. women aged 25-69 years at the end of the monitoring period. Screening coverage in women aged 20-69 years is also presented, for comparability with previous reports. The denominator (eligible population) for this indicator is adjusted for the estimated proportion of women who have had a total hysterectomy. Women who have withdrawn from or are not enrolled on the NCSP Register are excluded from the counts of women screened. Screening of women aged less than 20 years at the time of their cervical sample is also reported by DHB.
Target	80% of eligible women (aged 25-69 years at the end of the period) within three years. This target applies nationally, but is also a target for each ethnicity group (80% for Māori, 80% for Asian, 80% for Pacific, 80% for European/ Other).
Current Situation	As at 30 June 2016, 917,164 (76.7%) women aged 25-69 at the end of the current monitoring period had at least one cervical sample taken during the previous three years. This does not yet meet the target of 80%. 1,080,064 (90.3%) women aged 25-69 at the end of the current monitoring period had at least one cervical sample taken during the previous five years. Three-yearly coverage in women aged 25-69 years varied by DHB from 72.4% (Northland) to 80.5% (Bay of Plenty & Capital & Coast). Three of the 20 DHBs achieved the 80% target for women aged 25-69 years at the end of the period (Figure 1, Table 22). Three-yearly coverage also varied by ethnicity. Coverage targets of 80% were not met for Māori, Pacific, or Asian women. Coverage in these groups for women aged 25-69 years was 63.6%, 75.5% and 65.5% respectively. The coverage target was achieved among European/ Other women (81.9% of women aged 25-69 screened within three years) (Figure 2, Table 23). Coverage for each of Māori, Pacific, Asian or European/ Other women was also explored at the DHB level. Three-yearly coverage for Māori women ranged from 50.9% (South Canterbury) to 73.3% (Hawke's Bay) (Figure 4). The target level of 80% of Māori women screened within the previous three years was not achieved in any DHB. Three-yearly coverage for Pacific women ranged from 52.7% (Whanganui) to all women in (South Canterbury) (Figure 5). The target level of 80% of Pacific women screened within the previous three years was achieved by two DHBs (Auckland and South Canterbury).

Three-yearly coverage in Asian women ranged from 54.8% (West Coast) to 76.9% (Hutt Valley) (Figure 6). The target level of 80% of Asian women screened within the previous three years was not achieved in any DHB. Three-yearly coverage for European/ Other women ranged from 74.6% (Wairarapa) to 89.1% (Auckland) (Figure 7). The target level of 80% of European/ Other women screened within the previous three years was achieved in 10 DHBs (Auckland, Bay of Plenty, Capital and Coast, Hutt Valley, Lakes, Nelson Marlborough, Southern, Taranaki, Waikato, Waitemata).

The target coverage of 80% of women screened at least once within three years was achieved in three out of the nine five-year age groups between 25 and 69 years. Among these women, the target was achieved for women between the ages of 45 to 59 years, but was not achieved for the five-year age groups between 25 and 44, and 60 and 69 years. Among women aged 25-69 years at the end of the period, coverage was lowest for women aged 25-29 years (65.8%), and was highest for women aged 45-49 years (81.3%) (Figure 3, Table 24). Coverage was also low for women aged 20-24 years (52.1%), however many women in this age group were not eligible for screening for the entire three-year period, and so the target is not applied to this age group.

When compared to the findings for three-year coverage, five-year coverage had similar patterns of variation by age, DHB, and ethnicity. For women aged 25-69 years at the end of the monitoring period, five-year coverage varied from 84.3% for West Coast to 96.0% in Capital & Coast (Figure 8, Table 25); by age from 80.0% for women aged 25-29 years to 95.3% for women aged 45-49 years (Figure 9,Table 27); and from 75.7% (Asian) to 95.7% (European/ Other) (Figure 10, Table 26). Five-yearly coverage for Māori women ranged from 60.7% (South Canterbury) to 91.7% (Hawke's Bay) (Figure 11, Table 28). Five-yearly coverage for Pacific women ranged from 65.7% (Northland) to all women (Auckland and South Canterbury) (Figure 12, Table 28). Five-yearly coverage for Asian women ranged from 60.2% (West Coast) to 87.0% (Hutt Valley) (Figure 13, Table 28). Five-yearly coverage in European/ Other women ranged from 86.6% (West Coast) to all women (Auckland, Bay of Plenty, Capital & Coast and Lakes) (Figure 14, Table 28). Coverage was estimated to be over 100% of the eligible population in some cases (Table 28); this is likely due to limitations in the estimates for hysterectomy prevalence.

Screens in women aged less than 20 years

A total of 6,924 women who were aged less than 20 years at the time of their cervical sample had a cervical sample taken in the three years to the 30 June 2016. This represents 0.7% of women who were screened at any age (Table 30).

The number of women aged less than 20 years at the time they were screened varied by DHB from 48 (Tairawhiti) to 1,211 (Canterbury), however some differences in counts are to be expected due to differences in population size

and age structure between DHBs. In order to take differences in population size between DHBs into account, the number of women who were screened in the previous three years and aged 15-19 years at the time of their cervical sample in each DHB was divided by the estimated population of females aged 15-19 years in that DHB. Note that as the events occurred over a three-year period, and the population estimate is for a single year, this cannot be interpreted directly as the proportion of 15-19 year old females in each DHB who have been screened in the last three years. However, this does allow the variation in DHB populations to be partly accounted for, and thus can give an indication of where screening among women aged less than 20 years is more or less common. Estimates for this proportion ranged from 2.6% (Northland) to 7.2% (Canterbury). Some smaller DHBs screen a relatively low number of women when they are younger than 20 years, but at a comparatively high rate, because their population is small (for example South Canterbury, Wairarapa, West Coast and Whanganui). Details of screens of women aged less than 20 years by DHB are presented in Figure 15, and Table 29 to Table 31.

Further exploratory analysis determined that a very high proportion of the women who were aged less than 20 years at the time of their cervical sample were aged 18-19 years at the time (89.5%). This may represent opportunistic screening of women aged 18-19 years. This proportion varied from 80.3% in Wairarapa to 95.1% in Whanganui. Where this proportion is higher, it indicates that a larger proportion of screening in women aged less than 20 years may be attributable to opportunistic screening of women aged 18-19 years; as this proportion decreases, it indicates that more of the screening in women aged under 20 years is occurring in women aged under 18 years, and less may be attributed to opportunistic screening of women aged 18-19 years.

Trends

Coverage

Overall coverage in New Zealand among women aged 25-69 years is similar in this monitoring report (76.7% within the last three years, and 90.3% within the last five years) compared to the previous monitoring report (76.8% within the last three years, and 90.5% within the last five years).

For women screened in the last three years, coverage has been relatively stable in many DHBs compared to the previous monitoring period, with the change generally being less than one percentage point. In some DHBs a decrease has been seen for more than one monitoring period (for example in Taranaki and Wairarapa). Trends over the last four monitoring periods by DHB are shown in Figure 16 and Table 33.

The proportion of women screened in the previous three years by age continues to be similar to the proportions in the previous monitoring report. The coverage target of 80% was met for women in the five-year age groups between 45-59 years, but not for women outside this age range. Coverage has changed by less than one percentage point for most age groups. Trends over the last four monitoring periods are shown in Figure 17 and Table 34.

By ethnicity, coverage has been relatively unchanged over the last four monitoring periods for European/ Other women, while Māori, Pacific and Asian women show increasing coverage over time. Over the last two monitoring periods the proportion of Pacific and Asian women screened has increased by 1.3% (from 74.2% in the previous period to 75.5% in the current period) and 1.0% (from 64.5% in the previous period to 65.5% in the current period), respectfully. The steady increases the proportion of Pacific women and Asian women screened in the last three years have been seen in many DHBs, but is potentially particularly influenced by increases in all DHBs covering the Auckland region (Auckland, Counties Manukau, Waitemata), as a high proportion of Pacific and Asian women reside in this region (approximately 70% and 65% of Pacific and Asian women respectively). Māori and European / Other woman had coverage similar to the previous monitoring period (Figure 18, Table 35).

Screens in women aged less than 20 years

The number of women screened who were aged under 20 years has decreased from 7,299 in the previous monitoring period to 6,924 in the current monitoring period, however the proportion of all women with screening events who were aged less than 20 years at the time of the event has remained similar (at 0.7%). The number of women screened who were aged less than 20 years at the time of their cervical sample has decreased in 18 of the 20 DHBs over the last two monitoring periods (Figure 19).

The proportion of these women who were aged 18-19 years has increased since the previous monitoring period (from 89.0% to 89.5%), and an increase has occurred in most DHBs (13 of 20) (Figure 20). As in previous reports, it would appear that in New Zealand overall screens in very young women are reducing, and when women aged less than 20 years are screened, it increasingly reflects opportunistic screening of 18-19 year old's.

Comments

As discussed in the Methods section of this report (Hysterectomy-adjusted population (Section 14), the hysterectomy prevalence used to make the adjustment includes all women with a hysterectomy, some of whom may still require cervical screening. These women will have been removed from the denominator, but may still appear in the numerator. As a result of these limitations, coverage must be interpreted with some caution. We explored the impact of the hysterectomy-adjustment on the results by calculating coverage as a proportion of the total New Zealand female population (i.e. regardless of whether they have had a hysterectomy or not). Results for this analysis appear in Table 32.

Counts of women screened used to estimate coverage (numerator) exclude women who are not enrolled on the NCSP Register, whereas the hysterectomy-adjusted population estimates (denominator) represent all women in New Zealand without a hysterectomy, regardless of whether they are enrolled on the NCSP Register. Therefore, the coverage estimates may be

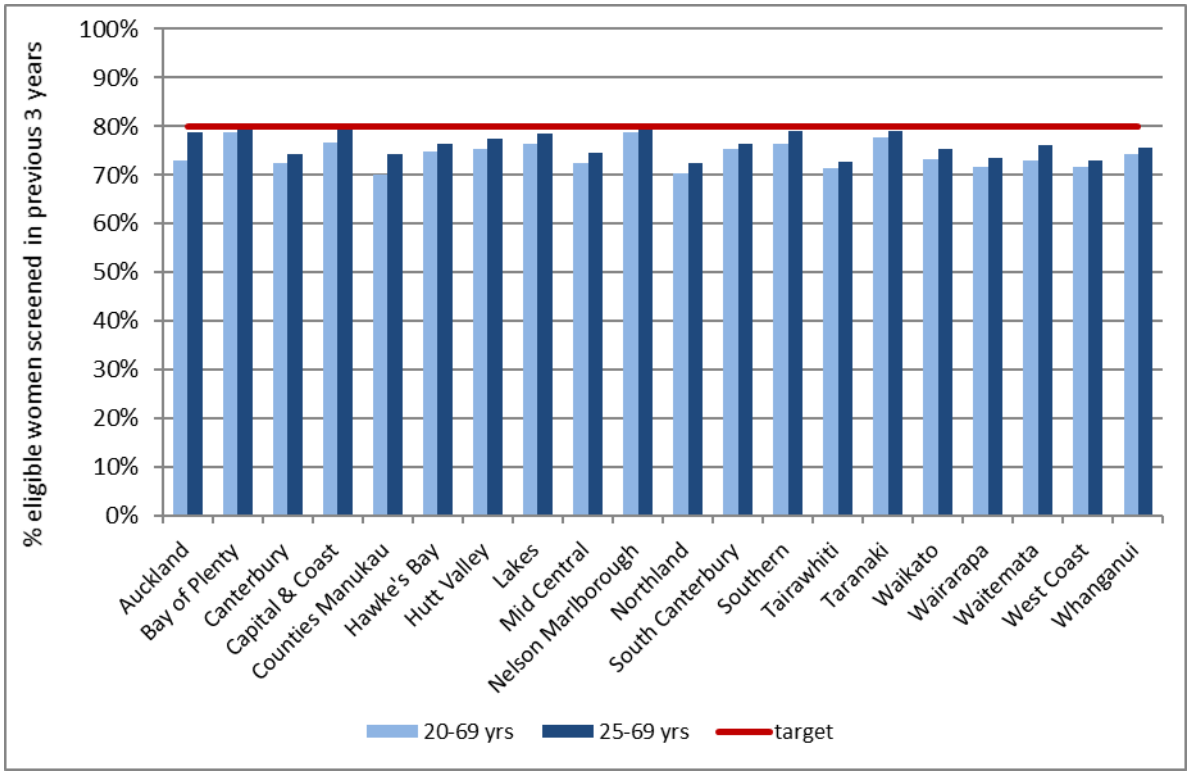
an underestimate of the actual coverage rates achieved, however the impact is likely to be very small.

Concerns about under- and over-counting of different ethnicity groups is leading the Ministry to use the NHI for ethnicities as other Ministry collections do. In the interim this report relies on NCSP Register ethnicities; however regular matching is done with the NHI register for women on the NCSP Register who have no ethnicity recorded on the NCSP Register.

Coverage in women aged 20-24 years is likely to remain lower than for other ages and coverage in this age group should be interpreted with caution, as many women will have had a shorter period in which they were eligible for screening.

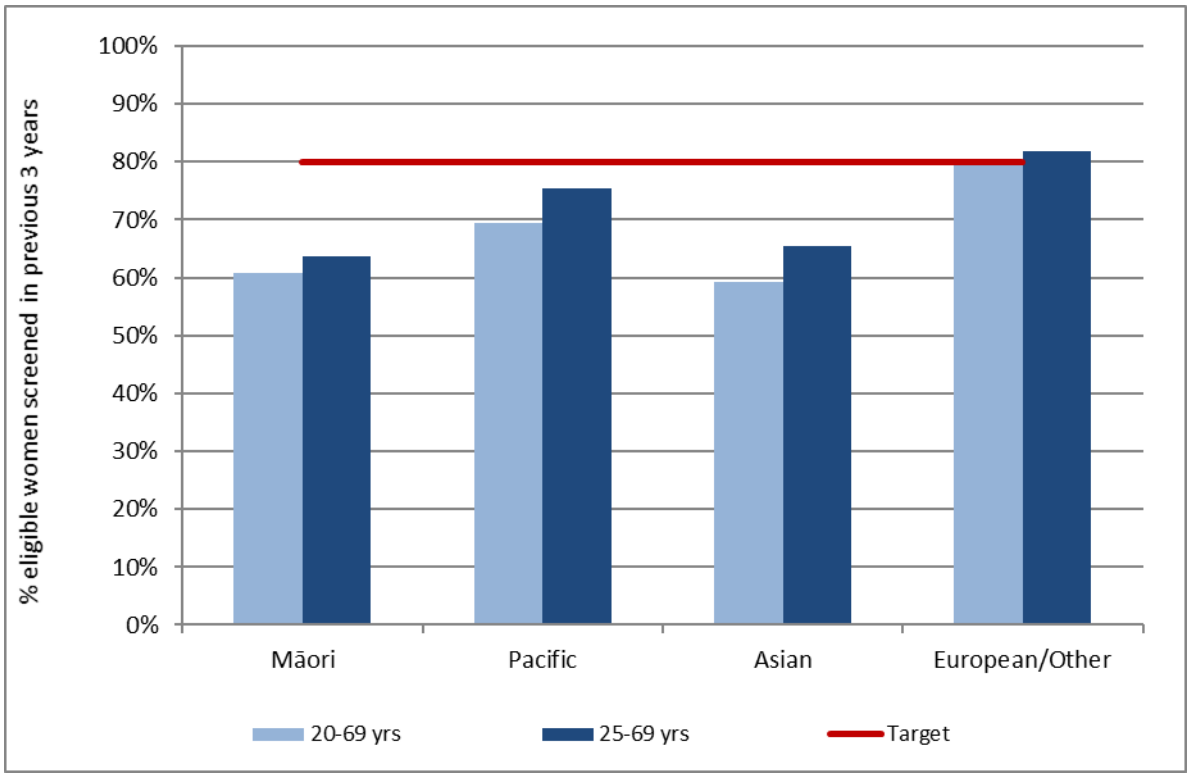
A limitation to the report that must be acknowledged is that in cases where a woman is deceased the woman's information is removed from the NCSP Register. In some cases, this could mean that women who die after the end of the monitoring period are included in the denominator for coverage, but potentially not in the numerator. This could also lead to underestimates of coverage, although the effect is likely to be small, especially in younger women.

Figure 1 - Three-year coverage by DHB (women screened in the three years prior to 30 June 2016, as a proportion of hysterectomy-adjusted female population)



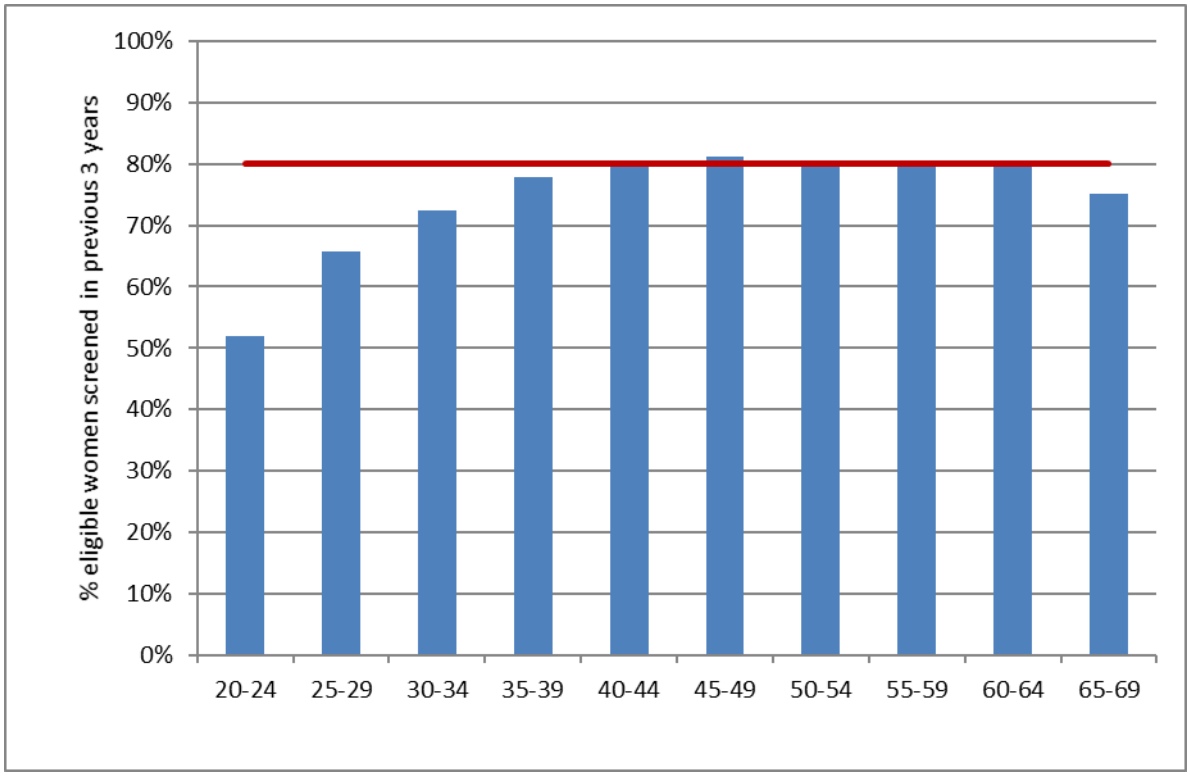
Note: Coverage calculated using population projection for 30 June 2016 based on 2013 Census data. Target 80%, hysterectomy adjusted. See also Table 22.

Figure 2 - Three-year coverage (women screened in the three years prior to 30 June 2016, as a proportion of hysterectomy-adjusted female population), by ethnicity



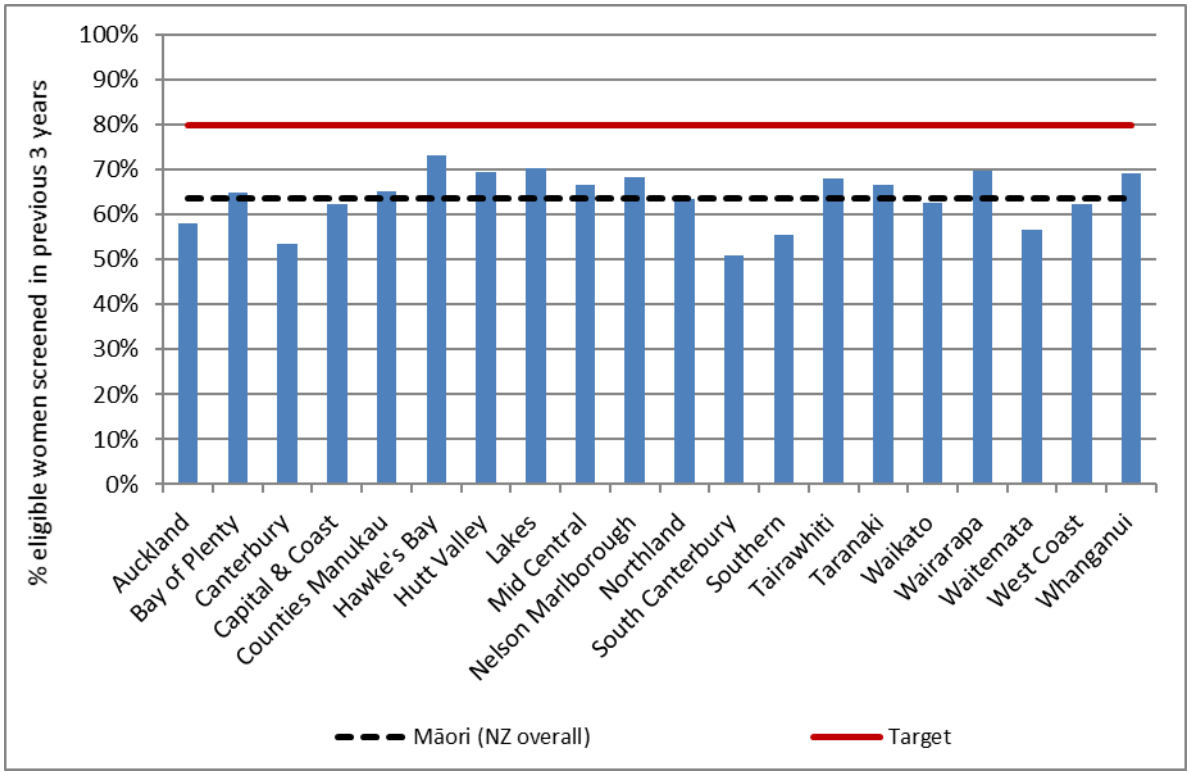
Note: Coverage calculated using population projection for 30 June 2016 based on 2013 Census data. Target: 80% for ages 25-69 years, hysterectomy adjusted. See also Table 23.

Figure 3 - Three-year coverage by five-year age group (women 20-69 years screened in the three years prior to 30 June 2016 , as a proportion of hysterectomy-adjusted female population)



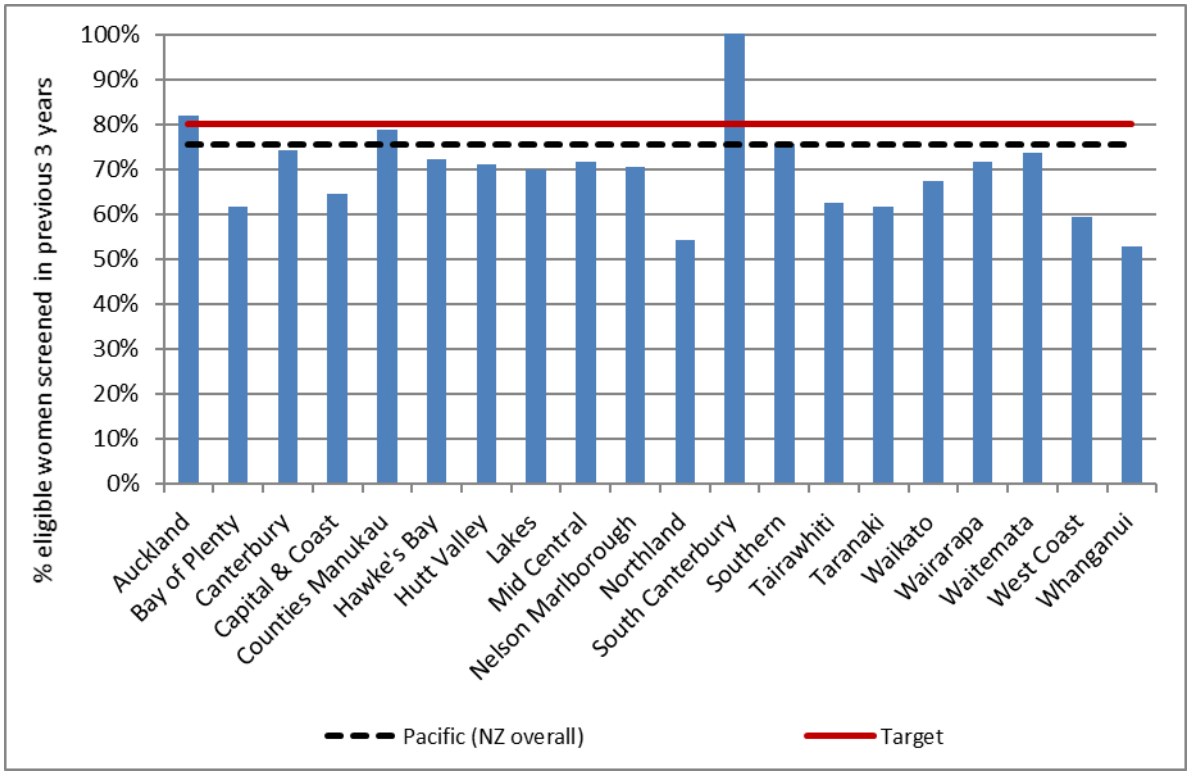
Note: Coverage calculated using population projection for 30 June 2016 based on 2013 Census data. Target: 80% for ages 25-69 years, hysterectomy adjusted. See also Table 24.

Figure 4 - Three-year coverage in Māori women (women 25-69 years screened in the three years prior to 30 June 2016, as a proportion of hysterectomy-adjusted female population), by DHB



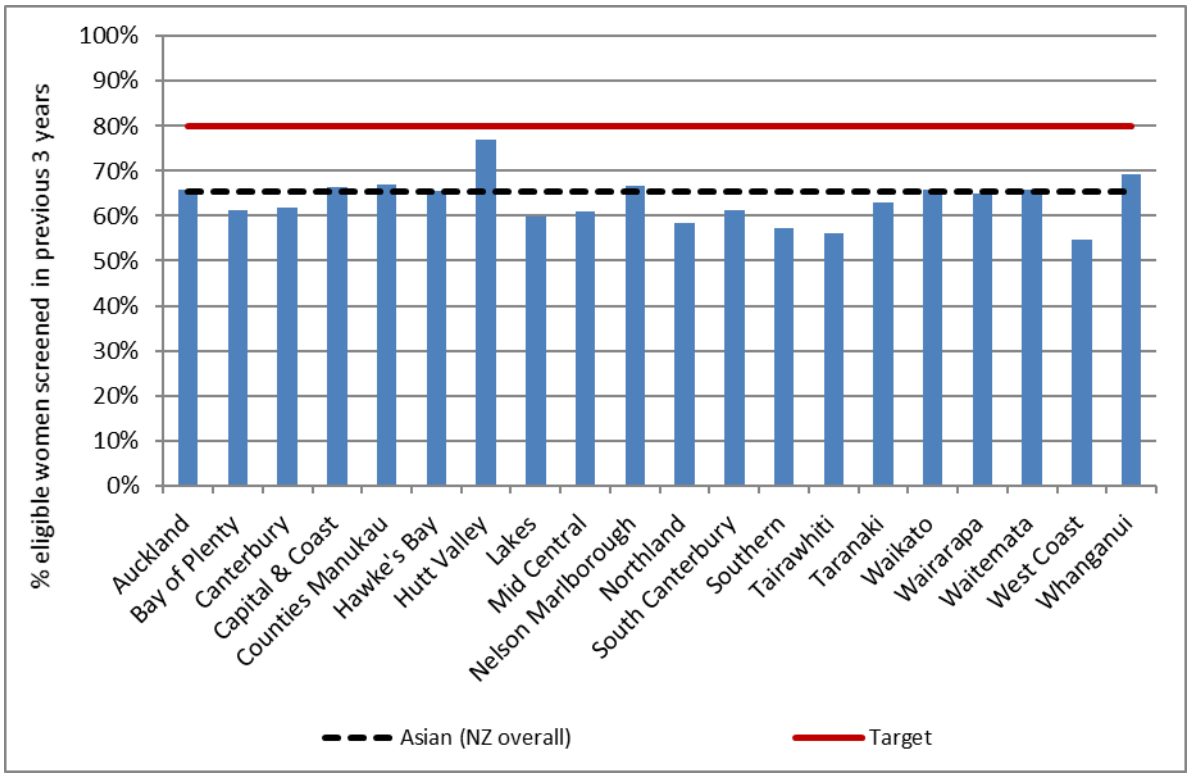
Note: Coverage calculated using population projection for 30 June 2016 based on 2013 Census data. Target 80%, hysterectomy adjusted.

Figure 5 - Three-year coverage in Pacific women (women 25-69 years screened in the three years prior to 30 June 2016, as a proportion of hysterectomy-adjusted female population), by DHB



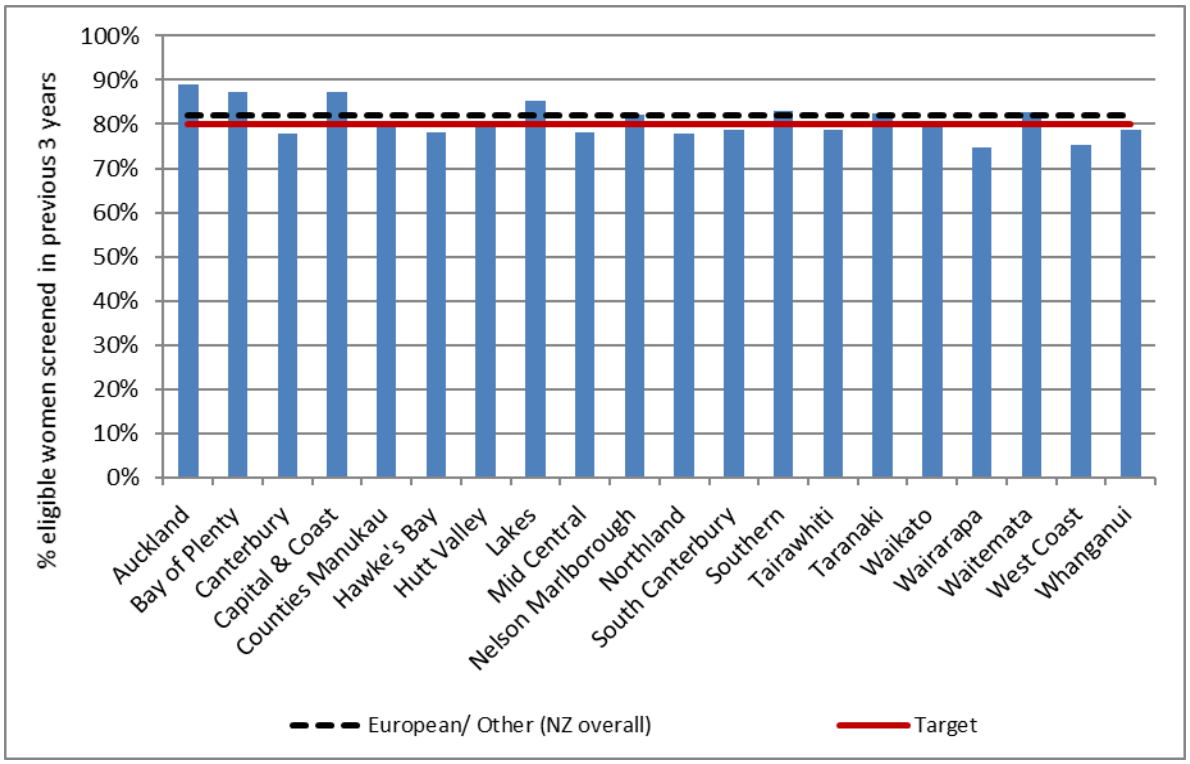
Note: Coverage calculated using population projection for 30 June 2016 based on 2013 Census data. Target 80%, hysterectomy adjusted.

Figure 6 - Three-year coverage in Asian women (women 25-69 years screened in the three years prior to 30 June 2016, as a proportion of hysterectomy-adjusted female population), by DHB



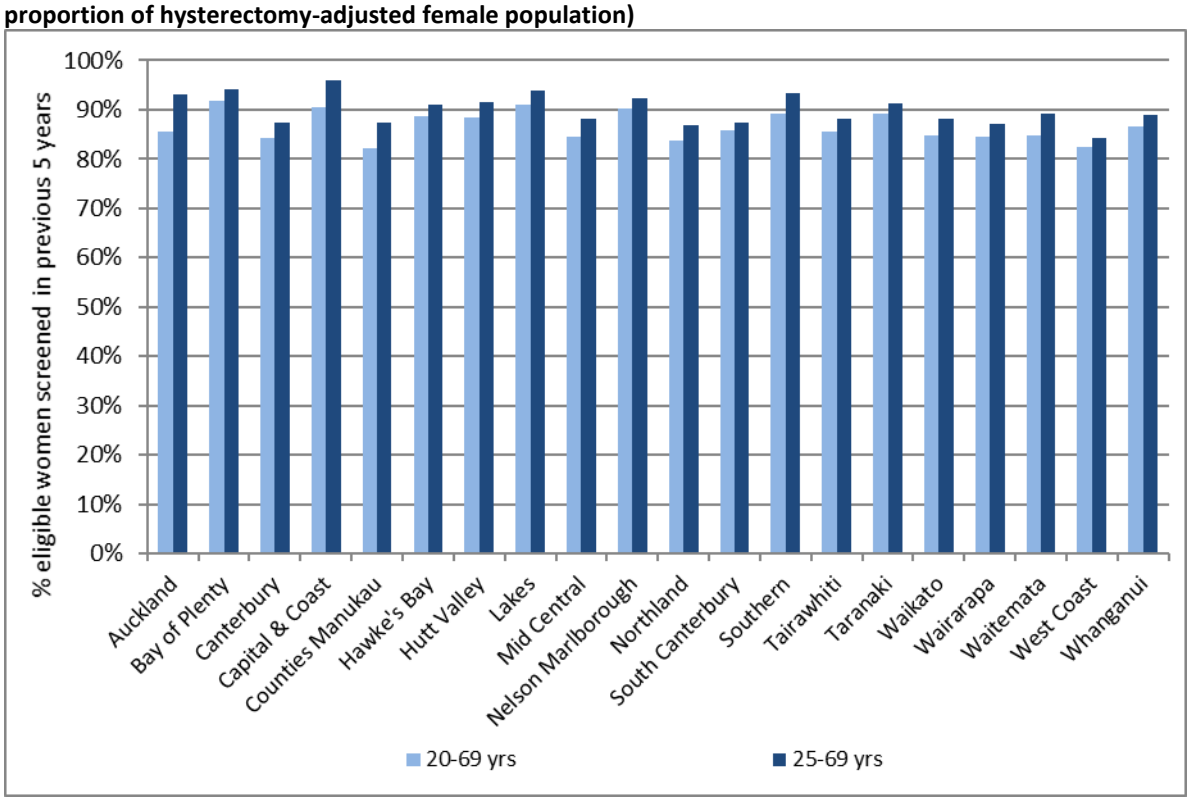
Note: Coverage calculated using population projection for 30 June 2016 based on 2013 Census data. Target 80%, hysterectomy adjusted.

Figure 7 - Three-year coverage in European/ Other women (women 25-69 years screened in the three years prior to 30 June 2016, as a proportion of hysterectomy-adjusted female population), by DHB



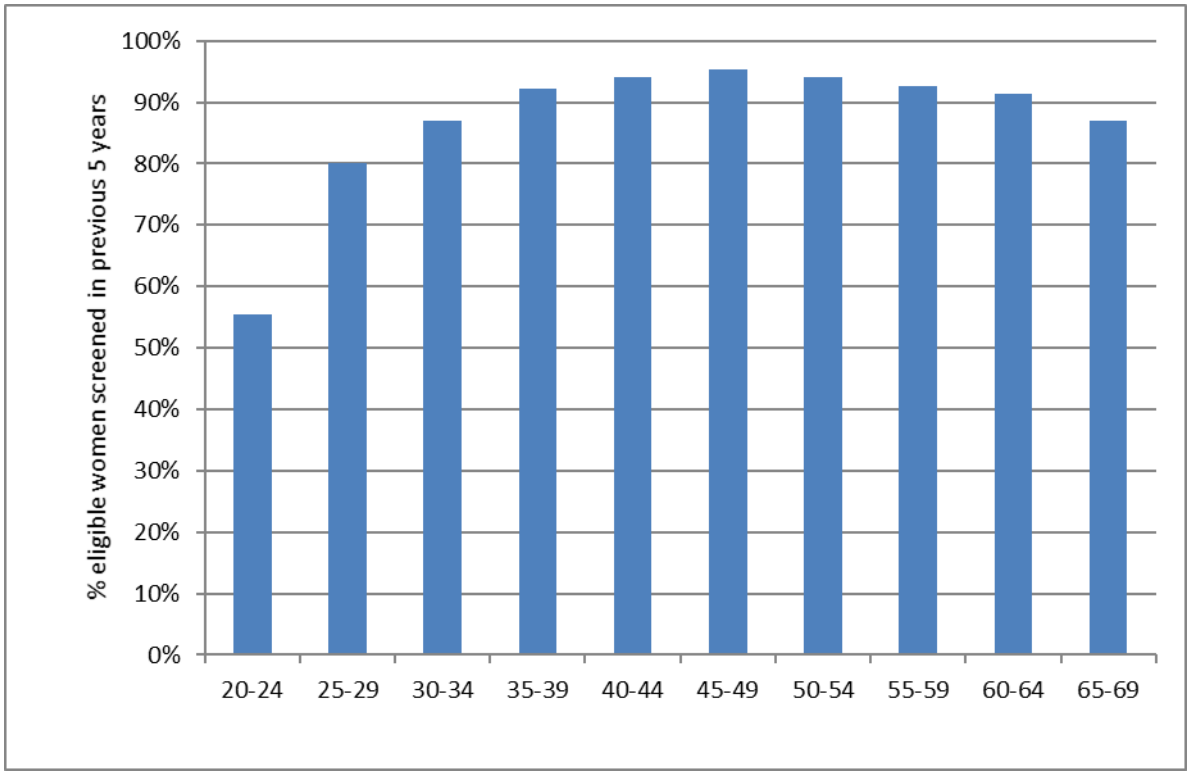
Note: Coverage calculated using population projection for 30 June 2016 based on 2013 Census data. Target 80%, hysterectomy adjusted.

Figure 8 - Five-year coverage by DHB (women screened in the five years prior to 30 June 2016, as a proportion of hysterectomy-adjusted female population)



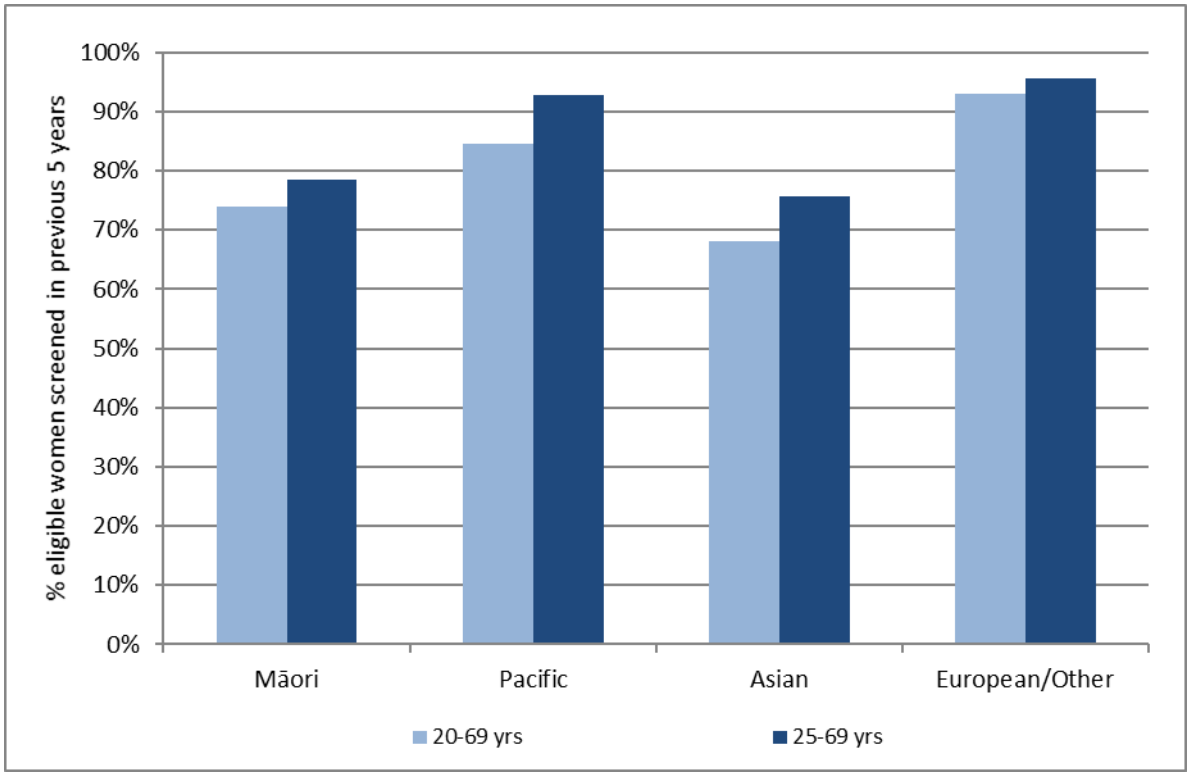
Note: Coverage calculated using population projection for 30 June 2016 based on 2013 Census data. See also Table 25.

Figure 9 - Five-year coverage by five-year age-group (women screened in the five years prior to 30 June 2016, as proportion of hysterectomy-adjusted female population)



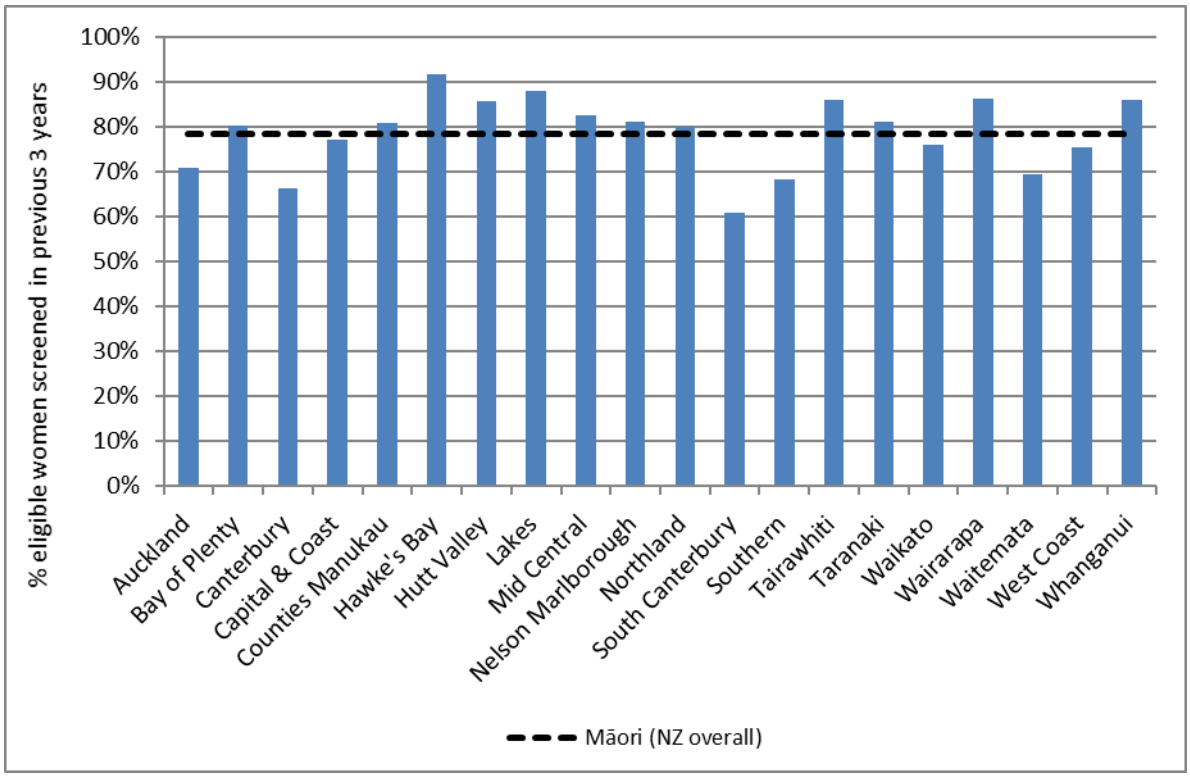
Note: Coverage calculated using population projection for 30 June 2016 based on 2013 Census data. See also Table 27.

Figure 10 - Five-year coverage by ethnicity (women screened in the five years prior to 30 June 2016, as a proportion of hysterectomy-adjusted female population)



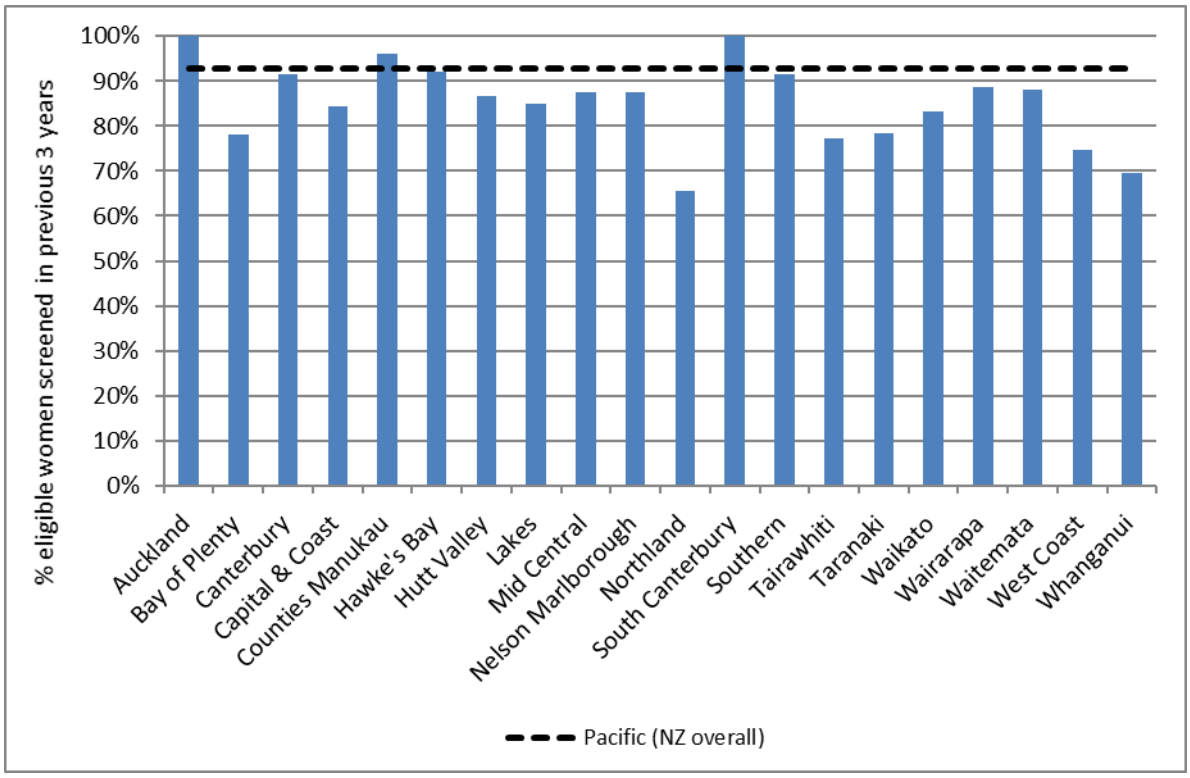
Note: Coverage calculated using population projection for 30 June 2016 based on 2013 Census data. See also Table 26

Figure 11 - Five-year coverage in Māori women (women 25-69 years screened in the five years prior to 30 June 2016, as a proportion of hysterectomy-adjusted female population), by DHB



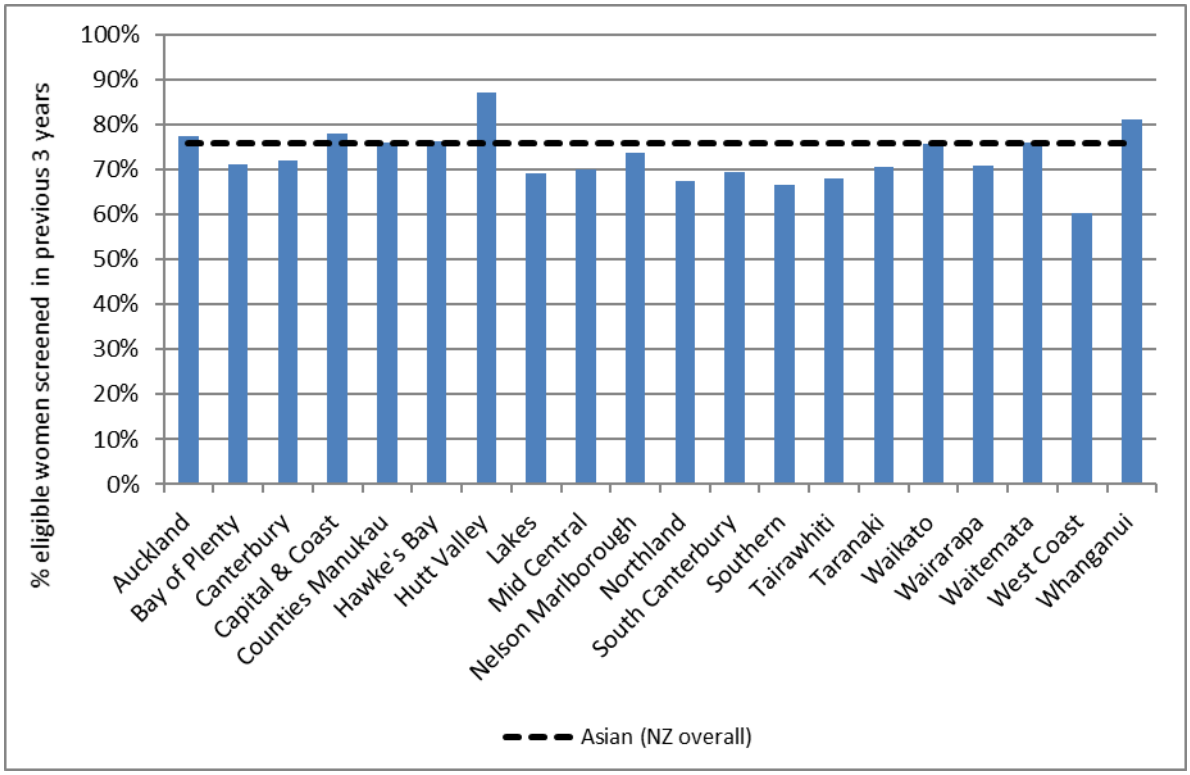
Note: Coverage calculated using population projection for 30 June 2016 based on 2013 Census data.

Figure 12 - Five-year coverage in Pacific women (women 25-69 years screened in the five years prior to 30 June 2016, as a proportion of hysterectomy-adjusted female population), by DHB



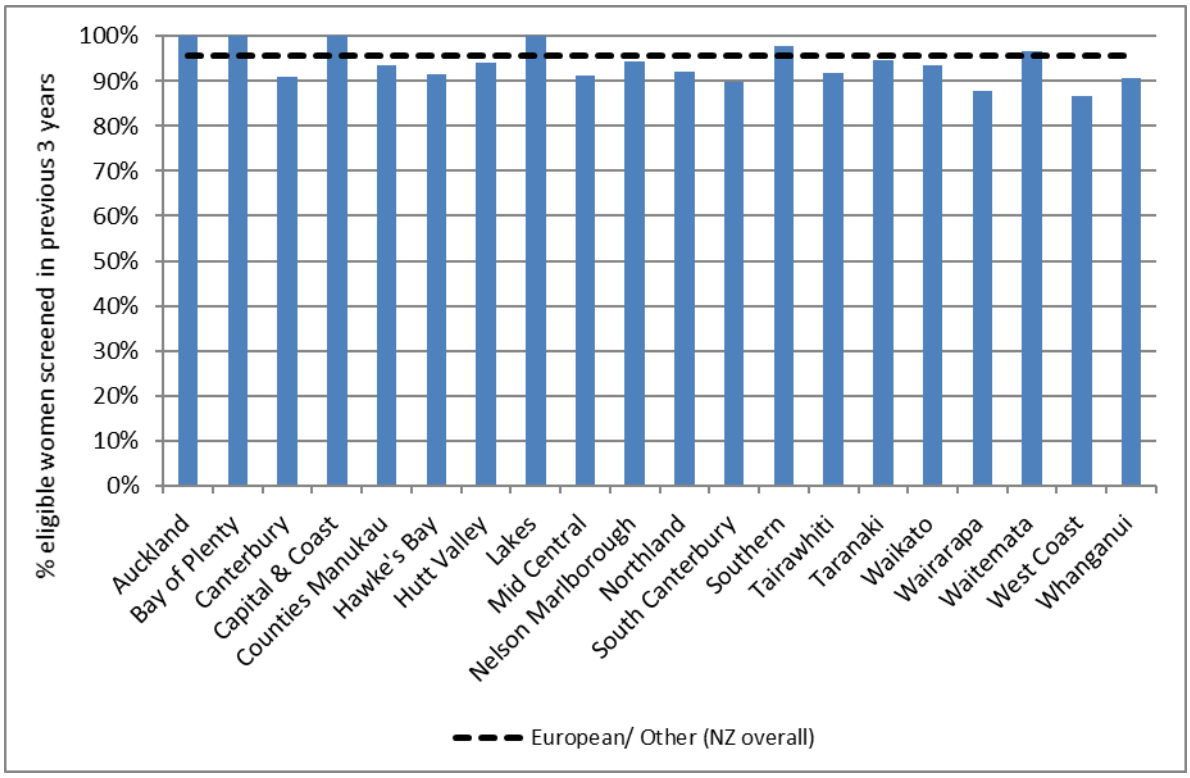
Note: Coverage calculated using population projection for 30 June 2016 based on 2013 Census data.

Figure 13 - Five-year coverage in Asian women (women 25-69 years screened in the five years prior to 30 June 2016, as a proportion of hysterectomy-adjusted female population), by DHB



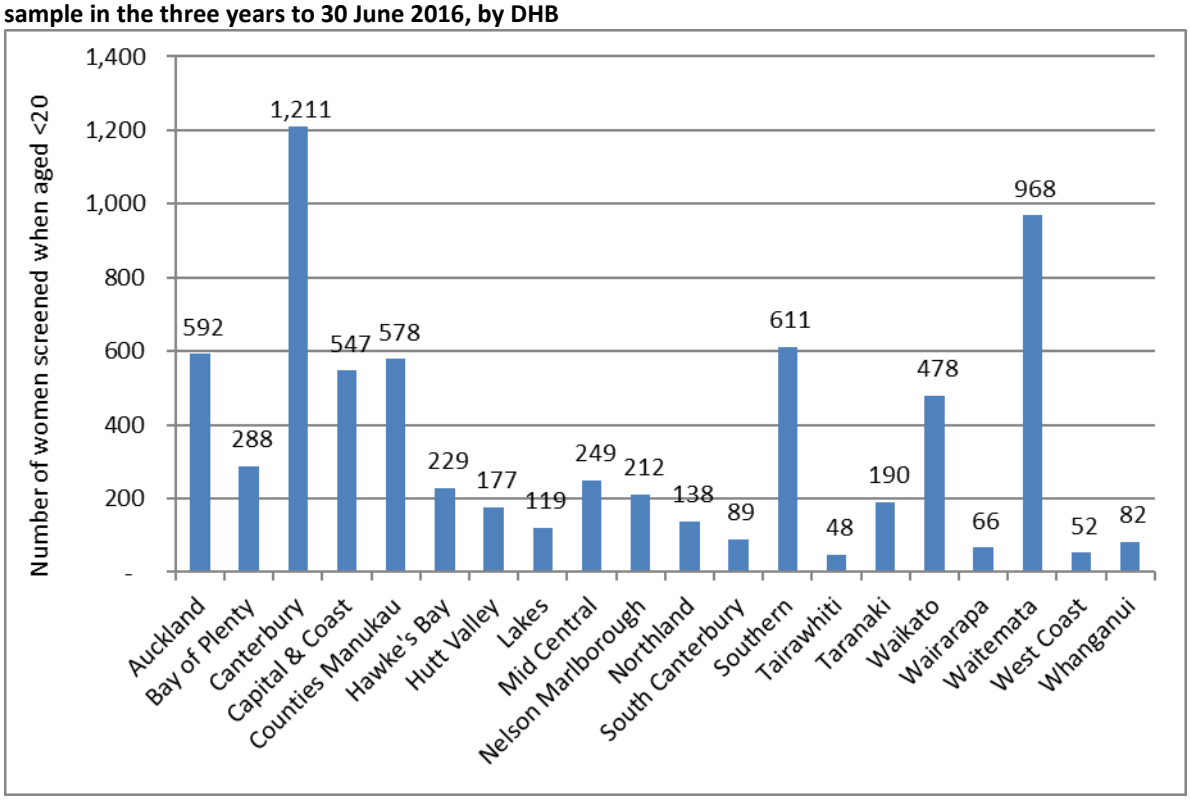
Note: Coverage calculated using population projection for 30 June 2016 based on 2013 Census data.

Figure 14 - Five-year coverage in European/ Other women (women 25-69 years screened in the five years prior to 30 June 2016, as a proportion of hysterectomy-adjusted female population), by DHB



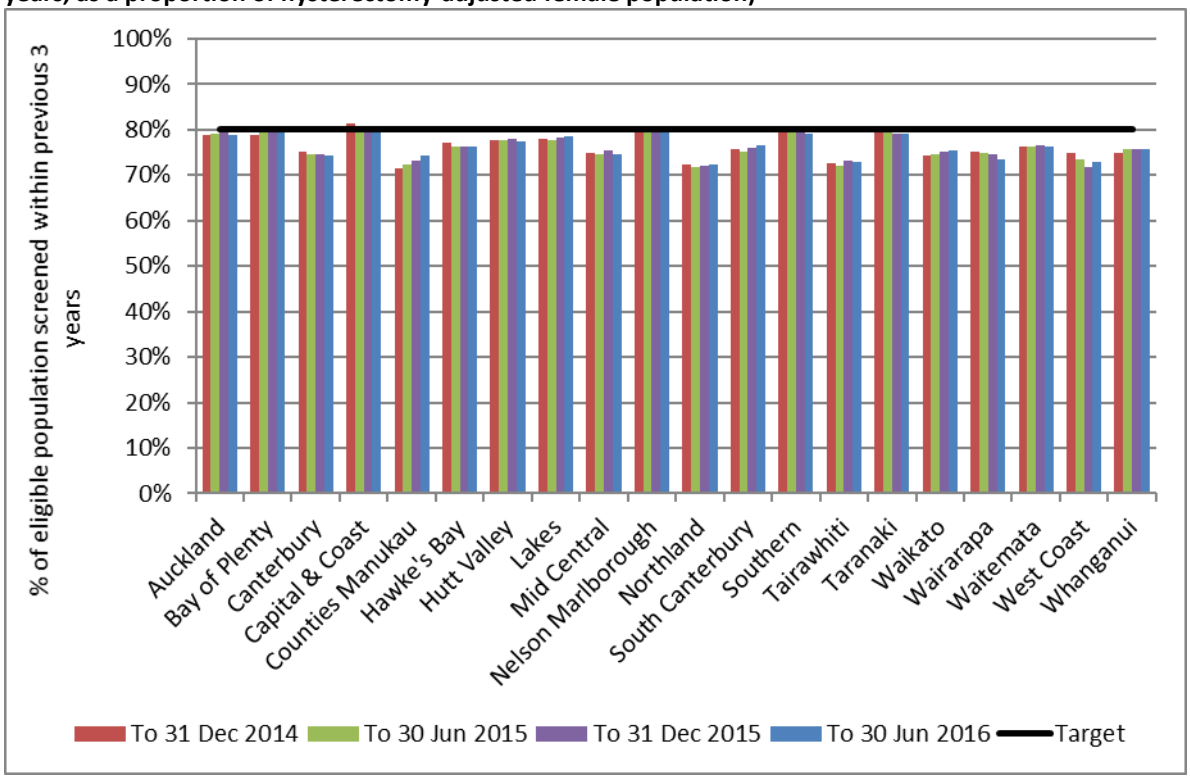
Note: Coverage calculated using population projection for 30 June 2016 based on 2013 Census data.

Figure 15 - Number of women screened who were aged less than 20 years at the time of their cervical sample in the three years to 30 June 2016, by DHB



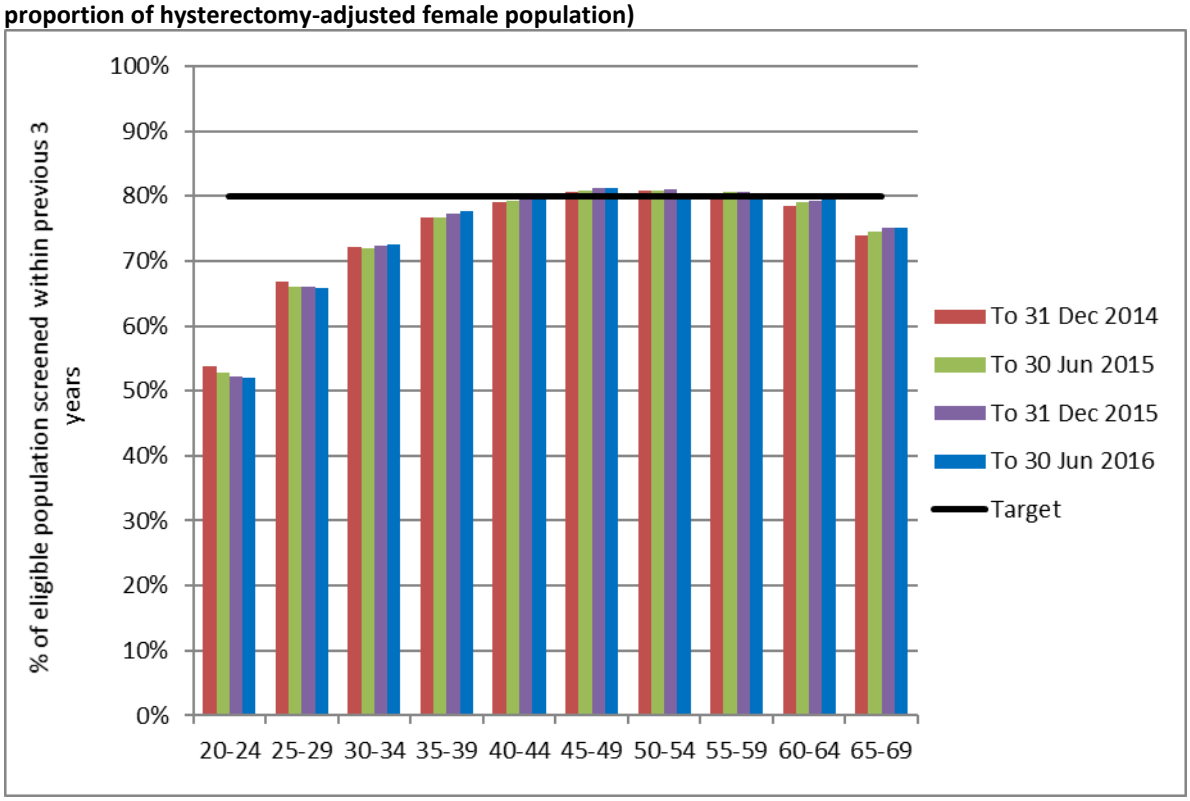
See also Table 29.

Figure 16 - Trends in three-year coverage by DHB (women aged 25-69 years screened in the previous three years, as a proportion of hysterectomy-adjusted female population)



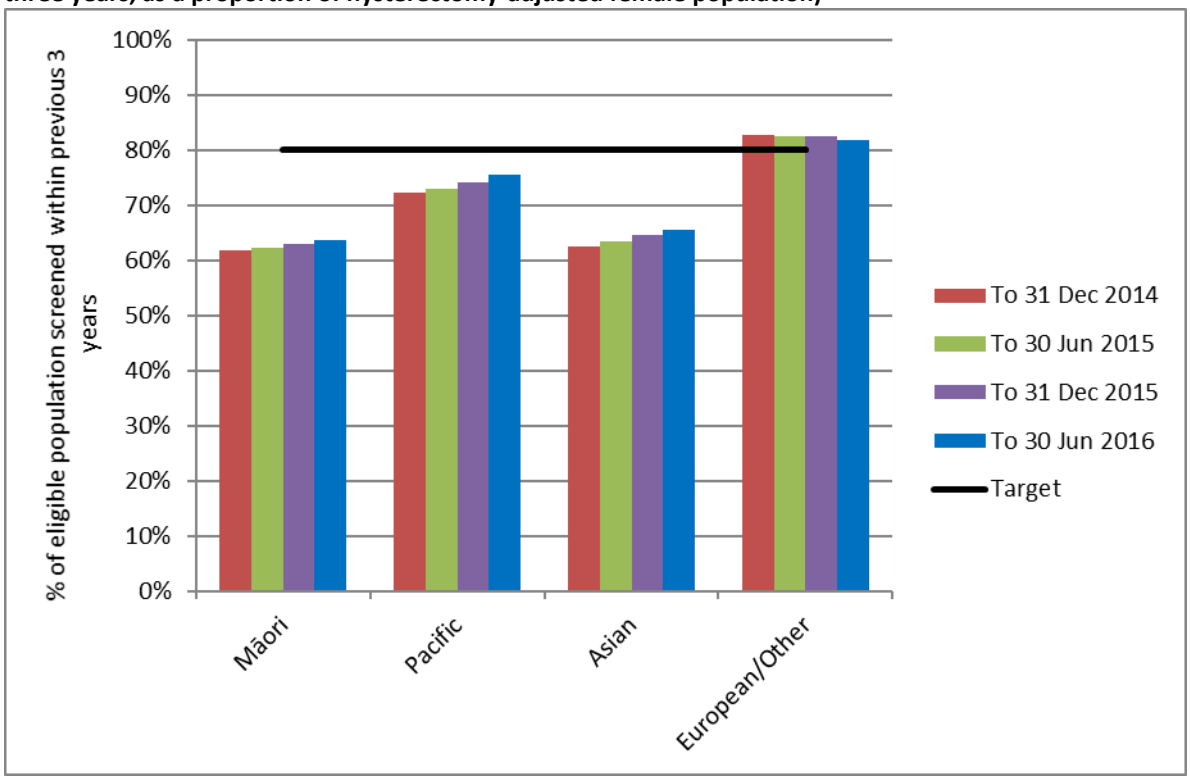
Coverage calculated using population projection at the date shown based on 2013 Census.
Target 80%. See also Table 33

Figure 17 - Trends in three-year coverage by age (women screened in the previous three years, as a proportion of hysterectomy-adjusted female population)



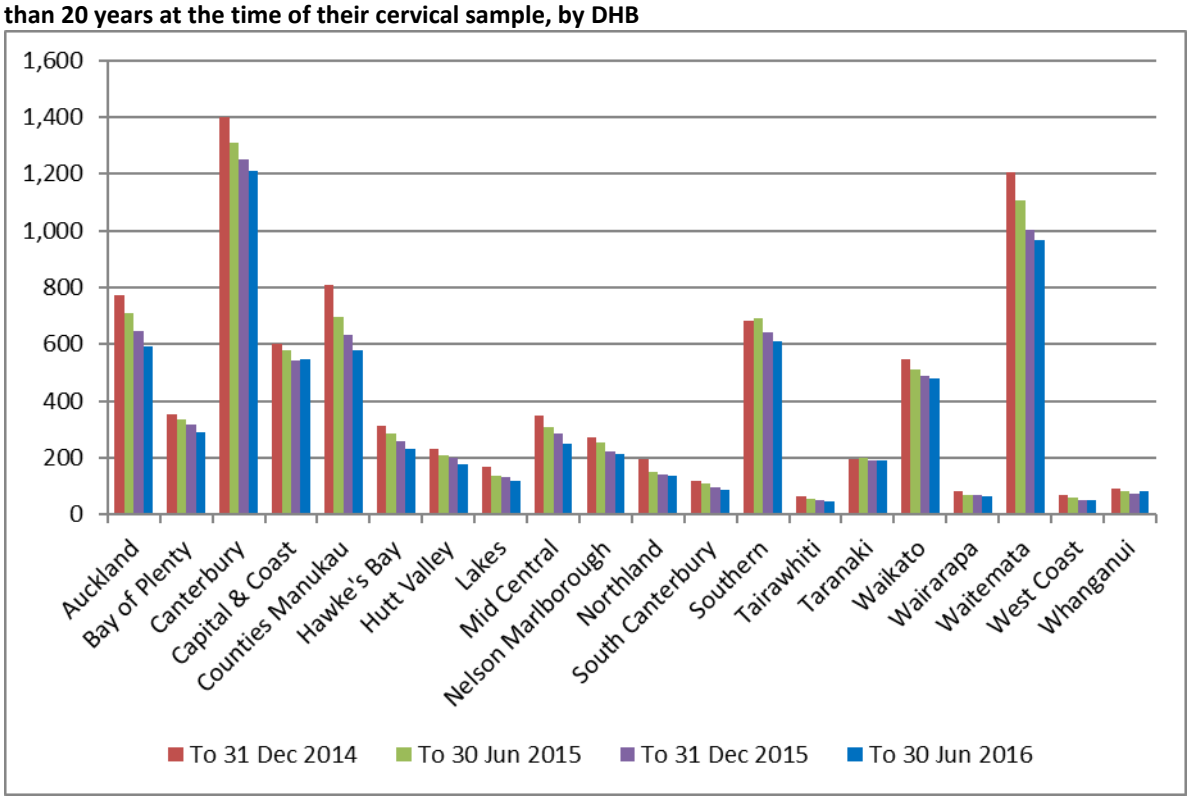
Coverage calculated using population projection at the date shown based on 2013 Census data.
Target 80%. See also Table 34

Figure 18 - Trends in three-year coverage by ethnicity (women aged 25-69 years screened in the previous three years, as a proportion of hysterectomy-adjusted female population)



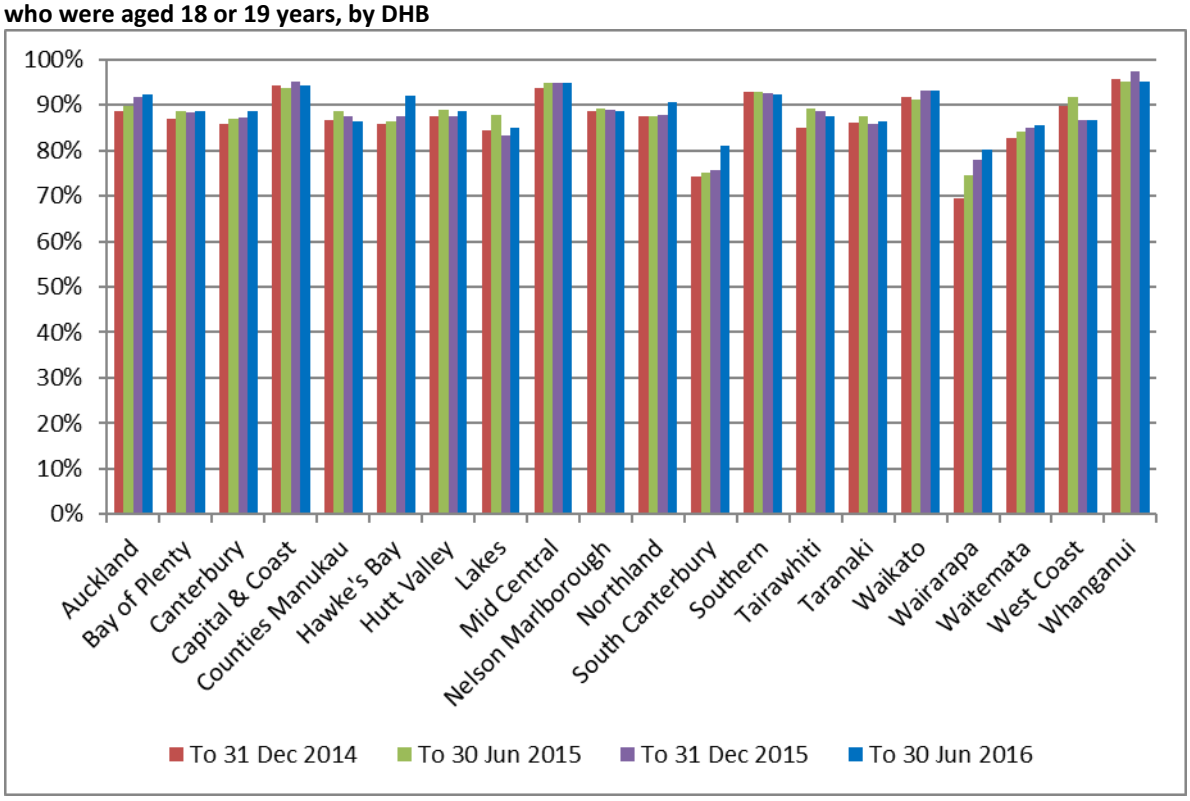
Coverage calculated using population projection at the date shown based on 2013 Census data. Target 80%. See also Table 35.

Figure 19 - Trends in the number of women screened in the preceding three years who were aged less than 20 years at the time of their cervical sample, by DHB



Coverage calculated using population projection at the date shown based on 2013 Census data. Target 80%. See also Table 29.

Figure 20 - Trends in the percent of women aged less than 20 years at the time of their cervical sample who were aged 18 or 19 years, by DHB



Coverage calculated using population projection at the date shown based on 2013 Census data.
Target 80%. See also Table 31.

Indicator 1.2 – Regularity of screening

Definition

This indicator reports on the timeliness of attendance, both for women recommended to return at the routine time of three years, or at an earlier interval of 12 months (for example following a recent abnormality).

For women recommended to return at a three-year interval, on-time screening is defined as attending between 30-42 months of their previous test (that is, within +/- six months of their due date). Early and late screening are therefore respectively defined as women who attend either within 30 months (<2.5 years), or more than 42 months (>3.5 years) of their previous test. The timing of early re-screening in this context matches the definition used within Indicator 4.

For women recommended to return at a 12-month interval, on-time screening is defined as attending between 9-12 months of their previous test (that is, within +/- three months of their due date). Early and late screening are therefore respectively defined as women who attend either within 9 months, or more than 15 months of their previous test.

The measure is calculated by constructing a reference cohort consisting of satisfactory cytology samples ("reference samples") collected from women aged 20-69 years in the five years prior to the end of the current monitoring period (30 June 2016).

The most recent satisfactory cytology sample from these women prior to the reference sample was identified on the NCSP Register. The recommendation code of these prior samples was used to classify the reference samples as either early, on-time, or late. Only reference samples where the prior sample indicated an expected screening interval or either three years (recommendation code R1 or B2B0) or 12 months (recommendation code R6, R7, R8, B2B7, B2B7A, or B2B7H) were included. Reference samples where no prior satisfactory cytology sample was identified on the register with a collection date of 1 January 2000 or later, or where the prior sample had any other recommendation code, were excluded from the analysis. These women were either under specialist management, had an expected screening interval of less than 12 months, or there was insufficient information to infer an expected screening interval. Reference samples collected at colposcopy were also excluded as these may have arisen in relation to symptoms or other clinical indications.

Results are presented based on the quarter of the year the reference cytology sample was collected. Therefore, a result for the first quarter of 2015 reports the percentage of women who attended for screening within that quarter who were attending either early, on-time or late in relation to the recommendation associated with their prior cytology test (i.e. the total of these three categories in each quarter sums to 100%).

For this measure age relates to the woman's age on the date of her reference cytology sample (i.e. the attendance which is classified as either early, on-time or late).

Target	Not yet defined, however aim to maximise on-time attendance.
Current Situation	This indicator is analysed annually. Data for timeliness of screening among women who attended during National Cervical Screening Programme Monitoring Report 45 1 January to 30 June 2016 will be provided in Report 46.
Trends	-
Comments	-

Indicator 2 – First screening events

Definition	Women with no cervical (cytology, histology, or HPV) samples taken prior to the current monitoring period, who have had a cervical sample taken during the monitoring period (first event). A woman's age is defined as her age at the end of the current monitoring period (i.e. the women's age at 30 June 2016). This indicator is presented as the number of women by age, DHB and ethnicity. It is also presented as a proportion of all women in the eligible population (defined as the hysterectomy-adjusted population, aged 20-69 years), and as a proportion of all women with a cervical sample taken during this monitoring period (screening event), by DHB.
Target	There are no targets for first screening events
Current Situation	There were 24,346 women aged 20-69 years at the end of the period who had their first screening event in the period 1 January – 30 June 2016. This constituted 11.2% of the 216,965 women aged 20-69 years with a cervical sample taken in the period (screening event), and 1.8% of the eligible population. The median age (at the end of the monitoring period) of women with a first event recorded was 25 years. The age group with the highest number of first screening events was women aged 20-24 years. 11,489 women aged 20-24 had their first screening event recorded on the register during this monitoring period, accounting for 47.2% of all women aged 20-69 years with first screening events (Figure 21, Table 36). First screening events then tended to decrease with increasing age. Women aged 20-24 years also had the highest proportion of women screened in their age group who were being screened for the first time (44.2%) (Figure 22), and the highest proportion of the eligible population at that age with a first screening event recorded in the current monitoring period 20-24 (7.1%) (Figure 23). The DHBs with the highest number of women aged 20-69 years with first screening events were Auckland (3,966). The DHBs where women with first screening events, as a proportion of all women with screening events, were the highest were Auckland (15.0%) followed by Counties Manukau (14.1%) and Capital & Coast (13.2%). The DHBs where this proportion was lowest were Wairarapa (6.1%) and Northland (7.8%) (Figure 24, Table 37). The ethnic group with the highest number of women with first screening events was European/ Other (13,243) (Table 38). The group with the highest proportion of their eligible population being screened for the first time was Asian women (3.2%), and the lowest was Māori women (1.4%) (Table 38). The proportion of women screened who were being screened for the first time was highest for Asian women (23.3%) (Figure 25, Table 38). This proportion is likely to be related to the median age of women with a first screening event, which for Asian women is comparatively high (31

years, compared with 22 years for Māori women, 25 years for Pacific women, and 23 years for European/ Other women) (Table 39).

Trends

The number of women with a first screening event recorded on the NCSP Register has increased from 23,259 women in the previous period to 24,346 in the current period. Across the overall eligible population aged 20-69 years, the proportion of women with screening events that are their first screening event being recorded on the NCSP Register is higher in this period (1.8%) compared to the previous period (1.7%).

Patterns by age, DHB, and ethnicity are broadly similar to those seen in the previous report. Trends by age show increasing number of first screens over time in the 5 year age groups between 20 to 39, with the remaining ages having a constant number of first screens. As was the case in previous reports, the median age of a first screening event was older for Asian women than for Māori, Pacific and European/ Other women, and Asian women with a first screening events constituted a larger proportion of all women with a screening event.

Trends over the two years ending 30 June 2016 are shown in Figure 26 (by age), Figure 27 (by DHB), and Figure 28 (by ethnicity).

Comments

This indicator can only measure the number of women with their first screening event in New Zealand, recorded on the register since its introduction (1990). It does not capture screening events which occurred outside New Zealand, or among women who are not enrolled on the NCSP Register.

Some differences in counts and proportion of women with first screens among screened women between DHBs are to be expected due to differences in population size, immigration and age structure. Proportions have been provided to partially account for this, however they should be interpreted with caution. For example, a relatively low number of women with first screens as a proportion of all women screened could be due to either a lower number of women with first events, or a higher number of women with screening events. For example, the DHB with the highest coverage, Capital & Coast, does not have a particularly high proportion of women with first events. If coverage remains high, then this proportion will inevitably decrease, as fewer women are available to be screened for the first time. Conversely, a relatively high number of women with first screens as a proportion of all women screened could be due to either a higher number of women with first events (due to increasing coverage), or a lower number of women with screening events (for example due to less frequent screening among women who have been screened at least once since the inception of the NCSP Register).

Figure 21 - Women with first screening events during the monitoring period, by five-year age group (women aged 20-69 years at 30 June 2016)

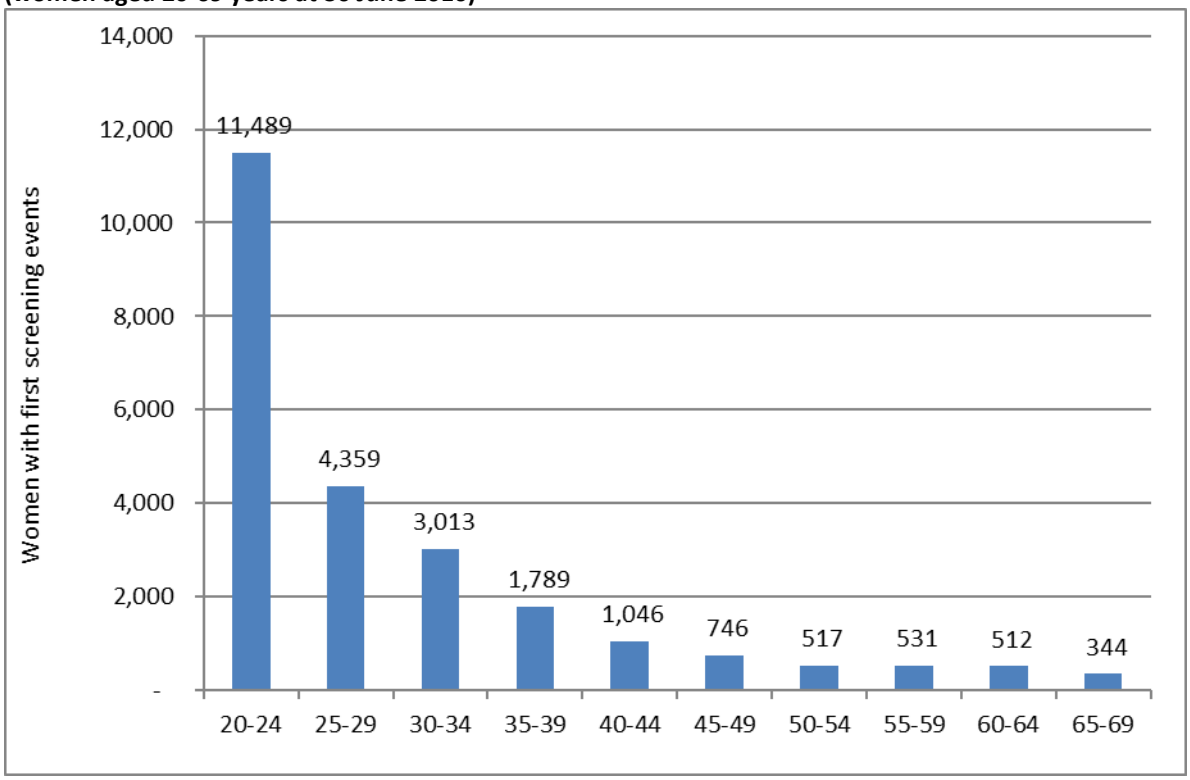


Figure 22 - Women with first screening events as a proportion of all women screened in that age group during the monitoring period, by five-year age group (women aged 20-69 years at 30 June 2016)

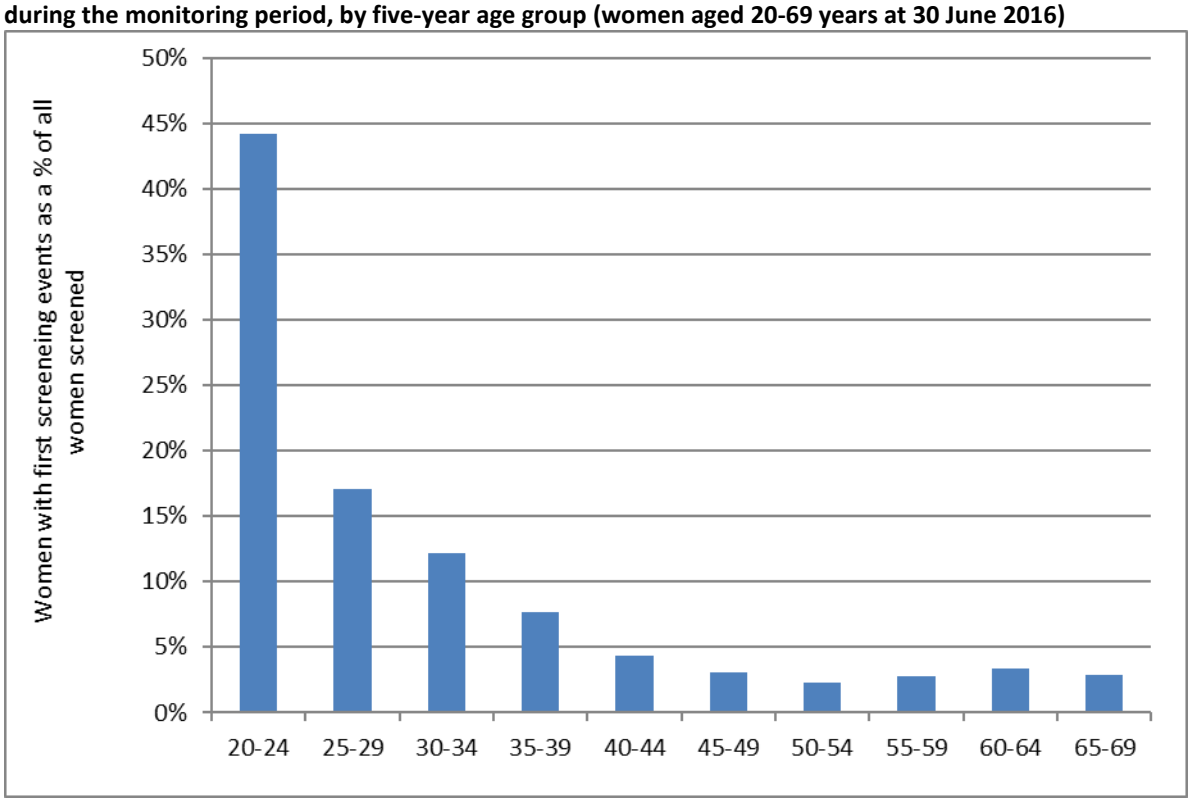
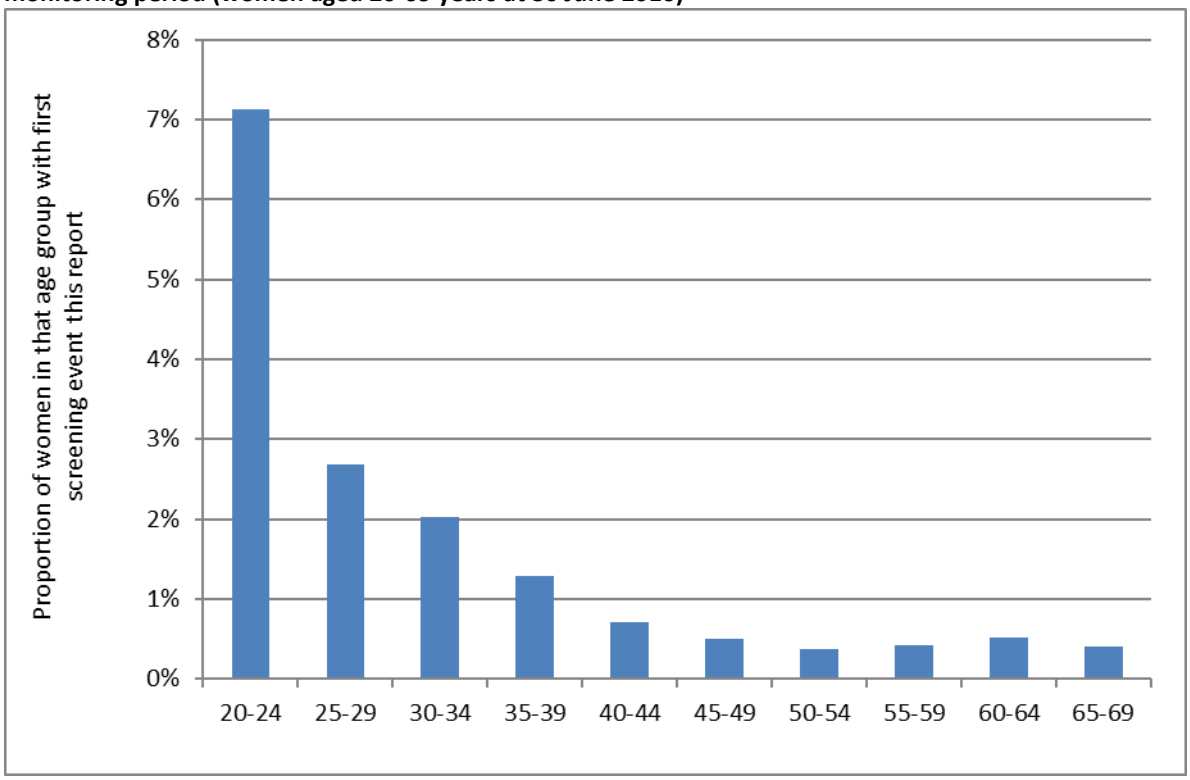


Figure 23 - Proportion of population* in that age group with their first screening event during the monitoring period (women aged 20-69 years at 30 June 2016)



**Hysterectomy adjusted, 2013 Census data projected to 30 June 2016*

Figure 24 - Women with first screening events as a proportion of all women screened during the monitoring period, by DHB (women aged 20-69 years at 30 June 2016)

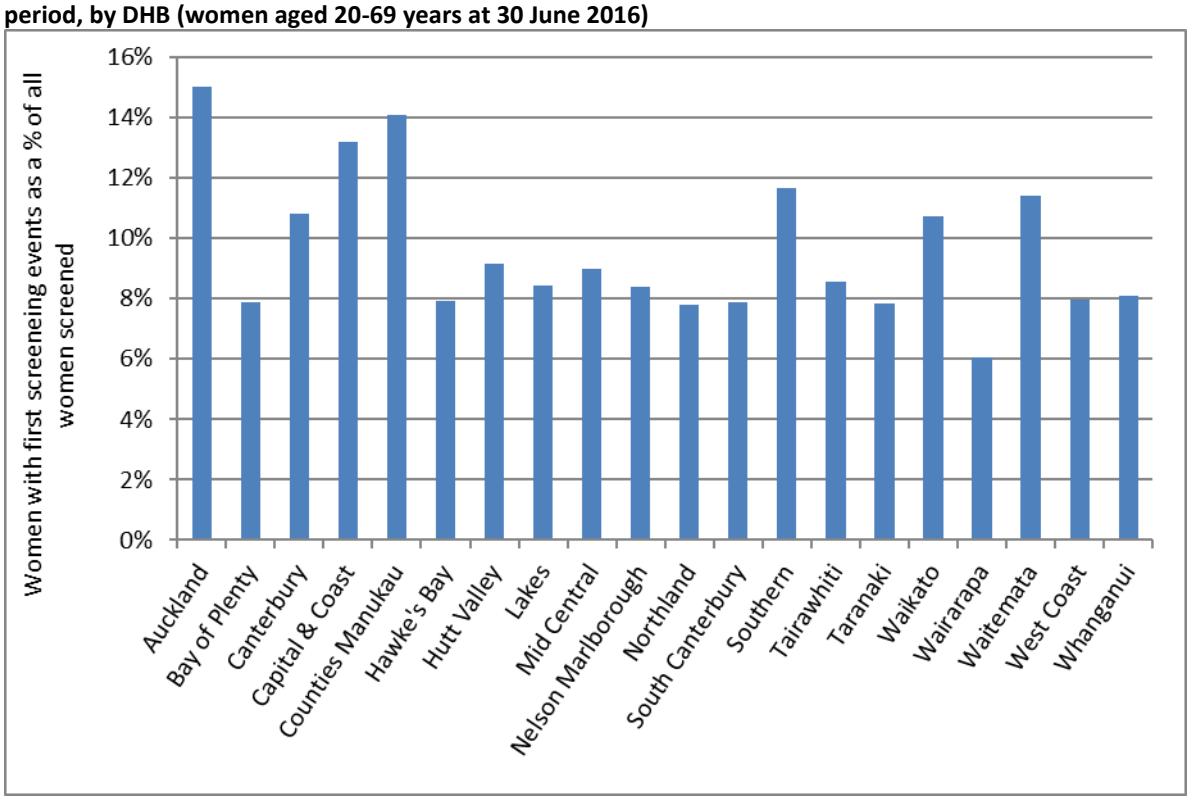


Figure 25 - Women with first screening events as a proportion of all women screened during the monitoring period, by ethnicity (women aged 20-69 years at 30 June 2016)

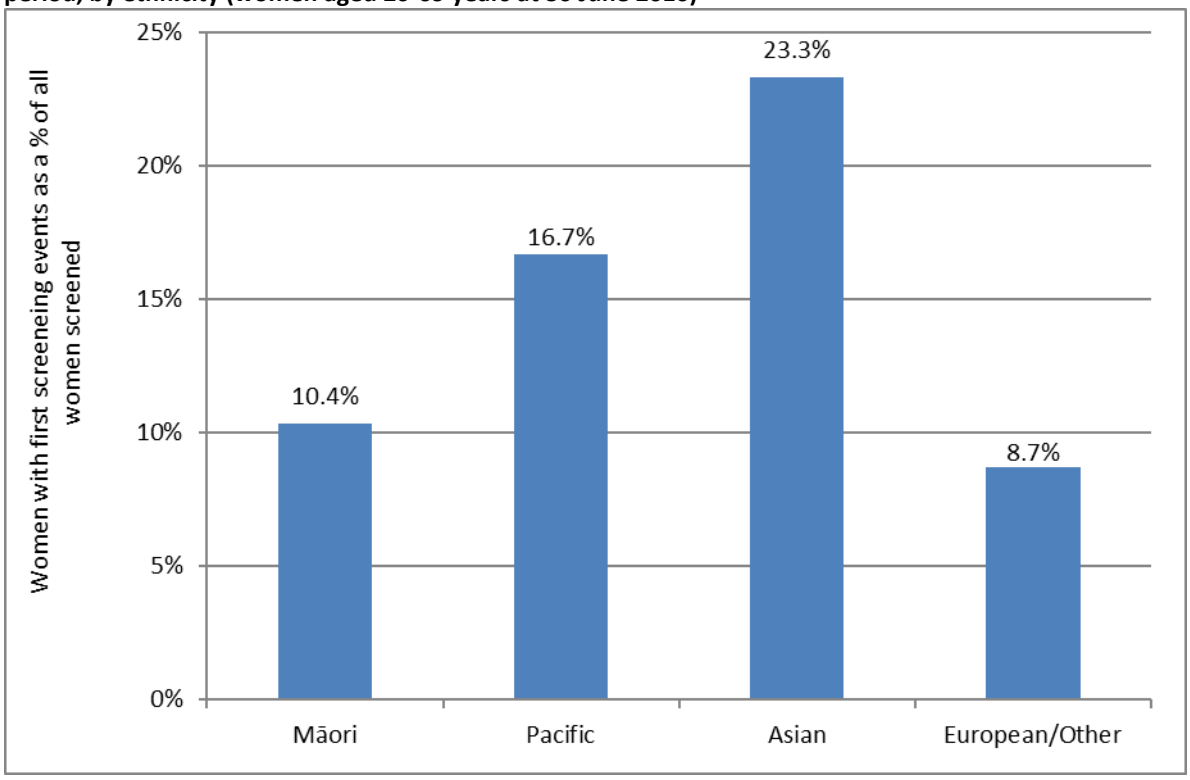


Figure 26 - Trends in the number of women with a first screening event, by age

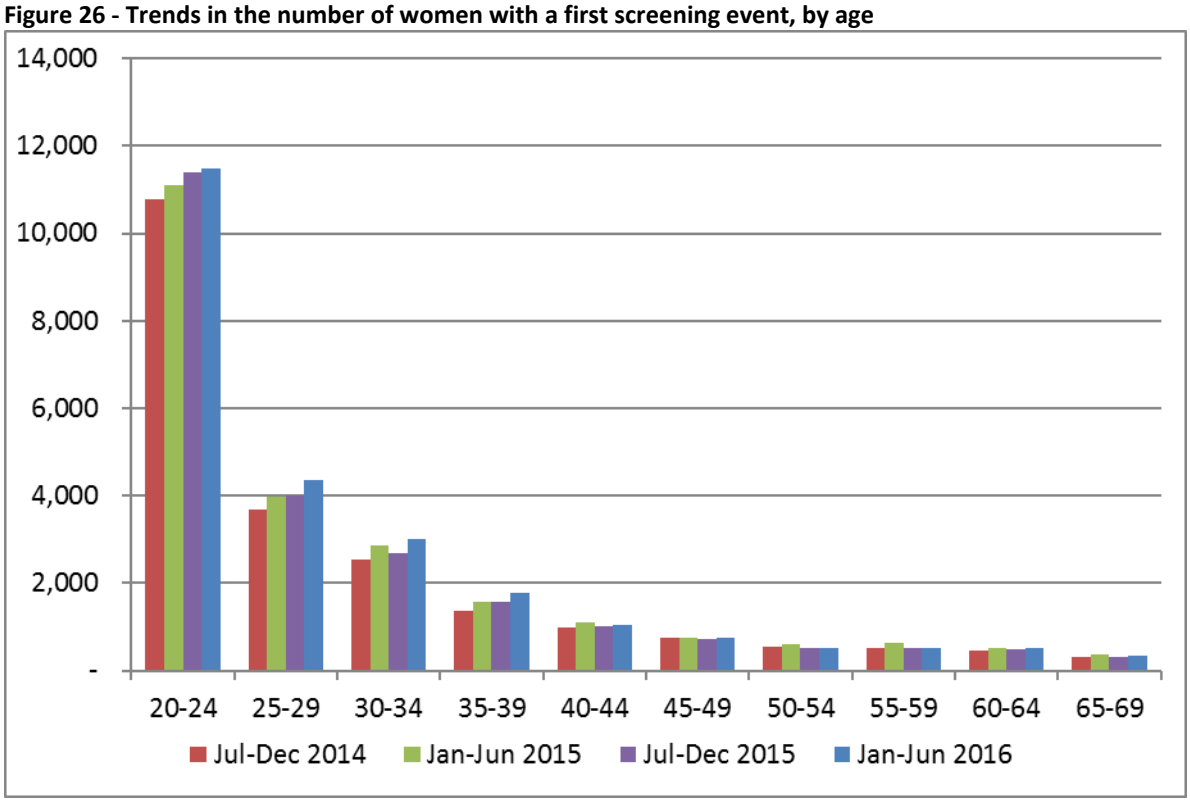


Figure 27 - Trends in the number of women with a first screening event, by DHB

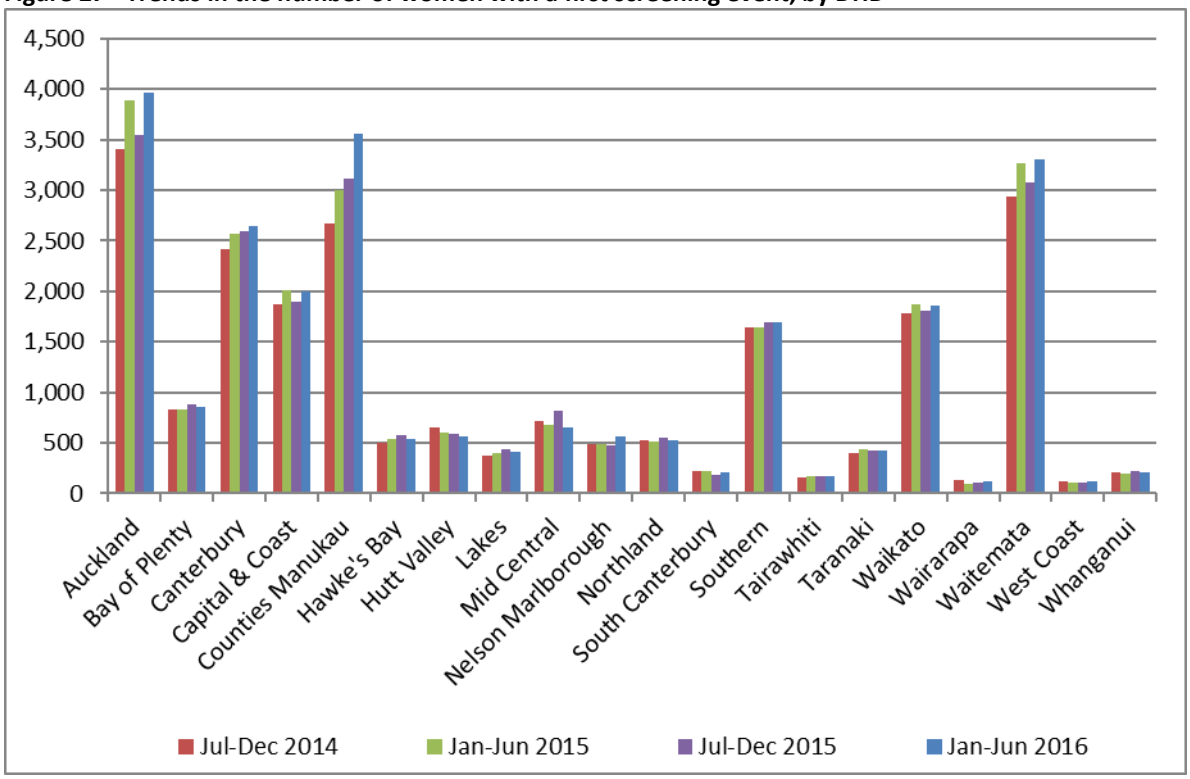
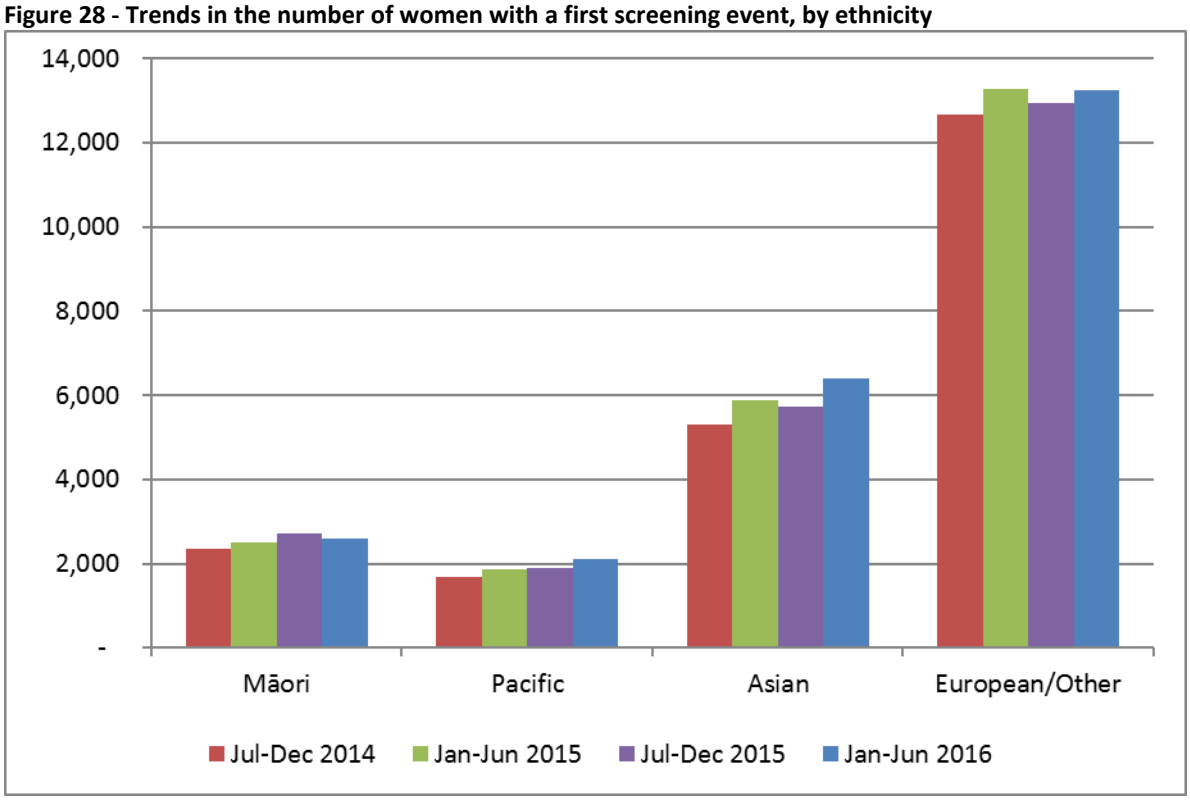


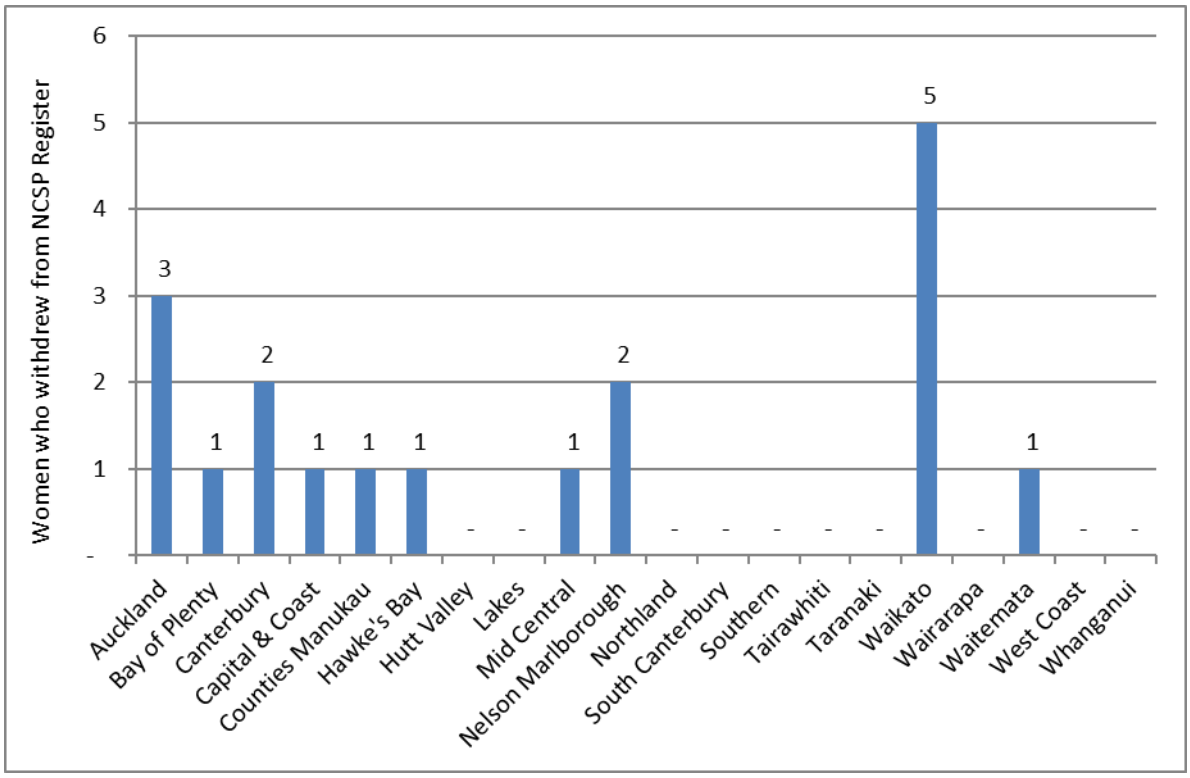
Figure 28 - Trends in the number of women with a first screening event, by ethnicity



Indicator 3 – Withdrawal rates

Definition	The number of women, by age-group, DHB, and ethnicity not currently enrolled in the NCSP Register and whose enrolment ended during the monitoring period (withdrawals). Withdrawals relate to active withdrawals, where women specifically elect to be removed from the NCSP Register. The proportion of women who were enrolled on the NCSP Register at 31 December 2015 (i.e. just prior to the commencement of the current monitoring period), whose enrolment ended within the current monitoring period, is also reported. Age is defined as a woman's age at the end of the monitoring period.
Target	Zero for ages 20-69 years.
Current Situation	At the commencement of the monitoring period, 1,553,416 women aged 20-69 years were enrolled on the NCSP Register. During the current monitoring period, 22 of these women (0.001%) withdrew from the NCSP Register. In all DHBs, the number and proportion of women who withdrew was extremely small (maximum five women in the Waikato DHB region). No women withdrew in ten of the twenty DHB regions (Figure 29). The age groups with the largest numbers and proportions of women who withdrew were women aged 25-29 years (4 women, 0.003% of those enrolled at the start of the monitoring period) in addition to women aged 30-34 and 60-64 years (each with 4 withdrawals, 0.002%) (Figure 30, Table 40). The number and proportion of women withdrawing was extremely small for all ethnic groups. No Māori women withdrew in the current monitoring period, while two Pacific women (0.002%), four Asian women (0.002%) and 16 European/ Other women (0.001%) withdrew during the current monitoring period (Figure 31, Table 41).
Trends	The number of women who withdrew in the current monitoring period (22 women) is higher than in the previous monitoring period (19 women). The overall number of withdrawals continues to be extremely small.
Comments	The proportion of women choosing to actively withdraw from the NCSP Register is extremely small. Withdrawals relate to active withdrawals, where women specifically elect to be removed from the NCSP Register. It does not include, for example, women who have moved overseas, or who have died during the period, and who therefore are not having tests recorded on the NCSP Register or who ask for no more communications but still participate in the Programme and have their results recorded on the NCSP Register.

Figure 29 - Number of women (aged 20-69 years) who withdrew from the NCSP Register by DHB, 1 January 2016 – 30 June 2016



Excludes 4 women who withdrew whose DHB was not recorded

Figure 30 - Number of women who withdrew from the NCSP Register by age, 1 January 2016 – 30 June 2016

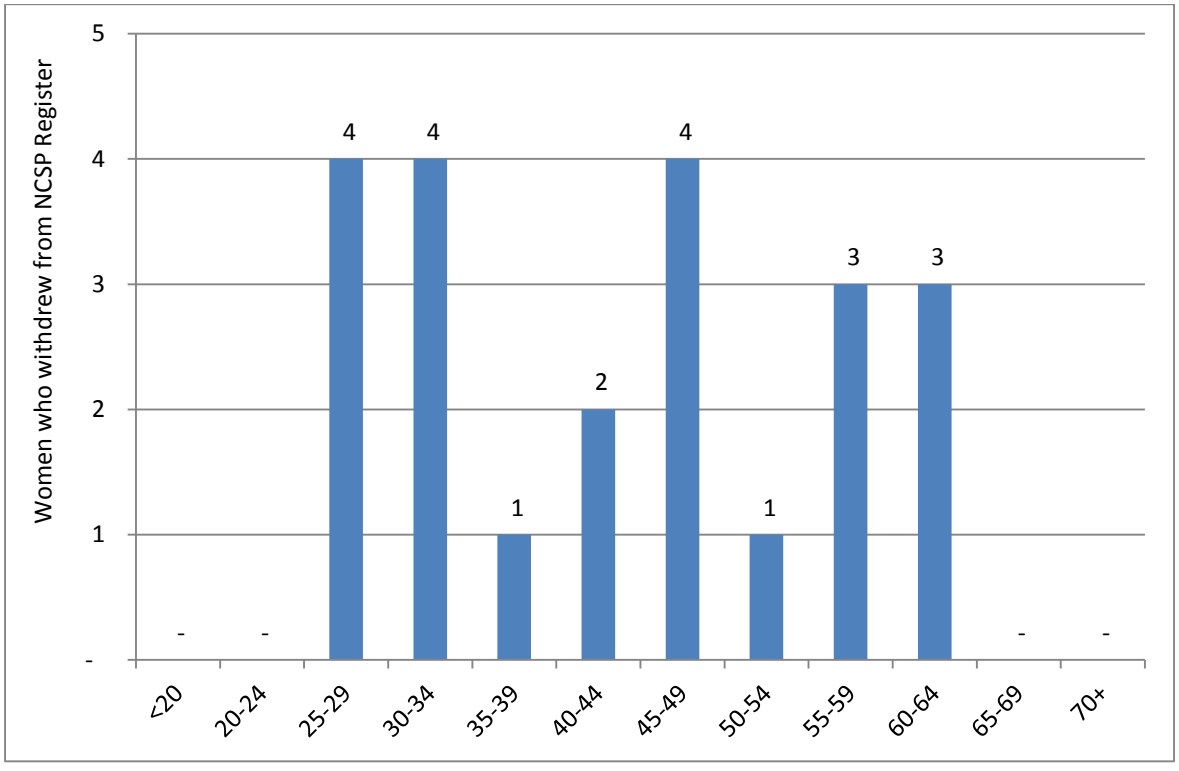
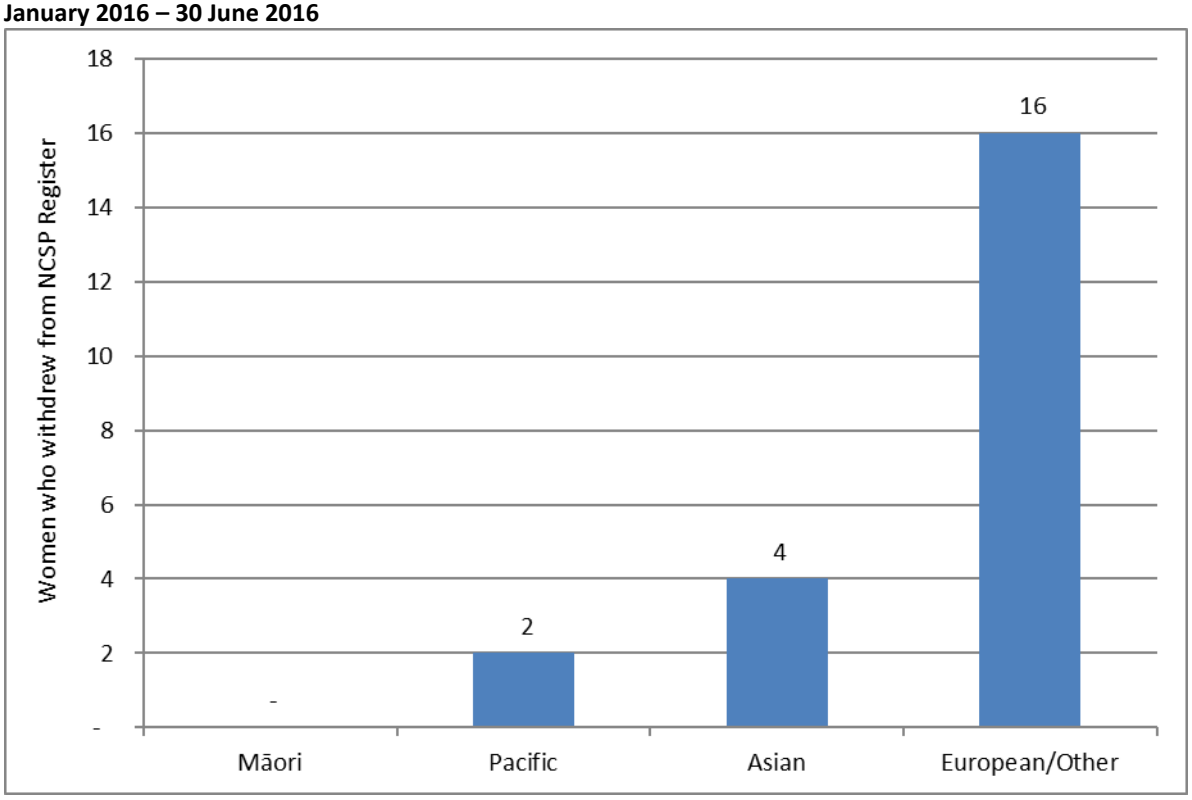


Figure 31 - Number of women (aged 20-69 years) who withdrew from the NCSP Register by ethnicity, 1 January 2016 – 30 June 2016



Indicator 4 – Early re-screening

Definition	The proportion of women who returned for a smear within 30 months (2.5 years) of their index smear is calculated for a cohort of women. The cohort comprises of women with an index smear taken between 1 August 2013 – 30 September 2013 (inclusive), who i) were aged 20-66 years at the time the smear was taken (and hence remained within the screening target age throughout the period); and ii) were given a recommendation to return at the regular interval of three years as a result of their smear in August/September 2013 (NZ Modified Bethesda code R1). Using this method of calculating the measure allows follow-up to be considered over 30 months for every individual woman. This measure excludes women who return early but are being followed according to *Guidelines for Cervical Screening in New Zealand*, for example, those with a recent report of an abnormality. It also excludes from the count of women screened early those whose "early" smear recommended urgent referral regardless of cytological findings, in view of the abnormal clinical history provided (NZ Modified Bethesda code R14). In some cases, early re-screening may be the result of women being re-screened early in response to clinical symptoms, and this is appropriate. For the purposes of analysis by age group, a woman's age is defined as her age at the end of the current monitoring period (i.e. a women's age at 30 June 2016).
Target	A target has not been set for this cohort-based calculation method. This method of calculation will result in a higher value than the old interval-based method, because all women are followed over the same length of time (30 months). A more detailed discussion of the reasons for this, and the rationale for the cohort-based method, can be found in Monitoring Report 30.
Current Situation	There were 44,904 women who had a smear taken in August or September 2013, were aged between 20-66 years at the time of their smear, and were given a recommendation to return for their next smear at the routine interval of three years. Among these women, 6,853 (15.3%) had at least one subsequent smear in the following 30 months. There was wide variation in early re-screening by DHB. Early re-screening was most common in Auckland (19.9%) and Waitemata (19.6%), and was least common in West Coast (8.6%), Tairawhiti and Mid Central (both with 8.9%) (Figure 32, Table 43). There was also variability by age. Younger women (aged 20-24 years at the end of the period) were most likely to be re-screened early (20.1%), and older women (aged 65-69 or 60-64 years) were the least likely to be re-screened

early (9.8% and 11.6% for these age groups, respectively) (Figure 33, Table 42). Rates of early re-screening are quite similar across the seven five-year age groups from 25 to 59 years (between 14.1% and 18.1%).

Among the ethnic groups considered, European/ Other women were the most likely to be re-screened early (15.7%). Early re-screening was least common among Pacific women (11.0%) (Figure 34, Table 44).

Trends

The level of early re-screening (15.3%) is slightly higher to that seen for the previous monitoring period (15.0%).

DHBs with the lowest and highest levels of early re-screening are different from the previous report; the lowest was West Coast (8.6% in the current monitoring period, 13.0% in the previous monitoring period) and the highest was Auckland (19.9% in the current monitoring period, and 19.2% in the previous monitoring period). West Coast DHB saw the largest percentage point reduction (4.3 percentage points, from 13.0% to 8.6%), while Whanganui saw the largest increase (2.9 percentage points, from 8.3% to 11.1%). While many DHBs have had a decreasing trend over time, early re-screening appears to no longer be decreasing in some DHBs, such as Canterbury, Hawke's Bay, Hutt Valley, Mid Central, Southern, and Whanganui. Trends over the two years ending 30 June 2016 by DHB are shown in Figure 35.

A reduction in the level of early re-screening was seen for five of the ten five-year age groups between 20 and 69 years since the previous report. Women aged 20-24 years saw the largest percentage point reduction (1.0 percentage points from 21.2% to 20.1%). Women aged 50-54 years saw the largest increase; 1.1 percentage points, from 14.9% to 16.0%. While in the previous report, early re-screening appeared to no longer be decreasing in women aged 35-39 years, a slight decreasing trend over time is becoming apparent in this report. Trends over the two years ending 30 June 2016 by 5-year age group are shown in Figure 36.

Early re-screening has decreased in Asian and Pacific ethnic groups over the last two years since the July-December 2014 monitoring period. While previous reports show a deceasing trend over time in Māori and European/ Other ethnic groups, since the previous monitoring period the level of early re-screening has increased for these women (from 13.7% to 14.9% for Māori woman and from 15.4% to 15.7% for European/ Other women).

Comments

Early re-screening was assessed based on cytology recommendation codes, in order to exclude from the early re-screening group women with a negative smear for whom an earlier screening visit is appropriate. Thus, only women with a recommendation that their next screening visit be in three years were eligible for inclusion in the early re-screening group (that is, in both the numerator and the denominator). Women excluded from the early re-screening group would include those who had just had their first smear or more than five years have elapsed since their previous smear (NCSP policy is

to recommend a one-year follow-up), women with atrophic changes for whom a repeat after oestrogen is recommended, women with an abnormal history or clinical symptoms, and those already under specialist care. Prior to Report 30, calculation of this indicator had not explicitly used recommendation codes to define the group of women of interest, and therefore the estimates for this measure may not be directly comparable to reports prior to Report 30.

It is important to note that whilst early re-screening rates appear to be relatively high in women aged 20-24 years, three-year coverage is much lower in this age-group. While a small proportion of women in this age group may be screened more frequently than recommended, a much larger proportion is under-screened or unscreened.

In some cases, early re-screening may be the result of women being re-screened early in response to clinical symptoms, and this is appropriate. We have used the NZ Modified Bethesda recommendation code for urgent referral regardless of cytological findings (R14) to try and exclude some of these cases from the count of women re-screened early, but this probably does not exclude all screens performed in response to clinical symptoms.

Note that the accuracy of this calculation is reliant on the correct use of the R1 recommendation code in laboratory reports. An exploratory analysis of the accuracy of the R1 code was published in a previous monitoring report (Report 30). It suggested that R1 codes were generally accurate, and the small number of discrepancies would not have a substantial effect on the estimate for early re-screening.

Figure 32 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by DHB

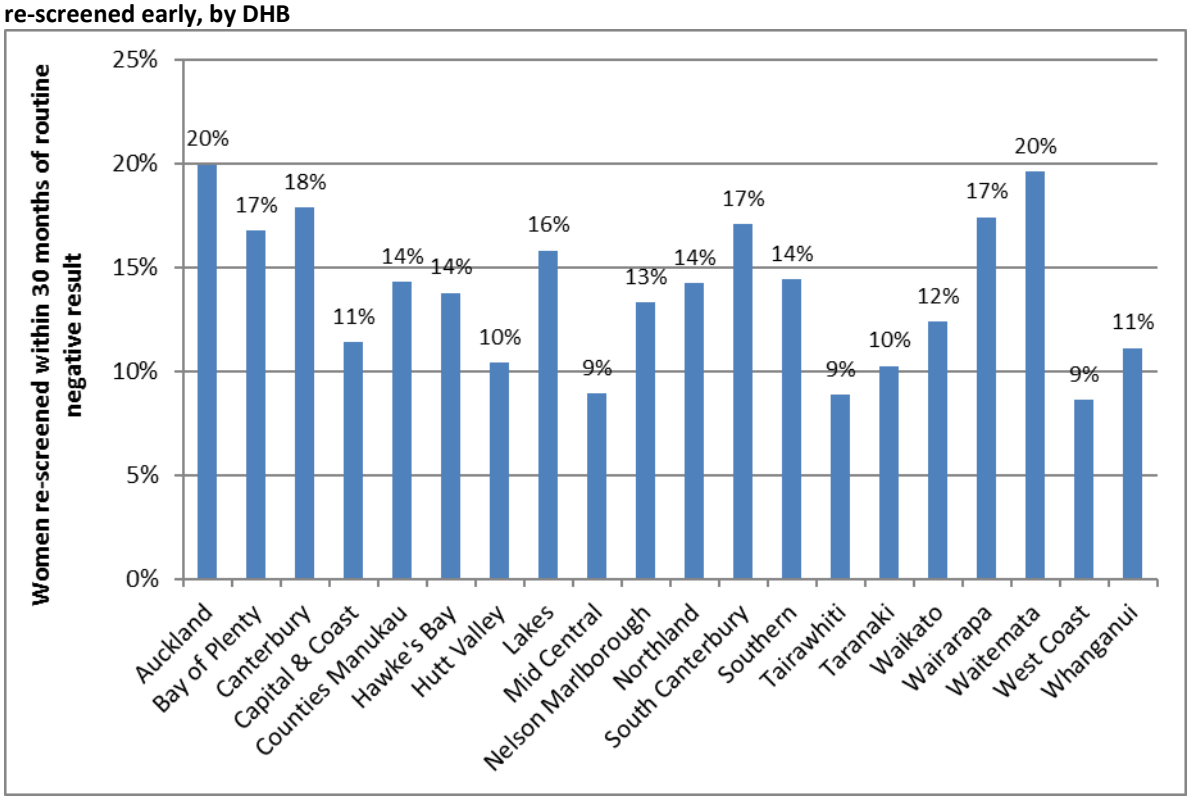


Figure 33 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by five-year age group

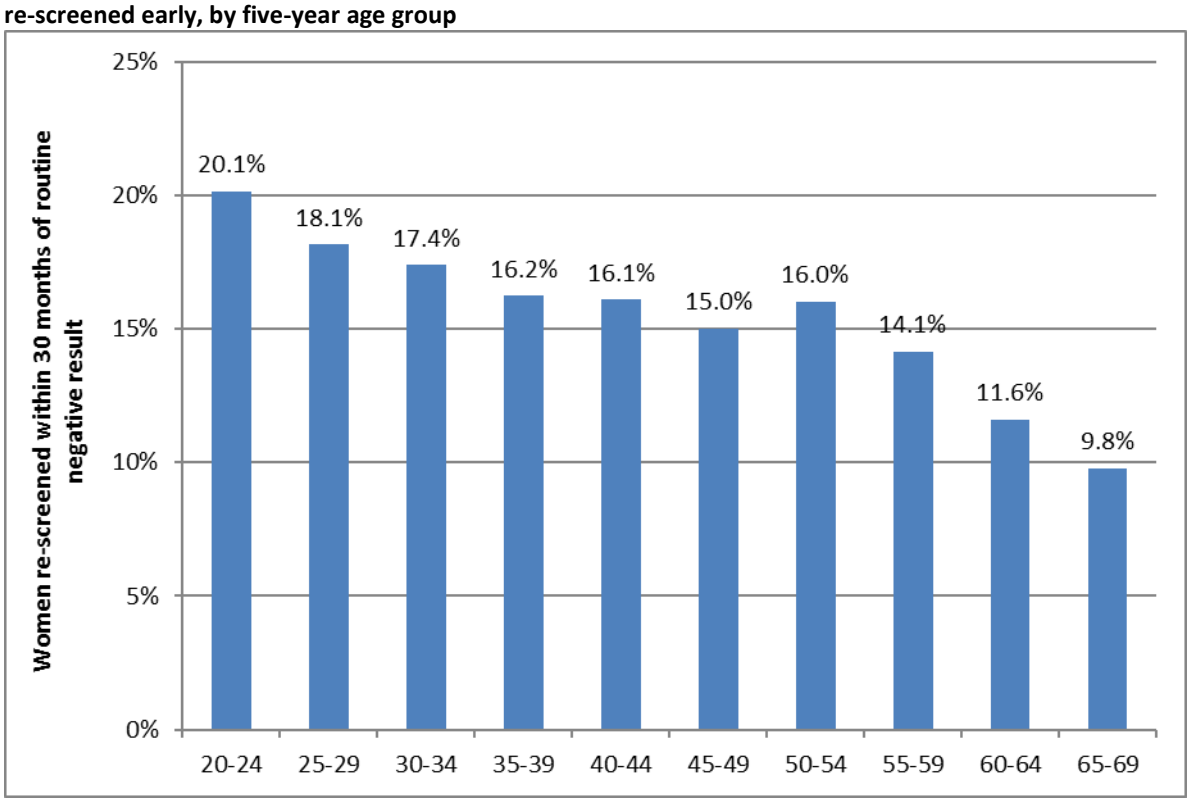


Figure 34 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by ethnicity

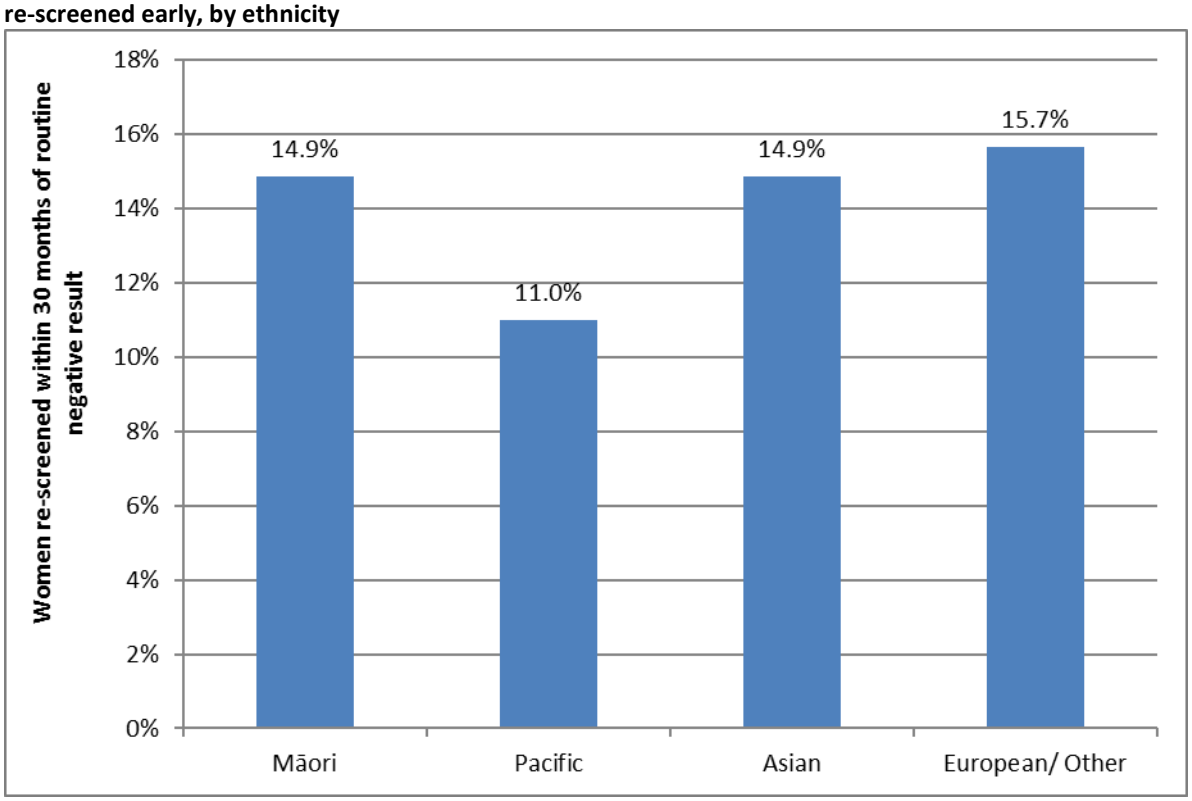


Figure 35 - Trends in the proportion of women recommended to return at the routine interval (three years) who were re-screened early, by DHB

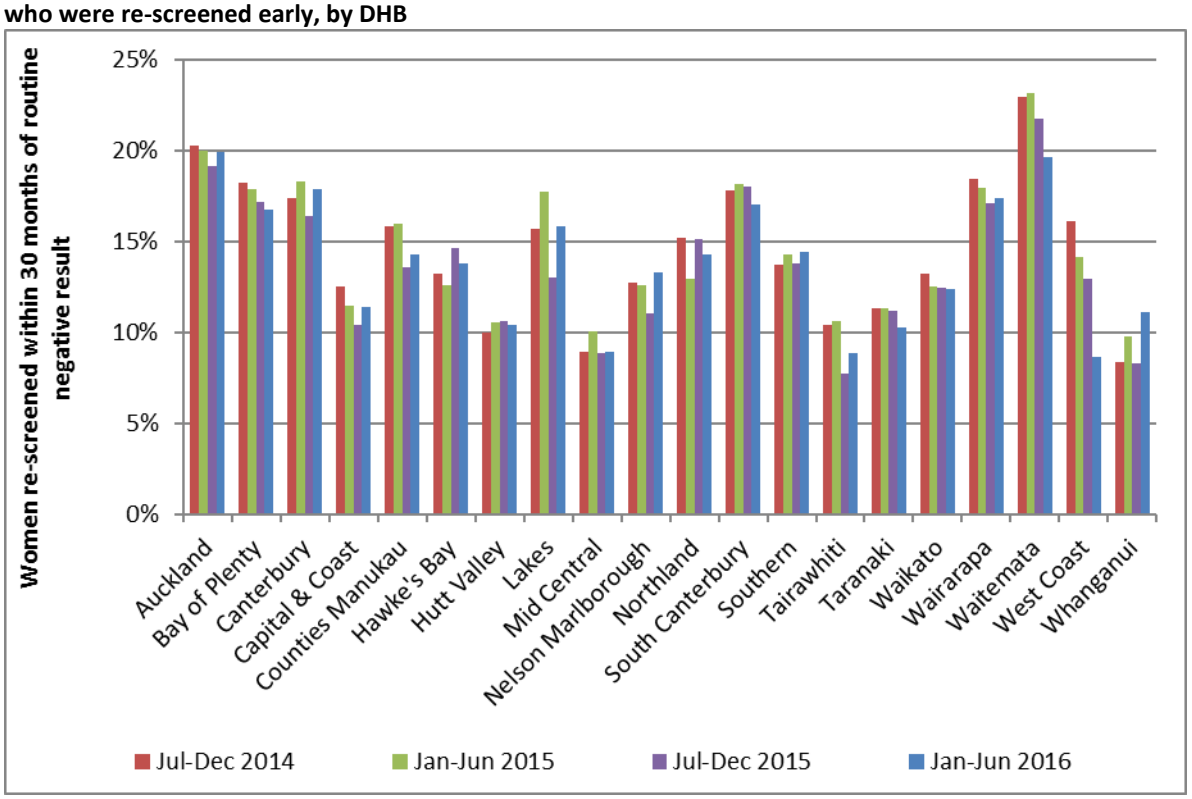
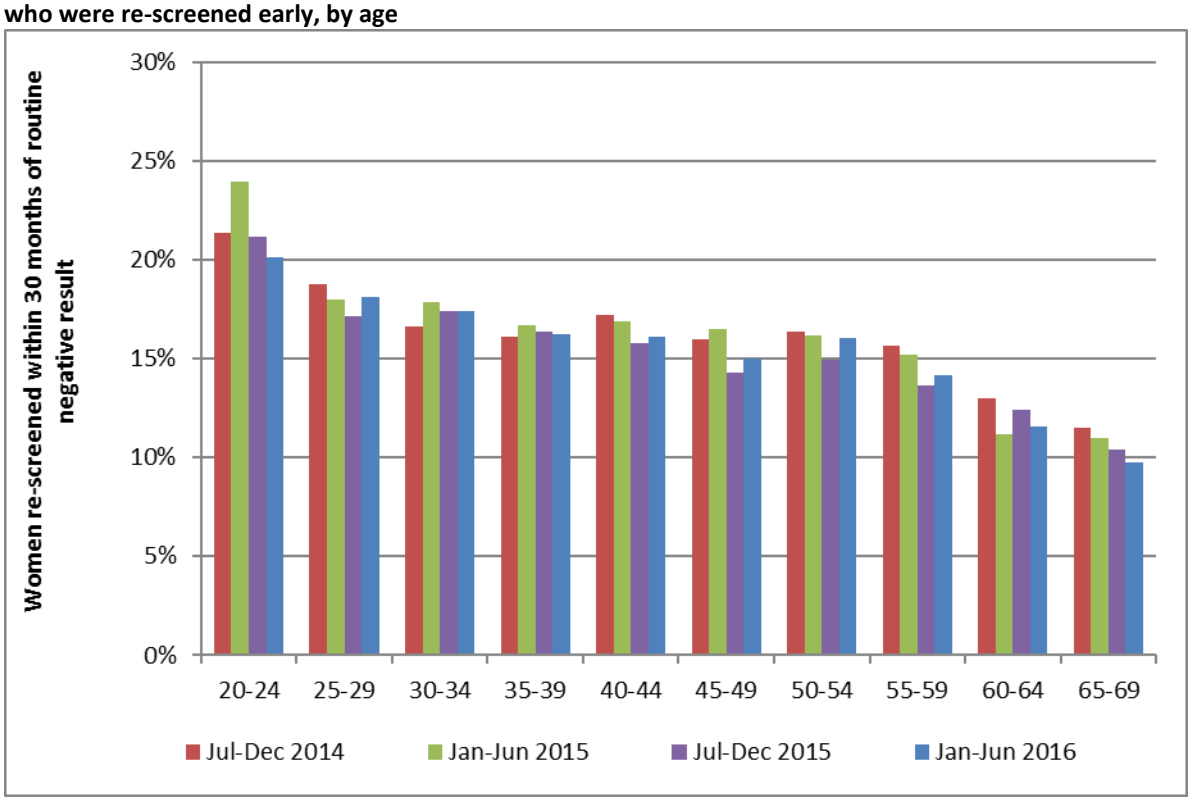


Figure 36 - Trends in the proportion of women recommended to return at the routine interval (three years) who were re-screened early, by age



Indicator 5 – Laboratory indicators

The indicators include cytology, histology reports (encompassing cytology and histology reporting rates, positive predictive value of cytology predicting HSIL), laboratory turnaround times, the accuracy of negative cytology reports (future development), and unsatisfactory samples. Volumes of high risk HPV tests according to NCSP guidelines are included in Indicator 8.

On 1 February 2015, Diagnostic Medlab Ltd. closed and Anatomical Pathology Services (owned by Auckland DHB) opened. This largely resulted in Diagnostic Medlab Ltd.'s work moving to Anatomical Pathology Services, therefore trends for Anatomical Pathology Services for periods prior to 1 Feb 2015 include results from Diagnostic Medlab Ltd. Also, Aotea Pathology Ltd. was taken over by Southern Community Laboratories in November 2015.

Indicator 5.1 – Laboratory cytology reporting

This includes the breakdown of cytology reporting by category for squamous and glandular abnormalities reported

- Negative
- ASC-US
- LSIL
- ASC-H
- HSIL
- SC
- AGC/AIS
- Adenocarcinoma
- Malignant neoplasm
- Total abnormalities
- Unsatisfactory samples

Definition	Bethesda codes used are provided in Appendix B. The Bethesda reporting system (TBS), introduced in New Zealand on 1 July 2005, is a New Zealand modification of the Bethesda 2001 cytology reporting system. The NCSP Register collects cytology results of samples taken from the cervix and vagina. Total samples include all cytology samples (satisfactory and unsatisfactory) taken during the monitoring period, including conventional, LBC, and combined samples. Reporting rates for negative cytology, total abnormal cytology, and other reporting categories are as a percentage of all satisfactory cytology samples.
Target	0.1 - 3.0% of LBC samples reported as unsatisfactory No more than 96% of satisfactory samples reported as negative No more than 10% of satisfactory samples reported as abnormal No less than 0.5% of satisfactory samples reported as HSIL (Bethesda HS1 or HS2)
Current Situation	Six laboratories reported on cytology taken during the current monitoring period, the same number as in the previous monitoring period. A total of

219,286 cytology samples were taken, almost all of which (>99.99%) were liquid-based cytology (LBC) samples.

Unsatisfactory cytology

2,529 cytology samples (1.2%) were unsatisfactory. These are reported in more detail in Table 1 and Figure 37. The remaining satisfactory samples are reported on in more detail in Table 2 to Table 6.

The unsatisfactory rate for LBC is the same as the overall rate at 1.2%, which is within the 0.1 - 3.0% target range for LBC samples. All six laboratories had unsatisfactory rates within the target range. Both Pathlab and Southern Community Laboratories had the lowest unsatisfactory percentage of 0.4% (Figure 37, Table 1).

Negative cytology reports

92.7% of satisfactory cytology results were negative, consistent with the target of no more than 96% (Table 2). The proportion of samples which were negative varied by laboratory from 68.8% (LabPLUS) to 95.5% (Southern Community Laboratories). All six laboratories met the target of no more than 96%.

Abnormal cytology reports

The proportion of satisfactory samples which were abnormal (7.3%) was also consistent with the target of no more than 10% (Figure 39, Table 2). This varied by laboratory however, from 4.5% (Southern Community Laboratories) to 31.2% (LabPLUS). Two laboratories (LabPLUS and Canterbury Health Laboratories) exceeded the target (31.2% and 11.8%, respectively).

Abnormal cytology results were most common in younger women (Table 5, Table 6).

HSIL cytology reports

Overall, 1.1% of satisfactory cytology samples were HSIL, consistent with the target of at least 0.5% of samples (Figure 40, Table 4). Rates varied by laboratory from 0.5% (Pathlab) to 3.9% (LabPLUS). All six laboratories met the HSIL target Figure 40, Table 4).

Among women aged 20-69 years, rates of HSIL or worse were most common in women aged 25-29 years (Table 5, Table 6).

In the current report we additionally examined age-standardised rates of HSIL cytology reports. This was done to partially account for different rates which may arise in different labs due to differences in the age of the population whose cytology tests they process. The age-standardised HSIL rates were very similar to the crude rates, both nationally and within each laboratory, but tended to be slightly lower (Table 45).

Trends

Unsatisfactory cytology

Overall, the percentage of unsatisfactory LBC samples for the current monitoring period (1.2%) is slightly lower to the 1.3% seen in the previous monitoring period. The same laboratories met the target for unsatisfactory LBC samples when compared to the previous report, with all being within the target range.

Negative vs abnormal cytology reports

The proportion of satisfactory cytology samples which are negative for intraepithelial lesion or malignancy (92.7%) is similar as in the previous monitoring period (92.6%), and correspondingly the proportion of cytology samples reported as abnormalities (7.3%) is also similar as in the previous monitoring period (7.4%). As in the previous monitoring period, all six laboratories continue to meet the target for negative cytology. The same laboratories as previous reports had abnormal cytology rates above the target of 10% (Canterbury Health Laboratories and LabPLUS).

HSIL cytology reports

The proportion of satisfactory cytology samples reported as HSIL (1.1%) is similar to that reported in the previous monitoring report (1.1%). The same six laboratories met the target of not less than 0.5% in the previous monitoring period.

Longer term trends in the proportion of satisfactory cytology samples reported as HSIL are shown in Figure 41 and Figure 42 (trends by age) and Figure 43 (trends by laboratory). Figure 41 and Figure 43 show trends over the last four monitoring report periods (two years), consistent with other trends presented in this report. Figure 42 shows longer term trends (1 July 2008 to 30 June 2016) in rates of HSIL cytology in women aged under 40 years, compared to the overall HSIL reporting rate in women of all ages. The younger age groups in this figure would be the first to be potentially affected by HPV vaccination (the oldest birth cohorts eligible for vaccination through the publicly funded program would be aged up to 26 years at the time of the current monitoring period). HSIL rates in women aged less than 20 years are quite variable; this is likely to be because far fewer women of this age group attend for screening, since routine screening is not recommended for women aged less than 20 years. HSIL reporting rates in women aged 20-24 years had been increasing prior to 2013 and reached a high of 2.2% for the July-December 2012 period. HSIL rates then fell for four monitoring periods between January 2013 and December 2014. However, in the previous monitoring period an increase was seen in virtually all age groups, including women aged 20-24 years (from 1.6% in the January to June 2015 report (Report 43) to 2.0% in the previous report (Report 44)). A slight drop in HSIL rates has been observed in this age group for the current monitoring report to 1.9%. However, a noticeable increase in HSIL rates is continuing to be observed in age groups 30-34 years between the previous and current report (Figure 42).

Comments

High rates of abnormal samples from LabPLUS are consistent with previous reports, and as discussed in previous monitoring reports, it is thought that the case-mix of this laboratory (i.e. a significant proportion of samples received from colposcopy clinics compared to other laboratories) is an underlying factor.

Workload catchments for laboratories may be regional or nationwide and are changing because of laboratory service restructuring. As a result, it is not always straightforward to determine the catchment population for a laboratory. Rates of negative and abnormal results for individual laboratories therefore need to be interpreted with some care, to allow for this difference in workloads and case-mix.

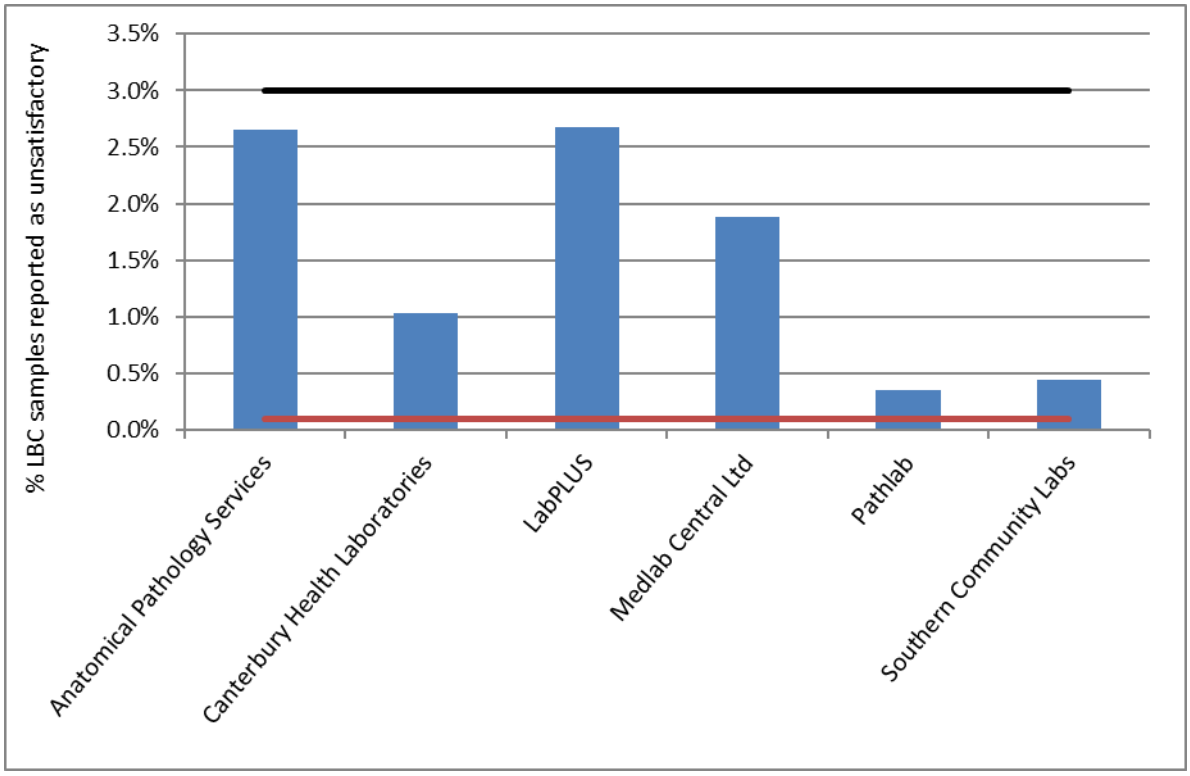
The national Human Papillomavirus (HPV) Immunisation Programme was introduced in New Zealand in September 2008, and involves routine vaccination of girls 12-13 years and catch-up vaccination has previously been offered to young women born in 1990 or later. International and New Zealand data indicate that many high grade squamous cytology reports are associated with HPV types which are potentially preventable by vaccination,[4-7] and that this is particularly true for younger women[4, 8-10]. It is anticipated that data will also soon be available from New Zealand to further quantify the potential impact of the Human Papillomavirus Immunisation Programme in New Zealand. As vaccinated cohorts enter the screening programme, it is anticipated that the proportion of satisfactory cytology samples reported as HSIL will gradually reduce, and that this will occur in younger age groups first (the oldest birth cohorts eligible for vaccination through the publicly funded program would be aged up to 26 years at the time of the current monitoring period, while the oldest birth cohorts offered vaccination at the target age of 12-13 years would be aged up to 20 years). Therefore, trends in the proportion of satisfactory cytology samples reported as HSIL by age are included in these monitoring reports, in order to monitor the impact of HPV vaccination over time. At the current time, it is not possible to present HSIL rates separately for vaccinated and unvaccinated women, because information relating to whether or not individual women have been vaccinated is not available on the NCSP Register. These data therefore need to be interpreted with some care, as they include results in all women, both vaccinated and unvaccinated.

In the previous report, there was an apparent increase in the percentage of satisfactory samples reported as HSIL. This increase appeared to occur in almost all age groups, and to be driven by an increase in the percentage of satisfactory samples reported as HSIL at Anatomical Pathology Services and Southern Community Laboratories, two laboratories which together accounted for 65.2% of all satisfactory cytology in the current monitoring period. An exploratory analysis found the increase in the percentage of satisfactory samples reported as HSIL appeared to coincide with a lower percent of women with HSIL + SC cytology with histologically-confirmed CIN2+ within six months. In the current report, the percentage of satisfactory samples reported as HSIL has decreased in women aged 20-24 years, and also those aged 25-29, 45-49, 55-59 and 65-69 years.

In the current report we additionally examined age-standardised rates of HSIL cytology reports, in order to partially account for differences in the age of the population whose cytology tests each laboratory processes. This could be an additional factor in some laboratories having higher or lower HSIL reporting rates. As the target does not specifically relate to age-standardised rates, these results cannot be directly compared to the target; however, as the target was set in 2013, standardising was done using the 2013 Census population (females). As the age-standardised HSIL rates were very similar to the crude rates within each laboratory, differences in age distribution of cytology tests reported do not appear to be a factor in differences between laboratories in HSIL reporting rates.

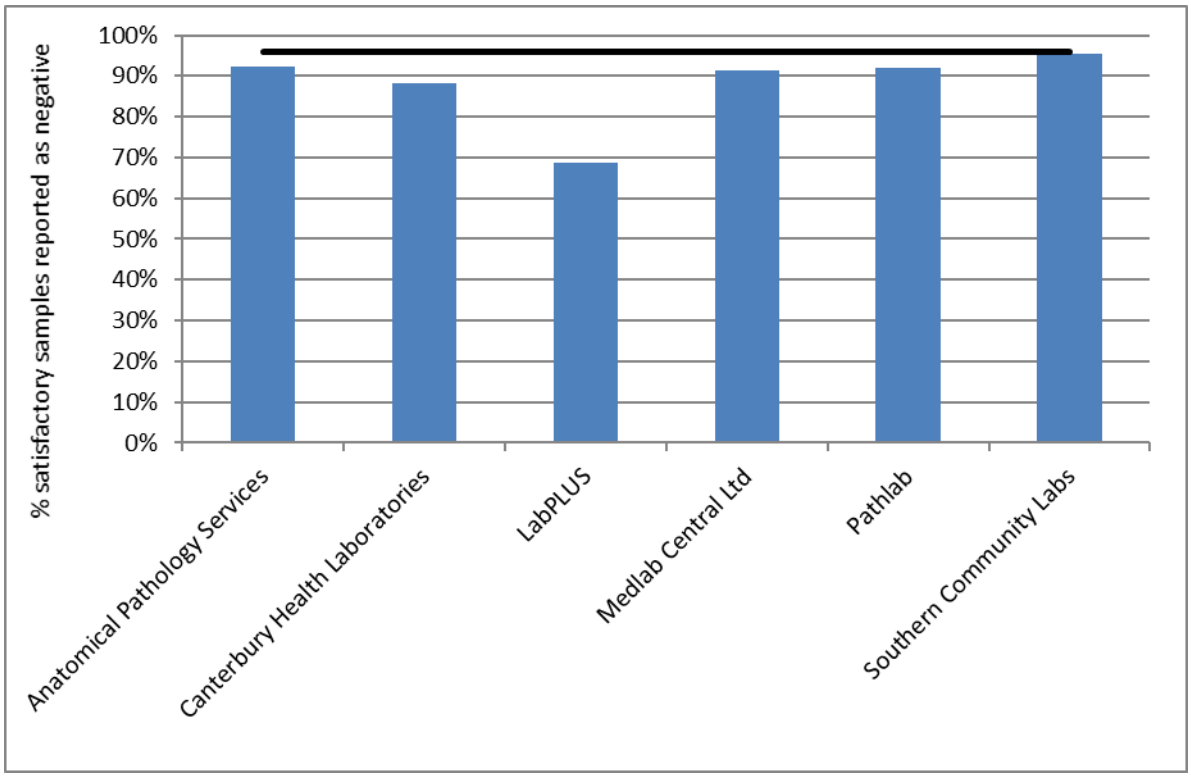
Caution must be taken when comparing percentages of reporting from this monitoring period to the previous monitoring periods due to changes in the number of reporting laboratories. Differences in percentages from this and previous monitoring reports may be due to differences in laboratory caseloads between the periods.

Figure 37 - Proportion of total LBC samples reported as unsatisfactory by laboratory, 1 January 2016 – 30 June 2016



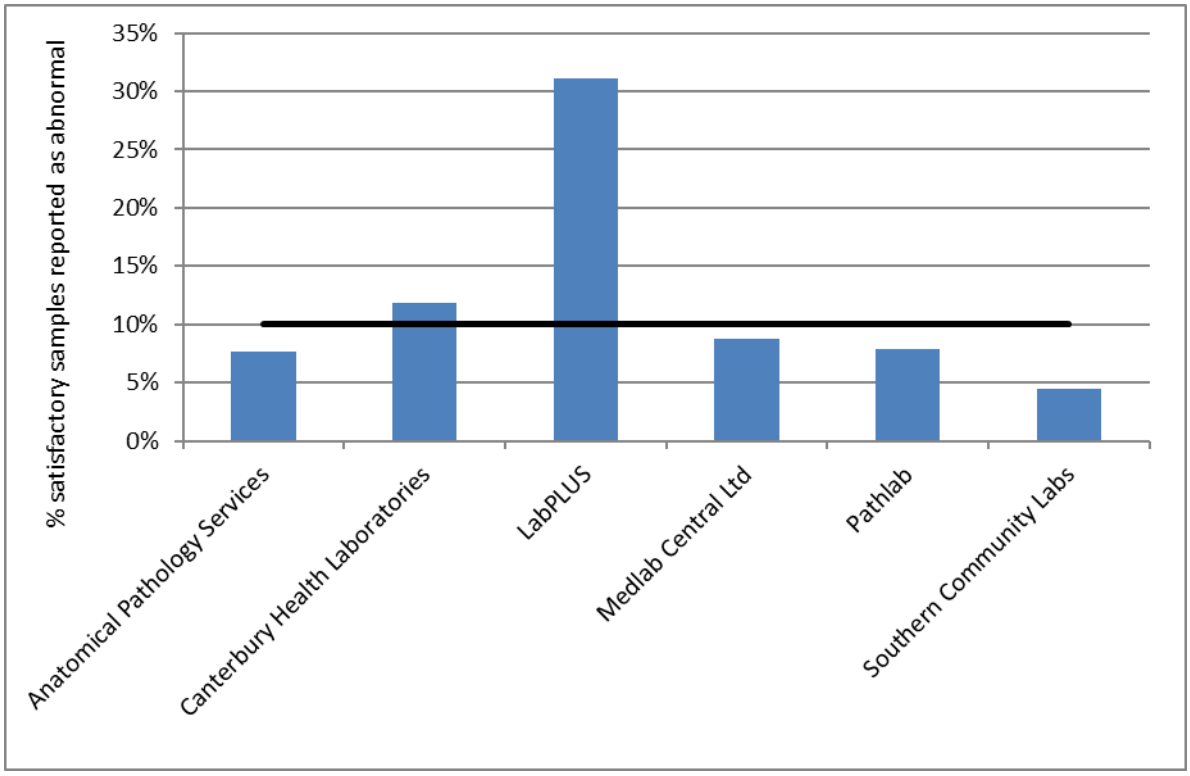
Target for LBC: 0.1-3.0% (Black line-upper target limit; red line=lower target limit)

Figure 38 - Proportion of total satisfactory samples reported as negative by laboratory, 1 January 2016 – 30 June 2016



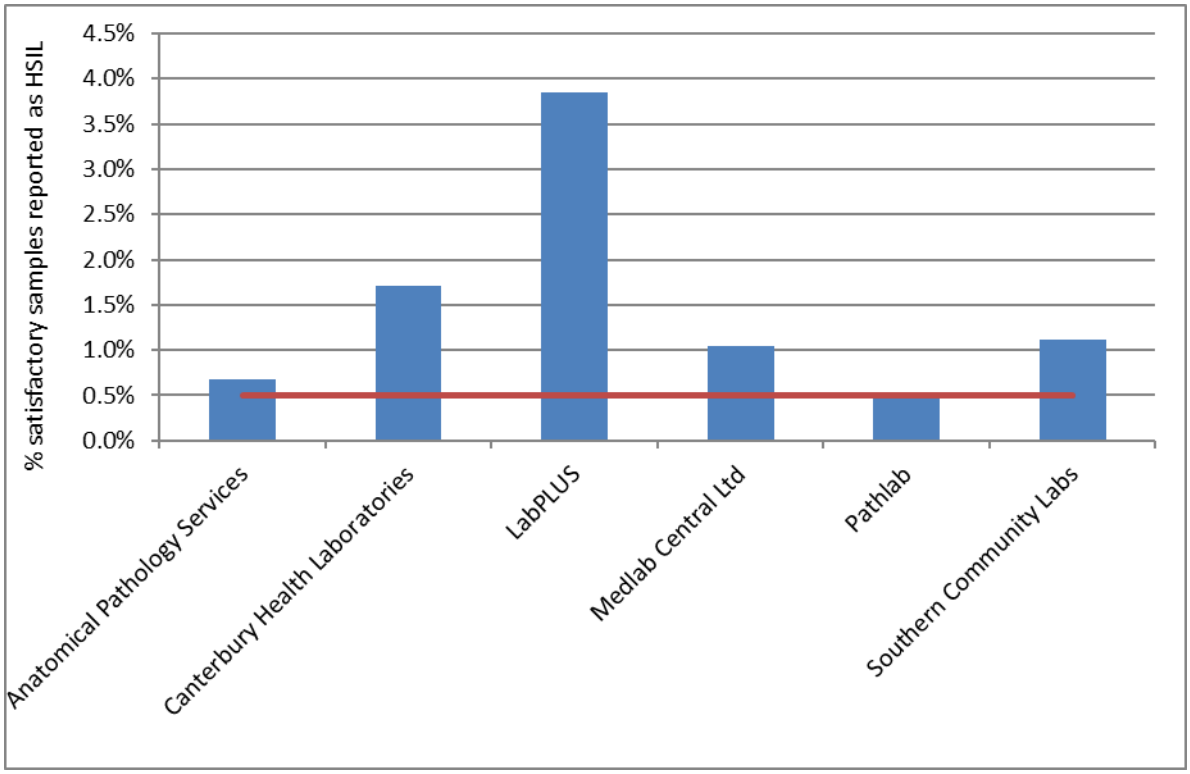
Note: Line shows negative target of no more than 96%

Figure 39 - Proportion of total satisfactory samples reported as abnormalities by laboratory, 1 January 2016 – 30 June 2016



Note: Line shows abnormal target no more than 10%

Figure 40 - Proportion of total satisfactory samples reported as HSIL by laboratory, 1 January 2016 – 30 June 2016



Note: Line shows HSIL target no less than 0.5%

Table 1 - Satisfactory and unsatisfactory cytology reporting by laboratory (1 January 2016 – 30 June 2016)

	All samples	Satisfactory		Unsatisfactory	
Laboratory	**N**	**N**	**%**	**N**	**%**
Anatomical Pathology Services	50,056	48,728	97.3	1,328	2.7
Canterbury Health Laboratories	11,301	11,185	99.0	116	1.0
LabPLUS	8,618	8,387	97.3	231	2.7
Medlab Central Ltd.	14,933	14,652	98.1	281	1.9
Pathlab	24,254	24,169	99.6	85	0.4
Southern Community Laboratories	110,124	109,636	99.6	488	0.4
Total	**219,286**	**216,757**	**98.8**	**2,529**	**1.2**

Table 2 - Laboratory cytology reporting by general result (1 January 2016 – 30 June 2016) – percentage of satisfactory samples

	Negative		Abnormal	
Laboratory	**N**	**%**	**N**	**%**
Anatomical Pathology Services	45,019	92.4	3,709	7.6
Canterbury Health Laboratories	9,866	88.2	1,319	11.8
LabPLUS	5,774	68.8	2,613	31.2
Medlab Central Ltd.	13,376	91.3	1,276	8.7
Pathlab	22,259	92.1	1,910	7.9
Southern Community Laboratories	104,746	95.5	4,890	4.5
Total	**201,040**	**92.7**	**15,717**	**7.3**

Target total negative: ≤ 96% reported as negative
Target total abnormal: ≤ 10% reported as abnormal

Table 3 - Laboratory cytology reporting by type of cytology sample (1 January 2016 – 30 June 2016) – counts

	Result									
Laboratory	**Negative**	**ASC-US**	**LSIL**	**ASC-H**	**HSIL**	**Invasive SCC**	**AGC/AIS**	**Adeno-carcinoma**	**Malignant Neoplasm**	**Total**
Anatomical Pathology Services	45,019	1,136	1,974	215	332	1	34	15	2	48,728
Canterbury Health Laboratories	9,866	394	555	161	192	5	10	2	-	11,185
LabPLUS	5,774	833	1,002	417	323	3	26	6	3	8,387
Medlab Central Ltd.	13,376	464	548	91	153	-	15	5	-	14,652
Pathlab	22,259	622	972	150	130	3	25	7	1	24,169
Southern Community Laboratories	104,746	599	2,716	222	1,226	7	102	18	-	109,636
Total	**201,040**	**4,048**	**7,767**	**1,256**	**2,356**	**19**	**212**	**53**	**6**	**216,757**

Table 4 - Laboratory cytology reporting by cytological category (1 January 2016 – 30 June 2016) – percentage of all satisfactory samples

	Result								
Laboratory	**Negative**	**ASC-US**	**LSIL**	**ASC-H**	**HSIL**	**Invasive SCC**	**AGC/AIS**	**Adeno-carcinoma**	**Malignant Neoplasm**
Anatomical Pathology Services	92.4	2.3	4.1	0.4	0.7	<0.005	0.07	0.03	<0.005
Canterbury Health Laboratories	88.2	3.5	5.0	1.4	1.7	0.04	0.09	0.02	-
LabPLUS	68.8	9.9	11.9	5.0	3.9	0.04	0.31	0.07	0.04
Medlab Central Ltd.	91.3	3.2	3.7	0.6	1.0	-	0.10	0.03	-
Pathlab	92.1	2.6	4.0	0.6	0.5	0.01	0.10	0.03	<0.005
Southern Community Laboratories	95.5	0.5	2.5	0.2	1.1	0.01	0.09	0.02	-
Total	**92.7**	**1.9**	**3.6**	**0.6**	**1.1**	**0.01**	**0.10**	**0.02**	**<0.005**

Target: HSIL ≥ 0.5% reported as HSIL

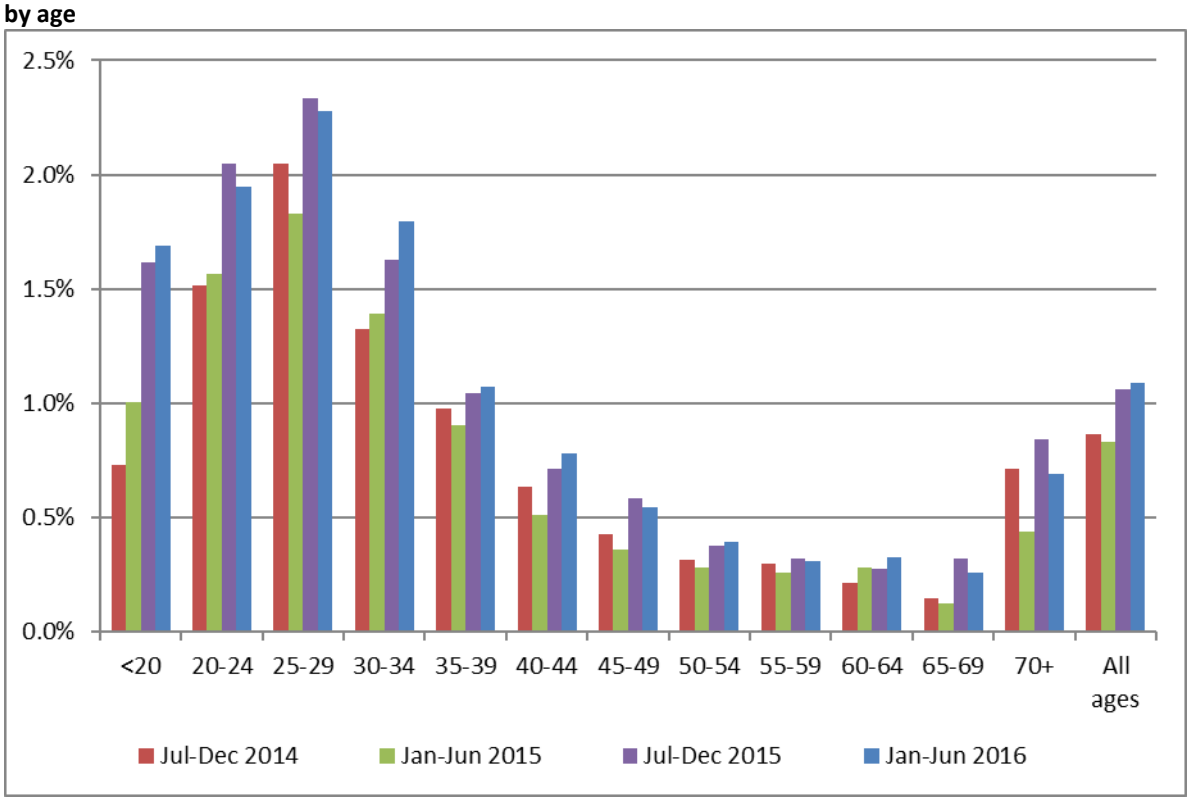
Table 5 - Laboratory reporting of cytological category by five-year age group (1 January 2016 – 30 June 2016) – counts

	Cytology Result									
Age Group	**Negative**	**ASC-US**	**LSIL**	**ASC-H**	**HSIL**	**Invasive SCC**	**AGC/AIS**	**Adeno-carcinoma**	**Malignant Neoplasm**	**Total**
<20	987	30	137	11	20	-	-	-	-	1,185
20-24	22,743	768	2,573	279	523	-	4	-	-	26,890
25-29	22,406	611	1,432	235	576	2	13	-	-	25,275
30-34	22,696	471	825	181	442	-	15	2	-	24,632
35-39	21,582	395	647	115	247	-	13	1	-	23,000
40-44	22,564	428	533	105	186	3	17	3	1	23,840
45-49	22,349	415	504	78	128	2	23	4	-	23,503
50-54	20,877	372	421	79	86	1	39	3	-	21,878
55-59	17,927	247	297	76	58	2	30	8	1	18,646
60-64	14,295	159	196	42	48	1	22	5	1	14,769
65-69	10,891	115	144	41	29	3	17	14	1	11,255
70+	1,723	37	58	14	13	5	19	13	2	1,884
Total	**201,040**	**4,048**	**7,767**	**1,256**	**2,356**	**19**	**212**	**53**	**6**	**216,757**

Table 6 - Laboratory reporting of cytological category by five-year age group (1 January 2016 – 30 June 2016) – percentage of all satisfactory samples in women of that age group

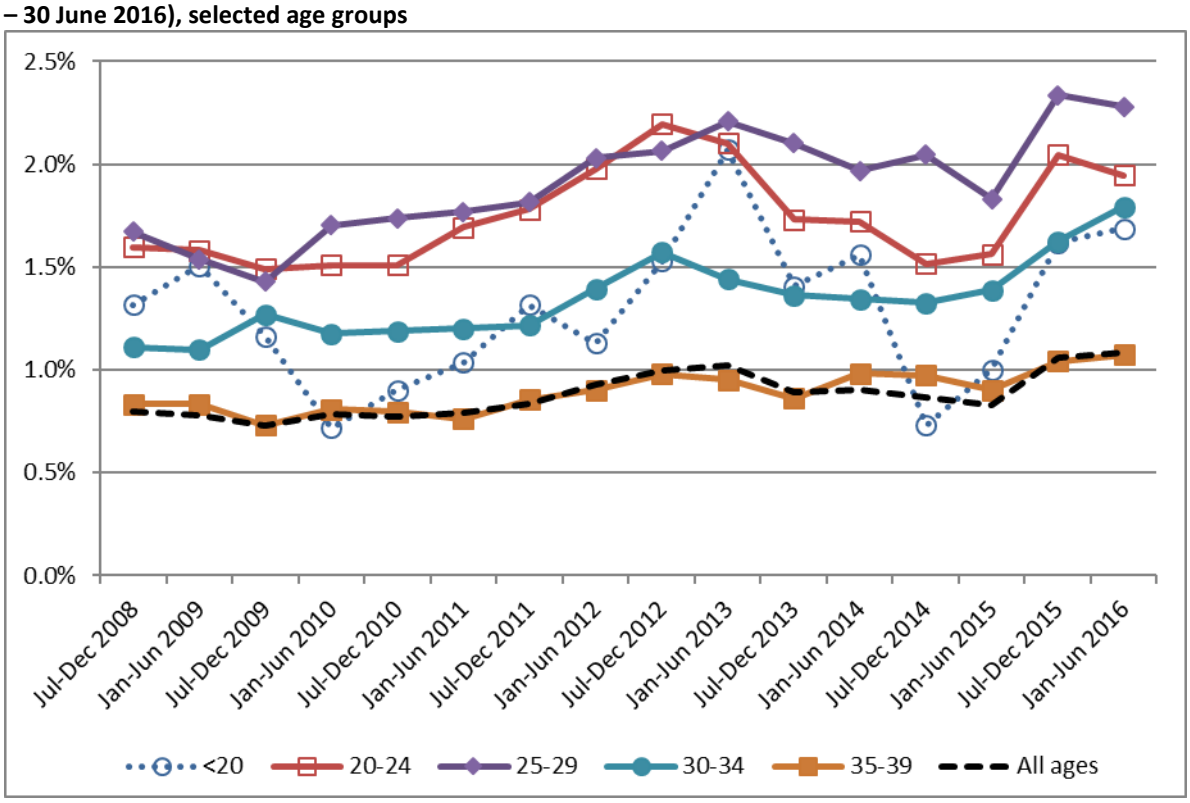
	Cytology Result								
Age Group	**Negative**	**ASC-US**	**LSIL**	**ASC-H**	**HSIL**	**Invasive SCC**	**AGC/AIS**	**Adeno-carcinoma**	**Malignant Neoplasm**
<20	83.3	2.5	11.6	0.9	1.7	-	-	-	-
20-24	84.6	2.9	9.6	1.0	1.9	-	0.01	-	-
25-29	88.6	2.4	5.7	0.9	2.3	0.01	0.05	-	-
30-34	92.1	1.9	3.3	0.7	1.8	-	0.06	0.01	-
35-39	93.8	1.7	2.8	0.5	1.1	-	0.06	<0.005	-
40-44	94.6	1.8	2.2	0.4	0.8	0.01	0.07	0.01	<0.005
45-49	95.1	1.8	2.1	0.3	0.5	0.01	0.10	0.02	-
50-54	95.4	1.7	1.9	0.4	0.4	<0.005	0.18	0.01	-
55-59	96.1	1.3	1.6	0.4	0.3	0.01	0.16	0.04	0.01
60-64	96.8	1.1	1.3	0.3	0.3	0.01	0.15	0.03	0.01
65-69	96.8	1.0	1.3	0.4	0.3	0.03	0.15	0.12	0.01
70+	91.5	2.0	3.1	0.7	0.7	0.27	1.01	0.69	0.11
Total	**92.7**	**1.9**	**3.6**	**0.6**	**1.1**	**0.01**	**0.10**	**0.02**	**<0.005**

Figure 41 - Trends in the proportion of total satisfactory samples reported as HSIL (last four monitoring periods), by age



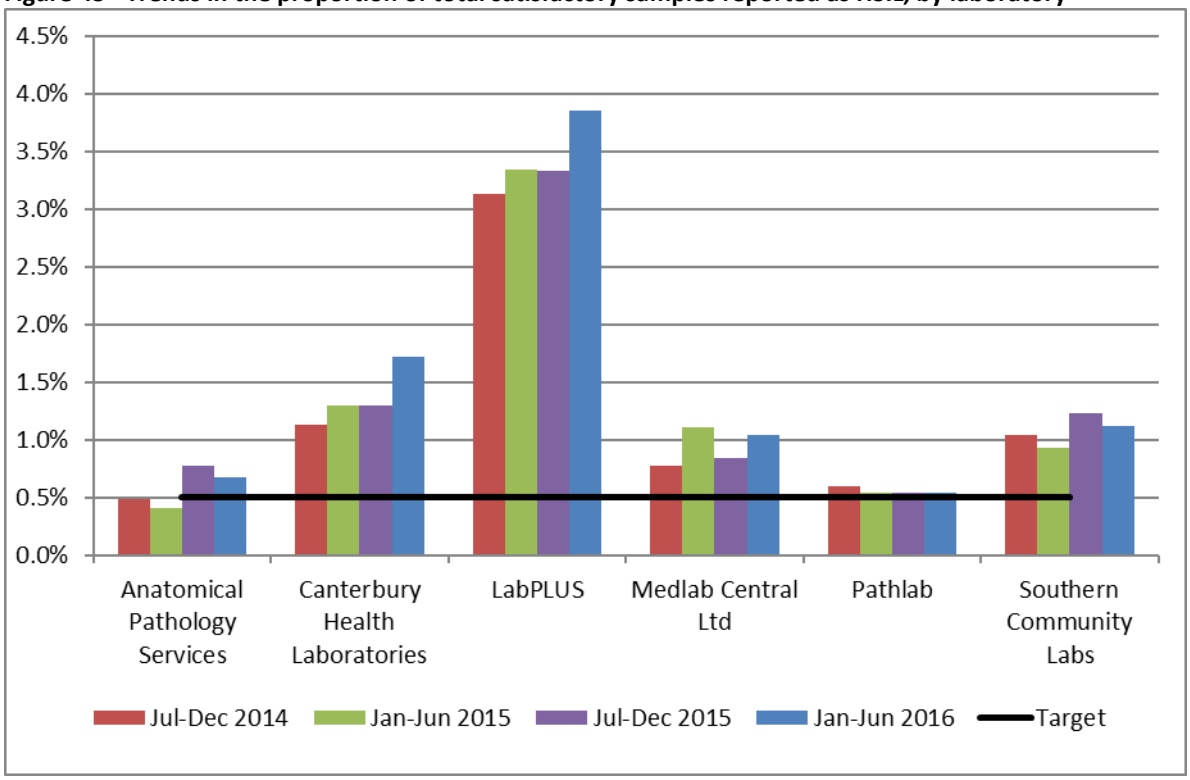
Note: women aged less than 20 years are not routinely screened

Figure 42 - Longer term trends in the proportion of total satisfactory samples reported as HSIL (1 January 2016 – 30 June 2016), selected age groups



Note: women aged less than 20 years are not routinely screened

Figure 43 - Trends in the proportion of total satisfactory samples reported as HSIL, by laboratory



Note: Line shows HSIL target of no less than 0.5%. Cytology prior to 1 Feb 2015 was reported on by Diagnostic Medlab Ltd., not Anatomical Pathology Services, however the catchment was very similar between the two laboratories.

Indicator 5.2 – Accuracy of cytology predicting HSIL

Definition	The accuracy of cytology predicting HSIL/SC (positive predictive value – PPV) is defined as the probability of a high grade histological report (CIN2/3 or higher) given an HSIL/invasive squamous carcinoma cytology report. Refer to Appendix D for detailed definitions of histological confirmation.
Target	Not less than 65% and not greater than 85%.
Current Situation	All satisfactory cytology samples collected in the six months prior to the current monitoring period (i.e. collected from 1 July to 31 December 2015 inclusive) were identified. Where a woman had multiple samples or a report had multiple interpretation codes, the most serious cytology result category reported was used. If there were two cytology test results for a woman of the same grade, the earliest one was used. Histology samples taken up to five days prior to and up to six months after the cytology sample were then retrieved for women with a high grade cytology report. Where there were multiple histology reports for a woman in the period, the most serious abnormality category was used. ***HSIL + SC*** 2,045 women with HSIL or SC cytology reports were identified. 144 of these women (7.0%) had no histology taken in the period from five days prior to six months after the cytology sample was taken. Among the remaining 1,901 for whom there was histology, 1,528 (80.4%) had their HSIL or SC cytology report confirmed by histology (Figure 44, Table 46). By laboratory, the proportion of HSIL+SC being confirmed by histology ranged from 72.2% for Anatomical Pathology Services to 89.9% for Medlab Central Ltd.. All seven laboratories achieved the minimum target of at least 65% of cytological HSIL + SC being confirmed by histology. Two of the seven laboratories exceeded the 85% upper target margin of HSIL + SC being histologically confirmed (Figure 44, Table 46). ***Other cytological abnormalities*** Similar calculations for positive predictive value were performed for ASC-H; glandular abnormalities (AG1-AG5, AIS, AC1-AC4); and the combination of ASC-H, HSIL and SC. There are no targets for these measures. ***ASC-H*** 1,080 women with a cytology report of ASC-H were identified. 201 (18.6%) had no histology taken in the period from five days prior to six months after the cytology sample. Among the remaining 879 women, 401 (45.6%) were histologically confirmed as high grade. This proportion varied by laboratory,

from 33.8% (Anatomical Pathology Services) to 63.2% (Medlab Central Ltd.) (Figure 45, Table 47).

ASC-H + HSIL + SC

A total of 3,125 women had a cytology report of ASC-H, HSIL or SC. 345 (11.0%) had no histology taken in the period from five days prior to six months after the cytology sample. Among the remaining 2,780 women, 1,929 (69.4%) were histologically confirmed as high grade. This proportion varied by laboratory, from 57.1% (Anatomical Pathology Services) to 80.4% (Medlab Central Ltd.) (Figure 45, Table 48).

Glandular abnormalities

There were 279 women with a glandular abnormality (AG1-AG5, AIS, AC1-AC4) identified. 98 women (35.1%) had no histology taken in the period from five days prior to six months after the cytology sample. Among the remaining 181 women, 71 (39.2%) were identified as having high grade histology. This was not analysed further, as the number of samples reported on by some laboratories was small.

Trends

HSIL + SC

Positive predictive value for HSIL and SC cytology has decreased when compared to the previous monitoring report (83.4% in the previous period; 80.4% in the current period). As in the previous monitoring period, all laboratories had greater than 65% of their HSIL + SC cytology results confirmed by histology. The number of laboratories with PPVs above the upper target of 85% has decreased from three to two. The proportion of cytology reports with histology available following HSIL or SC results is slightly lower (93.4% in the previous report; 93.0 in the current report). Trends in the positive predictive value for HSIL and SC cytology by laboratory are shown in Figure 46. Decreases in the positive predictive value for HSIL and SC cytology were evident for both Anatomical Pathology Services and Southern Community Laboratories.

ASC-H

Positive predictive value for ASC-H cytology has decreased slightly, from 46.6% to 45.6%, however there is no target for this measure. The proportion of ASC-H cytology reports with histology available has slightly decreased in the current report compare to the previous monitoring report (81.4 in current report; 82.9% in previous report). Decreases in the positive predictive value for ASC-H cytology were evident for both Anatomical Pathology Services and Southern Community Laboratories.

ASC-H + HSIL + SC

The positive predictive value for the combined group ASC-H, HSIL and SC has remained similar (69.3%) to what it is in the current report (69.4%). Note that there are no targets for the positive predictive value of this combined group.

Trends in the positive predictive value for the combined group ASC-H, HSIL and SC cytology by laboratory are shown in
Figure 47. Decreases in the positive predictive value for the combined group of ASC-H, HSIL and SC cytology were evident for both Anatomical Pathology Services and Southern Community Laboratories.

Glandular abnormalities

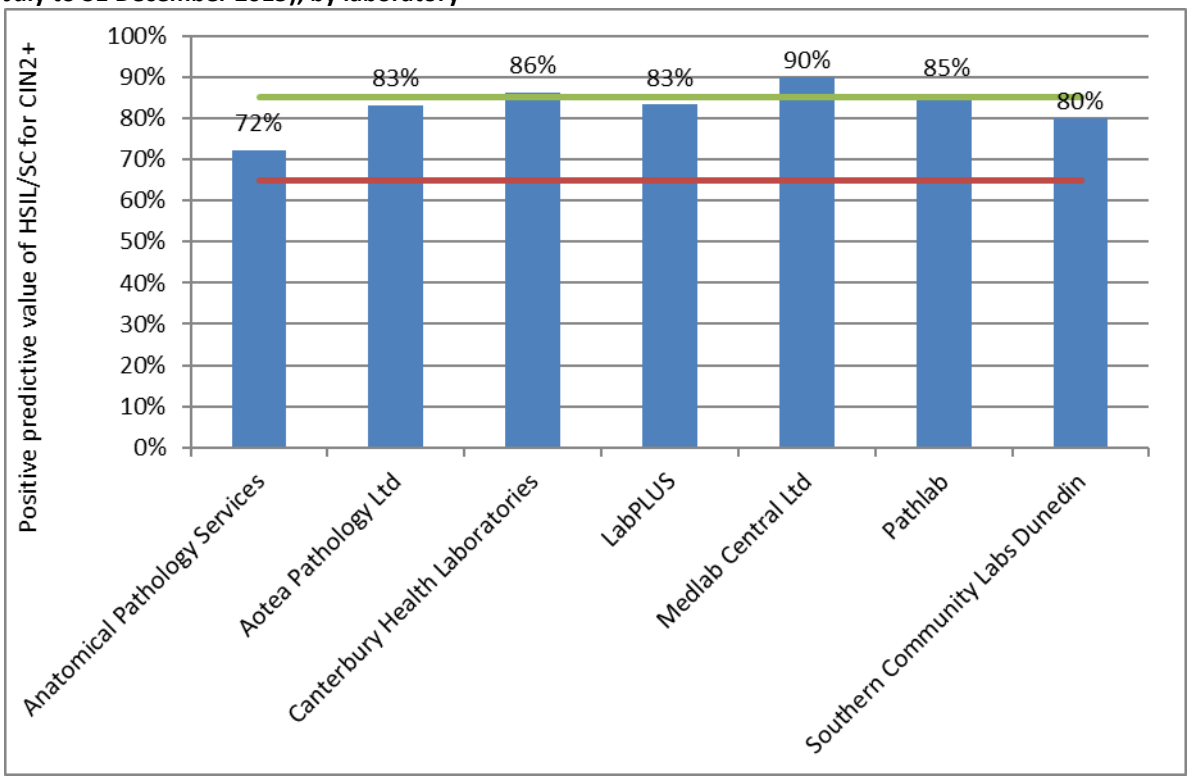
The positive predictive value of glandular abnormalities decreased (from 47.7% in the previous report to 39.2% in the current report). Compared to both ASC-H cytology, and the combined group of HSIL and SC cytology, there are far fewer glandular abnormalities, and an even smaller number with histology available. The proportion of glandular abnormalities with histology available (64.9%) is lower than that in the previous monitoring period (70.8%), and remains less than that for ASC-H (81.4%) and HSIL + SC (93.0%). As a result, the positive predictive value of glandular abnormalities is more prone to fluctuations than positive predictive values for other high grade abnormalities. Due to the small number of samples involved, glandular abnormalities were not analysed in further detail.

Comments

This estimate does not take into account cytology predicting HSIL for which there is no histology available. Histology may be unavailable because the woman does not attend for follow-up colposcopy, or a biopsy may not be taken if the colposcopic impression is normal. When more colposcopy data is available on the NCSP Register, it may be possible to better distinguish between these two possibilities.

The calculations also do not discriminate between cytology taken as a screening or diagnostic test. This may be a contributing factor for some laboratories with a PPV which is higher than the upper end of the target range, particularly where the colposcopically-directed cytology and corresponding histology are reported by the same laboratory as best management practice. Analysis separating community vs clinic derived cytology would provide a clearer picture of positive predictive value (and other reporting categories) in a screening setting.

Figure 44 - Positive predictive value for CIN2+ in women with HSIL or SC cytology reports (cytology in 1 July to 31 December 2015), by laboratory



Target: 65% - 85%.

Figure 45 - Positive predictive value for CIN2+ in women with other high grade cytology results (cytology in 1 July to 31 December 2015), by laboratory

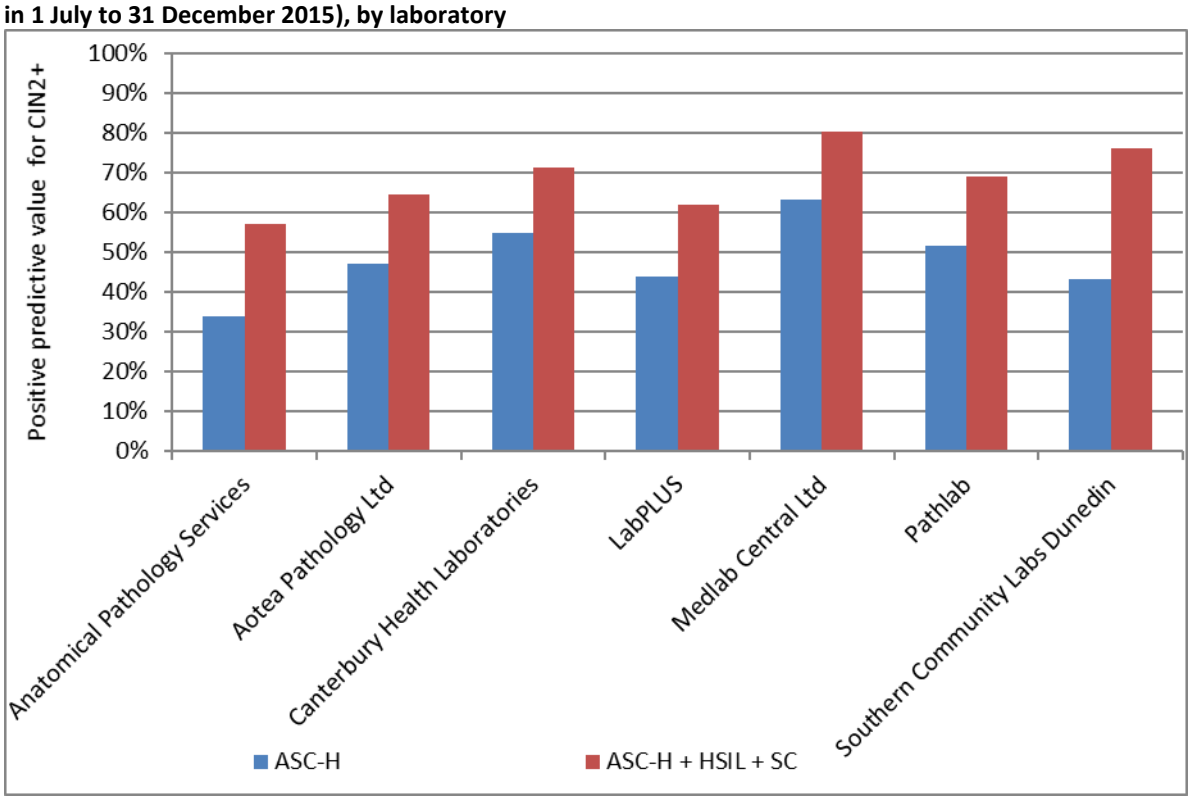
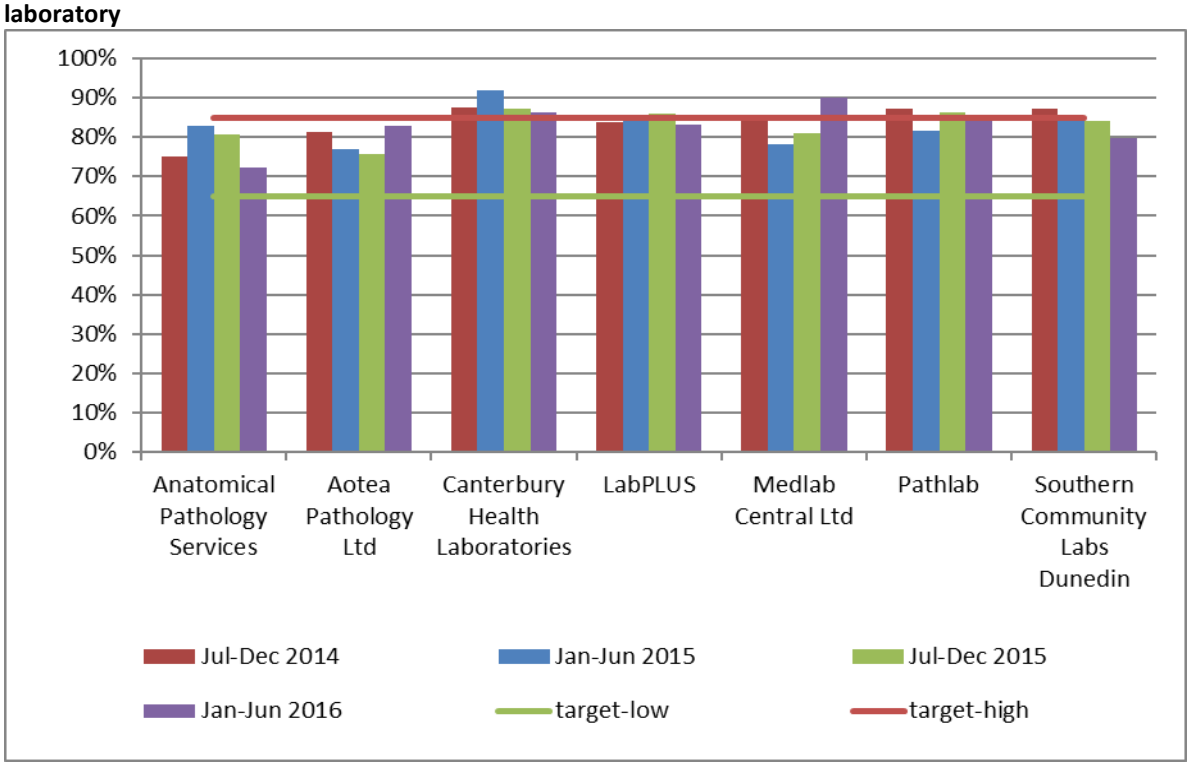
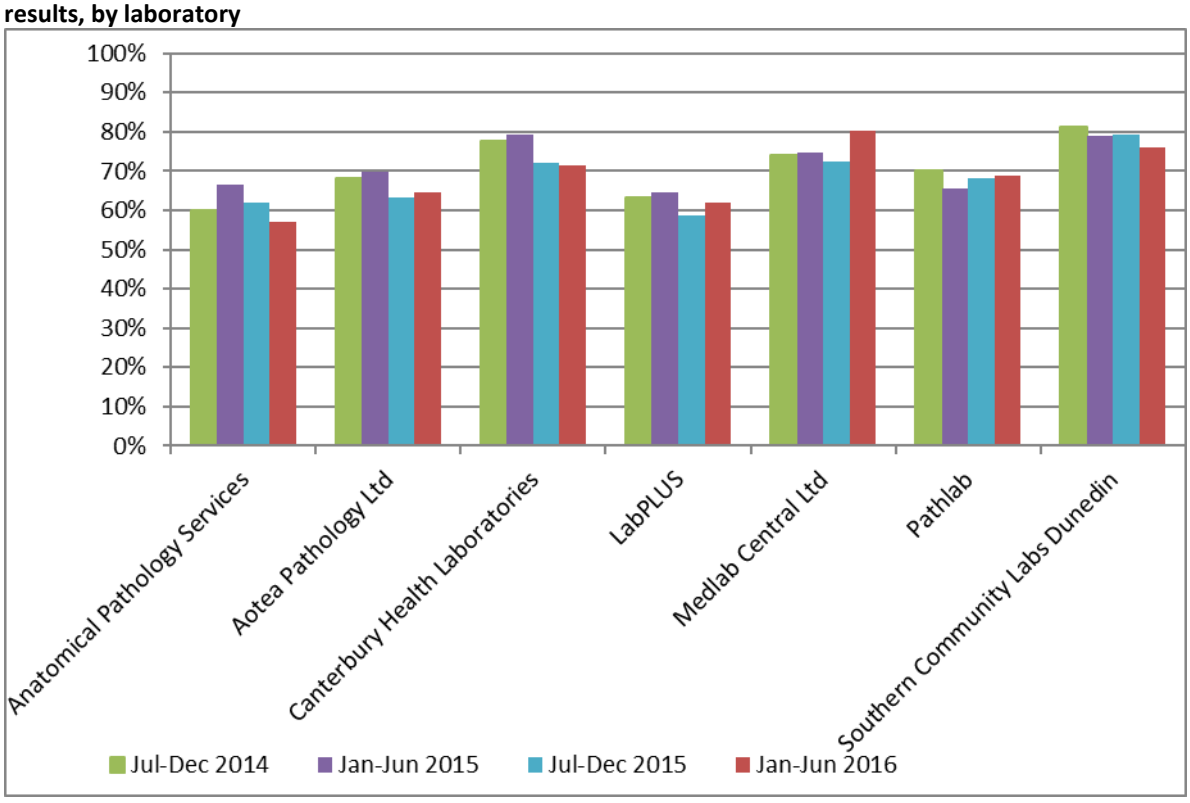


Figure 46 - Trends in the positive predictive value for CIN2+ in women with HSIL or SC cytology results, by laboratory



Time period relates to monitoring report period; cytology samples were collected in the period six months prior. Cytology prior to 1 Feb 2015 was reported on by Diagnostic Medlab Ltd., not Anatomical Pathology Services, however the catchment was very similar between the two laboratories.

Figure 47 - Trends in the positive predictive value for CIN2+ in women with ASC-H, HSIL or SC cytology results, by laboratory



Time period relates to monitoring report period; cytology samples were collected in the period six months prior. Cytology prior to 1 Feb 2015 was reported on by Diagnostic Medlab Ltd., not Anatomical Pathology Services, however the catchment was very similar between the two laboratories.

Indicator 5.3 – Accuracy of negative cytology reports

Definition	This indicator currently has two parts to its definition. 1. For women with a histological diagnosis of CIN2, CIN3, invasive SCC, AIS or invasive endocervical adenocarcinoma, the proportion of cytology slides originally reported within the preceding 42 months as negative, benign/reactive or unsatisfactory which on review are consistent with high grade or worse category (Standard 522). 2. The ability of a laboratory to correctly identify a negative sample. All cases with a high-grade/invasive diagnosis on histology (CIN2, CIN3, invasive SCC, AIS or invasive endocervical adenocarcinoma) must have a review of any cytology slides that have been reported as negative, benign/reactive or unsatisfactory in the previous 42 months. Any abnormality identified as high grade or worse on review of a previously reported negative or unsatisfactory cytology slide must be documented by the laboratory. Cumulative data must be forwarded to the National Screening Unit to help ensure the accuracy of submitted negative cytology reports.
Target	No more than 10% identified as HS1, HS2, SC, AIS or AC1-5 (HSIL+) on review. Aim for less than 15%, but not more than 20% identified as ASC-H, HS1, HS2, SC, AG4-5, AIS or AC1-5 (ASC-H +) on review.
Current Situation	This indicator is analysed annually. Data for women with a histological diagnosis of high-grade/invasive disease in the period 1 January – 31 December 2015 were provided in Report 44. This indicator will be provided again in Report 46.
Trends	-
Comments	-

Indicator 5.4 – Histology Reporting

Definition	The NCSP Register collects histology results of samples taken from the cervix and vagina. Histology samples include diagnostic biopsies, treatment biopsies, cervical polyps and the cervical tissue of total hysterectomy specimens. All histology samples taken during this period were retrieved. Where a histology sample had more than one SNOMED code, or a woman had more than one histology result, the most serious (highest) ranked code was used (see Appendix C). Results are presented both according to the detailed SNOMED category, and by broader histology diagnostic category. The mapping between SNOMED codes and diagnostic category is detailed in Appendix C. Two versions of SNOMED are used by laboratories (1986 and 1993) depending on the laboratory software. The NCSP Register accepts both versions and for statistical purposes maps the 1986 codes to the 1993 codes. A woman's age is defined as her age at the end of the monitoring period (i.e. a woman's age at 30 June 2016).
Target	None
Current Situation	14,002 histology samples were taken during the current monitoring period. 483 (3.4%) of these were insufficient for diagnosis. These samples were taken from 476 women, 62 (13.0%) of whom have a record of a subsequent sufficient histology test. The remaining 13,519 samples were taken from 11,744 women. Results for these women are reported on in detail in Table 7 to Table 10. Table 7 shows histology results by detailed SNOMED category, based on the most serious (highest) ranked result for each woman in the monitoring period. Table 8 to Table 10 show histology results by broader histology diagnostic category. 53.2% of women with histology tests had negative or benign histology results (Table 8). 21.5% of women had a high grade squamous (CIN2/3) histology result. 58 women (0.49%) women had histology results which were invasive squamous cell carcinoma (ISCC), 7 (0.06%) which were microinvasive SCC, 39 (0.33%) which were invasive adenocarcinoma (not endocervical type), 9 (0.08%) which were adenocarcinoma endocervical type, 70 (0.60%) which were adenocarcinoma in situ, and 3 (<0.05%) which were adenosquamous carcinoma. The age group with the largest number of women with histology samples was women aged 25-29 years (1,724 women, Table 9). Among women aged 20-69

	years, the age group with the lowest rate of women with results which were negative or HPV only was women aged 25-29 years (34.9%, Table 10).
Trends	The proportion of women with negative or benign histology (53.2%) is similar to that reported for the previous period (53.4%). The proportion of women with HSIL histology is also similar in the current period (21.5%) to what it was in the previous period (21.5%). Increases shown in the percentage of HSIL histology in 5 year age groups between 20-34 during the previous monitoring period (July to December 2015) decreased in this monitoring period (Figure 48). For the age group 35-39 there has been an increasing trend in percentage of HSIL over the last three monitoring periods. The proportions were slightly higher to those in the previous period for women with ISCC (0.49% this period and 0.35% last period), and invasive adenocarcinoma (0.33% of the endocervical type and 0.08% not endocervical type in this period and 0.26% and 0.07% in the last period, respectfully). The proportion was also similar for women with adenocarcinoma in situ (0.60% this period and 0.60% last period).
Comments	Histology samples include diagnostic biopsies, treatment biopsies, cervical polyps and the cervical tissue of total hysterectomy specimens. Histology samples may also include samples from non-cervical sites, where there is also a cervical component in the sample, for example endometrial samples. Also, pathologists are not always able to determine the site of origin particularly in small biopsies. These are likely to be contributing to the higher number of women with adenocarcinoma histology on the NCSP Register compared to the Cancer Registry.

Table 7 - Histology results reporting by SNOMED category

SNOMED category	Women with that diagnosis	
	N	%
Negative/normal	3,412	29.1
Inflammation	747	6.4
Microglandular hyperplasia	7	0.06
Squamous metaplasia	453	3.9
Atypia	87	0.74
HPV	736	6.3
Condyloma acuminatum	9	0.08
Dysplasia/CIN NOS	58	0.49
CIN 1 (LSIL) or VAIN 1	1,862	15.9
CIN 2 (HSIL) or VAIN 2	982	8.4
CIN 3 (HSIL) or VAIN 3	1,489	12.7
HSIL not otherwise specified	52	0.44
Polyp	1,202	10.2
Other*	416	3.5
Microinvasive squamous cell carcinoma	7	0.06
Invasive squamous cell carcinoma	58	0.49
Benign glandular atypia	5	<0.05
Glandular dysplasia	-	-
Adenocarcinoma in situ	70	0.60
Invasive adenocarcinoma (endocervical type)	9	0.08
Invasive adenocarcinoma (not endocervical type)	39	0.33
Adenosquamous carcinoma	3	<0.05
Metastatic tumour	14	0.12
Undifferentiated carcinoma	3	<0.05
Sarcoma	1	<0.05
Carcinosarcoma	3	<0.05
Choriocarcinoma	-	-
Miscellaneous primary tumour	3	<0.05
Small cell carcinoma	2	<0.05
Malignant tumour, small cell type	-	-
Melanoma	2	<0.05
Other primary epithelial malignancy	13	0.11
Total	**11,744**	**100.0**

NOS = not otherwise specified; HSIL not otherwise specified = high grade squamous intraepithelial lesion, not otherwise specified/ CIN2/3 (SNOMED code M67017; see Appendix C)

** Other morphologic abnormality, not dysplastic or malignant.*

Table 8 - Histology results reporting by diagnostic category

Histology category	Women with that histology result	
	N	%
Negative/benign (non neoplastic)	6,242	53.2
HPV	745	6.3
CIN1	2,007	17.1
CIN2	982	8.4
CIN3	1,489	12.7
HSIL not otherwise specified	52	0.44
Microinvasive	7	0.06
Invasive squamous cell carcinoma	58	0.49
Glandular dysplasia	-	-
Adenocarcinoma in situ	70	0.60
Invasive adenocarcinoma (endocervical type)	9	0.08
Invasive adenocarcinoma (not endocervical type)	39	0.33
Adenosquamous carcinoma	3	<0.05
Other cancer	41	0.35
Total	**11,744**	**100.0**

Details of mapping between SNOMED category and diagnostic category are included in Appendix C. HSIL not otherwise specified = high grade squamous intraepithelial lesion, not otherwise specified/ CIN 2/3 (SNOMED code M67017; see Appendix C).

Table 9 - Histology results by age – counts

	Age group												
Histology Diagnostic Category	**<20**	**20-24**	**25-29**	**30-34**	**35-39**	**40-44**	**45-49**	**50-54**	**55-59**	**60-64**	**65-69**	**70+**	**Total**
Negative/benign (non neoplastic)	9	399	443	538	569	874	1,080	854	552	373	270	281	6,242
HPV	4	143	159	99	73	67	70	52	28	25	16	9	745
CIN1	9	431	430	306	229	188	164	129	54	32	28	7	2,007
CIN2	5	247	234	162	108	88	59	34	23	10	6	6	982
CIN3	-	235	413	316	179	135	73	50	34	25	17	12	1,489
HSIL not otherwise specified	-	10	16	8	5	4	4	1	2	1	1	-	52
Microinvasive	-	-	2	3	-	1	1	-	-	-	-	-	7
Invasive squamous cell carcinoma	-	-	5	4	5	6	10	4	4	2	6	12	58
Glandular dysplasia	-	-	-	-	-	-	-	-	-	-	-	-	-
Adenocarcinoma in situ	-	4	20	19	10	4	4	4	2	3	-	-	70
Invasive adenocarcinoma (endocervical type)	-	1	-	1	-	-	2	2	-	1	-	2	9
Invasive adenocarcinoma (not endocervical type)	-	-	1	3	3	-	1	4	6	6	2	13	39
Adenosquamous carcinoma	-	-	-	1	1	-	-	-	-	-	-	1	3
Other cancer	-	-	1	-	2	3	3	4	5	3	5	15	41
Total	**27**	**1,470**	**1,724**	**1,460**	**1,184**	**1,370**	**1,471**	**1,138**	**710**	**481**	**351**	**358**	**11,744**

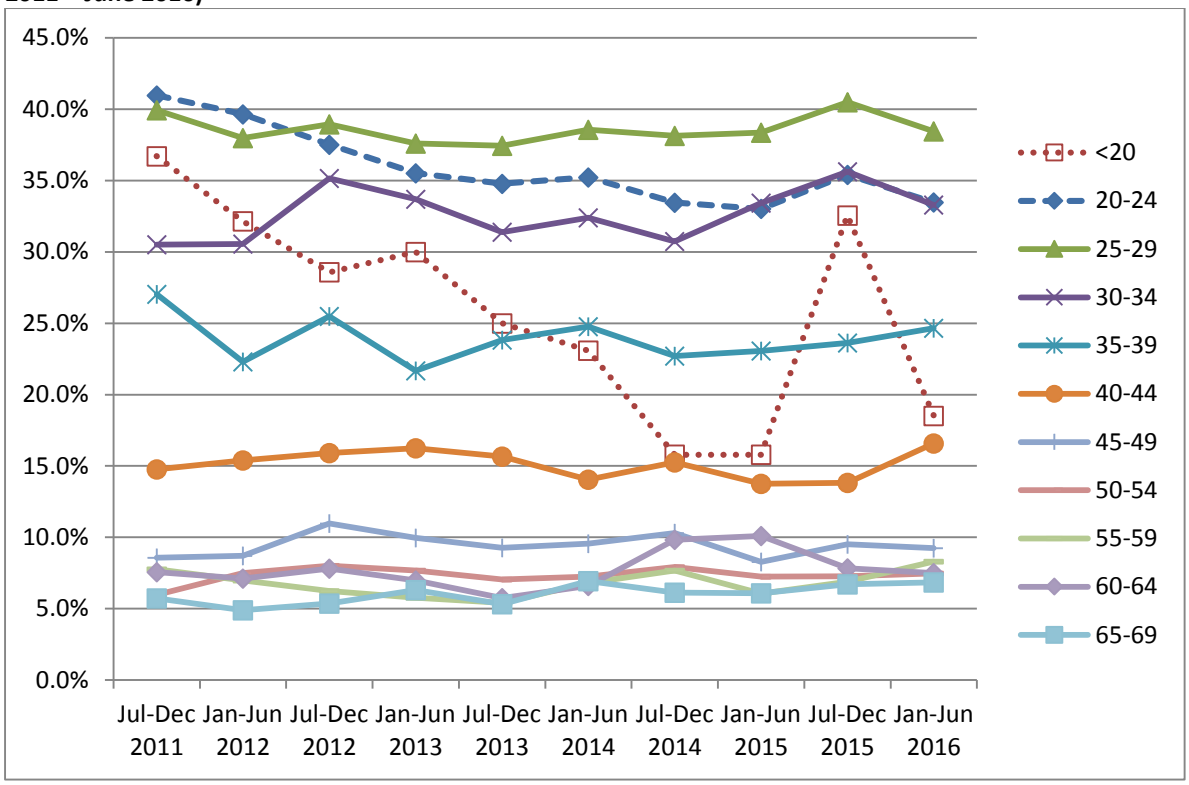
HSIL not otherwise specified = high grade squamous intraepithelial lesion, not otherwise specified/ CIN 2/3 (SNOMED code M67017; see Appendix C)

Table 10 - Histology results by age – percentages

Histology Diagnostic Category	Age group											
	<20	**20-24**	**25-29**	**30-34**	**35-39**	**40-44**	**45-49**	**50-54**	**55-59**	**60-64**	**65-69**	**70+**
Negative/benign (non neoplastic)	33.3	27.1	25.7	36.8	48.1	63.8	73.4	75.0	77.7	77.5	76.9	78.5
HPV	14.8	9.7	9.2	6.8	6.2	4.9	4.8	4.6	3.9	5.2	4.6	2.5
CIN1	33.3	29.3	24.9	21.0	19.3	13.7	11.1	11.3	7.6	6.7	8.0	2.0
CIN2	18.5	16.8	13.6	11.1	9.1	6.4	4.0	3.0	3.2	2.1	1.7	1.7
CIN3	-	16.0	24.0	21.6	15.1	9.9	5.0	4.4	4.79	5.2	4.8	3.4
HSIL not otherwise specified	-	0.68	0.93	0.55	0.42	0.29	0.27	0.09	0.28	0.21	0.28	-
Microinvasive	-	-	0.12	0.21	-	0.07	0.07	-	-	-	-	-
Invasive squamous cell carcinoma	-	-	0.29	0.27	0.42	0.44	0.68	0.35	0.56	0.42	1.7	3.4
Glandular dysplasia	-	-	-	-	-	-	-	-	-	-	-	-
Adenocarcinoma in situ	-	0.27	1.2	1.3	0.84	0.29	0.27	0.35	0.28	0.62	-	-
Invasive adenocarcinoma (endocervical type)	-	0.07	-	0.07	-	-	0.14	0.18	-	0.21	-	0.56
Invasive adenocarcinoma (not endocervical type)	-	-	0.06	0.21	0.25	-	0.07	0.35	0.85	1.2	0.57	3.6
Adenosquamous carcinoma	-	-	-	0.07	0.08	-	-	-	-	-	-	0.28
Other cancer	-	-	0.06	-	0.17	0.22	0.20	0.35	0.70	0.62	1.4	4.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

HSIL not otherwise specified = high grade squamous intraepithelial lesion, not otherwise specified/ CIN 2/3 (SNOMED code M67017; see Appendix C).

Figure 48 - Trends in histologically-confirmed HSIL as a percentage of all women with histology (July 2011 – June 2016)



Indicator 5.5 - Laboratory turnaround times

Definition	Turnaround time is defined as the number of working days from the date a sample is received by a laboratory, and the date which it is reported to the smear-taker or colposcopist. For the purposes of this measure, samples received and reported on the same day are defined as having a turnaround time of one day.
Target	***Cytology*** Laboratories are required to report 90% of final gynaecological cytology results to smear-takers within seven working days of receipt of the sample and 98% within 15 working days (Standard 513[11]). ***Histology*** Laboratories are required to report 90% of final histology results to referring colposcopists within ten working days of receipt of the sample and 98% of final histology results within 15 working days of receiving the sample (Standard 516[11]). ***Cytology with associated HPV testing*** Laboratories are required to report 98% of final cytology test results (including those associated with HPV test) within 15 working days of receiving the sample. Here, the turnaround time is measured specifically for cytology where HPV testing is performed for low grade triage. Low grade triage is defined further in Indicator 8; here it relates to cytology samples *received at the laboratory* in the monitoring period (as opposed to *samples collected* in the period, in Indicator 8). It is restricted to triage testing of women aged 30 years or more. These samples form a subset of those considered in the overall measure of turnaround time for cytology. Note that since reporting of cytology with adjunctive HPV testing requires that both test results be reported together (HPV test results must not be issued independently when adjunct to a cytology request), the turnaround time of the HPV test should not exceed that of the accompanying cytology, except where the HPV test was added after cytology was already reported.
Current Situation	***Cytology*** Six laboratories received 218,413 cytology samples during the current monitoring period. Overall, 95.1% of cytology samples were reported on within seven working days, which is above the target of 90% (Table 49). Nationally, 98.6% were reported on within 15 working days, which is above the target of 98%. Four of the six laboratories met the target for 90% of cytology samples to be reported to smear-takers in seven working days or less (Anatomical Pathology Services, Medlab Central Ltd., Pathlab and Southern Community Laboratories).

Whereas, Canterbury Health Laboratories and LabPLUS, had reported 87.9% and 87.8% respectfully within seven working days. (Figure 49, Table 49).

Five laboratories met the target of 98% of samples reported within 15 working days (Anatomical Pathology Services, Canterbury Health Laboratories, LabPLUS, Medlab Central Ltd. and Southern Community Laboratories) (Figure 50, Table 49). The remaining laboratory (Pathlab) had reported on 97.7% of cytology samples within 15 working days.

Histology

Fifteen laboratories received 13,963 histology samples in the current monitoring period. Overall 90.6% of samples were reported on within ten working days, which is above the target of 90%. Nationally 95.5% were reported on in 15 working days or less, which is below the target of 98% (Table 50).

Eight of the 15 laboratories met the target of 90% of final histology results to referring colposcopists within ten working days of receipt of the sample (Anatomical Pathology Services, Canterbury Health Laboratories, Medlab Central Ltd., Middlemore Hospital Laboratory, Nelson Hospital Laboratory, North Shore Hospital Laboratory, Southern Community Laboratories and Taranaki Medlab) (Figure 51, Table 50). Six laboratories met the target of 98% of final histology results within 15 working days of receiving the sample; Four of the remaining 9 laboratories had reported on at least 95% of samples within 15 days (Figure 52, Table 50).

Low grade cytology with associated HPV triage testing

Six laboratories received 2,867 cytology samples during the current monitoring period which were associated with HPV testing for the purpose of triage of low grade abnormalities. Overall, 98.9% of these cytology samples were reported on within 15 working days, which is above the target of 98%. The proportion of cytology samples with HPV triage tests reported on within 15 days ranged from 96.6% (Canterbury Health Laboratories) to 99.7% (Anatomical Pathology Services) (Figure 53, Table 51). The target of 98% of tests reported within 15 working days was met by four laboratories. Nationally, the proportion of cytology reported within 15 days for cytology associated with low grade triage HPV testing (98.9%) was slightly higher than the cytology reported overall (98.6%). The proportion of cytology tests reported within 15 working days is also similar regardless of whether there is an associated HPV triage test at all labs (Figure 53).

Trends

Cytology

The overall proportion of samples reported on within seven working days is similar in the current report (95.1) than in the previous monitoring period (95.0%). Out of the five remaining laboratories that met the cytology turnaround time target of 90% for seven working days in the previous monitoring period, four of those laboratories continued to meet the target in this monitoring period. The proportion of samples reported on within 15 working days was also similar to that reported in the previous monitoring period (98.6%, compared to 98.7% in the previous monitoring period). Out of the remaining six laboratories in this monitoring period, 5 laboratories met the target with 4 continuing to meet the 98% within 15 working days target from the previous monitoring period. All six laboratories had reported on at least 95% of samples within 15 working days in the current monitoring period, as was also the case for the same laboratories in the previous monitoring period.

Histology

The proportion of histology samples reported on within ten working days has decreased from 91.4% to 90.6%, however of the remaining laboratories two labs that achieved the target in the previous year fell below the ten-working-days target. The proportion of histology samples reported on within 15 working days is higher (95.5%, compared to 94.5% in the previous report). Of the remaining laboratories one additional laboratory met the fifteen-working-days target compared to the previous monitoring period resulting in a total of 6 laboratories meeting the target of 98%. In the current period, 10 of the 15 laboratories had reported on at least 95% of samples within 15 days, which is the same as the number achieved in the previous period, with the removal of Aotea Pathology Ltd..

Cytology with associated HPV triage testing

The proportion of cytology samples with an associated HPV triage test reported within 15 working days has increased slightly since the previous report – from 98.5% to 98.9%.

Comments

Note that the total number of cytology samples reported on in this Indicator is different from that reported in Indicator 5.1, as the inclusion criteria for the current indicator was all cytology samples *received by laboratories* within the monitoring period, rather than cytology samples *collected* during the monitoring period which was the criteria for Indicator 5.1.

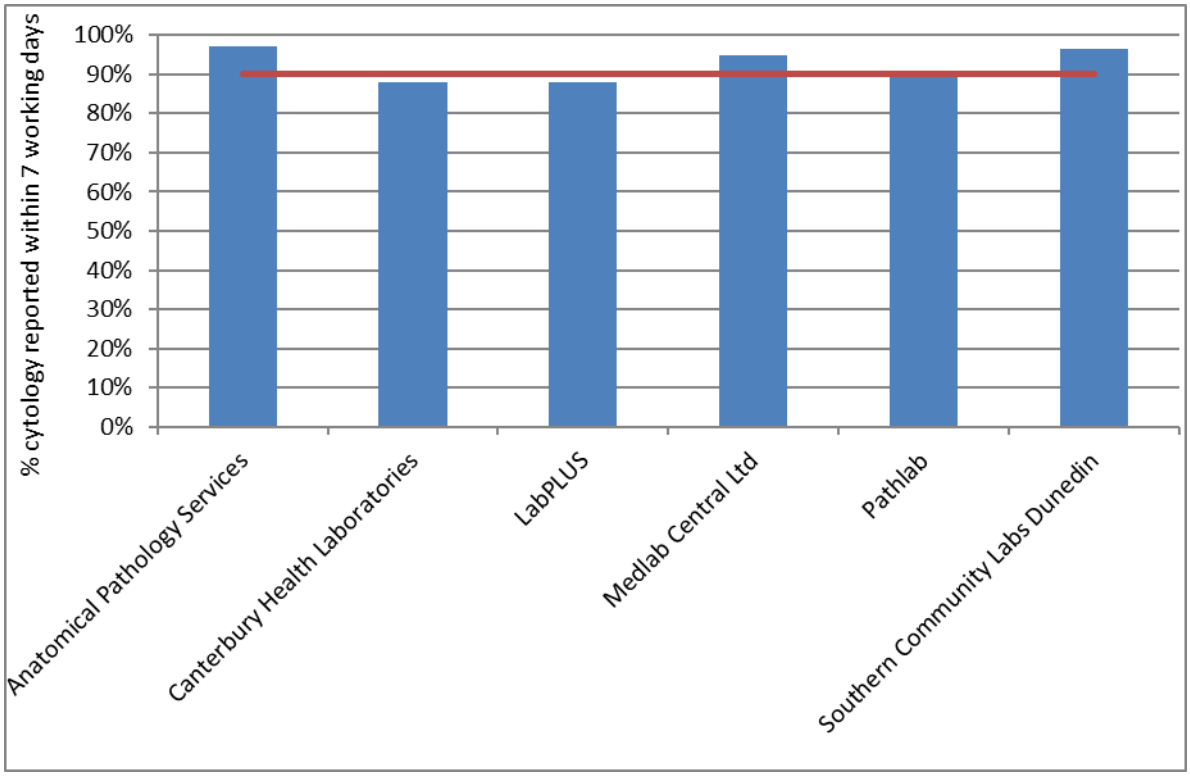
The definition used by individual laboratories for turnaround time differs. For example, depending on the definition used by the laboratory, a turnaround time of one day can mean the results are reported within 24 hours, on the same day the sample is received, or on the day after the sample is received. Therefore, we have applied the same definition to all laboratories in these calculations, but because of the variation between laboratories in their internal definition, it has not been possible in this report to use a definition here which is consistent with what each individual laboratory uses.

When errors are detected in the NCSP Register, the report date in the NCSP Register is updated to reflect the date on which the report was re-transmitted after the error was resolved. The occurrence of these errors can therefore distort (and lengthen) turnaround time, as in these cases the report date recorded in the NCSP Register does not reflect the date on which results were first communicated to the smear-taker or colposcopist. The extent of this cannot be directly determined from the NCSP Register, however audit results (which invariably find better turnaround time performance) suggest that it is a factor which should be considered in interpretation of these results.

There are some possible explanations why the turnaround time for cytology with associated HPV triage testing is longer than for other cytology. As the HPV triage test is performed in response to low grade cytology results in a subset of women (those aged 30 years or more without a recent cytological abnormality), the need for the HPV test is only apparent after the cytology result is available. Additionally, as HPV tests are generally performed in batches, laboratories with smaller HPV test volumes may take longer to accrue the required batch sizes, and therefore perform HPV tests less frequently.

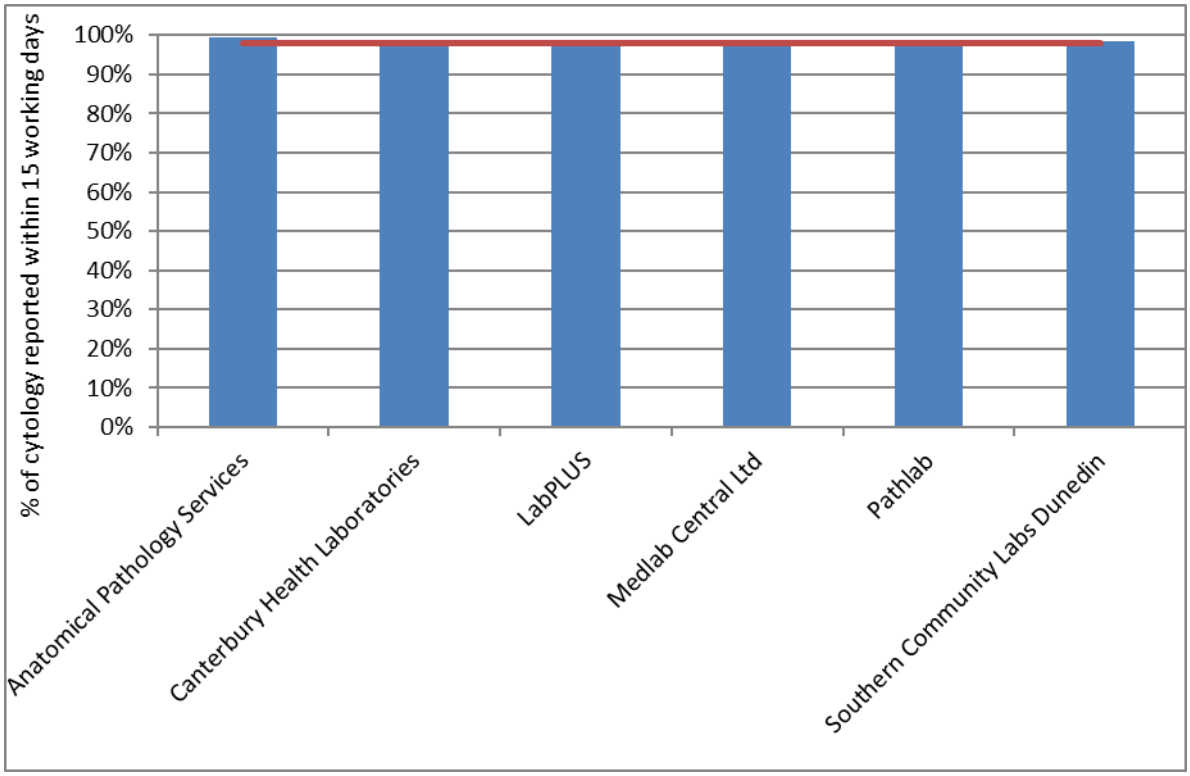
Caution must be taken when comparing percentages of reporting from this monitoring period to the previous monitoring periods due to changes in the number of reporting laboratories. Differences in percentages from this and previous monitoring reports may be due to differences in caseloads.

Figure 49 - Proportion of cytology samples reported within seven working days by laboratory, 1 January 2016 – 30 June 2016



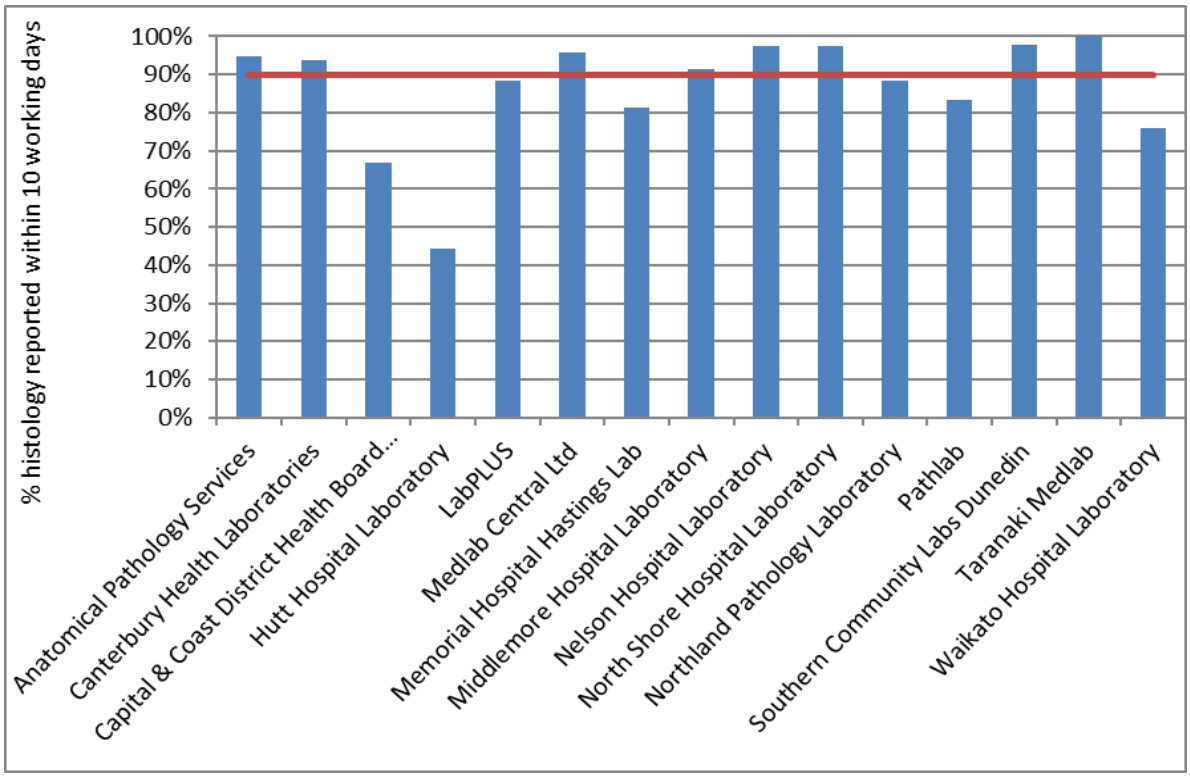
Target: 90% within seven working days (red line)

Figure 50 - Proportion of cytology samples reported within 15 working days by laboratory, 1 January 2016 – 30 June 2016



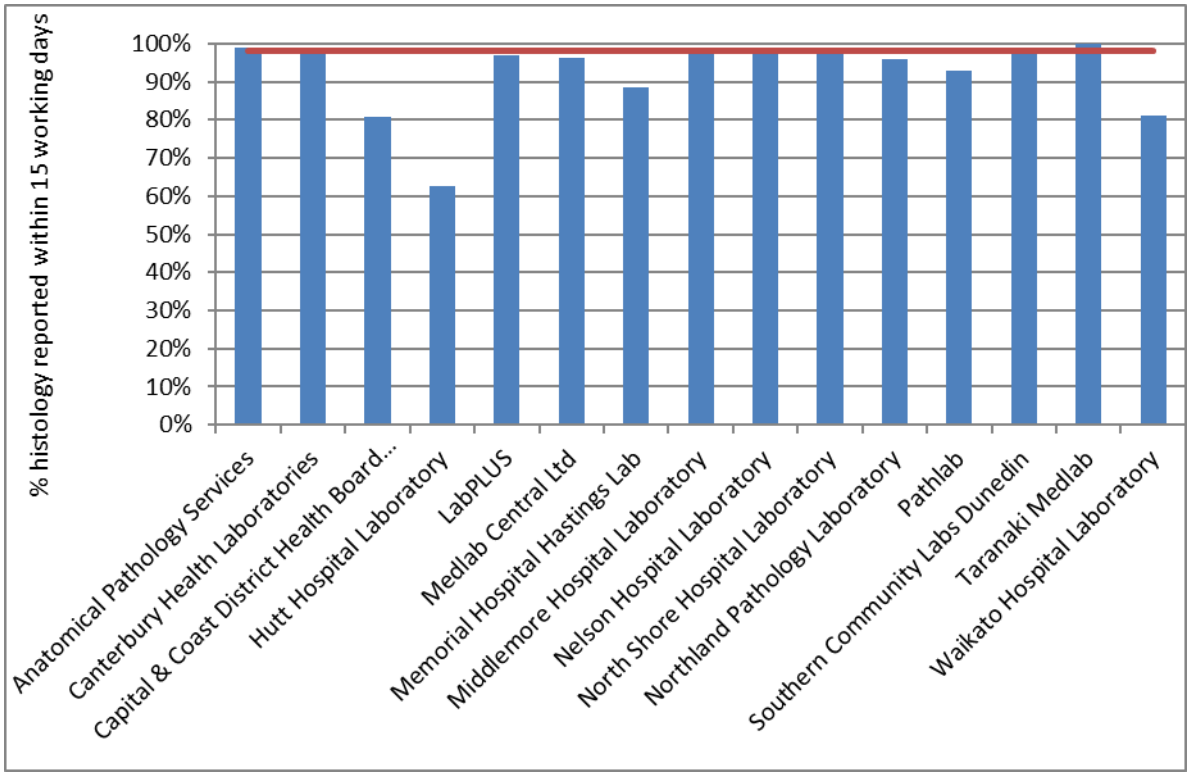
Target: 98% within 15 working days (red line)

Figure 51 - Proportion of histology samples reported within ten working days by laboratory, 1 January 2016 – 30 June 2016



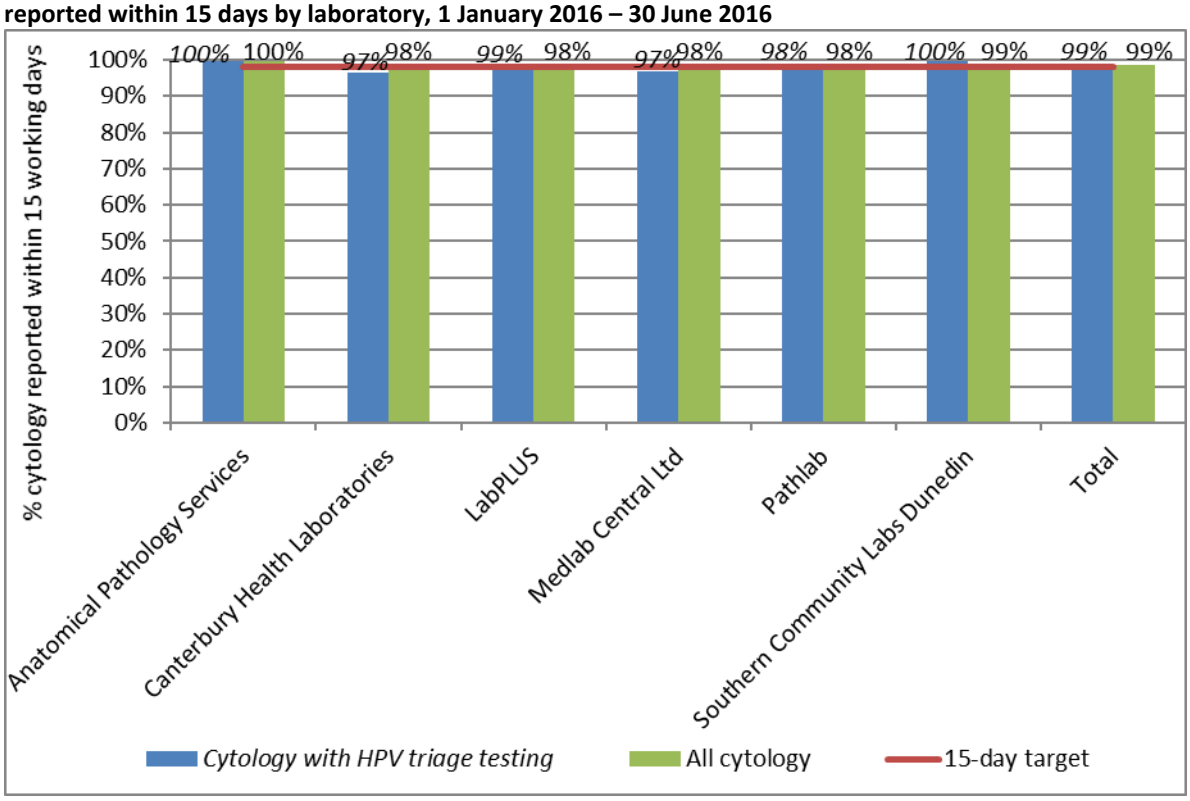
Target: 90% within ten working days (red line)

Figure 52 - Proportion of histology samples reported within 15 working days by laboratory, 1 January 2016 – 30 June 2016



Target: 98% within 15 working days (red line)

Figure 53 - Proportion of cytology samples with associated HPV triage testing and of all cytology samples reported within 15 days by laboratory, 1 January 2016 – 30 June 2016



Target: 98% within 15 working days (red line)

Indicator 6 – Follow up women high grade cytology, no histology

Definition	The proportion of women who have had a cervical sample showing a high grade cytology result for whom a histological report has been received by the NCSP Register. This proportion is a measure of the completeness of follow up of women with high grade cytology. Each woman with a high grade cytology result, relating to a cytology sample taken in the six months preceding the current monitoring period (i.e. sample taken in the period of 1 July to 31 December 2015), is followed for any histology samples taken on or after the date of the cytology sample. The period of time between the cytology and histology reports relating to these samples is calculated. The proportion of women with a histology report up to and including 90 days after their cytology report is calculated. Histology reports which occur prior to the cytology report are included, as long as the histology sample was not taken before the cytology sample, to allow for differences in turnaround times between cytology and histology. Analyses were also performed which calculated the proportion of women with a high grade cytology result who have a histology report within 180 days of their cytology report. For the purposes of this indicator, the following Bethesda 2001 New Zealand modified (2005) interpretation codes are included as high grade cytology: ASH, HS1, HS2, SC, AG1-AG5, AIS, AC1-AC5. High grade cytology reports which indicated that women were already under specialist management (TBS 2001 NZ modified 2005 recommendation code R13) are excluded. After these are excluded, follow-up of women who have more than one high grade cytology sample is based on the first cytology sample collected in the period. Note that some women may be assessed at colposcopy but have no biopsy taken. The colposcopy visit data for this group of women (Indicator 7.1) will supplement this indicator. An exploratory analysis was also performed here which calculated the proportion of women with high grade cytology who had no follow-up test of any kind (including colposcopy, histology sample, HPV sample, or subsequent cytology sample) within 180 days. Note that the Programme also attempts to facilitate the follow up of all women with absent histology so that they may receive appropriate care where possible. A woman's age is defined as her age at the end of the current monitoring period (i.e. A woman's age at 30 June 2016).
Target	90% of women should have a histology report within 90 days of their cytology report date.

99% of women should have a histology report within 180 days of their cytology report.

Current Situation

There were 3,917 high grade cytology results relating to samples collected in the period 1 July to 31 December 2015; 1,455 of these cytology samples were collected at a colposcopy visit or the results indicated that a woman was already under specialist management. It was assumed that these results were already being followed up in the course of this management, and so the cytology tests were excluded from this measure. This left 2,462 cytology results, which related to 2,453 women. Histological follow-up for these 2,453 women is considered in this indicator. Where women had more than one high grade cytology result relating to a sample taken in the period, histological follow-up of the earliest cytology sample taken in the period was assessed.

Histological follow-up

Nationally, 1,972 women (80.4%) had a histology report within 90 days of their cytology report, and 2,148 (87.6%) had a histology report within 180 days. These were below the targets of 90% within 90 days and 99% within 180 days.

The proportion of women with a histology report varied by DHB from 63.2% (Wairarapa) to 88.4% (Canterbury) within 90 days of their cytology report, and from 72.8% (Northland) to 95.1% (Hutt Valley) within 180 days of their cytology report (Figure 54, Table 11). No DHBs met the target for both the proportion of women with histology within 90 days and for 180 days. As shown in Table 11, some DHBs had a relatively small number of women with a high grade cytology result recorded in the period (including Wairarapa and West Coast, with 19 and 15 women respectively with a high grade result), and this should be taken into account when interpreting these results.

The proportion of women with a histology report also varied by age. Among women aged 20-69 years, the proportion varied from 58.5% (ages 65-69) to 86.8% (ages 30-34 years) within 90 days, and from to 64.6% (ages 65-69 years) to 92.6% (ages 30-34 years) within 180 days (Table 12). The targets were not met in any age group.

There was some variation in the proportion of women with histological follow-up by ethnicity, however the targets were not met for any group of women nationally. At 90 days, the proportion of women with histological follow-up ranged from 69.1% (Pacific women) to 83.4% (European/ Other). By 180 days, however, the difference had narrowed, and histology reports were available for 79.7% of Pacific women and 89.4% of European/ Other women (Table 13, Table 14). Further breakdown by DHB and ethnicity is shown in Table 13 and Table 14, and breakdown by DHB and age is shown in Table 52 and Table 53.

Among women with an urgent referral, due to a suspicion of invasive disease, a histology report was available within 90 days for 74.4% of women and within 180 days for 84.1% of women (Table 15). Among women where there was no suspicion of invasive disease (NZ modified Bethesda 2001 codes ASH, HS1,

AG1-5, AIS), 80.6% had a histology report available within 90 days and 87.7% within 180 days.

Women with no follow-up tests

When follow-up tests of any kind (colposcopy, histology, HPV test, or subsequent cytology test) were considered, there were 251 women (10.2%) who had no record of any subsequent follow-up within 90 days and 142 women (5.8%) who had no record of any subsequent follow-up within 180 days on the NCSP Register (Table 16).

This varied by DHB from 3.6% of women without follow-up of some kind (Lakes) to 20.7% (Northland) by 90 days and from 1.1% women without follow-up of some kind (Bay of Plenty) to 14.1% (Northland) by 180 days (Figure 55, Table 16). At 90 days, the number remaining without follow-up was ten or fewer in 13 DHBs and a maximum of 52 women in Counties Manukau. At 180 days, the number remaining without follow-up was ten or fewer in 13 DHBs, with a maximum of 25 women without follow-up in Counties Manukau.

The proportion of women who had no record of any subsequent follow-up also varied by ethnicity, from 7.4% (European/ Other) to 23.6% (Pacific) at 90 days and from 4.4% (European/ Other) to 14.6% (Pacific women) at 180 days (Figure 56).

Among women with an urgent referral, due to a suspicion of invasive disease, a follow-up test of some kind was available within 90 days for 81.7% of women and within 180 days for 84.1% of women (Table 15). At 180 days, there remained 13 women (15.9%) for whom no follow-up tests were recorded. Among women where there was no suspicion of invasive disease (NZ modified Bethesda 2001 codes ASH, HS1, AG1-5, AIS), 90.0% had a follow-up test report available within 90 days and 94.6% within 180 days (Table 15). At 180 days, there remained 129 women (5.4%) for whom no follow-up tests were recorded.

Trends

Histological follow-up

The proportion of women with a histology report within 90 days has decreased slightly since the previous monitoring period (from 82.7% to 80.4% in the current period). The proportion of women with a histology report within 180 days has also decreased, from 88.5% in the previous period to 87.6% in the current period.

While the proportion of women with histological follow-up has decreased overall, this still varies for individual DHBs. In 8 DHBs the proportion of women with histological follow-up has decreased at 90 days and at 180 days (Canterbury, Capital & Coast, Counties Manukau, Hutt Valley, Northland, Southern, Taranaki, Wairarapa). In 9 DHBs, the proportion of women with histological follow-up increased at both 90 days and at 180 days (Auckland, Bay of Plenty, Lakes, Mid Central, Nelson Marlborough, South Canterbury, Tairawhiti, Waikato, West Coast).

The proportion of women with follow-up histology at 90 days in the current monitoring period has decreased for all ethnic groups (Asian women from 77.4% to 76.1%, Māori from 77.6% to 72.7%, Pacific from 75.2% to 69.1% and European/ Other women from 85.2% to 83.4%). An increase in the proportion of women with follow-up histology at 180 days was seen for Māori and Asian women (from 82.4% to 83.2% and 84.9% to 85.0%, respectively), and decreased for Pacific and European/ Other women (from 89.0% to 79.7% and 90.3% to 89.4%, respectively). The proportions of women with follow-up histology are quite variable within individual DHBs and when broken down by DHB and ethnicity, as the number of women with high grade cytology generally becomes comparatively small when broken down in those categories (except in some cases such as for European/ Other women, and Māori women in a few DHBs).

As in previous reports, the proportion of women with histological follow-up varies substantially by age, and is generally lower in women aged 50 years or more, than in women younger than 50 years. Reductions in the proportion of histological follow-up were seen in most age groups in both 90 days and 180 days follow-up with increases seen in the 5 years age groups between 20-24, 30-39 and 70+ years.

Women with no follow-up tests

The proportion of women with no record of a follow-up test has increased since the previous period at 90 days, from 9.3% to 10.2%, and has remained similar at 180 days, from 5.9% to 5.8%.

Trends by DHB were complex, but reductions in the proportion of women with no follow-up test recorded at 180 days were observed in 10 of the 20 DHBs, and were greatest in Lakes, Whanganui and Tairawhiti. Increases were observed in some other DHBs, and were largest in Northland, Wairarapa and South Canterbury.

In the current monitoring period, the proportions of women for whom there was no follow-up test recorded has increased for Māori, Pacific and Asian women at 90 days and for Pacific and European/ Other women for 180 days. For Māori women the increase was from 14.4% to 17.9% at 90 days, however a decrease from 11.3% to 8.6% at 180 days was observed. For Asian women the increase was from 10.8% to 11.9% at 90 days, which decreased from 8.6% to 7.1% at 180 days. For European/ Other women the percent of no follow up remained the similar at 7.4% to at 90 days, and from 4.2% to 4.4% at 180 days. For Pacific women the proportion with no follow-up test recorded increased at 90 days from 16.5% to 23.6%, and from 6.4% to 14.6% at 180 days.

Comments

The proportion of women with a follow-up test of any kind provides useful additional information. While 19.6% of women with high grade cytology reports had no record of a histology report within 90 days, the proportion without a record of a follow-up test of any kind was much lower (10.2%). The same was also true at 180 days, where 12.4% of women with high grade

cytology reports had no record of a histology report within 180 days, but the proportion without a record of a follow-up test of any kind was much lower (5.8%). Consistent with previous monitoring reports, many of the women with no follow-up histology recorded do have a record of some follow-up test. This provides reassurance that many women without histology have not been lost to follow-up.

The measure of whether or not there has been a follow-up test of any sort considers cytology, colposcopy, histology and HPV tests. Therefore, changes in women with a follow-up of any kind of test may also reflect changes in the completeness of reporting on the NCSP Register for some tests. In particular, it may reflect changes in reporting of colposcopy visits on the Register over time (whereas it is expected that the completeness of lab-based tests is not likely to have changed). In particular, colposcopy data were incomplete for several DHBs in the previous monitoring period (Report 44), and this would potentially affect the proportion of women where no follow-up of any kind was recorded at 180 days (though it should not affect the proportion with histology recorded).

Note that some women presenting with cancer may be referred directly to oncology and therefore not recorded on the NCSP Register. This may have contributed to the lower rates of follow-up recorded for women with an urgent referral, due to a suspicion of invasive disease.

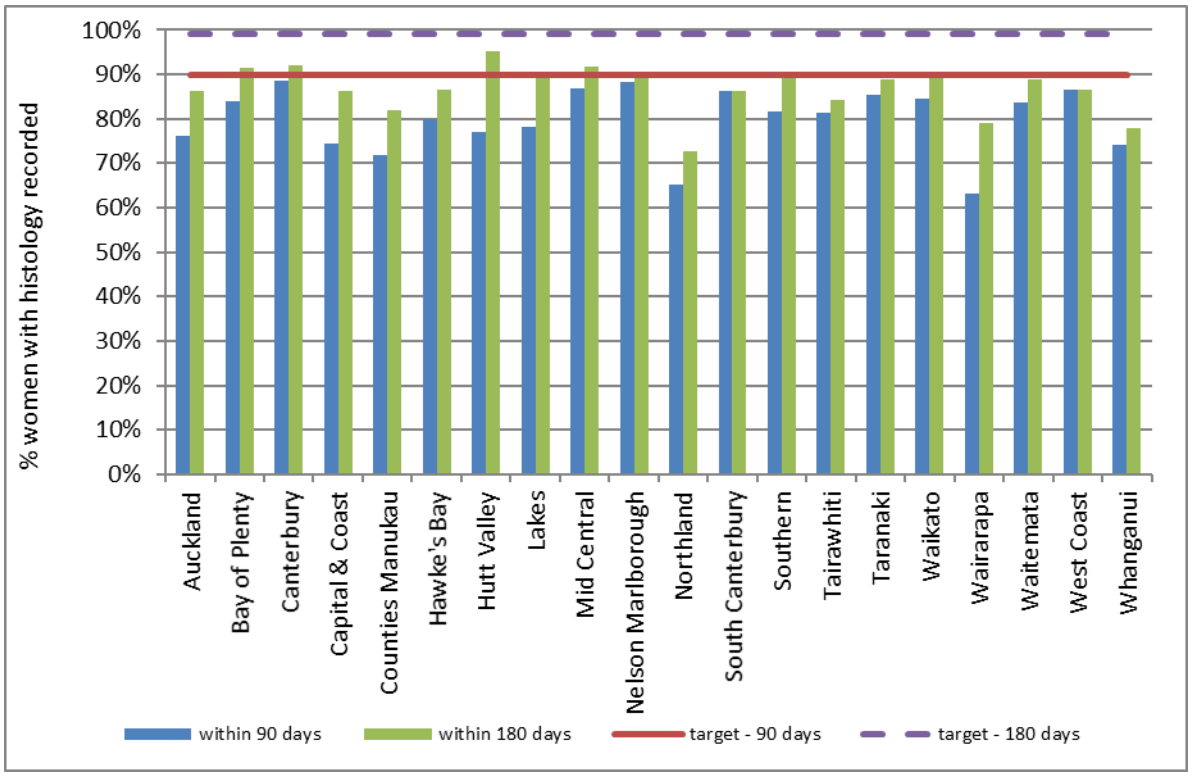
Note that while all *cytology results* which indicated that a woman was under specialist management were excluded from the measure of follow-up, not all *women* who had these cytology results were. If all cytology results for a woman indicated that she was under specialist management, she was excluded. However, any woman with at least one high grade cytology result which did *not* indicate that she was under specialist management was included in the group in whom histological follow-up was measured. It was assumed that any high grade cytology result without this indication should have been followed up in some way, regardless of other cytology results in the period. All of the cytology tests selected for follow up indicated that referral or further assessment was recommended.

The risk level for women with no recorded biopsy is difficult to ascertain because a lack of histology can be due to a number of reasons, including:

i) examined but no biopsy taken,
ii) did not attend (DNA) or refusal to attend
iii) wait time issue
iv) died or left New Zealand

Risk is also related to the degree of abnormality including microinvasive/invasive carcinoma. Women who do not or refuse to attend are at highest risk due to no colposcopic examination. Due to the significant risk for this group of women if not followed up, NCSP Portfolio Managers ensure that priority is given to follow-up of these women through DHBs.

Figure 54 - Proportion of women with a histology report within 90 days, and within 180 days of their high grade cytology report, by DHB



Target: 90% within 90 days; 99% within 180 days.

Table 11 - Women with a histology report within 90 and 180 days of a high grade cytology report, by DHB

DHB	High-grade cytology	Follow-up histology within 90 days		Follow-up histology within 180 days	
	N	N	%	N	%
Auckland	307	234	76.2	265	86.3
Bay of Plenty	94	79	84.0	86	91.5
Canterbury	303	268	88.4	279	92.1
Capital & Coast	137	102	74.5	118	86.1
Counties Manukau	267	192	71.9	219	82.0
Hawke's Bay	105	84	80.0	91	86.7
Hutt Valley	61	47	77.0	58	95.1
Lakes	55	43	78.2	49	89.1
Mid Central	84	73	86.9	77	91.7
Nelson Marlborough	86	76	88.4	77	89.5
Northland	92	60	65.2	67	72.8
South Canterbury	22	19	86.4	19	86.4
Southern	173	141	81.5	156	90.2
Tairawhiti	32	26	81.3	27	84.4
Taranaki	89	76	85.4	79	88.8
Waikato	168	142	84.5	150	89.3
Wairarapa	19	12	63.2	15	78.9
Waitemata	317	265	83.6	282	89.0
West Coast	15	13	86.7	13	86.7
Whanganui	27	20	74.1	21	77.8
Total	**2,453**	**1,972**	**80.4**	**2,148**	**87.6**

Table 12 - Women with a histology report within 90 and 180 days of a high grade cytology report, by age

Age (years)	High grade cytology	Follow-Up histology Within 90 days		Follow-up histology Within 180 days	
	N	N	%	N	%
<20	7	5	71.4	6	85.7
20-24	451	374	82.9	406	90.0
25-29	571	478	83.7	519	90.9
30-34	364	316	86.8	337	92.6
35-39	249	212	85.1	227	91.2
40-44	206	168	81.6	182	88.3
45-49	165	130	78.8	145	87.9
50-54	136	96	70.6	105	77.2
55-59	121	83	68.6	92	76.0
60-64	74	46	62.2	56	75.7
65-69	65	38	58.5	42	64.6
70+	44	26	59.1	31	70.5
Total	**2,453**	**1,972**	**80.4**	**2,148**	**87.6**

Table 13 - Women with a histology report within 90 days of a high grade cytology report, by DHB and ethnicity

	Māori		Pacific		Asian		European/ Other	
DHB	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Auckland	6	35.3	21	77.8	43	78.2	164	78.8
Bay of Plenty	12	75.0	1	100.0	4	66.7	62	87.3
Canterbury	20	83.3	3	75.0	19	79.2	226	90.0
Capital & Coast	5	71.4	6	66.7	10	90.9	81	73.6
Counties Manukau	40	65.6	28	58.3	37	75.5	87	79.8
Hawke's Bay	25	71.4	4	100.0	1	33.3	54	85.7
Hutt Valley	12	100.0	2	66.7	5	71.4	28	71.8
Lakes	14	82.4	0	0.0	-	-	29	78.4
Mid Central	18	85.7	2	100.0	2	100.0	51	86.4
Nelson Marlborough	1	100.0	-	-	3	75.0	72	88.9
Northland	26	66.7	3	75.0	1	50.0	30	63.8
South Canterbury	1	100.0	-	-	-	-	18	85.7
Southern	14	82.4	2	100.0	4	80.0	121	81.2
Tairawhiti	14	73.7	-	-	-	-	12	92.3
Taranaki	12	75.0	-	-	1	100.0	63	87.5
Waikato	24	77.4	6	85.7	3	60.0	109	87.2
Wairarapa	2	40.0	-	-	0	0.0	10	76.9
Waitemata	19	73.1	7	63.6	39	76.5	200	87.3
West Coast	3	75.0	-	-	-	-	10	90.9
Whanganui	4	80.0	-	-	-	-	16	72.7
Total	**272**	**72.7**	**85**	**69.1**	**172**	**76.1**	**1443**	**83.4**

' – ' indicates there were no women in this sub-category with a high grade cytology report

Table 14 - Women with a histology report within 180 days of a high grade cytology report, by DHB and ethnicity

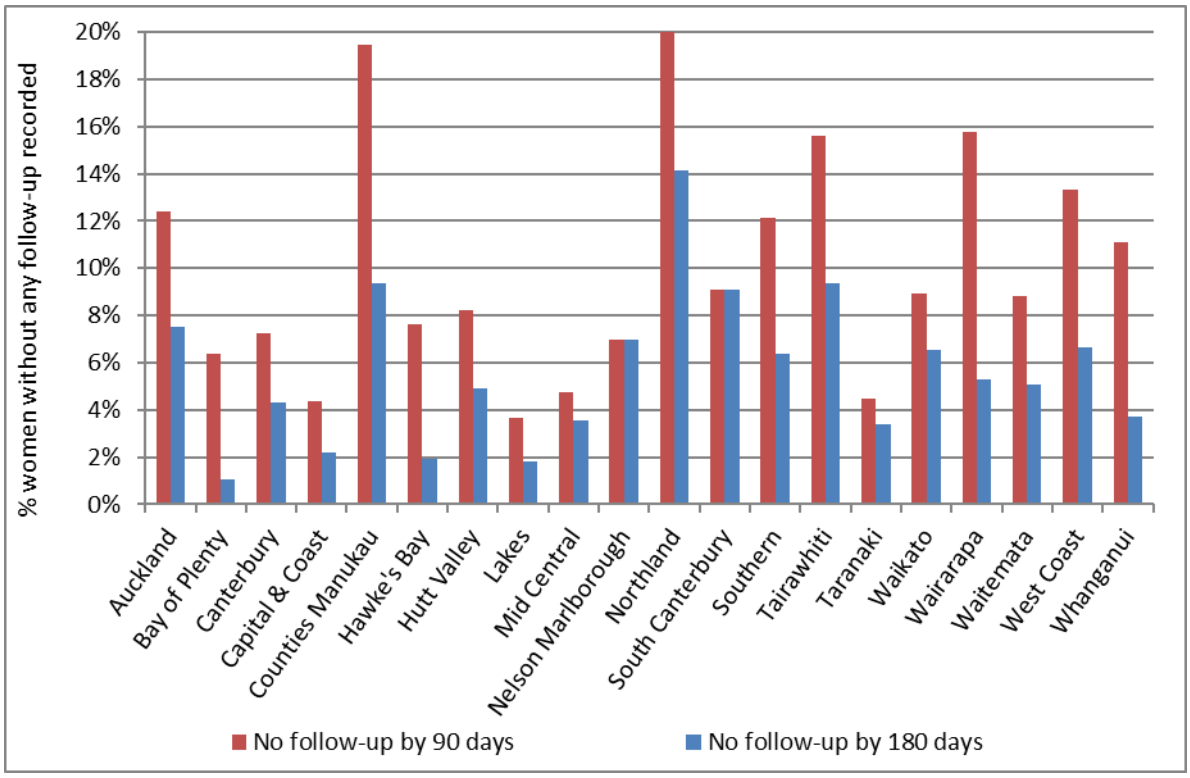
	Māori		Pacific		Asian		European/ Other	
DHB	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Auckland	11	64.7	22	81.5	47	85.5	185	88.9
Bay of Plenty	13	81.3	1	100.0	6	100.0	66	93.0
Canterbury	22	91.7	4	100.0	21	87.5	232	92.4
Capital & Coast	6	85.7	6	66.7	10	90.9	96	87.3
Counties Manukau	49	80.3	36	75.0	41	83.7	93	85.3
Hawke's Bay	29	82.9	4	100.0	1	33.3	57	90.5
Hutt Valley	12	100.0	3	100.0	7	100.0	36	92.3
Lakes	15	88.2	1	100.0	-	-	33	89.2
Mid Central	19	90.5	2	100.0	2	100.0	54	91.5
Nelson Marlborough	1	100.0	-	-	3	75.0	73	90.1
Northland	29	74.4	3	75.0	1	50.0	34	72.3
South Canterbury	1	100.0	-	-	-	-	18	85.7
Southern	16	94.1	2	100.0	4	80.0	134	89.9
Tairawhiti	15	78.9	-	-	-	-	12	92.3
Taranaki	13	81.3	-	-	1	100.0	65	90.3
Waikato	26	83.9	6	85.7	3	60.0	115	92.0
Wairarapa	4	80.0	-	-	0	0.0	11	84.6
Waitemata	22	84.6	8	72.7	45	88.2	207	90.4
West Coast	3	75.0	-	-	-	-	10	90.9
Whanganui	5	100.0	-	-	-	-	16	72.7
Total	**311**	**83.2**	**98**	**79.7**	**192**	**85.0**	**1547**	**89.4**

' – ' indicates there were no women in this sub-category with a high grade cytology report

Table 15 - Women with high grade cytology who have follow-up within 90 and 180 days recorded on the NCSP Register, by urgency of referral and type of follow-up

	Urgent referral (HS2, SC, AC1-5)		No suspicion of invasion (ASH, HS1, AG1-5, AIS)	
	N	**%**	**N**	**%**
Follow-up within 90 days				
- histology	61	74.4	1,911	80.6
- any follow-up	67	81.7	2,135	90.0
- no follow-up	*15*	*18.3*	*236*	*10.0*
Follow-up within 180 days				
- histology	69	84.1	2,079	87.7
- any follow-up	69	84.1	2,242	94.6
- no follow-up	*13*	*15.9*	*129*	*5.4*

Figure 55 - Proportion of women without any follow-up test within 90 days and within 180 days of a high grade cytology report, by DHB



No women without follow-up recorded within 180 days for Wairarapa and Whanganui.

Figure 56 - Proportion of women without any follow-up test within 90 days and within 180 days of a high grade cytology report, by ethnicity

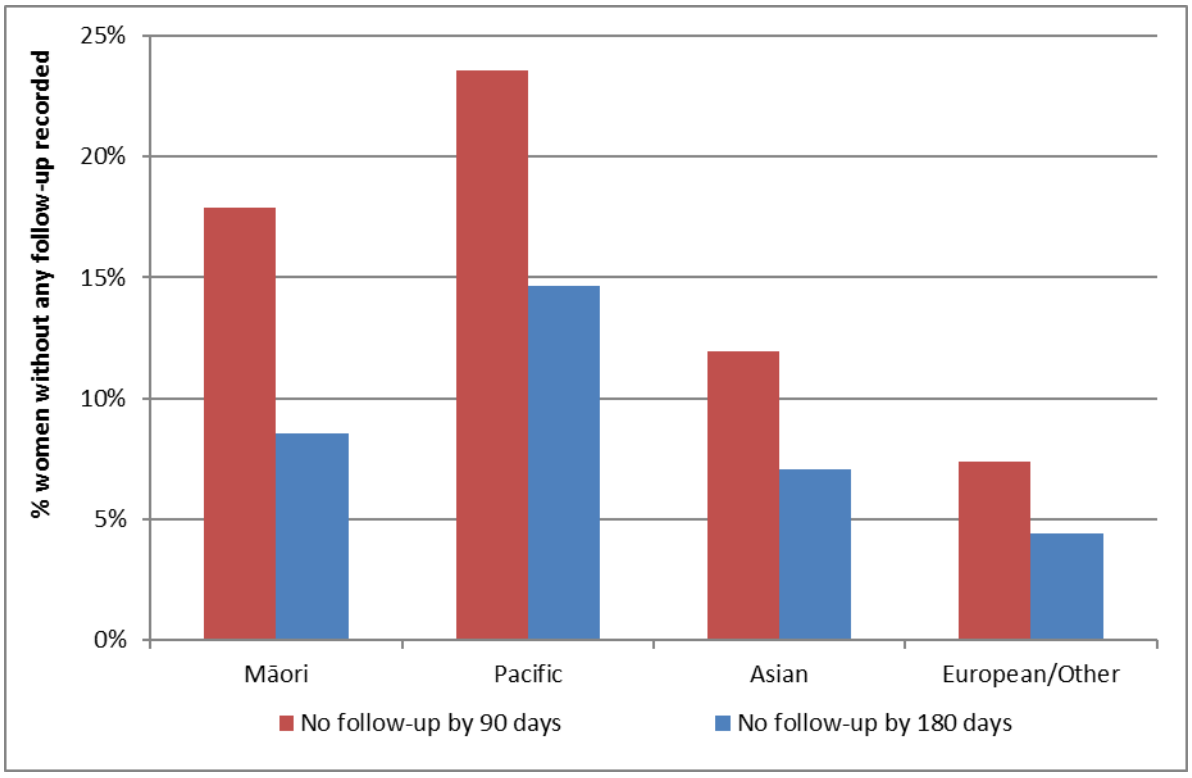


Table 16 - Women without any follow-up test within 90 and 180 days of a high grade cytology report, by DHB

DHB	High-grade cytology N	Without a follow-up test by 90 days N	%	Without a follow-up test by 180 days N	%
Auckland	307	38	12.4	23	7.5
Bay of Plenty	94	6	6.4	1	1.1
Canterbury	303	22	7.3	13	4.3
Capital & Coast	137	6	4.4	3	2.2
Counties Manukau	267	52	19.5	25	9.4
Hawke's Bay	105	8	7.6	2	1.9
Hutt Valley	61	5	8.2	3	4.9
Lakes	55	2	3.6	1	1.8
Mid Central	84	4	4.8	3	3.6
Nelson Marlborough	86	6	7.0	6	7.0
Northland	92	19	20.7	13	14.1
South Canterbury	22	2	9.1	2	9.1
Southern	173	21	12.1	11	6.4
Tairawhiti	32	5	15.6	3	9.4
Taranaki	89	4	4.5	3	3.4
Waikato	168	15	8.9	11	6.5
Wairarapa	19	3	15.8	1	5.3
Waitemata	317	28	8.8	16	5.0
West Coast	15	2	13.3	1	6.7
Whanganui	27	3	11.1	1	3.7
Unspecified	-	-	*0.0*	-	*0.0*
Total	**2,453**	**251**	**10.2**	**142**	**5.8**

Table 17 - Women without any follow-up test within 180 days of a high grade cytology report, by ethnicity

Ethnicity	High grade cytology N	Without follow-up by 90 days N	%	Without follow-up by 180 days N	%
Māori	374	67	17.9	32	8.6
Pacific	123	29	23.6	18	14.6
Asian	226	27	11.9	16	7.1
European/ Other	1,730	128	7.4	76	4.4
Total	**2,453**	**251**	**10.2**	**142**	**5.8**

Indicator 7 – Colposcopy indicators

These indicators report on colposcopy, against the 2013 NCSP Policies and Standards, Section 6. They include the following aspects:

7.1. Timeliness of colposcopic assessment of high grade cytology results (Standard 602)

7.2. Timeliness of colposcopic assessment of low grade cytology results (Standard 602)

7.3. Adequacy of documenting colposcopy assessment (Standard 603)

7.4. Timeliness of treatment (Standard 605)

7.5. Timely discharging of women after treatment (Standard 608)

7.6. Failure or refusal to attend appointments (Standard 609)

7.7. Maintaining staff skill levels - minimum colposcopy volumes (Standard 611)

Some of these indicators (7.6 and 7.7) have not been developed. It is envisioned that all indicators will be reviewed as part of the planned transition to primary HPV screening, and so these may be included in future monitoring reports after the program transitions.

Colposcopy data has been recorded on the NCSP Register for a relatively short time, compared to cytology and histology data. There is incomplete reporting of colposcopy data to the NCSP Register, and therefore results for these indicators may need to be interpreted with some caution. However, it was and is felt that colposcopy indicators were an important quality measure of the NCSP, and reporting on them should not be unduly delayed. This was also a recommendation of the 2011 Parliamentary Review into the NCSP.[12] It is anticipated that completeness of colposcopy data on the NCSP Register will continue to improve over time. The 2015 Parliamentary Review again emphasised that achieving complete recording of colposcopy data on the NCSP Register is essential. [13]

Additionally, not all DHBs are yet reporting the full data required by Colpscopy Policies and Standards 2013 for the full monitoring period. This means that in many cases performance indicators are not directly compared to the targets or have had to rely on proxy data to measure performance. Where relevant, this is described in the sections relating to the individual indicators.

Indicator 7.1 – Timeliness of colposcopic assessment – high grade cytology

Definition

This indicator measures performance against Standard 602. One of the data items required to report against Standard 602 (appointment date) is a new data item required by the Colposcopy Policies and Standards 2013; however, it is not yet available from all DHBs, because some are still transitioning to reporting using 2013 standards. Therefore this indicator relies on a proxy, the colposcopy visit date, and is not yet directly comparable to the Standard.

It relates to the proportion of women seen at colposcopy within the recommended time period, from the time of the receipt of a referral from the smear taker for a high grade cytology. This is calculated as the time from the referral following the high grade cytology result being accepted by the colposcopy unit, to the time of the woman's first colposcopic assessment at that colposcopy unit.

As in Indicator 6, high grade cytology results are included if the cytology sample was collected in the six months ending six months prior to the end of the current monitoring period (i.e. 1 July to 31 December 2015). High grade cytology is defined as that associated with any of the TBS codes ASH, HS1, HS2, SC, AG1-5, AIS, AC1-5. Where a woman has more than one high grade cytology result in the relevant time period, the result from the first high grade cytology sample collected is used. Timeliness of colposcopic assessment is calculated separately for those women with clinical suspicion of invasive carcinoma, or a suspicion of invasive disease (TBS codes HS2, SC, AC1-AC5 or recommendation codes R10 or R14); and for women with other high grade cytology results (TBS codes ASH, HS1, AG1-5, AIS), since the targets differ for these two groups.

Referrals and colposcopy visits for these women were retrieved from the NCSP Register. Referrals were retrieved where the date on which the referral was accepted occurred after the date the cytology sample was collected, and the referral was accepted no later than four weeks prior to the end of the current monitoring period. Colposcopy visits recorded on the NCSP Register were retrieved if they occurred after an accepted referral (to the same DHB) and no later than the end of the current monitoring period. The difference of four weeks between the two was to ensure that there were at least four weeks of data following every accepted referral which could be searched for colposcopy visits.

Histology results have been used to follow-up colposcopy visits by the NCSP Register to improve the quality of colposocopy data on the Register. During the previous and current monitoring periods all but three DHBs adopted electronic reporting of the 2013 Standards and this has greatly improved the data on the Register for those DHBs. The remaining three DHBs went live in August 2016. Future reports will be able to begin reporting against the 2013 Standards without using the current proxies when dataare sufficiently complete.

Results are reported by ethnicity and DHB. For women who attended colposcopy, DHB is assigned on the basis of the DHB of the colposcopy facility where she attended for colposcopy. The date on which the referral to that DHB was accepted is used to calculate timeliness. If there are multiple referrals for

	the same woman to that DHB, the date of the first accepted referral following the cytology sample is used. Women who attended colposcopy but had no relevant referral to that DHB recorded on the NCSP Register were excluded from the calculations of timeliness (since the time between the acceptance of the referral and the colposcopy visit could not be calculated). However, these women were reported on separately. For women who did not attend colposcopy prior to the end of the current monitoring period, DHB is assigned based on the DHB of the facility which accepted the referral for that woman (where the referral was accepted no later than four weeks prior to the end of the current monitoring period). If there were multiple referrals for the same woman which occurred after the cytology sample, the most recently accepted referral within the timeframe was used. For women who neither attended colposcopy nor had an accepted referral with any DHB, DHB is assigned on the basis of the health facility where their high grade cytology sample was collected. Since cytology samples were collected in the six months prior to the current monitoring period, this allows a follow-up period of at least six months for all women (and up to 12 months for some women) where a woman can attend colposcopy and be assigned to a DHB, or alternately have a referral accepted by a DHB. High grade cytology tests indicating that a woman was already under specialist management (TBS=R13) were excluded from this measure.
Target	95% or more of women who have evidence of clinical suspicion of invasive carcinoma, or a suspicion of invasive disease (TBS codes HS2, SC, AC1-AC5), receive colposcopy or a gynaecological assessment within 10 working days of receipt of referral. 95% or more of women who have high-grade smear abnormalities (but no suspicion of invasive disease) receive colposcopy within 20 working days of receipt of referral. The targets for this indicator rely on records of colposcopy appointments on the NCSP Register. It has not been possible to obtain appointment date from the NCSP Register for all women with a high grade cytology test in the six months prior to the current monitoring period, as this is a new data item in the Colposcopy Policies and Standards 2013. Therefore, as in recent reports, timeliness will be explored by looking at the time between an accepted referral and colposcopy visit, acknowledging that this is not directly comparable to the target.
Current Situation	In the period 1 July to 31 December 2015, there were 2,453 women with high grade cytology results who were not already under specialist management. There were 82 women who had results indicating suspicion of invasive disease, and the remaining 2,371 had other high grade cytology results. In total,

accepted referrals were found for 2,153 (87.8%) of the 2,453 women (Table 54).

Timeliness – high grade cytology indicating suspicion of invasive disease

Accepted referrals for colposcopy were found for 47 (57.3%) of the 82 women who had high grade cytology indicating suspicion of invasive disease. For those referred to colposcopy, referrals are broken down by the detailed cytological result in Table 57. Of these 47 women with a referral, 30 (63.8%) have a record of a colposcopy visit on the NCSP Register within ten working days of their referral, and 34 (72.3%) have a visit within 20 working days (Table 18).

Considering all 82 women with high grade cytology indicating suspicion of invasive disease, regardless of whether a referral to colposcopy was recorded or not, a total of 70 (85.4%) have a record of a colposcopy visit prior to 30 June 2016 (representing a follow-up period of at least six and up to 12 months after their high grade cytology report).

Timeliness – high grade cytology (no suspicion of invasive disease)

Accepted referrals for colposcopy were found for 2,106 women (88.8%) of the 2,371 women who had high grade cytology not indicating suspicion of invasive disease. Among the women with accepted referrals, 1,345 (63.9%) were seen within 20 working days of their referral, and 1,852 (87.9%) were seen within 40 working days (Table 55). The proportion of women seen within 20 working days varied by ethnicity, from 41.9% (Pacific women) to 68.5% (European/ Other women) (Figure 57, Table 55). This proportion also varied by DHB from 22.8% (Counties Manukau) to 90.5% (Whanganui) (Figure 58, Table 56).

In total, 2,232 (94.1%) of the 2,371 women with high grade cytology (but no suspicion of invasive disease) relating to a sample collected in the period 1 July to 31 December 2015 have a record of a colposcopy visit prior to 30 June 2016 (representing a follow-up period of at least six and up to 12 months after their high grade cytology).

Trends

Nationally, the proportion of women with high grade cytology indicating suspicion of invasive disease seen within the target timeframe (10 working days) has decreased from 76.2% to 63.8%. The percentage of women with high grade cytology indicating suspicion of invasive disease seen within 20 working days (72.3%) is also lower than that in the previous report (85.7%).

The proportion of women with high grade cytology (but no suspicion of invasive disease) seen within 20 working days has decreased from 67.8% in the previous report to 63.9% in the current report. A decrease has been shown overall during the last 3 monitoring periods. This trend was also representative when investigated by ethnicity with Pacific, Asian and European/ Other women showing a decrease in the proportion seen with high grade cytology and no suspicion of invasive disease over the last 3 monitoring periods (Figure 59).The

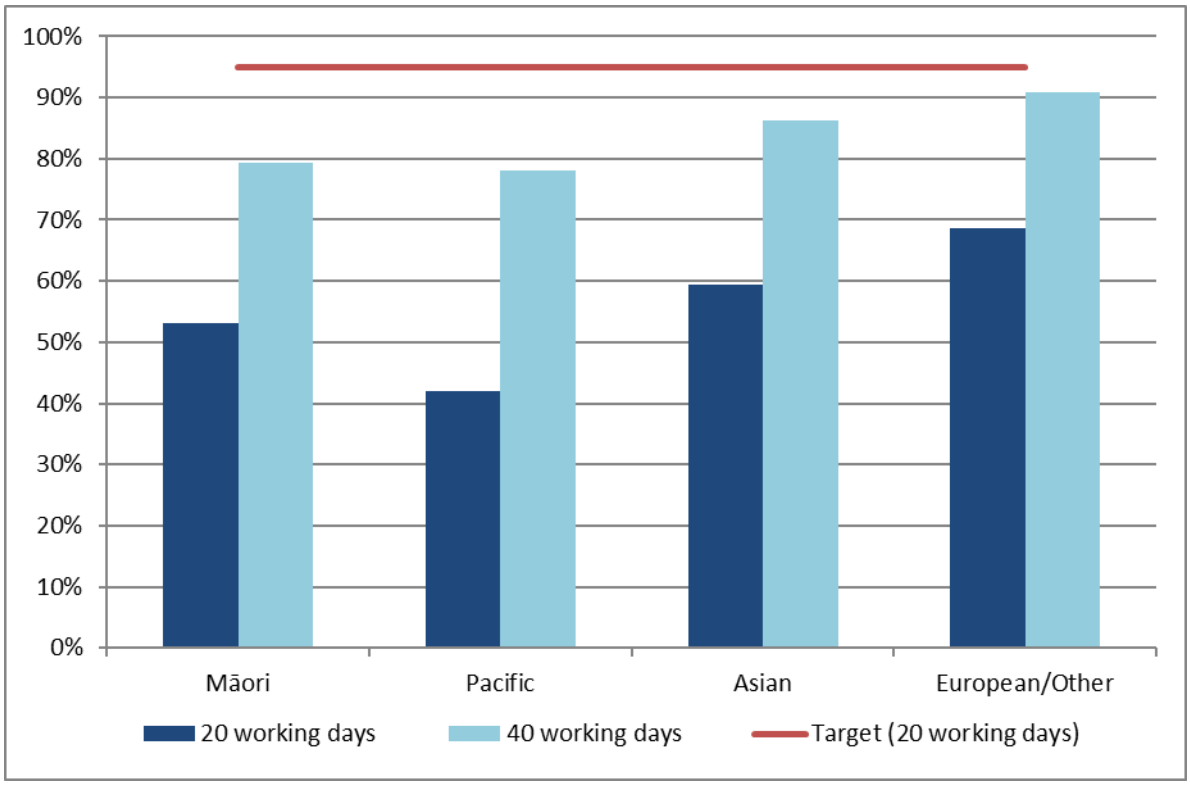
	proportion of all women with high grade results for whom an accepted referral was available on the NCSP Register is slightly higher in the current report compared to the previous report (87.8% in the current report; 87.5% in Report 44).
Comments	Since this indicator relies on colposcopy data in the NCSP Register, incomplete reporting of referrals and colposcopy visits as at the time of the data extract from the NCSP Register (mid-August 2016 for the current report) has led to an underestimate of the number of women with referrals and/or follow-up colposcopy visits in a given time period. In order to help address this, in the current report, histology data are also used to help ascertain if a colposcopy visit occurred. Women with a histology sample collected after their cytology sample are assumed to have attended a colposcopy clinic for follow-up, even if a colposcopy visit is not explicitly recorded on the NCSP Register. This information is included for descriptive purposes however, and is not measured against a target. Note that some women presenting with cancer or high grade cytology indicating suspicion of invasive disease may be referred directly to gynae-oncology for a cone biopsy instead of a colposcopy. Thus the propotion of women with high grade cytology indicating suspicion of invasive disease who are referred for or who attend colposcopy is likely to be an underestimate of women with appropriate follow-up, and the proportion with colposcopy in this group does not fully capture the overall level of performance. Additional information about follow-up tests performed in women with high grade cytology is included in Indicator 6. The same 2,453 women (82 with suspicion of invasive disease, 2,371 with other high grade cytology) are included in both this measure and Indicator 6. In Indicator 6, it was found that 2,148 (87.6%) had a follow-up test of some sort within 180 days. Here, colposcopy and histology records indicate that 2,302 (93.8%) women had attended colposcopy prior to 30 June 2016 (i.e. in a period of at least 181 days and up to one year after their high grade cytology sample). Note that there may be some differences in results by DHB, however, since in Indicator 6 the DHB assigned to a woman is her own DHB (or, where this information is not available on the NCSP Register, the DHB of her responsible health facility, based on the clinic's geographic location). In this indicator, women are assigned to a DHB based on either the DHB where they attended colposcopy, or the most recent DHB to which they have been referred (for women without colposcopy visits), or to the DHB of the health facility where the high grade cytology sample was collected (for women with no referral and no colposcopy visit). Additionally, only public clinics are assigned a DHB within Indicator 7.1; private clinics are separated out and reported on as a group. Reasons why a woman may not attend colposcopy within the recommended timeframe include both capacity limitations within the clinic, and potentially factors related to the woman requiring follow-up. Currently there is incomplete information available on the NCSP Register about colposcopy

	appointments which are scheduled for women where the woman reschedules or does not attend. Therefore in this indicator it is not possible to distinguish delays in attending colposcopy following high grade cytology which are due to capacity constraints which restrict the clinic's ability to offer timely appointments, and delays which may be due to an individual woman's need to reschedule an appointment or failure to attend. Factors which may lead a woman to delay a recommended visit include caring responsibilities, planned travel, competing prior commitments, illness, or menstruation.

Table 18 - Women with a high grade cytology report (suspicion of invasive disease), accepted referral and colposcopy visit, by ethnicity

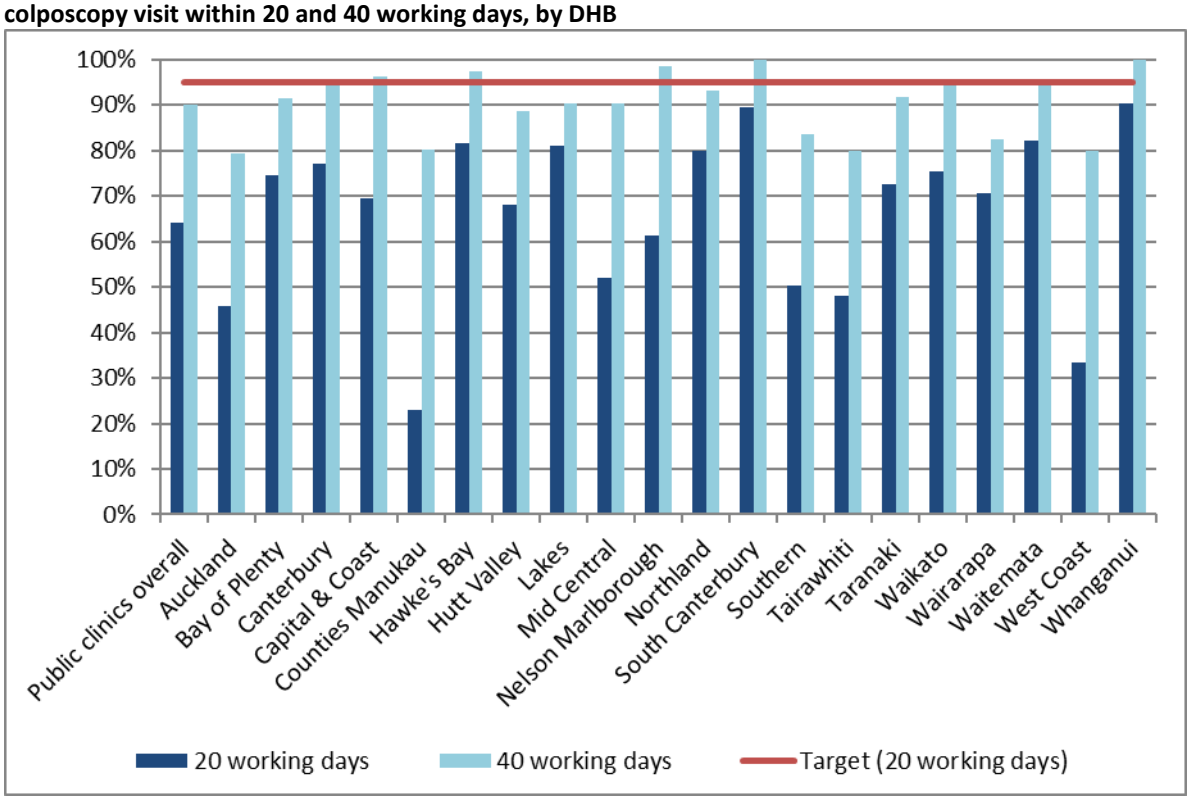
	HG women (suspicion of invasion)	Urgent referrals received	Women seen within:			
			10 working days		20 working days	
Ethnicity	**N**	**N**	**N**	**%**	**N**	**%**
Māori	12	9	6	66.7	6	66.7
Pacific	9	2	1	50.0	1	50.0
Asian	6	4	1	25.0	3	75.0
European/ Other	55	32	22	68.8	24	75.0
Total	**82**	**47**	**30**	**63.8**	**34**	**72.3**

Figure 57 - Percentage of women with a high grade cytology (no suspicion of invasive disease) with a colposcopy visit within 20 and 40 working days, by ethnicity



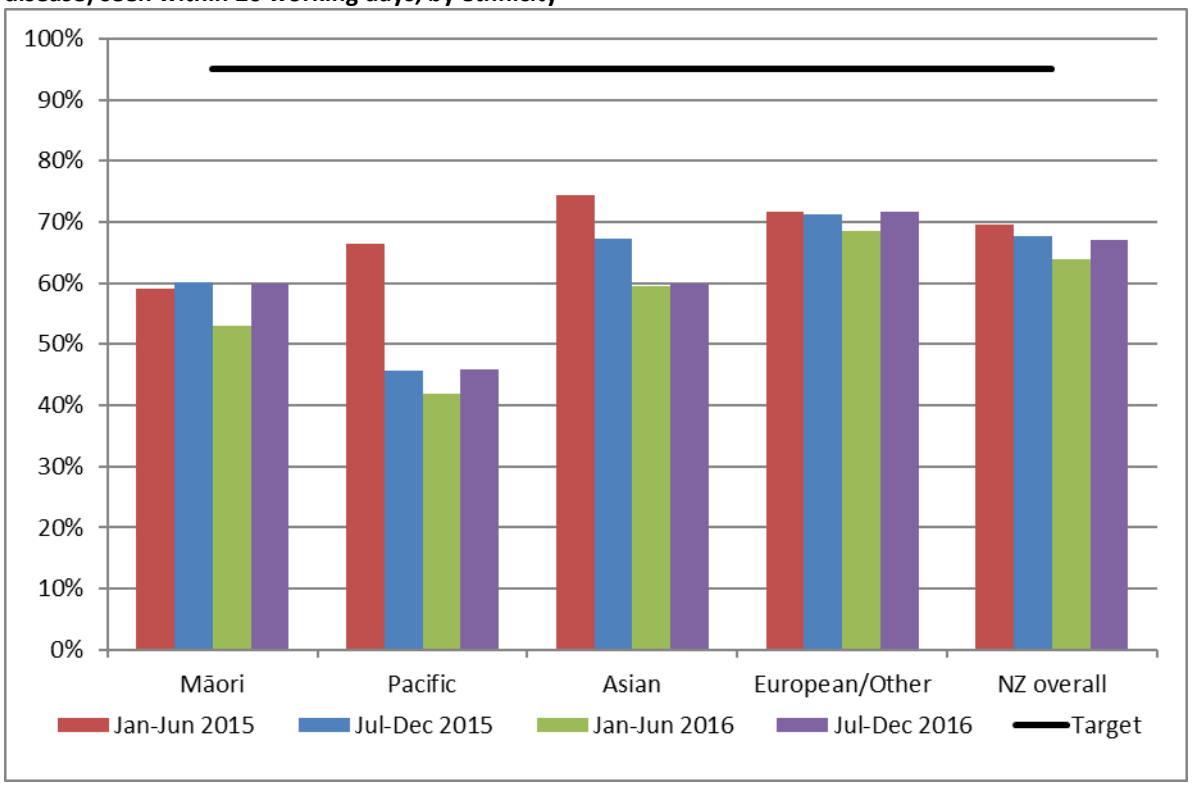
95% target relates to colposcopy visits within 20 working days

Figure 58 - Percentage of women with a high grade cytology (no suspicion of invasive disease) with a colposcopy visit within 20 and 40 working days, by DHB



95% target relates to colposcopy visits within 20 working days

Figure 59 - Trends of the proportion of women with a high grade cytology report (no suspicion of invasive disease) seen within 20 working days, by ethnicity



95% target relates to colposcopy visits within 20 working days

Indicator 7.2 – Timeliness of colposcopic assessment – low grade cytology

Definition

This indicator measures performance against Standard 602. One of the data items required to report against Standard 602 (appointment date) is a new data item required by the Colposcopy Policies and Standards 2013. However, it is not yet available from all DHBs, because (as at the beginning of the current monitoring period) some are still transitioning to reporting using 2013 standards. Therefore this indicator relies on a proxy, the colposcopy visit date, and is not directly comparable to the Standard.

It relates to the timeliness of colposcopic assessment of women with either persistent low grade cytology, or concurrent low grade cytology and a positive HPV test.

Women were included in this measure if they had a cytology sample collected in the 6-month period ending 12 months prior to the end of the current monitoring period (1 January – 30 June 2015 for the current report) where the results were low grade (ASC-US or LSIL), and either a positive HPV test (within four weeks of the cytology result) or a previous low grade cytology result (within the previous five years).

Referrals and colposcopy visits for these women were retrieved from the NCSP Register. Referrals were retrieved where the date on which the referral was accepted occurred after the date the cytology sample was collected, and at least 26 weeks before the end of the current monitoring period (i.e. 26 weeks before 30 June 2016, to allow at least 26 weeks following the referral for colposcopy to occur). Colposcopy visits recorded on the NCSP Register were retrieved if they occurred after the cytology test and no later than the end of the current monitoring period. In addition to explicit colposcopy visit records, histology samples in the same timeframe were used as a proxy for a colposcopy visit, to supplement colposcopy visit data.

Results are reported by ethnicity and DHB. For women who attended colposcopy, DHB is assigned on the basis of the DHB of the colposcopy facility where she attended for colposcopy (or where the histology sample was collected if a visit is not explicitly recorded). If there are multiple referrals for the same woman to that DHB, the date of the first accepted referral following the cytology sample is used.

For women who did not attend colposcopy prior to the end of the current monitoring period, DHB is assigned based on the DHB of the facility which accepted the referral for that woman. If there were multiple referrals for the same woman which occurred after the cytology sample, the most recently accepted referral within the timeframe was used.

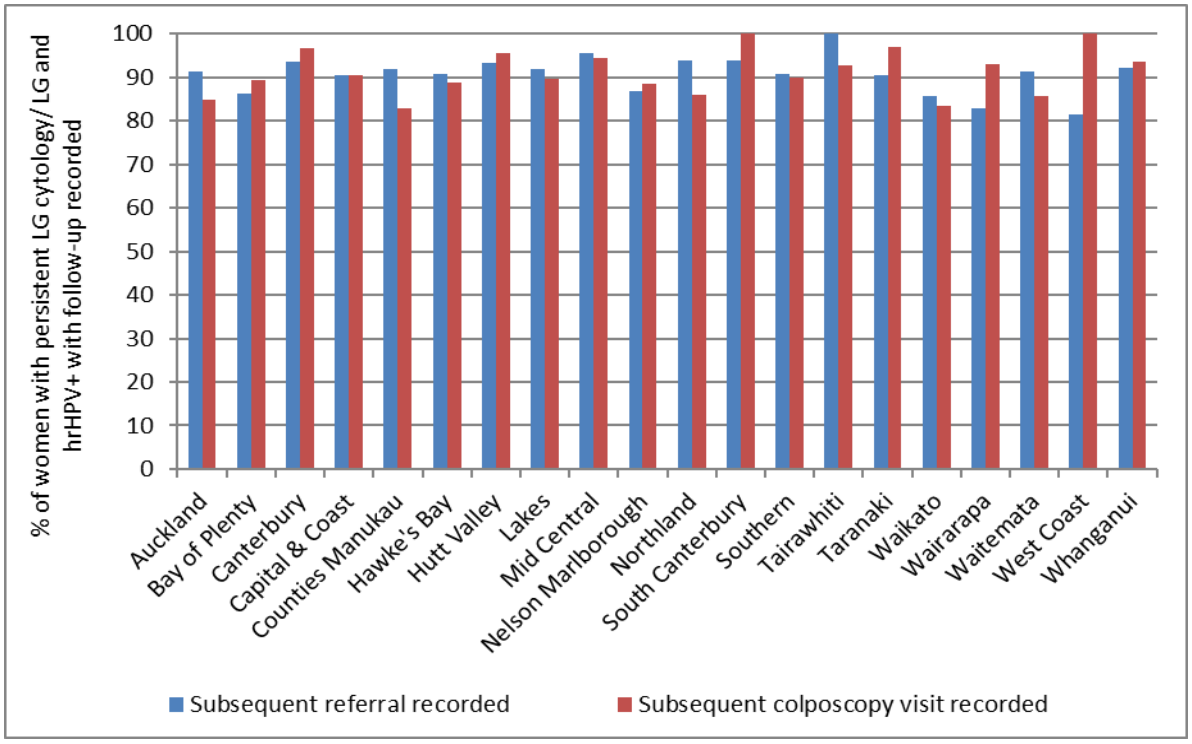
For women who neither attended colposcopy nor had an accepted referral with any DHB, DHB is assigned on the basis of the geographic region of health facility where their low grade cytology sample was collected.

Since cytology samples were collected in the 6-month period ending 12-months prior to the end of the current monitoring period, this allows a follow-up period of at least twelve months for all women (and up to 18 months for

	some women) where a woman can attend colposcopy and be assigned to a DHB.
Target	95% of women who have persistent low-grade abnormalities, or a low-grade abnormality and positive HPV test, must receive a date for a colposcopy appointment within a period that does not exceed 26 weeks of the colposcopy unit accepting the referral from the smear taker. At present, this indicator reports on aspects of follow-up, but not specifically on timeliness in relation to the standard, as the date of the first scheduled colposcopic appointment is not yet available for all women with a low grade cytology test in the 6-month period 12-months prior to the end of the current monitoring period. In the interim, it reports on the number and percentage of women for whom a subsequent accepted referral and/ or a colposcopy visit are recorded, and the number and proportion of women who attended colposcopy within 26 weeks of an accepted referral.
Current situation	There were 4,207 women with either persistent low grade cytology or low grade cytology and a positive HPV test collected in the period 1 January – 30 June 2015. Nationally, subsequent accepted referrals are recorded for 3,519 (83.6%) of these women, and subsequent colposcopy for 3,752 (89.2%). The proportion of women for whom a subsequent referral and colposcopy visit are recorded are shown by DHB in Figure 60, and by ethnicity in Figure 61. The proportion of women for whom an accepted referral was recorded on the NCSP Register ranged from 81.5% (West Coast) to 100.0% (Tairawhiti) (Figure 60). The proportion of women with a subsequent colposcopy visit (which occurred by the end of the current monitoring period) recorded on the NCSP Register ranged from 82.9% (Counties Manukau) to all women (South Canterbury and West Coast) (Figure 60). The proportion of women for whom an accepted referral was recorded on the NCSP Register ranged from 81.7% for European/ Other women to 92.5% for Pacific women (Figure 61). The proportion of women with a subsequent colposcopy visit recorded on the NCSP Register ranged from 82.5% (Pacific women) to 90.2% (European/ Other women) (Figure 61). An estimation of the timeliness of colposcopic assessment is provided by examining the time between when a referral is accepted for a colposcopy and when a woman attended for colposcopy. For the current report 3,246 women attended colposocopy following an accepted referral being recorded on the NCSP register; this is equivalent to 77.2% of all women with persistent low grade cytology or low grade cytology and a positive HPV test, and 92.2% of women who had an accepted referral following their low grade cytology. Nationally, 2,647 (75.2%) women attended for colposcopy within 26 weeks of their accepted referral (Table 58). By DHB, the proportion of women who attended for colposcopy within 26 weeks of their accepted referral ranged from 41.1% (Counties Manukau) to all women (South Canterbury) (Figure 62). By ethnicity, this figure ranged from 57.3% of Pacific women attending for colposcopy within 26 weeks of their accepted referral, to 78.4% of European/ Other women (Figure 63)

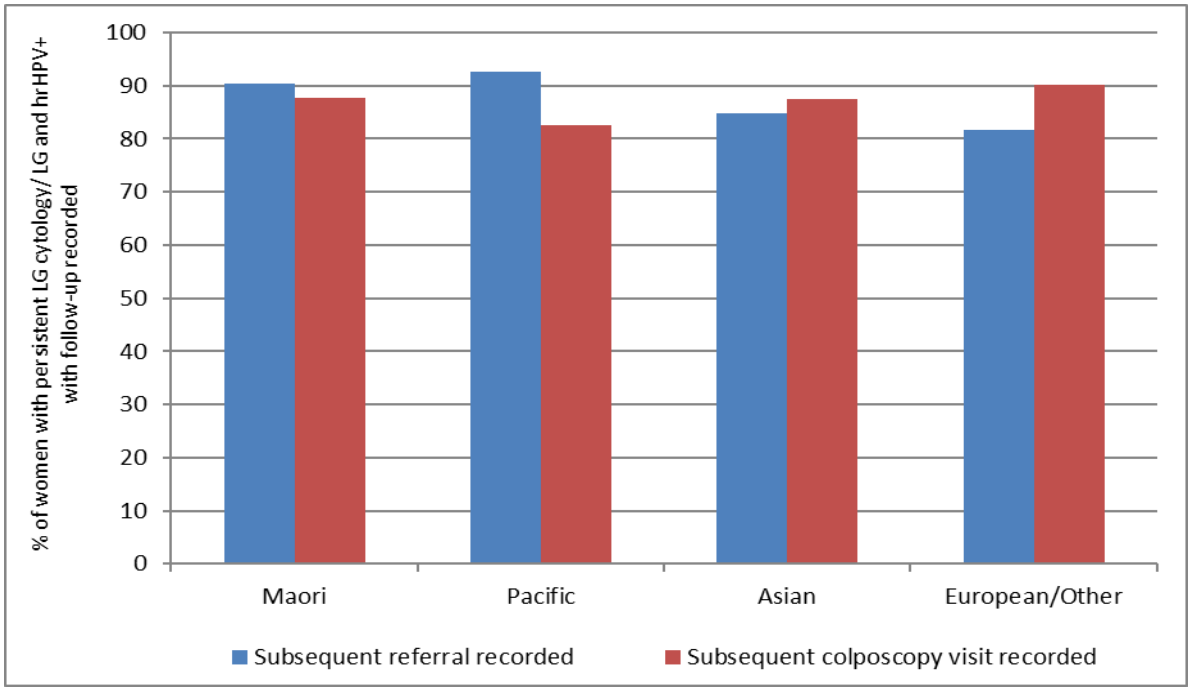
Trends	Nationally, the proportion of women with colposcopy within 26 weeks has decreased (75.2% in the current report compared to 87.2% in the previous report), and it has also decreased in every ethnic group (Figure 64). This was also reflected by DHB, with 12 out of 20 DHBs showing a decline in the proportion of women seen within 26 weeks since the previous report (Figure 65). However, substantial increases (greater than 10%) compared to the previous report in the proportion of women with coloscopy within 26 weeks were seen in three DHBs (Hutt Valley, South Canterbury and Tairawhiti).
Comments	The results for this indicator are not directly comparable to the target, as the date of the first colposcopy appointment scheduled is not yet available for all women on the NCSP Register. In the interim, this indicator is a descriptive measure of how many women have a referral and/ or a colposcopy visit recorded on the NCSP Register, and of the time taken between an accepted referral and first colposcopy visit. As has been the case for previous monitoring periods, it is evident that referrals are incompletely recorded on the NCSP Register, as some women have a record of a colposcopy visit, but no record of an accepted referral.

Figure 60 - Follow-up recorded* for women with persistent LG cytology/ LG cytology and positive HPV test, by DHB



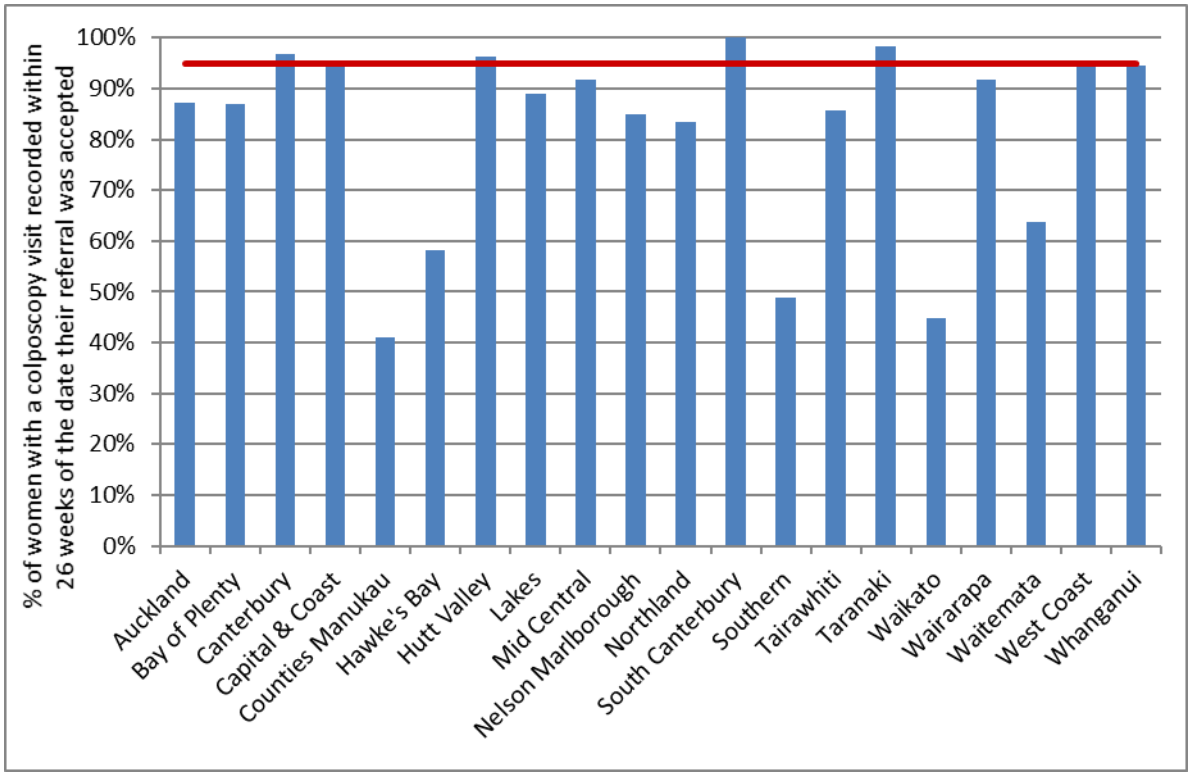
** For colposcopies 'follow-up' includes those recorded on the NCSP Register up to the end of the current monitoring period. Referrals includes those recorded on the NCSP Register up until 26 weeks prior to the end of the current monitoring period. Colposcopies include both women with and women without a referral recorded, and additionally assumes that a colposcopy occurred if a histology sample is recorded in the relevant timeframe.*

Figure 61 - Follow-up recorded* for women with persistent LG cytology/ LG cytology and positive HPV test, by ethnicity



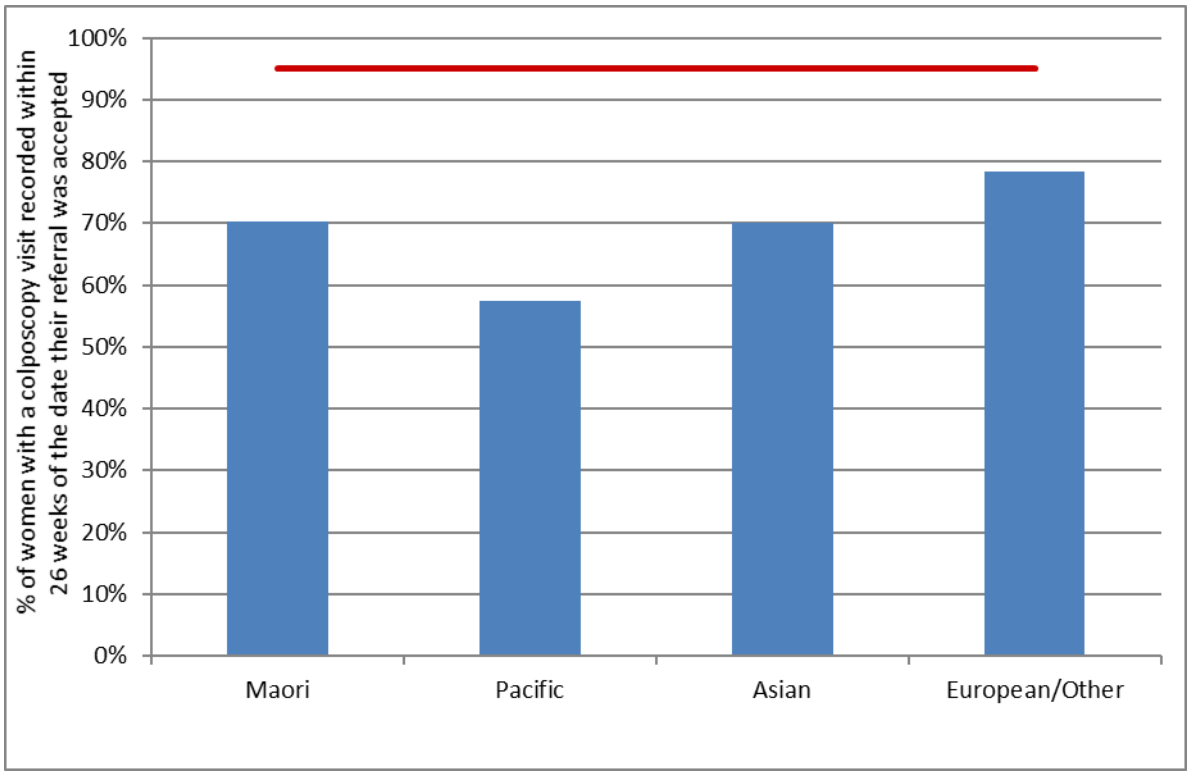
** For colposcopies 'follow-up' includes those recorded on the NCSP Register up to the end of the current monitoring period. Referrals includes those recorded on the NCSP Register up until 26 weeks prior to the end of the current monitoring period. Colposcopies include both women with and women without a referral recorded.*

Figure 62 - Women with persistent LG cytology or LG cytology and positive HPV test and an accepted referral for colposcopy: percentage with a colposcopy visit recorded within 26 weeks of the date the referral was accepted, by DHB



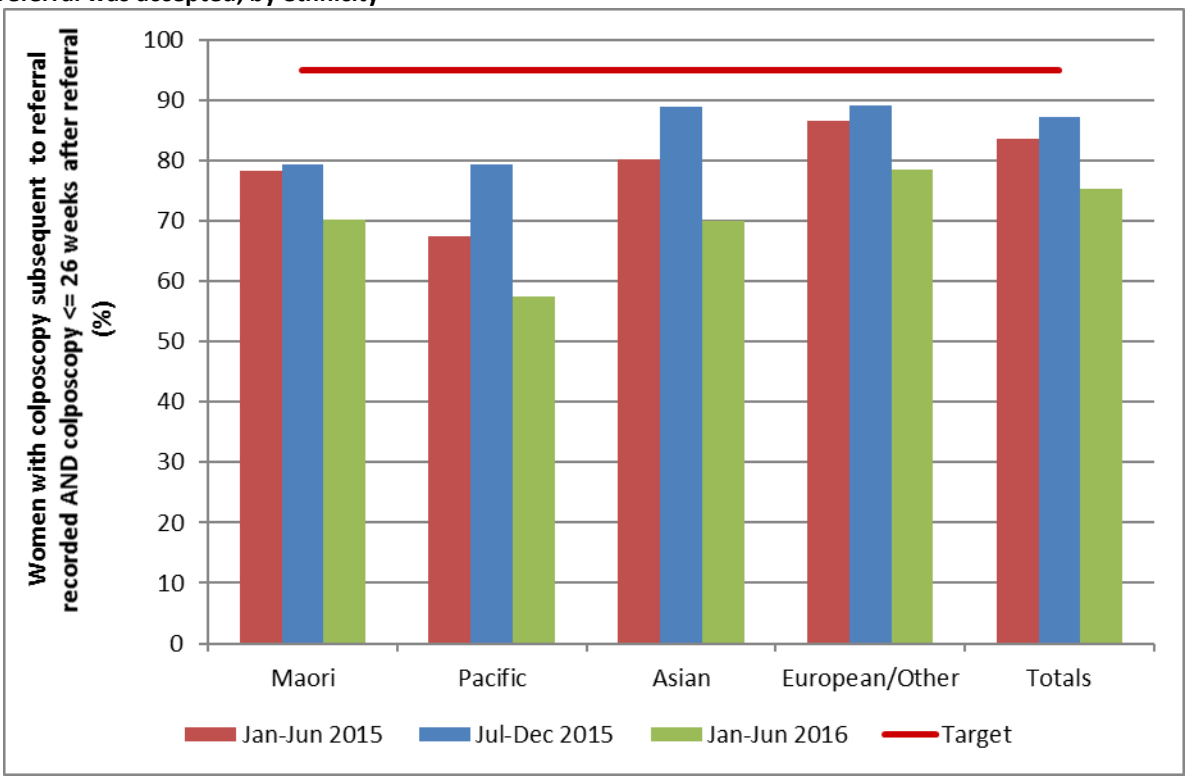
Note: Target 95%.

Figure 63 - Women with persistent LG cytology or LG cytology and positive HPV test and an accepted referral for colposcopy: percentage with a colposcopy visit recorded within 26 weeks of the date the referral was accepted, by ethnicity



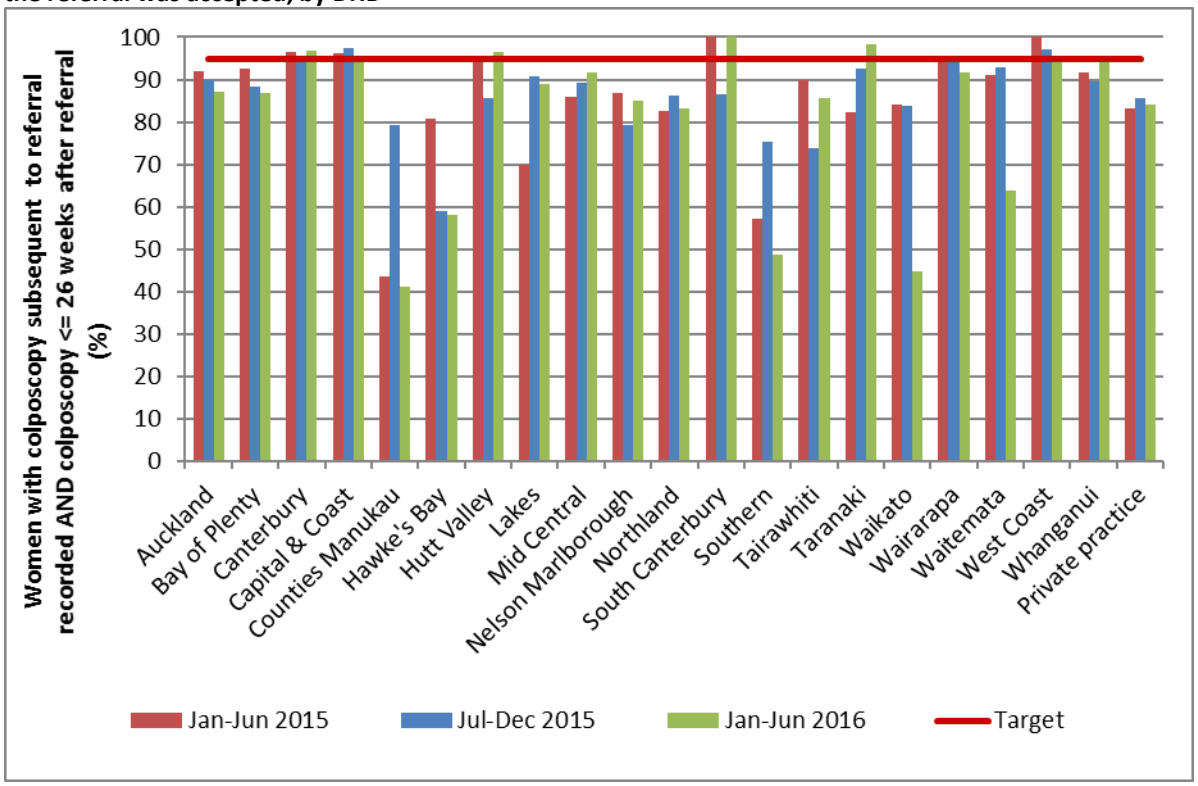
Note: Target 95%.

Figure 64 - Trends in proportion of women with persistent LG cytology or LG cytology and positive HPV test and an accepted referral for colposcopy who have a colposcopy visit recorded within 26 weeks of the date the referral was accepted, by ethnicity



Note: Target 95%.

Figure 65 - Trends in the proportion of women with persistent LG cytology or LG cytology and positive HPV test and an accepted referral for colposcopy who have a colposcopy visit recorded within 26 weeks of the date the referral was accepted, by DHB



Note: Target 95%.

Indicator 7.3 – Adequacy of documenting colposcopy assessment

Definition	This indicator measures performance against Standard 603. The proportion of colposcopies which occurred within the monitoring period with complete reporting of i) visibility of the squamo-columnar junction ii) presence or absence of a visible lesion iii) colposcopic opinion regarding the nature of the abnormality iv) recommended management and follow-up v) timeframe recommended for follow-up vi) items i), ii), and iii) completed Results are reported by DHB, based on the DHB of the facility where colposcopy was performed.
Target	100% of medical notes will accurately record colposcopic findings including: i) visibility of the squamo-columnar junction ii) presence or absence of a visible lesion iii) visibility of the limits of lesion iv) colposcopic opinion regarding the nature of the abnormality and the requirement for treatment v) recommended management and follow-up vi) timeframe recommended for follow-up. Items i), ii), v), vi) and the first of the items in iv) can be assessed using data in the NCSP Register, and are reported on below. Item iii) and the second half of item iv) cannot currently be assessed until all DHB clinics report in accordance with the 2013 Colposcopy Standards, which had not occurred by the current monitoring period. When calculating the completeness of recording of the colposcopic opinion regarding the nature of the abnormality, this was restricted to those colposcopy visits where the presence of a lesion was either noted (colposcopic appearance recorded as abnormal), or could not be ruled out (colposcopic appearance recorded as inconclusive). When calculating the overall completeness of items i), ii), and iii), colposcopic opinion regarding the nature of the abnormality was only required where colposcopic appearance was recorded as either abnormal or inconclusive.
Current Situation	There were 13,733 colposcopy visits within the current monitoring period recorded on the NCSP Register. Documentation relating to these visits was analysed (Table 60).

Nationally, the visibility of the squamocolumnar junction was documented for 97.4% of visits; the presence or absence of a lesion was documented for 100% of visits; and an opinion regarding the lesion grade was documented for 91.5% of visits where the presence of a lesion could not be ruled out. Additionally, the type of follow-up was documented for 96.5% of visits and the timeframe for follow-up was documented for 95.9% of visits. The visibility of the squamo-columnar junction, presence or absence of a visible lesion, and the colposcopic opinion regarding the nature of the abnormality (where relevant) were all documented for 92.4% of visits.

The colposcopic appearance was reported to be abnormal in 56.4% of colpscopies, and inconclusive in 5.2% of colposcopies (Table 61). Biopsies were taken at 88.6% of colposcopies when the colposcopic appearance was abnormal; 30.4% of colposcopies where the colposcopic appearance was reported as inconclusive, and 20.1% of colposcopies where colposcopic appearance was reported as normal (30.4% and 20.1%, respectively) (Table 62).

Documentation varied by DHB, as shown in Figure 66 and Table 60. Documentation of visibility of the squamocolumnar junction varied from 94.2% (Mid Central) to 99.3% (South Canterbury and Wairarapa). In all DHBs, all colposcopy reports documented the presence or absence of a lesion. Recording of the opinion regarding the abnormality grade (which was only assessed here if colposcopic appearance was recorded as abnormal or inconclusive), ranged from 85.3% (Taranaki) to 97.2% (West Coast). Recording of the recommended type of follow-up ranged from 78.9% (Taranaki) to 100% (Canterbury and West Coast) and recording of the recommended timeframe for follow-up ranged from 78.9% (Taranaki) to 99.7% (Canterbury). Complete documentation of the visibility of the squamo-columnar junction, presence or absence of a visible lesion, and the colposcopic opinion regarding the nature of the abnormality ranged from 86.9% (Bay of Plenty) to 97.1% (West Coast).

Abnormal colposcopic appearance ranged from 41.0% of colposcopies (South Canterbury) to 71.9% (Hutt Valley) of colposcopies. Inconclusive colposcopic appearance ranged from 1.9% of colposcopies (Lakes and West Coast) to 10.2% of colposcopies (Bay of Plenty) (Table 61). The proportion of colposcopies where a biopsy was taken also varied by DHB. When the colposcopic appearance was abnormal a biopsy was taken at 67.1% of visits in West Coast, up to the highest proportion of such colposcopies in Northland (97.8%). When the colposcopic appearance was normal the proportion of visits where a biopsy was taken ranged from 3.5% in Whanganui up to 30.3% in South Canterbury (Table 62).

Colposcopies performed in private practice accounted for 9.5% of all colposcopies recorded on the NCSP Register in New Zealand in the current monitoring period. The documentation rate was similar to, or slightly lower, in private practice compared with public clinics overall, with the exception of follow-up rates which was lower in private practice compared to public clinics; visibility of the squamocolumnar junction (97.1% for private practice and 97.5% for public clinics overall), presence or absence of a lesion (100% in both private and public), lesion grade (92.1% for private practice and 91.4%

	for public clinics), follow-up type (95.1% for private practice and 96.6% for public clinics), follow-up timeframe (92.7% for private practice and 96.2% for public clinics). The proportion of colposcopies with complete documentation of the visibility of the squamo-columnar junction, presence or absence of a visible lesion, and the colposcopic opinion regarding the nature of the abnormality was 92.2% for private practice and 92.4% for public clinics overall.
Trends	For New Zealand as a whole, documentation of colposcopy visit items has remained fairly consistent over the last four monitoring periods. In the current period visibility of the squamocolumnar junction was documented for 97.4% of colposcopies compared with between 95.1% and 97.7% for the previous three monitoring periods. The presence or absence of a lesion was documented for all visits in both the current and previous three periods. In the current period an opinion regarding the lesion grade was documented for 91.5% of visits where the presence of a lesion could not be ruled out, compared with between 91.5% and 92.2% for the previous three monitoring periods. Recording of recommended follow-up type was documented for 96.5% of visits in the current period, which is within the range seen for the previous three periods 92.2%-99.2%. This was also the case for recommended timeframe for follow-up, which was recorded for 95.9% of visits in the current period compared with 91.6%-98.4% in the previous three periods. Trends in the completion of all required fields are shown in Figure 67. Note, however, that two items (recommended type and timeframe for follow-up) were removed from this calculation in monitoring report 43 (1 January – 30 June 2015), so periods inclusive of report 43 are not comparable with earlier ones in Figure 67. For the current monitoring period, the removal of these two items from the calculation gave a completion rate of 92.4%, compared with a rate of 89.0% when the items are included. The largest difference in the completion rate between the current period compared to the previous monitoring period was for Whanganui (93.0% compared to 96.7% in the previous monitoring period). Trends in the number of colposcopies recorded on the NCSP Register are shown in Figure 68. The number of colposcopies decreased in the current monitoring period in five of the 20 DHBs. As expected, DHBs that were unable to report colposcopy data for the full monitoring period in the previous report showed percentage increases of over 100% in this report. These DHBs included Auckland, Countries Manukau, Lakes, Nelson Marlborough, Northland, Taranaki, Waikato and Waitemata. The increases in numbers takes the overall total and individual DHBs colposcopy numbers back to volumes consistent with earlier reports.
Comments	This measure is only able to assess adequacy of documentation where colposcopy visits have been entered onto the NCSP Register in accordance with the 2013 Colposcopy Standard. Therefore, it cannot provide an absolute estimate of adequacy if these data are incomplete on the NCSP Register. The

data used in this analysis was extracted from the NCSP Register in mid-August 2016.

As indicated above, missing colposcopy data from the latter part of 2015 (Report 44) for some DHBs led to an underestimate of the number of colposcopies in these DHBs during the previous monitoring period, and this likely explains the apparent increase in the volume of colposcopies recorded in the current monitoring period. The number of colposcopies recorded on the NCSP Register has increased by 43.6% and colposcopy volumes are now similar to those reported in Report 43. Therefore the apparent increase in number of colposcopies recorded can be attributed to a return to normal reporting from DHBs to the NCSP Register.

Some items required by the standard, such as the recording of recommended follow-up type and timeframe, cannot necessarily be completed at the time of the colposcopy visit – for example because they will depend on results of histology tests or other reviews. For DHBs that electronically report data to the NCSP Register, the completeness of these fields is likely to lag behind that of other fields, because the colposcopy visit data will be loaded onto the NCSP Register soon after the visit and before this information is available. As more DHBs have moved to electronic reporting, this lag could explain the reduction in the percentage of colposcopies where these items are complete, compared to previous reports. Additionally, since there is a lag in reporting recommended type and timeframe for follow-up, these two items were removed from the calculation of 'all items complete' in Report 43 and this has remained the case in subsequent reports. As discussed in Trends above, however, these are often not the fields with the lowest completion rates, and therefore removing them from the calculation made a relatively small difference to 'all items complete'. In 15 out of the 20 DHBs, the field with the lowest completion rate is predicted abnormality grade (only required where the presence of a lesion could not be ruled out). It is possible that the low completion rate for predicted abnormality grade could be because some clinics are incorrectly interpreting the requirement to document a *predicted* abnormality grade (which should be documented at the time of colposcopy) as a requirement to document in addition to the *diagnosed* abnormality grade, after histology results are available.

Some items in the 2013 colposcopy standard are not included in the 2008 colposcopy visit form or on the NCSP Register, in particular the visibility of the limits of the lesion, the biopsy site, and an explicit colposcopic opinion regarding the need for treatment (although a recommended follow-up timeframe is recorded, and whether follow-up is recommended with a colposcopist, oncology services, or smear taker). It is also not possible to determine the reason for the visit from the colposcopy visit form, for example if this is a first visit or a follow-up visit; or whether it was prompted by a high grade cytology result, a low grade cytology result which is either persistent or accompanied by a positive high risk HPV test result, a request for referral regardless of cytology results, or another reason. As many DHBs were still reporting to the NCSP Register using the 2008 standard at the start of the current monitoring period, these items could not be taken into account in this indicator for the current report.

The current colposcopy standard was published in July 2013 (available at https://www.nsu.govt.nz/health-professionals/national-cervical-screening-programme/policies-and-standards). When a sufficient number of DHBs have transitioned to the updated standard for a whole monitoring period, items from the updated standard will be included in these monitoring reports.

Figure 66 - Completion of colposcopic assessment fields, by DHB

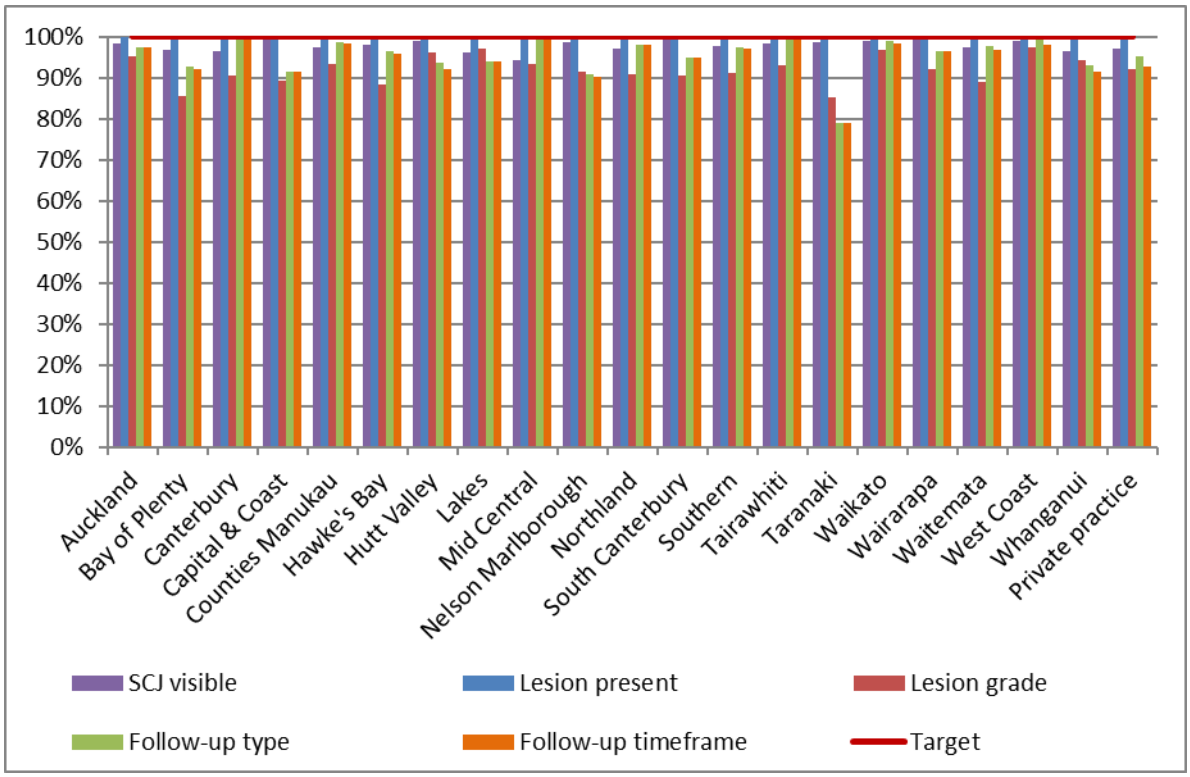
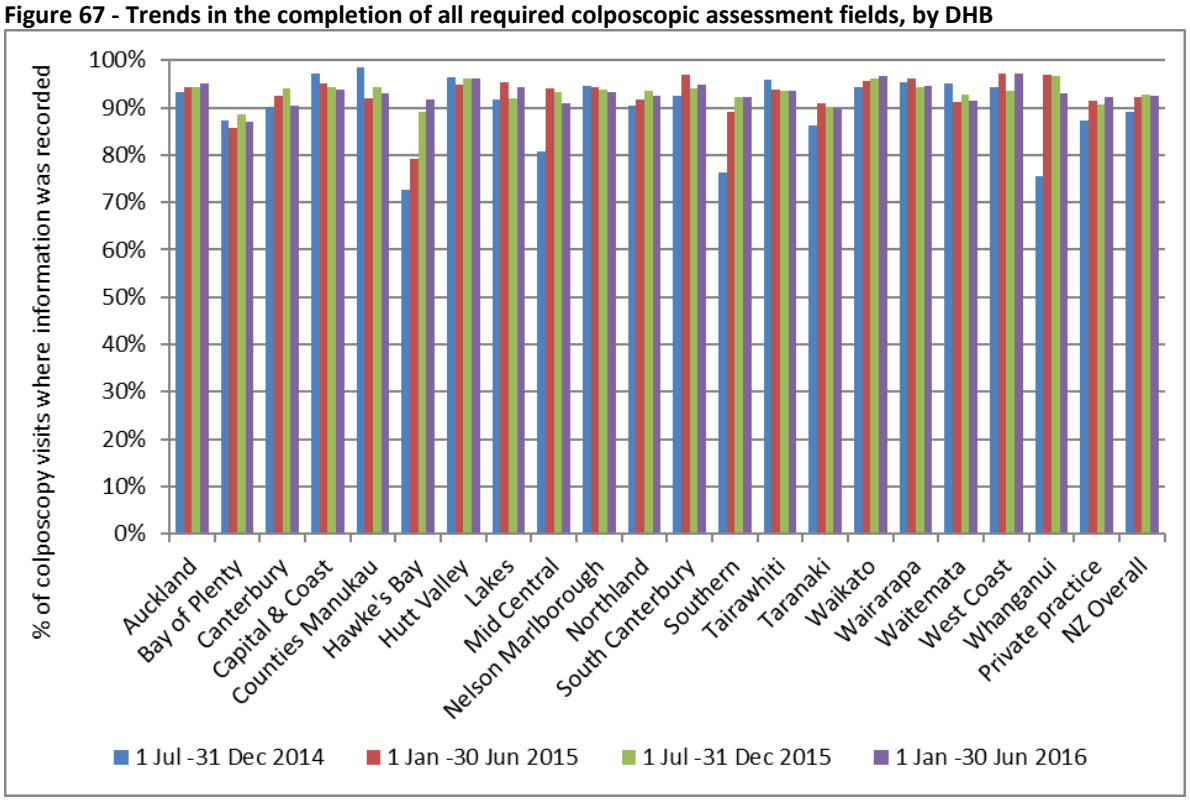
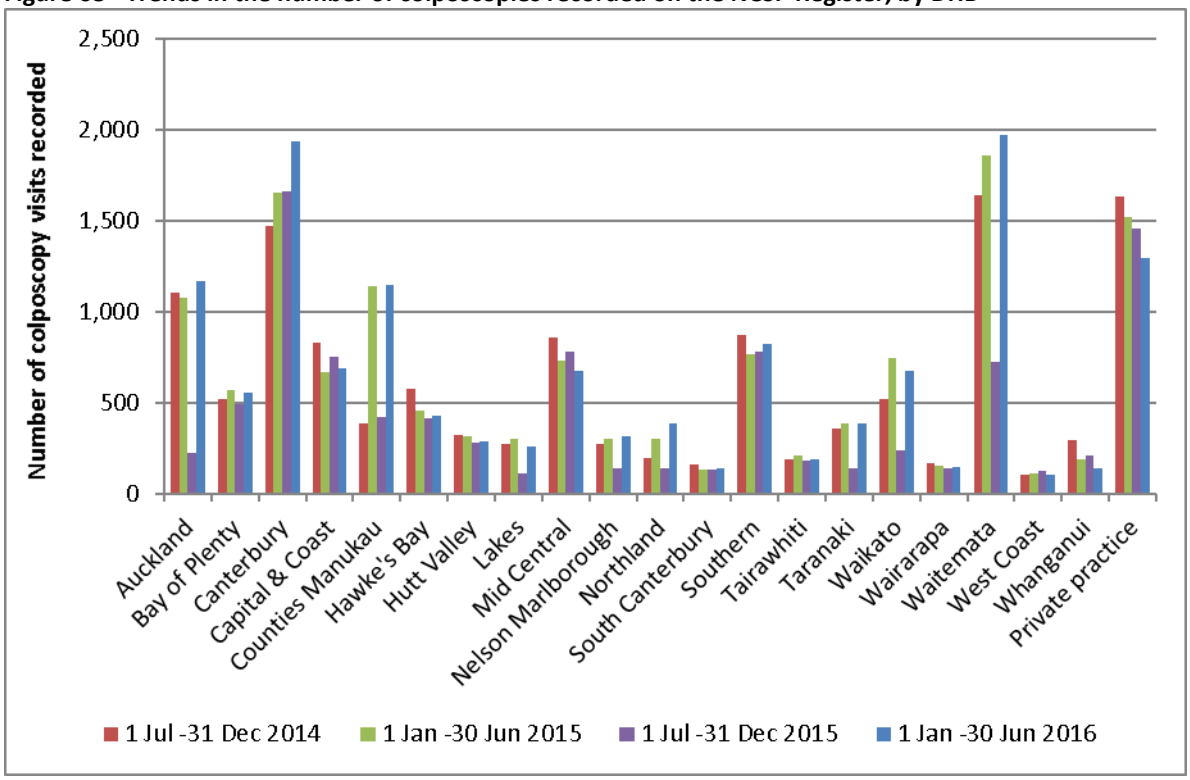


Figure 67 - Trends in the completion of all required colposcopic assessment fields, by DHB



Note: Definition of 'all fields completed' changed from 1 July 2015 as two fields were no longer included in the calculation (follow-up type and timeframe)

Figure 68 - Trends in the number of colposcopies recorded on the NCSP Register, by DHB



The apparent decrease in the number of colposcopies in 1 Jul-31 Dec 2015 compared to 1 Jan-30 Jun 2015 in several DHBs is because those DHBs were unable to electronically report colposcopy data to the NCSP Register after September 2015. Therefore the values for the period 1 Jul-31 Dec 2015 above do not include colposcopies which occurred after September 2015 in the affected DHBs (Auckland, Counties Manukau, Lakes, Nelson Marlborough, Northland, Taranaki, Waikato and Waitemata). In addition, for the 1 Jul - 31 Dec 2014 monitoring period five DHBs were transitioning to electronic reporting of colposcopy information to the NCSP Register. As a consequence, an unusually large number of colposcopies which occurred in this period were not recorded on the register in time to be included in the report covering this earlier period (from where the numbers included in this figure are drawn). This the reason for the apparent increase in colposcopies in Counties Manukau, Northland, Waikato and Waitemata in the period 1 Jan-30 Jun 2015 relative to 1 Jul-31 Dec 2014.

Indicator 7.4 – Timeliness and appropriateness of treatment

Definition	This indicator measures performance against Standard 605. It reports on the proportion of women with histological high grade squamous intraepithelial lesions (HSIL) who are treated within eight weeks of histological confirmation. Histological HSIL is defined as CIN2, CIN3, CIN2/3 or HSIL not otherwise specified (SNOMED codes M74007, M74008, M80102, M80702 and M67017). Histological LSIL is not routinely treated, as treatment is not recommended for women with low grade abnormalities in the 2013 Colposcopy Standards (consistent with 2008 NCSP *Guidelines for Cervical Screening in New Zealand*). The 2013 Colposcopy Standard recommends that the number of women who are treated with low-grade lesions (less than CIN2 on histology) be minimised. Therefore treatment of LSIL is included in this report for descriptive purposes and to examine the appropriateness (not timeliness) of treatment. This report describes the number and proportion of women with histological low grade squamous intraepithelial lesions (LSIL) who are treated. To ensure consistency in the follow-up time examined for each woman and in order to allow timely reporting, treatments are included if they occur within 26 weeks of histological confirmation. Histological LSIL is defined as CIN1 or CIN not otherwise specified (SNOMED codes M74006, M67016, M74000 and M67015). Women are included in this indicator if they have a histology sample where the result is HSIL or LSIL (as previously defined, above), and the sample was collected in the six-month period immediately prior to the current monitoring period (i.e. in the period 1 July to 31 December 2015). HSIL results must have been reported at least 8 weeks prior to the end of the current monitoring period, and LSIL results must have been reported at least 26 weeks prior to the end of the current monitoring period, in order to allow sufficient follow-up time for this indicator. Treatment was defined as a colposcopy visit where there was a record of electrosurgical excision, laser ablation or excision, cold knife cone biopsy, or total hysterectomy. Colposcopy visits involving punch biopsies only are not included. DHB is assigned based on the clinic where the histology sample was collected.
Target	90% or more of women with HSIL are treated within 8 weeks of histological confirmation of CIN2/3. There is no explicit target relating to low grade lesions, but the standard recommends that the number of women who are treated with low-grade lesions (less than CIN2 on histology) be minimised.
Current Situation	There were 2,597 women with a histological diagnosis of CIN2/3 (associated with histology samples collected in the previous six months, and reported at least eight weeks prior to 30 June 2016). Of these women, 1,661 women (64.0%) were treated within eight weeks of HSIL being histologically confirmed. The proportion of women treated within eight weeks varied widely by DHB, from 41.0% (Taranaki) to 89.7% (West Coast). No DHBs met the target of 90% of women

treated within eight weeks of histological confirmation of HSIL (Figure 69, Table 19).

There were 1,949 women with a histological diagnosis of LSIL (associated with histology samples collected in the previous six months, and reported at least 26 weeks prior to 30 June 2016). Treatment for histological LSIL is not routinely recommended in the 2013 Colposcopy Standards or the 2008 NCSP *Guidelines for Cervical Screening in New Zealand*[14], and so timeliness of treatment is not examined or compared to a target for LSIL. However, for descriptive purposes and to examine appropriateness of treatment, follow-up records were retrieved for the 1,949 women with histological LSIL. Of these women, 128 (6.6%) were subsequently treated within 26 weeks of LSIL being histologically confirmed and had no additional record of high grade histology in the six months preceding their treatment. The proportion of women subsequently treated varied widely by DHB, from no women (South Canterbury, Tairawhiti, Wairarapa and West Coast) to 15.4% (Whanganui) (Table 19). The DHB where the largest number of women were treated was Counties Manukau (27 women).

Trends

Nationally, the proportion of women with histological HSIL who were treated within eight weeks of histological confirmation is higher than the previous monitoring report; 62.3% in the previous report, 64.0% in the current report. The proportion of women with histological HSIL who were treated within eight weeks for the current report period increased in nine of the 20 DHBs compared with the previous report period (Figure 70).

The proportion of women with histological LSIL who were subsequently treated (within 26 weeks of LSIL being histologically confirmed) has increased slightly, from 6.3% for the previous report to 6.6% in the current report.

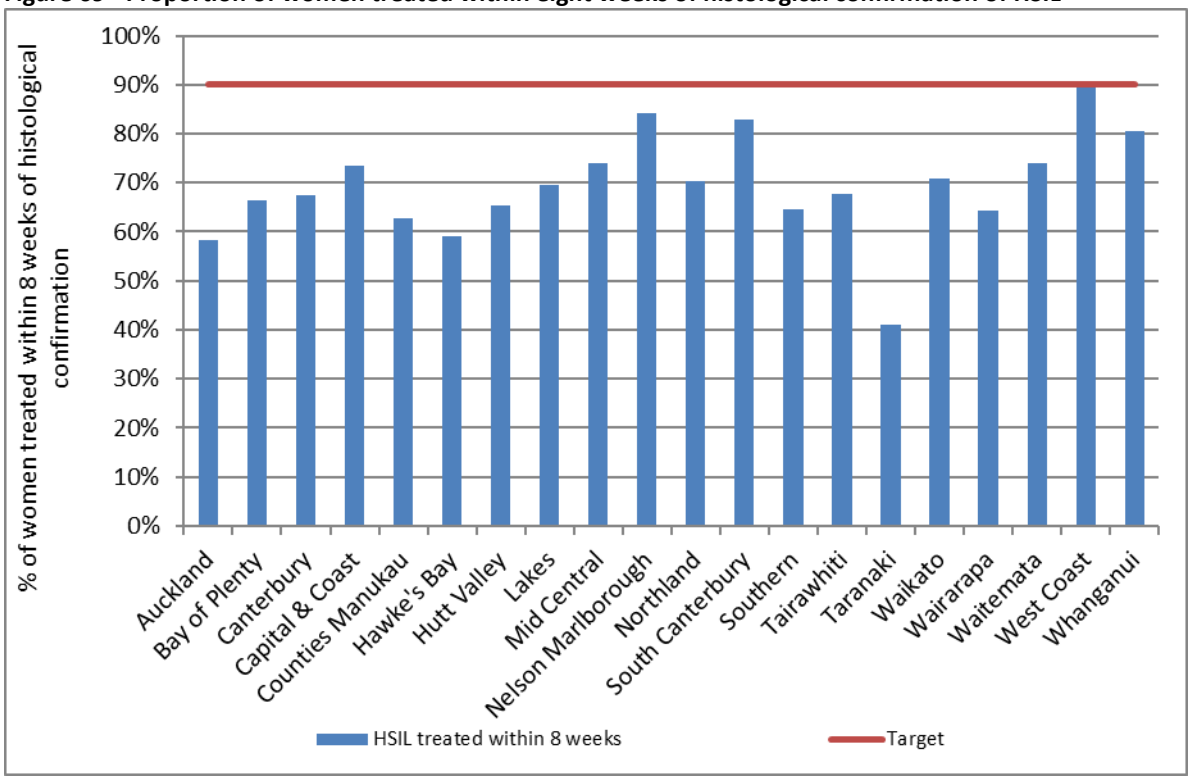
Comments

Whether or not treatment has occurred is determined for this indicator via colposcopy data in the NCSP Register. Colposcopy visit details are slowly improving with more and more DHBs adopting electronic reporting to the Register in place of manual colposcopy visit forms; however, these data are still potentially incomplete and consequently may underestimate timeliness of treatment. Similarly, trends may also reflect changes in the completeness of colposcopy data recording treatment within a DHB rather than necessarily true increases or decreases in the proportion of women treated. This incomplete recording of treatment potentially affects the results for treatments for both HSIL and LSIL. In some cases, treatment may have occurred in a different clinic to that where the original histology sample was collected. Facilities not explicitly defined as DHB (public) clinics are aggregated together as private practice. It is possible that women whose original HSIL (or LSIL) histology sample was collected outside a DHB clinic may in practice have been treated at a DHB clinic (or conversely a woman whose histology sample was collected at a DHB clinic may have been treated outside a DHB clinic). Note, however, that timeliness is assessed here by including any treatment visits, regardless of where they occurred.

The 2013 National Cervical Screening Programme Policies and Standards: 'Section 6 – Providing a Colposcopy Service' requires that in the future,

colposcopy clinics will provide information about the “decision to treat date”. At present, the “decision to treat date” is not available on the NCSP Register except where colposcopy is reported against the current Standards. When this “decision to treat date” information is available for all DHBs for a full monitoring period, it will be used to calculate timeliness of treatment.

Figure 69 - Proportion of women treated within eight weeks of histological confirmation of HSIL



Date that histology results were reported to requesting clinician is used as the date of histological confirmation. DHB is assigned based on the clinic where the original HSIL histology sample was collected, however treatments will be included regardless of where they occurred.

Figure 70 - Trends in the proportion of women treated within eight weeks of histological confirmation of HSIL, by DHB.

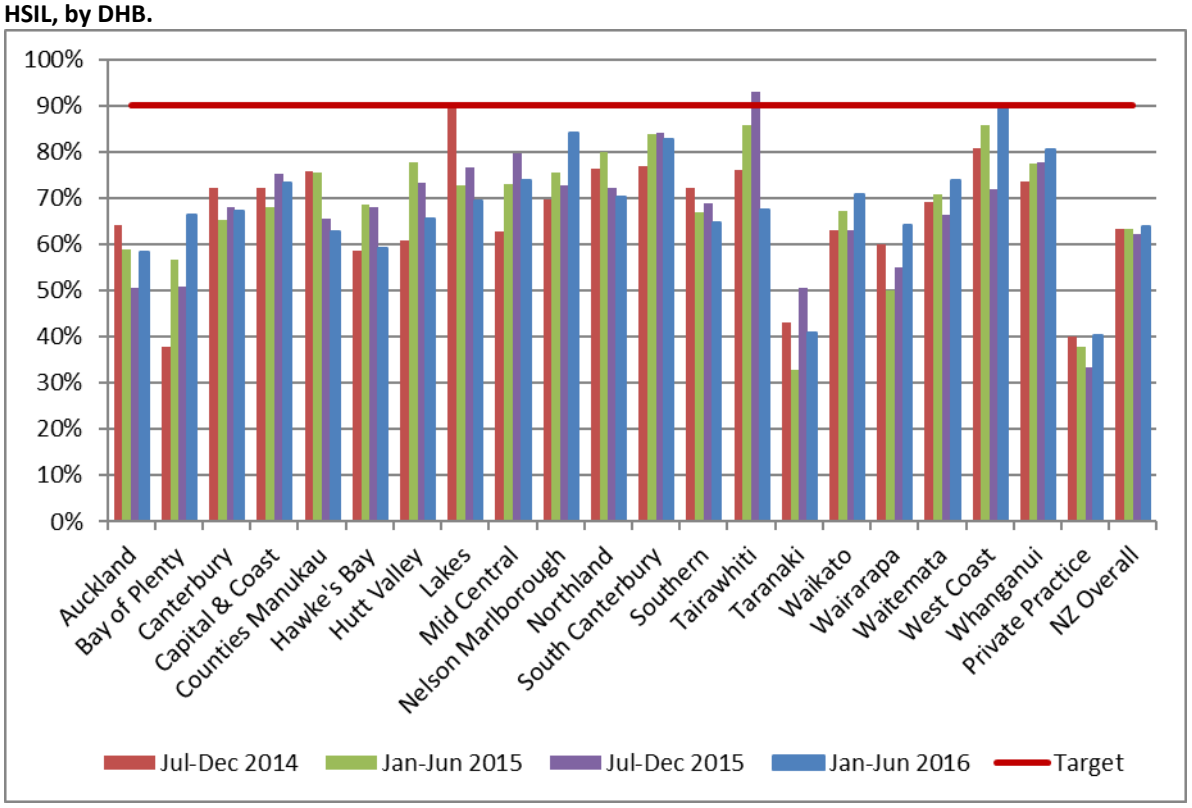


Table 19 - Timeliness and appropriateness of treatment, by DHB

DHB	Women with CIN2/3	Treated within 8 weeks		Women with histological LSIL*	Women subsequently treated†	
	N	N	%	N	N	%
Public clinics (overall)	*2,248*	*1,520*	*67.6*	*1,533*	*108*	*7.0*
Auckland	185	108	58.4	162	12	7.4
Bay of Plenty	98	65	66.3	86	2	2.3
Canterbury	355	239	67.3	347	18	5.2
Capital & Coast	98	72	73.5	83	11	13.3
Counties Manukau	201	126	62.7	241	27	11.2
Hawke's Bay	93	55	59.1	21	1	4.8
Hutt Valley	55	36	65.5	40	3	7.5
Lakes	59	41	69.5	38	3	7.9
Mid Central	123	91	74.0	84	5	6.0
Nelson Marlborough	82	69	84.1	17	1	5.9
Northland	84	59	70.2	8	1	12.5
South Canterbury	29	24	82.8	10	-	-
Southern	164	106	64.6	52	3	5.8
Tairawhiti	34	23	67.6	19	-	-
Taranaki	83	34	41.0	63	2	3.2
Waikato	209	148	70.8	55	1	1.8
Wairarapa	14	9	64.3	11	-	-
Waitemata	222	164	73.9	164	16	9.8
West Coast	29	26	89.7	19	-	-
Whanganui	31	25	80.6	13	2	15.4
Private Practice	*349*	*141*	*40.4*	*416*	*20*	*4.8*
Total	**2,597**	**1,661**	**64.0**	**1,949**	**128**	**6.6**

** CIN1, CIN not otherwise specified (SNOMED codes M67015, M67016, M74000 and M74006). CIN1 is not routinely treated (consistent with 2008 NCSP Guidelines for Cervical Screening in New Zealand), so these results are not compared to a target. They appear here for descriptive purposes and to show where the women with histologically confirmed LSIL were treated. † Includes women treated within 26 weeks of LSIL histology. Date that histology results were reported to requesting clinician is used as the date of histological confirmation. DHB is assigned based on the clinic where the original HSIL histology sample was collected, however treatments will be included regardless of where they occurred.*

Indicator 7.5 – Timely discharging of women after treatment

Definition

This indicator measures performance against Standard 608.

The proportion of women treated for a high grade lesion who:

- receive colposcopy within the period up to nine months after their treatment
- receive colposcopy and cytology within the period up to nine months after their treatment
- are discharged appropriately within 12 months of their treatment.

Treatment was defined as a colposcopy visit where there was a record of electrosurgical excision, laser ablation or excision, cold knife cone biopsy, or total hysterectomy. Colposcopy visits involving punch biopsies only are not included. Treatment was included if it was for a high grade lesion (CIN2 or CIN3), based on histology results for any histology specimen collected concurrent with or up to six months prior to treatment.

To allow for 12 months of follow-up information to be available, this indicator reports on women treated in the six-month period ending 12 months prior to the end of current monitoring period (i.e. 1 January to 30 June 2015). Records for each woman treated in the six-month period ending 12 months prior to the end of current monitoring period were retrieved from the NCSP Register. Among these treated women, the number of women with a colposcopy visit, and with both a colposcopy visits and a cytology sample was calculated. Follow-up colposcopy visits were not restricted to only those within the same DHB as where initial treatment occurred; rather any colposcopy visit recorded on the NCSP Register for that woman was included. Follow-up visits were retrieved for the period up to nine months after the treatment visit.

Eligibility for discharge is not explicitly defined in the NCSP Colposcopy Standard, so based on advice from the NCSP Advisory Group, women were defined as eligible for discharge if they had a colposcopy visit and cytology test following their treatment, and their cytology result was negative.

Women were defined as having been discharged when their colposcopy report form recommended follow-up by their smear taker / referring practitioner.

Results are reported by DHB, based on the DHB of the facility where the treatment colposcopy was performed. Therefore, for the purpose of this indicator, the DHB where treatment occurred was regarded as the DHB responsible for ensuring a treated woman was followed up. However, as previously described, the follow-up colposcopy visit need not have occurred within that DHB.

Target

90% or more of women treated for CIN 2 or 3 should have a colposcopy and smear within nine months' post treatment

90% or more of women treated for CIN 2 or 3 should be discharged back to the smear-taker as appropriate.

Current Situation

There were 1,478 women treated for CIN2 or CIN3 high grade lesions in the six-month period from 1 January – 30 June 2015. These women were followed up for twelve months from the date of their treatment visit.

Follow-up post treatment

There were 1,126 women (76.2%) with a follow-up colposcopy, and 1,107 women (74.9%) with both a follow-up colposcopy and a cytology sample in the nine month period after their treatment visit.

Figure 71 shows the percentage of treated women with a record of follow-up colposcopy, and both follow-up colposcopy and a cytology sample, in the period up to nine months post-treatment by DHB. Generally, the number of women with both cytology and colposcopy was very similar to the number of women with at least colposcopy (Table 63). The number of women with colposcopy only and no record of a cytology sample in the timeframe was at most six in Canterbury.

Nationally, the percentage of women treated for high grade lesions with a record of colposcopy and cytology within the nine-month period post-treatment (74.9%) is below the target value of 90%.

Two DHBs (Capital & Coast and Wairarapa) met the target of at least 90% of women receiving cytology and colposcopy within nine months post-treatment (Figure 71, Table 64Table 63). The percentage of treated women with a record of both follow-up colposcopy and a cytology sample in the period up to nine months post-treatment varied by DHB from 23.6% (Bay of Plenty) to 100.0% (Wairarapa).

Women discharged appropriately

In total, 1,076 women (72.8% of those treated) were eligible to be discharged by 12 months after their treatment visit, and 892 of these women (82.9%) were discharged within 12 months of treatment (Table 63). Figure 72 shows how these percentages varied by DHB. The percentage of women eligible for discharge who were discharged within 12 months of treatment ranged from 54.5% (South Canterbury) to all eligible women (Hutt Valley and West Coast) (Table 63). In some cases, the number of women eligible for discharge was small, so these results should be interpreted with caution (14 or fewer women in South Canterbury, Tairawhiti and Wairarapa).

Five DHBs met the target of discharging 90% of women where appropriate within 12 months (Capital & Coast, Counties Manukau, Hutt Valley, West Coast and Whanganui). In total (that is, without considering whether or not women met the criteria suggested by the NCSP Advisory Group to be eligible for discharge), 1,027 women were discharged within 12 months of being treated for a high grade lesion (69.5% of all women treated for a high grade lesion).

Trends

The proportion of women with follow-up has increased slightly overall (from 75.1% to 76.2% for colposcopy, and from 74.1% to 74.9% for both cytology and colposcopy). Two DHBs met the target of 90% of women having colposcopy and cytology within nine months of treatment, which was the same number of DHBs in the previous report.

	The proportion of women discharged appropriately to their smear taker by 12 months has remained similar (82.4% in the previous report; 82.9% in the current report). The number of DHBs meeting the target of 90% decreased from eight to five.
Comments	Since this indicator relies on colposcopy data in the NCSP Register, there is the possibility that incomplete reporting of colposcopy visits has led to an underestimate of the number of women with follow-up colposcopy visits and the number discharged in a given time period. The data used in this analysis was extracted from the NCSP Register in mid-August 2016. The target that 90% or more of women treated for CIN 2 or 3 should be discharged back to the smear taker as appropriate was assessed in this monitoring report, based on guidance from the NCSP Advisory Group as to when discharge would be appropriate. However, it should be noted that neither the 2008 NCSP *Guidelines for Cervical Screening in New Zealand* nor the 2013 Colposcopy Standards themselves provide explicit guidance for when discharge back to the smear taker is appropriate. In some circumstances, women may be treated within one DHB, but referred to another DHB for follow-up. This information is not always recorded in the NCSP Register however, and for clarity in this report, women remain assigned to the DHB where their treatment was performed. However, this measure does take into account all follow-up visits which women attend, regardless of the DHB in which they may occur.

Figure 71 - Percentage of women treated with colposcopy, and both colposcopy and cytology, within nine months post-treatment

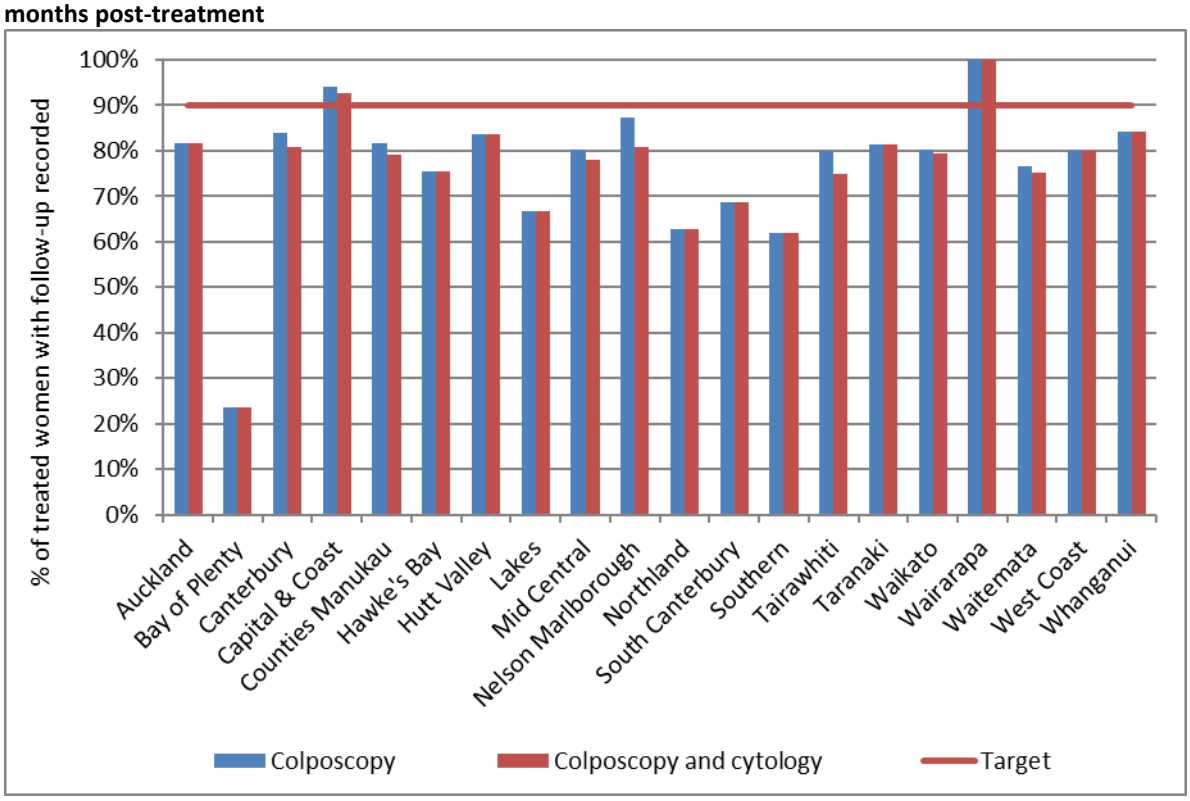
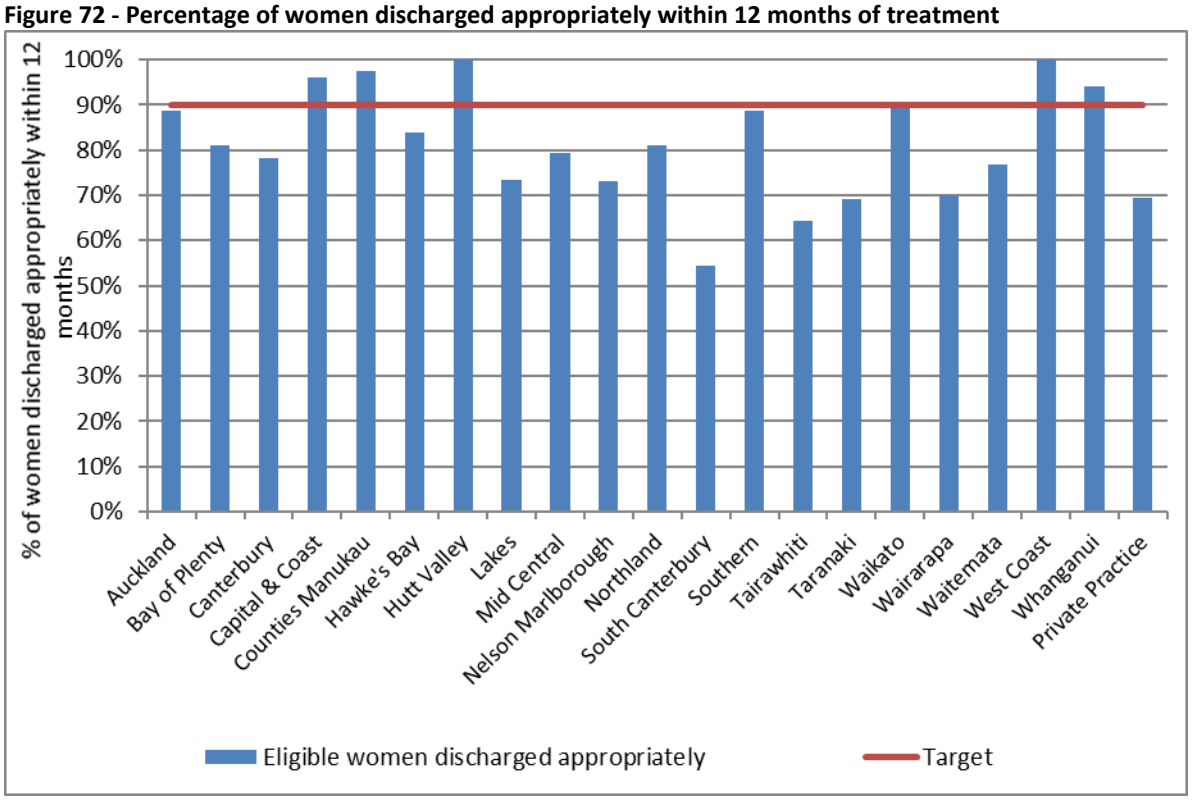


Figure 72 - Percentage of women discharged appropriately within 12 months of treatment



Indicator 8 – HPV tests

The indicators report on the use of HPV testing. At present, they incorporate the following indicators:

8.1 Triage of low grade cytology

8.2 HPV test volumes (including purpose for which the test was performed)

8.3 HPV tests for follow-up of women with a historical high grade abnormality

Specific monitoring of the other uses of HPV testing is not yet included. These other purposes include:

- Management of women previously treated for CIN
- Management of women with a high grade squamous cytology result in the past followed by negative cytology
- Resolution of discordant cytology, colposcopy and histology

Indicator 8.1 – Triage of low grade cytology

Definition	For women with an ASC-US or LSIL (low grade) cytology result relating to a cervical sample taken in the monitoring period, and with no recent abnormal cytology (i.e. abnormal cytology results relating to specimens taken in the preceding five years), the following are reported on: • The number and proportion of women with a subsequent HPV triage test (by age group, and cytology laboratory) • Women with an invalid HPV test result, as a proportion of those with a subsequent HPV test (by age group, and laboratory which performed the HPV test) • Women with positive HPV triage result, as a proportion of women with a valid HPV test (by age group, and cytology laboratory) • Histological outcomes in women where this information is available within 12 months following a positive HPV triage test Where a woman has two different low grade cytology results, relating to a sample or samples collected on the same date, she is grouped in accordance with the most serious result (i.e. LSIL). A subsequent HPV triage test is defined as an HPV test where the sample was collected at the same time or after the cytology sample, and where there is a result available (including invalid results). Women whose ASC-US or LSIL cytology test is associated with a recommendation code of R14 (refer regardless of cytology result) are excluded, as they may be symptomatic. Women who are aged less than 30 years are excluded from this indicator if they have ever had either a high grade squamous cytology result (ASC-H, HSIL) or a high grade squamous histology result (CIN2/3), as they may be having an HPV test in order to follow-up a previous high grade squamous abnormality (cytology or histology, i.e. historical testing). If a laboratory which performed the cytology refers the HPV test to a different laboratory, measures are based on the laboratory which performed the cytology test. Measures reported by age are based on the age of the women on the date that the cytology sample was collected.
Target	Targets have not yet been set.
Current Situation	There were 740 women aged less than 30 years and 1,486 women aged 30 years or more with an ASC-US cytology result relating to a sample collected in the current monitoring period, and who had no abnormal cytology results relating to samples taken in the previous five years. The corresponding figures for LSIL are 2,402 women aged less than 30 years and 1,567 women aged 30 years or more.

HPV triage

NCSP Guidelines (2008) recommend that women aged 30 years or more who have not had an abnormal cytology report in the previous five years are offered a HPV triage test following ASC-US or LSIL cytology. Among these eligible women, 94.1% of women aged 30 years or more with an ASC-US cytology result, and 95.0% of women aged 30 years or more with an LSIL cytology result are recorded as having a subsequent HPV test (Table 65, Table 66). These proportions ranged 78.1% (LabPLUS) to 99.4% (Anatomical Pathology Services) for ASC-US cytology results and from 70.4% (LabPLUS) to 98.9% (Anatomical Pathology Services) for LSIL cytology results (Figure 73, Table 65, Table 66).

HPV triage is not included in the recommendations for women aged less than 30 years, and accordingly the proportions of women aged less than 30 years with a subsequent HPV test are very small. Subsequent HPV tests are recorded in the NCSP Register for 1.8% of women aged less than 30 years with ASC-US results, and 0.9% of women aged less than 30 years with LSIL results. These proportions ranged from 0.9% (Anatomical Pathological Services) to 4.4% (LabPLUS) for women with ASC-US results, and from no women (Canterbury Health Laboratories and Pathlab) to 1.3% (LabPLUS) for women with LSIL results (Figure 74, Table 66).

Positive triage tests

Among women aged 30 years or more with a valid HPV triage test results, the proportion who were positive for high risk HPV was 22.8% for women with ASC-US results, and 57.2% for women with LSIL results. These proportions varied by laboratory from 12.1% (Canterbury Health Laboratories) to 28.2% (Southern Community Laboratories) for women with ASC-US cytology (Figure 75), and from 28.6% (LabPLUS) to 63.5% (Canterbury Health Laboratories) for women with LSIL cytology (Figure 76).

The proportion of women whose HPV triage test was positive also varied by age. Among women aged 30-69 years, HPV positivity rates were highest for those aged 30-39 years (28.9% for women with ASC-US cytology, and 62.0% for those with LSIL cytology). For women with ASC-US results, the positivity rates for each of the 10-year age groups between 40 and 69 years were similar (between 18.2% and 21.6%). For women with LSIL results, the positivity rates were between 41.5% and 55.6% for these 10-year age groups (Figure 77, Table 20).

Histological outcomes in triage positive women who attended colposcopy

In order to allow sufficient time for women to have attended colposcopy following a positive triage test, histological outcomes were assessed in women with low grade cytology and a positive HPV triage test in the six-month period 1 January – 30 June 2015. In this period, there were 396 women with an ASC-US cytology result and positive HPV triage test, and 948 who had an LSIL cytology result and positive HPV triage test. 364 (91.9%) of the women with ASC-US who were triage positive and 855 (90.2%) of the women with LSIL who were triage positive had a record of colposcopy and/or histology within the 12 months following their initial test results. Among the women with a record of

colposcopy, 258 (70.9%) and 643 (75.2%) of the women with ASC-US and LSIL respectively have a histology record.

Histological outcomes in these women were initially considered in an analogous manner to Indicator 5.2 – that is, the number of women with CIN 2 or worse histology (CIN2+; also see Appendix D), as a percentage of women who had a histology result available. The percentage of women with histology whose histology result was CIN2+ was 20.2% for HPV triage-positive ASC-US and 19.4% for HPV triage-positive LSIL (Table 67, Table 68). These percentages varied by laboratory from 10.5% (Aotea Pathology Ltd.) to 28.6% (Canterbury Health Laboratories) for HPV triage-positive ASC-US and from 15.3% (Anatomical Pathology Services) to 30.2% (Canterbury Health Laboratories) for HPV triage-positive LSIL (Figure 78). Note that these ranges excludes LabPLUS due to the very small numbers of triage-positive women, see Table 67 and Table 68).

We additionally considered histological outcomes as a percentage of women who attended colposcopy (rather than only those with a histology result). The corresponding percentages of women with CIN2+ histology were 14.3% for HPV triage-positive ASC-US and 14.6% for HPV triage-positive LSIL (Table 67, Table 68). These percentages varied by laboratory from 7.8% (Aotea Pathology Ltd.) to 24.0% (Canterbury Health Laboratories) for HPV triage-positive ASC-US and from 10.4% (Medlab Central Ltd.) to 29.5% (Canterbury Health Laboratories) for HPV triage-positive LSIL (Figure 79). These are also compared with the corresponding percentages of women who attended colposcopy within six months with CIN2+ histology for women with ASC-H and HSIL cytology, by laboratory, in Figure 80.

Histological outcomes within 12 months in women with triage-positive test results are shown by age, as a percentage of women with histology recorded (Figure 81), and as a percentage of women with colposcopy recorded (Figure 82). Among women aged 30-69 years, the percentage of women with CIN2+ histology within 12 months generally decreased with increasing age for HPV triage-positive ASC-US. For HPV triage-positive LSIL this pattern was less clear; the highest percentage of CIN2+ histology was seen for women aged 30-39, and the lowest percentage for women aged 50-59.

Trends

HPV triage

The proportion of women aged 30 years or more with low grade cytology (and no recent abnormal cytology in the preceding five years) who received a subsequent HPV test is lower than in the previous report for women with ASC-US results (96.0% in the previous period compared to 94.1% in the current period), and the same for women with LSIL results (96.8% in the previous period compared to 95.0% in the current period). The proportion of women aged less than 30 years with a subsequent HPV test is slightly higher than the previous monitoring period for ASC-US or LSIL results (1.4% in the previous period compared to 1.8% in the current period for ASC-US, 0.6% in the previous period compared to 0.9% in the current period for LSIL).

Positive triage tests

The proportion of women aged 30 years or more who tested positive for a high risk HPV type decreased for ASC-US (24.2% in the previous report; 22.8% in the current report), and also for LSIL (59.1% in the previous report; 57.2% in the current report. Overall the proportion of women with LSIL cytology and a positive high risk HPV test has decreased over four monitoring periods (2 years; from 64.1% in July-December 2014 to 57.2% in the current monitoring period).

Histological outcomes in triage positive women who attended colposcopy

91.9% of women with ASC-US cytology and a positive HPV triage test in the six-month reference period for the current report had a record of colposcopy and/or histology within the 12 months following their test result, slightly lower than the 92.7% seen for the previous report. For the current report 70.9% of these women with colposcopy also had a histology record, compared with 74.4% for the previous report, and of these women with a histology record, the histology result was CIN2+ for 20.2% of women in the current report, compared with 24.3% in the previous report. When histological outcomes were considered as a proportion of women with colposcopy, rather than histology, the corresponding figures were 14.3% in the current report versus 18.1% in the previous report.

For women with LSIL cytology and a positive HPV triage test in the reference period for the current report, 90.2% had a record of colposcopy and/or histology within 12 months of their result, which was very similar to the 90.9% of women in the previous report. For the current report 75.2% of these women with colposcopy also had a histology record, compared with 76.7% for the previous report, and of these women with a histology record, the histology result was CIN2+ for 19.4% of women in the current report, compared with 23.7% in the previous report. When histological outcomes were considered as a proportion of women with colposcopy, rather than histology, the corresponding figures were 14.6% for the current report and 18.1% for the previous report. As a percentage of women who attended colposcopy, of six laboratories (not including LabPLUS) five showed decreases from the previous report in CIN2+ histological outcomes in women who had ASC-US cytology and were HPV triage-positive (Figure 83). For women who had LSIL cytology and a positive HPV triage test there was also a decrease in CIN2+ histological outcomes in four of the six laboratories (Figure 84).

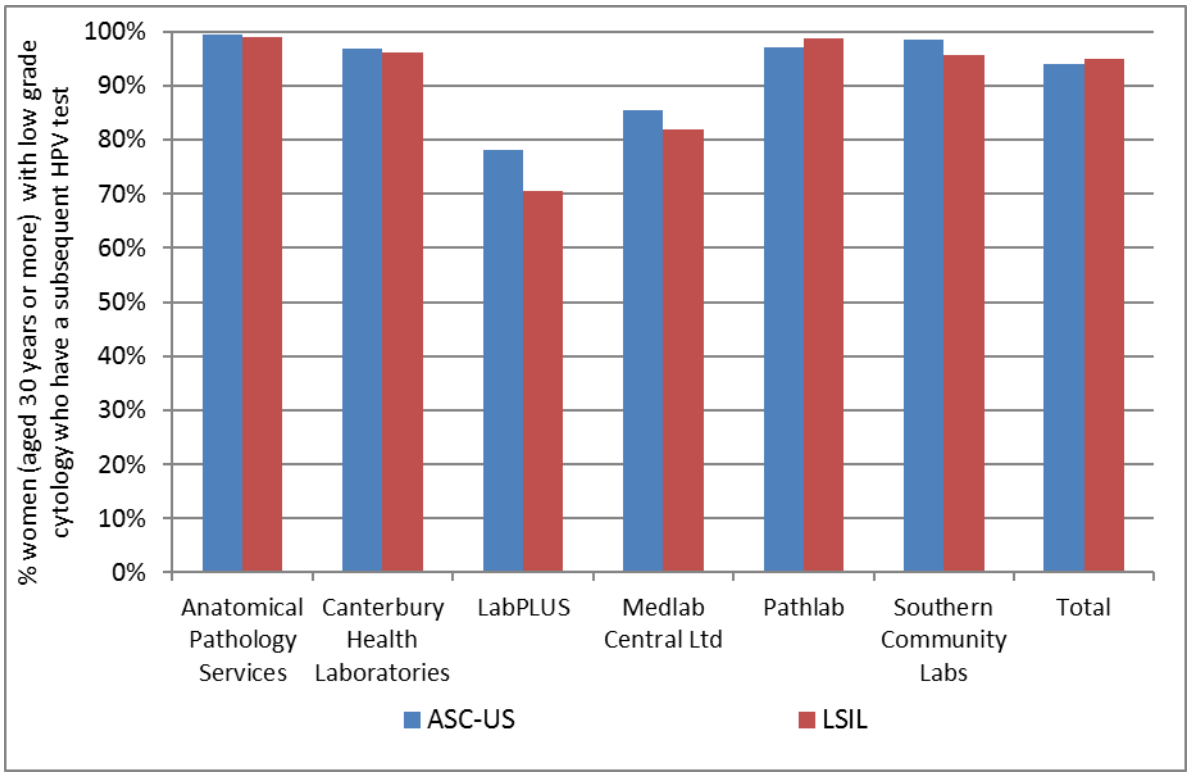
Comments

A small number of women aged less than 30 years with low grade results, no recent abnormalities (in the previous five years) and no record of any previous high grade squamous abnormality (cytological or histological), have a record of a subsequent HPV test (35 women). This is more than in the previous report (25 women). It is uncertain whether these HPV tests were performed for the purpose of triage, or for other reasons. In this report, we excluded women aged less than 30 years from this indicator if they had ever had a previous high grade squamous abnormality (either ASC-H/ HSIL cytology, or CIN2/3 histology). This was done in order to avoid potential inadvertent inclusion in this group of

women being tested for HPV in concordance with the guidelines as part of "historical testing". This could occur as a result of a previous high grade squamous abnormality (either ASC-H/ HSIL cytology, or CIN2/3 histology) currently managed by annual cytology, which occurred more than five years earlier (since abnormalities within the previous five years are already taken into account). It is also possible that some women were aged 29 years at the time of their cytology sample, but 30 years at the time of the cytology result, although previous exploration has suggested that the extent of this is likely to be small.[15, 16] Another possible explanation is that these women are being followed up for a previous high grade result but this is not recorded on the NCSP Register (for example because this occurred overseas). The HPV test may also have been ordered by a specialist. However note that inadvertent inclusion of HPV tests ordered by a specialist to resolve discordant results (or for historical testing) should be minimised since women were excluded from this indicator if they had any recent abnormalities (past five years, any abnormality grade); if they had ever had a high grade squamous abnormality (but no glandular abnormality) recorded on the NCSP Register; if the sample for HPV testing was collected on the same day as a recorded colposcopy visit for that woman; or if the sample for HPV testing was collected more than five weeks after the cytology sample.

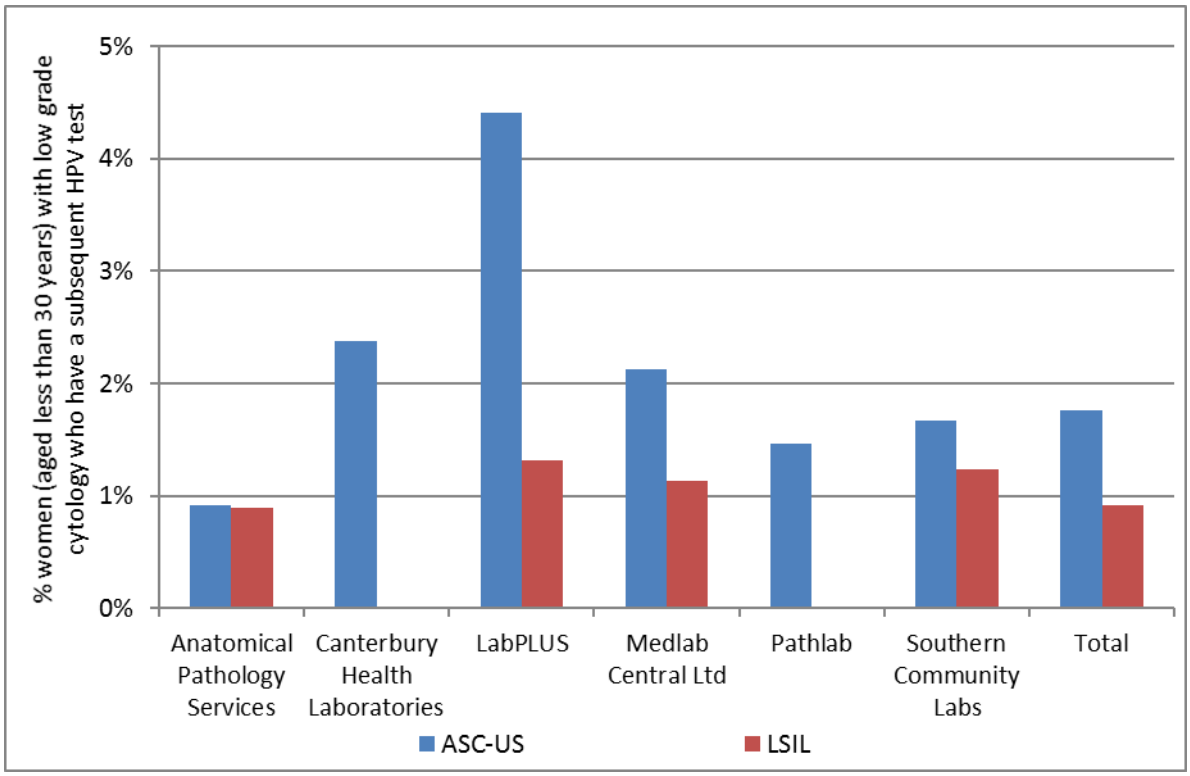
Aotea Pathology Ltd. was taken over by Southern Community Laboratories in November 2015. Results in this section relating to ASC-US and LSIL cytology collected in the current monitoring period (1 January – 30 June 2016) were processed by Southern Community Laboratories, and are reported accordingly; however, results relating to histological outcomes in women with ASC-US and LSIL cytology who were HPV triage positive were collected in the period 12 months prior to the current monitoring period (i.e. in 1 January – 30 June 2015). These tests were processed by Aotea Pathology Ltd., and are likewise reported accordingly.

Figure 73 - Proportion of women (aged 30 years or more) with low grade cytology who have a subsequent HPV test, by laboratory and cytology result



Excludes women with abnormal cytology in the five years preceding their low grade cytology sample

Figure 74 - Proportion of women (aged less than 30 years) with low grade cytology who have a subsequent HPV test, by laboratory and cytology result



Excludes women with abnormal cytology in the five years preceding their low grade cytology sample, and also women who have ever had a high grade squamous abnormality (cytology or histology)

Figure 75 - Proportion of HPV triage tests which are positive following ASC-US cytology (women aged 30 years or more), by cytology laboratory

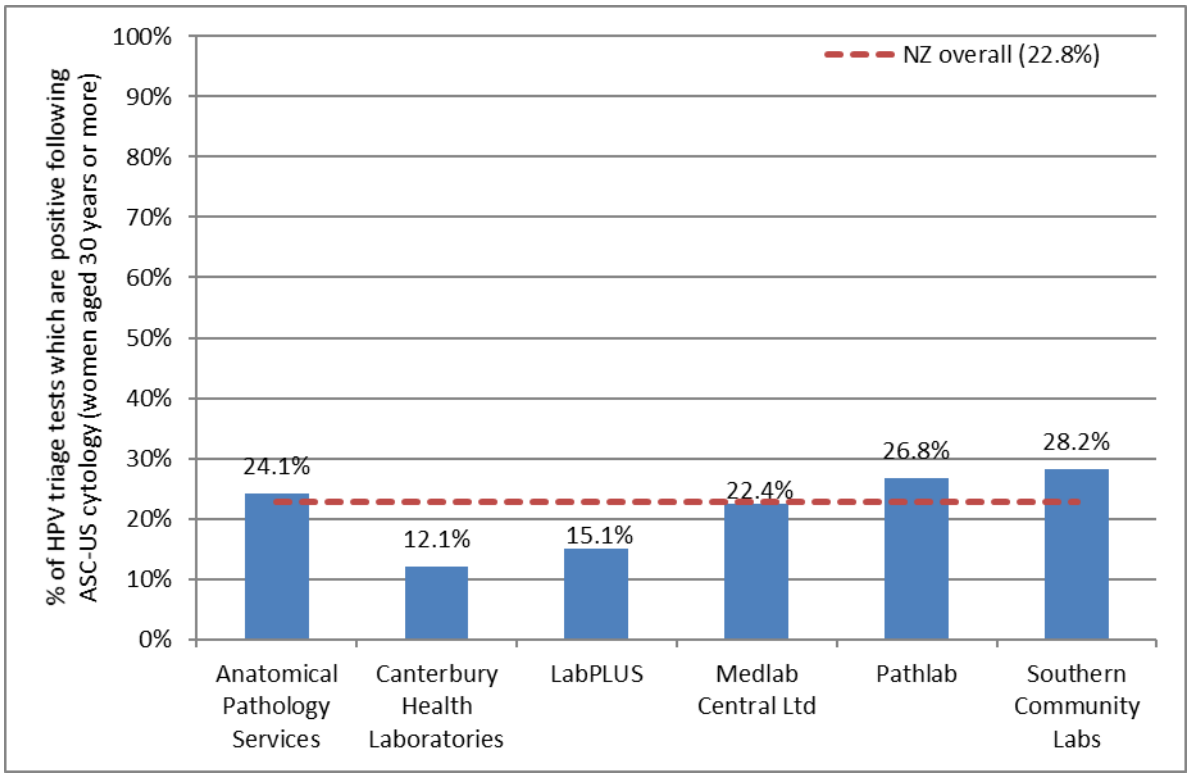


Figure 76 - Proportion of HPV triage tests which are positive following LSIL cytology (women aged 30 years or more), by cytology laboratory

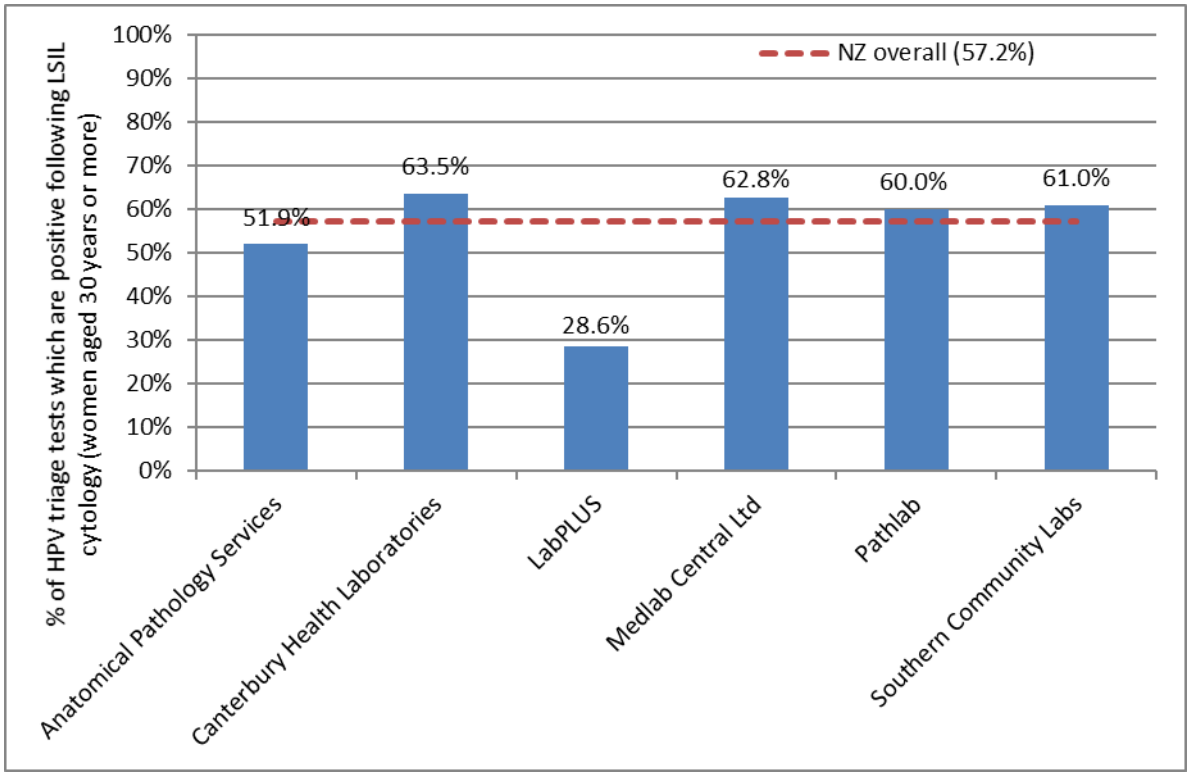
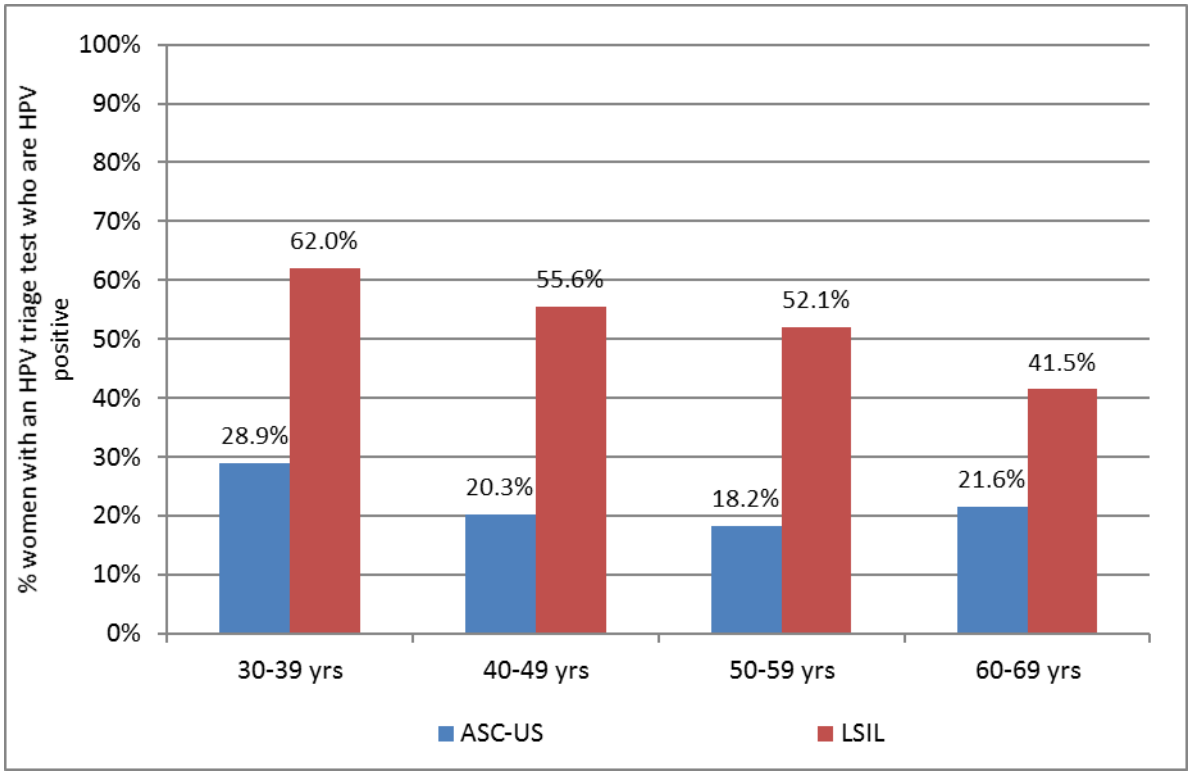


Figure 77 - Proportion of women with an HPV triage test who are HPV positive, by age and cytology result



Note: Excludes results for women aged less than 30 years and aged 70 years or more, since these are based on very small numbers of women with valid HPV test results.

Table 20 - HPV triage test results following ASC-US cytology, by age and cytology laboratory

Laboratory	Women with valid HPV test results		Women with positive HPV test results (number and % within each age group)											
	< 30yrs*	30+ yrs	< 30yrs*		30-39 yrs		40-49 yrs		50-59 yrs		60-69 yrs		70+ yrs	
	N	N	N	%	N	%	N	%	N	%	N	%	N	%
Anatomical Pathology Services	2	456	1	50.0	45	29.4	35	21.7	21	19.8	9	27.3	0	0.0
Canterbury Health Laboratories	1	157	1	100.0	3	6.1	11	20.0	3	7.9	2	14.3	0	0.0
LabPLUS	3	146	1	33.3	12	22.2	5	11.1	4	11.8	1	8.3	0	0.0
Medlab Central Ltd.	2	165	0	0.0	18	29.5	9	16.4	8	22.9	2	14.3	0	0.0
Pathlab	2	224	1	50.0	24	33.8	14	20.0	15	31.3	7	22.6	0	0.0
Southern Community Laboratories	3	245	0	0.0	33	41.8	20	26.0	8	12.7	6	28.6	2	40.0
Total	**13**	**1,393**	**4**	**30.8**	**135**	**28.9**	**94**	**20.3**	**59**	**18.2**	**27**	**21.6**	**2**	**14.3**

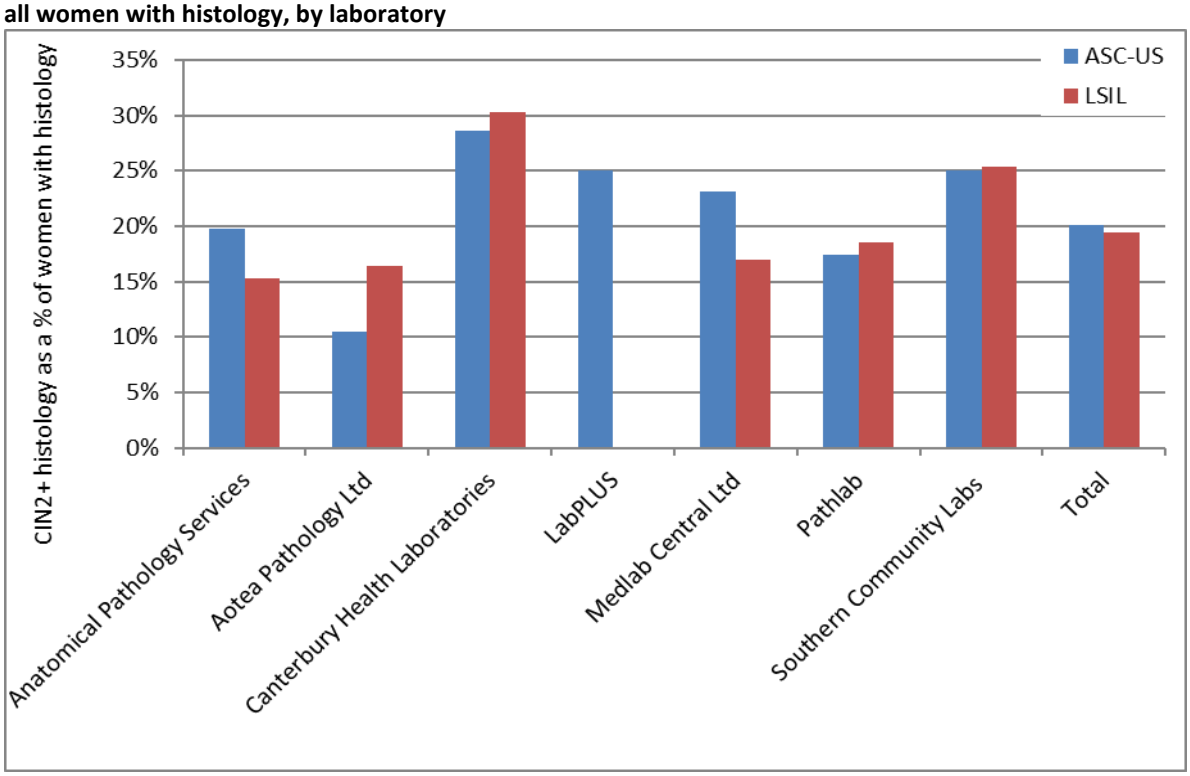
*Excludes women with abnormal cytology in the five years preceding their low grade cytology sample. * Additionally excludes women with any previous squamous high grade (cytology or histology)*

Table 21 - HPV triage test results following LSIL cytology, by age and cytology laboratory

Laboratory	Women with valid HPV test results		Women with positive HPV test results (number and % within each age group)											
	< 30yrs*	30+ yrs	< 30yrs*		30-39 yrs		40-49 yrs		50-59 yrs		60-69 yrs		70+ yrs	
	N	N	N	%	N	%	N	%	N	%	N	%	N	%
Anatomical Pathology Services	6	464	5	83.3	125	60.1	67	45.3	39	45.9	10	45.5	0	0.0
Canterbury Health Laboratories	0	74	-	-	14	51.9	19	73.1	10	62.5	4	80.0	0	0.0
LabPLUS	1	49	1	100.0	5	29.4	7	43.8	1	10.0	0	0.0	1	100.0
Medlab Central Ltd.	2	86	2	100.0	22	64.7	15	62.5	15	60.0	2	66.7	0	0.0
Pathlab	0	210	-	-	56	62.9	44	67.7	18	51.4	7	35.0	1	100.0
Southern Community Laboratories	13	602	10	76.9	202	65.4	98	57.3	55	58.5	11	40.7	1	100.0
Total	**22**	**1,485**	**18**	**81.8**	**424**	**62.0**	**250**	**55.6**	**138**	**52.1**	**34**	**41.5**	**3**	**75.0**

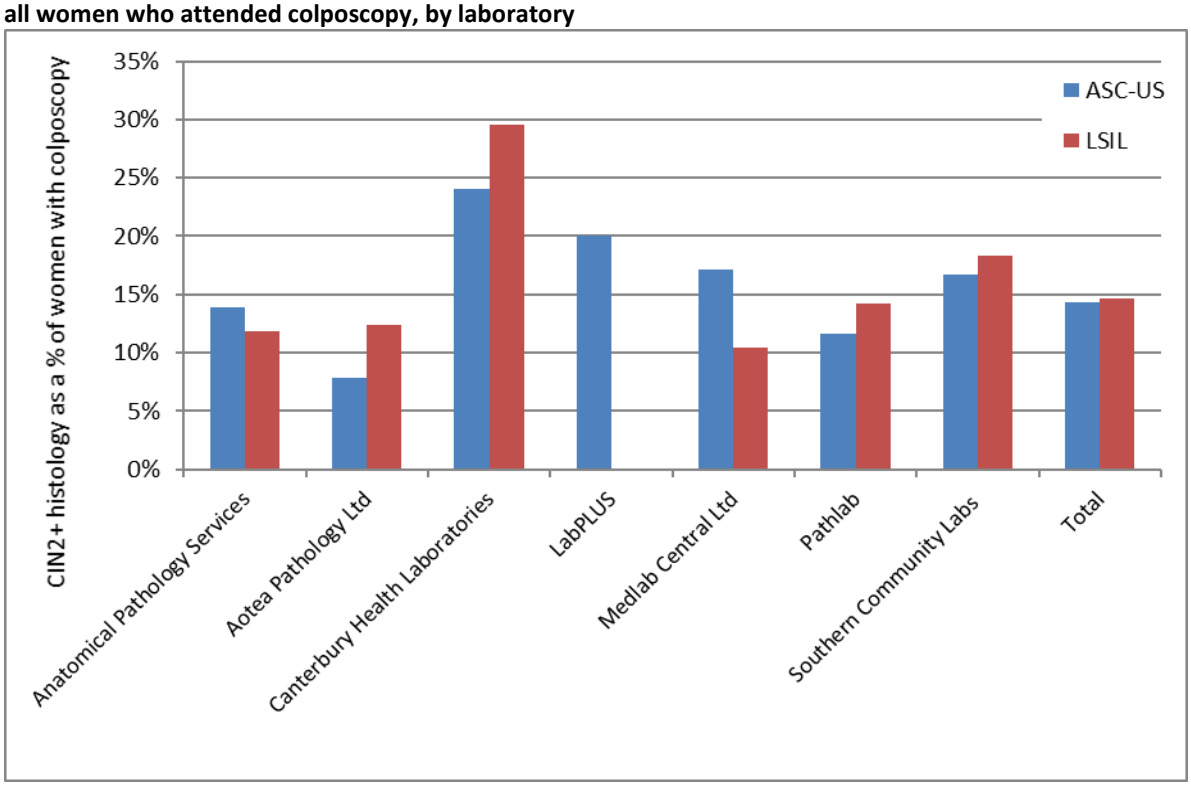
*Excludes women with abnormal cytology in the five years preceding their low grade cytology sample. * Additionally excludes women with any previous squamous high grade (cytology or histology)*

Figure 78 - Triage positive women with histologically-confirmed CIN2+ within 12 months, as a percentage of all women with histology, by laboratory



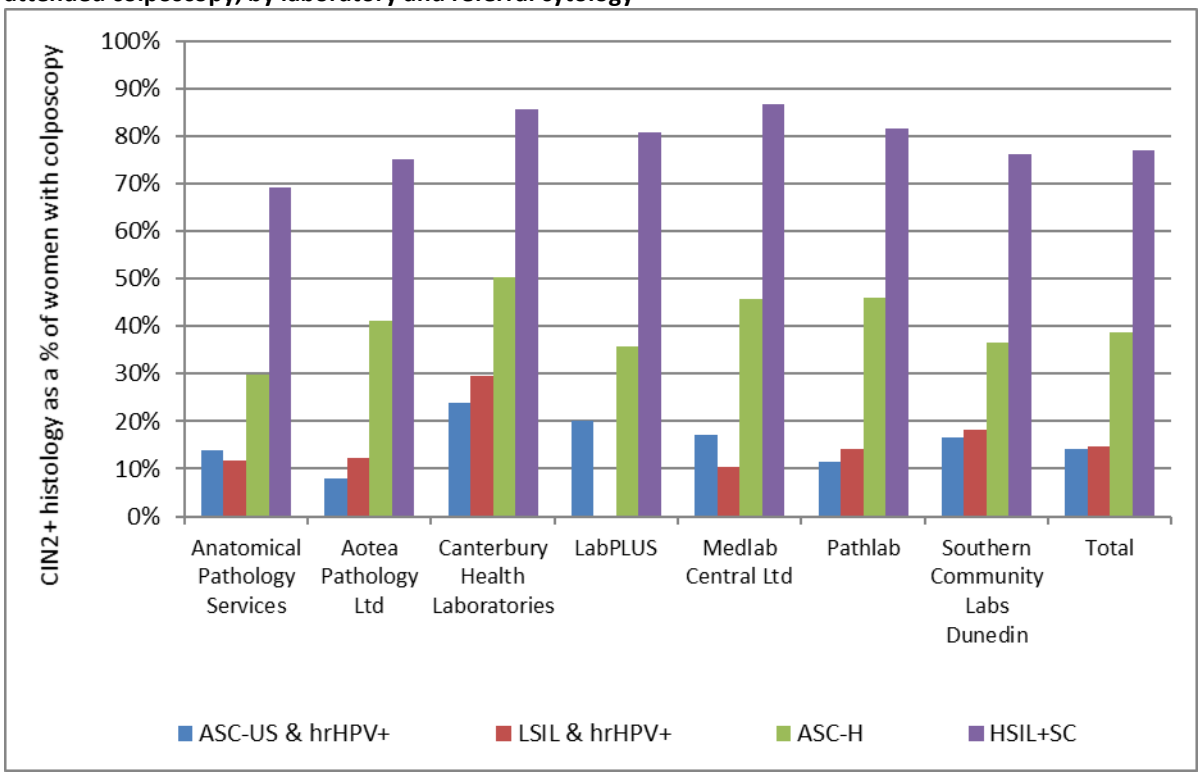
There were no women with cytology samples processed by LabPLUS who had an LSIL result resulting in histologically-confirmed CIN2+ for this monitoring period. Note that LabPLUS results are based in very small numbers of triage positive women (see Table 67 and Table 68).

Figure 79 - Triage positive women with histologically-confirmed CIN2+ within 12 months, as a percentage of all women who attended colposcopy, by laboratory



There were no women with cytology samples processed by LabPLUS who had an LSIL result resulting in histologically-confirmed CIN2+ for this monitoring period. Note that LabPLUS results are based in very small numbers of triage positive women (see Table 67 and Table 68).

Figure 80 **- Women with histologically-confirmed CIN2+ within 12 months, as a percentage of all women who attended colposcopy, by laboratory and referral cytology**



There were no women with cytology samples processed by LabPLUS who had an LSIL result resulting in histologically-confirmed CIN2+ for this monitoring period.

Figure 81 - Triage positive women with histologically-confirmed CIN2+ within 12 months, as a percentage of women with histology recorded, by age

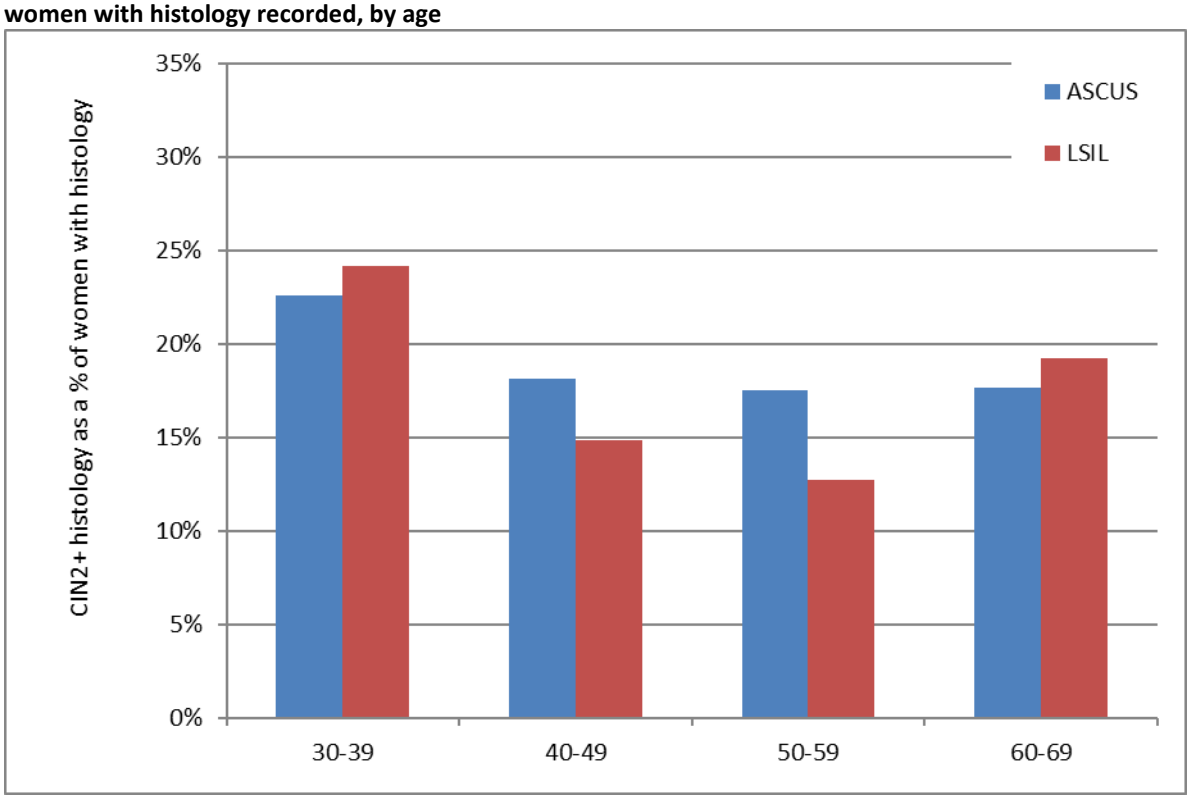


Figure 82 - Triage positive women with histologically-confirmed CIN2+ within 12 months, as a percentage of women with colposcopy recorded, by age

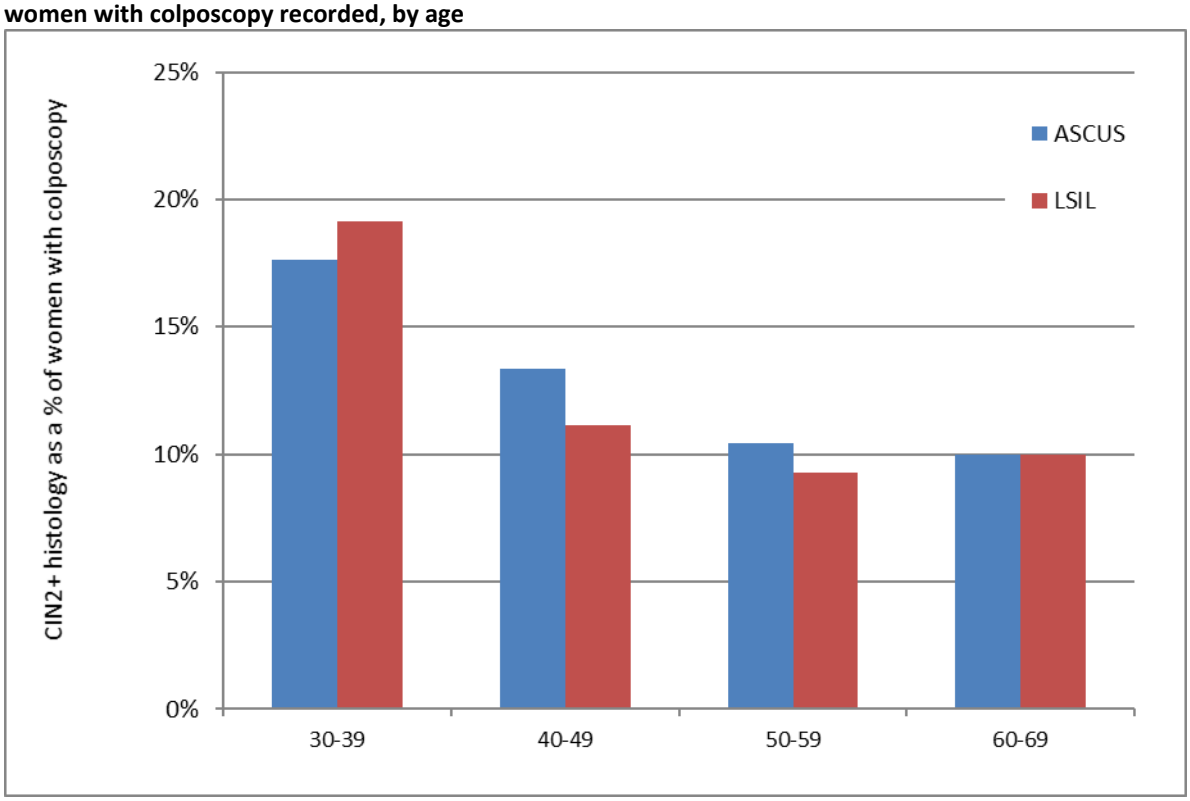
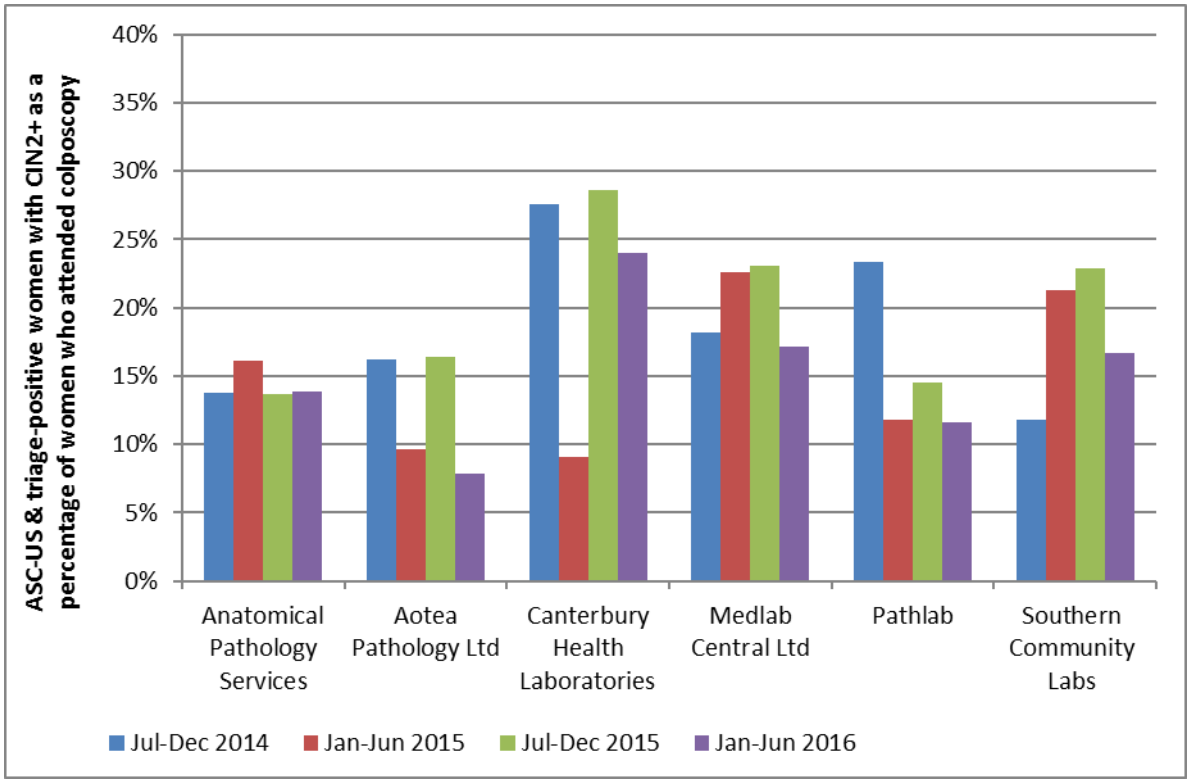
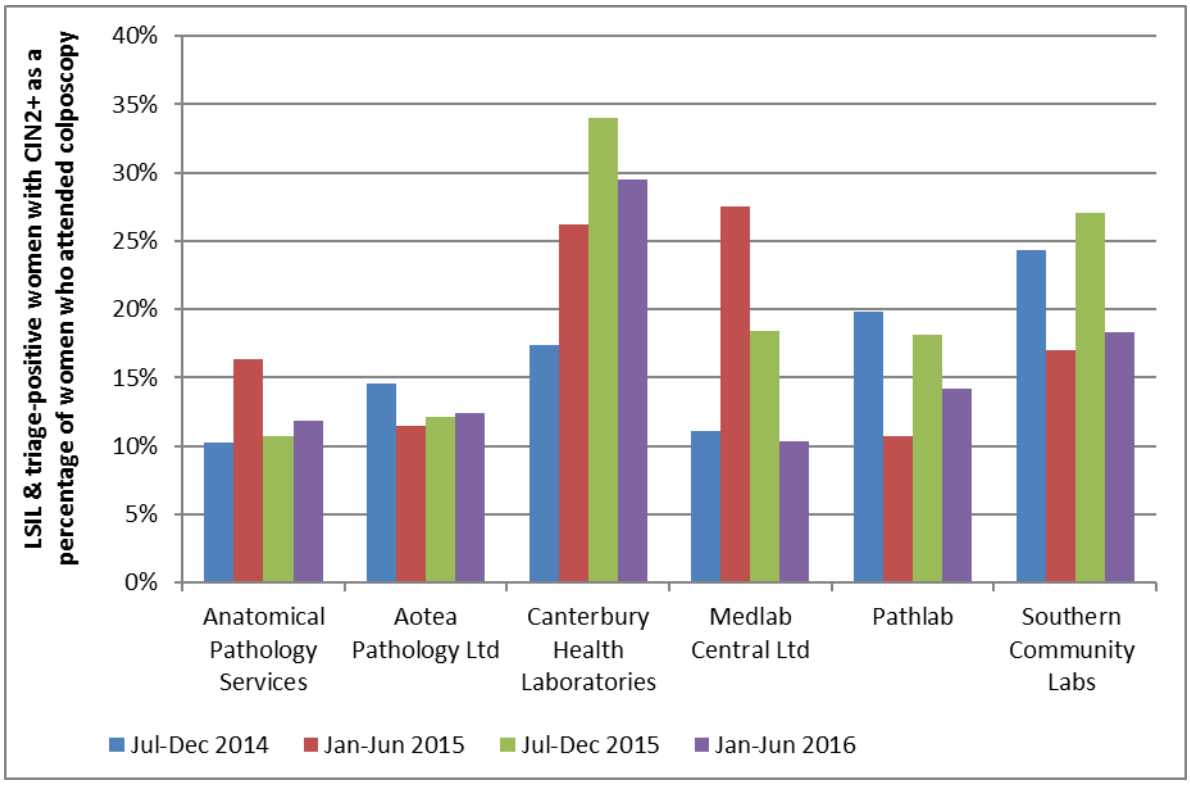


Figure 83 – Trends in ASC-US triage positive women with histologically-confirmed CIN2+ within 12 months, as a percentage of women with colposcopy recorded, by laboratory



Time periods relate to monitoring report periods; results relate to samples collected in the 6-month period 12 months prior to the monitoring period, to allow for sufficient follow-up time for colposcopy/ histology.

Figure 84 – Trends in LSIL triage positive women with histologically-confirmed CIN2+ within 12 months, as a percentage of women with colposcopy recorded, by laboratory



Time periods relate to monitoring report periods; results relate to samples collected in the 6-month period 12 months prior to the monitoring period, to allow for sufficient follow-up time for colposcopy/ histology.

Indicator 8.2 – HPV test volumes

Definition

All HPV tests received by laboratories within the monitoring period were retrieved. This volume of HPV tests (performed for any purpose) is reported on by:

- Laboratory
- Ethnicity
- Age group
- Purpose (under development)

Purpose is defined as one of the following categories:

i) Post-treatment *(women treated for high grade squamous lesions (specifically CIN2/3) in the period six months to four years prior to the HPV sample date, to capture two rounds of testing)*

ii) Historical *(high grade squamous cytology (ASC-H/ HSIL) or histology (CIN2/3) more than three years prior to the HPV test sample)*

iii) Taken at colposcopy (*HPV sample collected on the same date as a colposcopy visit or a histology sample in the same woman)*

iv) HPV triage *(as defined in Indicator 8.1, but restricted to women aged 30 years or more at the time of the cytology specimen, and where the low grade cytology (ASC-US or LSIL) was no more than six months prior to the HPV test)*

v) Other *(tests which do not fit into any of the above categories)*

These categories are defined hierarchically in the order shown; that is, a test cannot fit into more than one category, and tests are only considered for inclusion in a category if no previous categories in the list apply.

As this indicator is still being developed, tests in the 'Other' category were explored further. The number of tests that fell into the 'Other' category was found to be relatively high in this report, but this analysis is nonetheless indicative of the appropriate purposes. It is also useful to report the extent of HPV tests for other purposes and the need to eliminate HPV tests for other purposes that are not within the NCSP guidelines. For this reason the purpose of HPV tests are discussed in this report.

Rates of invalid HPV tests are also reported on.

Measures reported by age are based on the age of the women on the date that the HPV test sample was collected.

Target

Targets have not yet been set.

Current Situation

Overall volumes

There were 20,143 samples received by laboratories for HPV testing within the current monitoring period. These are reported on further in Table 69 to Table 74.

Virtually all (98.6%) samples for HPV testing were from women aged 20-69 years. The large majority of women (85.5%) were aged 30 years or more (Figure 85, Table 73).

The number of samples received by laboratories for HPV testing ranged from 1,065 (LabPLUS; 5.3% of all HPV tests) to 7,604 (Southern Community Laboratories; 37.8% of all HPV tests) (Figure 86, Table 69).

Figure 87 and Table 69 also show for each laboratory the ratio of the number of HPV tests received, divided by the number of cytology tests reported on (expressed as a percentage). This measure provides some correction for the variation in workloads between different laboratories. It is likely, for example, that laboratories which process a larger volume of cytology tests would also undertake a larger volume of HPV tests. The ratio of HPV tests to cytology tests reported was on average 9.2% across New Zealand – that is, on average 9.2% of cytology tests are associated with an HPV test. This ratio varied by laboratory from 6.9% (Southern Community Laboratories; i.e. fewer HPV tests processed in relation to cytology tests processed than national average) to 16.3% (Canterbury Health Laboratories; i.e. more HPV tests processed in relation to cytology tests processed than national average).

The distribution of HPV tests by ethnicity is shown in Table 72.

The overall proportion of HPV tests with invalid results was 0.3% (Table 70). The proportion was small for both HPV test technologies reported (Table 71).

Purpose of HPV tests

These HPV tests were further analysed in order to ascertain the purpose for which they were performed. Nationally, it was calculated that 2,787 (13.8%) were for post-treatment management for women treated in the past four years; 7,758 (38.5%) were for follow-up management of women with high grade squamous cytology or histology more than three years previously (historical testing); 877 (4.4%) were on samples collected at a colposcopy visit which did not fit into a previous category (possibly for resolution of discordant results); and 2,749 (13.6%) were for triage of low grade cytology in women aged 30 years or more. There were 5,972 (29.6%) HPV tests that did not fit into any of the previously described categories (Figure 88).

Further breakdowns of HPV tests by purpose are presented by age (Figure 89), laboratory (Figure 90), and ethnicity (Table 72).

There were variations in HPV test purpose by age (Figure 89, Table 73). HPV triage (by the definition used here, and consistent with NCSP Guidelines) did not occur in women aged less than 30 years. In women aged less than 30 years, a comparatively larger proportion were taken for post-treatment management (33.4% among women aged 20-29 years) and at colposcopy (18.4% among women aged 20-24 years) compared to older women. Follow-up of women with historical high grade squamous abnormalities (more than three years ago)

was the most common reason that HPV tests were performed among women in the 5-year age groups between 30 and 54 years. Tests which did not fit into the prescribed categories, and were therefore classified as 'Other', were the most common classification among women aged less than 24 years and 55 years and older.

HPV test purpose also varied by laboratory (Figure 90, Table 74). Among tests for which the purpose could be determined, the most common categories were historical testing (at Anatomical Pathology Services, LabPLUS, Medlab Central Ltd., Pathlab, Southern Community Laboratories) and post-treatment management (Canterbury Health Laboratories). In all laboratories, however, tests for which the purpose was unclear were quite common, varying from 20.1% at Pathlab to 38.5% at LabPLUS. The proportion of tests performed for post-treatment management varied from 10.7% (Pathlab) to 26.1% (Canterbury Health Laboratories), while the proportion performed to follow up women with historical high grade squamous abnormalities varied from 19.9% (LabPLUS) to 45.9% (Pathlab). The proportion of tests where the sample was collected at colposcopy but not for one of the previous purposes ranged from 1.3% (Anatomical Pathology Services) to 10.3% (Canterbury Health Laboratories). The proportion of tests performed for HPV triage ranged from 10.5% (Southern Community Laboratories) to 18.1% (LabPLUS).

Follow up of women with historical high grade squamous abnormalities (more than three years ago) was the most common reason that HPV tests were performed among Māori, Pacific and European/ Other women. HPV triage was the most common reason among Asian women (Table 72).

Tests in the 'Other' category were further explored. A proportion of the 'Other' tests (3.5%; 211 tests) were potentially tests performed for post-treatment management, because the same woman had CIN2/3 histology recorded on the NCSP Register, however there was no explicit record of treatment available on the NCSP Register, potentially due to incomplete colposcopy data on the NCSP Register. Another 6.3% occurred after treatment, but did not meet the criteria for post-treatment management because they occurred within 6 months of treatment (2.1%; 125 tests), or after treatment of either a non-squamous high grade (1.1%; 67 tests), or a non-high grade (3.1%; 183 tests) or following treatment of cervical cancer (0.1%, 4 tests). A further 18.2% of the 'Other' HPV tests occurred after a previous abnormality but one which did not meet the criteria for historical testing either because it was non-squamous 7.3%; 434 tests), the high grade was non-squamous and less than three years ago (0.9%; 55 tests), not high grade (0.1%; 8 tests), the high grade squamous cytology was less than three years ago (9.9%; 590 tests).

A larger proportion of the "Other" tests (32.1%; 1,915 tests) occurred in women who did not have any specific high grade abnormality recorded on the NCSP Register, but did have a record on the NCSP Register suggesting that they had a previous high grade abnormality (although the Register does not record whether it was a squamous abnormality or not). These records predominantly indicated prior high grade cytology (25.7%; 1,533 tests), but some suggested prior high grade histology (6.4%; 382 tests). Smaller proportions of HPV tests were associated with a low grade abnormality, including either a current low grade cytology result which did not meet the criteria for triage because the

woman had another recent abnormality and triage was not required (1.5%; 90 tests), or a record suggesting a previous low grade cytology not explicitly recorded on the NCSP Register (3.5%; 207 tests). After this exploration, there remained 2,083 tests (34.9% of "Other" tests; 10.3% of all HPV tests in the monitoring period) where purpose still could not be determined.

HPV tests at colposcopy

HPV tests taken at colposcopy were further explored, based on the DHB of the colposcopy clinic where the sample was taken, and whether or not it was a public or a private clinic. Nationally, more of the HPV tests which were taken at colposcopy came from public facilities (644 tests; 89.2%) than from private facilities (78 tests; 10.8%). As the number of HPV tests collected at a colposcopy clinic is potentially reflective of the number of colposcopies performed there, a rate of HPV tests at colposcopy which takes this variation into account was derived, in order to provide more information. The rate of HPV tests at colposcopy was calculated by dividing the number of HPV tests collected at colposcopy by the total number of colposcopies within that DHB or across private colposcopy clinics, expressed as a percentage. This rate can be broadly interpreted as the percentage of colposcopies (within a given DHB or sector) where an HPV test sample is collected. Across New Zealand, HPV test samples were collected in approximately 5.3% of colposcopies. In DHBs where HPV tests were collected at colposcopy, this value ranged from 0.2% (Hawke's Bay) to 42.1% (Lakes), and was 5.2% overall across all public DHB clinics (Figure 91, Table 75). In private practice, this rate was 6.0%. No HPV tests were taken at colposcopy in Capital & Coast, Hutt Valley, Tairawhiti, Taranaki, Wairarapa, West Coast and Whanganui.

Trends

Slightly less samples were received at laboratories for HPV testing in the current monitoring period (20,143) than in the previous monitoring report (20,466; a decrease of 1.6%). This was not consistent across all test purpose categories – while there was a decrease in tests performed for historical testing (from 39.0% to 38.5%) and tests which were for triage of low grade cytology (from 14.8% to 13.6%), the number of tests increased for HPV testing taken at colposcopy (from 4.3% to 4.4%), post treatment management (from 13.0% to 13.8%), and for tests which did not fit into prescribed categories (from 28.9% to 29.6%). The number of HPV tests which are performed for post-treatment management has been increasing over the last 4 monitoring periods (Figure 92).

The laboratory with the greatest percentage increase in the number of samples received between the current monitoring period compared with the previous report period was Canterbury Health Laboratories (from 1,675 to 1,828 tests; 9.1% increase). The laboratory with the largest percentage decrease in the number of tests received between the current and previous period was Medlab Central Ltd. (from 2,216 to 1,757 tests; 20.7% decrease). Trends by laboratory can be seen in Figure 93.

Variations in the purpose of HPV tests by age and ethnicity were broadly similar to that in previous reports. An increasing proportion of tests in Māori women and women between the ages on 45-49 years are for follow-up of a historical

high grade squamous abnormality (more than three years ago). In women aged between 65 to 69 years, the proportion of HPV tests for which the purpose is unclear has increased over the last four monitoring periods.

The proportion of HPV tests which are invalid remains very small.

Comments

HPV volumes by laboratory will vary for a number of reasons, one of which being the general volume of work in that laboratory. In order to provide some correction for the variation in workloads between different laboratories, we calculated the ratio of HPV tests received to cytology tests reported on (Figure 87, Table 69). Other reasons for variations in the rate of HPV testing by laboratory (which are not taken into account in this ratio) may include differences in the population they serve, because HPV testing is performed in specific subgroups of women. For example, HPV triage testing is performed in women with low grade (ASC-US/LSIL) cytology results (but without recent abnormalities), therefore laboratories reporting higher rates of low grade abnormalities may also have higher rates of triage testing. Conversely, laboratories reporting on a larger proportion of cytology from colposcopy clinics may be less likely to perform HPV triage testing, because women attending colposcopy have generally had a recent abnormality and therefore do not require triage. These issues may for example partly explain differences in the ratios in Canterbury Health Laboratories (where rates of low grade cytology results are comparatively higher) and LabPLUS (where a larger proportion of cytology comes from colposcopy clinics). To understand in more detail, the reasons for the differences, an explicit exploration of the purpose for which the HPV test was performed has been examined here.

Exploration is ongoing into the potential reason for tests in the 'Other' category, as is the refinement of specifications for the analysis of purpose. Some possible explanations include follow-up of women previously treated for high grade squamous abnormalities where these abnormalities occurred outside New Zealand, prior to the woman being enrolled on the NCSP Register, or prior to the inception of the NCSP Register. The latter may potentially explain why the proportion of 'Other' tests is higher in older women than in younger women (except for ages less than 20). Synopses held on the NCSP Register of previous (self-reported) high grade abnormalities have been used in this report to explore this possibility further (although these synopses do not distinguish between squamous abnormalities and glandular abnormalities; HPV testing is currently only recommended for the management of women with previous squamous abnormalities). The proportion associated with a synopsis reflecting a previous high grade abnormality (cytological or historical) reported here (32.1%) is less than that in the previous report (35.9%), and the number of tests in this category has also decreased since the previous report (from 2,121 to 1,915). In a June 2015 newsletter, the NCSP reminded laboratories that women with a previous glandular lesion, or a high grade synopsis code on their screening history but no confirmation that the previous abnormality was squamous, should remain on annual screening and HPV testing is not applicable.

Figure 85 - Volume of HPV test samples received by laboratories during the monitoring period, by age

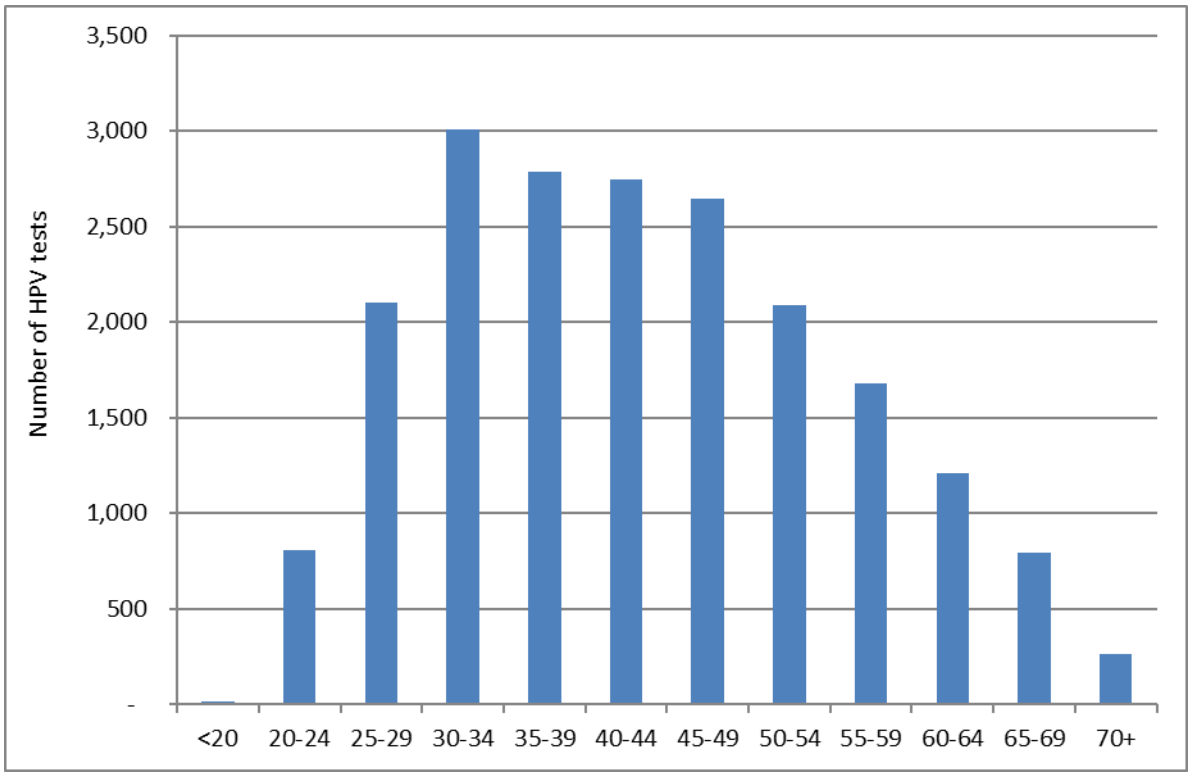


Figure 86 - Volume of HPV test samples received by laboratories during the monitoring period, by laboratory

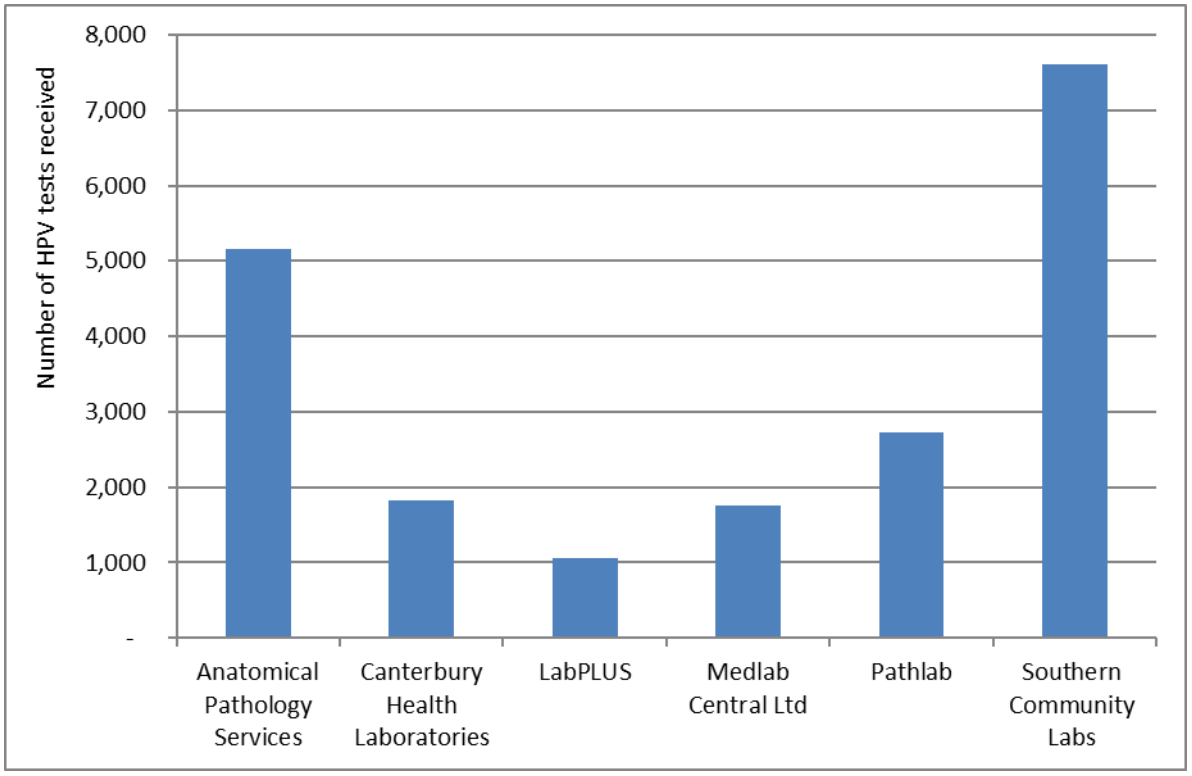
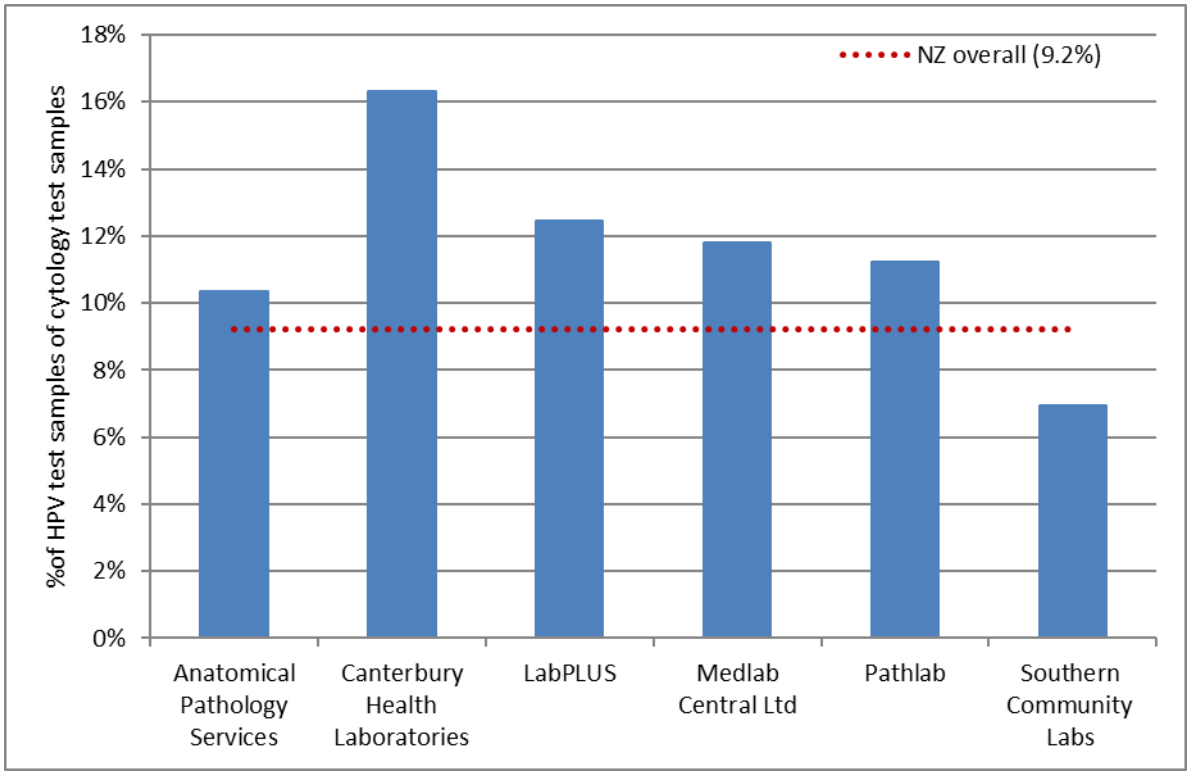


Figure 87 - HPV test samples as a percentage of cytology test samples received during the monitoring period, by laboratory



HPV tests/ colposcopy can be interpreted as the percentage of cytology tests which have an associated HPV test

Figure 88 - Volume of HPV test samples received during the monitoring period, by purpose

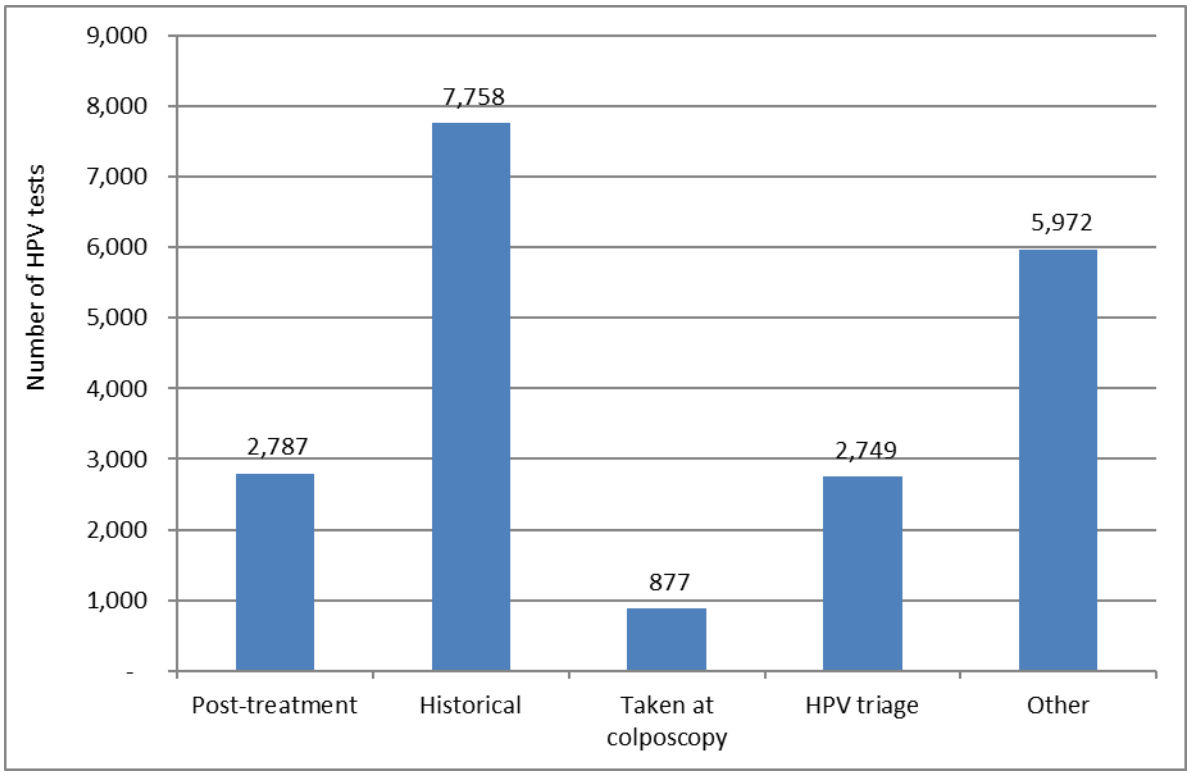


Figure 89 - HPV test samples received during the monitoring period, by purpose and age

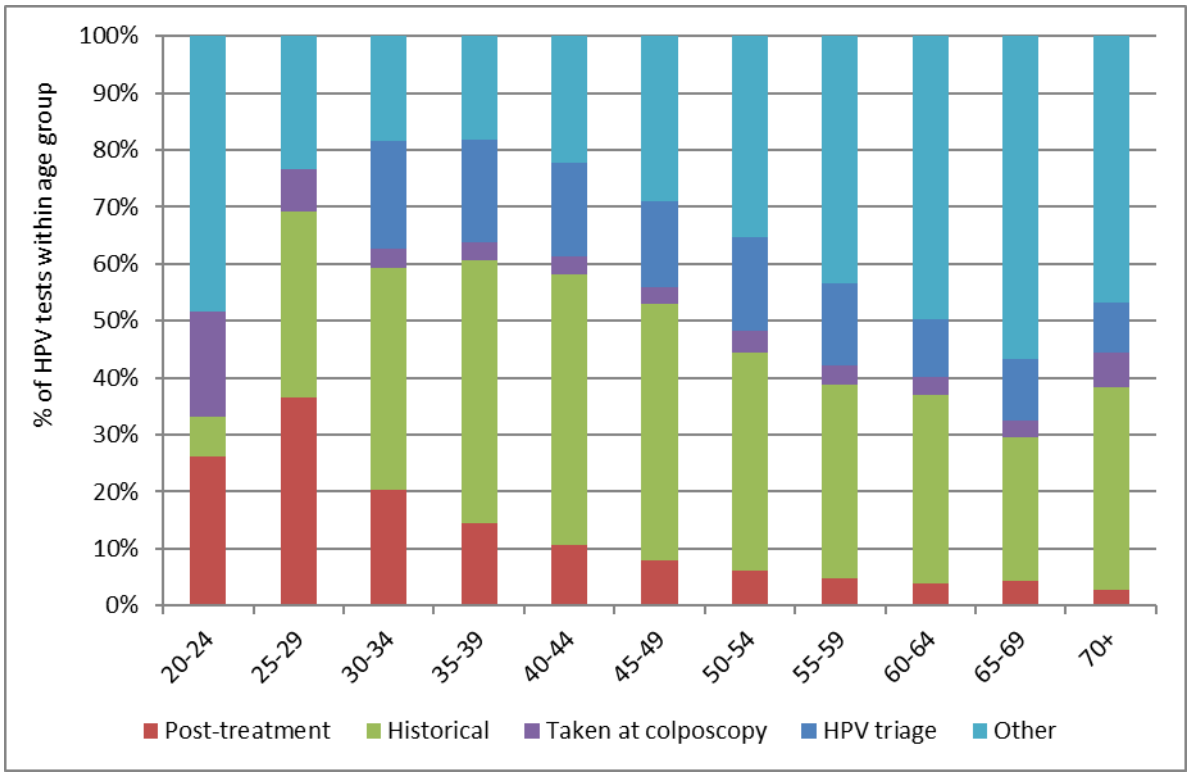


Figure 90 - HPV test samples received during the monitoring period, by purpose and laboratory

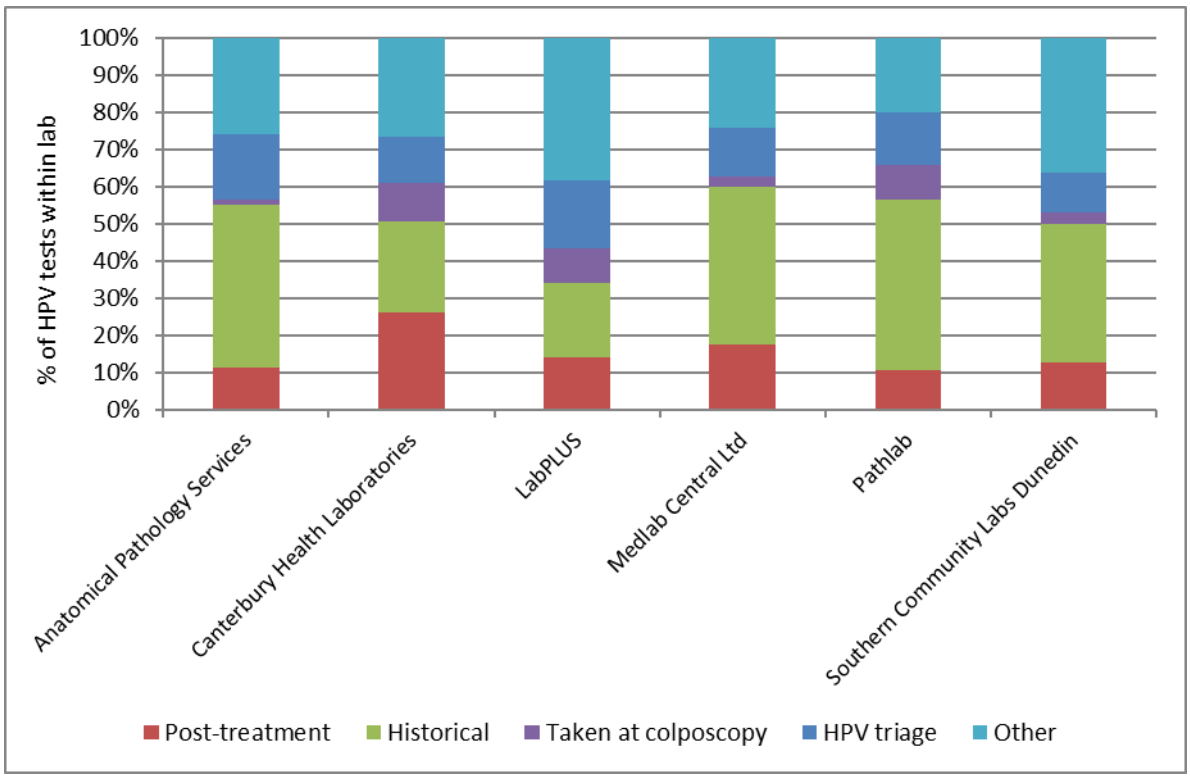
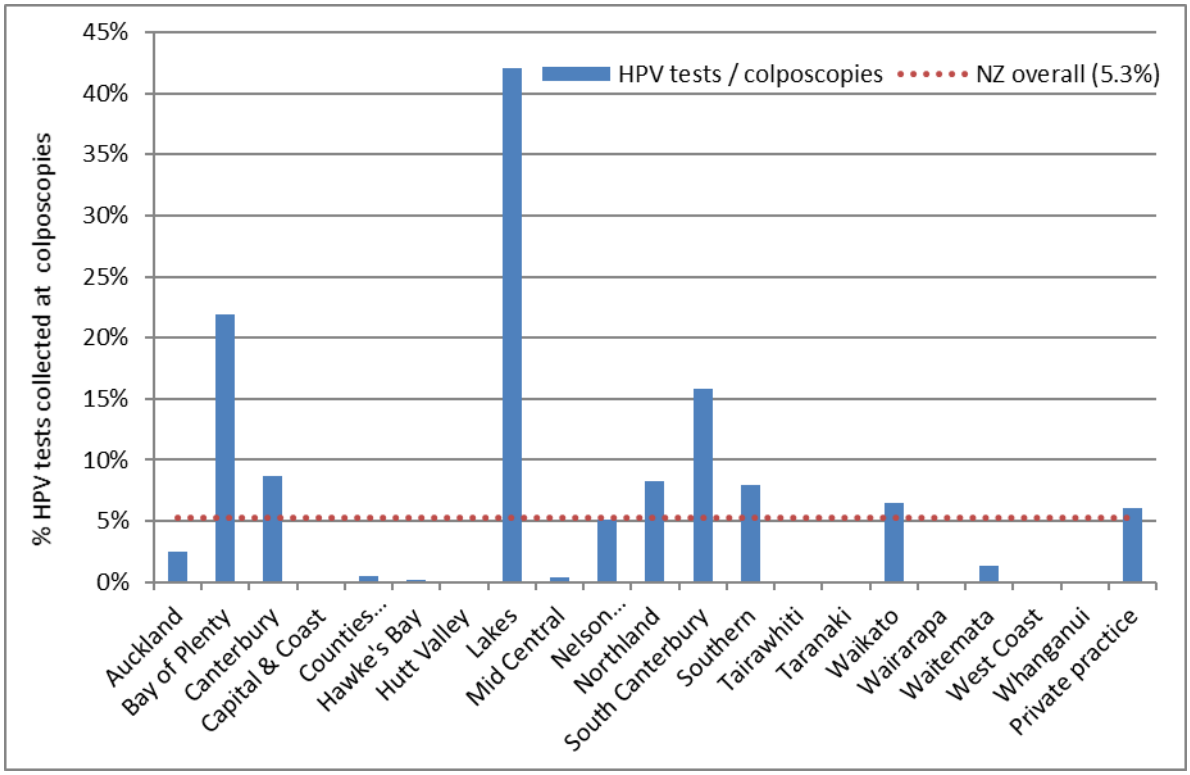


Figure 91 - HPV test samples collected at colposcopy, in relation to total colposcopies performed in the period, by DHB



HPV tests/ colposcopy can be interpreted broadly as the percentage of colposcopies within this DHB/ sector where a sample is collected for HPV testing. No HPV tests at colposcopy in Capital & Coast, Hutt Valley, Tairawhiti, Taranaki, Wairarapa, West Coast and Whanganui.

Figure 92 - Trends in volumes of HPV test samples received, by purpose

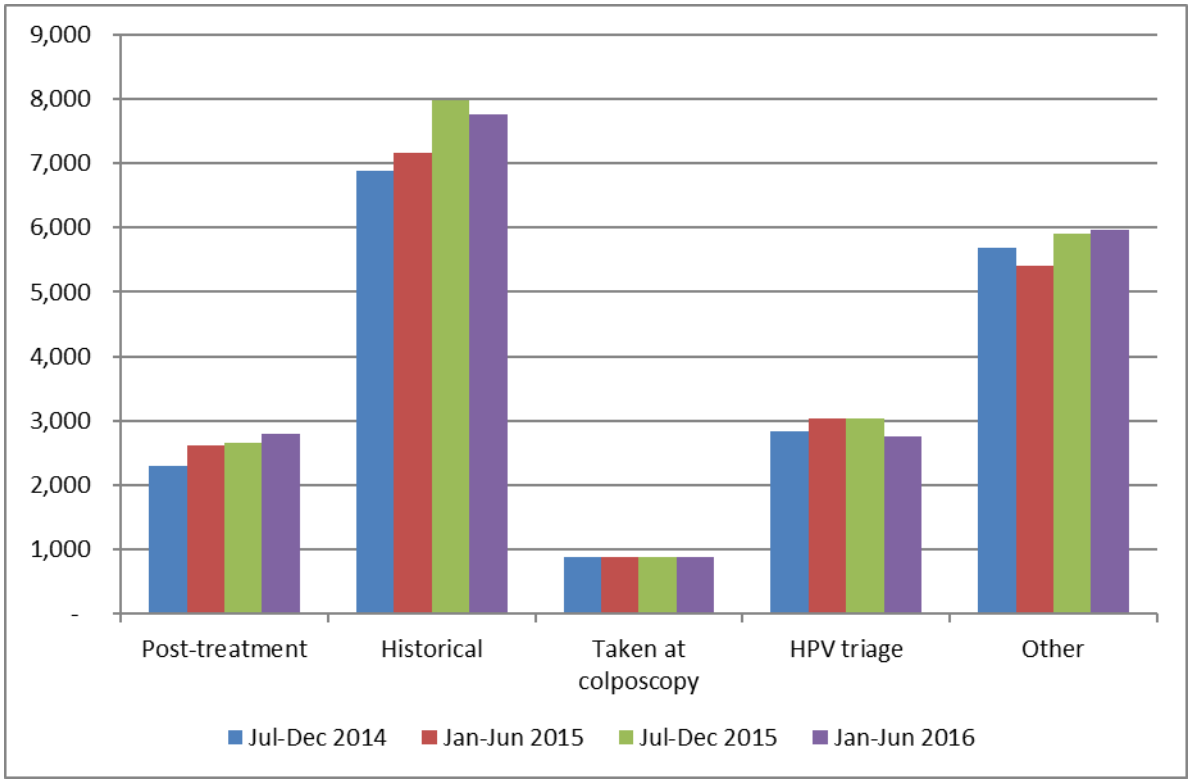
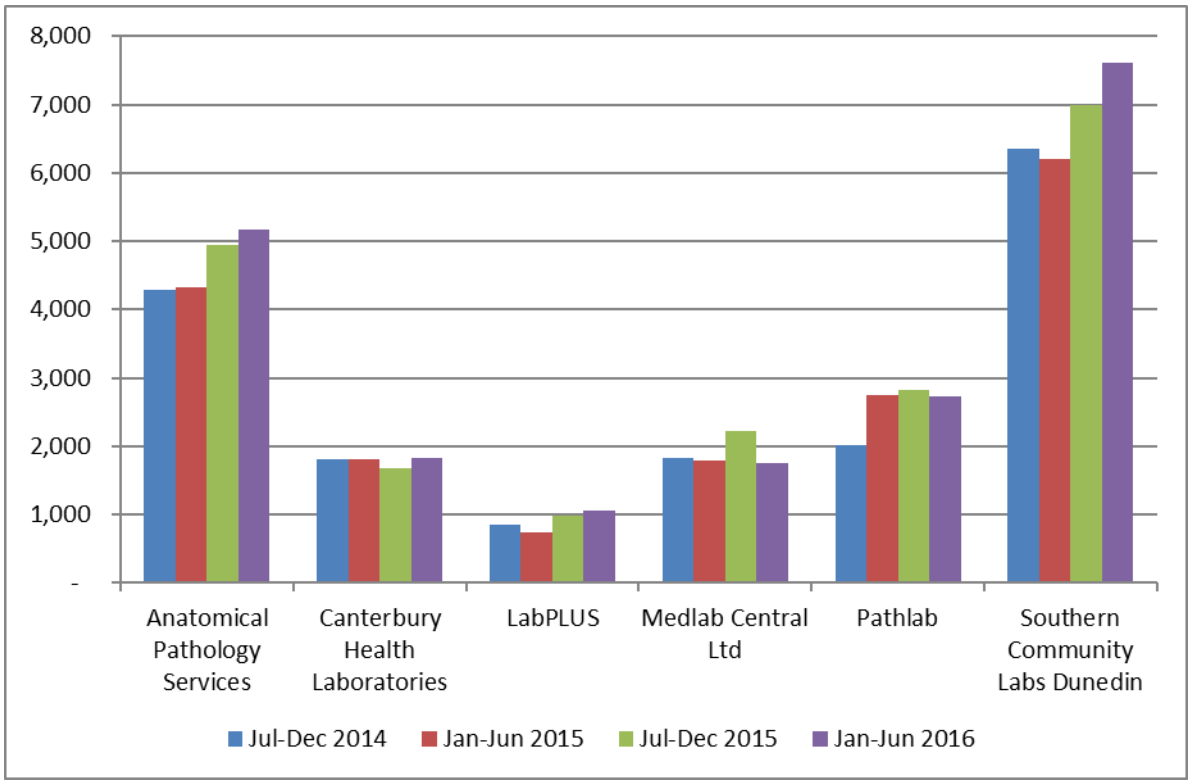


Figure 93 - Trends in volumes of HPV test samples received, by laboratory



Indicator 8.3 – HPV tests for follow-up of women with a historical high grade abnormality

Definition

NCSP Guidelines for Cervical Screening in New Zealand state that women with a previous high grade squamous abnormality (ASC-H, HSIL, CIN2/3) more than three years ago may benefit from two rounds of dual cytology and HPV testing ("historical testing"). If women test negative by both tests over two years, they can safely be screened according to the routine screening recommendations (cytology alone every three years until 70). HPV testing is not recommended for management of women with a historic non-squamous high grade abnormality.

The purpose of this indicator is to examine the extent to which historical testing is being undertaken in women who are eligible for it, and the outcomes of these tests. This indicator is still under development, however some aspects of it are included in the current monitoring report, as follows.

Test records for all women eligible for historical testing as at 1 October 2009 (the date that testing for HPV was introduced in New Zealand within the NCSP) were retrieved. It does not include women who may have become eligible for historical testing after 1 October 2009. Women are considered to have been eligible for historical testing as at 1 October 2009 if:

i) They had a high grade squamous abnormality (cytology or histology) more than three years prior to 1 October 2009; and

ii) They have not had a previous glandular abnormality prior to 1 October 2009; and

iii) Since their historical high grade squamous abnormality, they have had either only negative cytology OR no cytology OR three consecutive negative cytology tests as their most recent cytology results prior to 1 October 2009; and

iv) They had not been treated for a high grade squamous abnormality within the three years prior to 1 October 2009 *(followed up as for post-treatment women, not historical testing)*; and

v) They were alive on 1 October 2009.

Within the current report, Round 1 and Round 2 historical tests are only considered in the women within the overall group of all eligible women where:

i) the woman was still alive at the end of the current monitoring period; and

ii) she has not since had a non-squamous high grade abnormality *(no longer eligible for historical testing)*

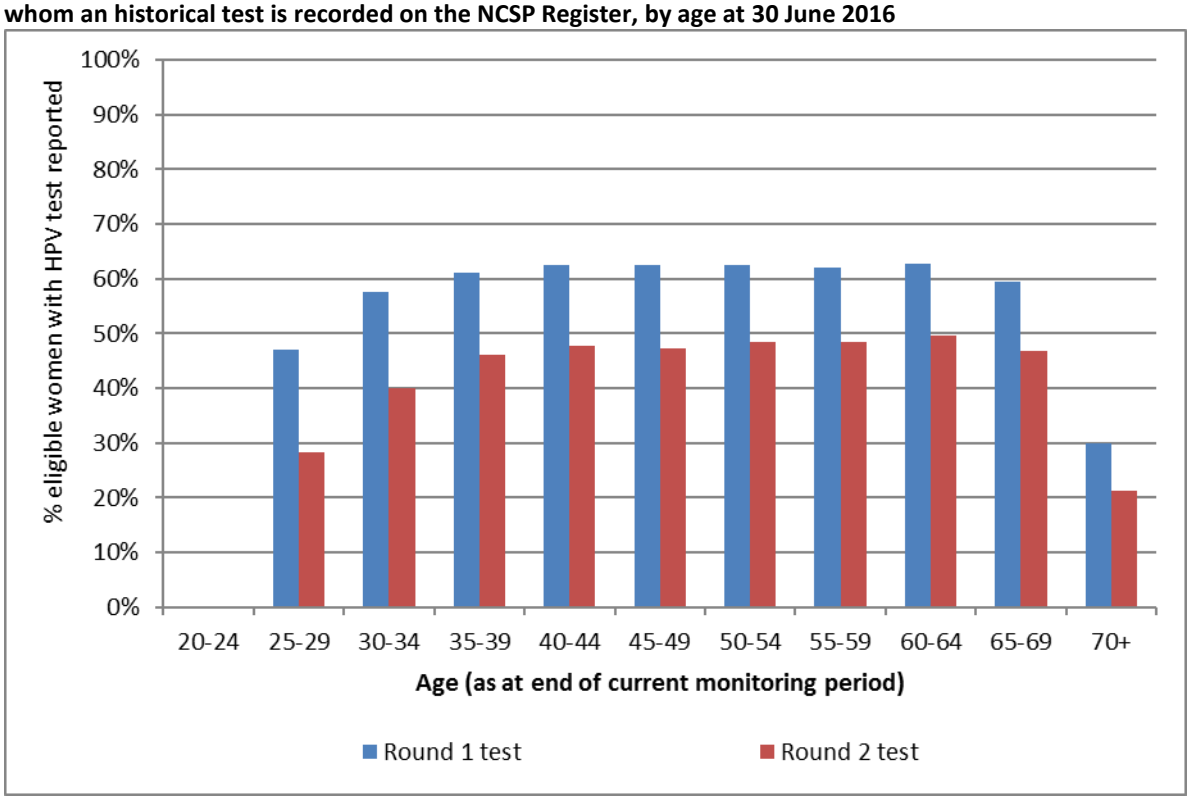
HPV tests in these women from 1 October 2009 were retrieved. HPV tests which appeared to have been carried out for other recommended uses of HPV testing (such as HPV triage of low grade cytology; HPV tests taken at colposcopy; or HPV tests performed to follow-up treatment of a high grade squamous abnormality within the previous three years) were excluded since they were not performed for the purpose of historical testing. After excluding

	those tests, the first HPV test in each woman was defined as her Round 1 historical test. A Round 2 historical test was defined as the first HPV test which occurred at least 9 months after a Round 1 historical test. Measures reported by age are based on the age of the women at the end of the current monitoring period (i.e. a woman's age at 30 June 2016). Measures reported by DHB are based on the geographic area relating to the woman's residence (or if this information is not available, that of her responsible health provider).
Target	This is a new measure, and targets have not yet been set.
Current Situation	***Overall women eligible for historical testing*** There were 50,507 women who, as at 1 October 2009, were eligible for HPV testing to follow-up a historical squamous high grade abnormality ("historical testing"). Of these women, 49,579 are considered in the current report (the remaining women were excluded because they were no longer alive at the end of the current monitoring period, or were no longer eligible for historical testing because they had a non-squamous high grade abnormality since 1 October 2009). There were no women eligible for historical testing who were aged less than 25 years at the end of the current monitoring period; however, this is not unexpected, as these women would be less than 20 years old on 1 October 2009 (Table 76). ***HPV tests performed for historical reasons*** Overall, 30,029 (60.6%) of the women eligible for historical testing have a Round 1 historical test recorded on the NCSP Register. There were 22,841 women who also have a Round 2 historical test (46.1% of eligible women; 76.1% of those with a Round 1 test). The proportion of women with historical tests varied by age. Among women aged 25 to 69 years at the end of the current monitoring period, the proportion of eligible women with a historical test varied from 47.2% (25-29 years) to 62.8% (60-64 years) for Round 1 tests, and from 28.4% (25-29 years) to 49.7% (60-64 years) for Round 2 tests (Figure 94, Table 76). The proportion of eligible women with historical tests also varied by DHB, from 44.9% (Counties Manukau) to 77.5% (Nelson Marlborough) for Round 1 tests, and from 28.0% (Auckland) to 68.2% (Nelson Marlborough) for Round 2 tests (Figure 95, Table 77). The number of women eligible for historical testing in a given DHB did not appear to have any relationship with the proportion who had received a historical test (Figure 100). The proportion of eligible women with Round 1 historical tests ranged from 41.5% in Pacific women to 62.9% in European/ Other women (Figure 96, Table 78). For Round 2 tests, this proportion ranged from 28.6% in Pacific women to 48.8% in European/ Other women. We explored whether the proportion of women with a historical HPV test was influenced by screening participation within the previous five years (since if

	women have not attended for any test, it would not be possible to initiate a historical test). The variation in the proportion of women with historical tests recorded did not appear to be fully explained by variations in screening participation, either by DHB (Figure 101, Table 79) or by ethnicity (Figure 102).
Trends	As this Indicator is reporting on the cumulative proportion of women who were eligible for HPV testing for the management of a historical high grade squamous lesion as at 1 October 2009, the proportion is generally expected to increase over time. It has done so in this report in every DHB (Figure **97**), ethnicity (Figure 98) and every age group (Figure 99).
Comments	This indicator is still under development. For example, planned refinements include reporting on the proportion of the Round 1 and Round 2 historical tests where HPV was detected, and on how many women are able to be returned to routine screening after two rounds of negative cytology and HPV tests; considering women with a historical high grade squamous abnormality who became eligible for historical testing after 1 October 2009; and taking into account whether women have attended for any screening test, since women who have not attended for any testing could not be offered historical testing. This last point has been partially explored within the current report, by considering whether there was any relationship between the variations in women with Round 1 and Round 2 historical tests by DHB or ethnicity and the variations in screening participation within the previous five years by DHB or ethnicity. An extended period of five-years was examined, since it approximately corresponds to the period since 1 October 2009 and the time of the data download from NCSP Register used within this report (August 2016), that is the period during which we searched for HPV tests in this group of women. However, as women with a previous abnormality are recommended to re-attend for screening more frequently than the routine interval, the variations in overall attendance by DHB or by ethnicity may differ from the variations by DHB or ethnicity in this subgroup of women who have had a previous abnormality. It is possible that in some cases eligible women were offered historical HPV testing, but did not consent to the test. It has not been possible to take this into account within the current report. While this affects Round 1 tests, this should be less of an issue for Round 2 tests, because in June 2015 the NCSP requested that labs prompt smear takers to add on an HPV test where this is indicated by the Guidelines, but was not requested by the smear taker. Additionally, for women who had already consented to the Round 1 HPV test, separate consent was not required for a Round 2 HPV test. It is also possible that the reason some women underwent Round 1 tests, but not Round 2 tests, is because their concurrent cytology result indicated that other management (for example colposcopy referral) was required. This might be explored when this indicator is further refined to report on the test results in women who have undergone historical testing. This indicator currently only considers women who had a high grade squamous abnormality more than three years prior to 1 October 2009. It is anticipated

	that women with more recent high grade squamous abnormalities will be followed up via standard post-treatment management which also includes HPV testing. It was intended that future monitoring reports would also incorporate reporting on the use of HPV tests for the purpose of post-treatment management as a separate sub-indicator within Indicator 8. however, development of additional indicators has been suspended prior to the program's planned transition to primary HPV screening, as indicators will be reviewed as part of the transition process.

Figure 94 - Proportion of eligible women with squamous high grade abnormality more than 3 years ago for whom an historical test is recorded on the NCSP Register, by age at 30 June 2016



No women aged less than 25 years at the end of the current monitoring period were eligible for historical testing.

Figure 95 - Proportion of eligible women with squamous high grade abnormality more than 3 years ago for whom an historical test is recorded on the NCSP Register, by DHB

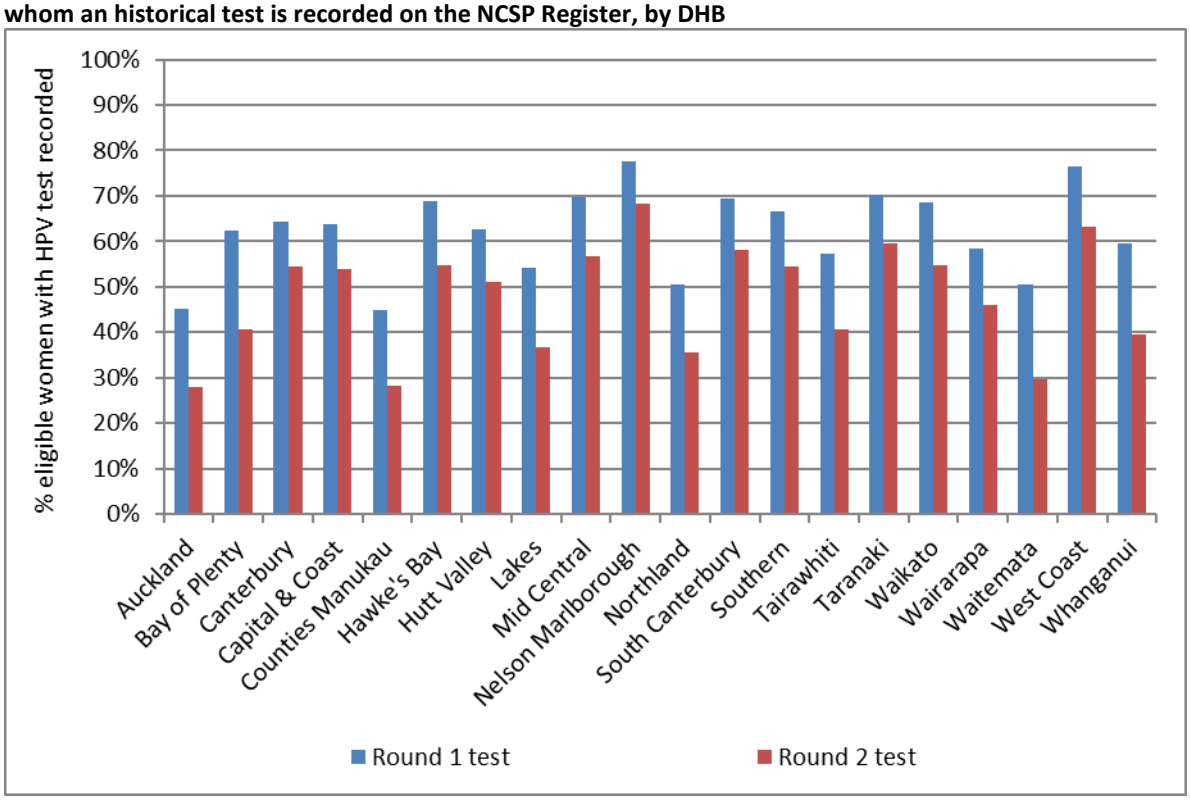


Figure 96 - Proportion of eligible women with squamous high grade abnormality more than 3 years ago for whom an historical test is recorded on the NCSP Register, by ethnicity

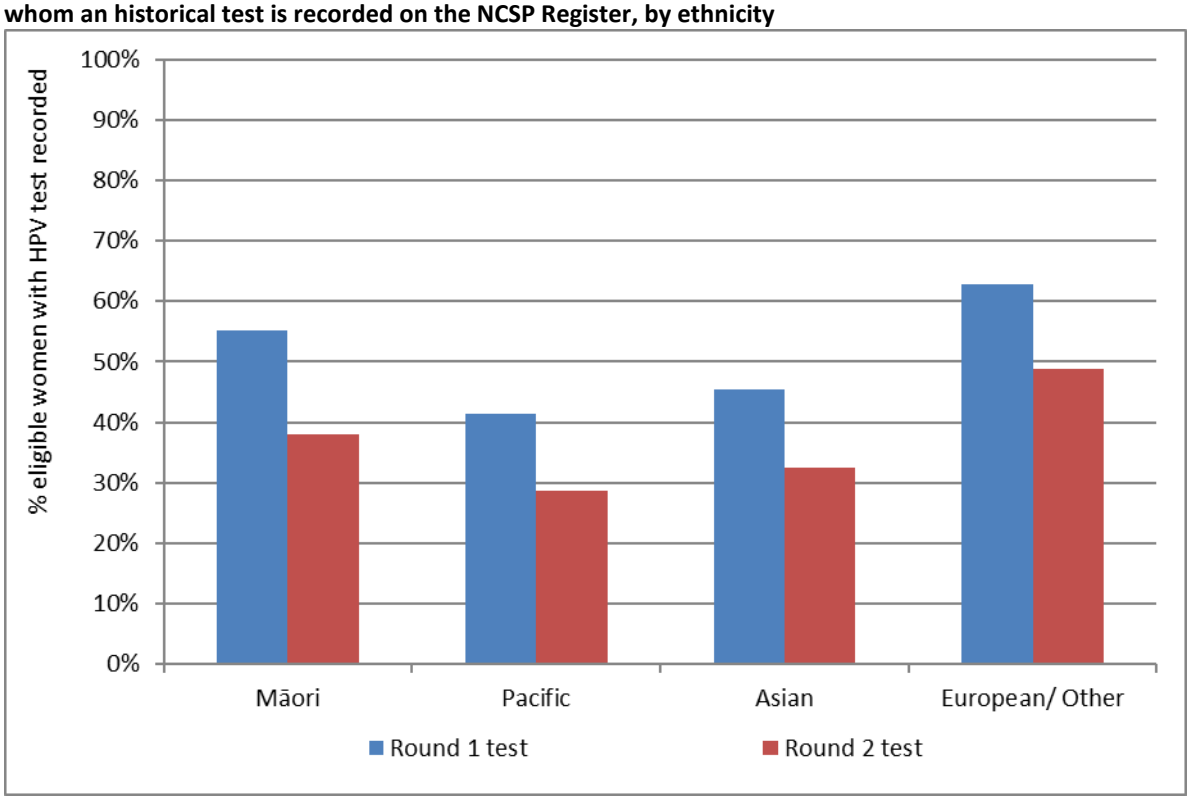


Figure 97 **– Trends in the proportion of eligible women with squamous high grade abnormality more than 3 years ago for whom a Round 1 historical test is recorded on the NCSP Register, by DHB**

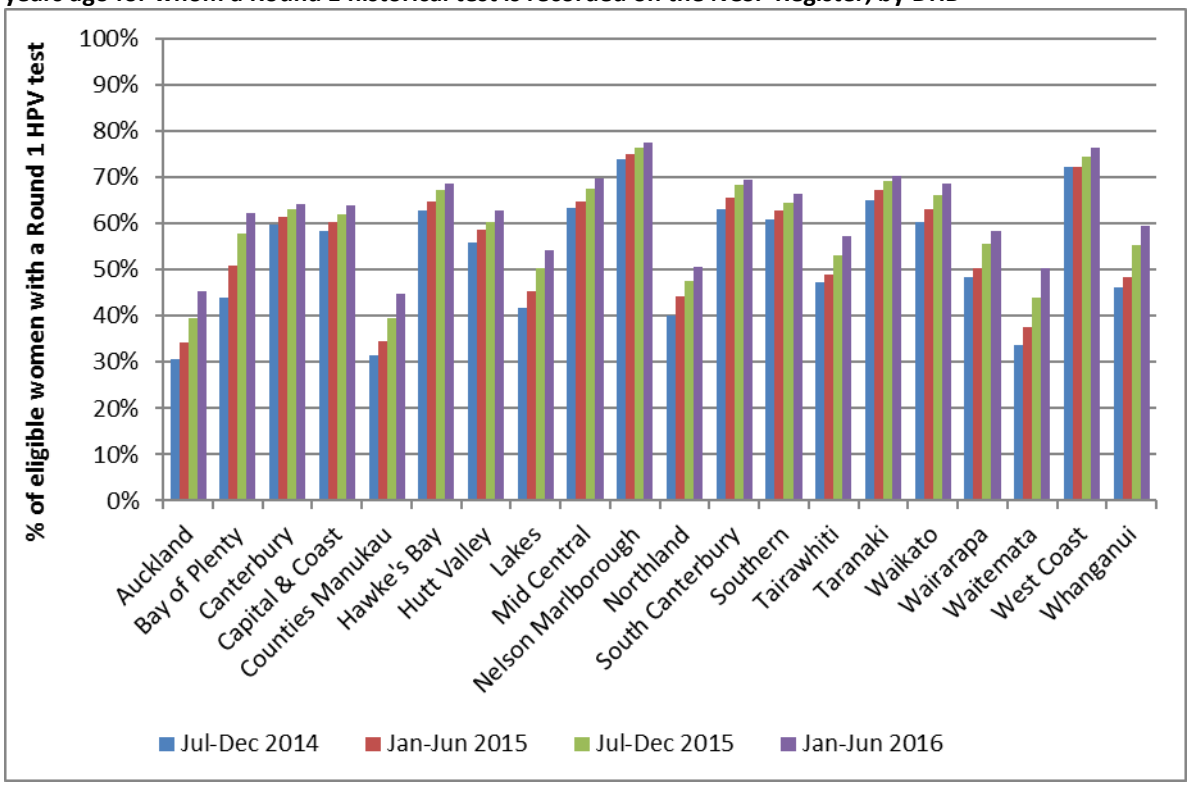


Figure 98 - Trends in the proportion of eligible women with squamous high grade abnormality more than 3 years ago for whom a Round 1 historical test is recorded on the NCSP Register, by ethnicity

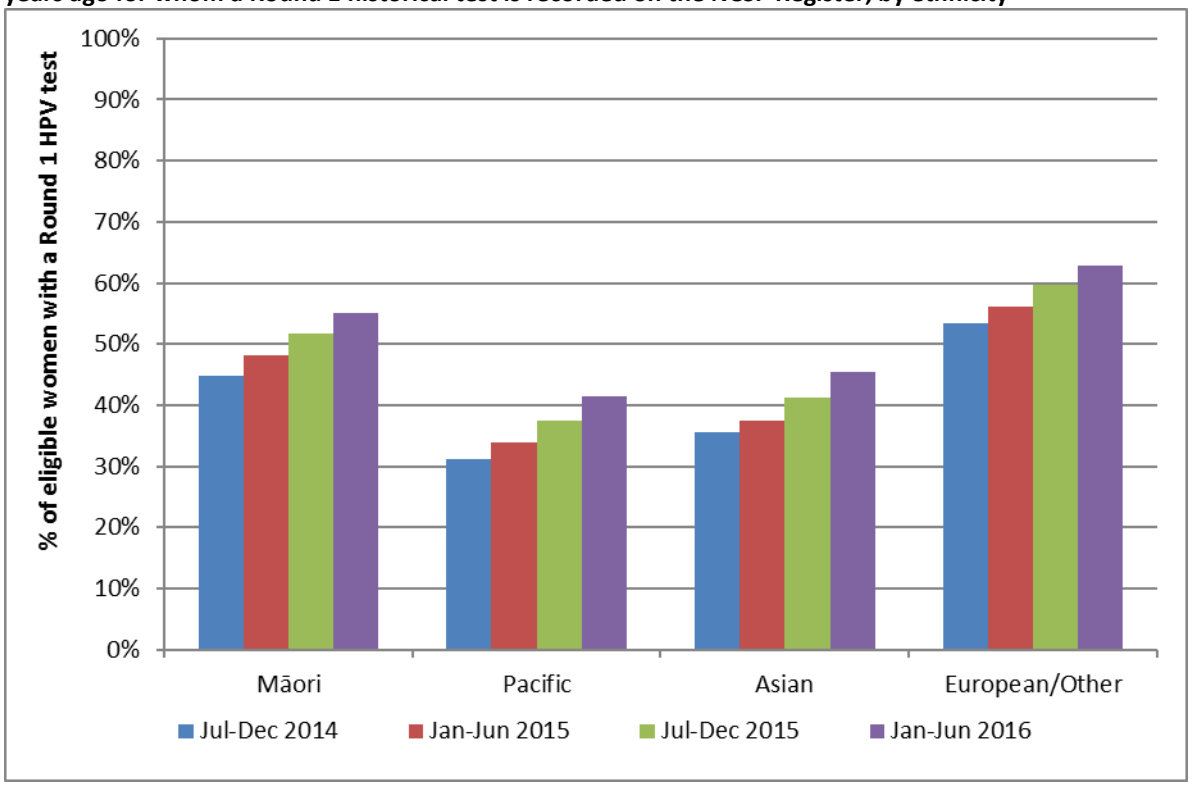
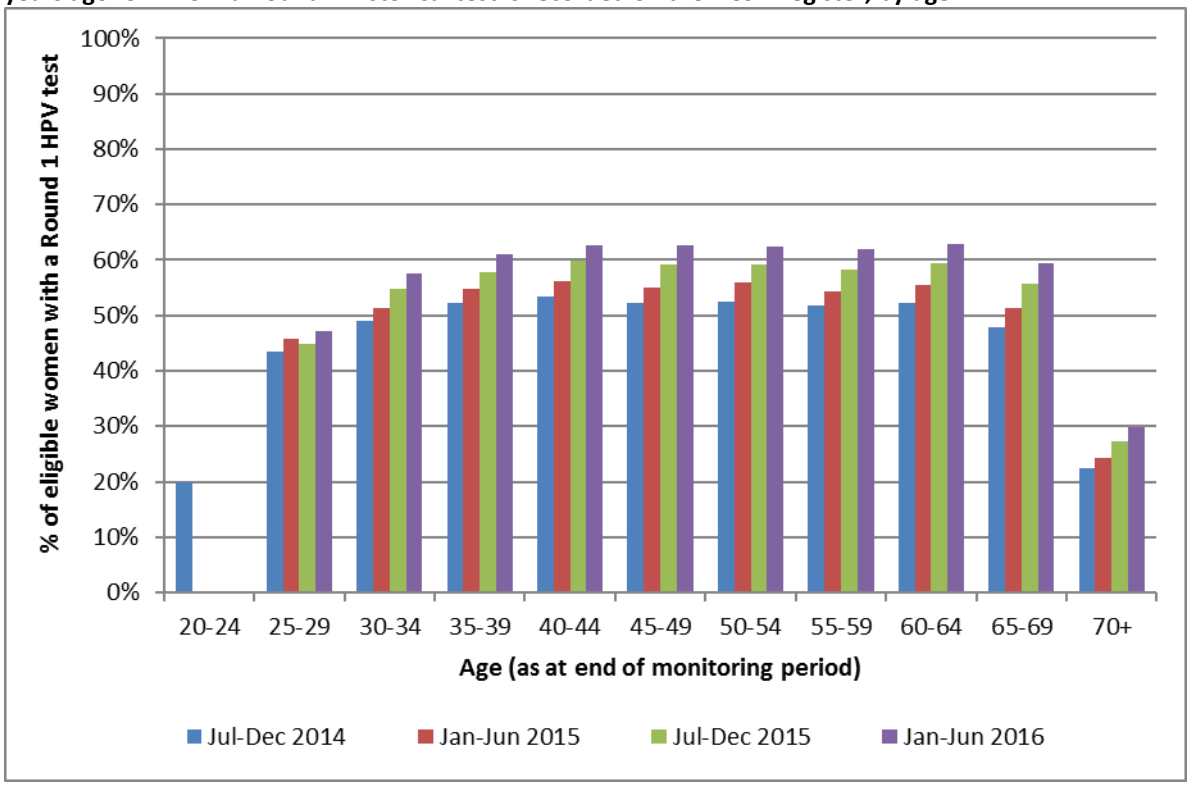


Figure 99 - Trends in the proportion of eligible women with squamous high grade abnormality more than 3 years ago for whom a Round 1 historical test is recorded on the NCSP Register, by age



Appendix A – Additional data

Indicator 1 - Coverage

Indicator 1.1 – Three-year coverage

Table 22 - Coverage by DHB (women 25-69 years screened in the three years prior to 30 June 2016, hysterectomy adjusted)

DHB	Hysterectomy adjusted population	Women screened in the last 3 years	
	N	N	%
Auckland	134,546	106,082	78.8
Bay of Plenty	56,318	45,308	80.5
Canterbury	137,172	102,098	74.4
Capital & Coast	80,542	64,805	80.5
Counties Manukau	134,471	99,774	74.2
Hawke's Bay	40,537	30,957	76.4
Hutt Valley	38,241	29,651	77.5
Lakes	26,478	20,766	78.4
Mid Central	42,475	31,725	74.7
Nelson Marlborough	38,288	30,702	80.2
Northland	42,022	30,435	72.4
South Canterbury	14,931	11,416	76.5
Southern	78,456	62,100	79.2
Tairawhiti	11,851	8,633	72.8
Taranaki	30,261	23,933	79.1
Waikato	98,314	74,041	75.3
Wairarapa	11,168	8,218	73.6
Waitemata	155,727	118,582	76.1
West Coast	8,763	6,400	73.0
Whanganui	15,257	11,538	75.6
Total	**1,195,818**	**917,164**	**76.7**

Excludes no women for whom DHB could not be determined

Table 23 - Coverage by ethnicity (women 25-69 years screened in the three years prior to 30 June 2016, hysterectomy adjusted)

Ethnicity	Hysterectomy adjusted population (ages 25-69 years)	Women screened in the last 3 years (ages 25-69 years)	
		N	%
Māori	158,054	100,477	63.6
Pacific	66,948	50,551	75.5
Asian	175,369	114,871	65.5
European/ Other	795,447	651,265	81.9
Total	**1,195,818**	**917,164**	**76.7**

Table 24 - Coverage by age (women 20-69 years screened in the three years prior to 30 June 2016, hysterectomy adjusted)

Age	Hysterectomy adjusted population	Women screened in the last 3 years	
	N	N	%
20-24	161,076	83,846	52.1
25-29	162,309	106,786	65.8
30-34	148,908	107,936	72.5
35-39	138,272	107,513	77.8
40-44	146,595	116,981	79.8
45-49	148,808	120,962	81.3
50-54	141,523	113,975	80.5
55-59	124,767	99,871	80.0
60-64	100,069	79,578	79.5
65-69	84,567	63,562	75.2
20-69	**1,356,894**	**1,001,010**	**73.8**

Table 25 - Coverage by DHB (women aged 25-69 years screened in the five years prior to 30 June 2016, hysterectomy adjusted)

DHB	Hysterectomy adjusted population	Women screened in the last 5 years	
	N	N	%
Auckland	134,546	125,239	93.1
Bay of Plenty	56,318	53,034	94.2
Canterbury	137,172	119,957	87.5
Capital & Coast	80,542	77,336	96.0
Counties Manukau	134,471	117,671	87.5
Hawke's Bay	40,537	36,878	91.0
Hutt Valley	38,241	35,036	91.6
Lakes	26,478	24,859	93.9
Mid Central	42,475	37,403	88.1
Nelson Marlborough	38,288	35,342	92.3
Northland	42,022	36,513	86.9
South Canterbury	14,931	13,028	87.3
Southern	78,456	73,337	93.5
Tairawhiti	11,851	10,450	88.2
Taranaki	30,261	27,660	91.4
Waikato	98,314	86,740	88.2
Wairarapa	11,168	9,725	87.1
Waitemata	155,727	138,901	89.2
West Coast	8,763	7,389	84.3
Whanganui	15,257	13,564	88.9
Total	**1,195,818**	**1,080,062**	**90.3**

Excludes 2 women for whom DHB could not be determined

Table 26 - Coverage by ethnicity – women aged 25-69 years screened in the five years prior to 30 June 2016, hysterectomy adjusted

Ethnicity	Hysterectomy adjusted population	Women screened in the last 5 years	
	N	N	%
Māori	158,054	123,936	78.4
Pacific	66,948	62,176	92.9
Asian	175,369	132,834	75.7
European/ Other	795,447	761,118	95.7
Total	**1,195,818**	**1,080,064**	**90.3**

Table 27 - Coverage by age (women 20-69 years screened in the five years prior to 30 June 2016, hysterectomy adjusted)

Age	Hysterectomy adjusted population	Women screened in the last 5 years	
		N	%
20-24	161,076	89,264	55.4
25-29	162,309	129,915	80.0
30-34	148,908	129,408	86.9
35-39	138,272	127,433	92.2
40-44	146,595	137,838	94.0
45-49	148,808	141,789	95.3
50-54	141,523	133,113	94.1
55-59	124,767	115,601	92.7
60-64	100,069	91,357	91.3
65-69	84,567	73,610	87.0
20-69	**1,356,894**	**1,169,328**	**86.2**

Table 28 - Women aged 25-69 years screened in the five years prior to 30 June 2016, by ethnicity and DHB (hysterectomy adjusted)

	Māori		Pacific		Asian		European/ Other	
DHB	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Auckland	6,880	70.9	12,543	101.7	32,954	77.5	72,862	104.2
Bay of Plenty	9,854	80.3	639	78.0	2,579	71.1	39,962	100.9
Canterbury	6,266	66.1	2,481	91.7	9,773	72.1	101,437	91.0
Capital & Coast	6,041	77.0	4,325	84.3	9,054	78.1	57,916	103.5
Counties Manukau	14,691	80.8	24,371	96.1	27,835	76.1	50,774	93.4
Hawke's Bay	8,225	91.7	1,075	92.2	1,403	76.3	26,175	91.7
Hutt Valley	4,688	85.7	2,275	86.7	3,874	87.0	24,199	94.2
Lakes	7,173	87.9	474	84.9	1,413	69.1	15,799	100.5
Mid Central	5,779	82.4	861	87.5	2,235	69.9	28,528	91.2
Nelson Marlborough	2,600	80.9	402	87.6	1,289	73.9	31,051	94.5
Northland	10,167	79.9	456	65.7	1,152	67.5	24,738	92.0
South Canterbury	602	60.7	119	113.3	402	69.3	11,905	89.8
Southern	4,313	68.1	1,048	91.6	2,999	66.6	64,977	97.7
Tairawhiti	4,600	85.9	196	77.2	242	68.0	5,412	91.9
Taranaki	3,624	81.1	217	78.3	992	70.7	22,827	94.7
Waikato	14,625	75.9	2,006	83.1	6,780	75.7	63,329	93.6
Wairarapa	1,371	86.3	156	88.6	240	70.8	7,958	87.8
Waitemata	8,782	69.4	8,245	88.2	27,022	76.1	94,852	96.6
West Coast	632	75.2	59	74.7	212	60.2	6,486	86.6
Whanganui	3,023	85.9	228	69.5	384	81.2	9,929	90.8
NZ Overall	**123,936**	**78.4**	**62,176**	**92.9**	**132,834**	**75.7**	**761,116**	**95.7**

Ethnicity-specific estimates for some DHBs exceed 100%. This is potentially due in part to limitations in the hysterectomy prevalence estimators which are used to adjust the eligible population.

Table 29 - Women under 20 years of age, and aged 15-19 years, screened in the three years prior to 30 June 2016, by DHB.

DHB	Number of women screened in last 3 years aged 10-20 years	aged 15-19 years	% of population aged 15-19 years screened
Auckland	592	592	3.8
Bay of Plenty	288	287	4.3
Canterbury	1,211	1,209	7.2
Capital & Coast	547	546	5.1
Counties Manukau	578	576	2.9
Hawke's Bay	229	228	4.4
Hutt Valley	177	177	3.8
Lakes	119	117	3.3
Mid Central	249	249	4.0
Nelson Marlborough	212	211	5.2
Northland	138	136	2.6
South Canterbury	89	88	5.2
Southern	611	610	5.3
Tairawhiti	48	48	2.9
Taranaki	190	188	5.3
Waikato	478	475	3.5
Wairarapa	66	65	5.1
Waitemata	968	967	4.9
West Coast	52	52	6.1
Whanganui	82	82	4.3
Unspecified	-	-	-
Total	**6,924**	**6,903**	**4.5**

Table 30 - Women screened under 20 years of age, as a proportion of all women screened in the three years to 30 June 2016, by DHB

DHB	Women screened in last 3 years aged < 20 years	Women screened in last 3 years all ages	Proportion of women screened who were aged < 20 years (%)
Auckland	592	117,117	0.5
Bay of Plenty	288	50,442	0.6
Canterbury	1,211	115,329	1.1
Capital & Coast	547	73,910	0.7
Counties Manukau	578	110,455	0.5
Hawke's Bay	229	34,487	0.7
Hutt Valley	177	32,798	0.5
Lakes	119	22,976	0.5
Mid Central	249	36,144	0.7
Nelson Marlborough	212	33,782	0.6
Northland	138	33,650	0.4
South Canterbury	89	12,705	0.7
Southern	611	71,340	0.9
Tairawhiti	48	9,638	0.5
Taranaki	190	26,739	0.7
Waikato	478	83,875	0.6
Wairarapa	66	9,162	0.7
Waitemata	968	131,331	0.7
West Coast	52	7,159	0.7
Whanganui	82	12,924	0.6
Unspecified	-	-	-
Total	**6,924**	**1,025,963**	**0.7**

Table 31 - Women screened under 20 years of age, and women aged 18-19 years when they were screened, in the three years to 30 June 2016, by DHB

	Number of women screened in last 3 years		
DHB	**aged 10-19 years**	**aged 18-19 years**	**% aged 18-19 years**
Auckland	592	546	92.2
Bay of Plenty	288	255	88.5
Canterbury	1,211	1,074	88.7
Capital & Coast	547	516	94.3
Counties Manukau	578	500	86.5
Hawke's Bay	229	211	92.1
Hutt Valley	177	157	88.7
Lakes	119	101	84.9
Mid Central	249	236	94.8
Nelson Marlborough	212	188	88.7
Northland	138	125	90.6
South Canterbury	89	72	80.9
Southern	611	564	92.3
Tairawhiti	48	42	87.5
Taranaki	190	164	86.3
Waikato	478	445	93.1
Wairarapa	66	53	80.3
Waitemata	968	828	85.5
West Coast	52	45	86.5
Whanganui	82	78	95.1
Unspecified	-	-	-
Total	**6,924**	**6,200**	**89.5**

Table 32 - Women (25-69 years) screened in the three years to 30 June 2016, as a percentage of the i) hysterectomy-adjustment NZ female population and ii) total NZ female population, by DHB

DHB	Women screened in the last 3 years (hysterectomy-adjusted)	Women screened in the last 3 years (no hysterectomy adjustment)
Auckland	78.8	71.1
Bay of Plenty	80.5	70.3
Canterbury	74.4	65.8
Capital & Coast	80.5	71.9
Counties Manukau	74.2	66.4
Hawke's Bay	76.4	66.7
Hutt Valley	77.5	68.8
Lakes	78.4	69.0
Mid Central	74.7	65.7
Nelson Marlborough	80.2	69.7
Northland	72.4	63.0
South Canterbury	76.5	66.5
Southern	79.2	69.7
Tairawhiti	72.8	64.2
Taranaki	79.1	69.7
Waikato	75.3	66.6
Wairarapa	73.6	63.9
Waitemata	76.1	67.8
West Coast	73.0	64.0
Whanganui	75.6	66.0
Total	**76.7**	**67.9**

Table 33 - Trends in three-year coverage by DHB (women screened in the previous three years, as a percentage of the hysterectomy-adjusted female population)

DHB	To 31 Dec 2014	To 30 Jun 2015	To 31 Dec 2015	To 30 June 2016
Auckland	78.8%	79.1%	79.4%	78.8%
Bay of Plenty	78.9%	79.5%	80.1%	80.5%
Canterbury	75.2%	74.5%	74.6%	74.4%
Capital & Coast	81.4%	80.5%	80.5%	80.5%
Counties Manukau	71.5%	72.5%	73.3%	74.2%
Hawke's Bay	77.0%	76.4%	76.3%	76.4%
Hutt Valley	77.8%	77.6%	78.0%	77.5%
Lakes	78.0%	77.8%	78.2%	78.4%
Mid Central	74.8%	74.6%	75.6%	74.7%
Nelson Marlborough	80.2%	80.6%	80.6%	80.2%
Northland	72.5%	71.9%	72.0%	72.4%
South Canterbury	75.6%	75.2%	75.9%	76.5%
Southern	79.3%	79.6%	79.6%	79.2%
Tairawhiti	72.5%	72.0%	73.1%	72.8%
Taranaki	80.2%	79.5%	79.2%	79.1%
Waikato	74.4%	74.7%	75.1%	75.3%
Wairarapa	75.2%	74.8%	74.6%	73.6%
Waitemata	76.2%	76.3%	76.5%	76.1%
West Coast	74.9%	73.5%	71.8%	73.0%
Whanganui	74.9%	75.7%	75.8%	75.6%
Total	**76.5%**	**76.5%**	**76.8%**	**76.7%**

Coverage calculated using population projection at the date shown based on 2013 Census data.

Table 34 - Trends in three-year coverage by age (women screened in the previous three years, as a percentage of the hysterectomy-adjusted female population)

Age	To 31 Dec 2014	To 30 Jun 2015	To 31 Dec 2015	To 30 June 2016
20-24	53.8%	52.7%	52.1%	52.1%
25-29	66.8%	66.0%	66.0%	65.8%
30-34	72.3%	72.0%	72.4%	72.5%
35-39	76.7%	76.7%	77.3%	77.8%
40-44	79.2%	79.3%	79.7%	79.8%
45-49	80.7%	80.8%	81.2%	81.3%
50-54	80.9%	80.8%	81.0%	80.5%
55-59	80.0%	80.6%	80.7%	80.0%
60-64	78.5%	79.1%	79.3%	79.5%
65-69	74.0%	74.5%	75.2%	75.2%
Total	**73.8%**	**73.6%**	**73.8%**	**73.8%**

Coverage calculated using population projection at the date shown based on 2013 Census data.

Table 35 - Trends in three-year coverage by ethnicity (women screened in the previous three years, as a percentage of the hysterectomy-adjusted female population)

Ethnicity	To 31 Dec 2014	To 30 Jun 2015	To 31 Dec 2015	To 30 June 2016
Māori	61.7%	62.2%	63.0%	63.6%
Pacific	72.1%	73.0%	74.2%	75.5%
Asian	62.6%	63.5%	64.5%	65.5%
European/ Other	82.7%	82.4%	82.4%	81.9%
Total	**76.5%**	**76.5%**	**76.8%**	**76.7%**

Coverage calculated using population projection at the date shown based on 2013 Census data.

Indicator 2 – First screening events

Table 36 - Age distribution of first screening events for period 1 January 2016 – 30 June 2016

Age	Women with first events	% of first events (ages 20-69 yrs) which occurred in that age group
20-24	11,489	47.2
25-29	4,359	17.9
30-34	3,013	12.4
35-39	1,789	7.3
40-44	1,046	4.3
45-49	746	3.1
50-54	517	2.1
55-59	531	2.2
60-64	512	2.1
65-69	344	1.4
20-69 yrs	**24,346**	**100.0**

Percentage = number of first screens in age group divided by total number of first screens x 100

Table 37 - Women (aged 20-69 years) with first screening events as a proportion of i) total number of women with screening events, and ii) eligible women, by DHB, for period 1 January 2016 – 30 June 2016

DHB	Women with first events N	As a proportion of women with a screening event		As a proportion of eligible population	
		N	%	N	%
Auckland	3,966	26,366	15.0	157,257	2.5
Bay of Plenty	850	10,762	7.9	62,028	1.4
Canterbury	2,641	24,408	10.8	155,160	1.7
Capital & Coast	2,003	15,194	13.2	94,533	2.1
Counties Manukau	3,553	25,192	14.1	154,383	2.3
Hawke's Bay	539	6,816	7.9	44,762	1.2
Hutt Valley	562	6,132	9.2	42,606	1.3
Lakes	405	4,804	8.4	29,338	1.4
Mid Central	647	7,196	9.0	48,614	1.3
Nelson Marlborough	567	6,767	8.4	41,576	1.4
Northland	522	6,695	7.8	46,428	1.1
South Canterbury	204	2,586	7.9	16,272	1.3
Southern	1,695	14,521	11.7	91,053	1.9
Tairawhiti	165	1,931	8.5	13,261	1.2
Taranaki	427	5,435	7.9	33,405	1.3
Waikato	1,856	17,321	10.7	111,937	1.7
Wairarapa	117	1,932	6.1	12,299	1.0
Waitemata	3,304	28,898	11.4	175,360	1.9
West Coast	117	1,465	8.0	9,645	1.2
Whanganui	206	2,544	8.1	16,977	1.2
Total	**24,346**	**216,965**	**11.2**	**1,356,894**	**1.8**

Note: Proportions shown are women with first screening event within a DHB, divided by i) all women with a screening event within that DHB (first or subsequent events) and ii) the hysterectomy-adjusted 2013 Census

population projected to 30 June 2016 for that DHB, as a percent. Total women screened and women with first events exclude those for whom DHB could not be ascertained.

Table 38 - Women (ages 20-69 years) with first screening events as a proportion of i) total number of women with screening events, and ii) eligible women, by ethnicity, for period 1 January 2016 – 30 June 2016

Ethnicity	Women with first events	As a proportion of women with a screening event[i]		As a proportion of eligible population[ii]	
		N	%	N	%
Māori	2,596	25,038	10.4	188,508	1.4
Pacific	2,108	12,643	16.7	80,711	2.6
Asian	6,399	27,426	23.3	202,875	3.2
European/ Other	13,243	151,858	8.7	884,800	1.5
Total	**24,346**	**216,965**	**11.2**	**1,356,894**	**1.8**

Note: Proportions shown are women with first screening event in an ethnicity group, divided by i) all women with a screening event within that ethnicity group (first or subsequent events) and ii) the hysterectomy-adjusted 2013 Census population projected to 30 June 2016 for that ethnicity group, as a percent.

Table 39 - Median age of women with a first screening event, by ethnicity, for period 1 January 2016 – 30 June 2016

Ethnic Group	Median Age	Mean Age
Māori	22	25.0
Pacific	25	29.3
Asian	31	34.9
European/ Other	23	27.4

Indicator 3 – Withdrawal rates

Table 40 - Number of women who withdrew from the NCSP Register 1 January 2016 – 30 June 2016 by age, and proportion of women who were enrolled at the start of the monitoring period who withdrew

Age	Enrolled at start	Women withdrawn	
	N	N	%
<20	1,039	-	0.000
20-24	78,285	-	0.000
25-29	142,380	4	0.003
30-34	163,787	4	0.002
35-39	173,073	1	0.001
40-44	192,223	2	0.001
45-49	198,526	4	0.002
50-54	189,439	1	0.001
55-59	167,382	3	0.002
60-64	135,483	3	0.002
65-69	112,838	-	0.000
70+	233,461	-	0.000
Total (all ages)	**1,787,916**	**22**	**0.001**
Total (20-69)	**1,553,416**	**22**	**0.001**

**As a proportion of women enrolled at the start of the monitoring period*

Table 41 - Number of women (aged 20-69 years) who withdrew from the NCSP Register 1 January 2016 – 30 June 2016 by ethnicity, and proportion of women who were enrolled at the start of the monitoring period who withdrew

Ethnicity	Enrolled at start	Women withdrawn	
	N	N	%
Māori	189,808	-	0.000
Pacific	95,967	2	0.002
Asian	173,898	4	0.002
European/ Other	1,093,743	16	0.001
Total	**1,553,416**	**22**	**0.001**

**As a proportion of women enrolled at the start of the monitoring period*

Indicator 4 – Early re-screening

Table 42 - Early re-screening by five-year age group

Age	Women recommended to return in 3 years	Women with >1 subsequent test	
		N	%
20-24	1,217	245	20.1
25-29	3,941	715	18.1
30-34	4,418	768	17.4
35-39	4,929	800	16.2
40-44	5,733	922	16.1
45-49	6,225	934	15.0
50-54	5,880	942	16.0
55-59	5,149	728	14.1
60-64	4,113	477	11.6
65-69	3,299	322	9.8
All ages	**44,904**	**6,853**	**15.3**

Table 43 - Early re-screening by DHB

DHB	Women recommended to return in 3 years	Women with >1 subsequent test	
		N	%
Auckland	4,944	986	19.9
Bay of Plenty	2,072	347	16.7
Canterbury	5,347	957	17.9
Capital & Coast	3,344	381	11.4
Counties Manukau	4,509	644	14.3
Hawke's Bay	1,633	225	13.8
Hutt Valley	1,376	143	10.4
Lakes	955	151	15.8
Mid Central	1,611	144	8.9
Nelson Marlborough	1,610	214	13.3
Northland	1,417	202	14.3
South Canterbury	592	101	17.1
Southern	3,315	478	14.4
Tairawhiti	417	37	8.9
Taranaki	1,220	125	10.2
Waikato	3,511	434	12.4
Wairarapa	425	74	17.4
Waitemata	5,698	1,118	19.6
West Coast	359	31	8.6
Whanganui	549	61	11.1
Unspecified	-	-	
Total	**44,904**	**6,853**	**15.3**

Table 44 - Early re-screening by ethnicity

Ethnicity	Women recommended to return in 3 years	Women with >1 subsequent test	
		N	%
Māori	4,458	663	14.9
Pacific	2,271	250	11.0
Asian	5,081	756	14.9
European/ Other	33,094	5,184	15.7
Total	**44,904**	**6,853**	**15.3**

Indicator 5 – Laboratory indicators

Indicator 5.1 – Laboratory cytology reporting

Table 45 - Age-standardised percentage of satisfactory smears reported as HSIL, by laboratory

	% satisfactory smears reported as HSIL	
Laboratory	**Age-standardised rate* (20-69 years)**	**Crude rate**
Anatomical Pathology Services	0.62%	0.68%
Canterbury Health Laboratories	1.47%	1.72%
LabPLUS	3.30%	3.85%
Medlab Central Ltd.	0.98%	1.04%
Pathlab	0.51%	0.54%
Southern Community Laboratories	1.01%	1.12%
Total	**0.99%**	**1.09%**

** Age-standardised to the NZ 2013 Census population (females, ages 20-69 years)*

Indicator 5.2 – Accuracy of cytology predicting HSIL

Table 46 - Positive predictive value of a report of HSIL+SC cytology by laboratory

Laboratory	Histology available		HSIL confirmed by histology		No histology		Total reports
	N	%	N	%	N	%	N
Anatomical Pathology Services	316	89.8	228	72.2	36	10.2	352
Aotea Pathology Ltd.	47	88.7	39	83.0	6	11.3	53
Canterbury Health Laboratories	124	97.6	107	86.3	3	2.4	127
LabPLUS	191	96.0	159	83.2	8	4.0	199
Medlab Central Ltd.	138	96.5	124	89.9	5	3.5	143
Pathlab	110	94.0	93	84.5	7	6.0	117
Southern Community Laboratories	975	92.5	778	79.8	79	7.5	1,054
Total	**1,901**	**93.0**	**1,528**	**80.4**	**144**	**7.0**	**2,045**

Target: 65% - 85%

Table 47 - Positive predictive value of a report of ASC-H cytology by laboratory

Laboratory	Histology available		HSIL confirmed by histology		No histology		Total reports
	N	%	N	%	N	%	N
Anatomical Pathology Services	204	80.6	69	33.8	49	19.4	253
Aotea Pathology Ltd.	49	86.0	23	46.9	8	14.0	57
Canterbury Health Laboratories	113	89.7	62	54.9	13	10.3	126
LabPLUS	225	80.6	99	44.0	54	19.4	279
Medlab Central Ltd.	76	69.1	48	63.2	34	30.9	110
Pathlab	99	85.3	51	51.5	17	14.7	116
Southern Community Laboratories	113	81.3	49	43.4	26	18.7	139
Total	**879**	**81.4**	**401**	**45.6**	**201**	**18.6**	**1,080**

Table 48 - Positive predictive value of a report of ASC-H + HSIL + SC cytology by laboratory

Laboratory	Histology available		HSIL confirmed by histology		No histology		Total reports
	N	%	N	%	N	%	N
Anatomical Pathology Services	520	86.0	297	57.1	85	14.0	605
Aotea Pathology Ltd.	96	87.3	62	64.6	14	12.7	110
Canterbury Health Laboratories	237	93.7	169	71.3	16	6.3	253
LabPLUS	416	87.0	258	62.0	62	13.0	478
Medlab Central Ltd.	214	84.6	172	80.4	39	15.4	253
Pathlab	209	89.7	144	68.9	24	10.3	233
Southern Community Laboratories	1,088	91.2	827	76.0	105	8.8	1,193
Total	**2,780**	**89.0**	**1,929**	**69.4**	**345**	**11.0**	**3,125**

Indicator 5.5 – Laboratory turnaround time

Table 49 - Timeliness of cytology reporting by laboratory, 1 January 2016 – 30 June 2016

	Laboratory turnaround time - cytology								
	Within 7 days		8-15 days		Total within 15 days		More than 15 days		Total
Laboratory	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**
Anatomical Pathology Services	48,457	97.2	1,199	2.4	49,656	99.6	210	0.4	49,866
Canterbury Health Laboratories	9,852	87.9	1,187	10.6	11,039	98.5	170	1.5	11,209
LabPLUS	7,500	87.8	867	10.2	8,367	98.0	174	2.0	8,541
Medlab Central Ltd.	14,124	94.8	518	3.5	14,642	98.3	256	1.7	14,898
Pathlab	22,051	90.9	1,626	6.7	23,677	97.7	569	2.3	24,246
Southern Community Laboratories	105,643	96.3	2,416	2.2	108,059	98.5	1,594	1.5	109,653
Total	**207,627**	**95.1**	**7,813**	**3.6**	**215,440**	**98.6**	**2,973**	**1.4**	**218,413**

Target: 90% within seven working days and 98% within 15 working days.

Note: total samples reported on for this Indicator is different from that reported in Indicator 5.1. Here, 'total samples' refers to all cytology samples received by laboratories within the monitoring period. Indicator 5.1 shows the total number of cytology samples taken during the period.

Table 50 - Timeliness of histology reporting by laboratory, 1 July - 1 January 2016 – 30 June 2016

	Laboratory turnaround time - histology								
	Within 10 days		10-15 days		Total within 15 days		More than 15 days		Total
Laboratory	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**
Anatomical Pathology Services	1,550	94.8	66	4.0	1,616	98.8	19	1.2	1,635
Canterbury Health Laboratories	1,660	93.7	76	4.3	1,736	98.0	35	2.0	1,771
Capital & Coast District Health Board Pathology	553	66.8	117	14.1	670	80.9	158	19.1	828
Hutt Hospital Laboratory	169	44.2	70	18.3	239	62.6	143	37.4	382
LabPLUS	915	88.5	87	8.4	1,002	96.9	32	3.1	1,034
Medlab Central Ltd.	831	95.6	4	0.5	835	96.1	34	3.9	869
Memorial Hospital Hastings Laboratory	70	81.4	6	7.0	76	88.4	10	11.6	86
Middlemore Hospital Laboratory	1,151	91.3	74	5.9	1,225	97.2	35	2.8	1,260
Nelson Hospital Laboratory	80	97.6	1	1.2	81	98.8	1	1.2	82
North Shore Hospital Laboratory	1,297	97.5	17	1.3	1,314	98.8	16	1.2	1,330
Northland Pathology Laboratory	277	88.2	24	7.6	301	95.9	13	4.1	314
Pathlab	911	83.3	104	9.5	1,015	92.9	78	7.1	1,093
Southern Community Laboratories	2,768	97.9	21	0.7	2,789	98.7	38	1.3	2,827
Taranaki Medlab	335	100.0	-	0.0	335	100.0	-	0.0	335
Waikato Hospital Laboratory	89	76.1	6	5.1	95	81.2	22	18.8	117
Total	**12,656**	**90.6**	**673**	**4.8**	**13,329**	**95.5**	**634**	**4.5**	**13,963**

Target: 90% within ten working days and 98% within 15 working days of receipt of the sample
Note: total histology samples reported on for this Indicator is different from that reported in Indicator 5.4. Indicator 5.5 includes all histology samples received by laboratories within the monitoring period, while 5.4 includes all histology samples taken within the monitoring period

Table 51 - Timeliness of reporting for cytology with associated HPV testing by laboratory, 1 January 2016 – 30 June 2016

	Laboratory turnaround time - cytology with HPV testing				
	Within 15 days		More than 15 days		Total
Laboratory	N	%	N	%	N
Anatomical Pathology Services	918	99.7	3	0.3	921
Canterbury Health Laboratories	225	96.6	8	3.4	233
LabPLUS	204	99.0	2	1.0	206
Medlab Central Ltd.	247	96.9	8	3.1	255
Pathlab	430	98.4	7	1.6	437
Southern Community Laboratories	812	99.6	3	0.4	815
Total	**2,836**	**98.9**	**31**	**1.1**	**2,867**

Indicator 6 – Follow-up of women with high grade cytology

Table 52 - Women with a histology report within 90 days of a high grade cytology report, by DHB and age

	<20		20-24		25-29		30-34		35-39		40-44		45-49		50-54		55-59		60-64		65-69		70+		Total
DHB	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	
Auckland	-	-	45	80.4	56	81.2	40	80.0	23	76.7	18	72.0	17	73.9	13	68.4	7	77.8	6	46.2	6	75.0	3	60.0	234
Bay of Plenty	-	-	6	85.7	27	84.4	8	88.9	9	90.0	4	100.0	9	81.8	3	75.0	7	100.0	3	60.0	2	66.7	1	50.0	79
Canterbury	-	-	62	92.5	69	92.0	36	97.3	24	88.9	22	88.0	16	80.0	18	78.3	9	64.3	4	80.0	3	75.0	5	83.3	268
Capital & Coast	-	-	20	74.1	32	84.2	17	85.0	13	72.2	10	71.4	5	83.3	3	75.0	2	40.0	0	0.0	0	0.0	0	0.0	102
Counties Manukau	-	-	34	79.1	39	76.5	37	82.2	22	75.9	17	70.8	11	57.9	10	58.8	5	41.7	7	63.6	6	50.0	4	100.0	192
Hawke's Bay	0	0.0	19	90.5	20	87.0	13	92.9	6	85.7	8	80.0	7	70.0	3	50.0	1	50.0	2	50.0	0	0.0	5	100.0	84
Hutt Valley	-	-	7	58.3	9	90.0	6	75.0	7	100.0	5	62.5	6	100.0	3	60.0	3	75.0	-	-	1	100.0	-	-	47
Lakes	1	100.0	11	91.7	7	58.3	3	75.0	3	100.0	3	75.0	6	85.7	3	75.0	4	100.0	1	33.3	1	100.0	-	-	43
Mid Central	-	-	20	90.9	16	80.0	10	83.3	11	91.7	3	100.0	4	100.0	4	80.0	3	100.0	2	66.7	-	-	-	-	73
Nelson Marlborough	-	-	13	81.3	18	100.0	7	100.0	7	100.0	10	90.9	6	100.0	6	85.7	2	50.0	-	-	5	71.4	2	66.7	76
Northland	-	-	7	53.8	9	69.2	14	93.3	7	70.0	12	100.0	2	28.6	2	50.0	3	50.0	2	66.7	1	16.7	1	33.3	60
South Canterbury	-	-	4	80.0	8	100.0	1	100.0	-	-	1	100.0	-	-	1	100.0	3	100.0	-	-	1	100.0	0	0.0	19
Southern	-	-	26	81.3	39	81.3	26	89.7	21	95.5	6	85.7	7	77.8	5	71.4	3	50.0	4	80.0	2	40.0	2	66.7	141
Tairawhiti	-	-	3	50.0	5	83.3	3	75.0	3	100.0	5	100.0	-	-	2	100.0	3	100.0	1	50.0	-	-	1	100.0	26
Taranaki	1	100.0	18	90.0	16	94.1	11	84.6	9	90.0	5	83.3	3	100.0	4	80.0	4	66.7	3	75.0	2	66.7	0	0.0	76
Waikato	1	50.0	32	94.1	38	88.4	25	86.2	13	81.3	11	78.6	5	71.4	5	71.4	6	66.7	3	100.0	2	100.0	1	50.0	142
Wairarapa	-	-	2	50.0	3	60.0	5	83.3	-	-	-	-	1	100.0	-	-	1	100.0	-	-	-	-	0	0.0	12
Waitemata	2	100.0	41	83.7	58	81.7	50	89.3	28	87.5	25	83.3	22	100.0	11	73.3	16	80.0	6	60.0	5	83.3	1	25.0	265
West Coast	-	-	4	80.0	3	75.0	1	100.0	3	100.0	2	100.0	-	-	-	-	-	-	-	-	-	-	-	-	13
Whanganui	-	-	-	-	6	75.0	3	75.0	3	100.0	1	100.0	3	75.0	0	0.0	1	33.3	2	100.0	1	100.0	-	-	20
Total	**5**	**71.4**	**374**	**82.9**	**478**	**83.7**	**316**	**86.8**	**212**	**85.1**	**168**	**81.6**	**130**	**78.8**	**96**	**70.6**	**83**	**68.6**	**46**	**62.2**	**38**	**58.5**	**26**	**59.1**	**1,972**

'– ' indicates there were no women in this sub-category with a high grade cytology report

Table 53 - Women with a histology report within 180 days of a high grade cytology report, by DHB and age

	<20		20-24		25-29		30-34		35-39		40-44		45-49		50-54		55-59		60-64		65-69		70+		Total
DHB	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	
Auckland	-	-	50	89.3	62	89.9	42	84.0	25	83.3	21	84.0	20	87.0	17	89.5	9	100.0	8	61.5	7	87.5	4	80.0	265
Bay of Plenty	-	-	7	100.0	29	90.6	8	88.9	9	90.0	4	100.0	10	90.9	3	75.0	7	100.0	5	100.0	2	66.7	2	100.0	86
Canterbury	-	-	63	94.0	72	96.0	36	97.3	26	96.3	24	96.0	18	90.0	18	78.3	10	71.4	4	80.0	3	75.0	5	83.3	279
Capital & Coast	-	-	23	85.2	36	94.7	19	95.0	16	88.9	11	78.6	6	100.0	3	75.0	2	40.0	1	100.0	1	33.3	0	0.0	118
Counties Manukau	-	-	38	88.4	42	82.4	42	93.3	26	89.7	18	75.0	14	73.7	12	70.6	8	66.7	8	72.7	7	58.3	4	100.0	219
Hawke's Bay	1	100.0	20	95.2	22	95.7	13	92.9	6	85.7	9	90.0	8	80.0	3	50.0	1	50.0	3	75.0	0	0.0	5	100.0	91
Hutt Valley	-	-	12	100.0	10	100.0	8	100.0	7	100.0	7	87.5	6	100.0	4	80.0	3	75.0	-	-	1	100.0	-	-	58
Lakes	1	100.0	11	91.7	10	83.3	4	100.0	3	100.0	3	75.0	7	100.0	3	75.0	4	100.0	2	66.7	1	100.0	-	-	49
Mid Central	-	-	21	95.5	18	90.0	10	83.3	12	100.0	3	100.0	4	100.0	4	80.0	3	100.0	2	66.7	-	-	-	-	77
Nelson Marlborough	-	-	13	81.3	18	100.0	7	100.0	7	100.0	10	90.9	6	100.0	6	85.7	2	50.0	-	-	5	71.4	3	100.0	77
Northland	-	-	9	69.2	11	84.6	14	93.3	7	70.0	12	100.0	3	42.9	2	50.0	4	66.7	2	66.7	2	33.3	1	33.3	67
South Canterbury	-	-	4	80.0	8	100.0	1	100.0	-	-	1	100.0	-	-	1	100.0	3	100.0	-	-	1	100.0	0	0.0	19
Southern	-	-	29	90.6	45	93.8	28	96.6	22	100.0	7	100.0	8	88.9	5	71.4	4	66.7	4	80.0	2	40.0	2	66.7	156
Tairawhiti	-	-	4	66.7	5	83.3	3	75.0	3	100.0	5	100.0	-	-	2	100.0	3	100.0	1	50.0	-	-	1	100.0	27
Taranaki	1	100.0	19	95.0	17	100.0	11	84.6	10	100.0	5	83.3	3	100.0	4	80.0	4	66.7	3	75.0	2	66.7	0	0.0	79
Waikato	1	50.0	33	97.1	39	90.7	28	96.6	13	81.3	12	85.7	5	71.4	5	71.4	7	77.8	3	100.0	2	100.0	2	100.0	150
Wairarapa	-	-	3	75.0	3	60.0	6	100.0	-	-	-	-	1	100.0	-	-	1	100.0	-	-	-	-	1	50.0	15
Waitemata	2	100.0	43	87.8	63	88.7	53	94.6	29	90.6	27	90.0	22	100.0	13	86.7	16	80.0	8	80.0	5	83.3	1	25.0	282
West Coast	-	-	4	80.0	3	75.0	1	100.0	3	100.0	2	100.0	-	-	-	-	-	-	-	-	-	-	-	-	13
Whanganui	-	-	-	-	6	75.0	3	75.0	3	100.0	1	100.0	4	100.0	0	0.0	1	33.3	2	100.0	1	100.0	-	-	21
Total	**6**	**85.7**	**406**	**90.0**	**519**	**90.9**	**337**	**92.6**	**227**	**91.2**	**182**	**88.3**	**145**	**87.9**	**105**	**77.2**	**92**	**76.0**	**56**	**75.7**	**42**	**64.6**	**31**	**70.5**	**2,148**

'– ' indicates there were no women in this sub-category with a high grade cytology report

Indicator 7 – Colposcopy indicators

Indicator 7.1 – Timeliness of colposcopic assessment – high grade cytology

Table 54 - Women with high grade cytology (including cytological suspicion of invasive disease), by DHB

DHB	HG women	HG women with referral recorded on the NCSP Register
	N	N
Auckland	213	189
Bay of Plenty	82	73
Canterbury	244	230
Capital & Coast	111	108
Counties Manukau	215	199
Hawke's Bay	99	82
Hutt Valley	51	44
Lakes	53	50
Mid Central	78	73
Nelson Marlborough	78	73
Northland	89	77
South Canterbury	23	19
Southern	145	131
Tairawhiti	29	29
Taranaki	79	74
Waikato	154	142
Wairarapa	18	17
Waitemata	234	221
West Coast	16	15
Whanganui	25	23
Private practice	*417*	*284*
Total	**2,453**	**2,153**

Table 55 - Women with a high grade cytology report (no suspicion of invasive disease), accepted referral and a colposcopy visit within 40 working days, by ethnicity

Ethnicity	HG women	Referrals received	Women seen within 20 working days		Women seen within 40 working days	
	N	N	N	%	N	%
Māori	362	343	182	53.1	272	79.3
Pacific	114	105	44	41.9	82	78.1
Asian	220	190	113	59.5	164	86.3
European/ Other	1,675	1,468	1,006	68.5	1,334	90.9
Total	**2,371**	**2,106**	**1,345**	**63.9**	**1,852**	**87.9**

Table 56 - Women with a high grade cytology report (no suspicion of invasive disease), accepted referral and a colposcopy visit within 40 working days, by DHB

DHB	HG women	Referrals received	Women seen within 20 working days		Women seen within 40 working days	
	N	N	N	%	N	%
Public clinics overall	*1,969*	*1,828*	*1,171*	*64.1*	*1,648*	*90.2*
Auckland	201	185	85	45.9	147	79.5
Bay of Plenty	79	71	53	74.6	65	91.5
Canterbury	233	224	173	77.2	211	94.2
Capital & Coast	110	108	75	69.4	104	96.3
Counties Manukau	211	197	45	22.8	158	80.2
Hawke's Bay	97	82	67	81.7	80	97.6
Hutt Valley	49	44	30	68.2	39	88.6
Lakes	45	42	34	81.0	38	90.5
Mid Central	78	73	38	52.1	66	90.4
Nelson Marlborough	75	70	43	61.4	69	98.6
Northland	86	75	60	80.0	70	93.3
South Canterbury	23	19	17	89.5	19	100.0
Southern	143	129	65	50.4	108	83.7
Tairawhiti	25	25	12	48.0	20	80.0
Taranaki	78	73	53	72.6	67	91.8
Waikato	150	138	104	75.4	131	94.9
Wairarapa	17	17	12	70.6	14	82.4
Waitemata	231	220	181	82.3	209	95.0
West Coast	16	15	5	33.3	12	80.0
Whanganui	22	21	19	90.5	21	100.0
Private Practice	*402*	*278*	*174*	*62.6*	*204*	*73.4*
Total	**2,371**	**2,106**	**1,345**	**63.9**	**1,852**	**87.9**

Table 57 - Women with cytological suspicion of invasive disease, by cytology result subcategory

Cytology result sub-category/ recommendation code	Total women	Women with accepted referral
	N	N
HS2	18	16
SC	16	12
AC1-5	39	14
R10, R14	9	5
Total	**82**	**47**

Refer to Appendix B for Bethesda categories/ recommendation codes

Indicator 7.2 – Timeliness of colposcopic assessment – low grade cytology

Table 58 - Follow-up of women with persistent low grade cytology/ low grade cytology and positive HPV test, by DHB

DHB	LG women	Women with subsequent referral recorded		Women with subsequent colposcopy visit recorded		Women with colposcopy subsequent to referral recorded		Women with colposcopy subsequent to referral recorded AND referral:colposcopy interval <= 26 weeks	
	N	N	%*	N	% *	N	% †	N	% †
Auckland	495	452	91.3	420	84.8	414	91.6	394	87.2
Bay of Plenty	276	238	86.2	247	89.5	228	95.8	207	87.0
Canterbury	270	253	93.7	261	96.7	250	98.8	245	96.8
Capital & Coast	219	198	90.4	198	90.4	192	97.0	189	95.5
Counties Manukau	427	392	91.8	354	82.9	342	87.2	161	41.1
Hawke's Bay	108	98	90.7	96	88.9	91	92.9	57	58.2
Hutt Valley	89	83	93.3	85	95.5	81	97.6	80	96.4
Lakes	88	81	92.0	79	89.8	75	92.6	72	88.9
Mid Central	163	156	95.7	154	94.5	152	97.4	143	91.7
Nelson Marlborough	61	53	86.9	54	88.5	53	100.0	45	84.9
Northland	64	60	93.8	55	85.9	55	91.7	50	83.3
South Canterbury	16	15	93.8	16	100.0	15	100.0	15	100.0
Southern	129	117	90.7	116	89.9	113	96.6	57	48.7
Tairawhiti	42	42	100.0	39	92.9	39	92.9	36	85.7
Taranaki	64	58	90.6	62	96.9	57	98.3	57	98.3
Waikato	334	286	85.6	279	83.5	249	87.1	128	44.8
Wairarapa	29	24	82.8	27	93.1	22	91.7	22	91.7
Waitemata	480	438	91.3	411	85.6	394	90.0	279	63.7
West Coast	27	22	81.5	27	100.0	22	100.0	21	95.5
Whanganui	78	72	92.3	73	93.6	70	97.2	68	94.4
Private practice	*748*	*381*	*50.9*	*699*	*93.4*	*332*	*87.1*	*321*	*84.3*
Total	**4,207**	**3,519**	**83.6**	**3,752**	**89.2**	**3,246**	**92.2**	**2,647**	**75.2**

LG women = women with persistent LG/ who are LG & HPV positive

** Percentage of women with persistent LG/ who are LG & HPV positive † percentage of women with a referral*

Table 59 - Follow-up of women with persistent low grade cytology/ low grade cytology and positive HPV test, by ethnicity

Ethnicity	LG women	Women with subsequent referral recorded		Women with subsequent colposcopy visit recorded		Women with colposcopy subsequent to referral recorded		Women with colposcopy subsequent to referral recorded AND referral: colposcopy interval <= 26 weeks	
	N	N	%*	N	% *	N	% †	N	% †
Māori	516	466	90.3	452	87.6	416	89.3	327	70.2
Pacific	228	211	92.5	188	82.5	179	84.8	121	57.3
Asian	413	350	84.7	361	87.4	315	90.0	245	70.0
European/ Other	3,050	2,492	81.7	2,751	90.2	2,336	93.7	1,954	78.4
Total	**4,207**	**3,519**	**83.6**	**3,752**	**89.2**	**3,246**	**92.2**	**2,647**	**75.2**

LG women = women with persistent LG/ who are LG & HPV positive

** Percentage of women with persistent LG/ who are LG & HPV positive † percentage of women with a referral*

Indicator 7.3 – Adequacy of documenting colposcopic assessment

Table 60 - Completion of colposcopic assessment fields, by DHB

DHB	Total colposcopies N	% of colposcopies performed where items are completed					
		SCJ visibility[(i)]	Presence/ absence lesion[(ii)]	Opinion re abnormality grade[(iii)]	Follow-up type	Follow-up timeframe	Items i, ii, & iii complete
Public clinics overall	*12,435*	*97.5*	*100.0*	*91.4*	*96.6*	*96.2*	*92.4*
Auckland	1,172	98.4	100.0	95.0	97.4	97.4	95.2
Bay of Plenty	557	96.6	100.0	85.5	92.6	92.1	86.9
Canterbury	1,939	96.5	100.0	90.4	100.0	99.7	90.4
Capital & Coast	689	99.1	100.0	89.3	91.3	91.3	93.8
Counties Manukau	1,149	97.5	100.0	93.1	98.5	98.2	93.0
Hawke's Bay	428	98.1	100.0	88.1	96.3	95.8	91.6
Hutt Valley	285	98.9	100.0	96.2	93.7	91.9	96.1
Lakes	259	96.1	100.0	97.0	93.8	93.8	94.2
Mid Central	677	94.2	100.0	93.2	99.4	99.4	91.0
Nelson Marlborough	314	98.7	100.0	91.3	90.8	90.1	93.3
Northland	386	97.2	100.0	90.9	97.9	97.9	92.5
South Canterbury	139	99.3	100.0	90.5	95.0	95.0	95.0
Southern	822	97.6	100.0	91.3	97.4	97.1	92.3
Tairawhiti	188	98.4	100.0	93.0	99.5	99.5	93.6
Taranaki	389	98.5	100.0	85.3	78.9	78.9	90.0
Waikato	678	99.0	100.0	96.7	98.8	98.2	96.8
Wairarapa	145	99.3	100.0	92.0	96.6	96.6	94.5
Waitemata	1,972	97.2	100.0	88.8	97.6	96.8	91.5
West Coast	105	99.0	100.0	97.2	100.0	98.1	97.1
Whanganui	142	96.5	100.0	94.1	93.0	91.5	93.0
Private practice	*1,298*	*97.1*	*100.0*	*92.1*	*95.1*	*92.7*	*92.2*
Total	**13,733**	**97.4**	**100.0**	**91.5**	**96.5**	**95.9**	**92.4**

Table 61 - Summary of colposcopic appearance findings, by DHB

DHB	Total colposcopies N	SCJ visible* N	Colposcopic appearance (as % of colposcopies where items are completed) Abnormal	Inconclusive
Public clinics overall	*12,435*	*12,121*	*56.4*	*5.3*
Auckland	1,172	1,153	60.2	3.2
Bay of Plenty	557	538	60.1	10.2
Canterbury	1,939	1,872	63.9	6.8
Capital & Coast	689	683	45.9	5.5
Counties Manukau	1,149	1,120	61.5	4.5
Hawke's Bay	428	420	48.6	6.5
Hutt Valley	285	282	71.9	2.8
Lakes	259	249	61.8	1.9
Mid Central	677	638	50.7	3.7
Nelson Marlborough	314	310	56.7	5.4
Northland	386	375	46.6	4.7
South Canterbury	139	138	41.0	4.3
Southern	822	802	55.8	5.4
Tairawhiti	188	185	63.3	4.8
Taranaki	389	383	50.6	8.7
Waikato	678	671	64.6	2.2
Wairarapa	145	144	55.9	4.8
Waitemata	1,972	1,917	47.6	6.0
West Coast	105	104	66.7	1.9
Whanganui	142	137	56.3	3.5
Private practice	*1,298*	*1,260*	*56.5*	*4.9*
Total	**13,733**	**13,381**	**56.4**	**5.2**

** Field has been completed*

Table 62 - Biopsies by colposcopic appearance and DHB

DHB	Colposcopic appearance								
	Abnormal			Inconclusive			Normal		
	Total	Biopsy taken		Total	Biopsy taken		Total	Biopsy taken	
	N	N	%	N	N	%	N	N	%
Public clinics overall	*7,016*	*6,276*	*89.5*	*657*	*183*	*27.9*	*4,762*	*913*	*19.2*
Auckland	705	648	91.9	37	14	37.8	430	51	11.9
Bay of Plenty	335	305	91.0	57	15	26.3	165	24	14.5
Canterbury	1,239	949	76.6	132	43	32.6	568	114	20.1
Capital & Coast	316	295	93.4	38	9	23.7	335	63	18.8
Counties Manukau	707	667	94.3	52	9	17.3	390	50	12.8
Hawke's Bay	208	195	93.8	28	4	14.3	192	54	28.1
Hutt Valley	205	182	88.8	8	4	50.0	72	17	23.6
Lakes	160	152	95.0	5	1	20.0	94	26	27.7
Mid Central	343	306	89.2	25	8	32.0	309	48	15.5
Nelson Marlborough	178	163	91.6	17	7	41.2	119	27	22.7
Northland	180	176	97.8	18	6	33.3	188	52	27.7
South Canterbury	57	48	84.2	6	3	50.0	76	23	30.3
Southern	459	442	96.3	44	18	40.9	319	85	26.6
Tairawhiti	119	85	71.4	9	3	33.3	60	12	20.0
Taranaki	197	191	97.0	34	10	29.4	158	15	9.5
Waikato	438	424	96.8	15	5	33.3	225	40	17.8
Wairarapa	81	69	85.2	7	2	28.6	57	11	19.3
Waitemata	939	855	91.1	118	20	16.9	915	193	21.1
West Coast	70	47	67.1	2	1	50.0	33	6	18.2
Whanganui	80	77	96.3	5	1	20.0	57	2	3.5
Private practice	*734*	*587*	*80.0*	*63*	*36*	*57.1*	*501*	*145*	*28.9*
Total	**7,750**	**6,863**	**88.6**	**720**	**219**	**30.4**	**5,263**	**1,058**	**20.1**

Indicator 7.5 – Timely discharge of women after treatment

Table 63 - Follow-up of treated women with colposcopy and cytology in the period up to nine months post-treatment, and discharge of eligible women

	Total treatments	Colposcopy & cytology within 9 months post-treatment		Eligible for discharge		Women discharged appropriately	
DHB	**N**	**N**	**%**	**N**	**% of women treated**	**N**	**% of eligible**
Auckland	130	106	81.5	80	61.5	71	88.8
Bay of Plenty	55	13	23.6	42	76.4	34	81.0
Canterbury	199	161	80.9	156	78.4	122	78.2
Capital & Coast	67	62	92.5	53	79.1	51	96.2
Counties Manukau	120	95	79.2	80	66.7	78	97.5
Hawke's Bay	49	37	75.5	37	75.5	31	83.8
Hutt Valley	37	31	83.8	28	75.7	28	100.0
Lakes	48	32	66.7	34	70.8	25	73.5
Mid Central	91	71	78.0	58	63.7	46	79.3
Nelson Marlborough	47	38	80.9	41	87.2	30	73.2
Northland	43	27	62.8	21	48.8	17	81.0
South Canterbury	16	11	68.8	11	68.8	6	54.5
Southern	113	70	61.9	89	78.8	79	88.8
Tairawhiti	20	15	75.0	14	70.0	9	64.3
Taranaki	48	39	81.3	42	87.5	29	69.0
Waikato	122	97	79.5	93	76.2	83	89.2
Wairarapa	12	12	100.0	10	83.3	7	70.0
Waitemata	149	112	75.2	95	63.8	73	76.8
West Coast	20	16	80.0	16	80.0	16	100.0
Whanganui	19	16	84.2	17	89.5	16	94.1
Private Practice	*73*	*46*	*63.0*	*59*	*80.8*	*41*	*69.5*
Total	**1,478**	**1,107**	**74.9**	**1,076**	**72.8**	**892**	**82.9**

Table 64 - Follow-up of treated women in the period up to nine months post-treatment

DHB	Total treatments	Colposcopy within 9 months post-treatment		Colposcopy & cytology within 9 months post-treatment	
	N	N	%	N	%
Auckland	130	106	81.5	106	81.5
Bay of Plenty	55	13	23.6	13	23.6
Canterbury	199	167	83.9	161	80.9
Capital & Coast	67	63	94.0	62	92.5
Counties Manukau	120	98	81.7	95	79.2
Hawke's Bay	49	37	75.5	37	75.5
Hutt Valley	37	31	83.8	31	83.8
Lakes	48	32	66.7	32	66.7
Mid Central	91	73	80.2	71	78.0
Nelson Marlborough	47	41	87.2	38	80.9
Northland	43	27	62.8	27	62.8
South Canterbury	16	11	68.8	11	68.8
Southern	113	70	61.9	70	61.9
Tairawhiti	20	16	80.0	15	75.0
Taranaki	48	39	81.3	39	81.3
Waikato	122	98	80.3	97	79.5
Wairarapa	12	12	100.0	12	100.0
Waitemata	149	114	76.5	112	75.2
West Coast	20	16	80.0	16	80.0
Whanganui	19	16	84.2	16	84.2
Private practice	*73*	*46*	*63.0*	*46*	*63.0*
Total	**1,478**	**1,126**	**76.2**	**1,107**	**74.9**

Indicator 8 – HPV tests

Indicator 8.1 – Triage of low grade cytology

Table 65 - Triage testing of women with ASC-US cytology

	Total ASC-US results		Women with an HPV test			
	aged < 30yrs	aged 30+ yrs	aged < 30yrs		aged 30+ yrs	
Laboratory	**N**	**N**	**N**	**%**	**N**	**%**
Anatomical Pathology Services	219	462	2	0.9	459	99.4
Canterbury Health Laboratories	42	162	1	2.4	157	96.9
LabPLUS	68	187	3	4.4	146	78.1
Medlab Central Ltd.	94	193	2	2.1	165	85.5
Pathlab	137	233	2	1.5	226	97.0
Southern Community Laboratories	180	249	3	1.7	245	98.4
Total	**740**	**1,486**	**13**	**1.8**	**1,398**	**94.1**

** Where the laboratory which performed the cytology test differs from the laboratory which performed the HPV test, classification is according to the laboratory which performed the cytology test*

Table 66 - Triage testing of women with LSIL cytology

	Total LSIL results		Women with an HPV test			
	aged < 30yrs	aged 30+ yrs	aged < 30yrs		aged 30+ yrs	
Laboratory	**N**	**N**	**N**	**%**	**N**	**%**
Anatomical Pathology Services	667	469	6	0.9	464	98.9
Canterbury Health Laboratories	119	77	0	0.0	74	96.1
LabPLUS	76	71	1	1.3	50	70.4
Medlab Central Ltd.	177	105	2	1.1	86	81.9
Pathlab	314	215	0	0.0	212	98.6
Southern Community Laboratories	1,049	630	13	1.2	602	95.6
Total	**2,402**	**1,567**	**22**	**0.9**	**1,488**	**95.0**

** Where the laboratory which performed the cytology test differs from the laboratory which performed the HPV test, classification is according to the laboratory which performed the cytology test*

Table 67 - Histological outcomes within 12 months in women with ASC-US cytology and positive HPV triage test

Laboratory	**Women with ASC-US cytology & positive HPV triage test**	**Triage positive women who attended colposcopy**		**Triage positive women with histology recorded**		**Triage positive women with CIN2+ histology**		
	N	**N**	**%***	**N**	**%***	**N**	**%†**	**%‡**
Anatomical Pathology Services	113	101	89.4	71	62.8	14	13.9	19.7
Aotea Pathology Ltd.	56	51	91.1	38	67.9	4	7.8	10.5
Canterbury Health Laboratories	25	25	100.0	21	84.0	6	24.0	28.6
LabPLUS	5	5	100.0	4	80.0	1	20.0	25.0
Medlab Central Ltd.	39	35	89.7	26	66.7	6	17.1	23.1
Pathlab	75	69	92.0	46	61.3	8	11.6	17.4
Southern Community Laboratories	83	78	94.0	52	62.7	13	16.7	25.0
Total	**396**	**364**	**91.9**	**258**	**65.2**	**52**	**14.3**	**20.2**

** % of women with ASC-US cytology and positive triage test †% of women with colposcopy ‡ % of women with histology. Results are for ASC-US cytology collected in the 6-month period 12 months prior to the current monitoring period (i.e. in* [Comments]*), to allow for sufficient follow-up time for colposcopy/ histology.*

Table 68 - Histological outcomes within 12 months in women with LSIL cytology and positive HPV triage test

Laboratory	Women with LSIL cytology & positive HPV triage test	Triage positive women who attended colposcopy		Triage positive women with histology recorded		Triage positive women with CIN2+ histology		
	N	N	%*	N	%*	N	%†	%‡
Anatomical Pathology Services	308	271	88.0	209	67.9	32	11.8	15.3
Aotea Pathology Ltd.	100	97	97.0	73	73.0	12	12.4	16.4
Canterbury Health Laboratories	44	44	100.0	43	97.7	13	29.5	30.2
LabPLUS	9	7	77.8	5	55.6	0	0.0	0.0
Medlab Central Ltd.	78	77	98.7	47	60.3	8	10.4	17.0
Pathlab	154	141	91.6	108	70.1	20	14.2	18.5
Southern Community Laboratories	255	218	85.5	158	62.0	40	18.3	25.3
Total	**948**	**855**	**90.2**	**643**	**67.8**	**125**	**14.6**	**19.4**

** % of women with LSIL cytology and positive triage test †% of women with colposcopy ‡ % of women with histology. Results are for ASC-US cytology collected in the 6-month period 12 months prior to the current monitoring period (i.e. in* [Comments]*), to allow for sufficient follow-up time for colposcopy/ histology.*

Indicator 8.2 – HPV test volumes

Table 69 - Volume of HPV test samples received during the monitoring period, by laboratory

Laboratory	HPV tests received		Ratio HPV tests: smears reported (%)
	N	% of national total	
Anatomical Pathology Services	5,166	25.6	10.4
Canterbury Health Laboratories	1,828	9.1	16.3
LabPLUS	1,065	5.3	12.5
Medlab Central Ltd.	1,757	8.7	11.8
Pathlab	2,723	13.5	11.2
Southern Community Laboratories	7,604	37.8	6.9
Total	**20,143**	**100.0**	**9.2**

Table 70 - Invalid HPV tests, by laboratory

Laboratory	Total	Valid		Invalid	
	N	N	%	N	%
Anatomical Pathology Services	5,166	5,156	99.8	10	0.2
Canterbury Health Laboratories	1,828	1,828	100.0	-	0.0
LabPLUS	1,065	1,064	99.9	1	0.1
Medlab Central Ltd.	1,757	1,756	99.9	1	0.1
Pathlab	2,723	2,687	98.7	36	1.3
Southern Community Laboratories	7,604	7,600	99.9	4	0.1
Total	**20,143**	**20,091**	**99.7**	**52**	**0.3**

Table 71 - Validity of HPV triage tests, by test technology

Test technology	Total HPV tests		Valid		Invalid	
	N	%	N	%	N	%
Abbott RealTime	9,432	46.8	9,428	100.0	4	<0.05
Roche COBAS 4800*	10,711	53.2	10,663	99.6	48	0.4
Total	**20,143**	**100.0**	**20,091**	**99.7**	**52**	**0.3**

** Includes tests processed at LabPLUS which did not have test technology type explicitly recorded, but it is known that they used Roche COBAS 4800 throughout the period.*

Table 72 - Volume of HPV test samples received during the monitoring period, by purpose and ethnicity

	Post-treatment		Historical		Taken at colposcopy		HPV triage		Other		Total
Ethnicity	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**
Māori	370	13.8	1,219	45.4	115	4.3	325	12.1	657	24.5	2,686
Pacific	72	10.7	248	36.8	13	1.9	186	27.6	155	23.0	674
Asian	212	15.1	370	26.4	60	4.3	419	29.9	340	24.3	1,401
European/ Other	2,133	13.9	5,921	38.5	689	4.5	1,819	11.8	4,820	31.3	15,382
Total	**2,787**	**13.8**	**7,758**	**38.5**	**877**	**4.4**	**2,749**	**13.6**	**5,972**	**29.6**	**20,143**

Table 73 - Volume of HPV test samples received during the monitoring period, by purpose and age

	Post-treatment		Historical		Taken at colposcopy		HPV triage		Other		Total
Age	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**
<20	1	6.3	-	-	4	25.0	-	0.0	11	68.8	16
20-24	211	26.1	57	7.1	149	18.4	-	0.0	391	48.4	808
25-29	765	36.4	688	32.8	155	7.4	-	0.0	491	23.4	2,099
30-34	614	20.4	1,168	38.8	103	3.4	574	19.1	552	18.3	3,011
35-39	401	14.4	1,284	46.1	89	3.2	503	18.1	507	18.2	2,784
40-44	294	10.7	1,304	47.4	85	3.1	455	16.6	611	22.2	2,749
45-49	208	7.9	1,195	45.1	77	2.9	398	15.0	770	29.1	2,648
50-54	127	6.1	800	38.3	80	3.8	346	16.5	738	35.3	2,091
55-59	79	4.7	571	34.0	56	3.3	242	14.4	729	43.5	1,677
60-64	46	3.8	399	33.1	39	3.2	122	10.1	601	49.8	1,207
65-69	34	4.3	200	25.2	24	3.0	86	10.8	450	56.7	794
70+	7	2.7	92	35.5	16	6.2	23	8.9	121	46.7	259
Total	**2,787**	**13.8**	**7,758**	**38.5**	**877**	**4.4**	**2,749**	**13.6**	**5,972**	**29.6**	**20,143**

Table 74 - Volume of HPV test samples received during the monitoring period, by purpose and laboratory

	Post-treatment		Historical		Taken at colposcopy		HPV triage		Other		Total
Laboratory	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**
Anatomical Pathology Services	584	11.3	2,269	43.9	67	1.3	913	17.7	1,333	25.8	5,166
Canterbury Health Laboratories	478	26.1	450	24.6	189	10.3	223	12.2	488	26.7	1,828
LabPLUS	150	14.1	212	19.9	100	9.4	193	18.1	410	38.5	1,065
Medlab Central Ltd.	307	17.5	747	42.5	48	2.7	231	13.1	424	24.1	1,757
Pathlab	292	10.7	1,249	45.9	248	9.1	388	14.2	546	20.1	2,723
Southern Community Laboratories	976	12.8	2,831	37.2	225	3.0	801	10.5	2,771	36.4	7,604
Total	**2,787**	**13.8**	**7,758**	**38.5**	**877**	**4.4**	**2,749**	**13.6**	**5,972**	**29.6**	**20,143**

Table 75 - HPV test samples collected at colposcopy, in relation to total colposcopies performed in the period, by DHB

Laboratory	HPV tests N	Colposcopies N	HPV tests / colposcopies %
Public clinics overall	*644*	*12,435*	*5.2*
Auckland	29	1,172	2.5
Bay of Plenty	122	557	21.9
Canterbury	168	1,939	8.7
Capital & Coast	-	689	-
Counties Manukau	6	1,149	0.5
Hawke's Bay	1	428	0.2
Hutt Valley	-	285	-
Lakes	109	259	42.1
Mid Central	3	677	0.4
Nelson Marlborough	16	314	.1
Northland	32	386	8.3
South Canterbury	22	139	15.8
Southern	65	822	7.9
Tairawhiti	-	188	-
Taranaki	-	389	-
Waikato	44	678	6.5
Wairarapa	-	145	-
Waitemata	27	1,972	1.4
West Coast	-	105	-
Whanganui	-	142	-
Private practice	78	1,298	6.0
Total	**722**	**13,733**	**5.3**

HPV tests/ colposcopy can be interpreted broadly as the percentage of colposcopies within this DHB/ sector where a sample is collected for HPV testing. Consistent with the count of colposcopies column, the number of HPV tests here includes only HPV test samples where a colposcopy report record exists.

Indicator 8.3 –HPV tests for follow-up of women with a historical high grade abnormality

Table 76 - Women eligible for and proportion who have received HPV testing for a historical high grade abnormality, by age at 30 June 2016

Age group	Number of women eligible for testing as at 1 Oct 2009		Round 1 test recorded		Round 2 test recorded	
	All	In current report*	N	%	N	%
<20	-	-	-	0.0	-	0.0
20-24	-	-	-	0.0	-	0.0
25-29	230	229	108	47.2	65	28.4
30-34	3,325	3,312	1,906	57.5	1,325	40.0
35-39	7,338	7,288	4,451	61.1	3,354	46.0
40-44	10,583	10,521	6,581	62.6	5,032	47.8
45-49	10,002	9,913	6,204	62.6	4,686	47.3
50-54	7,217	7,097	4,430	62.4	3,437	48.4
55-59	4,887	4,782	2,968	62.1	2,315	48.4
60-64	2,979	2,892	1,816	62.8	1,436	49.7
65-69	1,793	1,706	1,015	59.5	800	46.9
70+	2,153	1,839	550	29.9	391	21.3
Total	**50,507**	**49,579**	**30,029**	**60.6**	**22,841**	**46.1**

** Women are not followed up in the current report if they are no longer alive at the end of the current monitoring period; or if they have since had a non-squamous high grade abnormality (no longer eligible for HPV testing to follow-up historical high grade abnormality).*

Table 77 - Women eligible for and proportion who have received historical HPV testing, by DHB

DHB	Number of women eligible for historical testing as at 1 Oct 2009		Round 1 test recorded		Round 2 test recorded	
	All	In current report*	N	%	N	%
Auckland	4,180	4,128	1,868	45.3	1,157	28.0
Bay of Plenty	2,970	2,909	1,815	62.4	1,180	40.6
Canterbury	5,979	5,882	3,784	64.3	3,198	54.4
Capital & Coast	2,883	2,852	1,821	63.8	1,541	54.0
Counties Manukau	3,548	3,471	1,559	44.9	980	28.2
Hawke's Bay	2,202	2,153	1,480	68.7	1,176	54.6
Hutt Valley	1,545	1,517	951	62.7	774	51.0
Lakes	1,623	1,593	863	54.2	583	36.6
Mid Central	2,208	2,156	1,503	69.7	1,224	56.8
Nelson Marlborough	1,884	1,852	1,436	77.5	1,263	68.2
Northland	1,877	1,828	923	50.5	650	35.6
South Canterbury	819	800	556	69.5	464	58.0
Southern	4,767	4,690	3,121	66.5	2,557	54.5
Tairawhiti	895	875	502	57.4	355	40.6
Taranaki	2,225	2,169	1,526	70.4	1,291	59.5
Waikato	3,954	3,886	2,667	68.6	2,126	54.7
Wairarapa	488	479	280	58.5	220	45.9
Waitemata	5,205	5,113	2,579	50.4	1,521	29.7
West Coast	435	428	327	76.4	270	63.1
Whanganui	807	787	468	59.5	311	39.5
Unspecified	*13*	*11*	-	*0.0*	-	*0.0*
Total	**50,507**	**49,579**	**30,029**	**60.6**	**22,841**	**46.1**

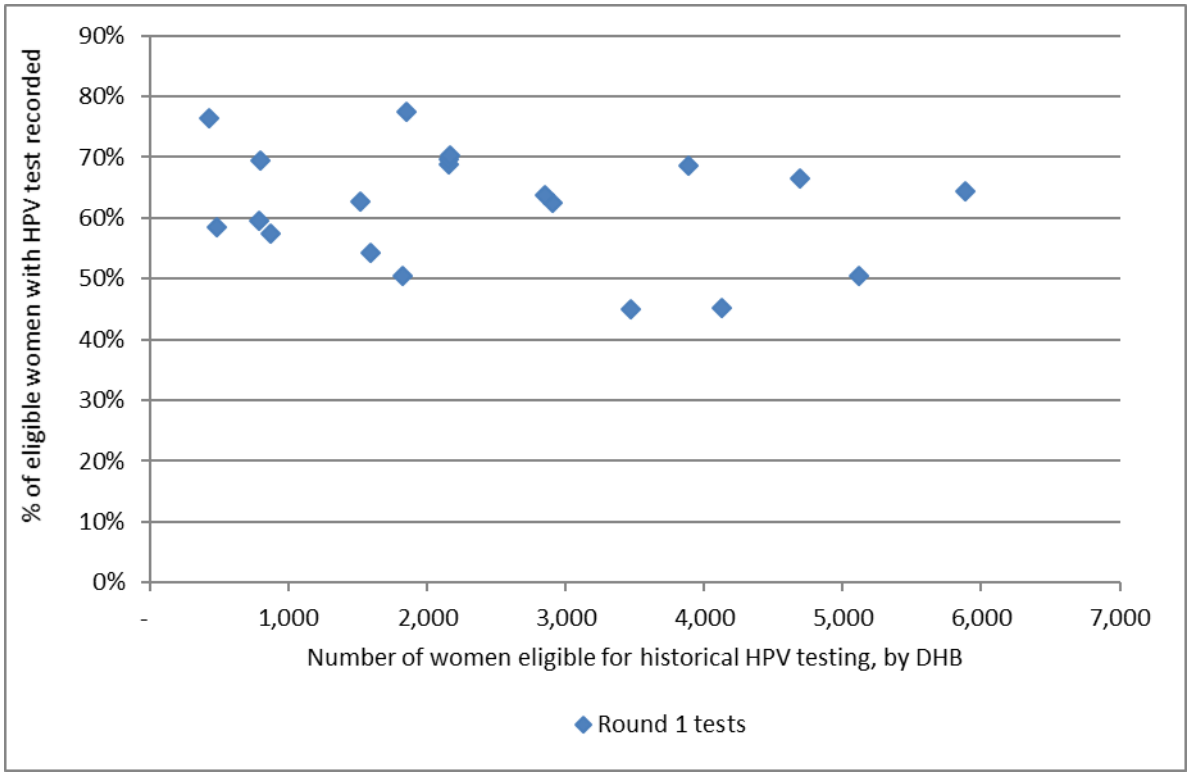
** Women are not followed up in the current report if they are no longer alive at the end of the current monitoring period; or if they have since had a non-squamous high grade abnormality (no longer eligible for historical HPV testing).*

Table 78 - Women eligible for and proportion who have received historical HPV testing, by ethnicity

Ethnicity	Number of women eligible for historical testing as at 1 Oct 2009		Round 1 test recorded		Round 2 test recorded	
	All	In current report*	N	%	N	%
Māori	7,775	7,574	4,172	55.1	2,876	38.0
Pacific	1,228	1,201	498	41.5	344	28.6
Asian	1,679	1,666	757	45.4	541	32.5
European/ Other	39,825	39,138	24,602	62.9	19,080	48.8
Total	**50,507**	**49,579**	**30,029**	**60.6**	**22,841**	**46.1**

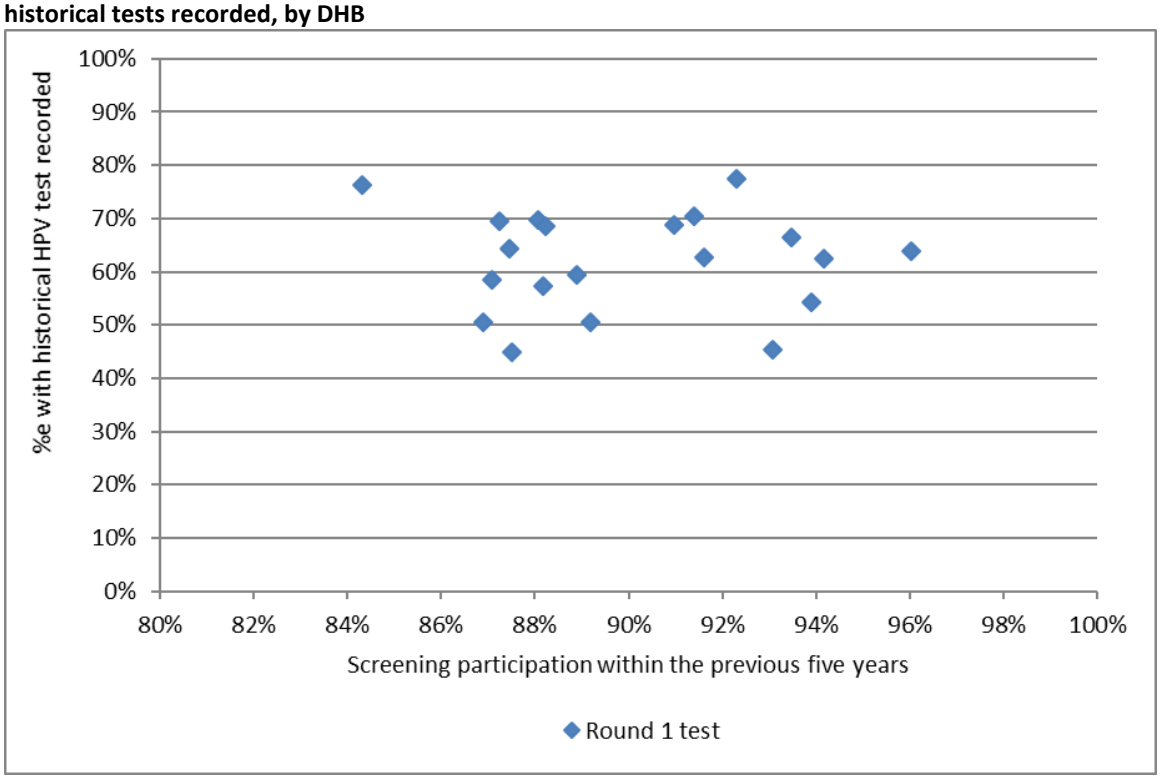
** Women are not followed up in the current report if they are no longer alive at the end of the current monitoring period; or if they have since had a non-squamous high grade abnormality (no longer eligible for historical HPV testing).*

Figure 100 - Number of women eligible for historical testing within a DHB versus the percentage with a Round 1 historical HPV test recorded



Each dot represents a DHB.
This chart does not suggest that there is any relationship between number of women eligible for testing and percent of women who have being tested, therefore this does not seem a likely explanation for the variation in women tested in different DHBs.

Figure 101 - Relationship between women screened in the previous five years and proportion of women with historical tests recorded, by DHB

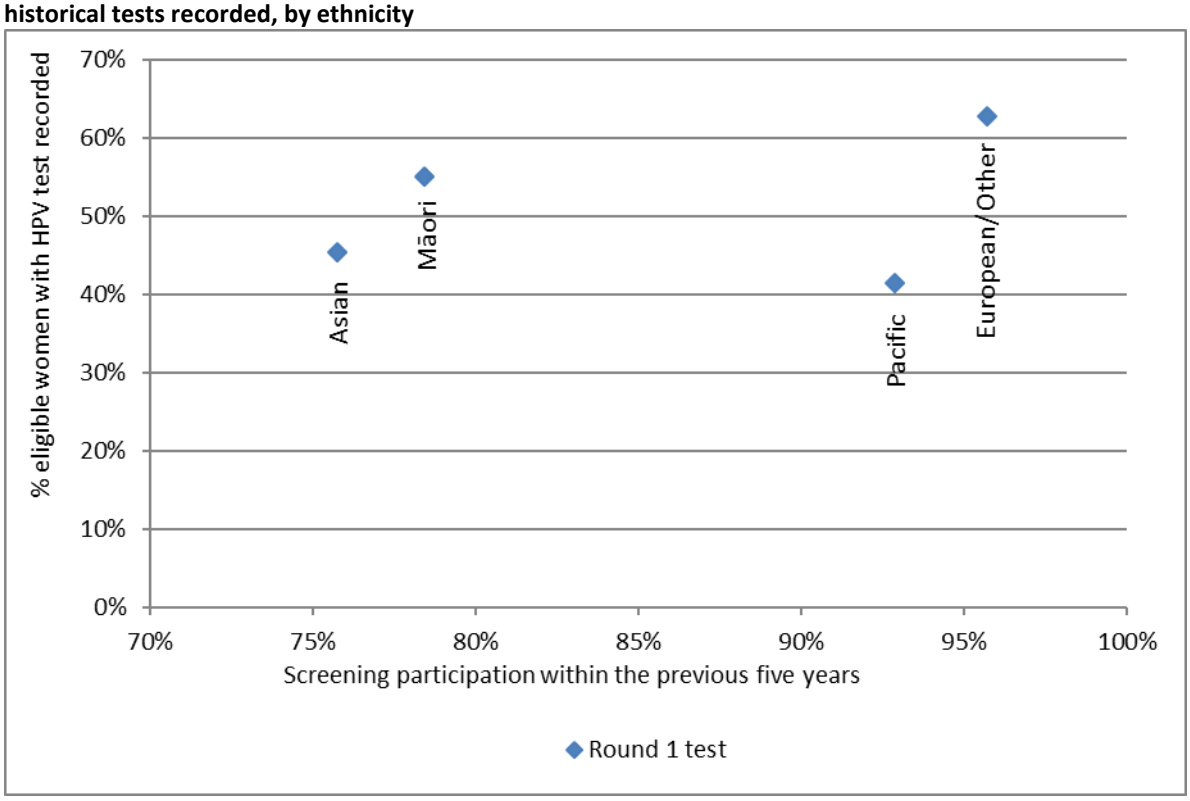


Each dot represents a DHB. See also Table 79.

Table 79 - Women screened in the previous five years and proportion of women with historical round 1 and 2 tests recorded, by DHB

DHB	Women screened in the last 5 years %	Round 1 test recorded %	Round 2 test recorded %
Auckland	*93.1*	45.3	28.0
Bay of Plenty	*94.2*	62.4	40.6
Canterbury	*87.5*	64.3	54.4
Capital & Coast	*96.0*	63.8	54.0
Counties Manukau	*87.5*	44.9	28.2
Hawke's Bay	*91.0*	68.7	54.6
Hutt Valley	*91.6*	62.7	51.0
Lakes	*93.9*	54.2	36.6
Mid Central	*88.1*	69.7	56.8
Nelson Marlborough	*92.3*	77.5	68.2
Northland	*86.9*	50.5	35.6
South Canterbury	*87.3*	69.5	58.0
Southern	*93.5*	66.5	54.5
Tairawhiti	*88.2*	57.4	40.6
Taranaki	*91.4*	70.4	59.5
Waikato	*88.2*	68.6	54.7
Wairarapa	*87.1*	58.5	45.9
Waitemata	*89.2*	50.4	29.7
West Coast	*84.3*	76.4	63.1
Whanganui	*88.9*	59.5	39.5

Figure 102 - Relationship between women screened in the previous five years and proportion of women with historical tests recorded, by ethnicity



Each dot represents an ethnicity

Appendix B – Bethesda 2001 New Zealand Modified

TBS code	Descriptor
Specimen type	
CPS	Conventional pap smear
LBC	Liquid based cytology
COM	Combined (conventional and liquid based)
Specimen site	
T	Vault
R	Cervical
V	Vaginal
Adequacy	
S1	The specimen is satisfactory for evaluation (optional free text)
S2	The specimen is satisfactory for evaluation (optional free text). No endocervical/ transformation zone component present
UA	The specimen is unsatisfactory for evaluation because of insufficient squamous cells
UB	The specimen is unsatisfactory for evaluation because of poor fixation/preservation
UC	The specimen is unsatisfactory for evaluation because foreign material obscures the cells
UD	The specimen is unsatisfactory for evaluation because inflammation obscures the cells
UE	The specimen is unsatisfactory for evaluation because blood obscures the cells
UF	The specimen is unsatisfactory for evaluation because of cytolysis/autolysis
UG	The specimen is unsatisfactory for evaluation because … (free text)
General	
G1	Negative for intraepithelial lesion or malignancy
G2	Epithelial cell abnormality: See interpretation/result
G3	Other: See interpretation/result
Interpretation	
O1	There are organisms consistent with Trichomonas species
O2	There are fungal organisms morphologically consistent with Candida species
O3	There is a shift in microbiological flora that may represent bacterial vaginosis
O4	There are bacteria morphologically consistent with Actinomyces species
O5	There are cellular changes consistent with Herpes simplex virus
OT1	There are reactive cellular changes present (optional free text)
OT2	There are endometrial cells present in a woman over the age of 40 years
OT3	There are atrophic cellular changes present
ASL	There are atypical squamous cells of undetermined significance (ASC-US) present
ASH	There are atypical squamous cells present. A high grade squamous intraepithelial lesion cannot be excluded (ASC-H)
LS	There are abnormal squamous cells consistent with a low grade squamous intraepithelial lesion (LSIL; CIN1/HPV)
HS1	There are abnormal squamous cells consistent with a high grade squamous intraepithelial lesion (HSIL). The features are consistent with CINII or CINIII
HS2	There are abnormal squamous cells consistent with a high grade squamous intraepithelial lesion (HSIL) with features suspicious for invasion

TBS code	Descriptor
SC	There are abnormal squamous cells showing changes consistent with squamous cell carcinoma
AG1	There are atypical endocervical cells present
AG2	There are atypical endometrial cells present
AG3	There are atypical glandular cells present
AG4	There are atypical endocervical cells favouring a neoplastic process
AG5	There are atypical glandular cells favouring a neoplastic process
AIS	There are abnormal endocervical cells consistent with adenocarcinoma in-situ (AIS)
AC1	There are abnormal glandular cells consistent with endocervical adenocarcinoma
AC2	There are abnormal glandular cells consistent with endometrial adenocarcinoma
AC3	There are abnormal glandular cells consistent with extrauterine adenocarcinoma
AC4	There are abnormal glandular cells consistent with adenocarcinoma
AC5	There are abnormal cells consistent with a malignant neoplasm
Recommendation	
R1	The next smear should be taken in three years, based on the information held on the NCSP Register
R2	Please repeat the smear within three months
R3	Please repeat the smear within three months of the end of pregnancy
R4	Please repeat the smear in three months
R5	Please repeat the smear in six months
R6	Please repeat the smear in 12 months
R7	Because a previous smear showed atypical squamous cells or low grade changes, please repeat the smear in 12 months
R8	Annual smears are indicated because of previous high grade abnormality
R9	Referral for specialist assessment is indicated
R10	Urgent referral for specialist assessment is indicated
R11	[not in use]
R12	Please repeat the smear shortly after a course of oestrogen treatment
R13	Under specialist care
R14	In view of the abnormal clinical history provided, urgent referral for assessment is recommended regardless of cytological findings

Appendix C – SNOMED categories for histological samples

Adequacy of specimen		**1986 Code**	**1993 Code**		
Insufficient or unsatisfactory material for diagnosis		M09000	M09010		
There is no code for satisfactory materials.					
Site (topography) of specimen		**1986 Code**	**1993 Code**		
Vagina		T81	T82000		
Cervix (includes endocervix and exocervix)		T83	T83200		
Summary diagnosis	**Code stored on register**	**1986 Code**	**1993 Code**	**Diagnostic category**	**Rank***
There will be a maximum of four M codes transmitted to the register.					
Negative result - normal tissue		M00100	M60000	Negative/benign	1
Inflammation		M40000	M40000	Negative/benign	2
Microglandular hyperplasia		M72480	M72480	Negative/benign	3
Squamous Metaplasia		M73000	M73000	Negative/benign	4
Polyp		M76800	M76800	Negative/benign	5
Other (Morphologic abnormality, not dysplastic or malignant)		M01000	M01000	Negative/benign	6
Atypia		M69700	M67000	CIN 1	7
Benign glandular atypia		M81400	M67030	Negative/benign	8
HPV, koilocytosis, condyloma (NOS) Condyloma acuminatum	M76700	M76700 M76720	M76700 M76720	HPV	9
CIN I (LSIL) (VAIN I when used with T81/ T82000)		M74006	M67016	CIN 1	10
Dysplasia / CIN NOS		M74000	M67015	CIN 1	11
Glandular dysplasia		M81401	M67031	Glandular dysplasia	12
CIN II (HSIL) (VAIN II when used with T81/ T82000)		M74007		CIN 2	13
HSIL NOS		M67017	M67017	HSIL	14
CIN III (HSIL) (VAIN III when used with T81/ T82000) Carcinoma in situ		M74008 M80102 M80702	 M80102 M80702	CIN 3	17 15 16
Adenocarcinoma in situ		M81402	M81402	Adenocarc. in situ	18
Microinvasive squamous cell carcinoma		M80765	M80763	Micro-invasive	19
Invasive squamous cell carcinoma		M80703	M80703	Invasive SCC	20
Invasive adenocarcinoma (endocervical type)		M83843	M83843	Invasive adenocarcinoma	21
Adenosquamous carcinoma		M85603	M85603	Adenosquamous carcinoma	22
Invasive adenocarcinoma (not endocervical type)		M81403	M81403	Invasive adenocarcinoma	23
Metastatic tumour		M80006	M80006	Other cancer	29
Undifferentiated carcinoma		M80203	M80203	Other cancer	24
Sarcoma		M88003	M88003	Other cancer	25
Other codes accepted	**Code stored on register**	**1986 Code**	**1993 Code**	**Diagnostic category**	**Rank**
Carcinosarcoma	M88003	M89803	M89803	Other cancer	26
Choriocarcinoma	M80003	M91003	M91003	Other cancer	27
Miscellaneous primary tumour	M80003	M80003	M80003	Other cancer	28
Small cell carcinoma	M80003	M80413	M80413	Other cancer	30
Malignant tumour, Small cell type	M80003	M80023	M80023	Other cancer	31
Melanoma	M80003	M87203	M87203	Other cancer	32
Other primary epithelial malignancy	M80003	M80103	M80103	Other cancer	33

Appendix D – Indicator Definitions Targets and Reporting Details

Positive predictive value calculations

Table 80 - Definition used for positive predictive value calculations

Histology Diagnosis	G1	Squamous (G2)					Glandular (G2)			Other (G3)	Total
	G1	ASL	LS	ASH	HS1/2	SC	AG1-5	AIS	AC1-4	AC5	
Negative				q	y	y	a	a	a		
Squam-Atypia NOS				q	y	y	a	a	a		
Squam-Low Grade/CIN1/HPV				q	y	y	a	a	a		
Squam-High Grade/CIN2-3				p	x	x	b	b	b		
Squam MI SCC				p	x	x	b	b	b		
Squam-Invasive SCC				p	x	x	b	b	b		
Gland-Benign Atypia				q	y	y	a	a	a		
Gland-Dyplasia				p	x	x	b	b	b		
Gland-AIS				p	x	x	b	b	b		
Gland-Invasive Adeno				p	x	x	b	b	b		
Other Malignant Neoplasm				p	x	x	b	b	b		

PPV% (ASC-H)= sum(p) / (sum(p)+sum(q))
PPV% (HSIL)= sum(x) / (sum(x)+sum(y))
PPV% (ASC-H+HSIL+SC)= (sum(p) + sum(x))/ (sum(p)+sum(q) +sum(x) + sum(y)

Appendix E – DHB assignment for colposcopy clinics

Where results in Indicator 7 (colposcopy indicators) are provided by DHB, the clinics included in each DHB are as listed below. Assignment of individual facilities to specific DHBs was provided by the NCSP. All other colposcopy clinics were grouped together as "Private practice".

DHB	Colposcopy clinics included*
Auckland	Ward 97 - Gynae Inpatient Auckland City Hospital General Surgery – Auckland City Hospital Colposcopy Clinic - Greenlane Clinical Centre Gynae Outpatient Clinic – Greenlane Clinical Centre Short Stay Surgical Unit – Greenlane Clinical Centre Emergency Medicine – North Shore Hospital
Bay of Plenty	Whakatane Hospital (G) Opotiki Hospital Outpatients' Department Tauranga Hospital (G)
Canterbury	Ashburton Hospital Christchurch Hospital Christchurch Sexual Health Centre Christchurch Women's Hospital - Colposcopy Christchurch Women's Hospital - Gynaecology
Capital & Coast	Colposcopy Clinic – Wellington Women's Hospital Outpatients Department Kenepuru Women's Outpatients' Department Women's Clinic – Wellington Regional Hospital
Counties Manukau	Manukau Super Clinic Gynaecology Clinic – [Middlemore Hospital] Colposcopy Clinic – Manukau Super Clinic
Hawke's Bay	Chatham Islands Health Centre Outpatients Dept – Napier Health Centre Villa 4, Gynaecology, Hawke's Bay Hospital Hawkes Bay Regional Hospital Wairoa Cervical Screening Wairoa Hospital
Hutt Valley	Women's Health Clinic – Hutt Hospital Gynaecology Clinic - Hutt Hospital
Lakes	Rotorua Hospital (Gynae Dept) Taupo Hospital
Mid Central	Colposcopy Clinic – Palmerston North Hospital Gynaecology Clinic - Palmerston North Hospital Gynaecology Clinic Horowhenua Hospital
Nelson Marlborough	Marlborough Maternity & Gynae Nelson Outpatients Department
Northland	Colposcopy Clinic Whangarei Hospital Kaitaia Hospital Colp Outpatients' Department Bay Of Islands Hospital Outpatients' Department Gynaecology Clinic Whangarei Hospital
South Canterbury	Timaru Hospital - Colp/Gynae
Southern	General Gynae Department – Dunedin Hospital

DHB	Colposcopy clinics included*
	Dunedin Public Hospital Dunedin Colposcopy Clinic Southland Hospital Gynaecology
Tairawhiti	Gisborne Hospital
Taranaki	Taranaki Health Base Hospital - Outpatients Department Hawera Outpatients
Waikato	Te Kuiti Hospital Womens Outpatient Services – Waikato Hospital Tokoroa Hospital - Bev Thorn
Wairarapa	Gynaecology Clinic – Wairarapa Hospital
Waitemata	Colposcopy Clinic- Waitakere Hospital Gynaecology Clinic –North Shore Hospital Colposcopy Clinic- North Shore Hospital Peri-Operative Department - North Shore Hospital
West Coast	Greymouth Hospital Gynaecology Clinic Greymouth
Whanganui	Wanganui Hospital Gynaecology Clinic – Good Health Wanganui

** Assignment of specific facilities to a DHB was provided by the NCSP, in order to distinguish between DHB clinics and private practice, because the NCSP Register records geographic DHB and does not record public vs private clinic.*

Appendix F – Glossary

Term	Definition
AGC	Atypical glandular cells
AIS	Adenocarcinoma in situ. High-grade changes to the glandular (endocervical) cells of the cervix
ASC-H	Atypical squamous cells of undetermined significance, cannot exclude high grade
ASC-US	Atypical squamous cells of undetermined significance
ASR	Age standardised rate
CI	Confidence interval
CIN	Cervical intra-epithelial neoplasia; CINI: low grade; CIN2 or 3: high grade
CIS	Carcinoma in situ. An older classification of CIN3. Abnormal cells that are confined to the surface epithelium of the cervix.
CPS	Conventional Pap (Papanicolaou) Smear
DHB	District Health Board
European/ Other	European women and women from non-Māori and non-Pacific ethnic groups
HPV	Human papillomavirus
HPV test	Testing for a high risk (oncogenic) subtype of human papillomavirus
hrHPV	A high risk (oncogenic) subtype of human papillomavirus
HSIL	High grade squamous intra-epithelial lesion
ISC	Invasive squamous carcinoma
LBC	Liquid based cytology
LSIL	Low grade squamous intra-epithelial lesion
NCSP	National Cervical Screening Programme
NILM	Negative for intraepithelial lesion or malignancy (a negative cytology report)
NSU	National Screening Unit of the Ministry of Health
NHI	National Health Index
NPV	Negative predictive value. The proportion of the screened population with negative test results who do not have the disease being tested for.
OR	Odds ratio
PCR	Polymerase chain reaction. A technique in molecular genetics used in many types of HPV testing
PPV	Positive predictive value. The proportion of the screened population with positive test results who have the disease being tested for.
RR	Relative risk
SC	Squamous cell carcinoma (TBS 2001)
SCC	Squamous cell carcinoma
SNOMED	Systematised Nomenclature of Medicine. A systematically organised collection of medical terminology including histopathological diagnoses.
TBS 2001 (New Zealand Modified)	The Bethesda System 2001 NZ Modified. A management system based on categorising the cytological interpretation of cellular abnormality as negative, low-grade or high-grade.
TZ	Transformation zone. The region of the cervix where the glandular precursor cells change to squamous cells

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