National Screening Unit

National Cervical Screening Programme

Monitoring Report 44

1 July - 31 December 2015

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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 1 July - 31 December 2015.

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 31 December 2015.

- Among an estimated 1,184,129 eligible women aged 25-69 years at the end of the monitoring period, 908,935 (76.8% had a screening test in the previous three years.
- Coverage target was not met nationally (80% of women aged 25-69 years screened in the previous three years).
- Coverage target was met for specific five-year age groups between 45-59 years.
- Coverage target was met by three of 20 DHBs.
- Nationally, coverage targets were met for European/Other women (82.4% screened within the previous three years), but were not met for Māori, Pacific, or Asian women (63.0%, 74.2%, 64.5% respectively screened within the previous three years).
- Five-year coverage among women aged 25-69 years exceeds 80% in all DHBs, and in women in all five-year age groups between 25-69 years.
- Three-year coverage among women aged 25-69 years (76.8%) is slightly higher than that reported in the previous monitoring report (76.5%). It has increased in Māori, Pacific and Asian women, and remained the same for European/ Other women.
- Three-year coverage has increased in most age groups, with small increases in women aged 30-69 years.
- Three-year coverage decreased in all of 20 DHBs.
- Five-year coverage among women aged 25-69 years (90.5%) is similar to that in the previous monitoring report (90.7%).

Screens in women aged less than 20 years

Target: None

- In the three years to 31 December 2015, 7,299 women had a cervical sample taken when they were aged less than 20 years. This is less than in the previous reporting period (7,859 women).
- This represents 0.7% of all women (of any age) who were screened in the three-year period (the same as the previous reporting period).

- Most of these women (89.0%) 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 current report 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 recent reports 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

Routine screening (3-year recall)

- Among women attending for screening in 2015 following a 3-year recall recommendation, 61.2% were attending on-time; 16.3% more than six months early; and 22.6% more than six months late.
- Over the period 2011 to 2015, the proportion of women who were screened on-time increased in all ethnic groups and all age groups. This predominantly reflected a reduction in early re-screening.
- The proportion re-attending more than six months late for their routine screen was consistently higher in Māori and Pacific women than in Asian and European/Other women, and was consistently highest in women aged 30-39 years.

12-month re-screening

- Among women attending for screening in 2015 following a 12-month repeat recommendation, 41.4% were attending on-time; 3.3% more than three months early; and 55.2% more than three months late.
- Over the period 2011 to 2015, the proportion of women who were re-attending on-time for 12-month follow-up and the proportion who were re-attending more than three months early decreased somewhat. There was a corresponding increase in the proportion of women who were re-attending more than 15 months after a recommendation to return in 12 months.
- In 2015, the majority of women who were re-attending after a recommendation to return in 12 months were re-attending more than three months later than recommended. This was the case for all ethnic groups, and all age groups other than women aged 60-69 years.
- The proportion who were re-attending more than 15 months after a recommendation to return in 12 months was consistently higher in Māori and Pacific women than in Asian and European/Other women, and was consistently highest in women aged 30-39 years.

Indicator 2	First screening events **Target:** None • There were 23,259 women who had their first screening event during the current reporting period – a decrease compared to the previous reporting 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 19 women aged between 20-69 years who withdrew from the NCSP Register during this six-month period. This is similar to the number of women in this age range who withdrew during the previous reporting period (20 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. • 15.0% 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 7.7% in Tairawhiti to 21.7% in Waitemata. • Early re-screening occurs in all ethnic groups, but is most common among Asian women (15.6%), and least common among Pacific women (11.2%). • Early re-screening occurs in all age groups, but is most common in women aged 20-24 years at the end of the period (21.2%) and least common in women aged 60-64 years at the end of the period (12.4%). • Early re-screening has slightly decreased since the previous report, from 16.0% to 15.0%.

Indicator 5 Laboratory Indicators

Indicator 5.1 Cytology reporting

The proportion of cytology samples which are LBC has remained the same since the previous reporting period, at virtually 100.0%.

Unsatisfactory cytology

Target: 0.1 - 3% for LBC

- Percent LBC samples unsatisfactory target met by all seven laboratories, and was met nationally (1.3%).
- The rate of unsatisfactory LBC samples is similar to the previous report (1.3%).

Negative cytology

Target: No more than 96% of satisfactory cytology samples

- Percent of samples negative target met by all seven laboratories and was met nationally (92.6%).
- Nationally, the percent of samples which are negative (92.6%) is the same as reported in the previous period (92.6%).

Abnormal cytology

Target: No more than 10% of satisfactory cytology samples

- Percent of samples abnormal target met nationally and by five of seven laboratories.
- Nationally, the percent of samples which are abnormal (7.4%) is the same as reported in the previous period (7.4%).

HSIL cytology

Target: No less than 0.5% of satisfactory cytology samples

- Percent of samples HSIL target met nationally and by six of the seven laboratories.
- Percent of samples HSIL (1.1%) is slightly higher than the previous report (0.8%).

Indicator 5.2 Cytology positive predictive value

HSIL + SC

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

- Four laboratories met the target range for HSIL+SC.
- Nationally, the positive predictive value of HSIL+SC was slightly lower for this monitoring period (83.4%) than in the previous report (83.7%).

Other cytological abnormalities

Target: None

- Nationally, the positive predictive value of ASC-H has decreased compared to the previous report (46.6% in this report, 51.4% in the previous report).
- Nationally, the positive predictive value of the combination of ASC-H+HSIL+SC has decreased compared to the previous report (69.3% compared to 72.2% in the previous report).
- Nationally, the percent of glandular cytological abnormalities identified as histological high grade has decreased since the previous report, from 55.1% to 47.7 % (however this measure is generally based on a comparatively small number of samples; 172 with histology in the current report).

Indicator 5.3 <u>Accuracy of negative cytology reports</u>

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

- Nationally, 2.7% of slides originally reported as negative, benign/reactive or unsatisfactory were consistent with HSIL+ on review.
- All laboratories met the target.

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%

- Nationally, 5.3% of slides originally reported as negative, benign/reactive or unsatisfactory were consistent with ASC-H+/AG4+ on review.
- All laboratories met the target of less than 20% and achieved rates of less than 15%.

Indicator 5.4 <u>Histology reporting</u>

Target: None

- 13,889 histology samples were taken during the current reporting period. 490 (3.5%) of these were insufficient for diagnosis.
- Results for most severe histology from 11,703 women with samples which were sufficient for diagnosis are presented
- 53.4% of women had histology samples which were negative/ benign
- 21.8% of women had CIN2/3 or HSIL histology results.
- 70 (0.6%) women had histology results indicating adenocarcinoma in situ (AIS).

- 41 (0.4%) women had ISCC histology results, 39 (0.3 %) women had invasive adenocarcinoma (eight endocervical type; 31 not endocervical type) histology results, and 2 (<0.05%) had adenosquamous carcinoma histology results.

Indicator 5.5 Turnaround times

Cytology

- The seven-working-days target for cytology was met nationally (95.0% samples were reported within seven working-days), and was met by six of seven laboratories.
- The 15-working-days target was met nationally (98.7% samples were reported within 15 working-days), and was also met by six of the seven laboratories.
- Performance against the seven-working-days target has increased slightly since the previous report (from 93.8% to 95.0%) and the number of labs meeting the target has increased from five to six.
- The overall percent of cytology samples reported within 15-working-days (98.7%) is slightly lower than in the previous reporting period (98.9%).

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 (91.4%). The target was not met for reporting within 15 working days (94.5%).
- Targets were met by 10 of 16 laboratories (ten working day target) and five of 16 laboratories (15 working day target).
- The overall proportion of histology samples reported within 15 days (94.5%) is slightly lower than the previous report (95.7%). The number of laboratories meeting the targets has increased by one at 10 working days and 15 working days since the previous report.

Low grade cytology with associated HPV triage testing

Target: 98% within 15 working days *(updated since previous report)*

- There were 3,135 cytology samples with associated HPV triage testing in the current reporting period.
- Turnaround time was above the target: 98.5% were reported on within 15 working days.
- Six laboratories met the target.

The proportion reported within 15 days for this subgroup of cytology (98.5%) is similar to that for all cytology reported (98.7%).

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).
- 82.7% of women had a histology report within 90 days of their high grade cytology report; 88.5% of women had one within 180 days.
- One of the DHBs (Hutt Valley) met the target for histological follow-up within 90 days but no DHB met the target for 180 days.
- Nationally, the proportion of women with histological follow-up within 90 days has increased since the previous reporting period (from 81.4% to 82.7%), as has the proportion with follow-up within 180 days (from 87.7% to 88.5%).
- Compared to the previous reporting period, the proportion of women with follow-up histology within 90 days increased for Pacific women (from 72.9% to 75.2%), Māori (from 75.4% to 77.6%) and European/Other women (from 83.7% to 85.2%), but decreased for Asian (from 80.1% to 77.4%).
- The proportion of women with follow-up histology within 180 days increased compared to the previous reporting period for Māori, Pacific and Asian women, but decreased for European/Other women (although in most cases the change is small).
- The proportion of women with histological follow-up at both 90 and 180 days decreased for some age groups, including 20-24 years, 35-44 years and 55-59 years, but increased for all other age groups.

Any follow-up tests

Target: None

- Nationally, 199 (9.3%) women have no follow-up test report (colposcopy, subsequent cytology, histology, HPV test) within 90 days of their high grade cytology report, and 126 (5.9%) 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 reporting period at 90 days (from 9.0% to 9.3%) and at 180 days (from 5.2% to 5.9%).
- Compared to the previous reporting period, the proportion of women with no follow-up test recorded at 180 days has increased for Māori (from 7.3% to 11.3%), Asian (from 5.3% to 8.6%) and European/other women (from 4.1% to 4.2%), but decreased for Pacific women (from 12.7% to 6.4%).

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 2,133 women with high grade cytology results who were not already under specialist management.
- This comprised 63 women with high grade results indicating a suspicion of invasive disease and 2,070 women with other high grade results.
- Among the 63 women with high grade cytology results indicating a suspicion of invasive disease, 42 had an accepted referral; 76.2% of the women were seen within 10 working days of their referral being accepted; 85.7% were seen within 20 working days of their referral being accepted. This is lower than in the previous report at 10 working days (78.9%), and at 20 working days (94.7%).
- Among the 2,070 women with other high grade cytology results, 1,824 had an accepted referral; 67.8% 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 reporting period (69.5%).
- A colposcopy visit is recorded for 56 (88.9%) of the women with high grade cytology results indicating a suspicion of invasive disease, and 1,945 (94.6%) of the women with other high grade cytology results up to 31 December 2015 (follow-up time of at least six and up to 12 months).
- Nationally, the proportion of women with accepted referrals recorded on the NCSP Register is slightly lower compared to the previous report (from 87.5% to 87.7%).
- In the current report histology data has been used to infer a colposcopy visit and supplement colposcopy visit data, as colposcopy data is still incomplete.

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 4,068 women with persistent low grade cytology or low grade cytology and a positive hrHPV test collected in 1 January – 30 June 2015 (the six months prior to the current monitoring period).
- Subsequent accepted referrals are recorded for 3,511 (86.3%) of these women, and subsequent colposcopy for 3,649 (89.7%) of these women.
- The median time between the cytology report date and the date the referral was accepted was six days (interquartile range (IQR): 2 - 13 days). Among women with a referral recorded, the median time between an accepted referral and the first attendance for colposcopy was 88 days (IQR: 42 – 141 days).
- Considering all women with a record of colposcopy, including those without a referral recorded on the NCSP Register, the median time between the cytology report and the first colposcopy visit was 93 days (IQR: 46 – 153 days).

Indicator 7.3 Adequacy of reporting colposcopy

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

- Based on 9,566 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 97.7% of colposcopies.
- Presence or absence of a lesion was documented for all colposcopies.
- Colposcopic opinion regarding abnormality grade was documented for 91.8% of colposcopies where appearance was abnormal or inconclusive.
- The type of recommended follow-up was recorded for 92.2% of colposcopy visits, and the recommended timeframe for this follow-up was recorded for 91.6% of colposcopy visits.
- All of these items were completed for 92.8% of colposcopy visits.
- Colposcopic appearance was reported as abnormal in 55.9% of colposcopies, and inconclusive in 5.0% of colposcopies.
- Completion of most recommended fields is similar to what was reported in the previous monitoring period.
- Overall completion (92.8%) is also similar to what it was in the previous reporting period (92.1%).
- The number of colposcopies recorded on the NCSP Register has decreased by 29.7%, however it is likely that this represents differences in reporting of colposcopies rather than a true decrease in the number of colposcopies performed. Several DHBs were unable to report colposcopy data for the full

monitoring period, and it is likely that this is the main reason for the apparent decrease in number of colposcopies recorded.
- The number of DHBs reporting colposcopy data electronically to the NCSP Register increased from five to (thirteen during the current monitoring period).

Indicator 7.4 Timeliness and appropriateness of treatment

Target: 90% or more of women with HSIL should be treated within eight weeks of histological confirmation.

- 62.3% of 2,402 women with HSIL histology (CIN2/3) during the period 1 January – 30 June 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 decreased slightly since the previous reporting period (from 63.4% to 62.3%).
- One DHB met the target.

Treatment of histologically confirmed LSIL is not recommended by the *2008 NCSP Guidelines for Cervical Screening in New Zealand*, and the NCSP standard recommends that the number of women treated for low grade abnormalities is minimised. For descriptive purposes, the number of women with LSIL histology (CIN1, CIN not otherwise specified) who received treatment is reported here.

- There were 133 women with LSIL histology (CIN1, CIN not otherwise specified) who received treatment within 26 weeks of their LSIL histology report, and did not additionally have high grade histology in the six months preceding treatment.

Indicator 7.5 Timeliness of discharge following treatment

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, 1,673 women were treated for high grade lesions in the period July to December 2015.
- 74.1% of women treated have a record of both colposcopy and cytology within the nine months after their treatment visit. 75.1% 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 1,282 women who met the criteria for appropriate discharge within 12 months of their treatment (76.6% of

women treated). Of these women, 1,056 (82.4%) were discharged to their smear-taker within 12 months.
- Eight DHBs met the target of discharging 90% or more women who were eligible for discharge within 12 months.

Indicator 8 HPV testing

Indicator 8.1 HPV triage of low grade cytology

Target: None set.

HPV triage

- Nationally, 96.0% of women aged 30 years or more with an eligible ASC-US cytology result, and 96.8% of women aged 30 years or more with an eligible LSIL cytology result are recorded as having a subsequent HPV triage test.
- Among women aged 30 years or more with valid HPV triage test results, 24.2% of women with ASC-US results and 59.1% of women with LSIL results were positive for high risk HPV.

Positive triage tests

- Positivity for high risk HPV varied by laboratory (from 14.8% to 39.4% for ASC-US, and from 47.2% to 81.7% for LSIL)
- Positivity for high risk HPV generally decreased with increasing age.
- Small numbers of HPV triage tests occur in women aged under 30 years (in 1.4% of women with an ASC-US result, and 0.6% of women with an LSIL result; 25 women in total)
- The proportion of women who were eligible for HPV triage of low grade cytology who subsequently received a triage test is higher than that in the previous reporting period for women with ASC-US results (97.5%, compared to 96.3% in the previous report) and remained the same as that in the previous reporting period for women with LSIL results (96.8% for both reports).
- The proportion of women whose HPV tests were positive was similar in the current reporting period for ASC-US (24.2%, compared to 24.0% in the previous period), and also for LSIL (59.1%, compared to 61.0% 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, 92.7% of women have a record of colposcopy and 69.0% have a record of histology within 12 months of their triage test. The corresponding percentages for LSIL are 90.9% with colposcopy and 69.7% with histology within 12 months.

- Among women with colposcopy recorded within 12 months of a positive triage test, 18.1% of women with ASC-US cytology and 18.1% of women with LSIL cytology had a histological outcome of CIN 2 or a more serious result (CIN2+).
- Among women with histology recorded within 12 months of a triage test, 24.3% of women with ASC-US cytology and 23.7% of women with LSIL cytology had a histological outcome of CIN 2 or a more serious result (CIN2+).

Indicator 8.2 HPV test volumes

Target: None set.

- Nationally, 20,466 cervical samples were received at laboratories for HPV testing during the current monitoring period.
- These samples generally related to women aged 30 years or more (86.5% of all HPV test samples)
- HPV test volumes were lowest at Aotea Pathology (833 samples; 4.1% of all HPV test samples) and highest at Southern Community Labs (6,998 samples; 34.2% of all HPV test samples).
- Nationally, 13.0% of HPV tests were taken for follow-up of women treated for confirmed high grade squamous abnormalities in the previous four years, 39.0% were taken to manage women with high grade squamous cytology or histology more than three years ago (historical testing), 4.3% were taken at colposcopy (potentially to assist in resolving discordant results), and 14.8% were taken for HPV triage of low grade cytology in women aged 30 years or more.
- Of the remaining HPV tests (28.9% of all HPV tests, 5,916 tests total), 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 (35.9% of the remaining tests; 10.4% of all HPV tests; 2,121 tests in total); this may have occurred, for example, because the abnormalities pre-date either the Register or the woman's enrolment on the Register or because the abnormalities occurred overseas. A smaller proportion appear to have been related to follow-up of an abnormality outside guidelines, for example non-squamous abnormalities, or low grade abnormalities in cases where the guidelines recommend referral to colposcopy rather than triage (26.4% of the remaining tests; 7.6% of all HPV tests; 1,564 tests in total).
- The proportion of HPV tests which are invalid is very small (0.1%).
- Overall HPV test volumes have increased by 7.1% since the previous reporting period.

Indicator 8.3	Historical HPV tests for follow-up of women with previous high grade abnormality Target: None set. • This analysis followed up 49,658 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 28,494 women (57.4%) with a Round 1 historical HPV test recorded, and 21,597 women (43.5%) with a Round 2 historical HPV test recorded. • The proportion of women who had received a historical HPV test varied by DHB, from 39.6% to 76.4% for Round 1 tests and from 24.9% to 66.8% for Round 2 tests. • There was comparatively little variation by age in the proportion of women who had received a historical HPV test. This varied from 44.8% (25-29 years) to 59.9% (40-44 years) for Round 1 tests, and from 26.1% (25-29 years) to 48.0% (60-64 years) for Round 2 tests. The proportions were lower than this range for women aged 20-24 years at the end of the current monitoring period, however these are based on very small numbers, as there were only a small number of women this age who were eligible for historical HPV testing. • The proportion of women who had received a historical HPV test varied somewhat by ethnicity, from 37.4% (Pacific women) to 59.8% (European/Other women) for Round 1 tests and from 25.8% (Pacific women) to 46.3% (European/Other women) for Round 2 tests. • The proportion of eligible women with an HPV test recorded has increased since the previous report from 53.8% to 57.4% for Round 1 tests, and from 40.6% to 43.5% for Round 2 tests. • This indicator is still being developed and further refinements are anticipated in future monitoring reports.

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 those who die from it. The Programme recommends regular cervical screening at three yearly 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:
Email: Ivan_Rowe@moh.govt.nz
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3. Methods

Data used

The analyses in this report are based on data extracted from the NCSP Register in mid-February 2016.

Age

Unless otherwise specified, age is defined as the woman's age at the end of the reporting period, i.e. 31 December 2015.

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 2014). The 2015 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 31 December 20155 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 31 December 2015.

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 were not available were included in the "European/Other ethnic groups" category. The data download used for the current analysis (NCSP Register data as at February 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. 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 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.

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 yearly coverage, (discussed above) we also report five yearly 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 to previous reports, 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 reporting 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, ie 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 by 30 June 2015. 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 31 December 2015, 908,935 (76.8%) women aged 25-69 at the end of the current reporting period had at least one cervical sample taken during the previous three years. This does not yet meet the target of 80%. 1,071,337 (90.5%) women aged 25-69 at the end of the current reporting 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 71.8% (West Coast) to 80.6% (Nelson Marlborough). Three of the 20 DHBs achieved the 80% target for women aged 25-69 years at the end of the period (

Figure 1, Table 23).

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 women aged 25-69 years, the target was achieved for each of the specific five-year age groups between 45 and 59 years, but was not achieved for the five-year age groups between 25 and 44 years, or 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 (66.0%), and was highest for women aged 45-49 years (81.2%) (Figure 2, Indicator 1.1 – Three-year coverage

Table 22). 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.

Three-yearly coverage also varied by ethnicity. Coverage targets of 80% not met for Māori, Pacific, or Asian women. Coverage in these groups for women aged 25-69 years was 63.0%, 74.2%, and 64.5% respectively. Among European/Other women, coverage achieved was 82.4% within three years (Figure 4,
Table 24).

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 73.0% (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 52.0% (Northland) to 90.4% (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 53.4% (West Coast) to 76.3% (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 74.2% (West Coast) to 90.2% (Auckland) (Figure 7). The target level of 80% of European/Other women screened within the previous three years was achieved in 11 DHBs (Auckland, Bay of Plenty, Capital & Coast, Counties Manukau, Hutt Valley, Lakes, Nelson Marlborough, Southern, Taranaki, Waikato and Waitemata).

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 84.4% for West Coast to 96.2% in Capital & Coast (Figure 8, Table 26); by age from 80.7% for women aged 25-29 years to 95.1% for women aged 45-49 years (Figure 9, Table 25); and from 74.7% (Asian) to 96.2% (European/Other) (Figure 10, Table 27). Five-yearly coverage for Māori women ranged from 59.3% (South Canterbury) to 91.7% (Hawke's Bay) (Figure 11, Table 28). Five-yearly coverage for Pacific women ranged from 63.0% (Northland) to all women (Auckland and South Canterbury) (Figure 12, Table 28). Five-yearly coverage for Asian women ranged from 59.8% (West Coast) to 87.0% (Hutt Valley) (Figure 13, Table 28). Five-yearly coverage in European/Other women ranged from 86.8% (West Coast) to all women (Auckland) (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 7,299 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 31 December 2015. 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 53 (Tairawhiti) to 1,251 (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 7.4% (Canterbury). Some smaller DHBs screen a relatively low number of women when they are younger than 20 years, but because the population is small this equates to screening women aged less than 20 years old at a comparatively high rate (for example South Canterbury, Wairarapa and West Coast). 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 more than three quarters 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 (89.0%). This may represent opportunistic screening of women aged 18-19 years. This proportion varied from 75.8% in South Canterbury to 97.3% 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

Trends information in this report need to be interpreted with some caution, as the population estimates used were updated to employ projections based on the 2013 Census population for the current and two previous reporting periods ('to 31 Dec 2015', 'to 30 Jun 2015' and 'to 31 Dec 2014'), while the earlier periods ('to 30 Jun 2014') employ projections based on the 2006 Census. This change will have improved the estimates of coverage, however it also means that some caution is required in interpreting changes across time, as these may partially reflect differences in the population estimates.

Coverage

Overall coverage in New Zealand among women aged 25-69 years is similar in the current period (76.8% within the last three years, and 90.5% within the last five years) compared to the previous monitoring period (76.5% within the last three years, and 90.7% 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

Northland and Tairawhiti). 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 was similar to the proportions in the previous monitoring report. The coverage target of 80% continued to be 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 by age are shown in Figure 17 and Table 34.

By ethnicity, coverage has been relatively unchanged over the last four monitoring periods for Māori, Asian, and European/Other women. The proportion of Pacific women screened has increased over this period, from 69.0% in 30 June 2014 to 74.2% in 31 December 2015) (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 7,859 in the previous monitoring period to 7,299 in the current monitoring period, as has the proportion of all women with screening events who were aged less than 20 years at the time of the event (from 0.8% to 0.7%). The number of women screened who were aged less than 20 years at the time has decreased in all DHBs (Figure 19).

The proportion of these women who were aged 18-19 years has increased somewhat since the previous reporting period (from 88.6% to 89.0%), and an increase has occurred in most DHBs (12 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 olds.

Comments

As discussed in Methods (Hysterectomy-adjusted population, page 15), 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 (ie regardless of whether they have had a hysterectomy or not). Results for this analysis appear in Table 32.

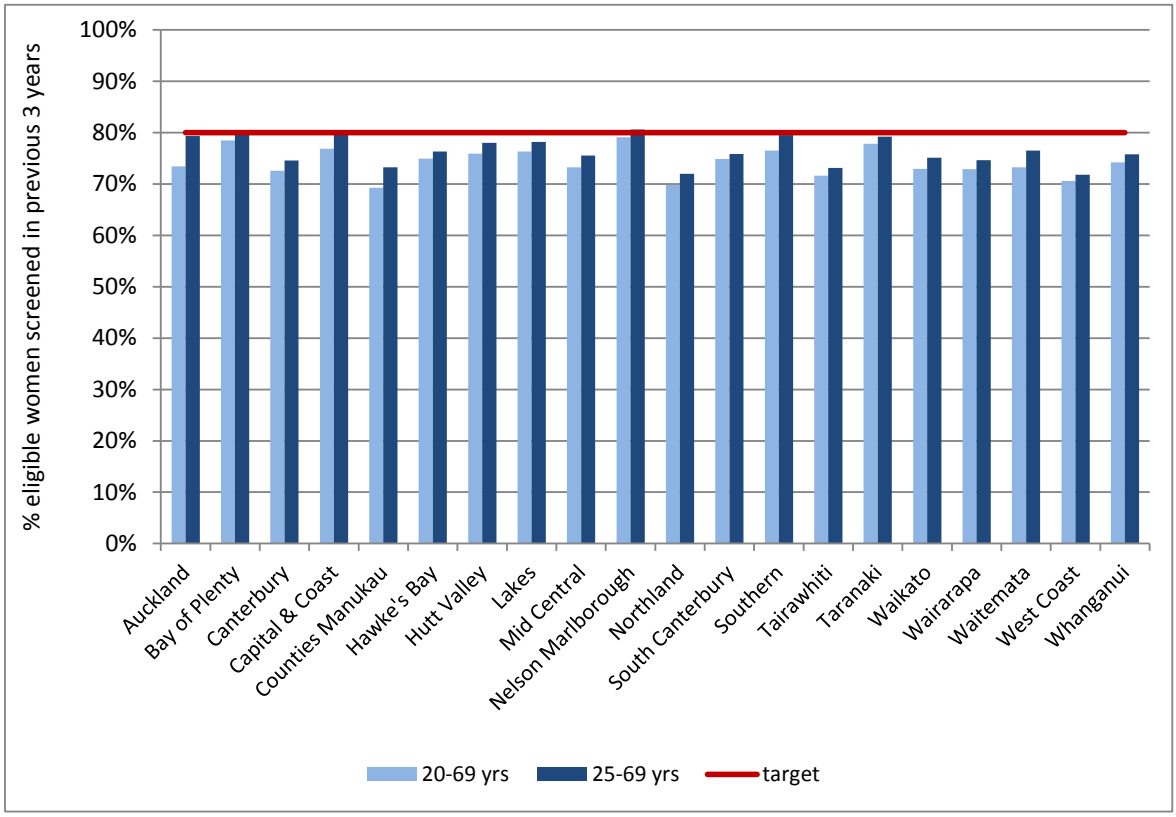
Counts of women screened used to estimate coverage (numerator) exclude women who are not enrolled on the NCSP Register, whereas the hysterectomy-adjusted population estimates (denominator) represent all women in New Zealand without a hysterectomy, regardless of whether they are enrolled on the NCSP Register. Therefore the coverage estimates may be an underestimate of the actual coverage rates achieved, however the impact is likely to be very small.

The current monitoring report employs different estimates of hysterectomy prevalence compared to that used in monitoring reports prior to Report 37. As a result, coverage estimates in the current report are not directly comparable to estimates prior to Report 37 and so trends should be interpreted with caution. Trends for earlier reporting periods were examined in the Annual Report covering 2010/2011, where coverage for recent years were re-calculated using the updated hysterectomy adjustors, to allow a better comparison to be made.

Concerns about under- and over-counting of different ethnicity groups is leading the Ministry to explore using the NHI for ethnicities as all other Ministry collections are moving to do so. In the interim this report relies on NCSP Register ethnicities.

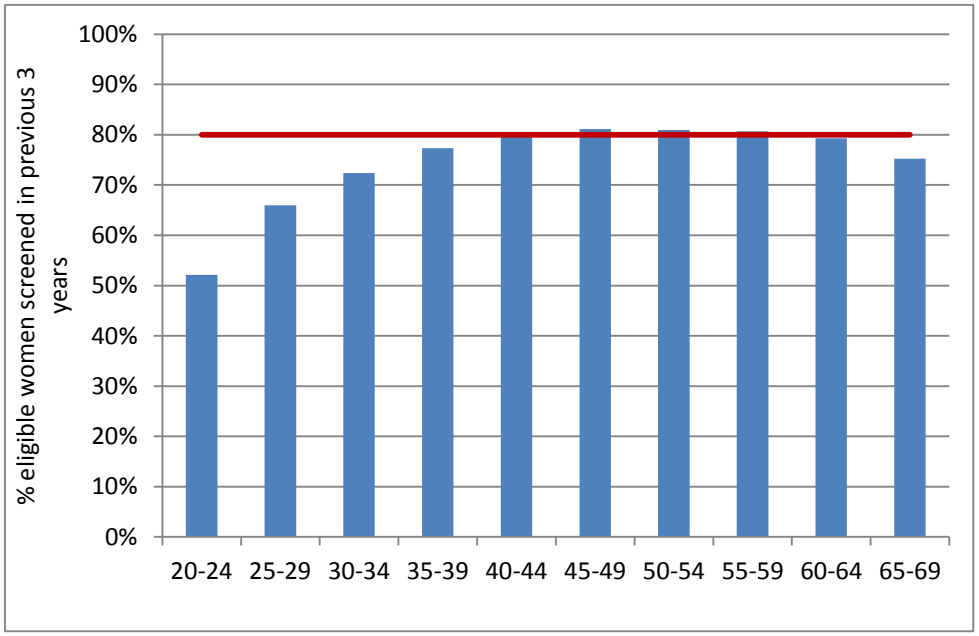
Coverage in women aged 20-24 years is likely to remain lower than for other ages and coverage in this age group should be interpreted with caution, as many women will have had a shorter period in which they were eligible for screening.

Figure 1 - Three-year coverage by DHB (women screened in the three years prior to 31 December 2015, as a proportion of hysterectomy-adjusted female population)



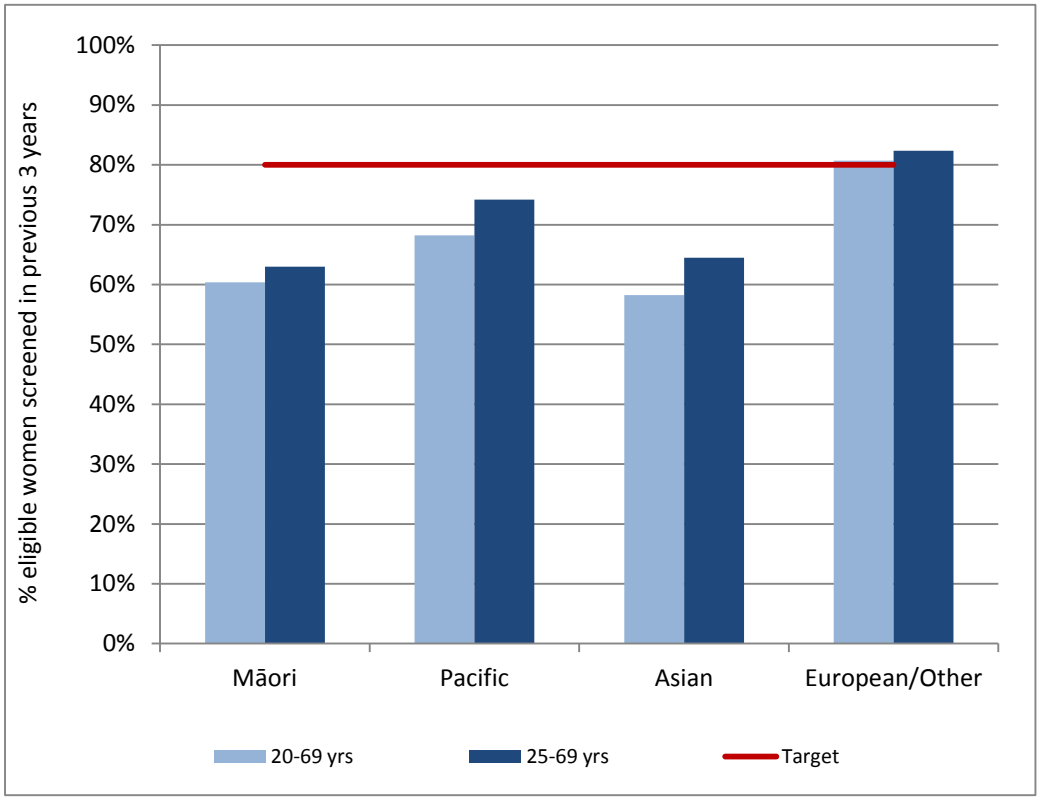
Note: Coverage calculated using population projection for 31 December 2015 based on 2013 Census data. Target 80%, hysterectomy adjusted. See also Table 23.

Figure 2 - Three-year coverage by five-year age group (women 20-69 years screened in the three years prior to 31 December 2015, as a proportion of hysterectomy-adjusted female population)



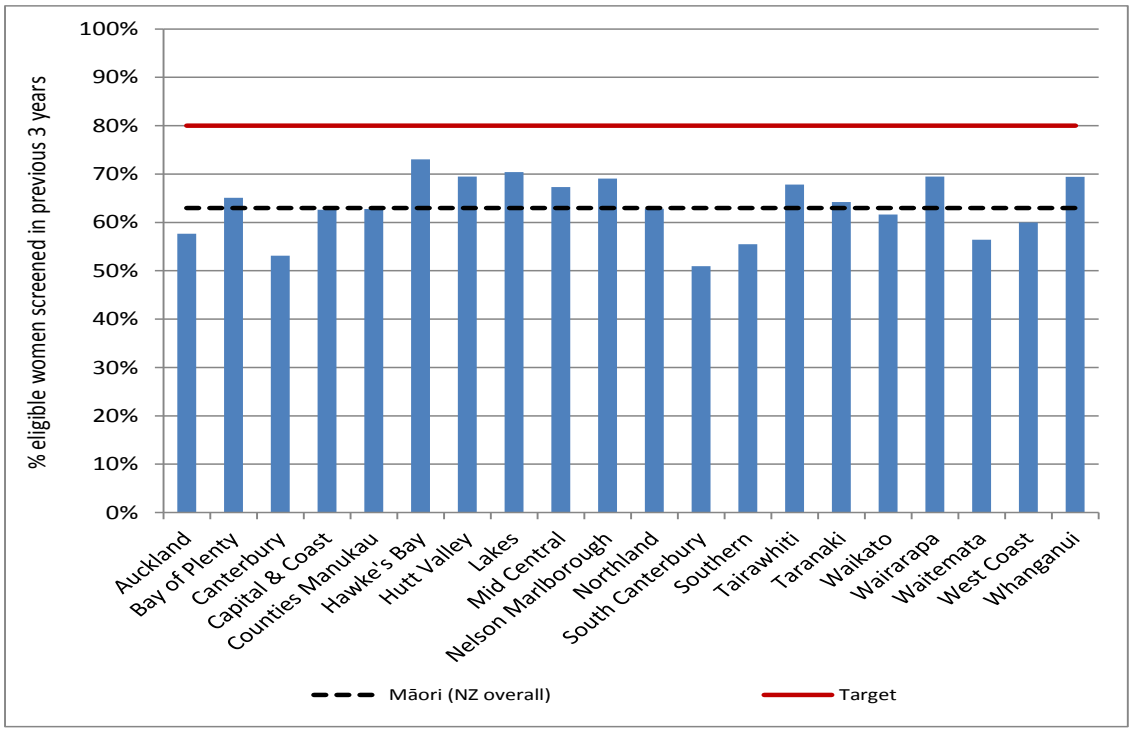
Note: Coverage calculated using population projection for 31 December 2015 based on 2013 Census data. Target: 80% for ages 25-69 years, hysterectomy adjusted. See also Indicator 1.1 – Three-year coverage Table 22.

Figure 3 - Three-year coverage (women screened in the three years prior to 31 December 2015, as a proportion of hysterectomy-adjusted female population), by ethnicity



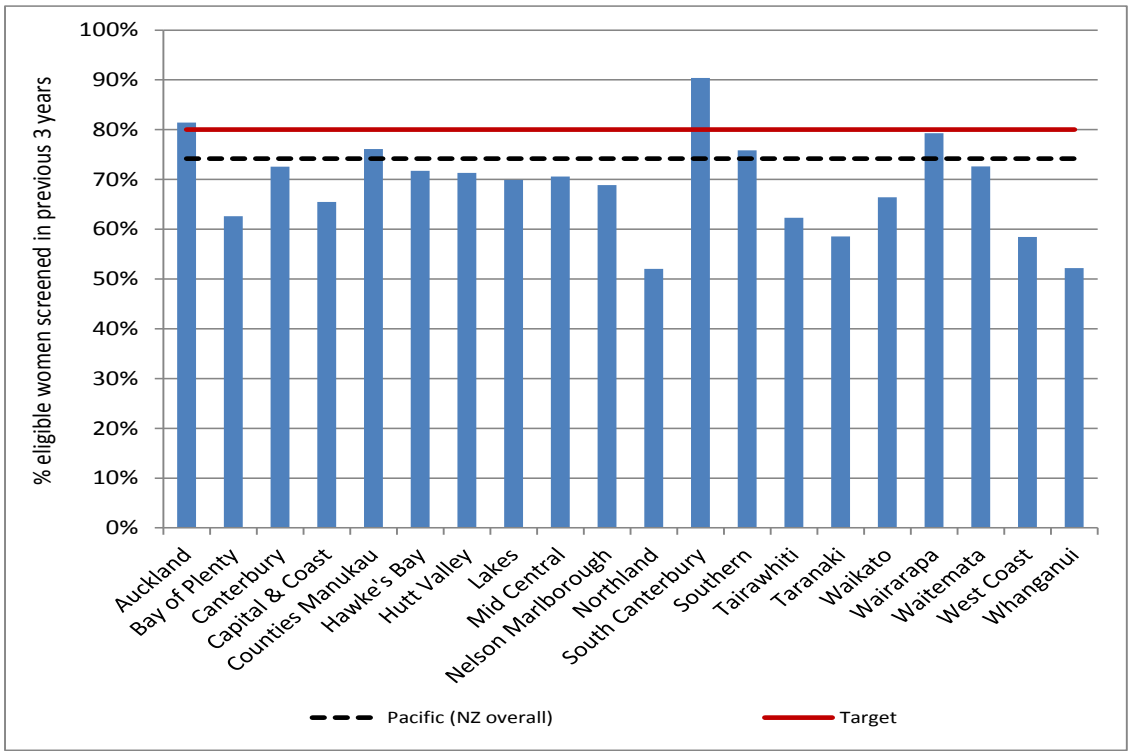
Note: Coverage calculated using population projection for 31 December 2015 based on 2013 Census data. data. Target: 80% for ages 25-69 years, hysterectomy adjusted. See also Table 24.

Figure 4 - Three-year coverage in Māori women (women 25-69 years screened in the three years prior to 31 December 2015, as a proportion of hysterectomy-adjusted female population), by DHB



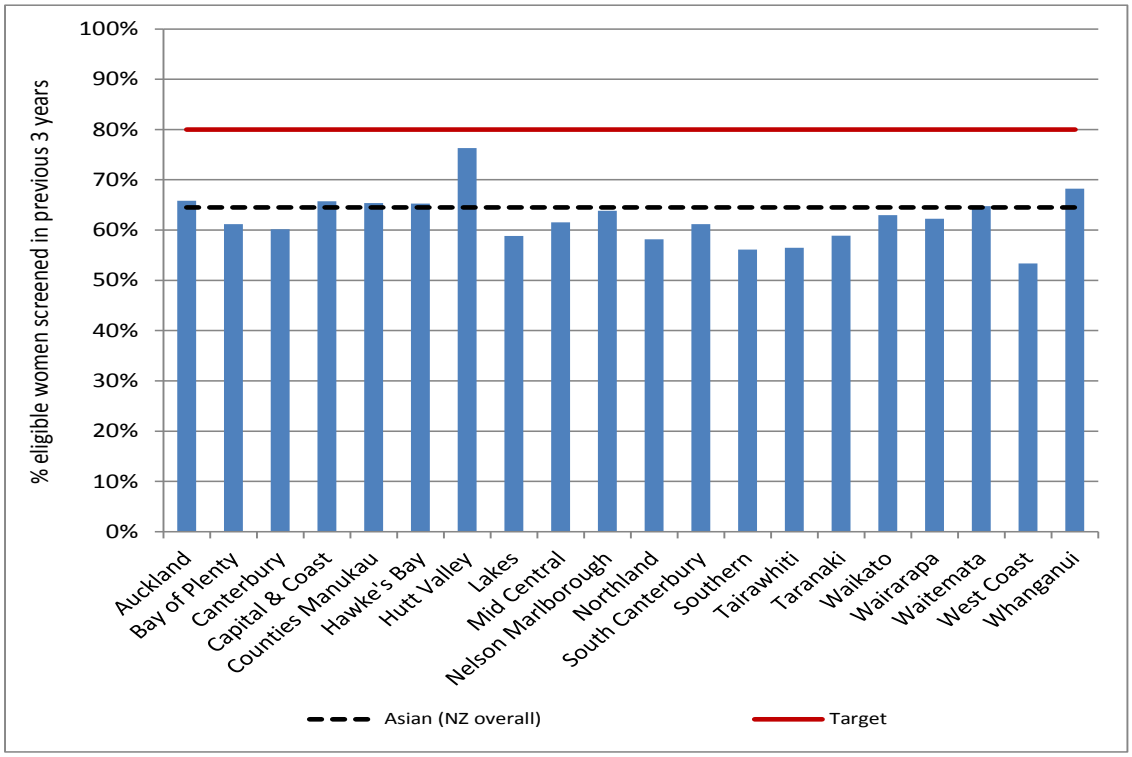
Note: Coverage calculated using population projection for 31 December 2015 based on 2013 Census data. Target 80%, hysterectomy adjusted.

Figure 5 - Three-year coverage in Pacific women (women 25-69 years screened in the three years prior to 31 December 2015, as a proportion of hysterectomy-adjusted female population), by DHB



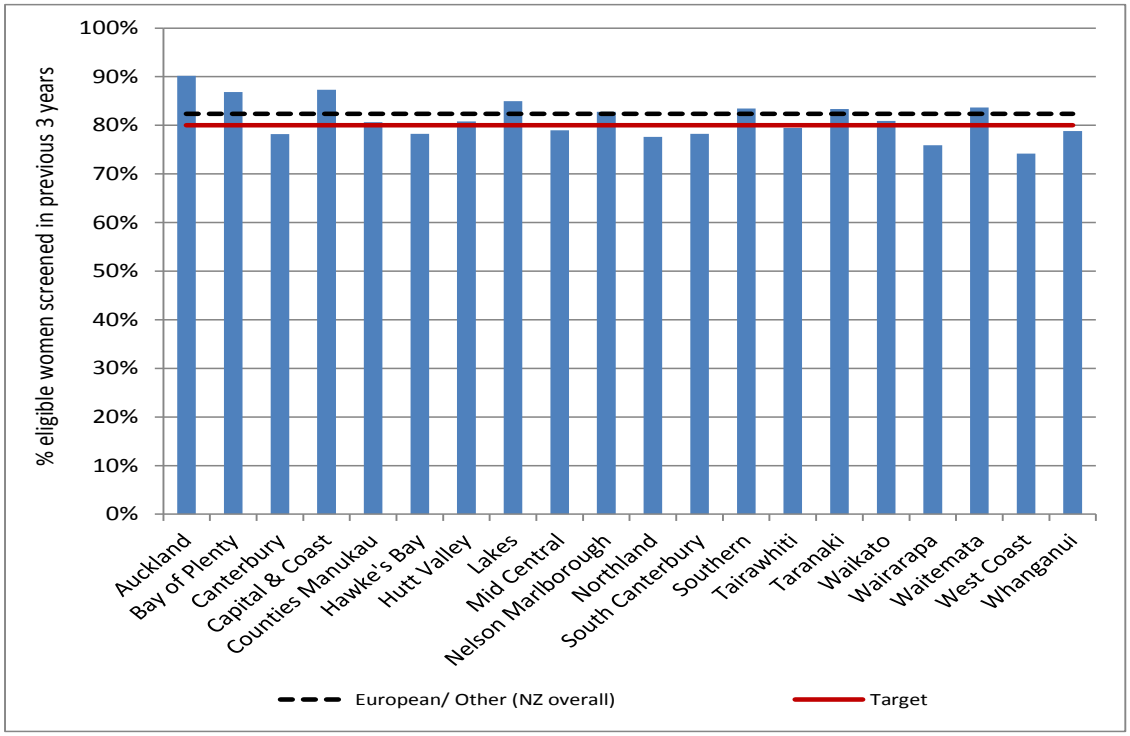
Note: Coverage calculated using population projection for 31 December 2015 based on 2013 Census data. Target 80%, hysterectomy adjusted.

Figure 6 - Three-year coverage in Asian women (women 25-69 years screened in the three years prior to 31 December 2015, as a proportion of hysterectomy-adjusted female population), by DHB



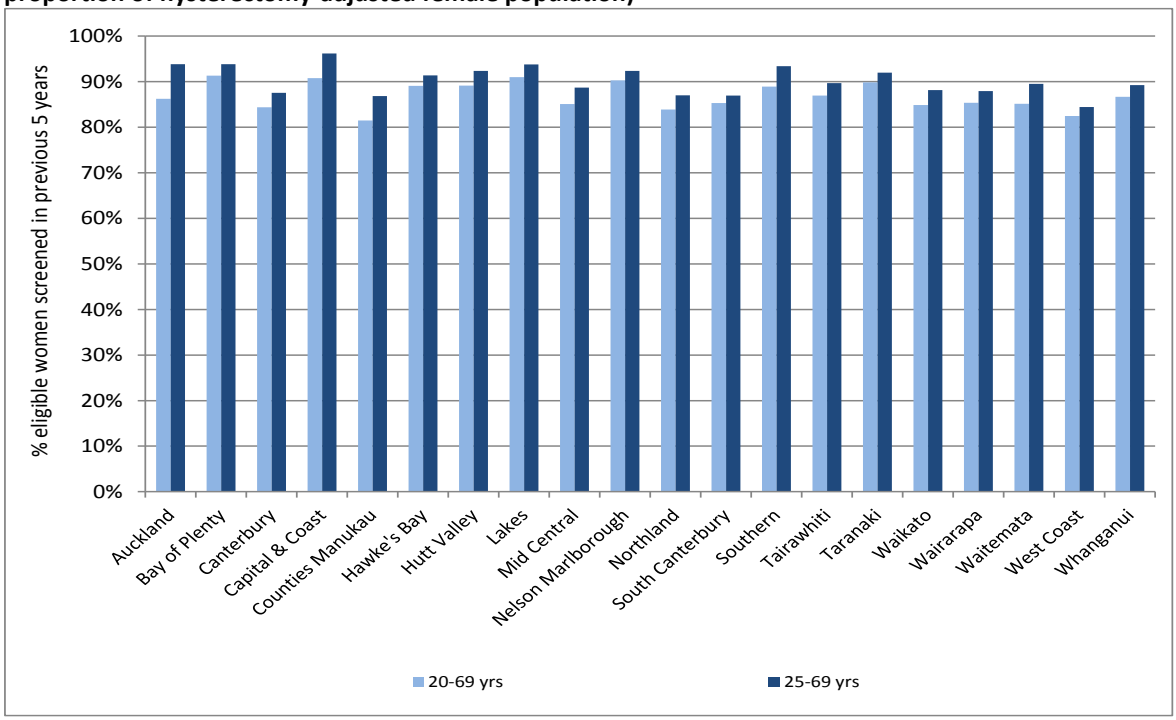
Note: Coverage calculated using population projection for 31 December 2015 based on 2013 Census data. Target 80%, hysterectomy adjusted.

Figure 7 - Three-year coverage in European/ Other women (women 25-69 years screened in the three years prior to 31 December 2015, as a proportion of hysterectomy-adjusted female population), by DHB



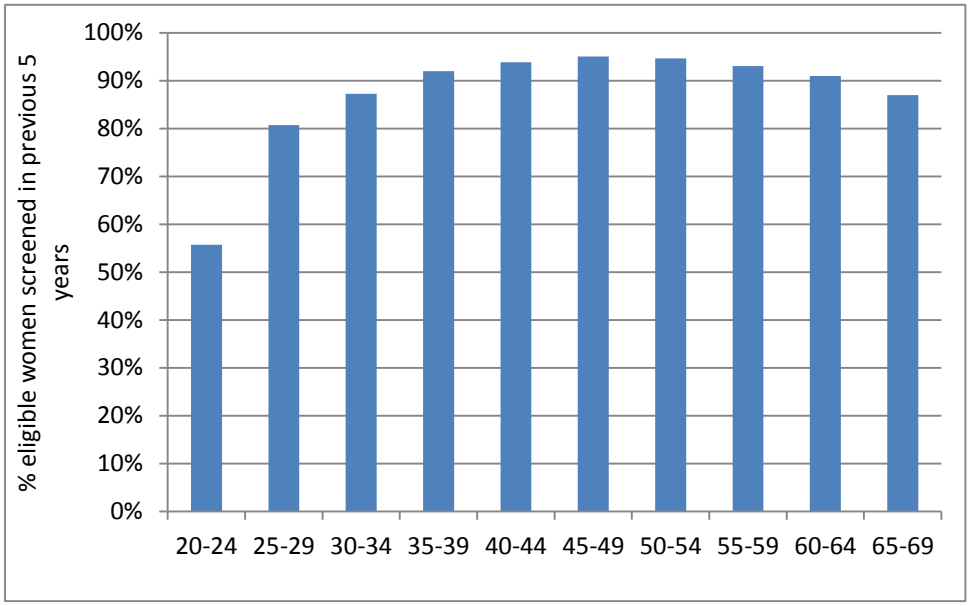
Note: Coverage calculated using population projection for 31 December 2015 based on 2013 Census data. Target 80%, hysterectomy adjusted.

Figure 8 - Five-year coverage by DHB (women screened in the five years prior to 31 December 2015, as a proportion of hysterectomy-adjusted female population)



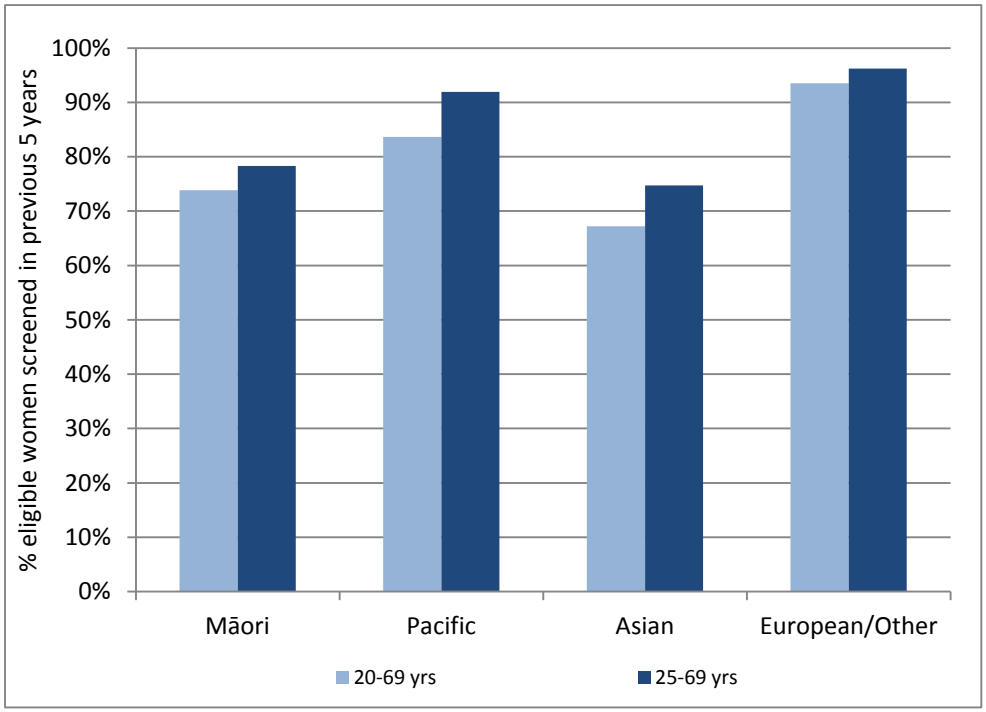
Note: Coverage calculated using population projection for 31 December 2015 based on 2013 Census data. See also Table 26.

Figure 9 - Five-year coverage by five-year age-group (women screened in the five years prior to 31 December 2015, as proportion of hysterectomy-adjusted female population)



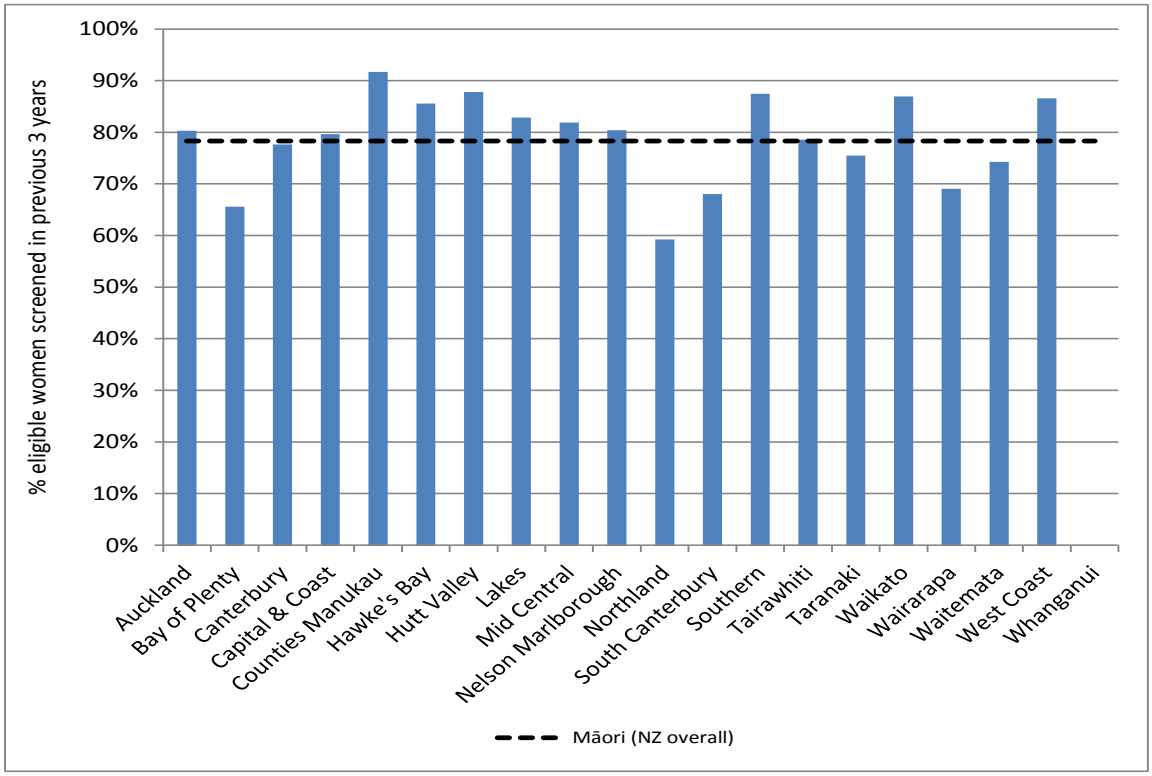
Note: Coverage calculated using population projection for 31 December 2015 based on 2013 Census data. See also Table 25.

Figure 10 - Five-year coverage by ethnicity (women screened in the five years prior to 31 December 2015, as a proportion of hysterectomy-adjusted female population)



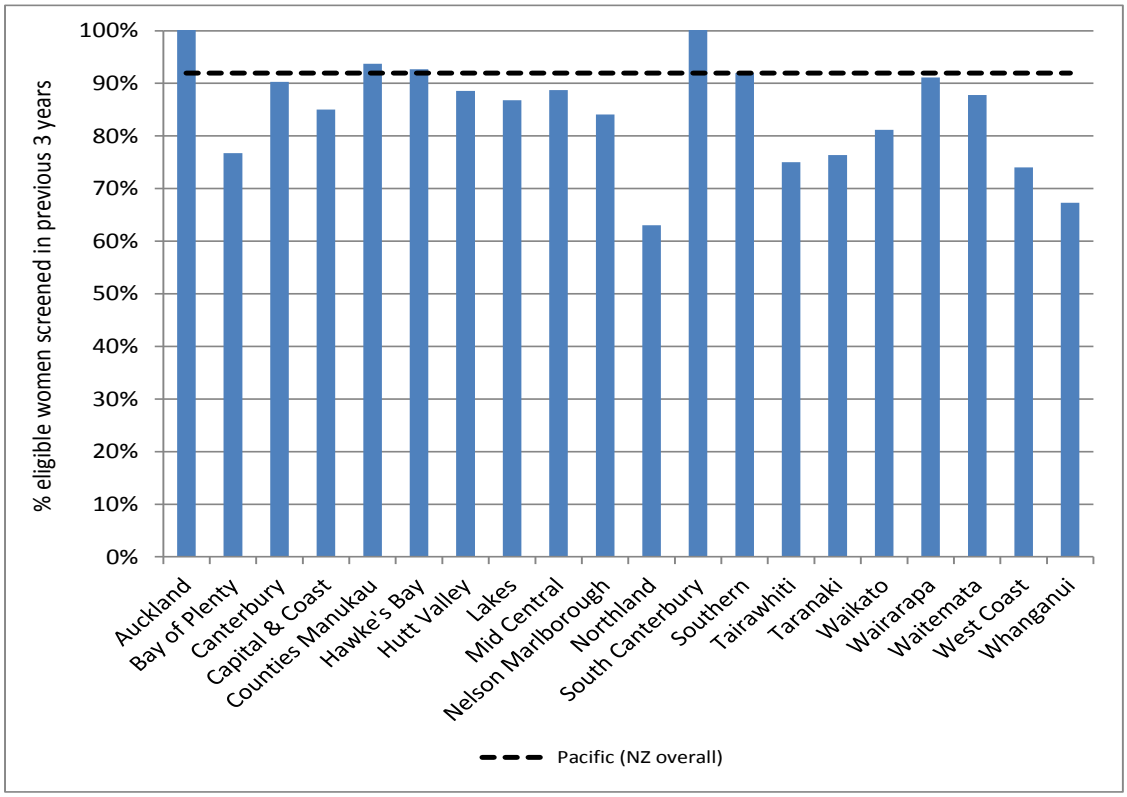
Note: Coverage calculated using population projection for 31 December 2015 based on 2013 Census data. See also Table 27.

Figure 11 - Five-year coverage in Māori women (women 25-69 years screened in the five years prior to 31 December 2015, as a proportion of hysterectomy-adjusted female population), by DHB



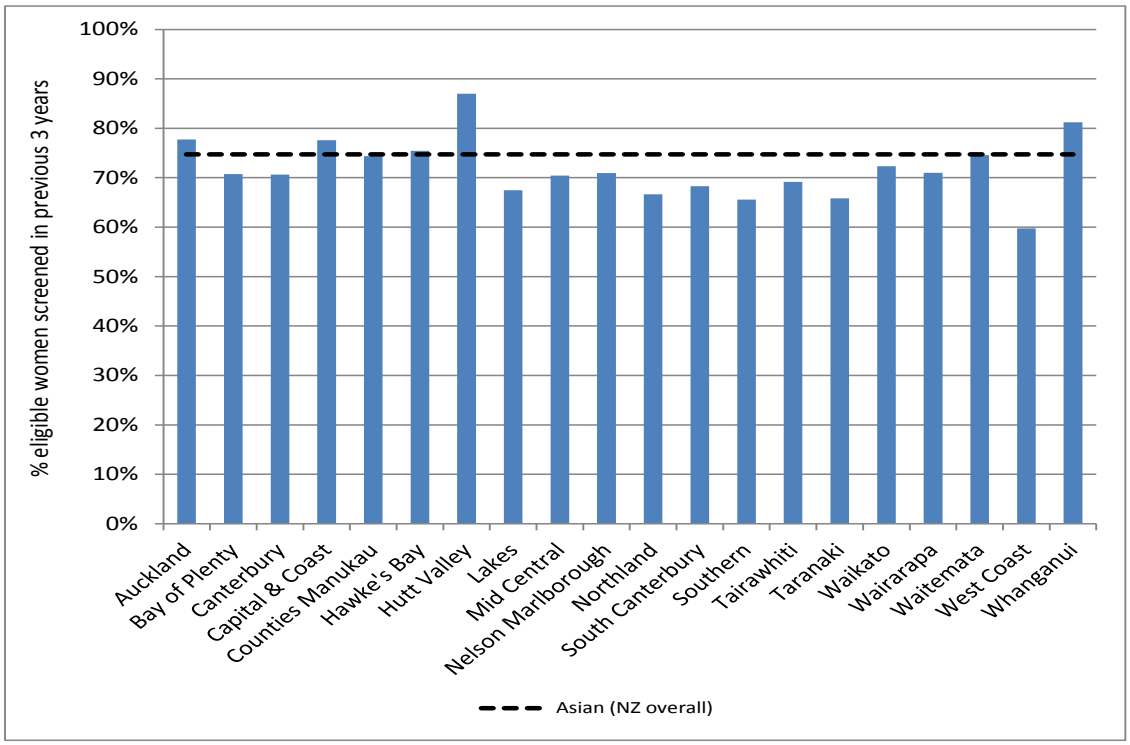
Note: Coverage calculated using population projection for 31 December 2015 based on 2013 Census data.

Figure 12 - Five-year coverage in Pacific women (women 25-69 years screened in the five years prior to 31 December 2015, as a proportion of hysterectomy-adjusted female population), by DHB



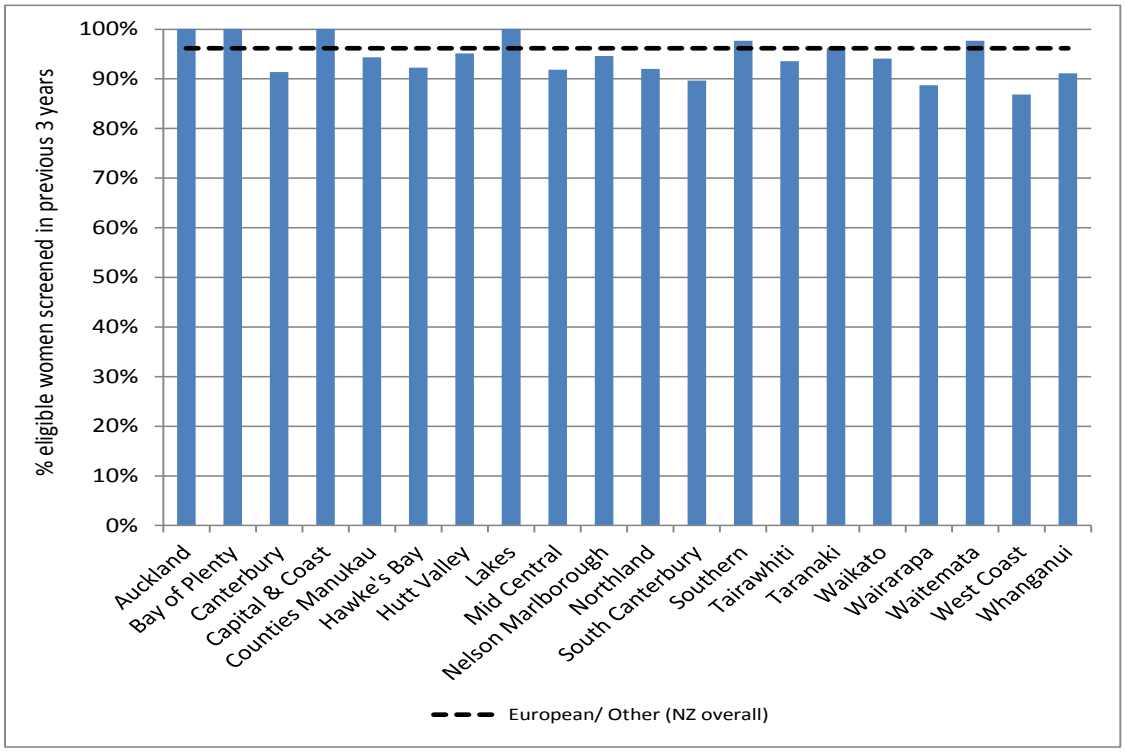
Note: Coverage calculated using population projection for 31 December 2015 based on 2013 Census data.

Figure 13 - Five-year coverage in Asian women (women 25-69 years screened in the five years prior to 31 December 2015, as a proportion of hysterectomy-adjusted female population), by DHB



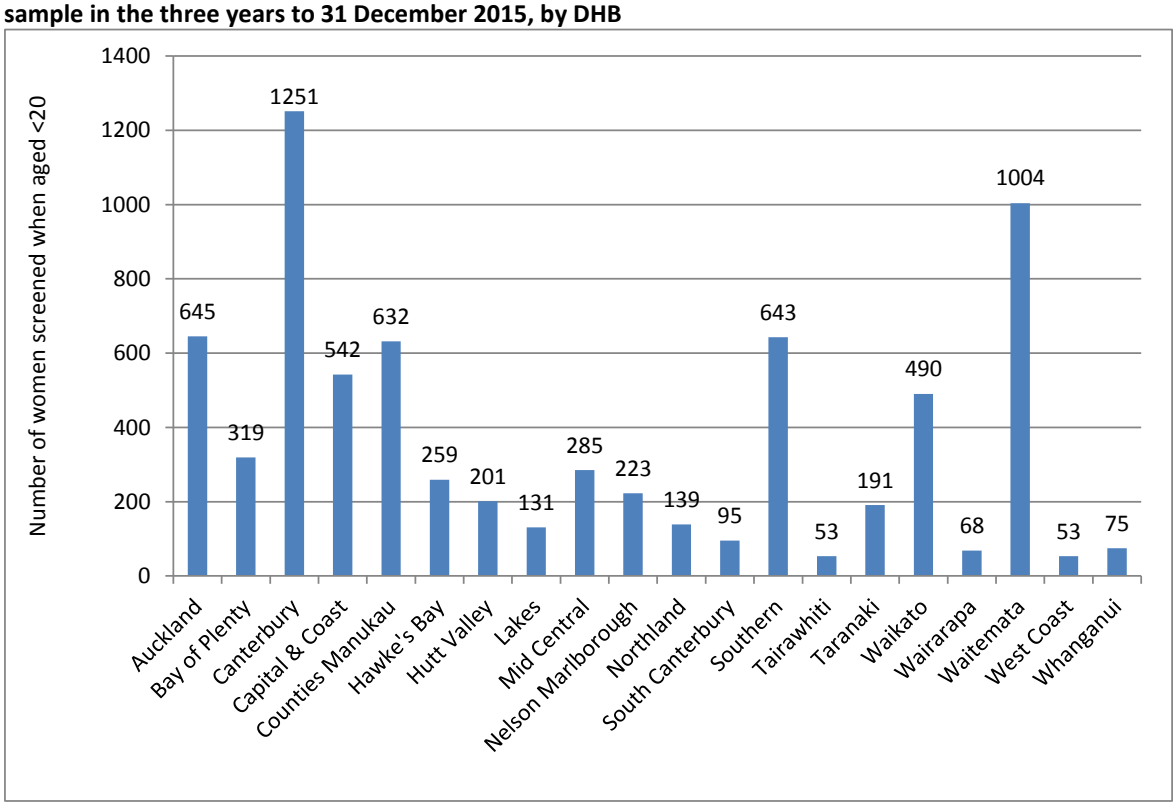
Note: Coverage calculated using population projection for 31 December 2015 based on 2013 Census data.

Figure 14 - Five-year coverage in European/Other women (women 25-69 years screened in the five years prior to 31 December 2015, as a proportion of hysterectomy-adjusted female population), by DHB



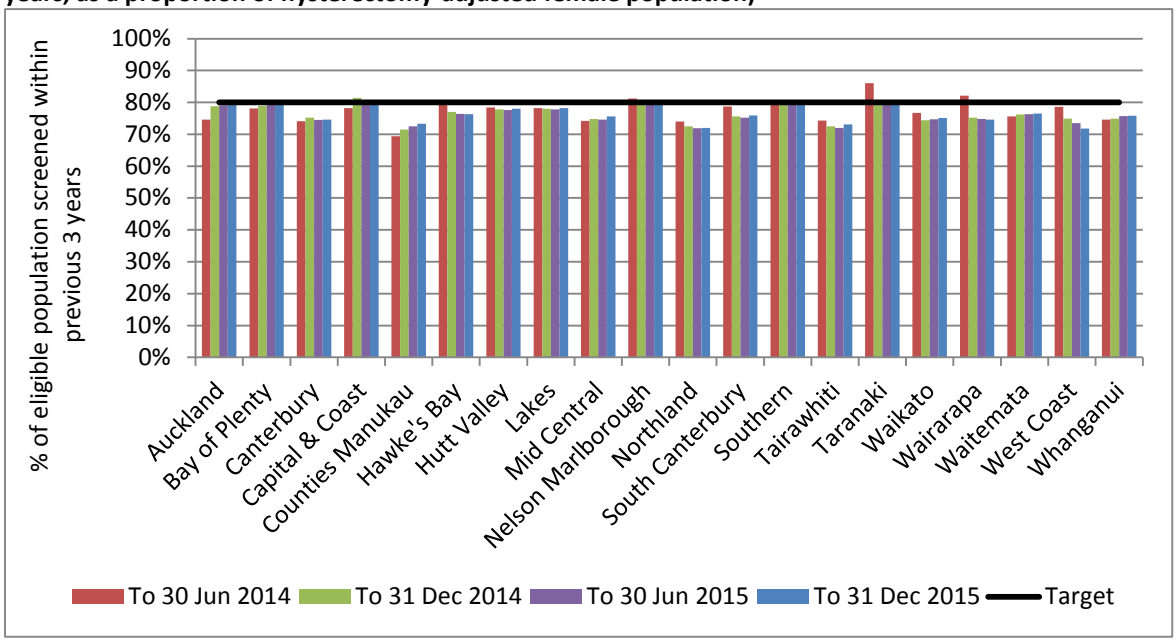
Note: Coverage calculated using population projection for 31 December 2015 based on 2013 Census data.

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 31 December 2015, by DHB



See also Table 31.

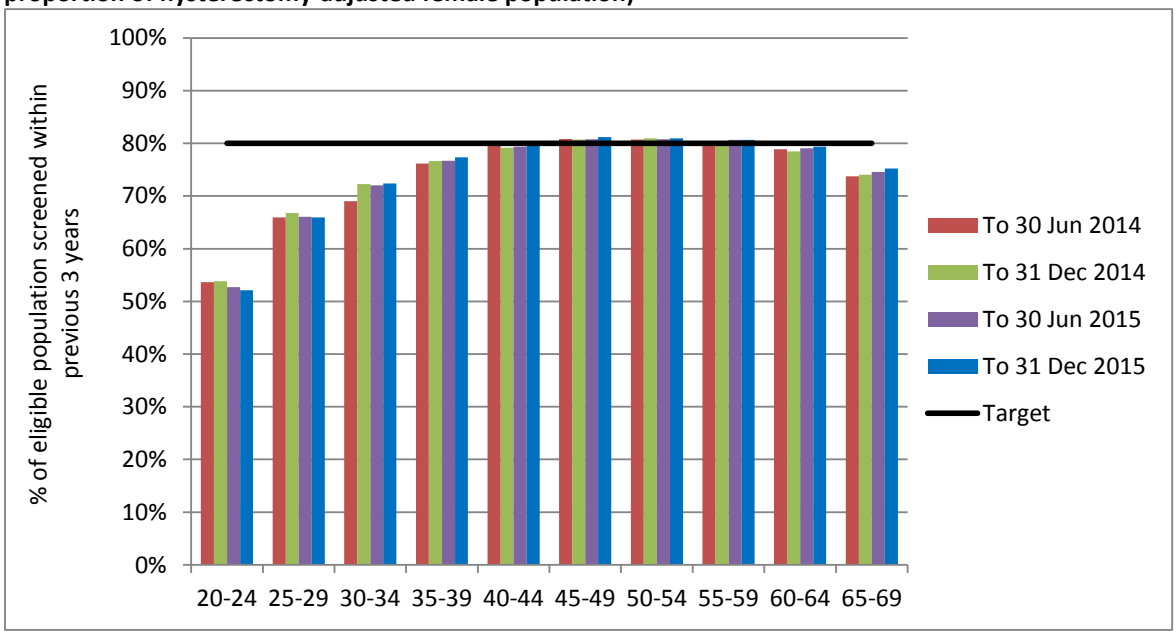
Figure 16 – Trends in three-year coverage by DHB (women aged 25-69 years screened in the previous three years, as a proportion of hysterectomy-adjusted female population)



Coverage calculated using population projection at the date shown based on 2013 Census data for 31 Dec 2014 and 30 Jun 2015, and 2006 Census data for 31 Dec 2013 and 30 Jun 2014.

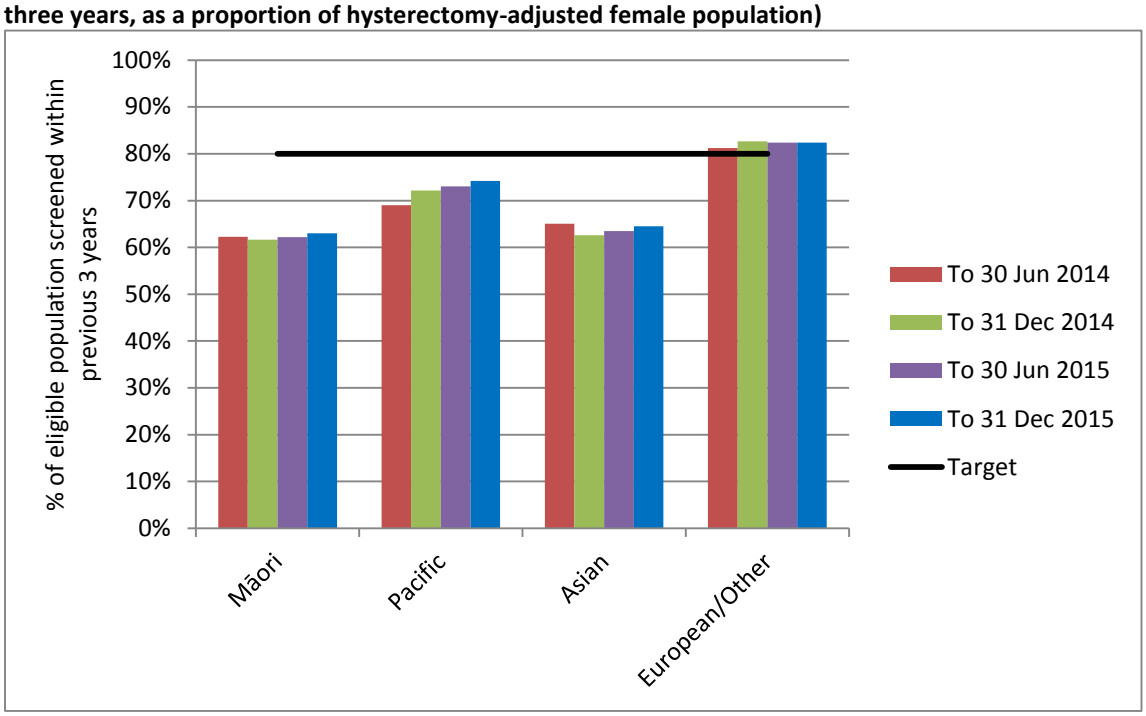
Target 80%. See also Table 33.

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



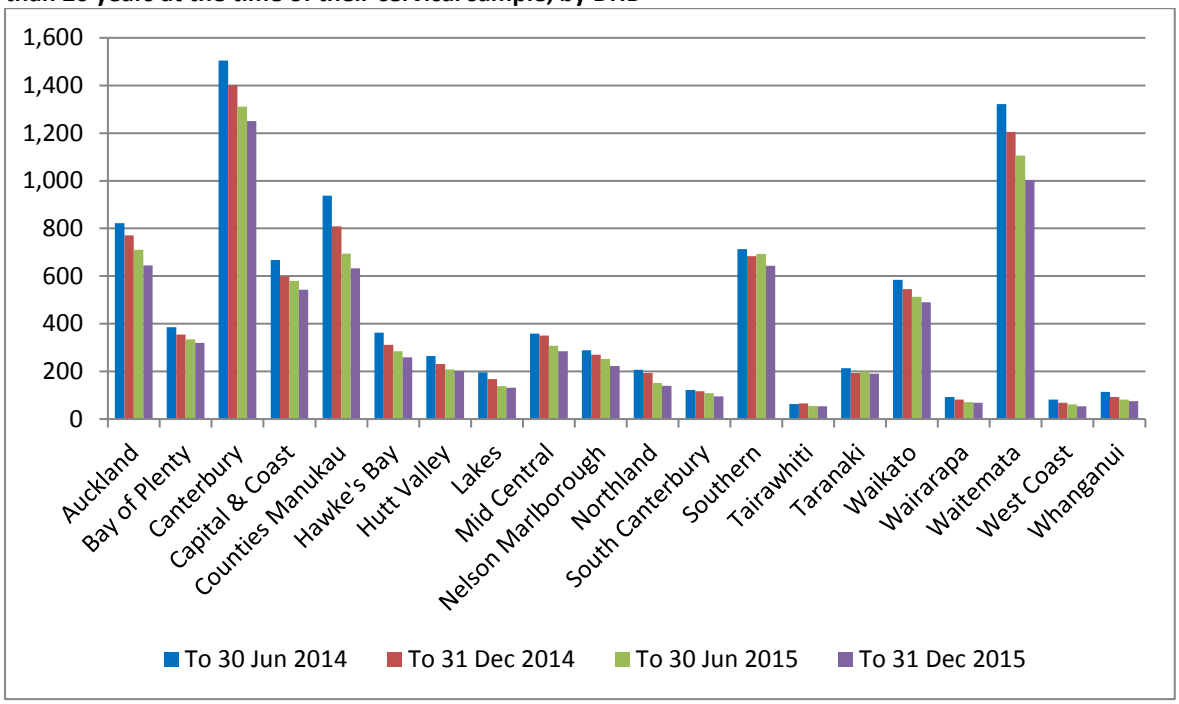
Coverage calculated using population projection at the date shown based on 2013 Census data for 31 Dec 2014 and 30 Jun 2015, and 2006 Census data for 31 Dec 2013 and 30 Jun 2014.
Target 80%. See also Table 34.

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)



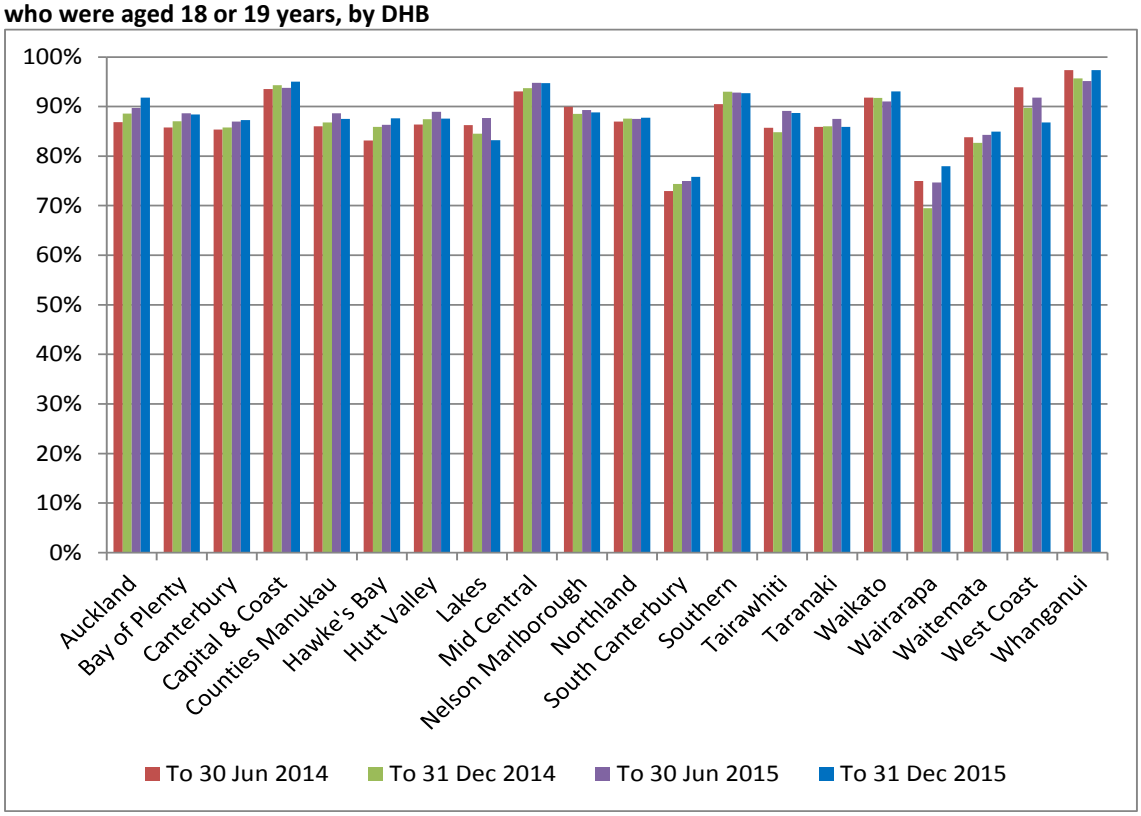
Coverage calculated using population projection at the date shown based on 2013 Census data for 31 Dec 2014 and 30 Jun 2015, and 2006 Census data for 31 Dec 2013 and 30 Jun 2014.
Target 80%. See also Table 35.

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 for 31 Dec 2014 and 30 Jun 2015, and 2006 Census data for 31 Dec 2013 and 30 Jun 2014.
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 for 31 Dec 2014 and 30 Jun 2015, and 2006 Census data for 31 Dec 2013 and 30 Jun 2014.
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 (31 December 2015).

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 (ie 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 (ie 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	In total over the period 2011-2015, satisfactory cytology samples were collected from 1,180,971 women aged 20-69 years (based on their age at the time of the sample). Of these, 1,053,765 women met all inclusion criteria and 1,728,234 cytology samples collected from these women are included as reference cytology samples for analysis in this report. This section will focus on the results for the 12 months prior to the end of the current monitoring period (31 December 2015), while trends over the past five years are described in the *Trends* section. ***Routine screening (3-year recall)*** Among women attending for screening in 2015 following a 3-year recall recommendation, 61.2% were attending on-time; 16.3% more than six months early; and 22.6% more than six months late (Figure 21). *By ethnicity* The proportion of women re-attending in 2015 who were on-time was highest for European/Other women (62.7%), and lowest in Māori women (52.7%). The proportion of women returning for routine screening who were re-attending early was highest for Asian women (17.7%) and lowest for Pacific women (12.1%). The proportion of women screened who were re-attending later than recommended was highest for Pacific women (33.1%), and lowest for Asian women (20.8%) (Figure 22). Details of the number of re-attendances in each category are shown in Table 36. *By age* The proportion of women attending for screening in 2015 who were re-attending on-time was highest for women aged 60-69 years (72.4%) and lowest for women aged 20-29 years (51.3%). The opposite pattern was observed for the proportion of women who were re-attending early, which ranged from 11.2% (60-69 years) to 26.5% (20-29 years). The proportion of women screened who were re-attending later than recommended was highest for women aged 30-39 years (29.2%) and lowest for women aged 60-69 years (16.3%) (Figure 23). Details of the number of re-attendances in each category are shown in Table 37. ***12-month re-screening*** Among women attending for screening in 2015 following a 12-month repeat recommendation, 41.4% were attending on-time; 3.3% more than three months early; and 55.2% more than three months late (Figure 25).

By ethnicity

The proportion of women re-attending in 2015 who were on-time was highest for European/ Other women (44.5%), and lowest in Pacific women (29.9%). The proportion of women returning for 12-month repeat screening who were re-attending early was very small in all groups, but was highest for European/ Other women (3.6%) and lowest for Pacific women (2.3%). The proportion of women screened who were re-attending later than recommended was relatively high in all groups, but was highest for Pacific women (67.8%), and lowest for European/ Other women (51.9%) (Figure 25).

Details of the number of re-attendances in each category are shown in Table 38.

By age

The proportion of women attending for screening in 2015 following a 12-month repeat recommendation who were re-attending on-time was highest for women aged 60-69 years (49.2%) and lowest for women aged 30-39 years (36.1%). Very few women were re-attending early; this ranged from 2.6% (40-49 years) to 4.3% (20-29 years). The proportion of women screened who were re-attending later than recommended was highest for women aged 30-39 years (60.7%) and lowest for women aged 60-69 years (47.8%) (Figure 26).

Details of the number of re-attendances in each category are shown in Table 39.

Trends

Routine screening (3-year recall)

Over the period 2011 to 2015, the proportion of women who were screened on-time increased from 59.5% to 62.1%. This predominantly reflected a reduction in the proportion of women who were being screened early (fell from 17.6% to 15.4%). There was comparatively little variation in the proportion of women who were returning late (ranged from 21.7% to 23.3%). (Figure 27).

By ethnicity

Over the period 2011 to 2015, the proportion of women who were screened on-time increased in all ethnic groups, with the increase being largest in Asian women. In all groups, this predominantly reflected a reduction in the proportion of women who were being screened early, as this fell in all groups. There was comparatively little variation in the proportion of women who we returning late in any group, however the proportion returning late was consistently higher in Māori and Pacific women than in Asian and European/Other women (Figure 28).

By age

Over the period 2011 to 2015, the proportion of women who were screened on-time increased in all age groups, with the increase being largest in women aged 20-29 years. In all groups, there was a substantial reduction in the proportion of women who were being screened early, however there was also a small increase in the proportion of women who were returning late. The proportion of women returning late was consistently highest for women aged 30-39 years,

and consistently lowest for women aged 60-69 years. On-time screening tended to increase with increasing age, and was consistently lowest in women aged 20-29 years, and highest in women aged 60-69 years (Figure 29).

12-month re-screening

Over the period 2011 to 2015, the proportion of women who were re-attending on-time for 12-month follow-up decreased somewhat, from 45.6% to 42.1%, as did the proportion who were re-attending more than three months early, which decreased from 5.2% to 3.1%. There was a corresponding increase in the proportion of women who were re-attending more than 15 months after a recommendation to return in 12 months, which increased from 49.2% to 54.7%. This meant that in 2015, the majority of women who were re-attending after a recommendation to return in 12 months were re-attending more than three months later than recommended (Figure 30).

By ethnicity

Over the period 2011 to 2015, the proportion of women who were re-attending on-time for 12-month follow-up decreased somewhat in all ethnic groups, as did the proportion who were re-attending early. The proportion of women who were re-attending at more than 15 months after a recommendation to return at 12 months increased in all ethnic groups, but the increase was approximately twice as high in Māori and Pacific women (8.0% and 8.6% respectively) than in Asian and European/ Other women (3.7% and 4.2% increase respectively). The proportion of women returning less than nine months after a recommendation to return in 12 months was very small and similar in all groups, however the proportion returning on-time was consistently higher in Asian and European/Other women than in Māori and Pacific women, and the proportion who were re-attending more than 15 months after a recommendation to return in 12 months was consistently higher in Māori and Pacific women than in Asian and European/Other women. By 2015, and in all ethnic groups, the majority of women who were re-attending after a recommendation to return in 12 months were re-attending more than three months later than recommended (Figure 31).

By age

Over the period 2011 to 2015, the proportion of women who were re-attending on-time for 12-month follow-up decreased somewhat in all age groups other than women aged 20-29 years. The proportion of women who were re-attending early decreased in all age groups. The proportion of women who were re-attending at more than 15 months after a recommendation to return at 12 months increased in all age groups, but comparatively small in women aged 20-29 years (2.1% increase over 2011 to 2015), whereas it ranged from 7.1% to 8.5% in women in older age groups. The proportion of women returning less than nine months after a recommendation to return in 12 months was very small and broadly similar in all age groups, however the proportion returning on-time was consistently highest in women aged 60-69 years and consistently lowest in

women age 20-29 years. The proportion who were re-attending more than 15 months after a recommendation to return in 12 months was consistently highest in women aged 30-39 years and lowest in women 60-69 years. By 2015, and all age groups other than those aged 60-69 years, the majority of women who were re-attending after a recommendation to return in 12 months were re-attending more than three months later than recommended (Figure 32).

Comments

This is the first time this indicator has been included in the biannual monitoring reports. Earlier versions of regularity of screening were included in the NCSP Annual Reports for 2012 and 2013, however this indicator has been moved to the biannual reports for easier comparison with other screening-related indicators. It is envisioned that the NCSP Annual Reports will now contain cancer data only, and all screening-related indicators will be in the biannual report.

This indicator reports on regularity of screening among women who have attended for screening; however it does not capture women who have not attended for screening at all. Indicator 1.1, Coverage, is able to provide some insight into the overall proportion of women who have not attended (for example, those not screened in the previous five years).

Figure 21 - Timeliness of re-attendance in 2015 following a routine (3-year) repeat screening recommendation

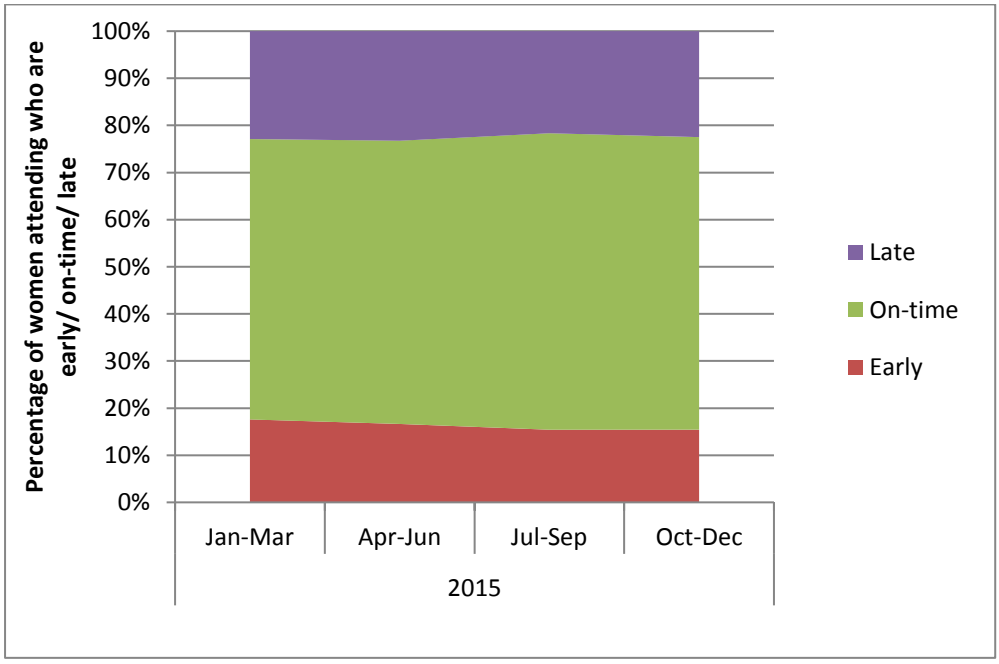


Figure 22 - Timeliness of re-attendance following a routine (3-year) repeat screening recommendation, by ethnicity

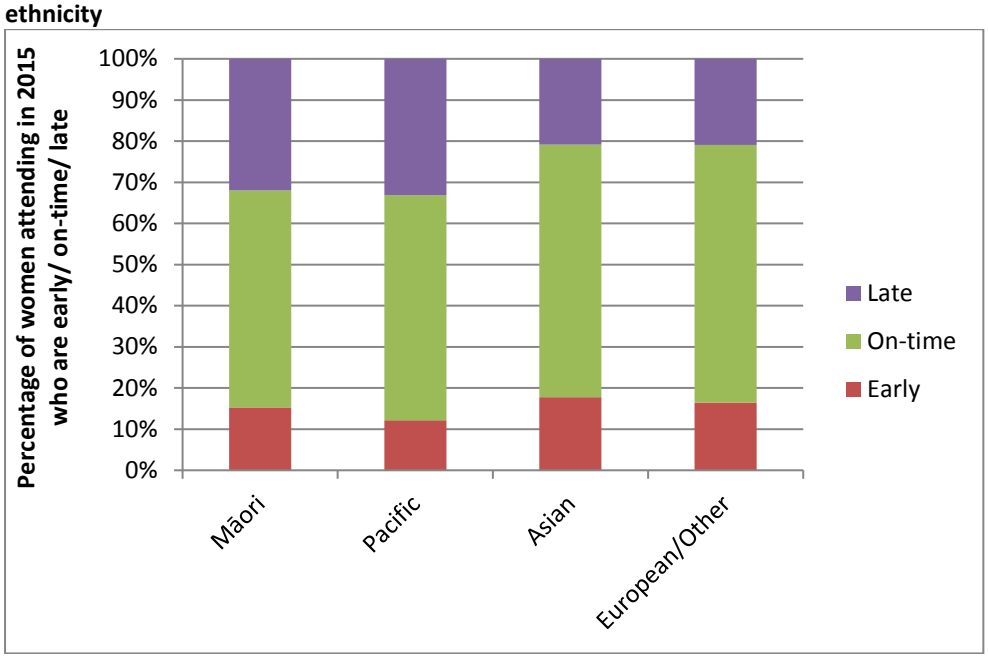


Figure 23 - Timeliness of re-attendance in 2015 following a routine (3-year) repeat screening recommendation, by age

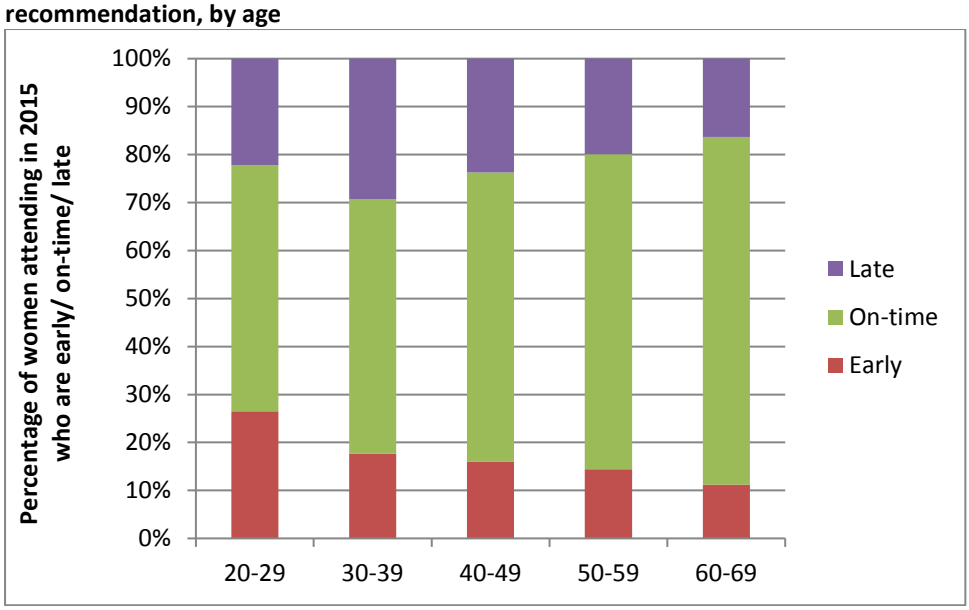


Figure 24 - Timeliness of re-attendance in 2015 following a 12-month repeat screening recommendation

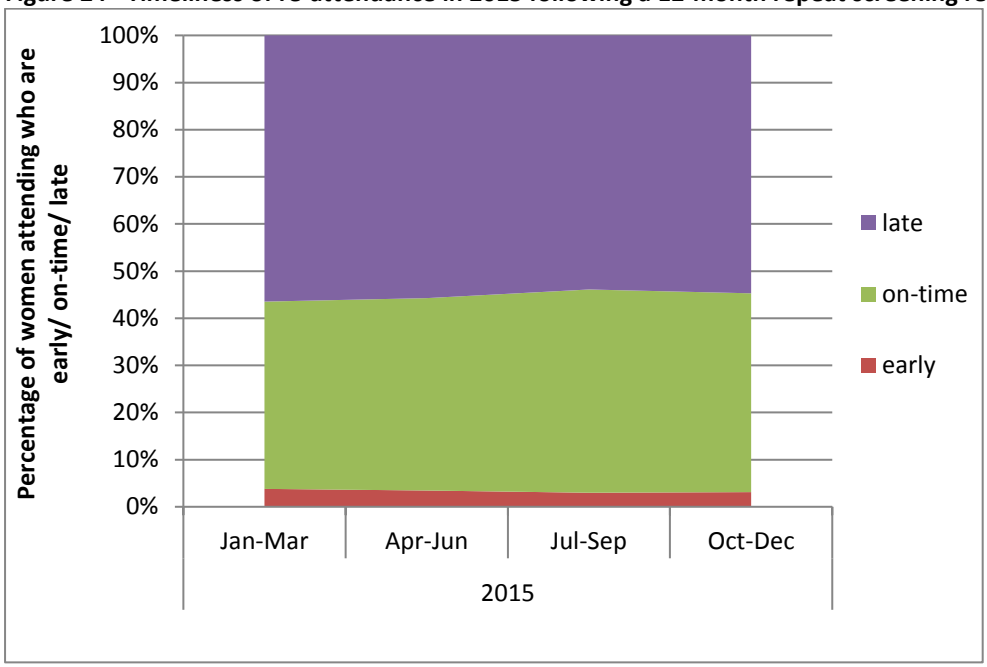


Figure 25 – Timeliness of re-attendance in 2015 following a 12-month repeat screening recommendation, by ethnicity

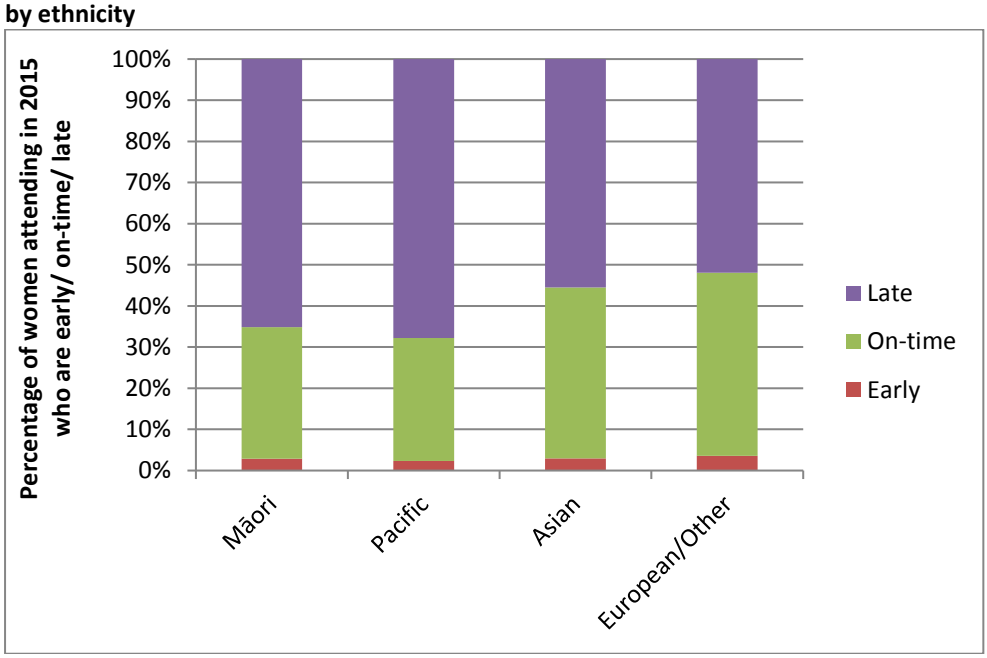


Figure 26 – Timeliness of re-attendance in 2015 following a 12-month repeat screening recommendation, by age

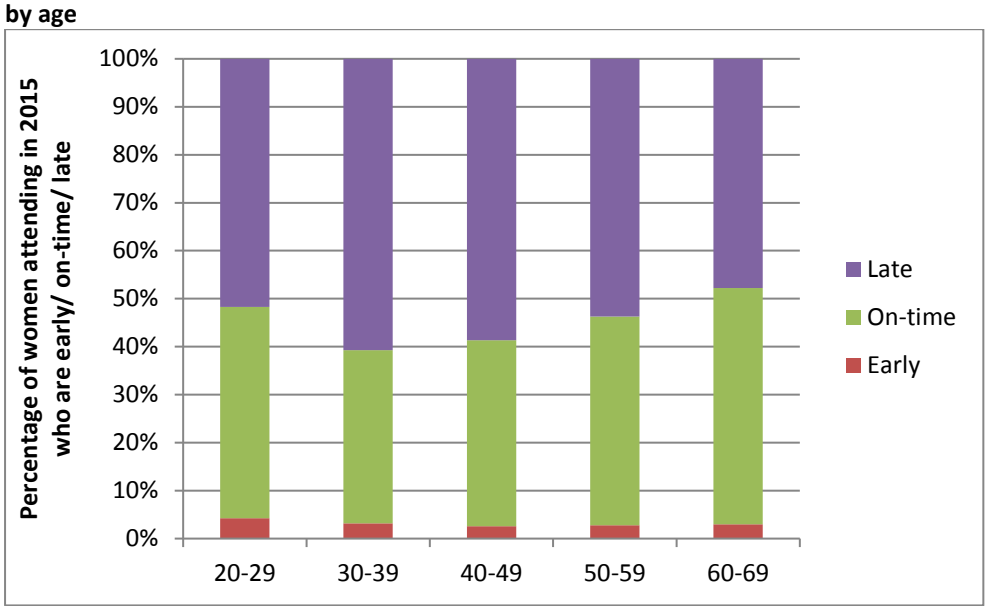


Figure 27 – Trends in the timeliness of re-attendance following a routine (3-year) repeat screening recommendation

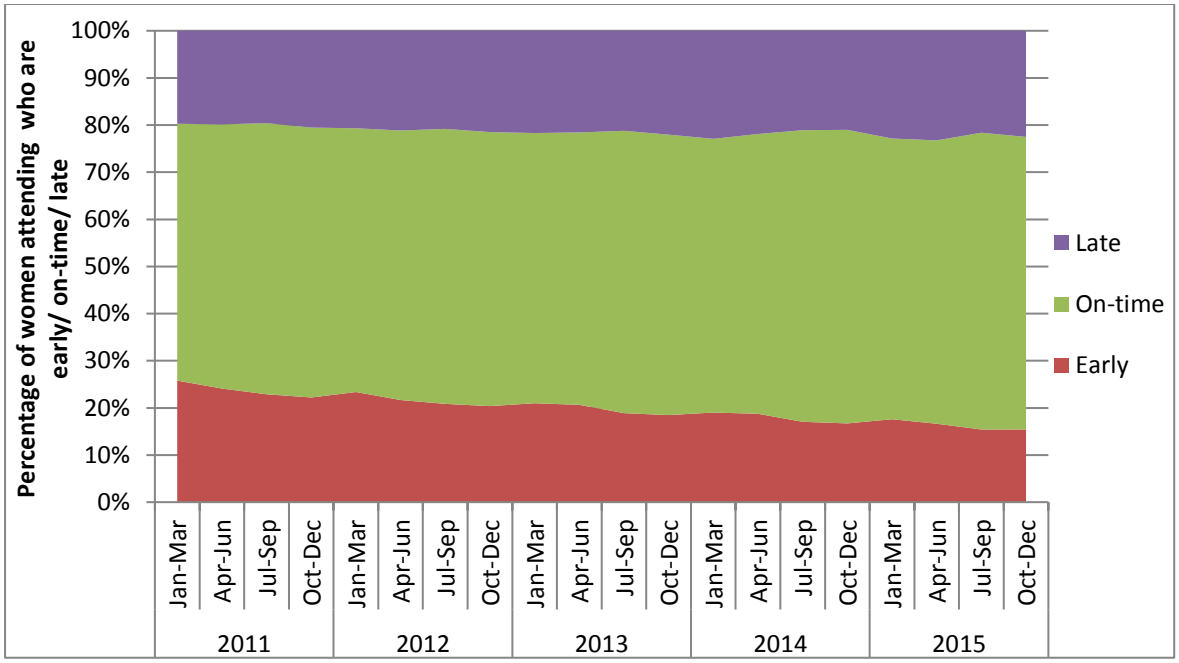


Figure 28 – Timeliness of re-attendance following a routine (3-year) repeat screening recommendation (percent), 2011-2015, by ethnicity

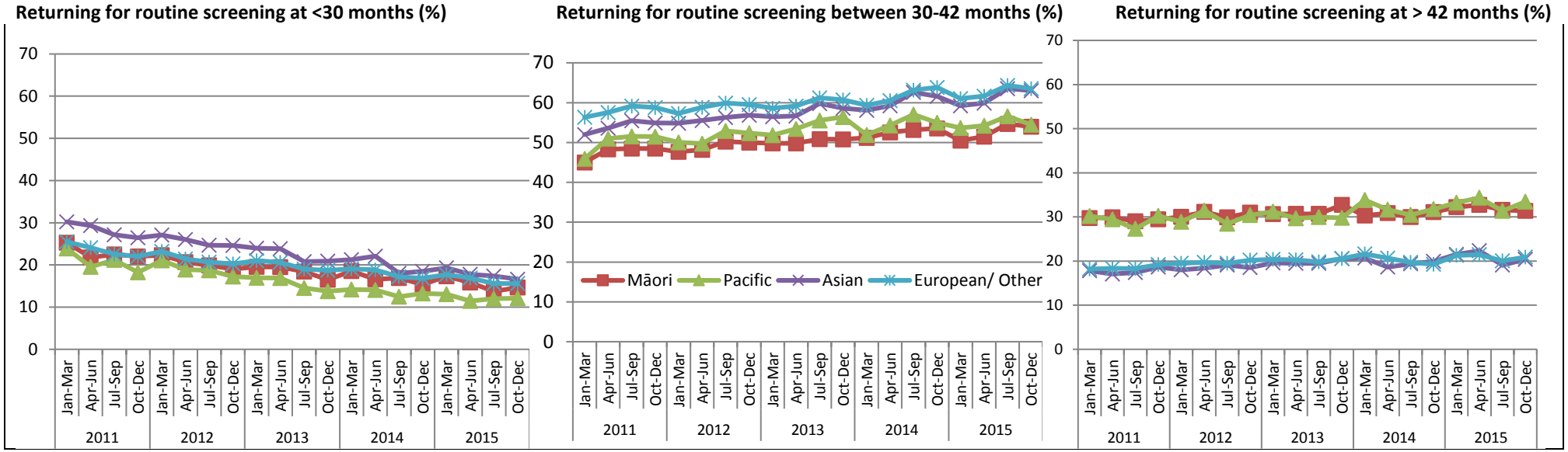


Figure 29 – Timeliness of re-attendance following a routine (3-year) repeat screening recommendation (percent), 2011-2015, by age

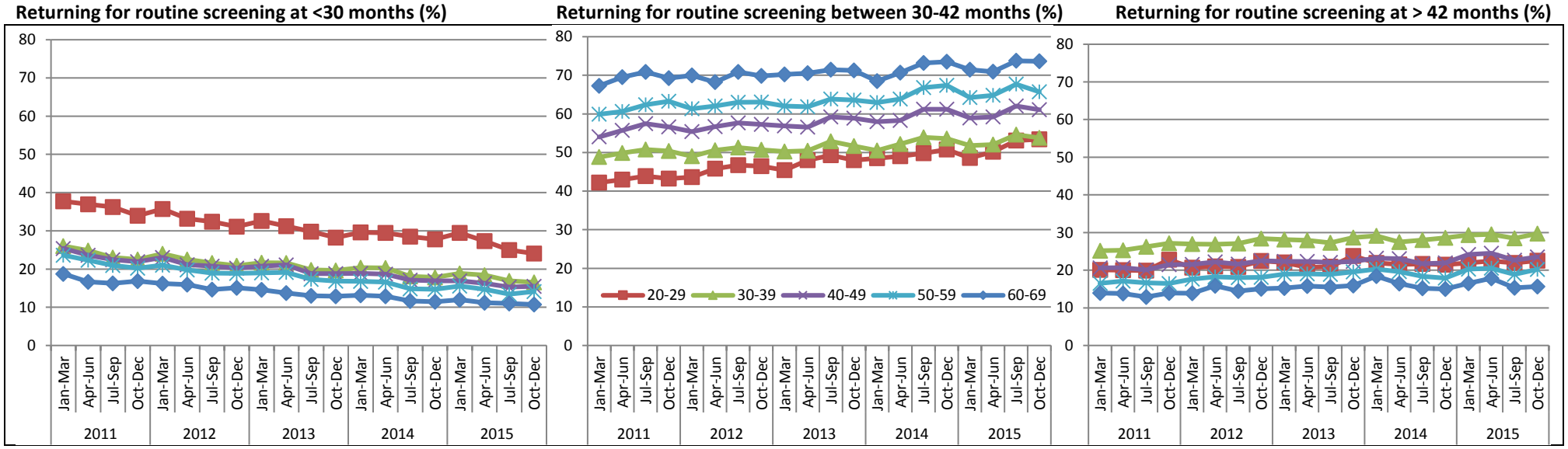


Figure 30 – Trends in the timeliness of re-attendance following a 12-month repeat screening recommendation

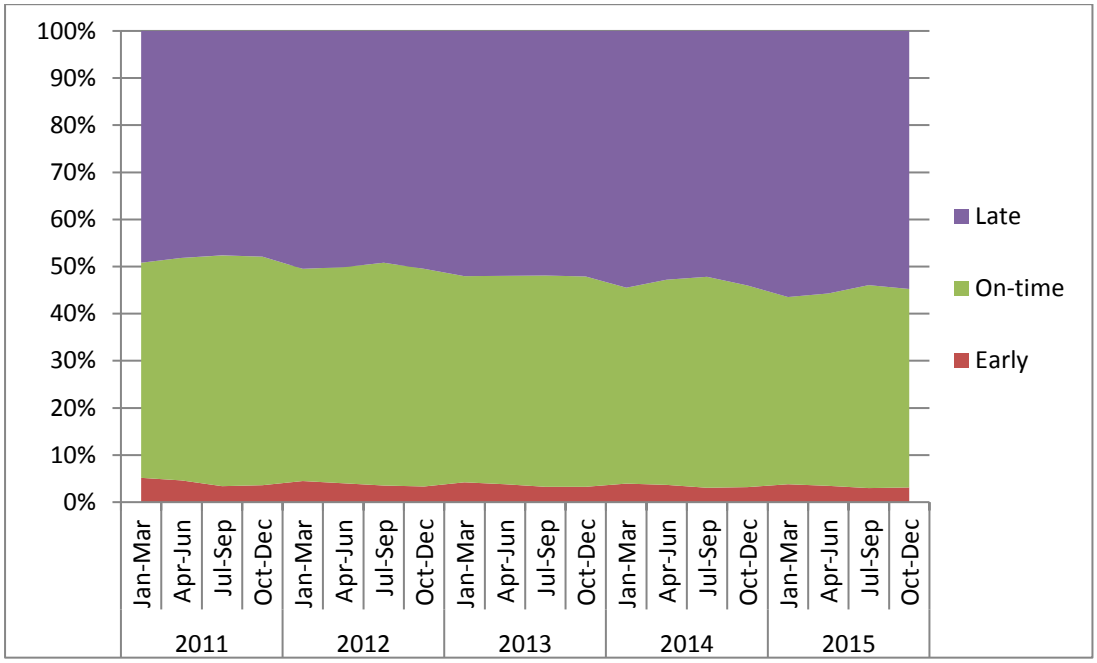


Figure 31 – Timeliness of re-attendance following a 12-month repeat screening recommendation (percent), 2011-2015, by ethnicity

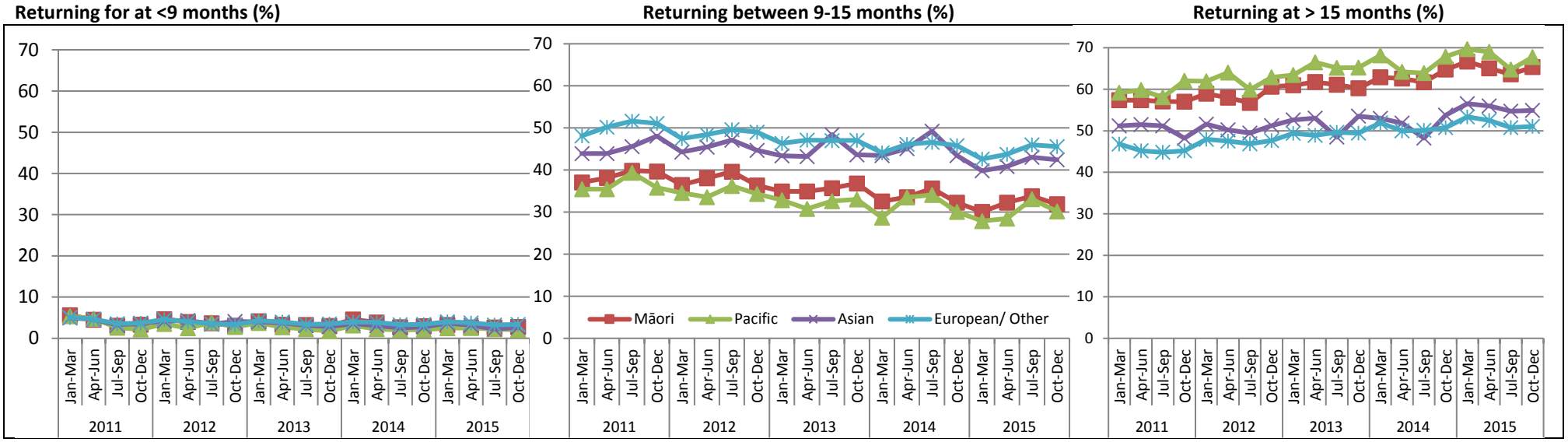
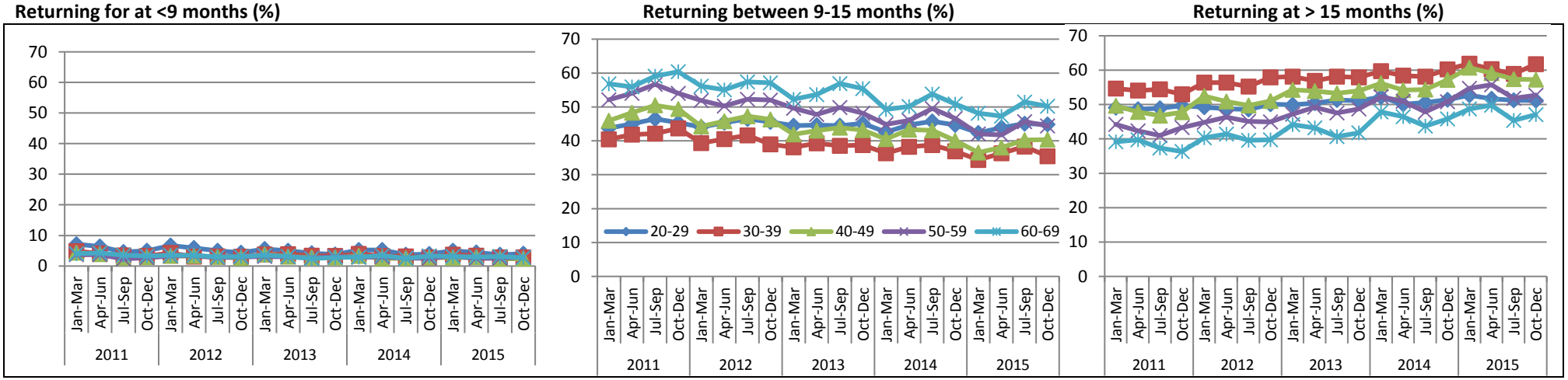


Figure 32 – Timeliness of re-attendance following a 12-month repeat screening recommendation (percent), 2011-2015, by age



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. 31 December 2015).

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 23,259 women aged 20-69 years at the end of the period who had their first screening event in the period 1 July - 31 December 2015. This constituted 10.7% of the 216,980 women aged 20-69 years with a cervical sample taken in the period (screening event), and 1.7% 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. 11,390 women aged 20-24 had their first screening event recorded on the register during this monitoring period, accounting for 49.0% of all women aged 20-69 years with first screening events (Table 40). First screening events then decreased 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 (49.0%) (Figure 34), and the highest proportion of eligible women at that age with a first screening event recorded in the current reporting period (7.1%) (Figure 35).

The DHBs with the highest number of women aged 20-69 years with first screening events was Auckland (3,548). The DHBs where women with first screening events, as a proportion of all women with screening events, were the highest were Auckland (13.7%), Capital & Coast (12.7%) and Counties Manukau (13.5%). The DHBs where this proportion was lowest were Wairarapa (5.4%), Nelson Marlborough (7.1%) and South Canterbury (7.1%) (Figure 36, Table 41).

The ethnic group with the highest number of women with first screening events was European/Other (12,661) (Table 42). The group with the highest proportion of their eligible population being screened for the first time was Asian women (2.8%), and the lowest was Māori women (1.3%) (Table 42). The proportion of women screened who were being screened for the first time was highest for Asian women (21.4%) (Figure 37, Table 42). 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 21 years for Māori women, 26 years for Pacific women, and 23 years for European/Other women) (Table 43).

Trends

The number of women with a first screening event recorded on the NCSP Register has decreased from 23,511 women in the previous period to 23,259 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 (10.7%) is the same as the previous period (10.7%).

Patterns by age, DHB, and ethnicity are broadly similar to those seen in the previous report. As was the case in previous reports, the median age of a first screening event was older for Asian women than for Māori women or European/ Other women, and women with first screening events constituted a larger proportion of the women screened for Asian women.

Trends over the two years ending 31 December 2015 are shown in Figure 38 (by age), Figure 39 (by DHB), and Figure 40 (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 (which could be due to high coverage, higher abnormality rates [as abnormalities require women to return more frequently], or higher early re-screening). For example, the DHB with the highest coverage, Nelson Marlborough, 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 register).

Figure 33 – Women with first screening events during the monitoring period, by five-year age group (women aged 20-69 years at 31 December 2015)

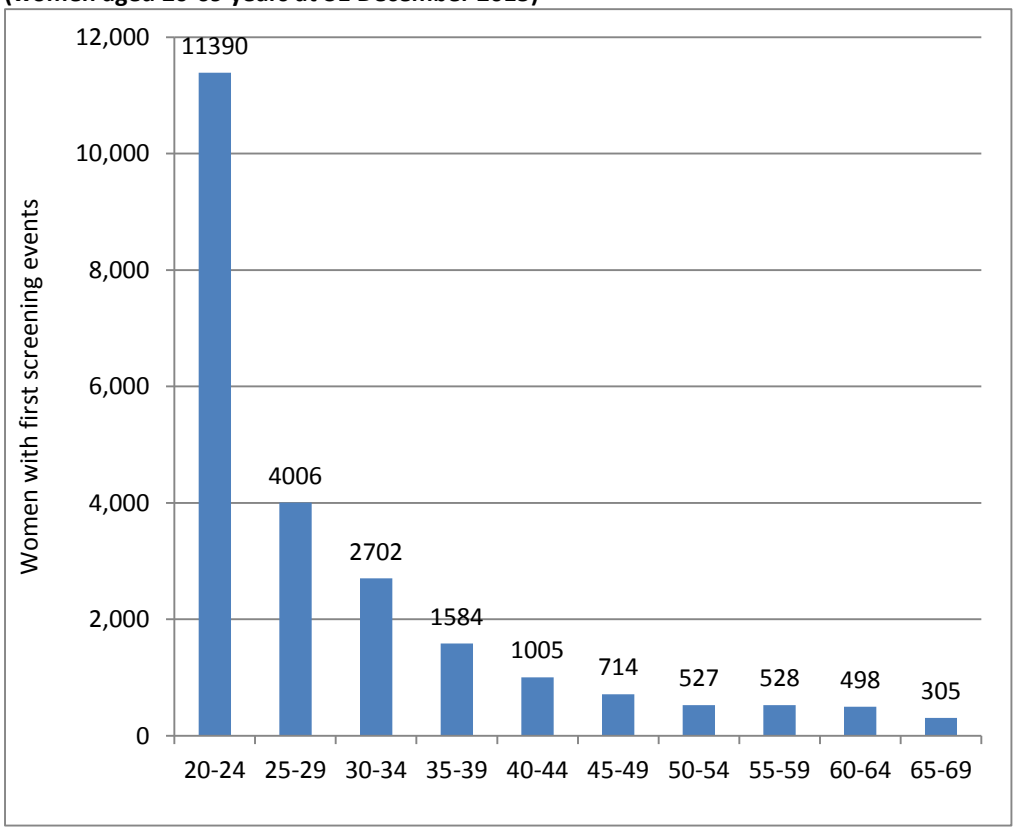


Figure 34 – Women with first screening events as a proportion of all women screened in that age group during the monitoring period, by five-year age group (women aged 20-69 years at 31 December 2015)

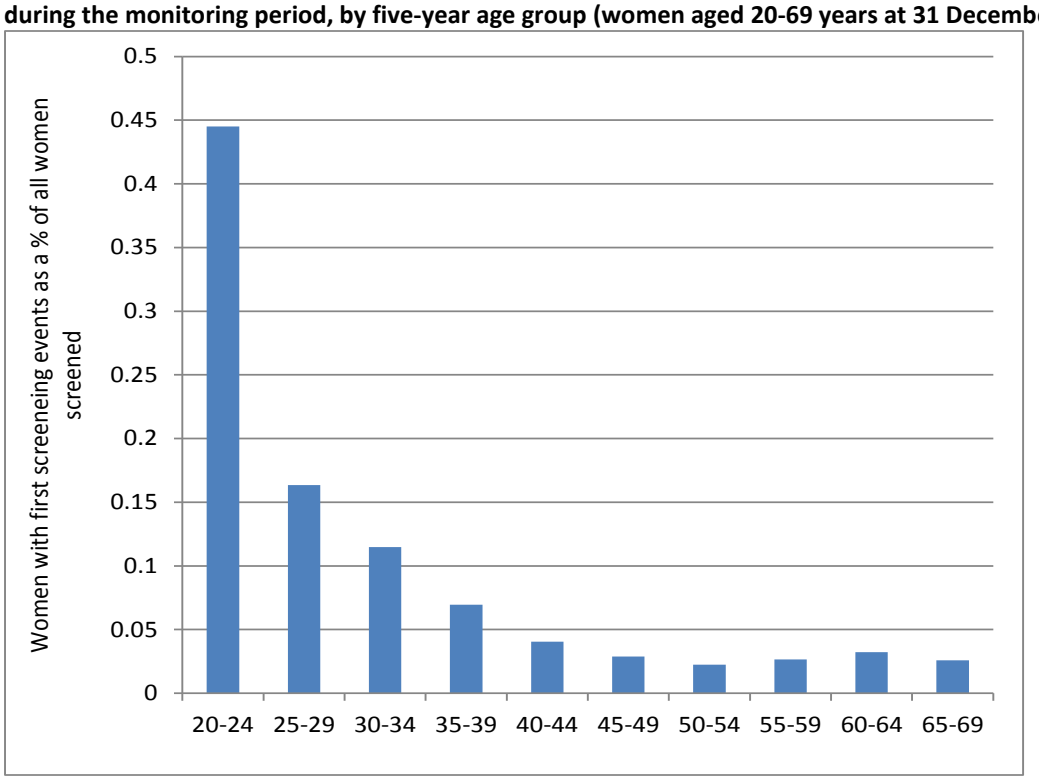
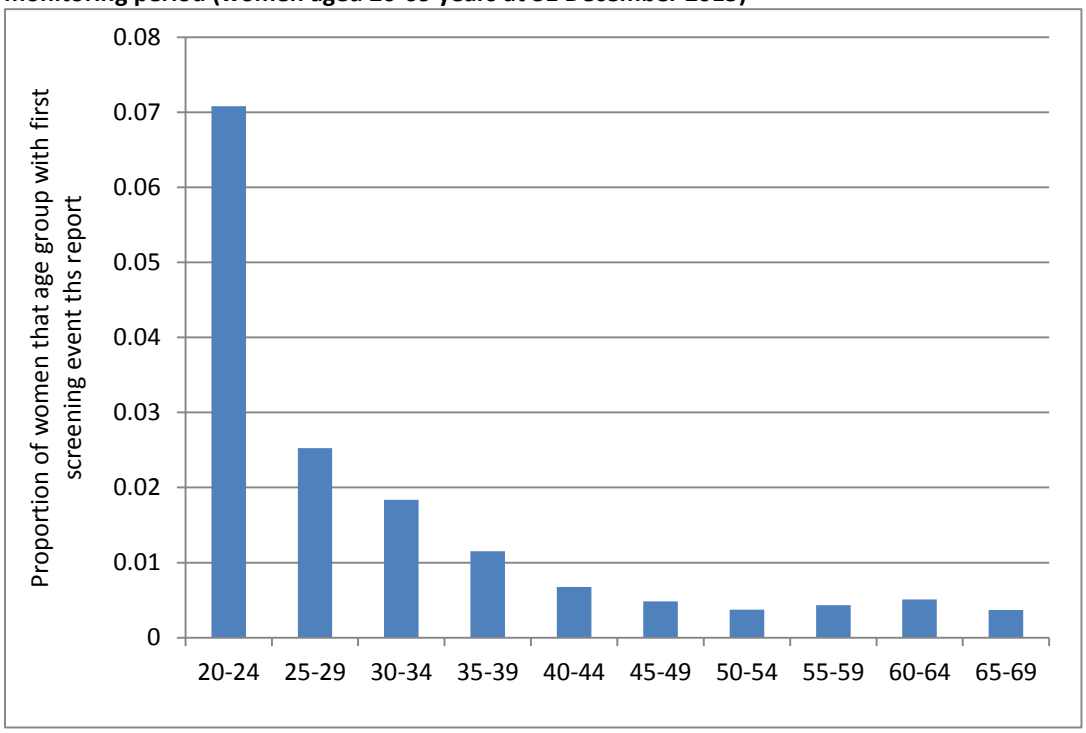


Figure 35 – Proportion of population* in that age group with their first screening event during the monitoring period (women aged 20-69 years at 31 December 2015)



**Hysterectomy adjusted, 2013 Census data projected to 31 December 2015*

Figure 36 – Women with first screening events as a proportion of all women screened during the monitoring period, by DHB (women aged 20-69 years at 31 December 2015)

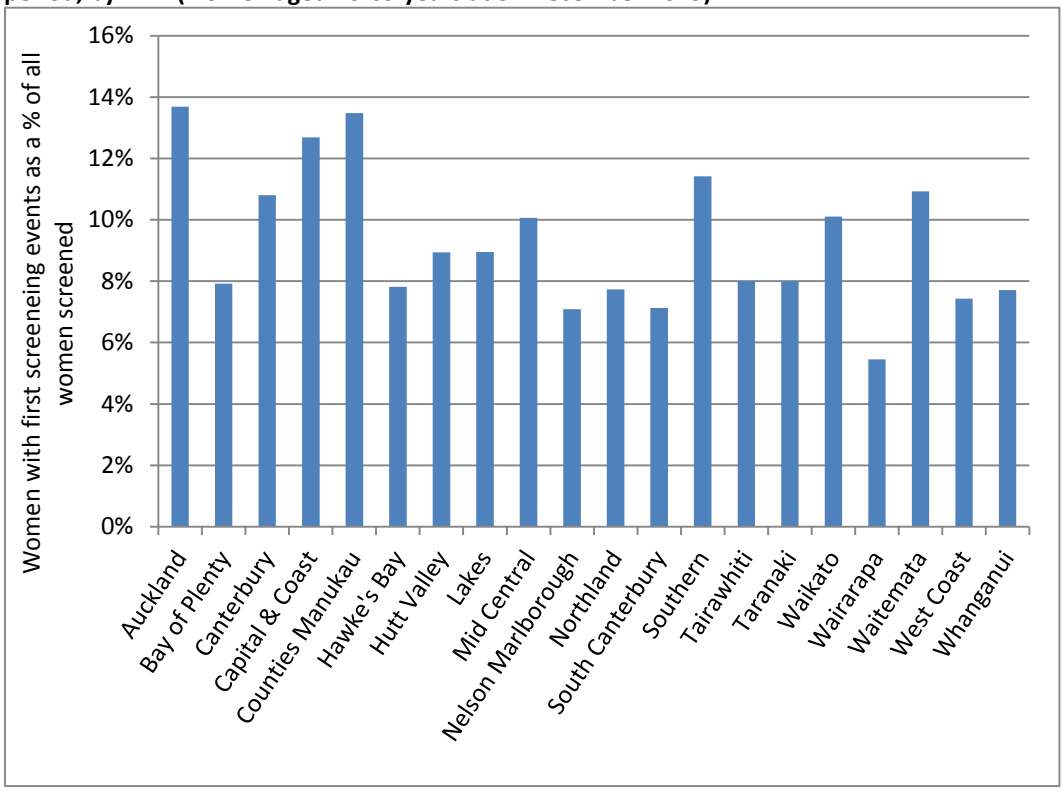


Figure 37 – Women with first screening events as a proportion of all women screened during the monitoring period, by ethnicity (women aged 20-69 years at 31 December 2015)

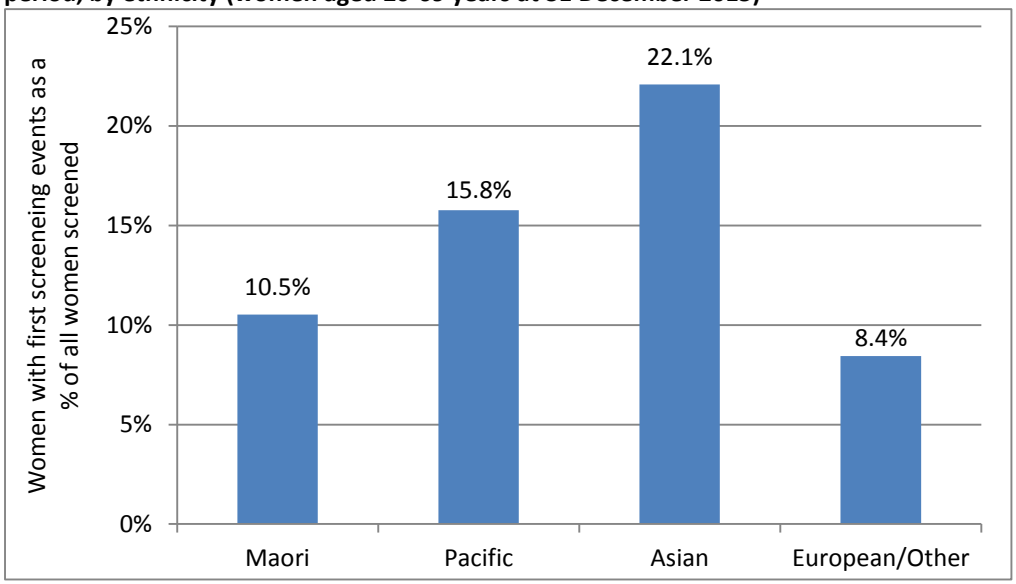


Figure 38 – Trends in the number of women with a first screening event, by age

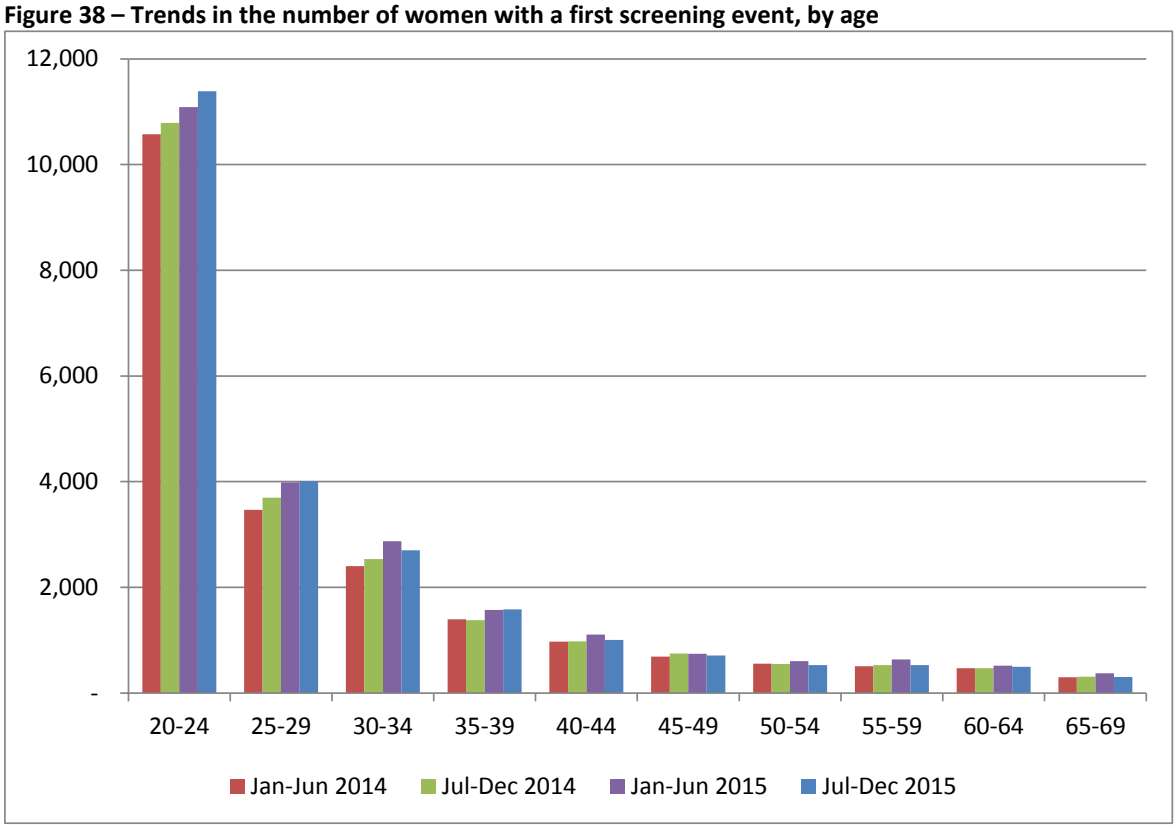


Figure 39 – Trends in the number of women with a first screening event, by DHB

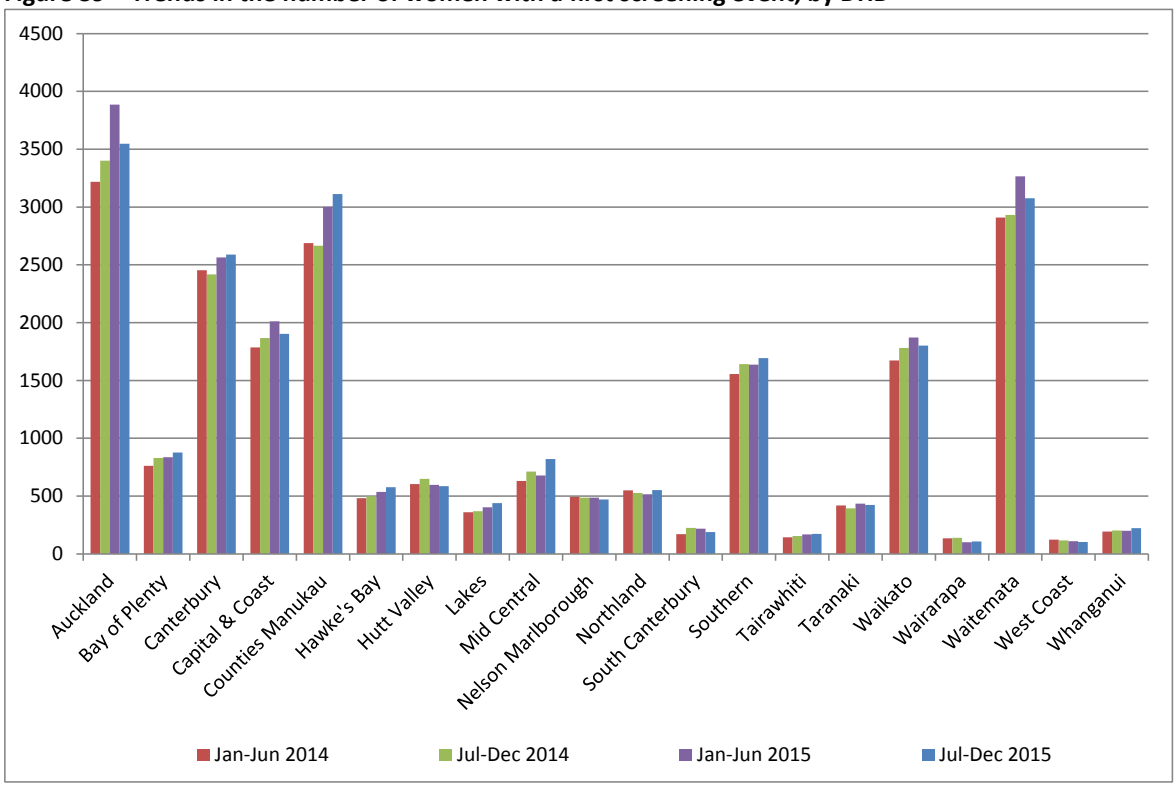
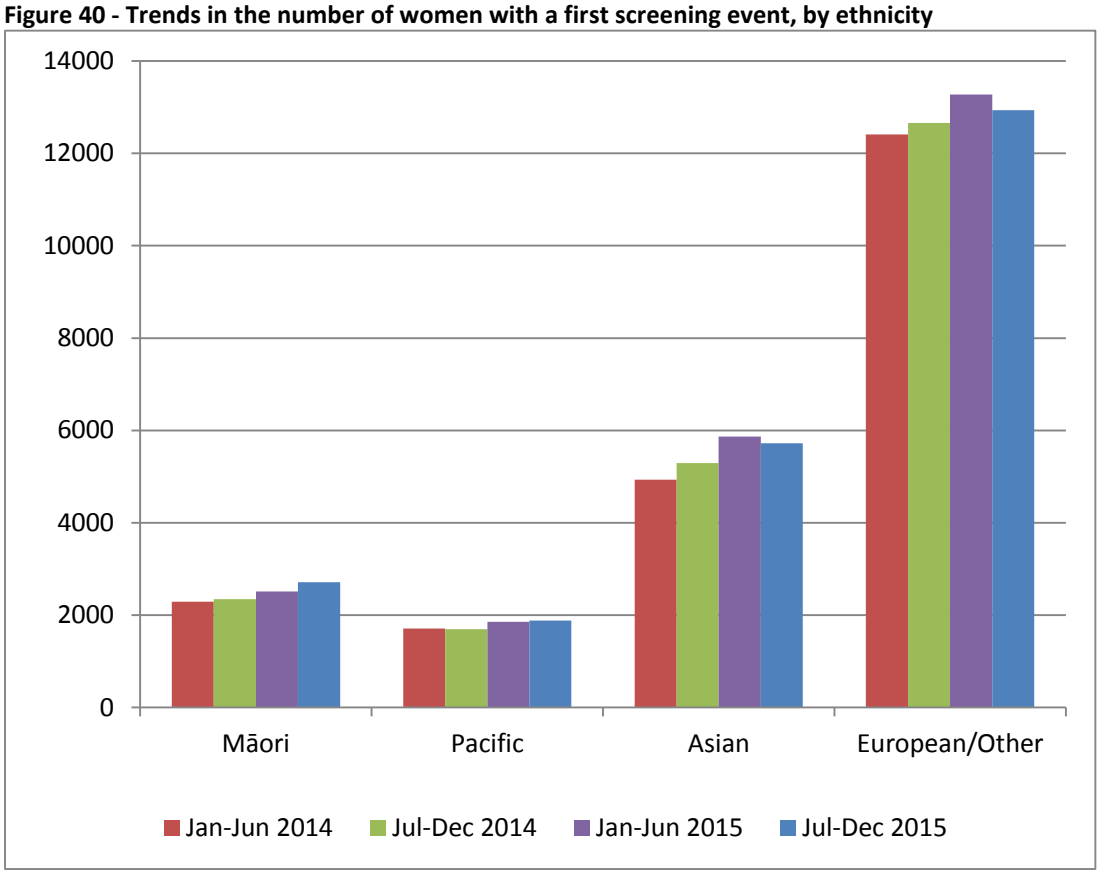


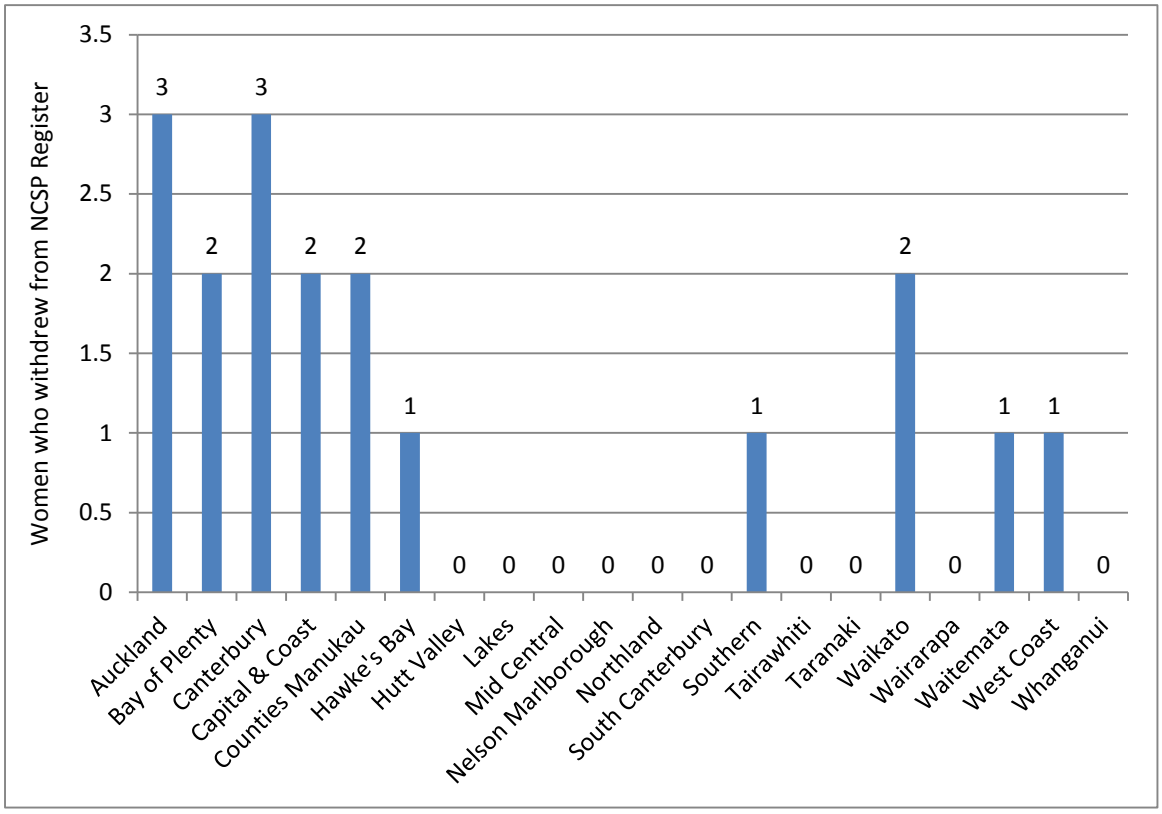
Figure 40 - Trends in the number of women with a first screening event, by ethnicity



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 reporting 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 30 June 2015 (ie just prior to the commencement of the current reporting period), whose enrolment ended within the current reporting period, is also reported. Age is defined as a woman's age at the end of the reporting period.
Target	Zero for ages 20-69 years.
Current Situation	At the commencement of the reporting period, 1,537,785 women aged 20-69 years were enrolled on the NCSP Register. During the current reporting period, 19 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 three women in the Canterbury DHB region). No women withdrew in ten of the twenty DHB regions (Figure 41). The age groups with the largest numbers and proportions of women who withdrew were women aged 20-24 years (3 women, 0.004% of those enrolled at the start of the reporting period) and women aged 65-69 years (3 women, 0.003%) (Figure 42, Table 44). The number and proportion of women withdrawing was extremely small for all ethnic groups. In total two Asian women (0.001%) and 17 European/ Other women (0.002%) withdrew in the current monitoring period (Figure 43, Table 45).
Trends	The number of women who withdrew in the current reporting period (19 women) is lower than in the previous reporting period (20 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.

Figure 41 - Number of women (aged 20-69 years) who withdrew from the NCSP Register by DHB, 1 July - 31 December 2015



Excludes 4 women who withdrew whose DHB was not recorded

Figure 42 - Number of women who withdrew from the NCSP Register by age, 1 July - 31 December 2015

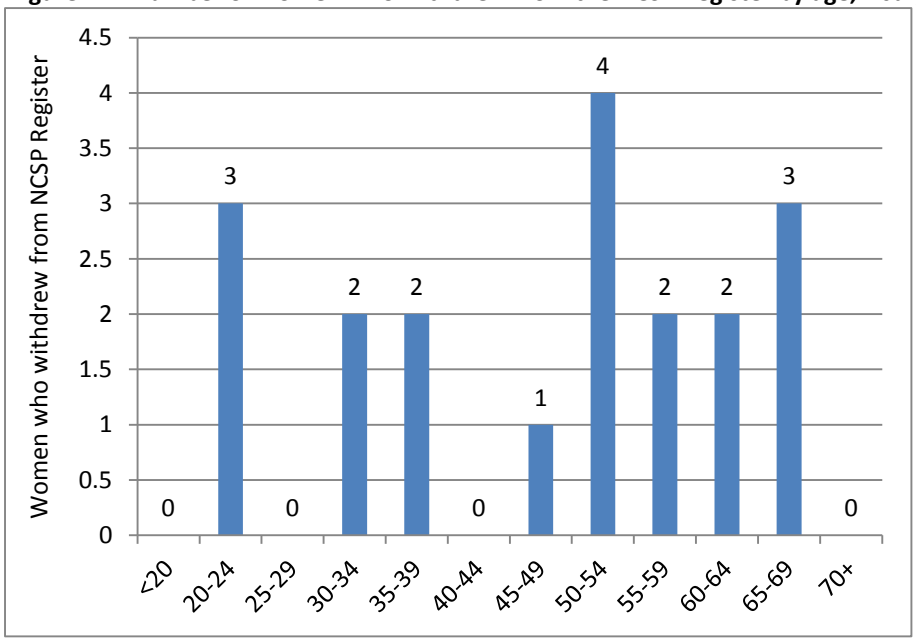
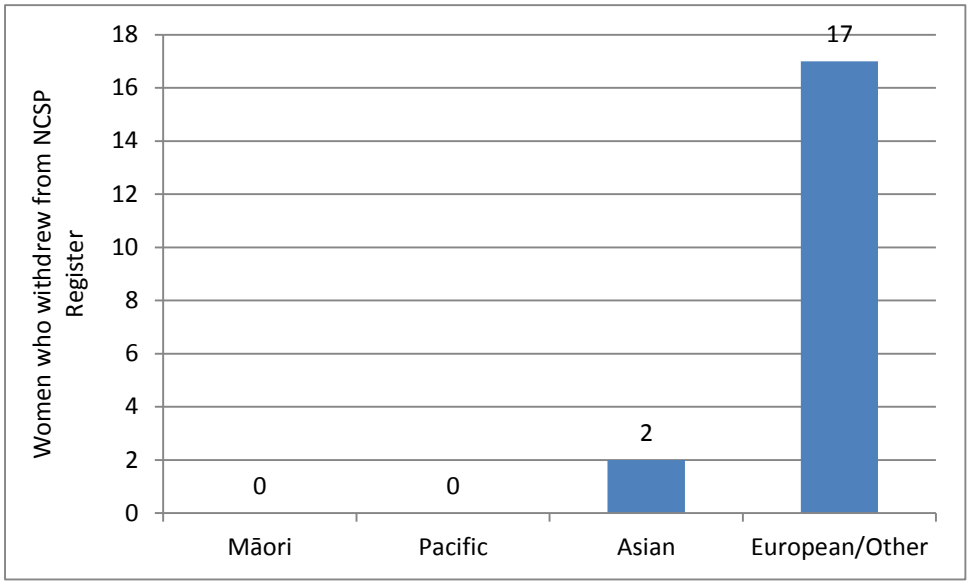


Figure 43 - Number of women (aged 20-69 years) who withdrew from the NCSP Register by ethnicity, 1 July - 31 December 2015



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 women with an index smear taken between 1 February 2013 – 31 March 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 February/March 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 reporting period (ie 31 December 2015).
Target	A target has not yet 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 41,935 women who had a smear taken in February or March 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, 6,311 (15.0%) 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 Waitemata (21.7%) and Auckland (19.2%), and was least common in Tairawhiti (7.7%), Whanganui (8.3%) and Mid Central (8.8%) (Figure 44, Table 47). 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 (21.2%), and older women (aged 60-64 or 65-69 years) were the least likely to be re-screened early (12.4 and 10.4% for these age groups, respectively) (Figure 45, Table 46). Rates

	of early re-screening are quite similar across the seven five-year age groups from 25 to 59 years (between 14% and 18%). Among the ethnic groups considered, Asian and European/ Other women were the most likely to be re-screened early (15.6% and 15.4%, respectively). Early re-screening was least common among Pacific women (11.2%) (Figure 46, Table 48).
Trends	The level of early re-screening (15.0%) is similar to that seen for the previous monitoring period (16.0%). DHBs with the lowest and highest levels of early re-screening are slightly different from the previous report; the lowest was Tairawhiti (7.7% in the current monitoring period, 10.6% in the previous monitoring period) and the highest was Waitemata (21.7% in the current monitoring period, 23.1% in the previous monitoring period). Lakes DHB saw the largest percentage point reduction (4.8 percentage points, from 17.8% to 13.0%), while Northland saw the largest increase (2.2 percentage points, from 12.9% to 15.1%). While many DHBs have had a decreasing trend over time, early re-screening appears to no longer be decreasing in some DHBs, such as Hawke's Bay, Hutt Valley, Mid Central, South Canterbury, Southern, and Taranaki. Trends over the two years ending 31 December 2015 by DHB are shown in Figure 47. A reduction in the level of early re-screening was seen for nine 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 (2.8 percentage points from 24.0% to 21.2%). Women aged 60-64 years saw the largest increase; 1.3 percentage points, from 11.1% to 12.4%. While many age groups have had a decreasing trend over time, early re-screening appears to no longer be decreasing in women aged 30-34 years and 35-39 years. Trends over the two years ending 31 December 2015 by 5-year age group are shown in Figure 48. Early re-screening has decreased in all ethnic groups over the last two years since the July-December 2013 monitoring period. Since the previous monitoring period the level of early re-screening has decreased for all ethnic groups.
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 44 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by DHB

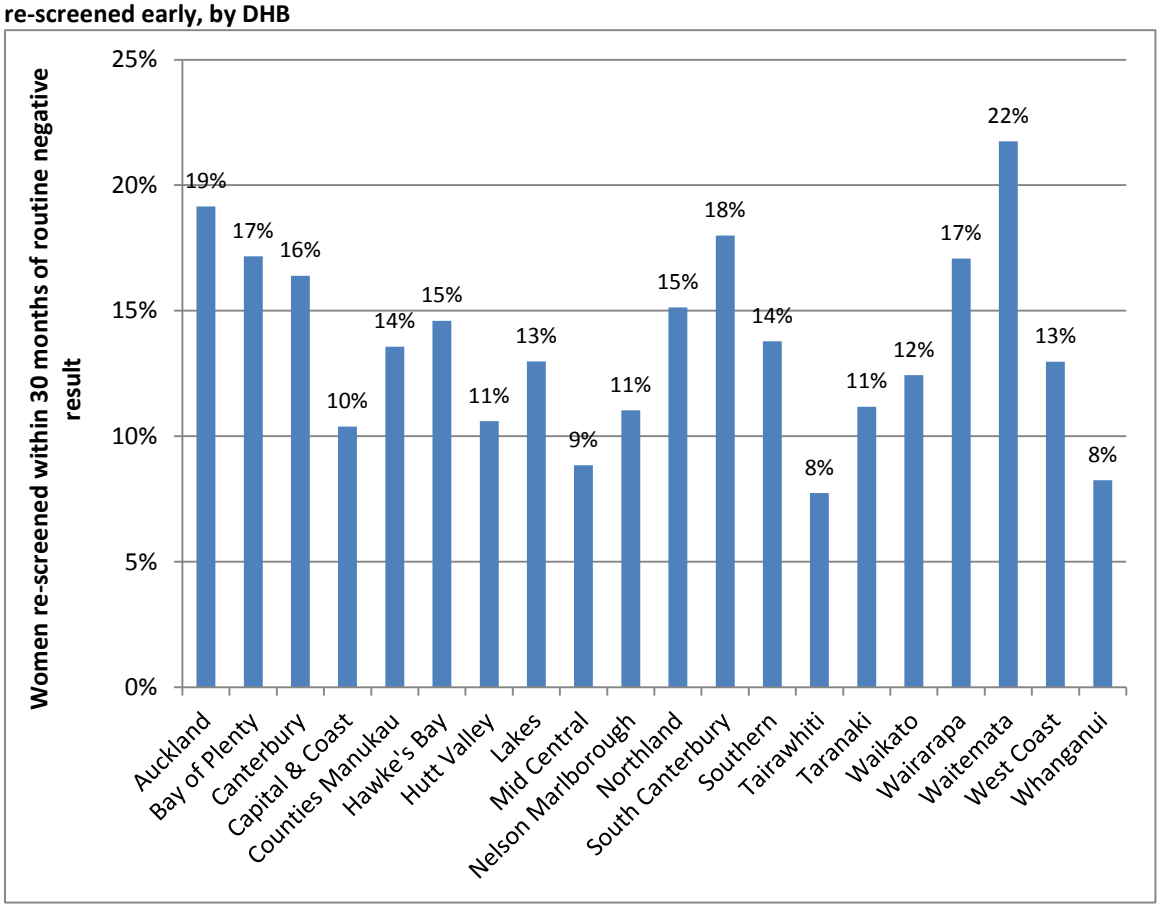


Figure 45 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by five-year age group

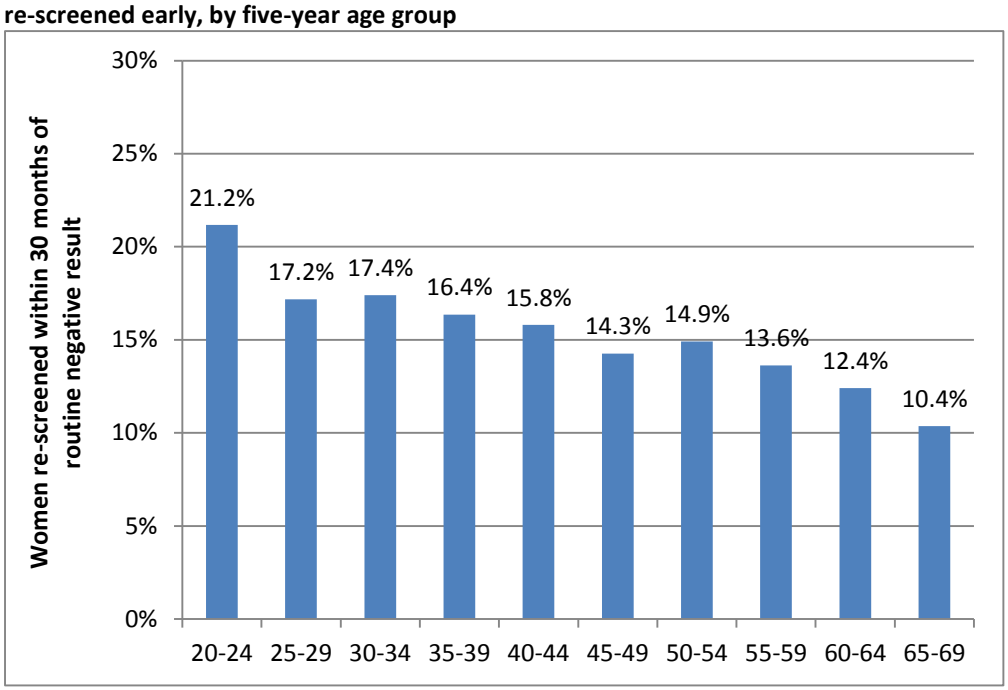


Figure 46 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by ethnicity

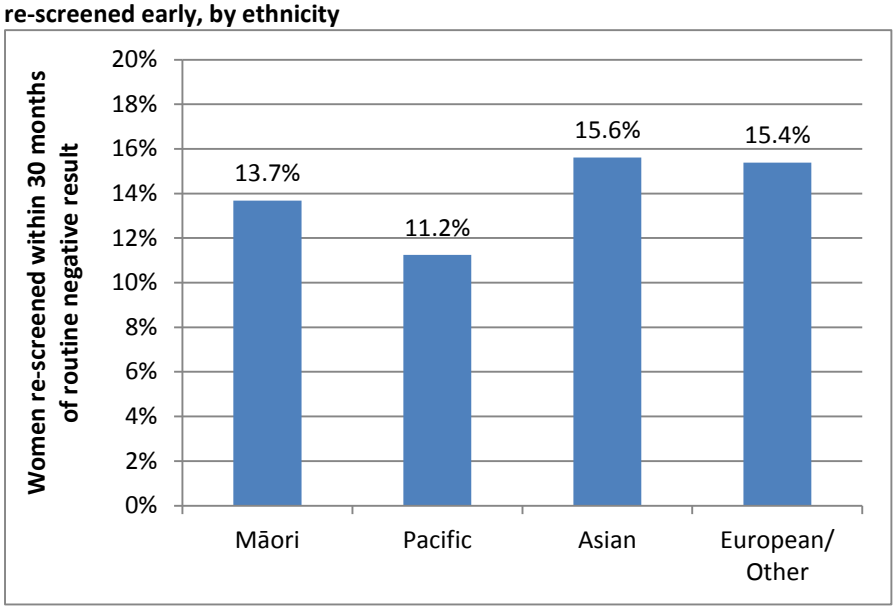


Figure 47 – Trends in the proportion of women recommended to return at the routine interval (three years) who were re-screened early, by DHB

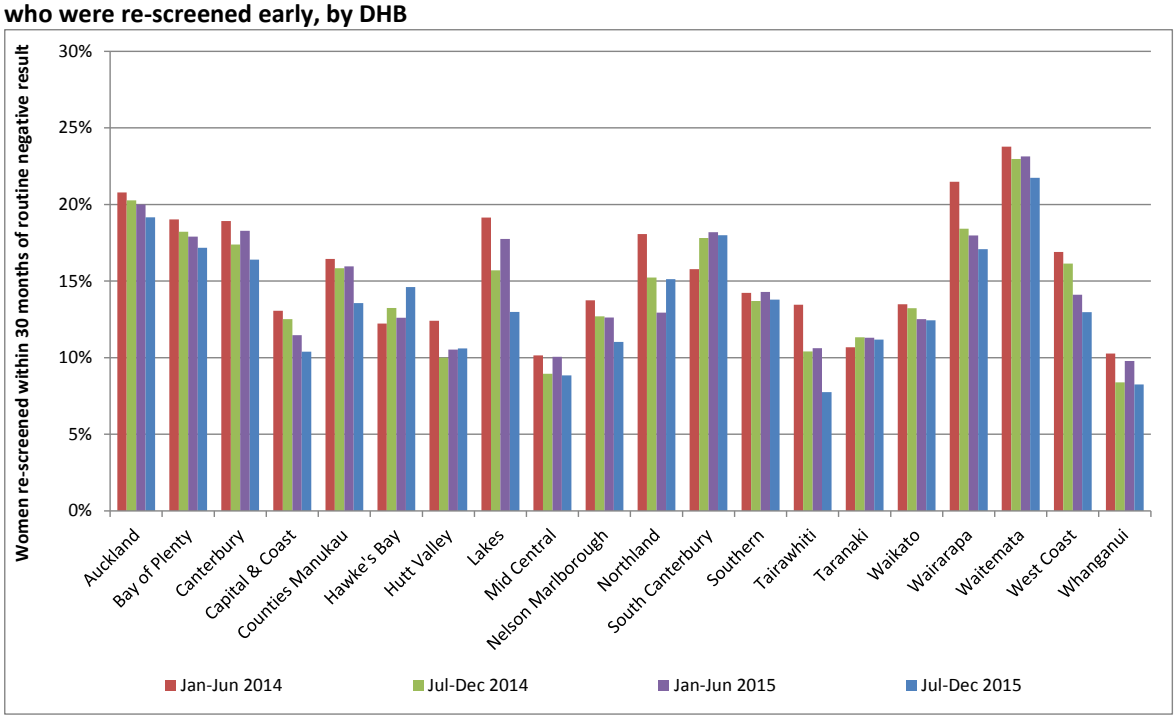
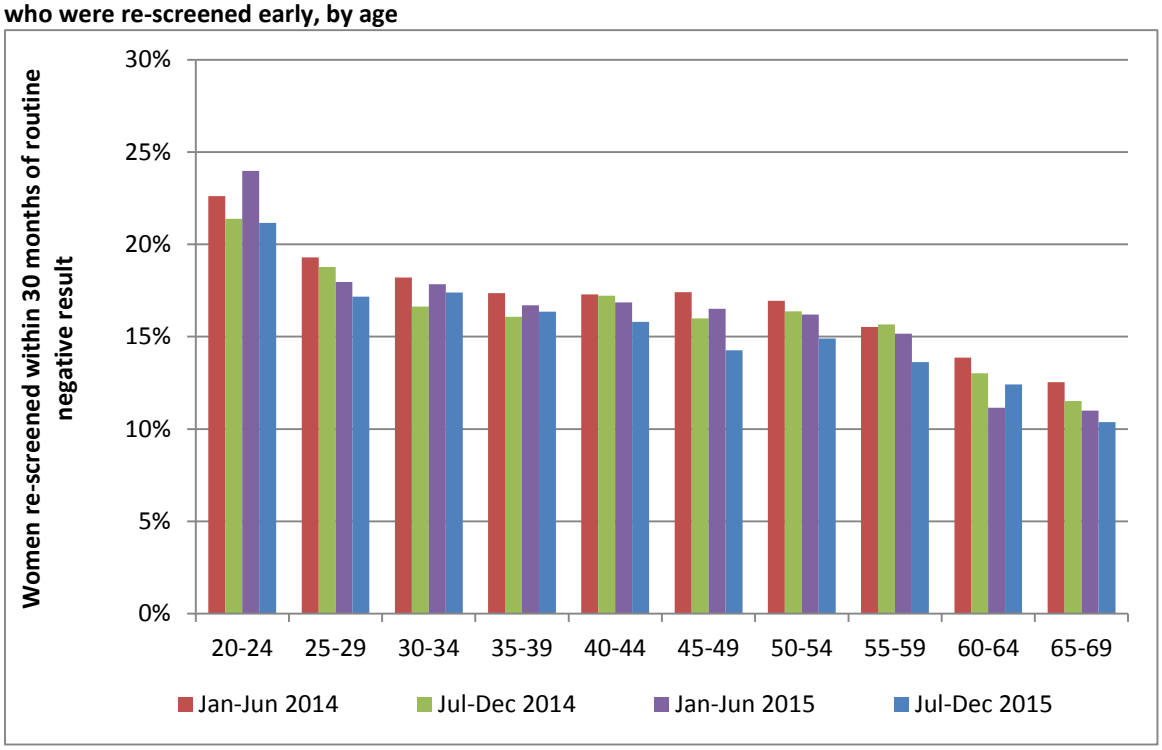


Figure 48 - Trends in the proportion of women recommended to return at the routine interval (three years) who were re-screened early, by age



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 (hrHPV) 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 was taken over by Southern Community Labs 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 reporting 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% 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	Seven laboratories reported on cytology taken during the current reporting period, the same number as in the previous reporting period. A total of 219,244 cytology samples were taken, almost all (100%) were liquid-based cytology (LBC). ***Unsatisfactory cytology*** 2,953 cytology samples (1.3%) were unsatisfactory. These are reported in more detail in Table 1. The remaining satisfactory samples are reported on in more detail in Table 2 to Table 6.

As almost all cytology samples taken during the monitoring period were LBC samples, the unsatisfactory rate for LBC is the same as the overall rate at 1.3%, which is within the 0.1 - 3% target range for LBC samples. All of the seven laboratories had unsatisfactory rates within the target range (Figure 37, Table 4).

Negative cytology reports

92.6% of satisfactory cytology results were negative, consistent with the target of no more than 96% (Table 8). The proportion of samples which were negative varied by laboratory from 70.3% (LabPLUS) to 95.6% (Southern Community Labs). All seven laboratories met the target of no more than 96%.

Abnormal cytology reports

The proportion of satisfactory samples which were abnormal (7.4%) also was less than the target of no more than 10% (Figure 51, Table 2). This varied by laboratory however, from 4.4% (Southern Community Labs) to 29.7% (LabPLUS). Two laboratories (LabPlus and Canterbury Health Laboratories) exceeded the target (29.7% and 12.2%, 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 52, Table 4). Rates varied by laboratory from 0.4% (Aotea Pathology Ltd) to 3.3% (LabPLUS). Six of the seven laboratories met the HSIL target (Figure 52, 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 and over time. 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 49).

Trends

Unsatisfactory cytology

Overall, the percentage of unsatisfactory LBC samples for the current monitoring period (1.3%) is similar to the 1.3% seen in the previous monitoring period, and is within the target range of 0.1 - 3%. The number of laboratories meeting the target for unsatisfactory LBC samples increased from six to seven since the previous monitoring period.

Negative vs abnormal cytology reports

The proportion of satisfactory cytology samples which are negative for intraepithelial lesion or malignancy (92.6%) is the same as in the previous monitoring period (92.6%), and correspondingly the proportion of cytology samples reported as abnormalities (7.4%) is also the same as in the previous reporting period (7.4%). As in the previous reporting period, all laboratories met the target for negative cytology. The number of laboratories with abnormal cytology rates above the target of 10% is the same as in the previous monitoring period (two).

HSIL cytology reports

The proportion of satisfactory cytology samples reported as HSIL (1.1%) is slightly higher to the previous monitoring report (0.8%). The number of laboratories meeting the target of not less than 0.5% has increased from five to six.

Longer term trends in the proportion of satisfactory cytology samples reported as HSIL are shown in Figure 53 and Figure 54 (trends by age) and Figure 55 (trends by laboratory). Figure 53 and Figure 55 show trends over the last four monitoring report periods (two years), consistent with other trends presented in this report. Figure 54 shows longer term trends (July 2008 to December 2015) 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 25 years at the time of the current reporting 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. They then fell for four monitoring periods between January 2013 and December 2014, remained stable in the previous reporting period, but in the current monitoring period (from 1.6% in the previous report to 2.0% in the current report). However a relatively sharp increase in HSIL rates was observed in almost all age groups between the previous and current report (Figure 54). The results by laboratory (Figure 55) suggest that this was driven by an increase in HSIL rates from Anatomical Pathology Services and Southern Community Labs, who respectively accounted for 21.6% and 43.6% of all satisfactory cytology tests in the current six-month monitoring period. In the former case, this follows lower than usual HSIL rates between July 2014 and June 2015. It is important to consider the increases in HSIL at these two particular laboratories in conjunction with their positive predictive value for confirmed CIN2+. This would be routinely be reported in Indicator 5.2 in Report 45, however in the interests of exploring this increase, an analysis of PPV of HSIL + SC cytology for CIN2+ at these laboratories was undertaken on an updated data extract from the NCSP Register (data extracted on 18 August 2016). At the time of the

updated extract, 91.8% of women with HSIL + SC cytology had subsequent histology within six months and 96.2% had subsequent colposcopy within six months recorded on the NCSP Register. The proportion of women with HSIL + SC cytology with histologically confirmed CIN 2+ within six months was lower at these two laboratories for HSIL + SC cytology collected in the current monitoring period (1 July - 31 December 2015) than has been typical in previous monitoring reports, both as a proportion of women with histology (Figure 107), and as a proportion of women with colposcopy (Figure 108).

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 (ie a significant proportion of samples received from colposcopy clinics compared to other laboratories) is an underlying factor.

Workloads for laboratories may be regional or nationwide, and 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.

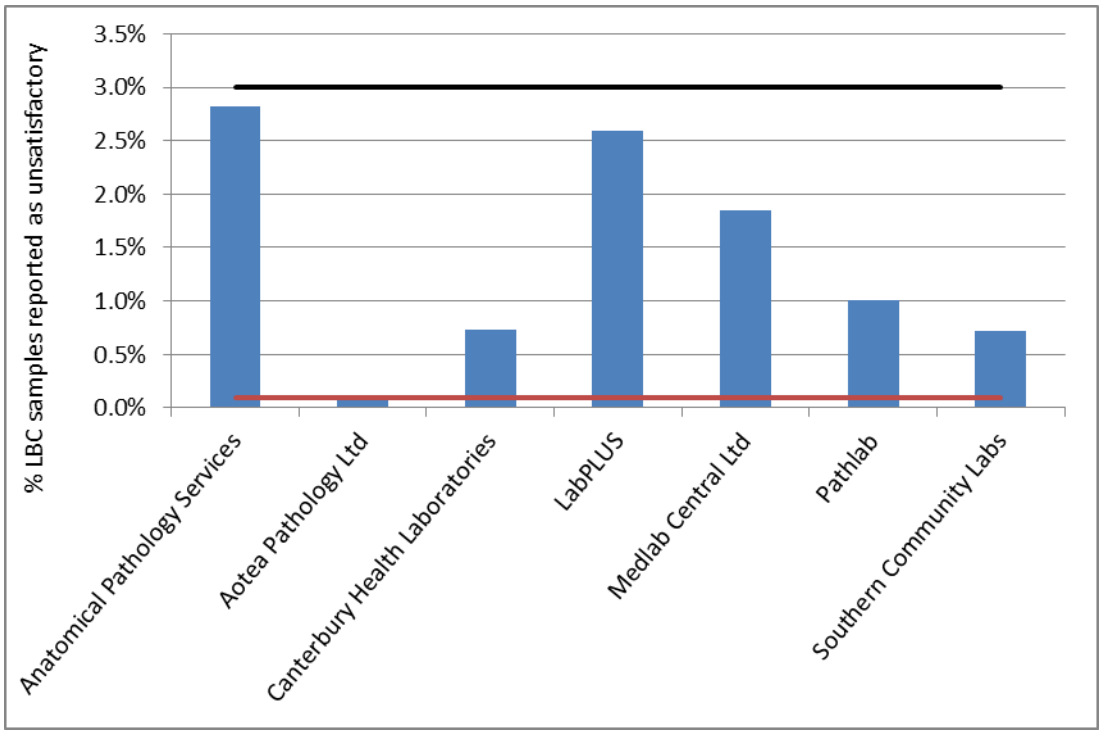
The national Human Papillomavirus (HPV) Immunisation Programme was introduced in New Zealand in September 2008, and involves routine vaccination of girls 12-13 years and catch-up vaccination has previously been offered to young women born in 1990 or later. International and New Zealand data indicate 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 25 years at the time of the current reporting period, while the oldest birth cohorts offered vaccination at the target age of 12-13 years would be aged up to 19 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 current 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.

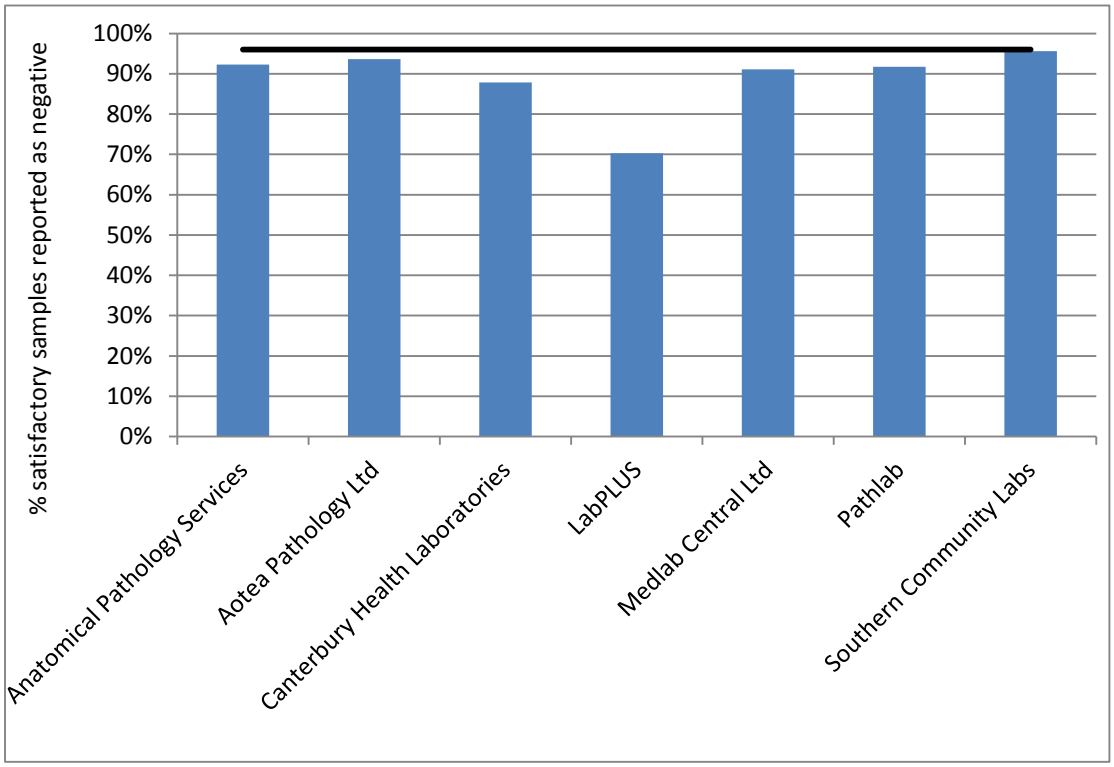
In the current report we additionally examined age-standardised rates of HSIL cytology reports, in order to partially account for differences in the age of the population whose cytology tests each laboratory processes. This could be an additional factor in some laboratories having higher or lower HSIL 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.

Figure 49 - Proportion of total LBC samples reported as unsatisfactory by laboratory, 1 July - 31 December 2015



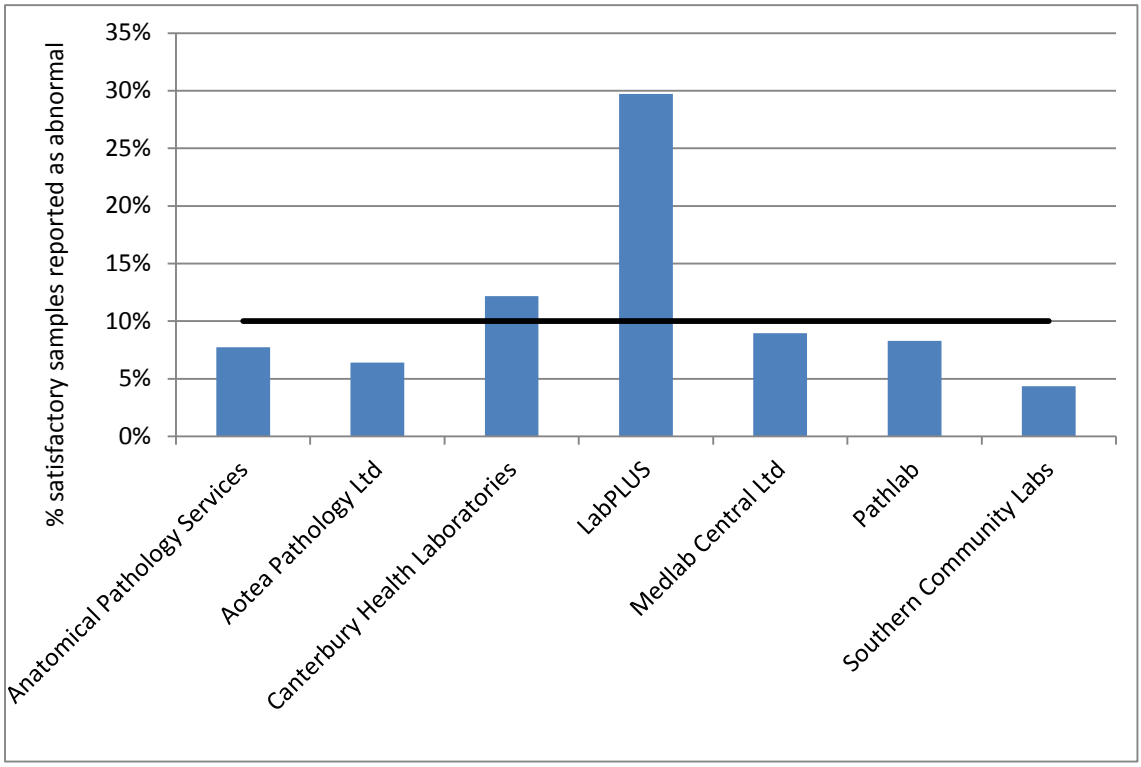
Target for LBC: 1-5% (Black line=upper target limit; red line=lower target limit)

Figure 50 - Proportion of total satisfactory samples reported as negative by laboratory, 1 July - 31 December 2015



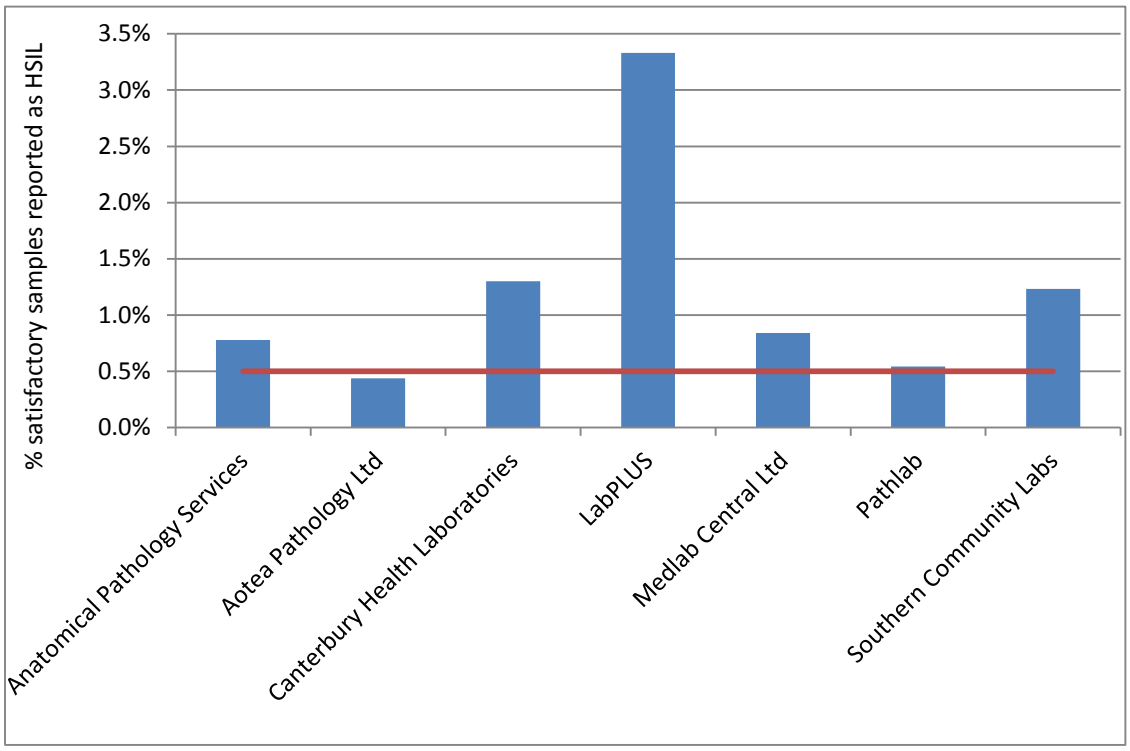
Note: Line shows negative target of no more than 96%

Figure 51 - Proportion of total satisfactory samples reported as abnormalities by laboratory, 1 July - 31 December 2015



Note: Line shows abnormal target no more than 10%

Figure 52 - Proportion of total satisfactory samples reported as HSIL by laboratory, 1 July - 31 December 2015



Note: Line shows HSIL target of no less than 0.5%

Table 1 - Satisfactory and unsatisfactory cytology reporting by laboratory (1 July - 31 December 2015)

	All samples	Satisfactory		Unsatisfactory	
Laboratory	**N**	**N**	**%**	**N**	**%**
Anatomical Pathology Services	48,072	46,713	97.2	1,359	2.8
Aotea Pathology Ltd	13,067	13,051	99.9	16	0.1
Canterbury Health Laboratories	11,308	11,225	99.3	83	0.7
LabPLUS	8,753	8,526	97.4	227	2.6
Medlab Central Ltd	18,325	17,987	98.2	338	1.8
Pathlab	24,836	24,585	99.0	251	1.0
Southern Community Labs	94,883	94,204	99.3	679	0.7
Total	**219,244**	**216,291**	**98.7**	**2,953**	**1.3**

Table 2 - Laboratory cytology reporting by general result (1 July - 31 December 2015) – percentage of satisfactory samples

	Negative		Abnormal	
Laboratory	**N**	**%**	**N**	**%**
Anatomical Pathology Services	43,102	92.3	3,611	7.7
Aotea Pathology Ltd	12,216	93.6	835	6.4
Canterbury Health Laboratories	9,858	87.8	1,367	12.2
LabPLUS	5,991	70.3	2,535	29.7
Medlab Central Ltd	16,378	91.1	1,609	8.9
Pathlab	22,547	91.7	2,038	8.3
Southern Community Labs	90,093	95.6	4,111	4.4
Total	**157,083**	**92.6**	**12,495**	**7.4**

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

Table 3 - Laboratory cytology reporting by cytological category (1 July - 31 December 2015) – counts

	Result									
Laboratory	**Negative**	**ASC-US**	**LSIL**	**ASC-H**	**HSIL**	**Invasive SCC**	**AGC/AIS**	**Adeno-carcinoma**	**Malignant Neoplasm**	**Total**
Anatomical Pathology Services	43,102	1,130	1,777	285	363	5	43	8	-	46,713
Aotea Pathology Ltd	12,216	325	385	64	57	-	2	2	-	13,051
Canterbury Health Laboratories	9,858	416	633	157	146	-	10	5	-	11,225
LabPLUS	5,991	944	883	389	284	2	27	5	1	8,526
Medlab Central Ltd	16,378	693	598	140	151	4	17	6	-	17,987
Pathlab	22,547	665	1,061	151	133	3	16	9	-	24,585
Southern Community Labs	90,093	491	2,159	160	1,161	9	112	18	1	94,204
Total	**200,185**	**4,664**	**7,496**	**1,346**	**2,295**	**23**	**227**	**53**	**2**	**216,291**

Table 4 - Laboratory cytology reporting by cytological category (1 July - 31 December 2015) – 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	92.3	2.4	3.8	0.6	0.8	0.01	0.09	0.02	-
Aotea Pathology Ltd	93.6	2.5	2.9	0.5	0.4	-	0.02	0.02	-
Canterbury Health Laboratories	87.8	3.7	5.6	1.4	1.3	-	0.09	0.04	-
LabPLUS	70.3	11.1	10.4	4.6	3.3	0.02	0.32	0.06	0.01
Medlab Central Ltd	91.1	3.9	3.3	0.8	0.8	0.02	0.09	0.03	-
Pathlab	91.7	2.7	4.3	0.6	0.5	0.01	0.07	0.04	-
Southern Community Labs	95.6	0.5	2.3	0.2	1.2	0.01	0.12	0.02	<0.005
Total	**92.6**	**2.2**	**3.5**	**0.6**	**1.1**	**0.01**	**0.10**	**0.02**	**<0.005**

Target: HSIL ≥ 0.5% reported as HSIL

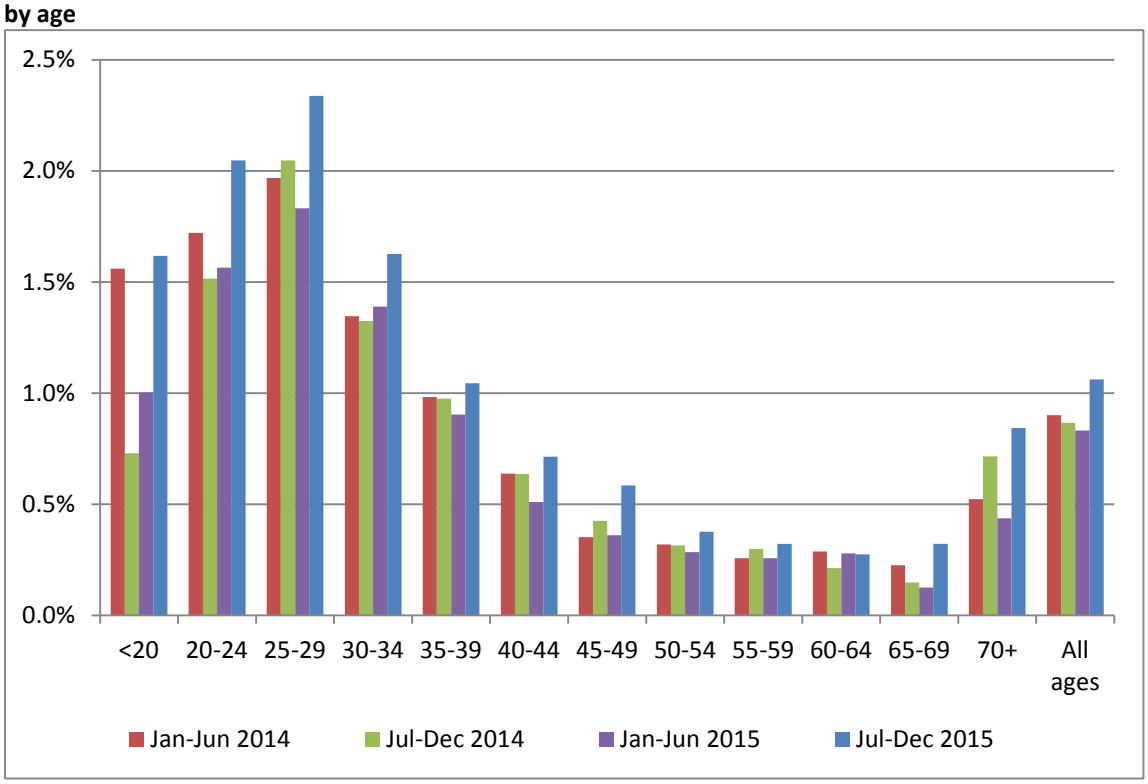
Table 5 - Laboratory reporting of cytological category by five-year age group (1 July - 31 December 2015) – counts

	Cytology Result									
Age Group	Negative	ASC-US	LSIL	ASC-H	HSIL	Invasive SCC	AGC/AIS	Adeno-carcinoma	Malignant Neoplasm	Total
<20	914	40	131	10	18	-	-	-	-	1,113
20-24	22,275	899	2,432	330	542	-	4	-	-	26,482
25-29	21,351	693	1,337	302	567	1	13	-	-	24,264
30-34	21,348	533	808	165	378	2	12	-	1	23,247
35-39	20,927	443	584	130	233	1	13	3	-	22,334
40-44	23,294	491	559	95	176	6	22	5	-	24,648
45-49	22,675	491	516	79	140	-	35	2	-	23,938
50-54	21,897	410	411	77	86	-	42	3	-	22,926
55-59	18,517	288	284	77	62	5	28	7	1	19,269
60-64	14,393	204	235	43	41	1	19	4	-	14,940
65-69	10,850	129	155	31	36	3	16	10	-	11,230
70+	1,744	43	44	7	16	4	23	19	-	1,900
Total	**200,185**	**4,664**	**7,496**	**1,346**	**2,295**	**23**	**227**	**53**	**2**	**216,291**

Table 6 - Laboratory reporting of cytological category by five-year age group (1 July - 31 December 2015) – percentage of all satisfactory samples in women of that age group

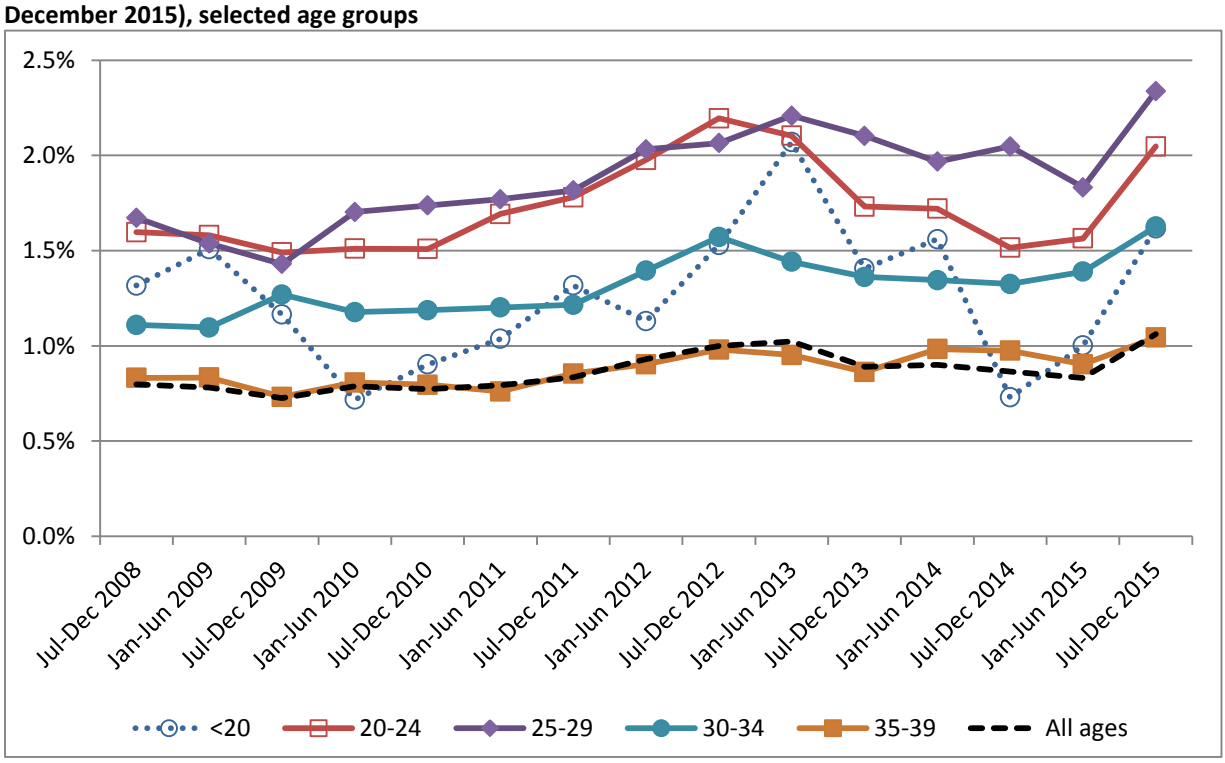
	Cytology Result								
Age Group	**Negative**	**ASC-US**	**LSIL**	**ASC-H**	**HSIL**	**Invasive SCC**	**AGC/AIS**	**Adeno-carcinoma**	**Malignant Neoplasm**
<20	82.1	3.6	11.8	0.9	1.6	-	-	-	-
20-24	84.1	3.4	9.2	1.2	2.0	-	0.02	-	-
25-29	88.0	2.9	5.5	1.2	2.3	<0.005	0.05	-	-
30-34	91.8	2.3	3.5	0.7	1.6	0.01	0.05	-	<0.005
35-39	93.7	2.0	2.6	0.6	1.0	<0.005	0.06	0.01	-
40-44	94.5	2.0	2.3	0.4	0.7	0.02	0.09	0.02	-
45-49	94.7	2.1	2.2	0.3	0.6	-	0.15	0.01	-
50-54	95.5	1.8	1.8	0.3	0.4	-	0.18	0.01	-
55-59	96.1	1.5	1.5	0.4	0.3	0.03	0.15	0.04	0.01
60-64	96.3	1.4	1.6	0.3	0.3	0.01	0.13	0.03	-
65-69	96.6	1.1	1.4	0.3	0.3	0.03	0.14	0.09	-
70+	91.8	2.3	2.3	0.4	0.8	0.21	1.21	1.00	-
Total	**92.6**	**2.2**	**3.5**	**0.6**	**1.1**	**0.01**	**0.10**	**0.02**	**<0.005**

Figure 53 – Trends in the proportion of total satisfactory samples reported as HSIL (last four monitoring periods), by age



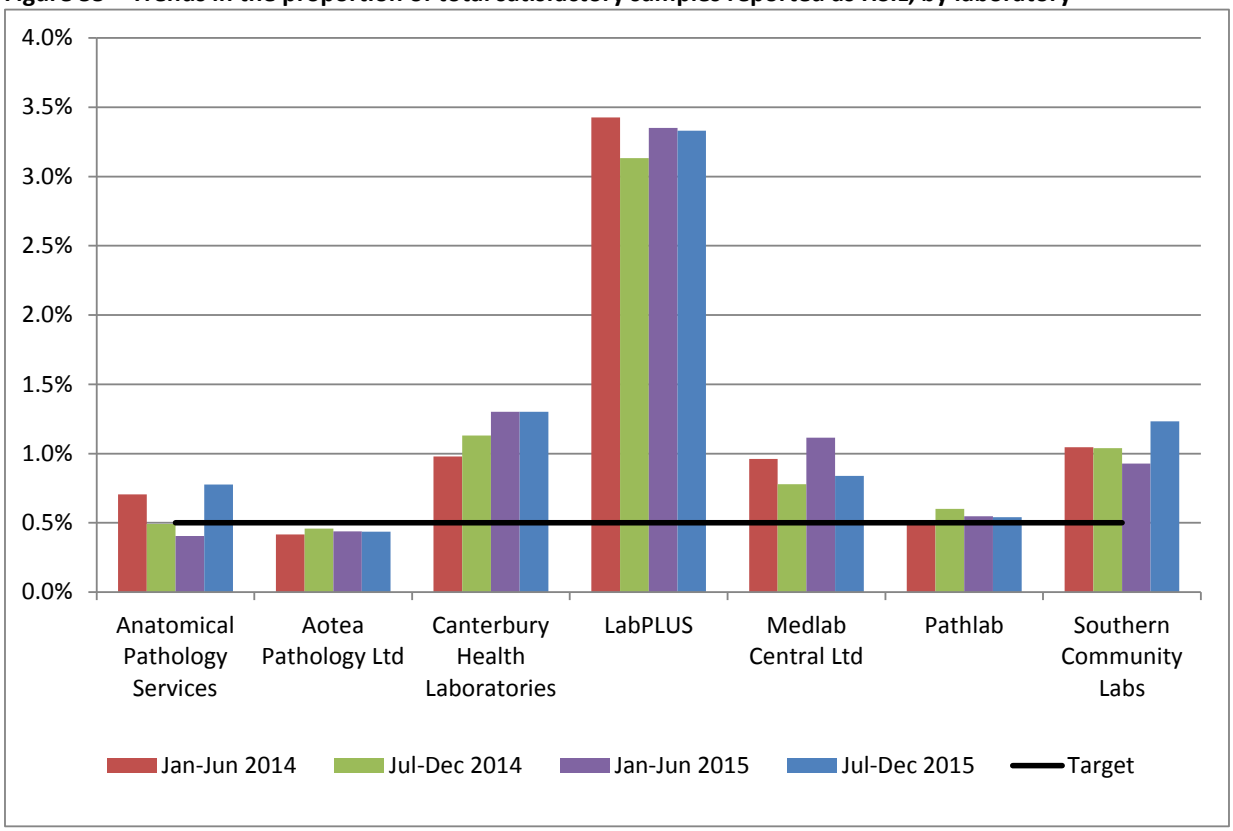
Note: women aged less than 20 years are not routinely screened

Figure 54 – Longer term trends in the proportion of total satisfactory samples reported as HSIL (July 2008 – December 2015), selected age groups



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

Figure 55 – 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 (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 reporting period (ie collected from 1 January – 30 June 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*** 1,646 women with HSIL or SC cytology reports were identified. 108 of these women (6.6%) had no histology taken in the period from five days prior to six months after the cytology sample was taken. Among the remaining 1,538 for whom there was histology, 1,283 (83.4%) had their HSIL or SC cytology report confirmed by histology (Figure 56, Table 50). By laboratory, the proportion of HSIL+SC being confirmed by histology ranged from 75.6% for Aotea Pathology Ltd to 87.1% for Canterbury Health Laboratories. All laboratories achieved the minimum target of at least 65% of cytological HSIL+SC being confirmed by histology. Three of the seven laboratories exceeded the 85% upper target margin of HSIL+SC being histologically confirmed (Figure 56, Table 50). ***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*** 1,159 women with a cytology report of ASC-H were identified. 198 (17.1%) had no histology taken in the period from five days prior to six months after the cytology sample. Among the remaining 961 women, 448 (46.6%) were histologically confirmed as high grade. This proportion varied by laboratory,

from 41.0% (LabPLUS) to 54.5% (Canterbury Health Laboratories) (Figure 57, Table 51).

ASC-H+HSIL+SC

A total of 2,805 women had a cytology report of ASC-H, HSIL or SC. 306 (10.9%) had no histology taken in the period from five days prior to six months after the cytology sample. Among the remaining 2,499 women, 1,731 (69.3%) were histologically confirmed as high grade. This proportion varied by laboratory, from 58.5% (LabPLUS) to 79.3% (Southern Community Labs) (Figure 57, Table 52).

Glandular abnormalities

There were 243 women with a glandular abnormality (AG1-AG5, AIS, AC1-AC4) identified. 71 women (29.2%) had no histology taken in the period from five days prior to six months after the cytology sample. Among the remaining 172 women, 82 (47.7%) 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 is similar to the previous monitoring report (83.4% in the previous period; 84.1% in the current period). As in the previous monitoring period, all laboratories had at least 65% of their HSIL + SC cytology results confirmed by histology. The number of laboratories with PPVs above the upper target of 85% has increased from two to three. The proportion of cytology reports with histology available following HSIL or SC results is similar (93.5% in the previous report; 93.4% in the current report). Trends in the positive predictive value for HSIL and SC cytology by laboratory are shown in Figure 58.

ASC-H

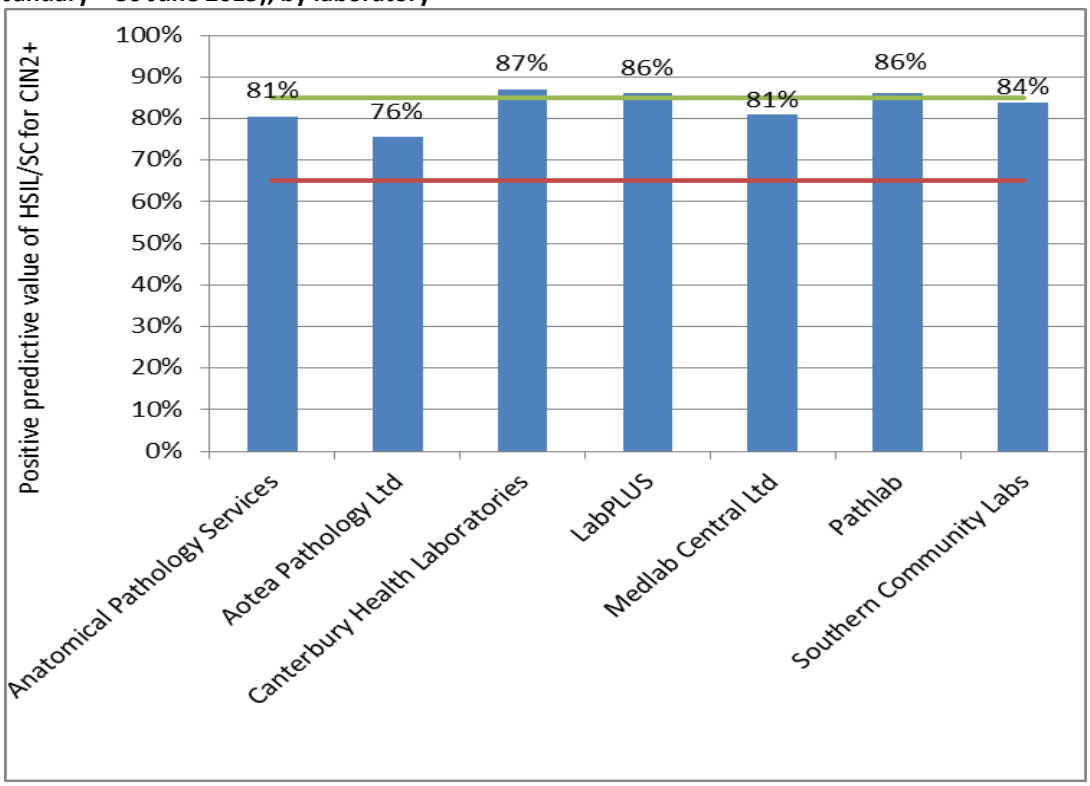
Positive predictive value for ASC-H cytology has decreased, from 51.4% to 46.6%, however there is no target for this measure. The proportion of ASC-H cytology reports with histology available has remained similar in the current report compare to the previous monitoring report (82.9% in current report; 82.6% in previous report).

ASC-H+HSIL+SC

The positive predictive value for the combined group ASC-H, HSIL and SC has decreased from what it was in the previous report (72.2%) to what it is in the current report (69.3%), however there are no targets for the positive predictive value of the combined group of ASC-H, HSIL and SC. Trends in the positive predictive value for the combined group ASC-H, HSIL and SC cytology by laboratory are shown in Figure 59.

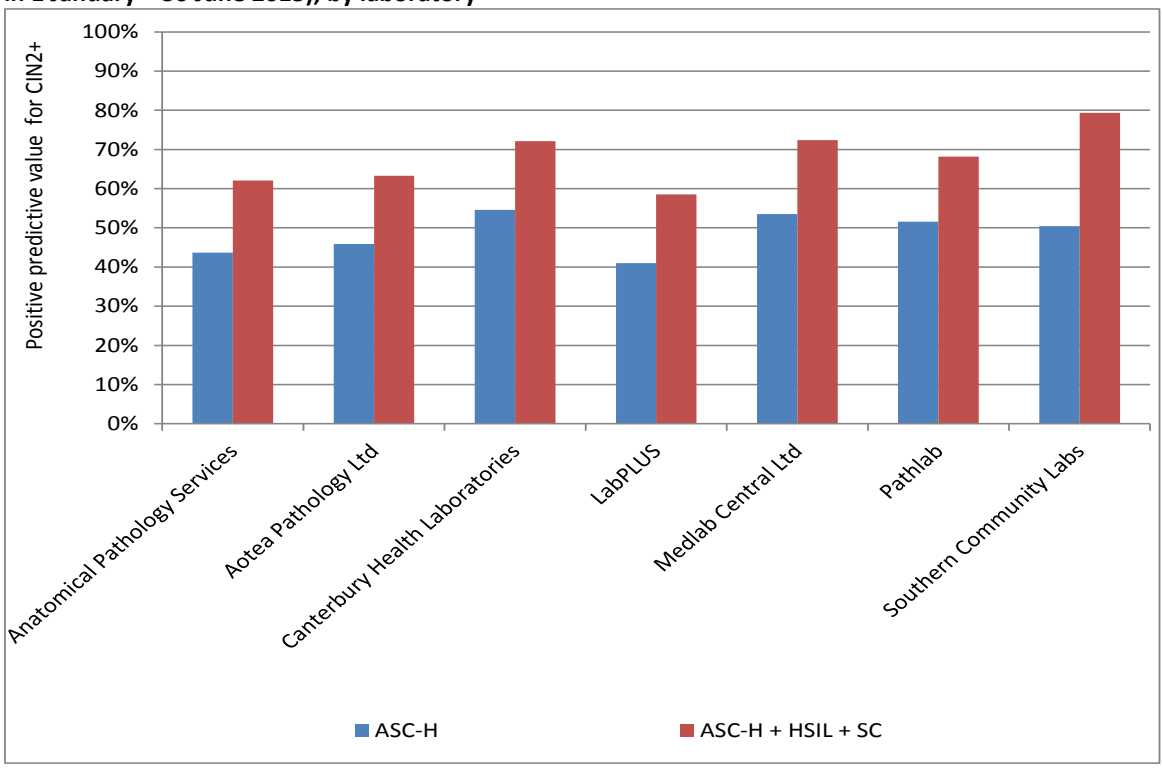
	Glandular abnormalities The positive predictive value of glandular abnormalities decreased (from 55.1% in the previous report to 47.7% in the current report). Compared to both ASC-H cytology, and the combined group of HSIL and SC cytology, there are far fewer glandular abnormalities, and an even smaller number with histology available. The proportion of glandular abnormalities with histology available (70.8%) is lower than that in the previous reporting period (72.8%), and remains less than that for ASC-H (82.9%) and HSIL + SC (93.4%). As a result, the positive predictive value of glandular abnormalities is more prone 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 it 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 56 - Positive predictive value for CIN2+ in women with HSIL or SC cytology reports (cytology in 1 January – 30 June 2015), by laboratory



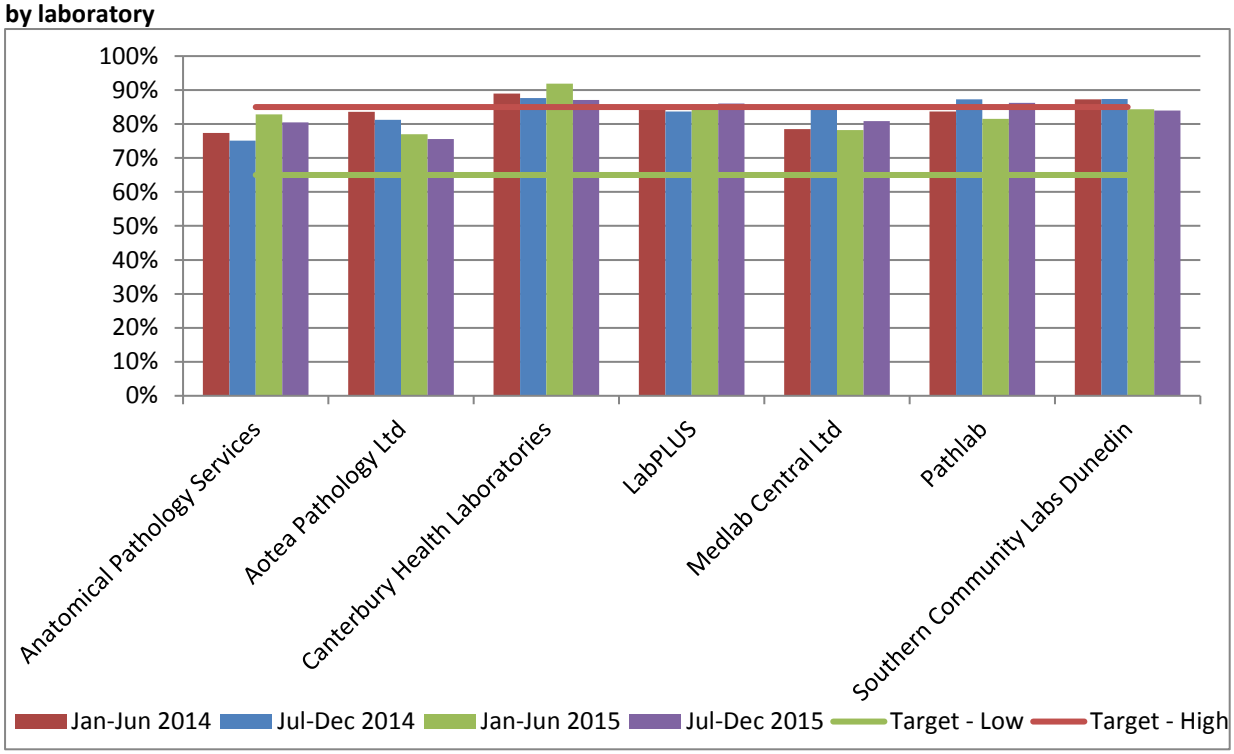
Target: 65% - 85%. Cytology prior to 1 Feb 2015 was reported on by Diagnostic Medlab Ltd, not Anatomical Pathology Services, however the catchment was very similar between the two laboratories.

Figure 57 - Positive predictive value for CIN2+ in women with other high grade cytology results (cytology in 1 January – 30 June 2015), by laboratory



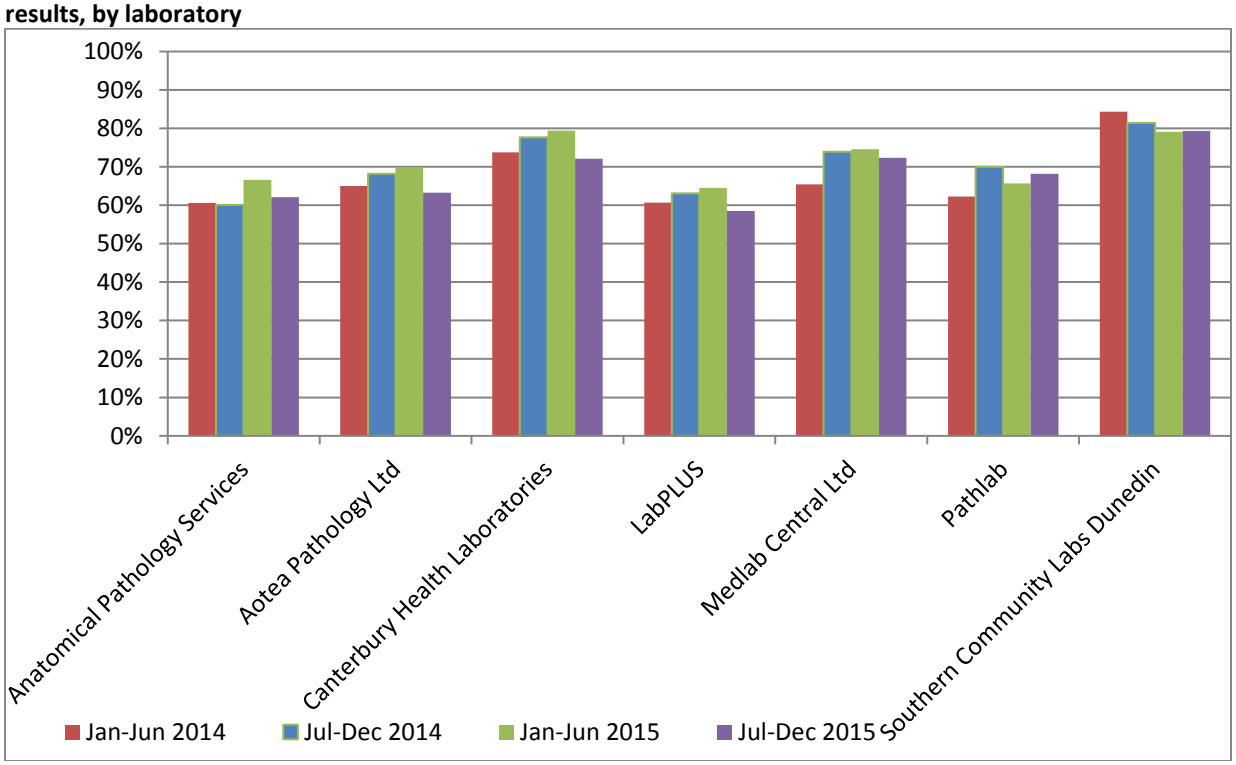
Cytology prior to 1 Feb 2015 was reported on by Diagnostic Medlab Ltd, not Anatomical Pathology Services, however the catchment was very similar between the two laboratories.

Figure 58 – 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 59 – Trends in the positive predictive value for CIN2+ in women with ASC-H, HSIL or SC cytology results, by laboratory

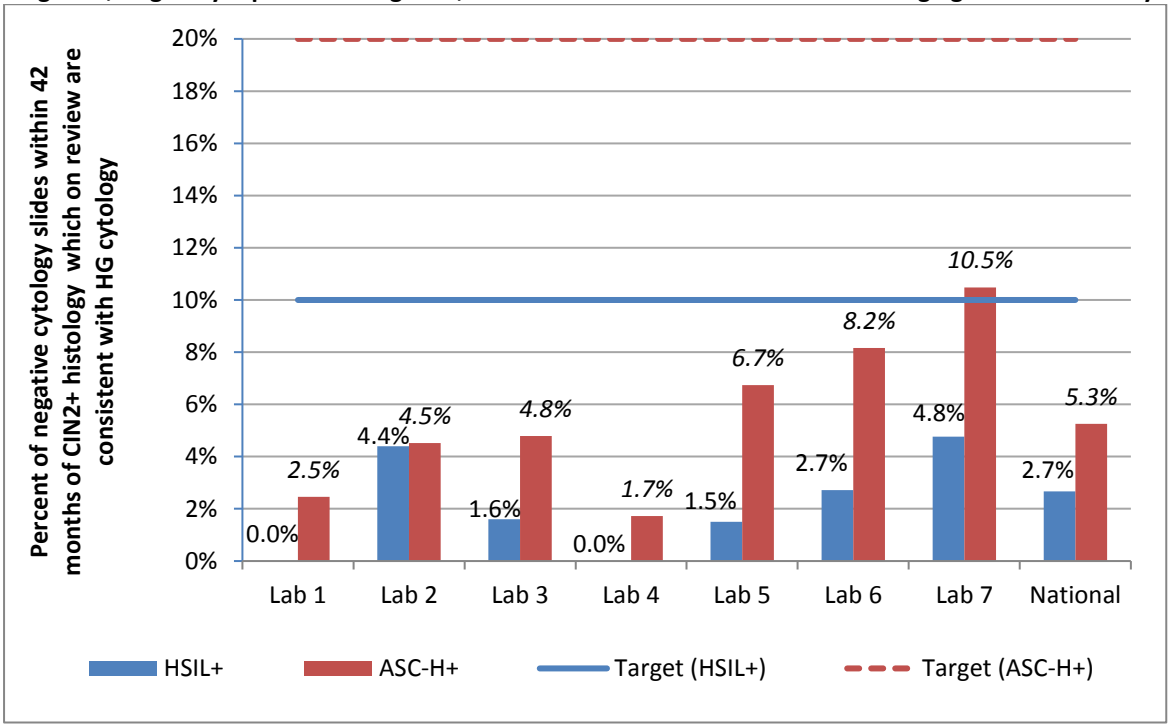


Time period relates to monitoring report period; cytology samples were collected in the period six months prior. Cytology prior to 1 Feb 2015 was reported on by Diagnostic Medlab Ltd, not Anatomical Pathology Services, however the catchment was very similar between the two laboratories.

Indicator 5.3 – Accuracy of negative cytology reports

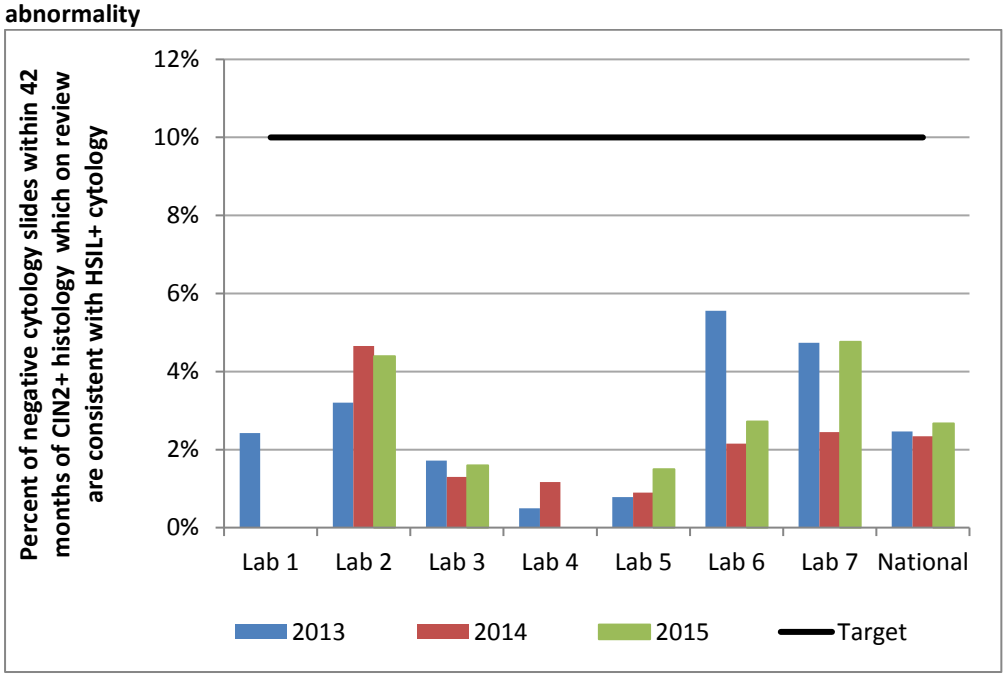
Definition	This indicator currently has two parts to its definition. 1. For women with a histological diagnosis of CIN2, CIN3, invasive SCC, AIS or invasive endocervical adenocarcinoma, the proportion of cytology slides originally reported within the preceding 42 months as negative, benign/reactive or 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	Data required for this measure were not available directly from the NCSP Register for the current reporting period, but was provided by the National Screening Unit and does not identify laboratories. Data were provided for women with a histological diagnosis of high-grade/invasive disease in the period 1 January – 31 December 2015, for whom the previous cervical smear, within the 42 months prior, was negative. Nationally, 2.7% of these previous smears were consistent with HSIL+ on review, and 5.3% were consistent with ASC-H+/ AG4+ on review (Figure 60). These results varied by laboratory, from 0% to 4.8% for HSIL+ and from 1.7% to 10.5% for ASC-H + (Figure 60). No laboratory exceeded the targets, nor the additional aim of achieving less than 15% for ASC-H.
Trends	The proportion of slides that were consistent with a high grade or worse abnormality decreased from 2013 to 2014, but increased from 2014 to 2015, from 2.5% to 2.3% to 2.7% for HSIL+, and from 5.7% to 4.7% to 5.3% for ASC-H+. Trends by laboratory are shown in Figure 61 (HSIL+) and Figure 62 (ASC-H+).
Comments	Laboratories are not identified for this indicator.

Figure 60- Proportion of cytology slides within the 42 months preceding a high grade/ invasive histological diagnosis, originally reported as negative, which on review are consistent with a high grade abnormality



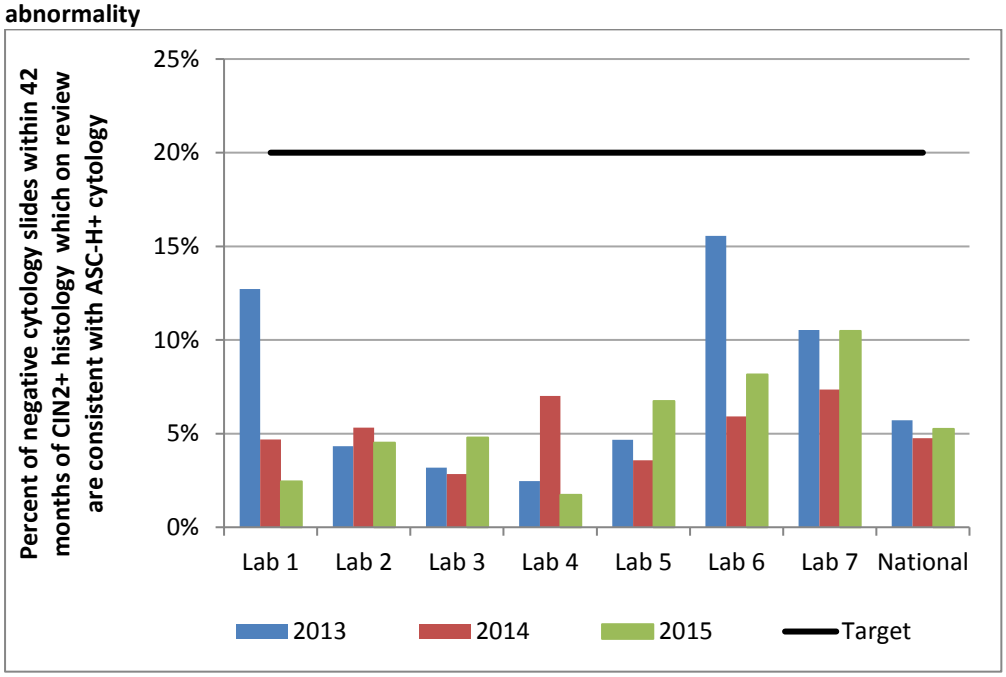
HSIL+ includes cytology interpretation codes HS1, HS2, SC, AIS or AC1-5; ASC-H+ includes cytology interpretation codes ASH, HS1, HS2, SC, AIS or AC1-5 (see Appendix B – Bethesda 2001 New Zealand Modified).

Figure 61 – Trends in the proportion of cytology slides within the 42 months preceding a high grade/ invasive histological diagnosis, originally reported as negative, which on review are consistent with HSIL or worse abnormality



HSIL+ includes cytology interpretation codes HS1, HS2, SC, AIS or AC1-5; (see Appendix B – Bethesda 2001 New Zealand Modified).

Figure 62 – Trends in the proportion of cytology slides within the 42 months preceding a high grade/ invasive histological diagnosis, originally reported as negative, which on review are consistent with ASC-H or worse abnormality



ASC-H+ includes cytology interpretation codes ASH, HS1, HS2, SC, AIS or AC1-5 (see Appendix B – Bethesda 2001 New Zealand Modified).

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 reporting period.
Target	None
Current Situation	13,889 histology samples were taken during the current reporting period. 490 (3.5%) of these were insufficient for diagnosis. The remaining 13,399 samples were taken from 11,703 women. Results for these women are reported on in detail in Table 7 to Table 10. The 490 samples which were insufficient for diagnosis were taken from 485 women, 69 (14%) of whom have a record of a subsequent sufficient histology test. Table 7 shows histology results by detailed SNOMED category, based on the most serious (highest) ranked result for each woman in the monitoring period. Tables 12-14 show histology results by broader histology diagnostic category. 53.4% of women with histology tests had negative or benign histology results (Table 8). 20.9% of women had high grade squamous (CIN2/3) histology results. 41 (0.35%) women had histology results which were invasive squamous cell carcinoma (ISCC), 11 (0.09%) which were microinvasive SCC, 31 (0.26%) which were invasive adenocarcinoma (not endocervicle type), 8 (0.07%) which were adenocarcinoma endocervicle type, 70 (0.60%) which were adenocarcinoma in situ, and 2 (<0.05) which were adenosquamous carcinoma. The age group with the largest number of women with histology samples was women aged 25-29 years (1,677 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 20-24 years (34.2%, Table 10).

Trends	The proportion of women with negative or benign histology (53.4%) is similar to that reported for the previous period (52.4%) The proportion of women with HSIL histology is also similar in the current period (20.9%) to what it was in the previous period (20.5%). The proportions were similar to those in the previous period for women with ISCC (0.35% this period and 0.40% last period), and invasive adenocarcinoma of the endocervical type and not endocervical type (0.26% and 0.07% in this period and 0.24% and 0.05 in the last period, respectfully). The proportion was also similar for women with adenocarcinoma in situ (0.60% this period and 0.62% 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	3,359	28.7
Inflammation	756	6.5
Microglandular hyperplasia	17	0.15
Squamous metaplasia	447	3.8
Atypia	92	0.8
HPV	845	7.2
Condyloma acuminatum	6	0.05
Dysplasia/CIN NOS	39	0.33
CIN 1 (LSIL) or VAIN 1	1,758	15.0
CIN 2 (HSIL) or VAIN 2	995	8.5
CIN 3 (HSIL) or VAIN 3	1,451	12.4
HSIL not otherwise specified	70	0.6
Polyp	1,269	10.8
Other*	400	3.4
Microinvasive squamous cell carcinoma	11	0.09
Invasive squamous cell carcinoma	41	0.35
Benign glandular atypia	2	<0.05
Glandular dysplasia	-	-
Adenocarcinoma in situ	70	0.60
Invasive adenocarcinoma (endocervical type)	8	0.07
Invasive adenocarcinoma (not endocervical type)	31	0.26
Adenosquamous carcinoma	2	<0.05
Metastatic tumour	15	0.13
Undifferentiated carcinoma	1	<0.05
Sarcoma	3	<0.05
Carcinosarcoma	2	<0.05
Choriocarcinoma	-	-
Miscellaneous primary tumour	2	<0.05
Small cell carcinoma	1	<0.05
Malignant tumour, small cell type	-	-
Melanoma	1	<0.05
Other primary epithelial malignancy	9	0.08
Total	**11,703**	**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)	6,250	53.4
HPV	851	7.3
CIN1	1,889	16.1
CIN2	995	8.5
CIN3	1,451	12.4
HSIL not otherwise specified	70	0.6
Microinvasive	11	0.09
Invasive squamous cell carcinoma	41	0.35
Glandular dysplasia	-	-
Adenocarcinoma in situ	70	0.60
Invasive adenocarcinoma (endocervical type)	8	0.07
Invasive adenocarcinoma (not endocervical type)	31	0.26
Adenosquamous carcinoma	2	<0.05
Other cancer	34	0.29
Total	**11,703**	**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)	21	336	461	447	598	887	1,129	890	561	365	277	278	6,250
HPV	-	160	131	108	110	94	75	66	44	38	20	5	851
CIN1	8	431	384	297	183	176	147	127	69	33	25	9	1,889
CIN2	8	280	254	164	100	69	48	33	20	11	6	2	995
CIN3	5	214	414	309	173	115	90	52	30	26	17	6	1,451
HSIL not otherwise specified	1	19	11	13	9	5	6	1	1	1	1	2	70
Microinvasive	-	-	2	2	1	3	-	2	1	-	-	-	11
Invasive squamous cell carcinoma	-	-	3	5	2	8	3	2	7	4	2	5	41
Glandular dysplasia	-	-	-	-	-	-	-	-	-	-	-	-	-
Adenocarcinoma in situ	-	7	16	17	15	4	5	2	2	-	2	-	70
Invasive adenocarcinoma (endocervical type)	0	1	0	0	0	2	1	1	0	1	0	2	8
Invasive adenocarcinoma (not endocervical type)	0	0	0	1	1	4	5	4	1	3	3	9	31
Adenosquamous carcinoma	-	-	-	1	-	-	-	1	-	-	-	-	2
Other cancer	-	1	1	-	2	1	3	3	5	3	5	10	34
Total	**43**	**1,449**	**1,677**	**1,364**	**1,194**	**1,368**	**1,512**	**1,184**	**741**	**485**	**358**	**328**	**11,703**

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)	48.8	23.2	27.5	32.8	50.1	64.8	74.7	75.2	75.7	75.3	77.4	84.8
HPV	-	11.0	7.8	7.9	9.2	6.9	5.0	5.6	5.9	7.8	5.6	1.5
CIN1	18.6	29.7	22.9	21.8	15.3	12.9	9.7	10.7	9.3	6.8	7.0	2.7
CIN2	18.6	19.3	15.1	12.0	8.4	5.0	3.2	2.8	2.7	2.3	1.7	0.6
CIN3	11.6	14.8	24.7	22.7	14.5	8.4	6.0	4.4	4.0	5.4	4.7	1.8
HSIL not otherwise specified	2.3	1.3	0.7	1.0	0.8	0.4	0.40	0.08	0.13	0.21	0.28	0.6
Microinvasive	-	-	0.12	0.15	0.08	0.22	-	0.17	0.13	-	-	-
Invasive squamous cell carcinoma	-	-	0.18	0.37	0.17	0.58	0.20	0.17	0.94	0.82	0.6	1.5
Glandular dysplasia	-	-	-	-	-	-	-	-	-	-	-	-
Adenocarcinoma in situ	-	0.48	0.95	1.25	1.26	0.29	0.33	0.17	0.27	-	0.56	-
Invasive adenocarcinoma (endocervical type)	-	0.07	-	-	-	0.15	0.07	0.08	-	0.21	-	0.6
Invasive adenocarcinoma (not endocervical type)	-	-	-	0.07	0.08	0.29	0.33	0.34	0.13	0.62	0.8	2.7
Adenosquamous carcinoma	-	-	-	0.07	-	-	-	0.08	-	-	-	-
Other cancer	-	0.07	0.06	-	0.17	0.07	0.20	0.25	0.67	0.62	1.4	3.0
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).

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 (also 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 (also Standard 516[11]). ***Cytology with associated hrHPV 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 reporting 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 hrHPV testing requires that both test results be reported together (hrHPV test results must not be issued independently when adjunct to a cytology request), the turnaround time of the hrHPV test should not exceed that of the accompanying cytology.
Current Situation	***Cytology*** Seven laboratories received 220,502 cytology samples during the current reporting period. Overall, 95.0% of cytology samples were reported on within seven working days, which is above the target of 90%. Nationally, 98.7% were reported on within 15 working days, which is above the target of 98% (Table 53). Six of the seven laboratories met the target for 90% of cytology samples to be reported to smear-takers in seven working days or less (Anatomical Pathology Services, Aotea Pathology Ltd, LabPLUS, Medlab Central Ltd, Pathlab and Southern Community Labs). The remaining laboratory (Canterbury Health

Laboratories) had reported 88.5% within seven working days. (Figure 63, Table 53).

Six laboratories met the target of 98% of samples reported within 15 working days (Anatomical Pathology Services, Aotea Pathology Ltd, Canterbury Health Laboratories, LabPLUS, Pathlab and Southern Community Labs) (Figure 64, Table 53). The remaining laboratory (Medlab Central Ltd) had reported on 97.9% of cytology samples within 15 working days.

Histology

Sixteen laboratories received 12,729 histology samples in the current reporting period. Overall 91.4% of samples were reported on within ten working days, which is above the target of 90%. Nationally 94.5% were reported on in 15 working days or less, which is below the target of 98% (Table 54).

Ten 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, Aotea Pathology Ltd, Canterbury Health Laboratories, LabPLUS, Medlab Central Ltd, Nelson Hospital Laboratory, North Shore Hospital Laboratory, Southern Community Labs Dunedin, Taranaki Medlab, Waikato Hospital Laboratory) (Figure 65, Table 54). Six laboratories met the target of 98% of final histology results within 15 working days of receiving the sample; all 5 of the remaining 10 laboratories had reported on at least 95% of samples within 15 days (Figure 66, Table 54).

Low grade cytology with associated HPV triage testing

Seven laboratories received 3,135 cytology samples during the current reporting period which were associated with HPV testing for the purpose of triage of low grade abnormalities. Overall, 98.5% 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 93.6% (Canterbury Health Laboratories) to 100.0% (Aotea Pathology Ltd) (Figure 67, Table 55). 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 (98.5%) was the similar to that for all cytology reported (98.7%). 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 67).

Trends

Cytology

The overall proportion of samples reported on within seven working days is higher in the current report (95.0%) than in the previous monitoring period (93.8%). The number of laboratories meeting the cytology turnaround time target of 90% for seven working days has increased from five to six laboratories. The proportion of samples reported on within 15 working days was slightly lower in the current reporting period (98.7%, compared to 98.9% in the previous reporting period). The number of laboratories meeting the target remained at six laboratories. All seven laboratories had reported on at

least 95% of samples within 15 working days in the current monitoring period, as was also the case in the previous monitoring period.

Histology

The proportion of histology samples reported on within ten working days has decreased from 92.1% to 91.4%, however the number of labs meeting the ten-working-days target has increase from nine to ten. The proportion of histology samples reported on within 15 working days is lower (94.5%, compared to 95.7% in the previous report). The number of laboratories meeting the fifteen-working-days target (six) is higher than in the previous reporting period (four). In the current period, 11 of the 16 laboratories had reported on at least 95% of samples within 15 days, which is the same as the previous period.

Cytology with associated HPV triage testing

The proportion of cytology samples with an associated HPV triage test reported within 15 working days has decreased slightly since the previous report – from 98.6% to 98.5%.

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 reporting period, rather than cytology samples *collected* during the reporting period which was the criteria for Indicator 5.1.

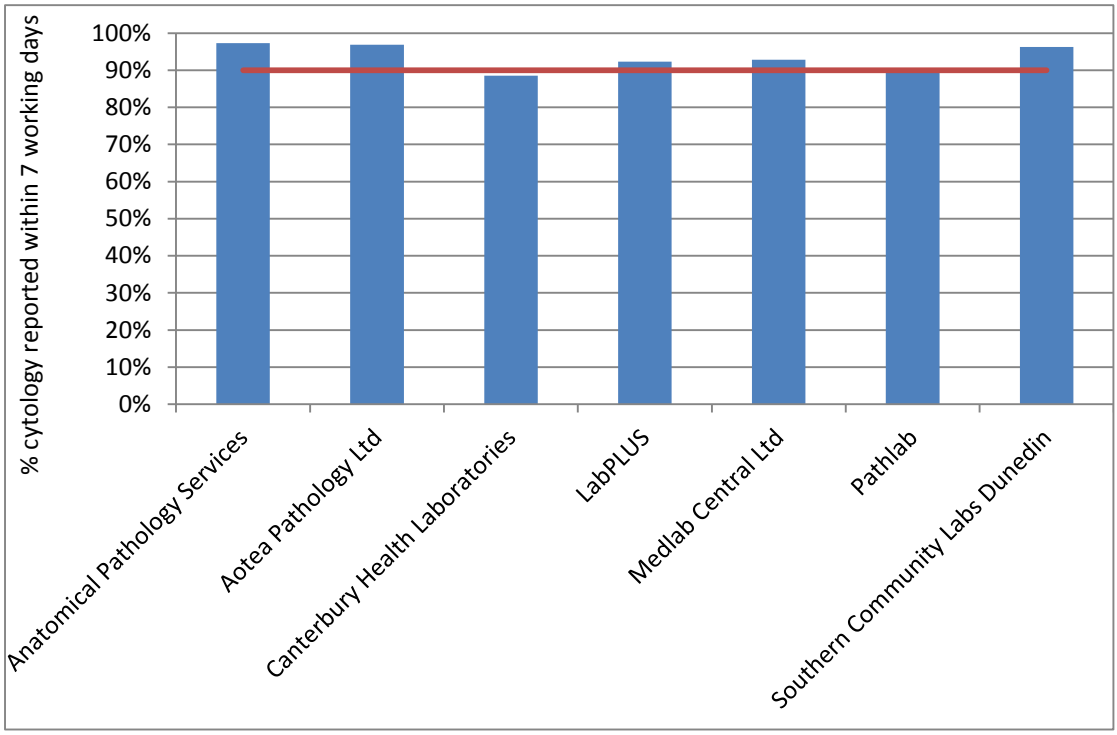
The definition used by individual laboratories for turnaround time differs. For example, depending on the definition used by the laboratory, a turnaround time of one day can mean the results are reported within 24 hours, on the same day the sample is received, or on the day after the sample is received. 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

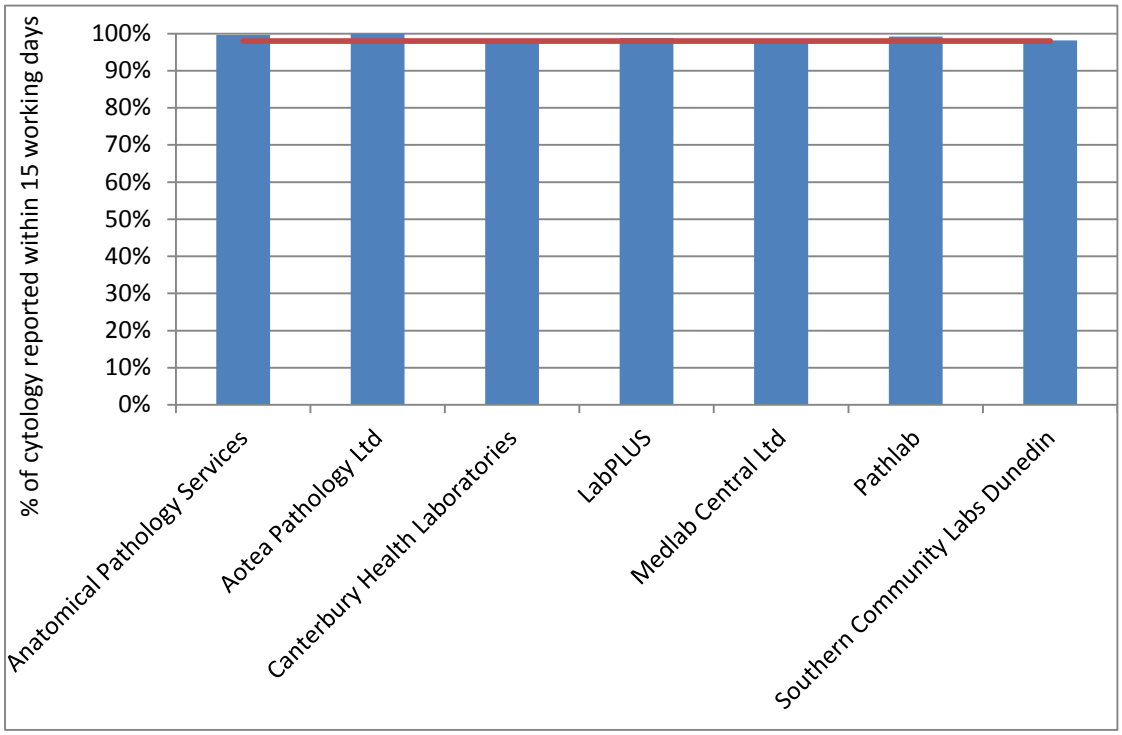
batches, laboratories with smaller HPV test volumes may take longer to accrue the required batch sizes, and therefore perform HPV tests less frequently.

Figure 63 – Proportion of cytology samples reported within seven working days by laboratory, 1 July - 31 December 2015



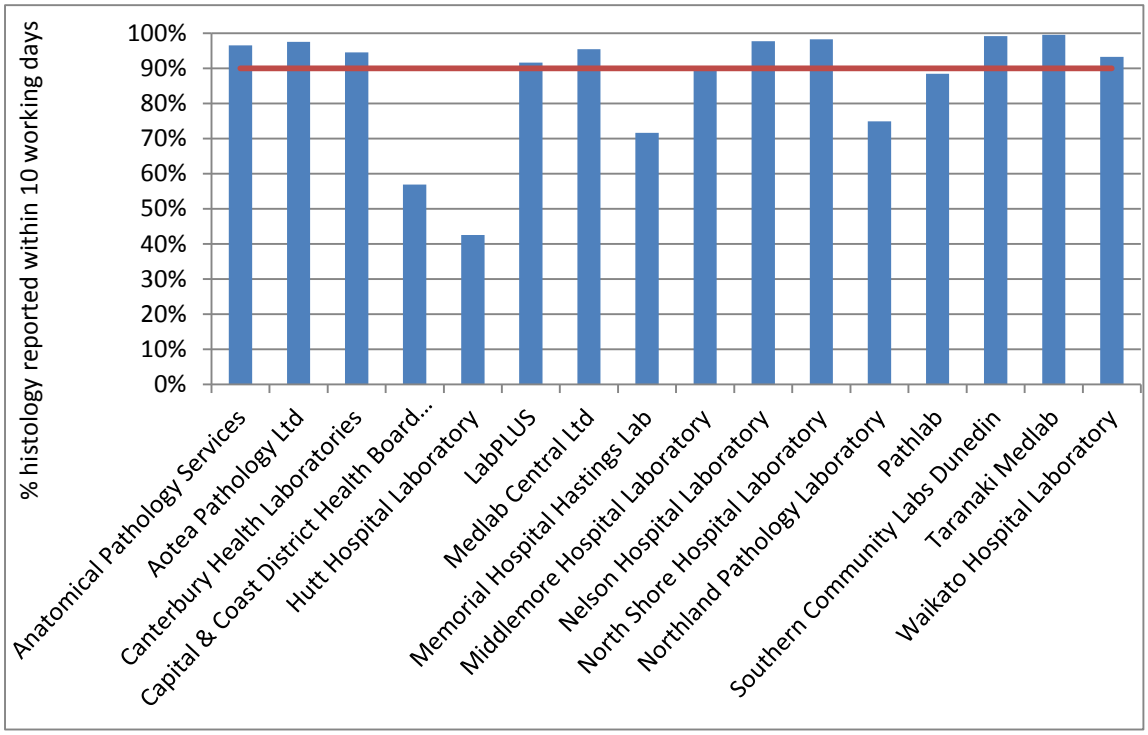
Target: 90% within seven working days (red line)

Figure 64 – Proportion of cytology samples reported within 15 working days by laboratory, 1 July - 31 December 2015



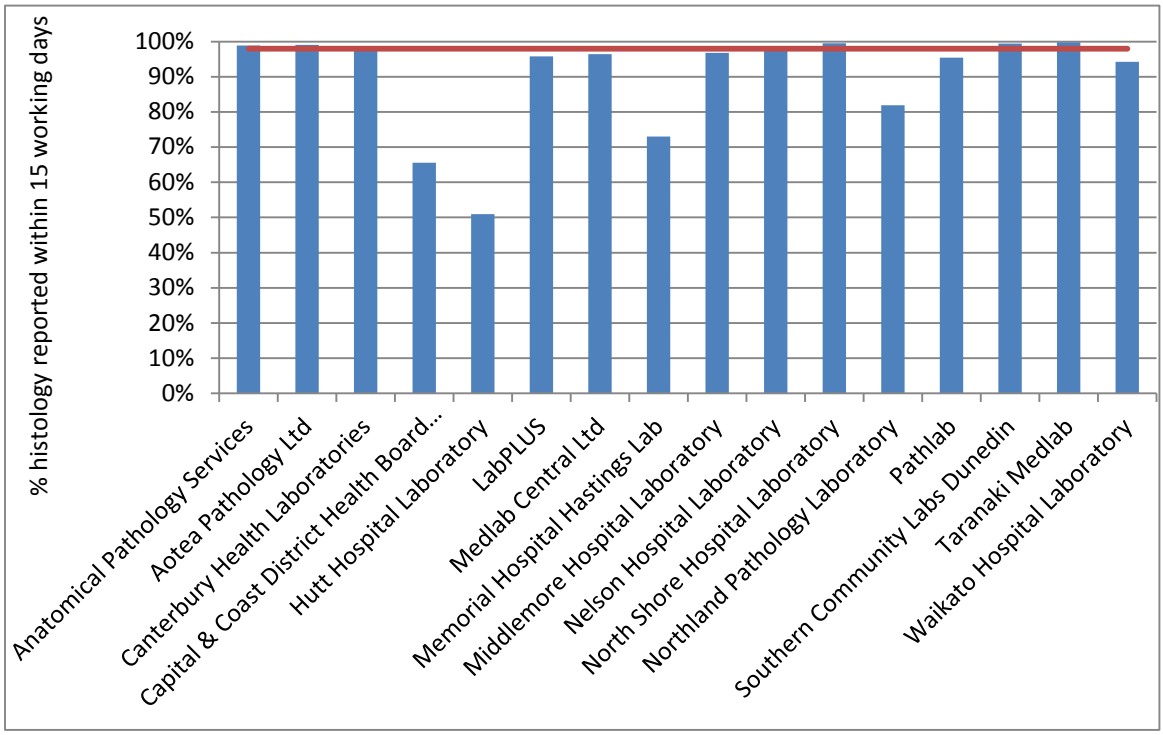
Target: 98% within 15 working days (red line)

Figure 65 – Proportion of histology samples reported within ten working days by laboratory, 1 July - 31 December 2015



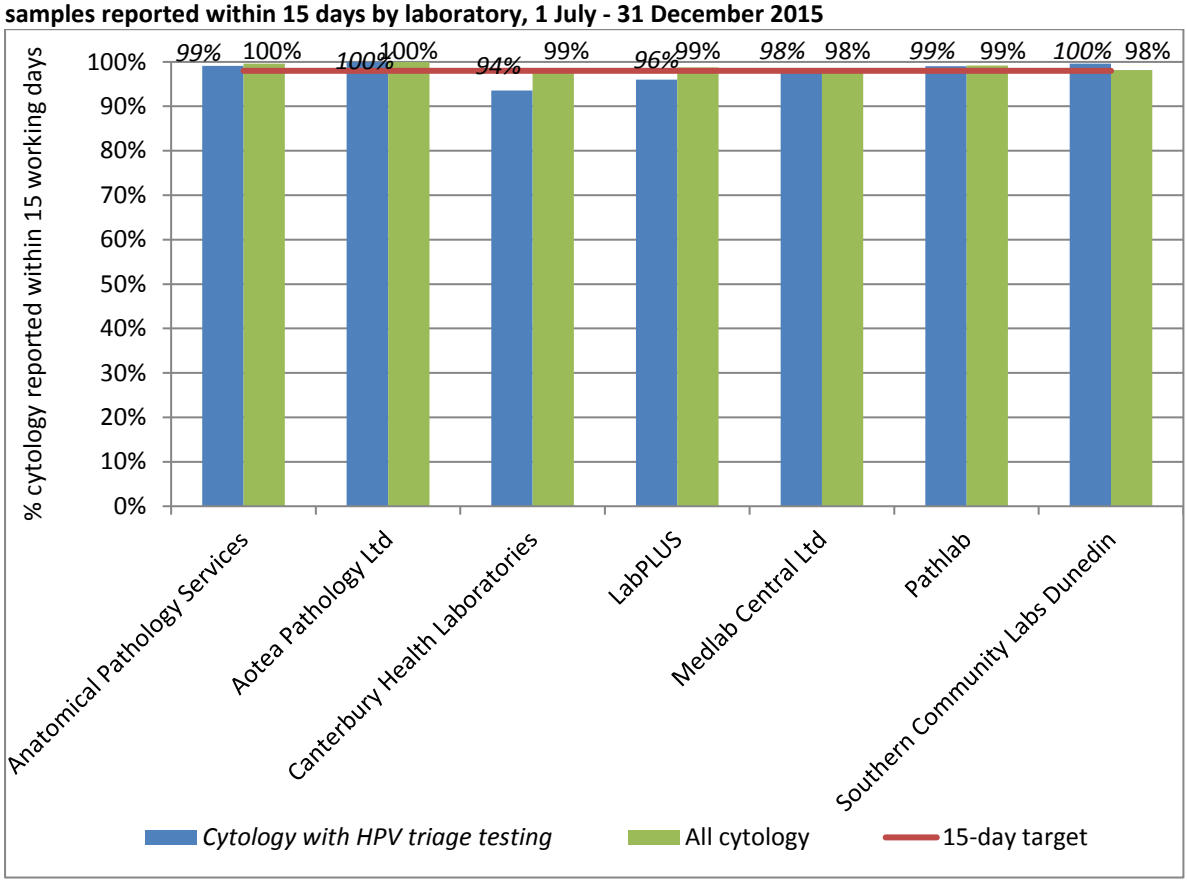
Target: 90% within ten working days (red line)

Figure 66 – Proportion of histology samples reported within 15 working days by laboratory, 1 July - 31 December 2015



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

Figure 67 – Proportion of cytology samples with associated HPV triage testing and of all cytology samples reported within 15 days by laboratory, 1 July - 31 December 2015



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

Indicator 6 – Follow up women with 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 reporting period (ie sample taken in the period of 1 January – 30 June 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 reporting period (ie 31 December 2015).
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 3,475 high grade cytology results relating to samples collected in the period 1 January – 30 June 2015; 1,332 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 2,143 cytology results, which related to 2,133 women. Histological follow-up for these 2,133 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, 1,765 women (82.7%) had a histology report within 90 days of their cytology report, and 1,887 (88.5%) 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 72.7% (Lakes) to 95.1% (Hutt Valley) within 90 days of their cytology report, and from 76.5% (Whanganui) to 97.6% (Hutt Valley) within 180 days of their cytology report (Figure 68, Table 11). Hutt Valley was the only DHB to meet the target for the proportion of women with histology within 90 days. No DHB's met the target for 180 days. As shown in Table 13, 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 21 and 19 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 70.8% (ages 60-64 years) to 87.4% (ages 40-44 years) within 90 days, and from to 78.2% (ages 50-54 years) to 92.5% (ages 25-29 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 75.2% (Pacific women) to 85.2% (European/Other women). By 180 days, however, the difference had narrowed, and histology reports were available for 89.0% of Pacific women and 90.3% 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 56 and Table 57.

Among women with an urgent referral, due to a suspicion of invasive disease, a histology report was available within 90 days for 85.7% of women and within 180 days for 90.5% of women (Table 15). Among women where there was no suspicion of invasive disease (NZ modified Bethesda 2001 codes ASH, HS1, AG1-5, AIS), 82.7% had a histology report available within 90 days and 88.4% 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 199 women (9.3%) who had no record of any subsequent follow-up within 90 days and 126 women (5.9%) who had no record of any subsequent follow-up within 180 days on the NCSP Register (Table 16).

This varied by DHB from 0% women without follow-up of some kind (Wairarapa) to 15.4% (Tairawhiti) by 90 days and from 0% women without follow-up of some kind (Wairarapa) to 11.4% (Lakes) by 180 days (Figure 69, Table 16). Where there were women without any follow-up tests recorded, the number was generally small in most DHBs. At 90 days, the number remaining without follow-up was ten or fewer in 15 DHBs and a maximum of 34 women in Auckland. At 180 days, the number remaining without follow-up was ten or fewer in 16 DHBs, with a maximum of 22 women without follow-up in Waitemata.

The proportion of women who had no record of any subsequent follow-up also varied by ethnicity, from 7.4% (European/Other women) to 16.5% (Pacific women) at 90 days and from 4.2% (European/Other women) to 11.3% (Māori women) at 180 days (Figure 70).

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 87.3% of women and within 180 days for 88.9% of women (Table 15). At 180 days, there remained 7 women (11.1%) 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), 90.8% had a follow-up test report available within 90 days and 94.3% within 180 days (Table 15). At 180 days, there remained 119 women (5.7%) for whom no follow-up tests were recorded.

Trends

Histological follow-up

The proportion of women with a histology report within 90 days has increased slightly since the previous reporting period (from 81.4% to 82.7% in the current period). The proportion of women with a histology report within 180 days has also increased, from 87.7% in the previous period to 88.5% in the current period.

While the proportion of women with histological follow-up has increased overall, this still varies for individual DHBs. In 5 DHBs the proportion of women with histological follow-up has decreased at 90 days and at 180 days (Auckland,

Capital & Coast, South Canterbury Wairarapa and Waitemata). In 9 DHBs, the proportion of women with histological follow-up increased at both 90 days and at 180 days (Canterbury, Hawke's Bay, Hutt Valley, Lakes, Mid Central, Nelson Marlborough, Southern, Taranaki and Whanganui).

The proportion of women with follow-up histology at 90 days in the current monitoring period has increased overall for all ethnic groups (82.4% in the current monitoring period, 81.4% in the previous period). Although there was a 2.7 percentage point decrease for Asian women (from 80.1% to 77.4%), Māori (from 75.4% to 77.6%), Pacific (from 72.9% to 75.2%) and European/Other women (from 83.7% to 85.2%) all had increased follow-up in the current monitoring period compared to the previous monitoring period. An increase in the proportion of women with follow-up histology at 180 days was seen for Pacific and European/ Other women (from 83.1% to 89.0% and 89.1% to 90.3%, respectively), and decreased for Māori and Asian women (from 83.9% to 82.4% and 86.5% to 84.9%, respectively). The proportions of women with follow-up histology are quite variable within individual DHBs, as the number of women with high grade cytology generally becomes comparatively small when broken down by both DHB and ethnicity (except 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. Increased proportions of histological follow-up in the current monitoring period for women aged 50-54 (from 66% to 74%) and 65-69 (from 46% to 78%) at 90 days have reduced the size of this difference compared to that seen in previous monitoring periods.

Women with no follow-up tests

The proportion of women with no record of a follow-up test has increased slightly since the previous period at 90 days, from 9.0% to 9.3%, and also at 180 days, from 5.2% to 5.9%.

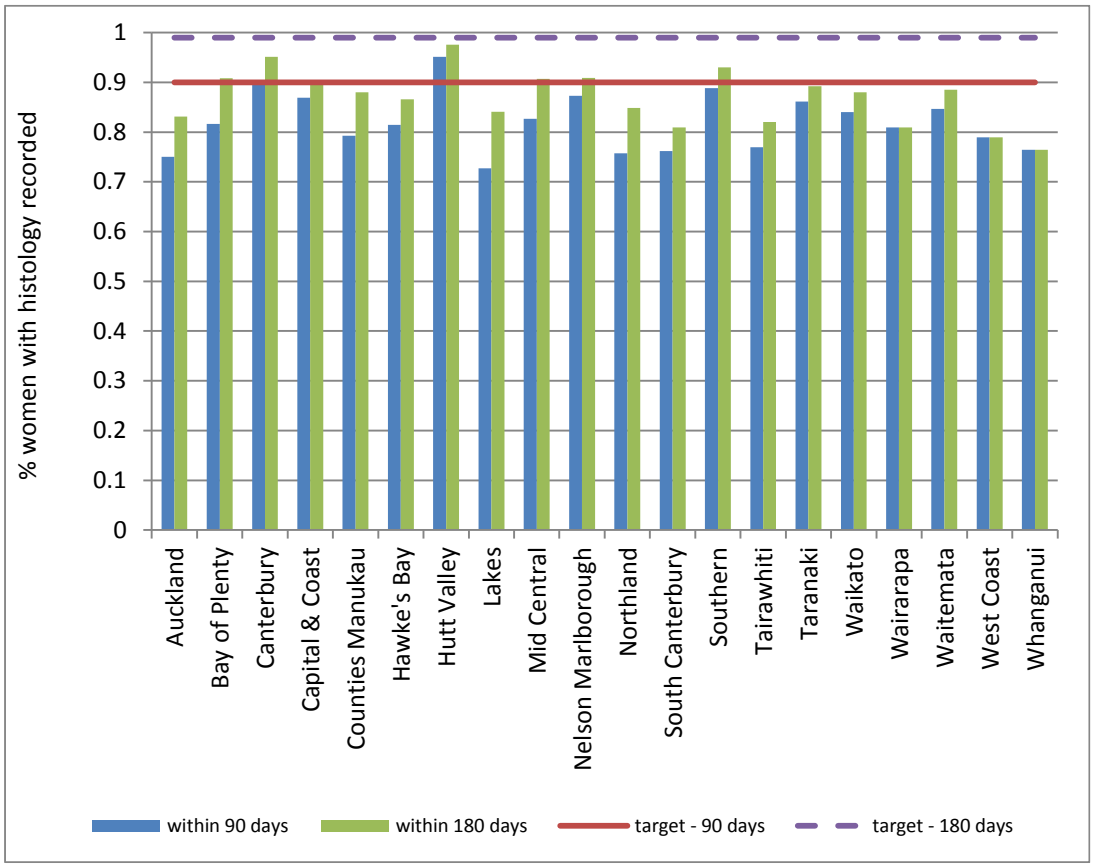
Trends by DHB were complex, but reductions in the proportion of women with no follow-up test recorded at 180 days were observed in 8 of the 20 DHBs, and were greatest in Hutt Valley, Southern and Tairawhiti. Increases were observed in some other DHBs, and were largest in Lakes, Northland and Whanganui.

In the current monitoring period, the proportions of women for whom there was no follow-up test recorded has increased for Māori, Asian and European/ Other women at both 90 days and 180 days. For Māori women the increase was from 12.9% to 14.4% at 90 days and 7.3% to 11.3% at 180 days. For Asian women the increase was from 10.5% to 10.8% at 90 days, and from 5.3% to 8.6% at 180 days. For European/ Other women the increase was from 7.1% to 7.4% at 90 days, and from 4.1% to 4.2% at 180 days. For Pacific women the proportion with no follow-up test recorded decreased at 90 days from 19.5% to 16.5%, and from 12.7% to 6.4% was at 180 days.

Comments	The proportion of women with a follow-up test of any kind provides useful additional information. While 17.3% 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 (9.3%). The same was also true at 180 days, where 11.5% 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 (5.9%). 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 current monitoring period, 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 68 - 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	272	204	75.0	226	83.1
Bay of Plenty	109	89	81.7	99	90.8
Canterbury	247	221	89.5	235	95.1
Capital & Coast	107	93	86.9	96	89.7
Counties Manukau	217	172	79.3	191	88.0
Hawke's Bay	97	79	81.4	84	86.6
Hutt Valley	41	39	95.1	40	97.6
Lakes	44	32	72.7	37	84.1
Mid Central	75	62	82.7	68	90.7
Nelson Marlborough	55	48	87.3	50	90.9
Northland	66	50	75.8	56	84.8
South Canterbury	21	16	76.2	17	81.0
Southern	143	127	88.8	133	93.0
Tairawhiti	39	30	76.9	32	82.1
Taranaki	65	56	86.2	58	89.2
Waikato	200	168	84.0	176	88.0
Wairarapa	21	17	81.0	17	81.0
Waitemata	261	221	84.7	231	88.5
West Coast	19	15	78.9	15	78.9
Whanganui	34	26	76.5	26	76.5
Total	**2,133**	**1,765**	**82.7**	**1,887**	**88.5**

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	8	7	87.5	7	87.5
20-24	363	293	80.7	316	87.1
25-29	535	465	86.9	495	92.5
30-34	357	304	85.2	322	90.2
35-39	213	179	84.0	194	91.1
40-44	159	139	87.4	143	89.9
45-49	135	118	87.4	123	91.1
50-54	124	92	74.2	97	78.2
55-59	103	74	71.8	82	79.6
60-64	65	46	70.8	54	83.1
65-69	40	31	77.5	35	87.5
70+	31	17	54.8	19	61.3
Total	**2,133**	**1,765**	**82.7**	**1,887**	**88.5**

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	16	69.6	19	67.9	49	76.6	120	76.4
Bay of Plenty	24	70.6	-	-	2	100.0	63	86.3
Canterbury	16	72.7	5	100.0	15	93.8	185	90.7
Capital & Coast	9	81.8	5	100.0	4	57.1	75	89.3
Counties Manukau	28	77.8	37	77.1	32	84.2	75	78.9
Hawke's Bay	20	83.3	1	50.0	1	33.3	57	83.8
Hutt Valley	12	92.3	1	100.0	2	100.0	24	96.0
Lakes	12	66.7	-	-	-	-	20	76.9
Mid Central	17	81.0	1	100.0	0	0.0	44	84.6
Nelson Marlborough	9	100.0	-	-	-	-	39	84.8
Northland	18	81.8	0	0.0	0	0.0	32	76.2
South Canterbury	1	100.0	-	-	1	50.0	14	77.8
Southern	8	100.0	2	100.0	1	100.0	116	87.9
Tairawhiti	16	69.6	0	0.0	0	0.0	14	100.0
Taranaki	10	90.9	0	0.0	1	100.0	45	86.5
Waikato	40	80.0	5	83.3	5	62.5	118	86.8
Wairarapa	3	75.0	-	-	-	-	14	82.4
Waitemata	15	78.9	6	75.0	31	83.8	169	85.8
West Coast	0	0.0	-	-	0	0.0	15	88.2
Whanganui	0	0.0	-	-	0	0.0	26	86.7
Total	**274**	**77.6**	**82**	**75.2**	**144**	**77.4**	**1,265**	**85.2**

' – ' 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

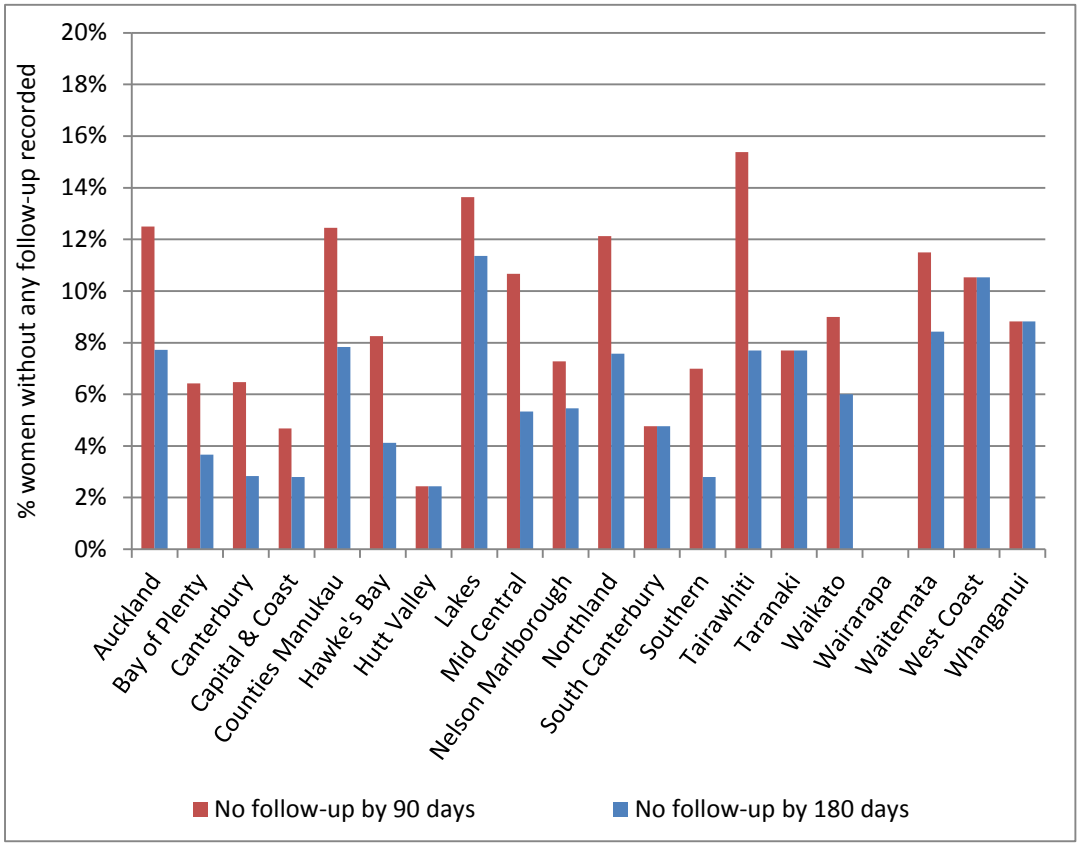
	Māori		Pacific		Asian		European/Other	
DHB	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Auckland	17	73.9	24	85.7	54	84.4	131	83.4
Bay of Plenty	30	88.2	-	-	2	100.0	67	91.8
Canterbury	17	77.3	5	100.0	15	93.8	198	97.1
Capital & Coast	9	81.8	5	100.0	5	71.4	77	91.7
Counties Manukau	30	83.3	43	89.6	34	89.5	84	88.4
Hawke's Bay	20	83.3	1	50.0	2	66.7	61	89.7
Hutt Valley	13	100.0	1	100.0	2	100.0	24	96.0
Lakes	13	72.2	-	-	-	-	24	92.3
Mid Central	17	81.0	1	100.0	1	100.0	49	94.2
Nelson Marlborough	9	100.0	-	-	-	-	41	89.1
Northland	20	90.9	0	0.0	0	0.0	36	85.7
South Canterbury	1	100.0	-	-	2	100.0	14	77.8
Southern	8	100.0	2	100.0	1	100.0	122	92.4
Tairawhiti	18	78.3	0	0.0	0	0.0	14	100.0
Taranaki	10	90.9	1	100.0	1	100.0	46	88.5
Waikato	41	82.0	6	100.0	6	75.0	123	90.4
Wairarapa	3	75.0	-	-	-	-	14	82.4
Waitemata	15	78.9	8	100.0	33	89.2	175	88.8
West Coast	0	0.0	-	-	0	0.0	15	88.2
Whanganui	0	0.0	-	-	0	0.0	26	86.7
Total	**291**	**82.4**	**97**	**89.0**	**158**	**84.9**	**1,341**	**90.3**

' – ' 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	54	85.7	1,711	82.7
- any follow-up	55	87.3	1,879	90.8
- no follow-up	8	12.7	191	9.2
Follow-up within 180 days				
- histology	57	90.5	1,830	88.4
- any follow-up	56	88.9	1,951	94.3
- no follow-up	7	11.1	119	5.7

Figure 69 – 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 70 - Proportion of women without any follow-up test within 90 days and within 180 days of a high grade cytology report, by ethnicity

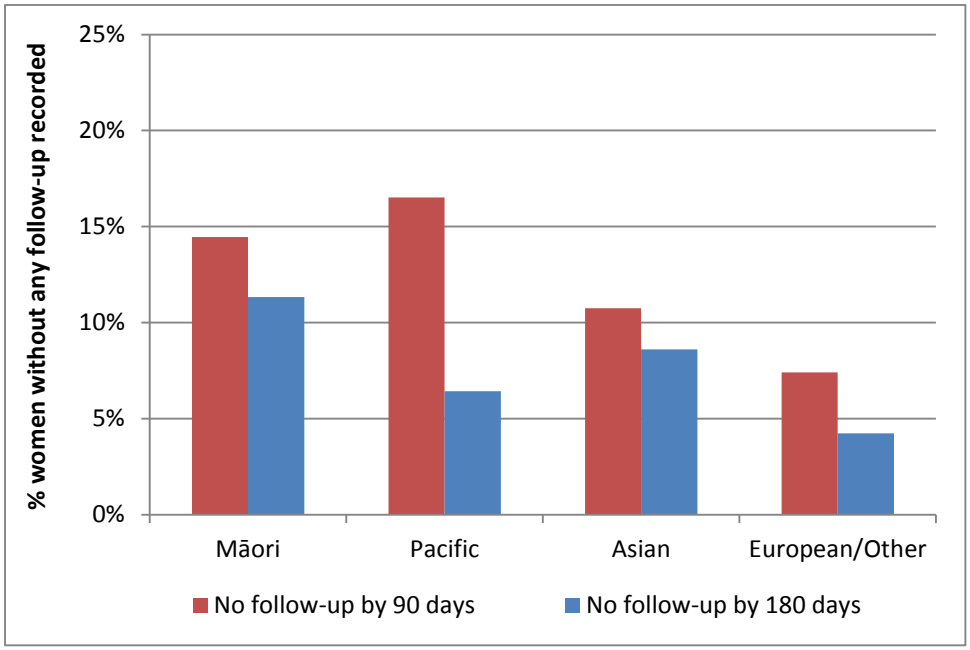


Table 16 - Women without any follow-up test within 90 and 180 days of a high grade cytology report, by DHB

DHB	High-grade cytology N	Without a follow-up test by 90 days N	%	Without a follow-up test by 180 days N	%
Auckland	272	34	12.5	21	7.7
Bay of Plenty	109	7	6.4	4	3.7
Canterbury	247	16	6.5	7	2.8
Capital & Coast	107	5	4.7	3	2.8
Counties Manukau	217	27	12.4	17	7.8
Hawke's Bay	97	8	8.2	4	4.1
Hutt Valley	41	1	2.4	1	2.4
Lakes	44	6	13.6	5	11.4
Mid Central	75	8	10.7	4	5.3
Nelson Marlborough	55	4	7.3	3	5.5
Northland	66	8	12.1	5	7.6
South Canterbury	21	1	4.8	1	4.8
Southern	143	10	7.0	4	2.8
Tairawhiti	39	6	15.4	3	7.7
Taranaki	65	5	7.7	5	7.7
Waikato	200	18	9.0	12	6.0
Wairarapa	21	-	-	-	0.0
Waitemata	261	30	11.5	22	8.4
West Coast	19	2	10.5	2	10.5
Whanganui	34	3	8.8	3	8.8
Unspecified	-	-		-	
Total	**2,133**	**199**	**9.3**	**126**	**5.9**

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	353	51	14.4	40	11.3
Pacific	109	18	16.5	7	6.4
Asian	186	20	10.8	16	8.6
European/Other	1,485	110	7.4	63	4.2
Total	**2,133**	**199**	**9.3**	**126**	**5.9**

Indicator 7 – Colposcopy indicators

These indicators report on colposcopy, against the 2013 NCSP Policies and Standards, Section 6 (2011, draft). 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, 7.7) have not been developed.

Colposcopy data has been recorded on the NCSP Register for a relatively short time, compared to cytology and histology data. It is possible that 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.

Colposcopy data were incomplete for some DHBs in the current monitoring period, and this would potentially affect the results for some indicators in this section. As most of these colposcopy indicators are looking for follow-up in women with abnormal cytology, histology, or treatment prior to the current monitoring period, in most cases, the effect of this is likely to be small. This is discussed in *Comments* section of each individual indicator. The affected DHBs are Auckland, Counties Manukau, Lakes, Nelson Marlborough, Northland, Taranaki, Waikato and Waitemata (no data after September 2015 in all cases). These DHBs had commenced collecting data according to Colpscopy Policies and Standards 2013, but had to stop reporting in September 2015 due to a coding error being identified. That error was resolved by November 2015 and tested at Southern DHB. The DHBs then needed to update and restart electronic reporting (including for the period from September 2015 to when the DHB restarted reporting) to the NCSP Register. Southern DHB was the only DHB live with the updated software before the data was extracted from the NCSP Register.

Additionally, no clinic reported 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.

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. 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.

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 reporting 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 reporting 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 January – 30 June 2015, there were 2,133 women with high grade cytology results who were not already under specialist management. There were 63 women who had results indicating suspicion of invasive disease, and the remaining 2,070 had other high grade cytology results. In total, accepted referrals were found for 1,866 (87.5%) of the 2,133 women (Table 58).

Timeliness – high grade cytology indicating suspicion of invasive disease

Accepted referrals were found for 42 (66.7%) of the 63 women who had high grade cytology indicating suspicion of invasive disease. These are broken down by the detailed cytological result in Table 61. Of these 42 women with a referral, 32 (76.2%) have a record of a colposcopy visit on the NCSP Register within ten working days of their referral, and 36 (85.7%) have a visit within 20 working days (Table 18).

Considering all 63 women with high grade cytology indicating suspicion of invasive disease, regardless of whether a referral was recorded or not, a total of 56 (88.9%) have a record of a colposcopy visit prior to 31 December 2015 (representing a follow-up period of at least six and up to 12 months after their high grade cytology).

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

Accepted referrals were found for 1,824 women (88.1%) of the 2,070 women. Among the women with accepted referrals, 1,236 (67.8%) were seen within 20 working days of their referral, and 1,630 (89.4%) were seen within 40 working days (Table 57). The proportion of women seen within 20 working days varied by ethnicity, from 45.7% (Pacific women) to 71.3% (European/Other women) (Figure 71, Table 59). This proportion also varied by DHB from 35.4% (Nelson Marlborough) to 97.0% (Hutt Valley) (Figure 72, Table 60).

In total, 1,945 (94.0%) of the 2,070 women with high grade cytology (but no suspicion of invasive disease) relating to a sample collected in the period 1 January – 30 June 2015 have a record of a colposcopy visit prior to 31 December 2015 (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 78.9% to 76.2%. The percentage of women with high grade cytology indicating suspicion of invasive disease seen within 20 working days (85.7%) is also lower than that in the previous report (94.7%).

The proportion of women with high grade cytology (but no suspicion of invasive disease) seen within 20 working days has decreased from 69.5% in the previous report to 67.8% in the current report. The proportion of all women with high grade results for whom an accepted referral was available on the NCSP Register is similar in the current report compared to the previous report (87.5% in the current report; 87.7% in Report 43).

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-February 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. Several DHBs were not able to load data for the latter part of the monitoring period in time for the extract of data used for this report; however it is not anticipated this would have a great influence on the results for this indicator. This is because the high grade cytology was collected in the previous six-month period, and follow-up colposcopy was predominantly checked for within 20 working days of the cytology result. In most cases, these 20 working days would still fall in the previous six-month period, and the remainder in the early part of the current monitoring period. In addition, as histology samples are also used as a proxy for a colposcopy visit, only colposcopy visits where no histology was collected would be affected. However, the total number of women who had attended for colposcopy by the end of the monitoring period may potentially be underestimated.

This information is included for descriptive purposes however, and is not measured against a target.

Note that some women presenting with cancer may be referred directly to oncology and therefore are not recorded as a colposcopy visit.

Additional information about follow-up tests performed in women with high grade cytology is included in Indicator 6. The same 1,996 women (76 with suspicion of invasive disease, 1,920 with other high grade cytology) are included in both this measure and Indicator 6. In Indicator 6, it was found that 1,750 (87.7%) had a follow-up test of some sort within 180 days. Here, colposcopy and histology records indicate that 1,888 (94.6%) women had attended colposcopy prior to 31 December 2015 (ie 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

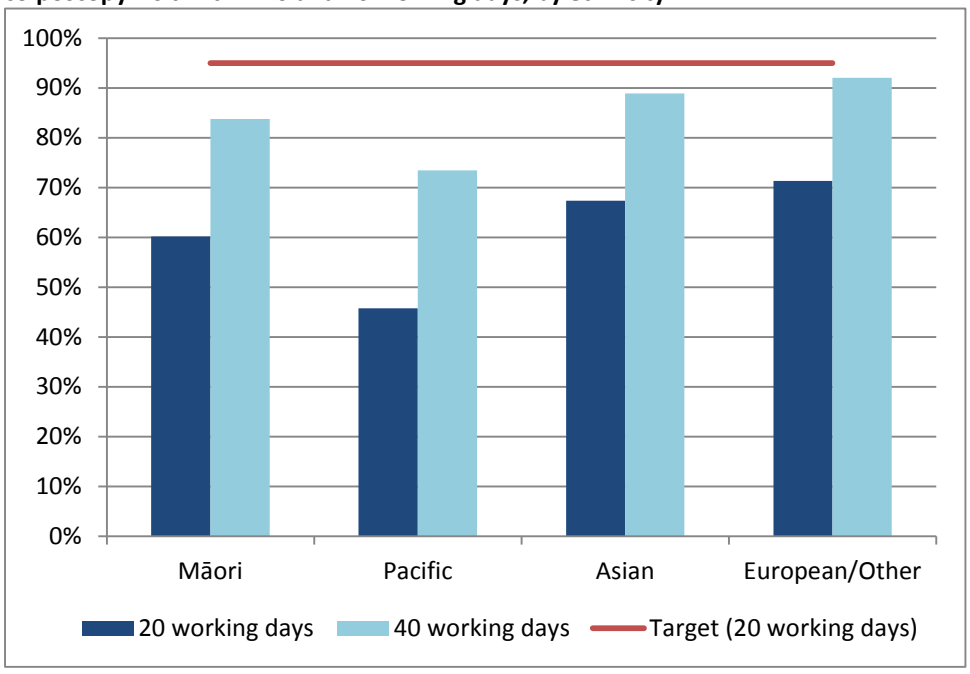
timely appointments, and delays which may be due to an individual woman's need to reschedule an appointment or failure to attend. Factors which may lead a woman to delay a recommended visit include caring responsibilities, planned travel, competing prior commitments, illness, or menstruation.

In the current report, national public holidays which fall on a weekday are excluded from the count of working days. This is consistent with the previous report, but a small change since reports prior to Report 41, where the calculations included all weekdays. This change would be expected to if anything slightly increase the proportion of women who had a colposcopy visit recorded within the target timeframe compared to the method used in previous reports.

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

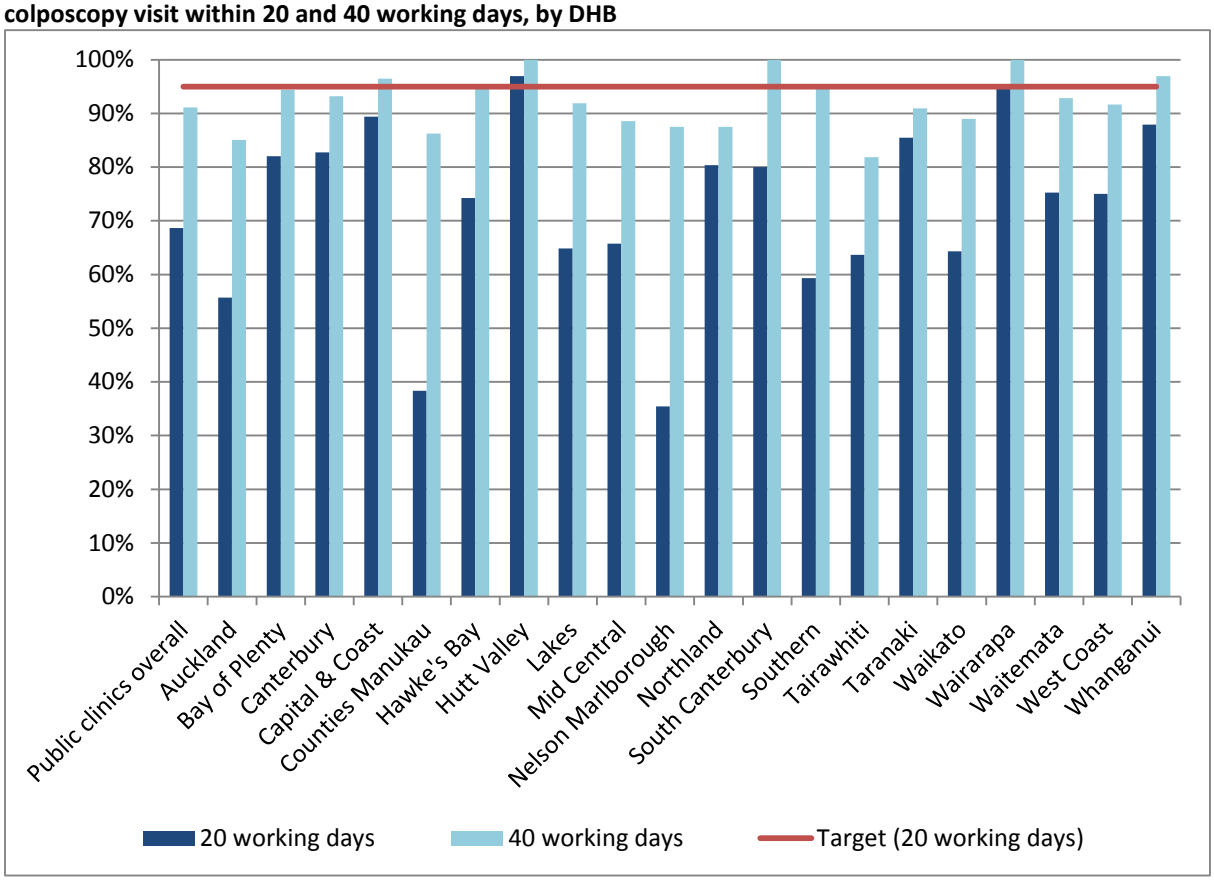
	HG women (suspicion of invasion)	Urgent referrals received	Women seen within:			
			10 working days		20 working days	
Ethnicity	N	N	N	%	N	%
Māori	10	7	4	57.1	5	71.4
Pacific	7	3	2	66.7	2	66.7
Asian	7	5	4	80.0	5	100.0
European/Other	39	27	22	81.5	24	88.9
Total	**63**	**42**	**32**	**76.2**	**36**	**85.7**

Figure 71 – 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 72 – 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

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 31 December 2015) 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 hrHPV 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 July – 31 December 2014 for the current report) where the results was low grade (ASC-US or LSIL), and either a positive hrHPV 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 (31 December 2015, 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.

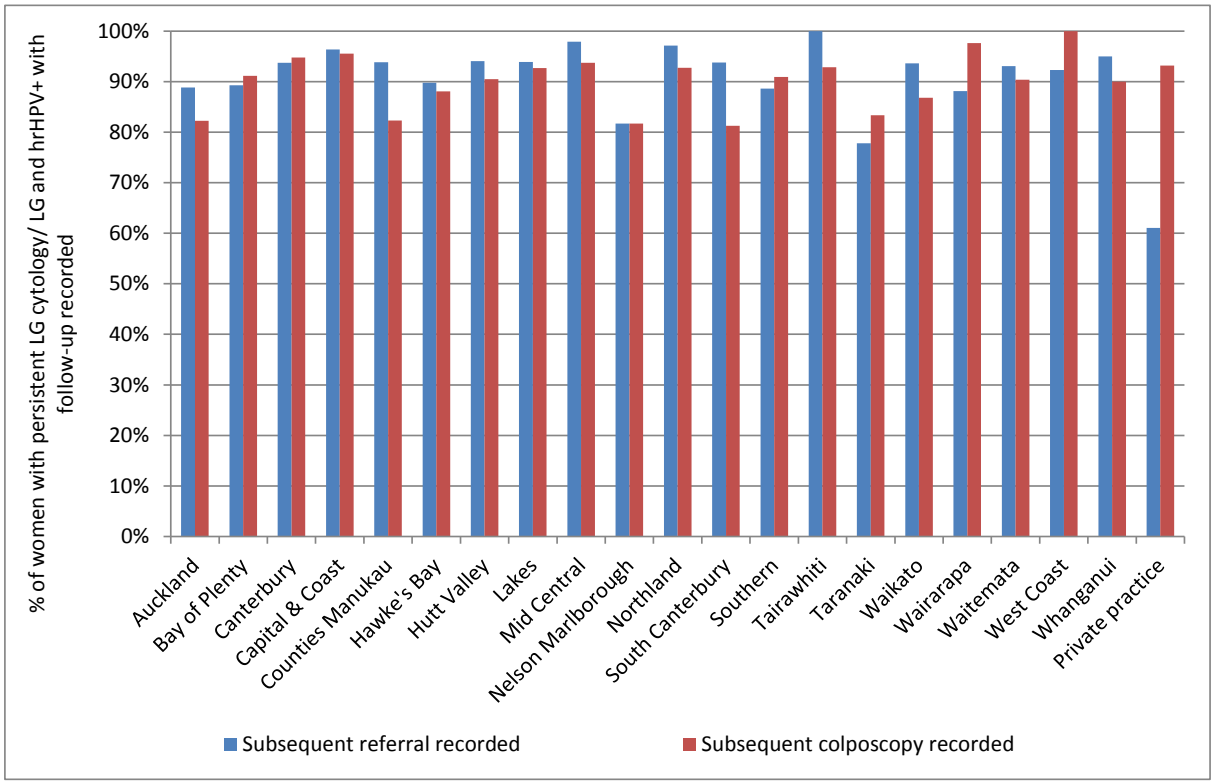
For women who neither attended colposcopy nor had an accepted referral with any DHB, DHB is assigned on the basis of the geographic region of health facility where their low grade cytology sample was collected.

Since cytology samples were collected in the 6-month period ending 12-months prior to the end of the current reporting 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. 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.
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.
Current situation	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. There were 4,068 women with persistent low grade cytology or low grade cytology and a positive hrHPV test collected in the period [Comments]. Nationally, subsequent accepted referrals are recorded for 3,511 (86.3%) of these women, and subsequent colposcopy for 3,649 (89.7%). The proportion of women for whom a subsequent referral and colposcopy visit are recorded are shown by DHB in Figure 73, and by ethnicity in Figure 74. The proportion of women for whom an accepted referral was recorded on the NCSP Register ranged from 75.9% (Taranaki) to 100.0% (Tairawhiti) (Figure 73). The proportion of women with a subsequent colposcopy visit recorded on the NCSP Register ranged from 81.3% (South Canterbury) to 100.0% (West Coast) (Figure 73). The proportion of women for whom an accepted referral was recorded on the NCSP Register ranged from 81.7% for European/Other women to 90.5% for Māori women (Figure 74). The proportion of women with a subsequent colposcopy visit recorded on the NCSP Register ranged from 82.0% (Pacific women) to 91.1% (European/Other women) (Figure 74). 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 3,144 women attended colposocopy following an accepted referral being recorded on the NCSP register; 77.3% of all women with persistent low grade cytology or low grade cytology and a positive hrHPV test, and 92.7% of women who had an accepted referral following their low grade cytology. Nationally, 2,958 (87.2%) women attended for colposcopy within 26 weeks of their accepted referral (Table 62). By DHB, the proportion of women who attended for colposcopy within 26 weeks of their accepted referral ranged from 59.0% (Hawke's Bay) to 97.4% of women (Capital & Coast) (Figure 75). By ethnicity, this figure ranged

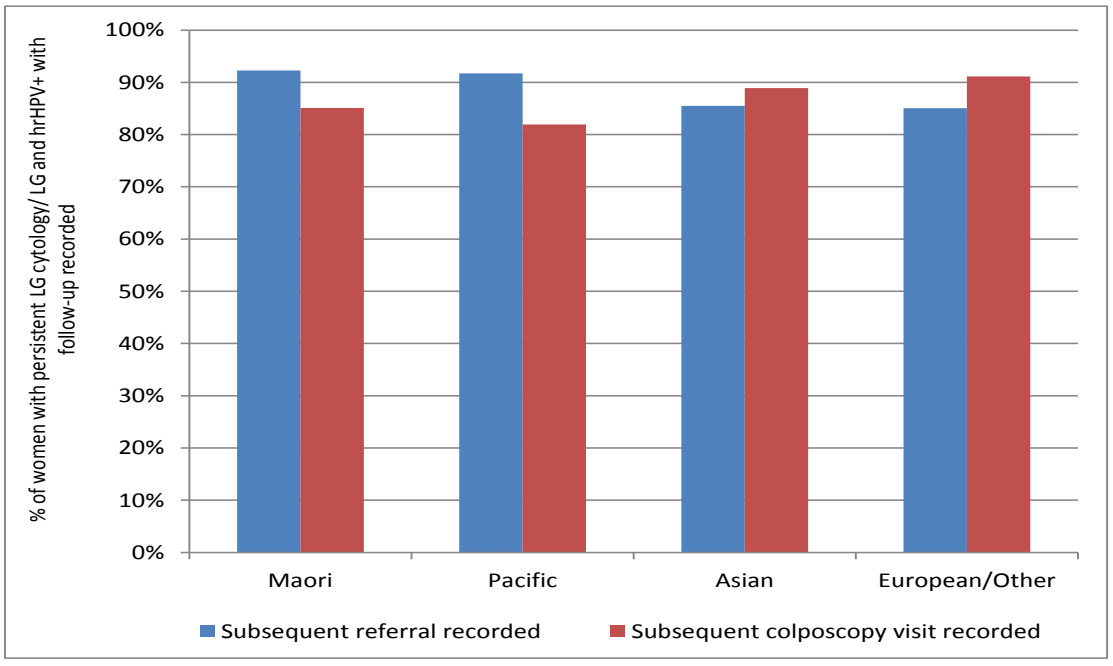
	from 79.3% of Pacific women attending for colposcopy within 26 weeks of their accepted referral, to 89.1% of European/Other women (Figure 76)
Trends	Nationally, the proportion of women with colposcopy within 26 weeks has increased, and it has also increased in every ethnic group (Figure 77). However, the proportion of women seen within 26 weeks has not increased consistently across DHBs (Figure 78). Substantial increases in the proportion of women with coloscopy within 26 weeks were seen in the two DHBs where this had previously been lowest (Counties Manukau and Southern).
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. Accepted referrals are included if they occurred after the date the cytology sample was collected, and at least 26 weeks before the end of the current monitoring period (31 December 2015, to allow at least 26 weeks following the referral for colposcopy to occur). Colposcopies are included if they occurred after the date the cytology sample was collected and no later than the end of the current monitoring period. Referrals or a colposcopy visit recorded are included if they were recorded on the NCSP Register prior to the time of the data extract (mid-February 2016). Missing colposcopy data from the latter part of 2015 for some DHBs may lead to an underestimate of the number of women who had attended colposcopy in these DHBs, and to an underestimate in the median time between cytology report or referral to the colposcopy visit. This may be mitigated by the use of histology records as an additional proxy for colposcopy visits, however this would not detect colposcopy visits where a biopsy sample was not taken. As has been the case for previous reporting 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 73 - Follow-up recorded* for women with persistent LG cytology/ LG cytology and positive hrHPV 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.*

Figure 74 - Follow-up recorded* for women with persistent LG cytology/ LG cytology and positive hrHPV 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 75 - Women with persistent LG cytology or LG cytology and positive hrHPV 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

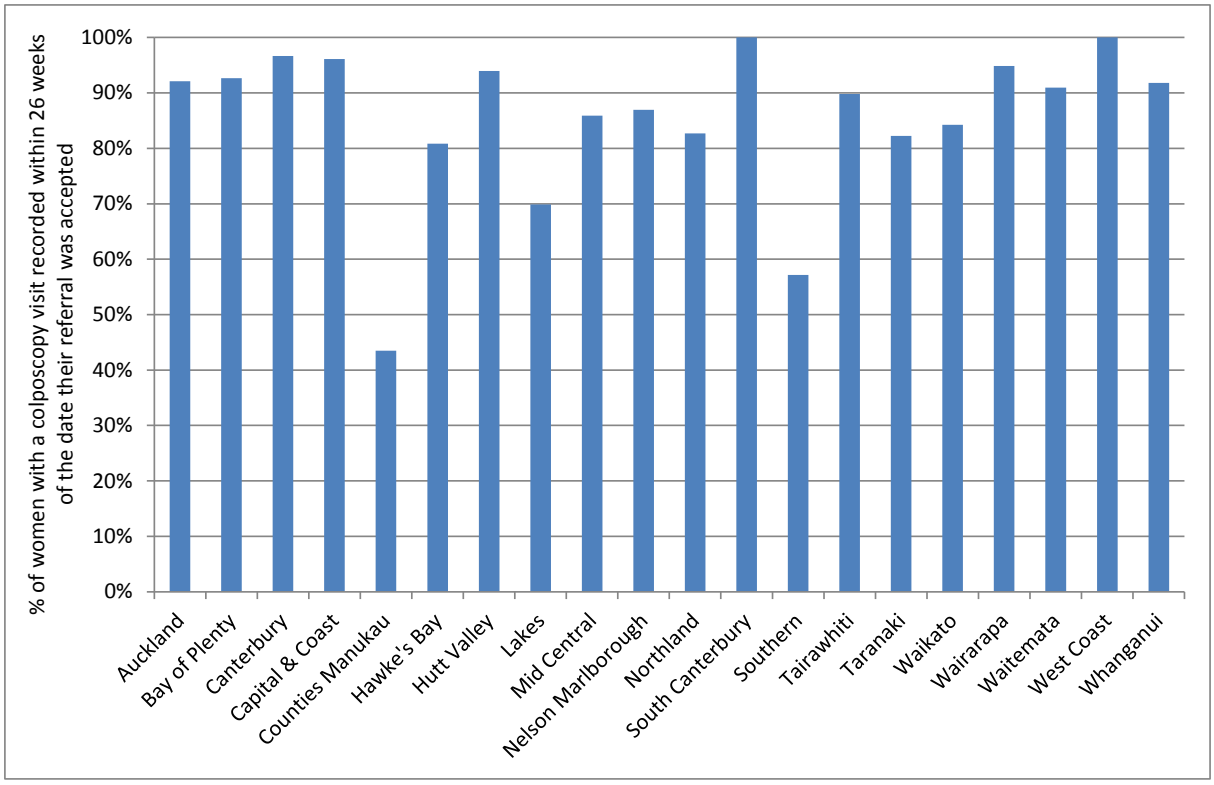


Figure 76 - Women with persistent LG cytology or LG cytology and positive hrHPV test and an accepted referral for colposcopy: percentage with a colposcopy visit recorded within 26 weeks of the date the referral was accepted, by ethnicity

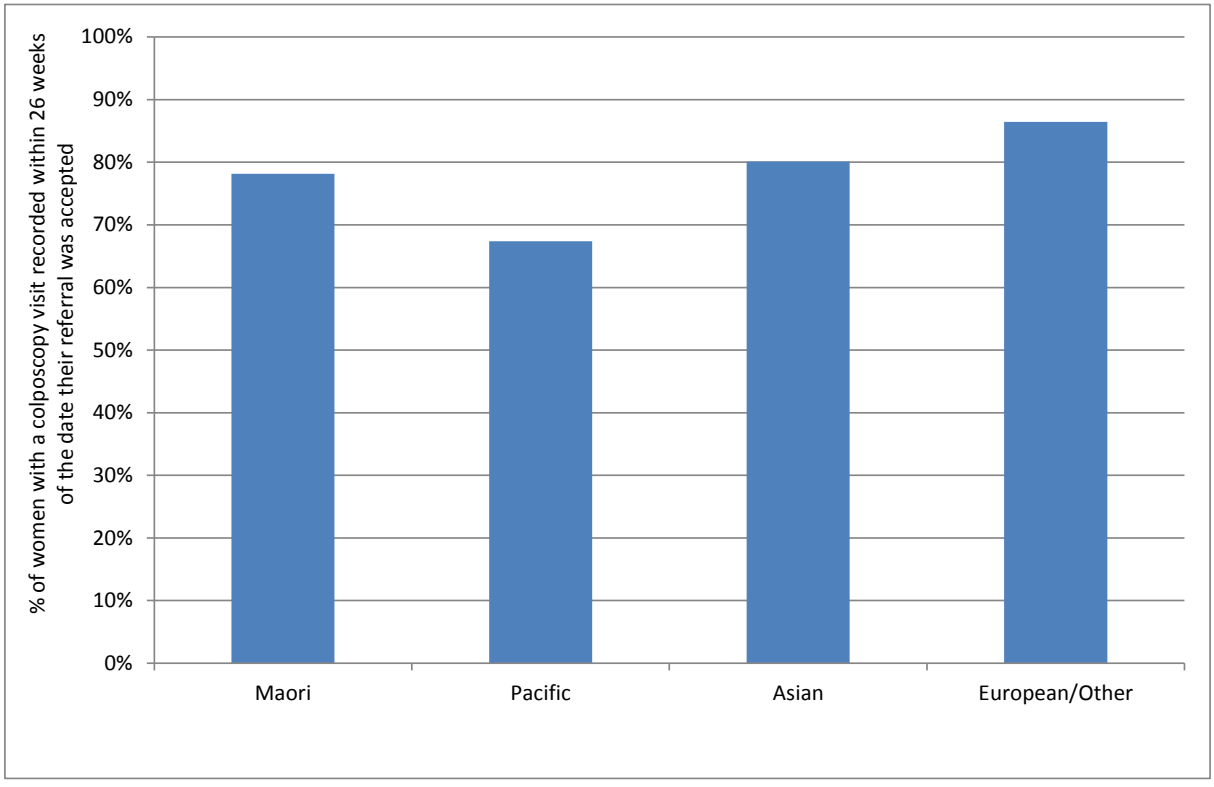


Figure 77 - Trends in proportion of women with persistent LG cytology or LG cytology and positive hrHPV test and an accepted referral for colposcopy who have a colposcopy visit recorded within 26 weeks of the date the referral was accepted, by ethnicity

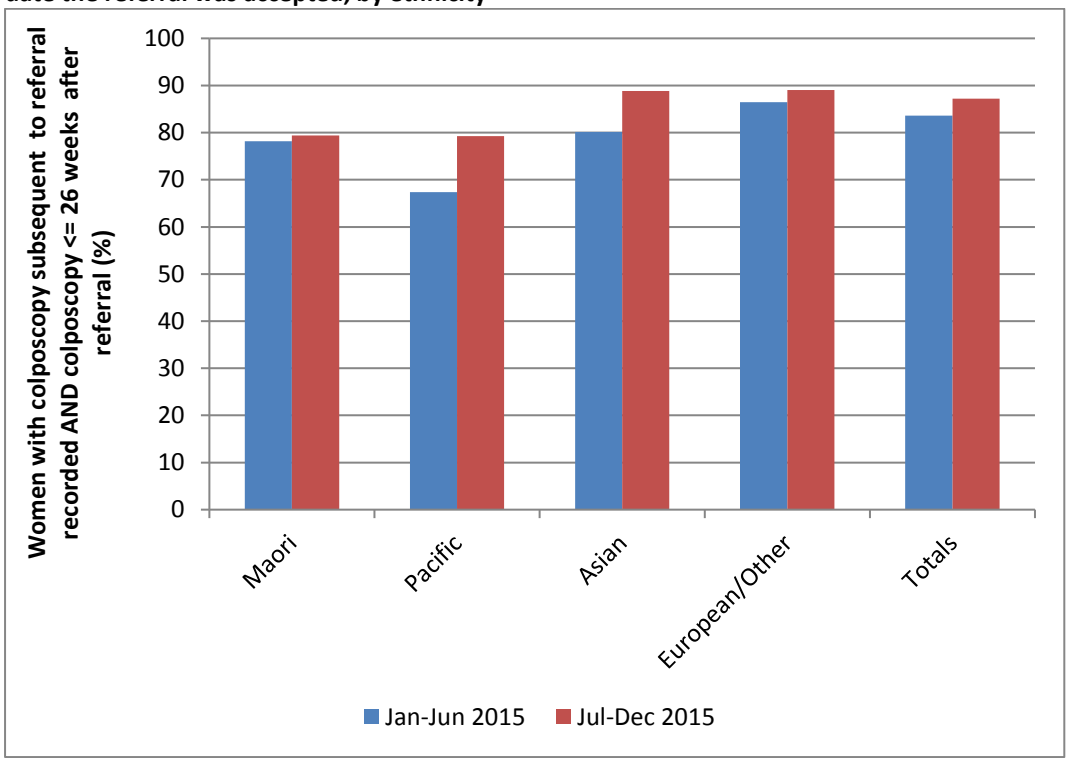
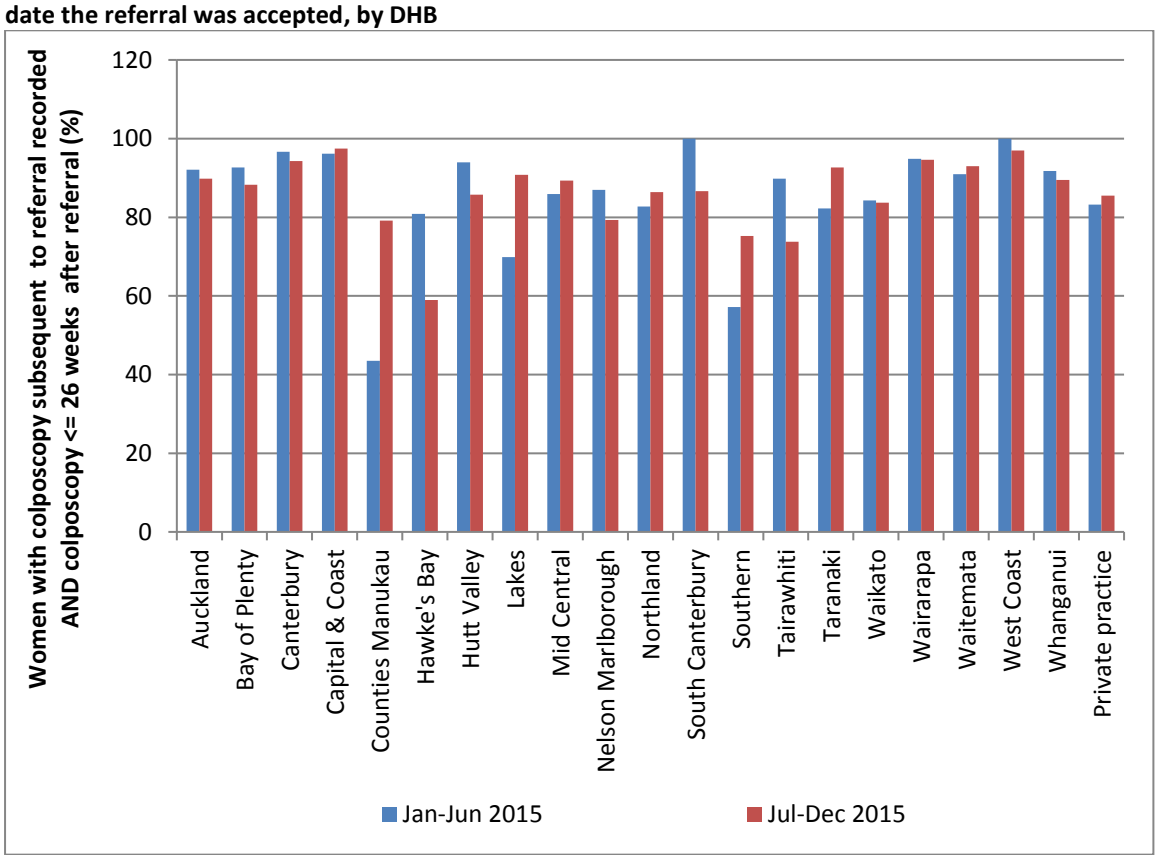


Figure 78 - Trends in the proportion of women with persistent LG cytology or LG cytology and positive hrHPV test and an accepted referral for colposcopy who have a colposcopy visit recorded within 26 weeks of the date the referral was accepted, by DHB



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 as they are 2013 Colposcopy Standard data items and for the current monitoring period were not yet recorded on the NCSP-R for all colposcopies. 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 9,566 colposcopy visits within the current monitoring period recorded on the NCSP Register. Documentation relating to these visits was analysed (Table 64).

Nationally, the visibility of the squamocolumnar junction was documented for 97.7% of visits; the presence or absence of a lesion was documented for 100% of visits; an opinion regarding the lesion grade was documented for 91.8% of visits where the presence of a lesion could not be ruled out. Additionally, the type of follow-up was documented for 92.2% of visits and the timeframe for follow-up was documented for 91.6% 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 92.8% of visits.

The colposcopic appearance was reported to be abnormal in 55.9% of colpscopies, and inconclusive in 5.0% of colposcopies (Table 65). A biopsy was more likely to have been taken at colposcopy when the colposcopic appearance was abnormal (biopsy taken at 81.3% of such colposcopies) than when it was inconclusive or normal (38.1% and 23.3%, respectively) (Table 64).

Documentation varied by DHB, as shown in Figure 79 and Table 64. Documentation of visibility of the squamocolumnar junction varied from 95.7% (Bay of Plenty) to 99.5% (Whanganui). 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 87.0% (Northland) to 97.6% (Waikato). Recording of the recommended type of follow-up ranged from 51.1% (Auckland) to 100% (Canterbury, Hutt Valley, South Canterbury, Tairawhiti, Wairarapa and West Coast) and recording of the recommended timeframe for follow-up ranged from 50.2% (Auckland) to 100% (South Canterbury, Tairawhiti and West Coast). 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 88.5% (Bay of Plenty) to 96.7% (Whanganui) (Figure 80, Table 65).

Abnormal colposcopic appearance ranged from 33.3% of colposcopies (Northland) to 69.4% of colposcopies (Hutt Valley). Inconclusive colposcopic appearance ranged from 2.5% of colposcopies (Waikato) to 7.2% of colposcopies (Bay of Plenty) (Table 65). The proportion of colposcopies where a biopsy was taken also varied by DHB. When the colposcopic appearance was abnormal a biopsy was taken at 59.5% of visits in Whanganui, up to the highest proportion of such colposcopies in Northland (95.7%). When the colposcopic appearance was normal the proportion of visits where a biopsy was taken ranged from 2.5% in Whanganui up to 42.2% in Hawke's Bay (Table 64).

Colposcopies performed in private practice accounted for 15.2% of all colposcopies recorded on the NCSP Register in New Zealand in the current monitoring period. The documentation rate was the same as, or slightly lower, in private practice compared with public clinics overall, with the exception of follow-up rates which was higher in private practice compared to public clinics; visibility of the squamocolumnar junction (96.5% for private practice and 97.9% for public clinics overall), presence or absence of a lesion (100% in both private and public), lesion grade (90.2% for private practice

and 92.0% for public clinics), follow-up type (97.3% for private practice and 91.3% for public clinics), follow-up timeframe (95.8% for private practice and 90.8% 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 92.8% for private practice and 93.2% 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, with the exception of follow-up type and follow-up timeframe. In the current period visibility of the squamocolumnar junction was documented for 97.7% of colposcopies compared with between 95.1% and 97.0% 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 91.8% of visits where the presence of a lesion could not be ruled out, compared with between 91.5% and 92.3% for the previous three monitoring periods. Recording of recommended follow-up type was documented for 92.2% of visits in the current period, which is lower compared with the 98.1%-99.2% seen for the previous three periods. This was also the case for recommended timeframe for follow-up, which was recorded for 91.6% of visits in the current period compared with 97.5%-98.4% in the previous three periods.

Trends in the completion of all required fields are shown in Figure 61. Note, however, that two items (recommended type and timeframe for follow-up) have been removed from this calculation for the current and previous reporting period, so these two periods are not comparable with earlier ones in Figure 61. For the current monitoring period, the removal of these two items from the calculation gave a completion rate of 92.8%, compared with a rate of 89.4% when the items are included. The largest difference between the current period compared to the previous monitoring period was for Hawke's Bay (89.2% compared to, 79.3% in the previous monitoring period).

Trends in the number of colposcopies recorded on the NCSP Register are shown in Figure 64. The number of colposcopies decreased in the current reporting period in 13 of the 20 DHBs.

Comments

This measure is only able to assess adequacy of documentation where colposcopy visits have been entered onto the NCSP Register. 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-February 2016.

Missing colposcopy data from the latter part of 2015 for some DHBs has likely led to an underestimate of the number of colposcopies in these DHBs during the monitoring period, however it is not expected to have affected the results for the completeness of colposcopy data reported.

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 have been removed from the calculation of 'all items complete' for the current report. As discussed in Trends above, however, these are 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 every DHB, the field with the lowest completion rate is either visibility of the squamocolumnar junction or 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 because some clinics are incorrectly interpreting the requirement to document a *predicted* abnormality grade (which can be documented at the time of colposcopy) as a requirement to document the *diagnosed* abnormality grade, after histology results are available.

Some items in the colposcopy standard are not included in the 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 an 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.

An updated 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 79 – Completion of colposcopic assessment fields, by DHB

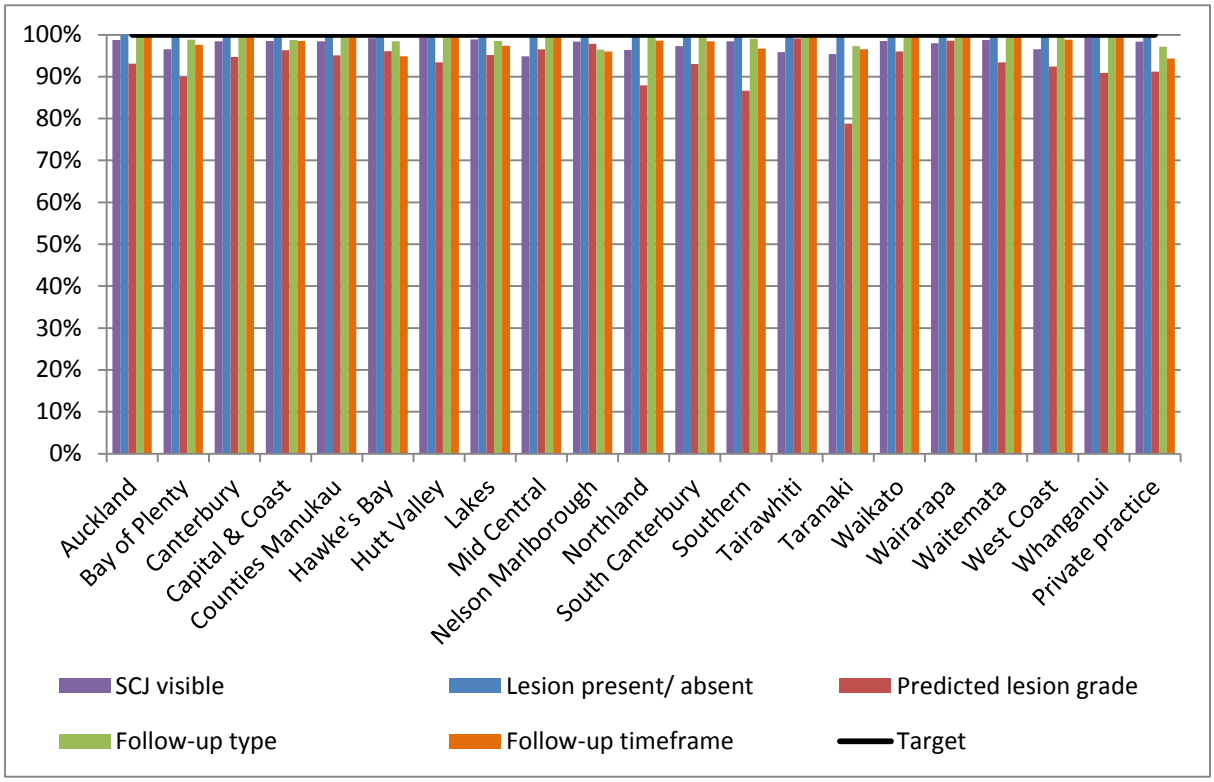
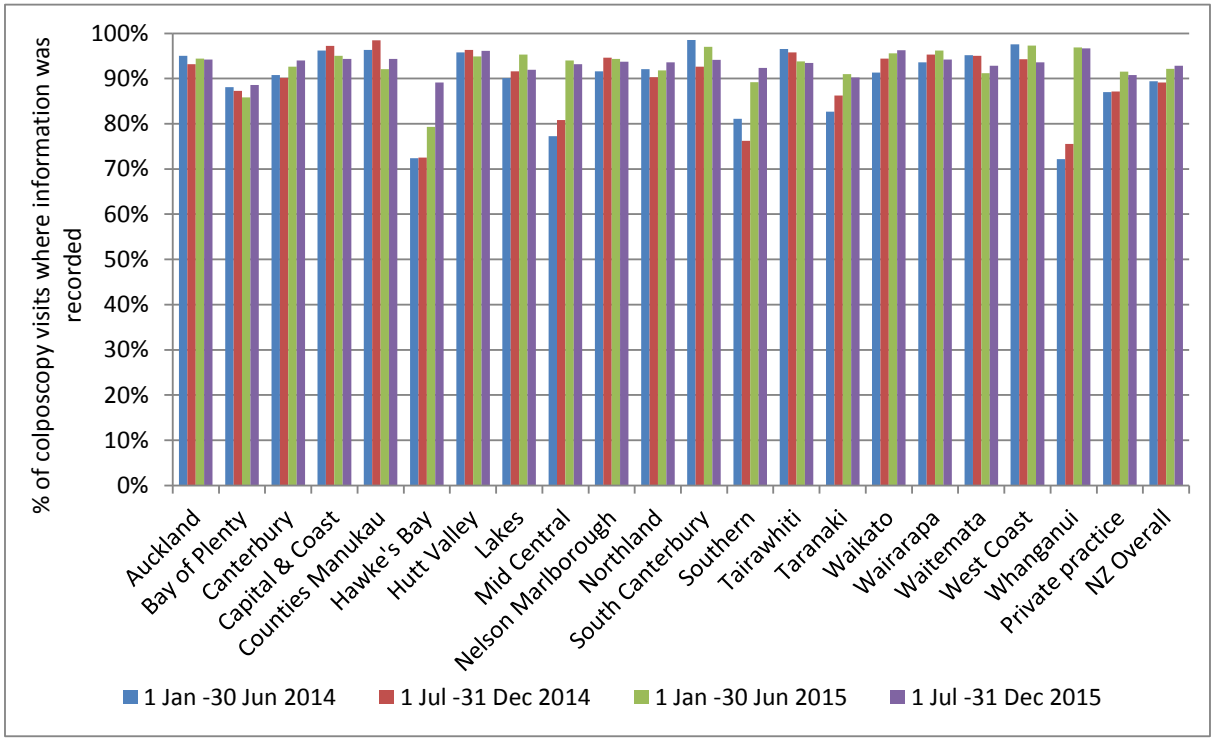
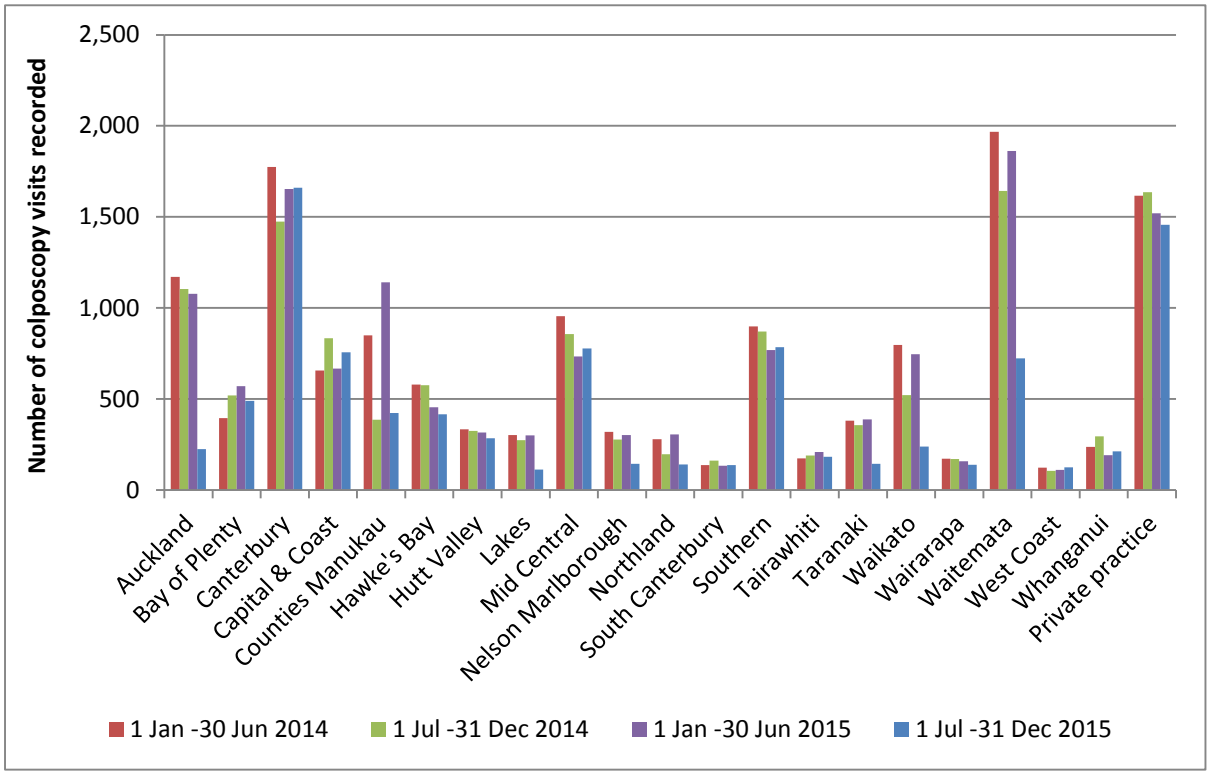


Figure 80 – Trends in the completion of all required colposcopic assessment fields, by DHB



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 81 – Trends in the number of colposcopies recorded on the NCSP Register, by DHB



The apparent decrease in the number of colsopcopies 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 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. 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 M67017, M74007, M74008, M80102 and M80702). 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 M67015, M67016, M74000 and M74006). 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 reporting period (ie in the period 1 January – 30 June 2015). HSIL results must have been reported at least 8 weeks prior to the end of the current reporting period, and LSIL results must have been reported at least 26 weeks prior to the end of the current reporting 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 2,402 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 31 December 2015). Of these women, 1,496 women (62.3%) were treated within eight weeks of HSIL being histologically confirmed.

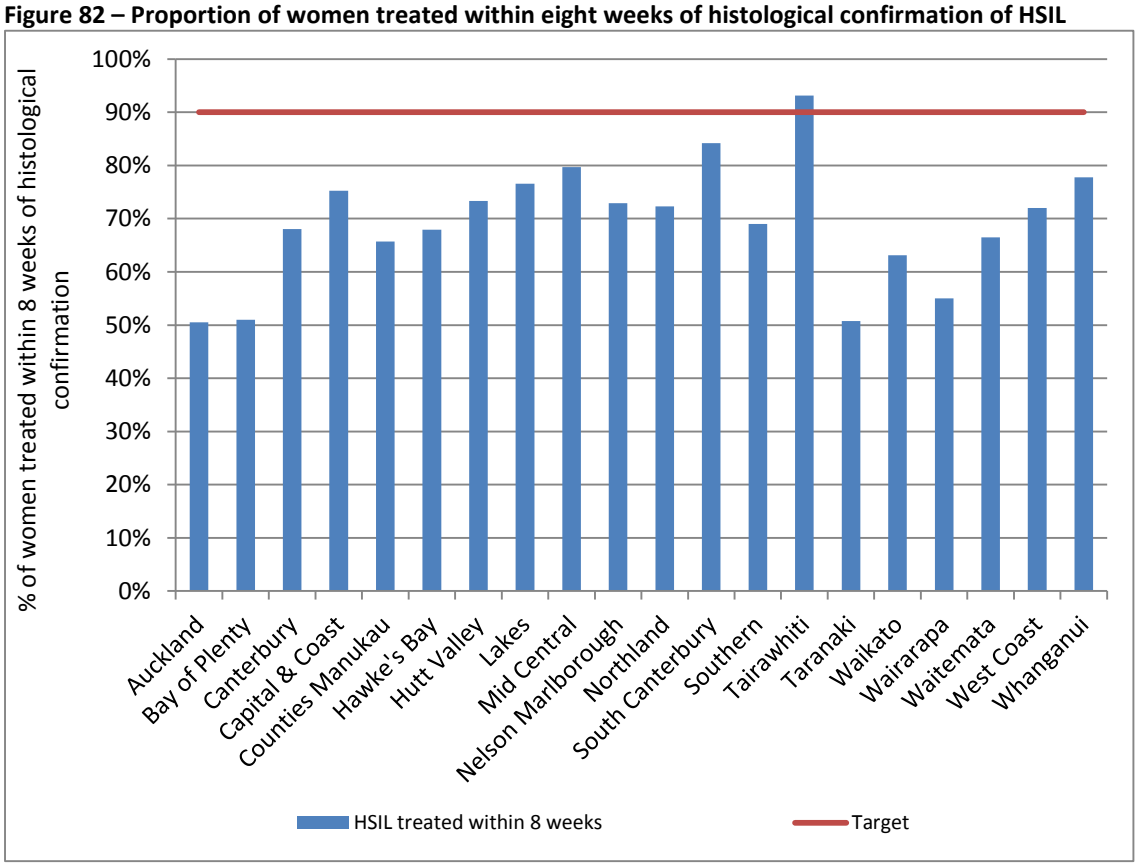
	The proportion of women treated within eight weeks varied widely by DHB, from 50.5% (Auckland) to 93.1% (Tairawhiti). One DHB (Tairawhiti) met the target of 90% of women treated within eight weeks of histological confirmation of HSIL (Figure 82, Table 19). There were 2,102 women with a histological diagnosis of LSIL (associated with histology samples collected in the previous six months, and reported at least 26 weeks prior to 31 December 2015). Treatment for histological LSIL is not routinely recommended in the 2013 Colposcopy Standards or the 2008 NCSP *Guidelines for Cervical Screening in New Zealand*[13], 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 2,102 women with histological LSIL. Of these women, 133 (6.3%) 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 (Nelson Marlborough, South Canterbury, Tairawhiti) to 50.0% (Northland) (Table 19). The DHB where the largest number of women were treated was Counties Manukau (26 women).
Trends	Nationally, the proportion of women with histological HSIL who were treated within eight weeks of histological confirmation is similar to the previous monitoring report; 63.4% in the previous report, 62.3% in the current report. The proportion of women with histological HSIL who were treated within eight weeks for the current report period increased in ten of the 21 DHBs compared with the previous report period. The proportion of women with histological LSIL who were subsequently treated (within 26 weeks of LSIL being histologically confirmed) has decreased slightly, from 7.1% for the previous report to 6.3% 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 addition, missing colposcopy data from September 2015 on for eight DHBs may also have affected the results for this reporting period for those DHBs. The effect on timeliness of treatment of HSIL is likely to be small, however, as the HSIL had to be histologically-confirmed in the previous six months and so the eight-week target period would have elapsed by the end of August in virtually all cases. However, it is possible the number of women treated for LSIL in these DHBs will have been understated. The eight affected

DHBs are Auckland, Counties Manukau, Lakes, Nelson Marlborough, Northland, Taranaki, Waikato and Waitemata.

DHB is assigned based on the clinic where the original sample confirming HSIL (or LSIL) histology was collected. 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 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 82 – 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.

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)	*2,094*	*1,393*	*66.5*	*1,651*	*117*	*7.1*
Auckland	196	99	50.5	191	7	3.7
Bay of Plenty	102	52	51.0	99	10	10.1
Canterbury	319	217	68.0	385	17	4.4
Capital & Coast	97	73	75.3	104	10	9.6
Counties Manukau	172	113	65.7	220	26	11.8
Hawke's Bay	78	53	67.9	29	3	10.3
Hutt Valley	60	44	73.3	55	5	9.1
Lakes	64	49	76.6	48	2	4.2
Mid Central	128	102	79.7	63	2	3.2
Nelson Marlborough	59	43	72.9	20	-	-
Northland	65	47	72.3	4	2	50.0
South Canterbury	19	16	84.2	6	-	-
Southern	158	109	69.0	44	1	2.3
Tairawhiti	29	27	93.1	26	-	-
Taranaki	69	35	50.7	62	10	16.1
Waikato	198	125	63.1	50	1	2.0
Wairarapa	20	11	55.0	18	2	11.1
Waitemata	209	139	66.5	194	17	8.8
West Coast	25	18	72.0	25	1	4.0
Whanganui	27	21	77.8	8	1	12.5
Private Practice	*308*	*103*	*33.4*	*451*	*16*	*3.5*
Total	**2,402**	**1,496**	**62.3**	**2,102**	**133**	**6.3**

** 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 and 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 reporting period. Records for each woman treated in the six-month period ending 12 months prior to the end of current reporting period were retrieved from the NCSP Register. Among these treated women, the number of women with a colposcopy visit, and with both a colposcopy visit 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 women 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 1,673 women treated for CIN2 or CIN3 high grade lesions in the six-month period from 1 July – 31 December 2014. These women were followed up for twelve months from the date of their treatment visit.

Follow-up post treatment

There were 1,256 women (75.1%) with a follow-up colposcopy, and 1,240 women (74.1%) with both a follow-up colposcopy and a cytology sample in the nine month period after their treatment visit.

Figure 83 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 67). The number of women with colposcopy only and no record of a cytology sample in the timeframe was at most six (Waikato).

Nationally, the percentage of women treated for high grade lesions with a record of colposcopy and cytology within the nine-month period post treatment (74.1%) is below the target value of 90%.

Two DHBs (Waitemata and Whanganui) met the target of at least 90% of women receiving cytology and colposcopy within nine months post-treatment (Figure 83, Table 67). 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 38.8% (Bay of Plenty) to 91.2% (Whanganui).

Women discharged appropriately

In total, 1,282 women (76.6% of those treated) were eligible to be discharged by 12 months after their treatment visit, and 1,056 of these women (82.4%) were discharged within 12 months of treatment (Table 67). Figure 84 shows how these percentages varied by DHB. The percentage of women eligible for discharge who were discharged within 12 months of treatment ranged from 54.0% (Waitemata) to all eligible women (Wairarapa) (Table 67). In some cases, the number of women eligible for discharge was small, so these results should be interpreted with caution (Fourteen in Wairarapa and 15 in West Coast).

Eight DHBs met the target of discharging 90% of women where appropriate within 12 months (Auckland, Counties Manukau, Hutt Valley, Mid Central, Northland, Wairarapa, 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), 1,183 women were discharged within 12 months of being treated for a high grade lesion (70.7% of all women treated for a high grade lesion).

Trends

The proportion of women with follow-up has decreased slightly overall (from 71.8% to 75.1% for colposcopy, and from 70.5% to 74.1% for both cytology and colposcopy). No DHBs met the target of 90% of women having colposcopy and

cytology within 9 months of treatment, which was also the case for the previous reporting period.

The proportion of women discharged appropriately to their smear taker by 12 months has decreased (from87.4% in the previous report to 82.4% in the current report). The number of DHBs meeting the target of 90% decreased from 13 to 8.

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-February 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.

Missing colposcopy data from the latter part of 2015 for some DHBs as a result of not being able to electronically upload their colposcopy data (after approximately September 2015 in all cases) may have affected the results for this reporting period. There is unlikely to be an effect on the proportion of women with colposcopy within nine months of their treatment, however, as the treatments occurred in July -December 2014, and so the nine-month period would have elapsed by the end of September at the latest. It is possible, however, that the discharge information for some women in these DHBs was affected, and so the proportion of women discharged appropriately within 12 months of treatment may be an underestimate. In spite of this, some of the affected DHBs met the target (Auckland, Counties Manukau and Northland) or were very close to it (Nelson Marlborough and Waikato).

Figure 83 – Percentage of women treated with colposcopy, and both colposcopy and cytology, within nine months post-treatment

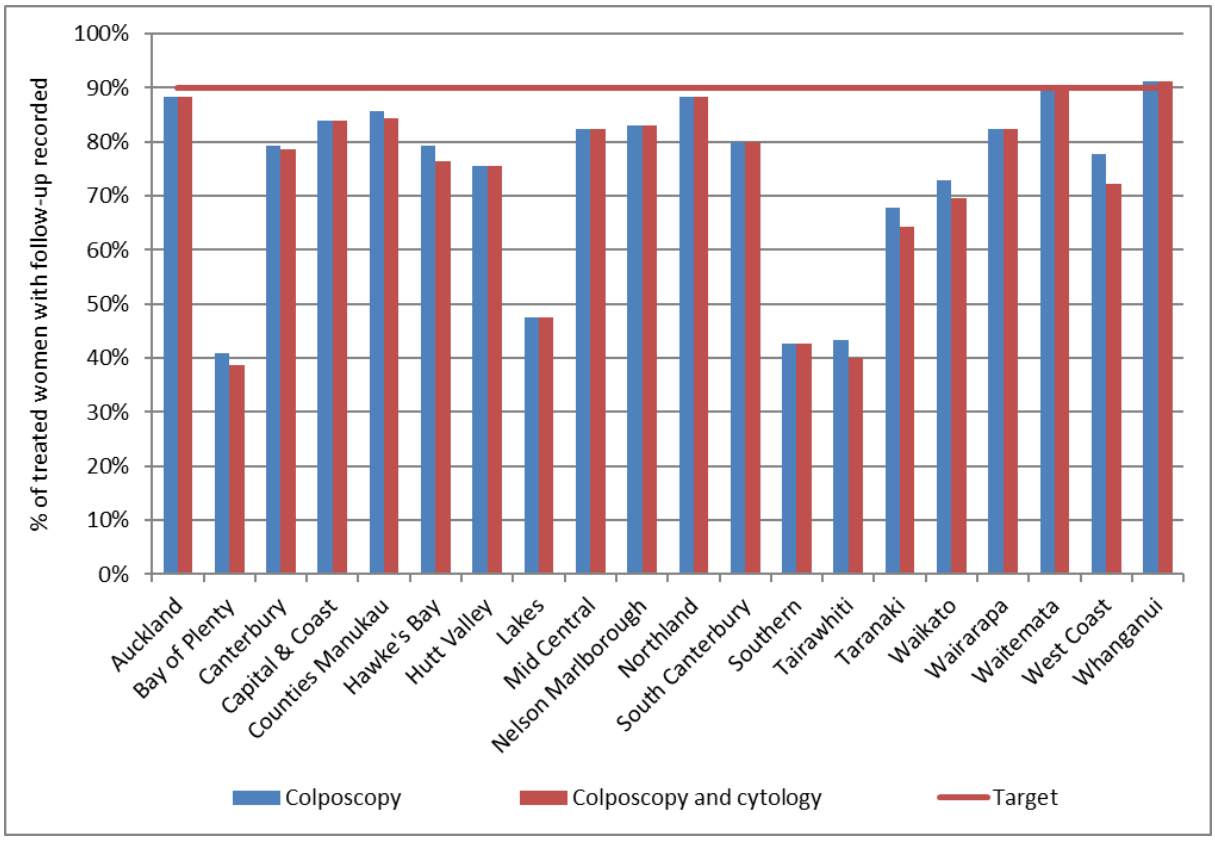
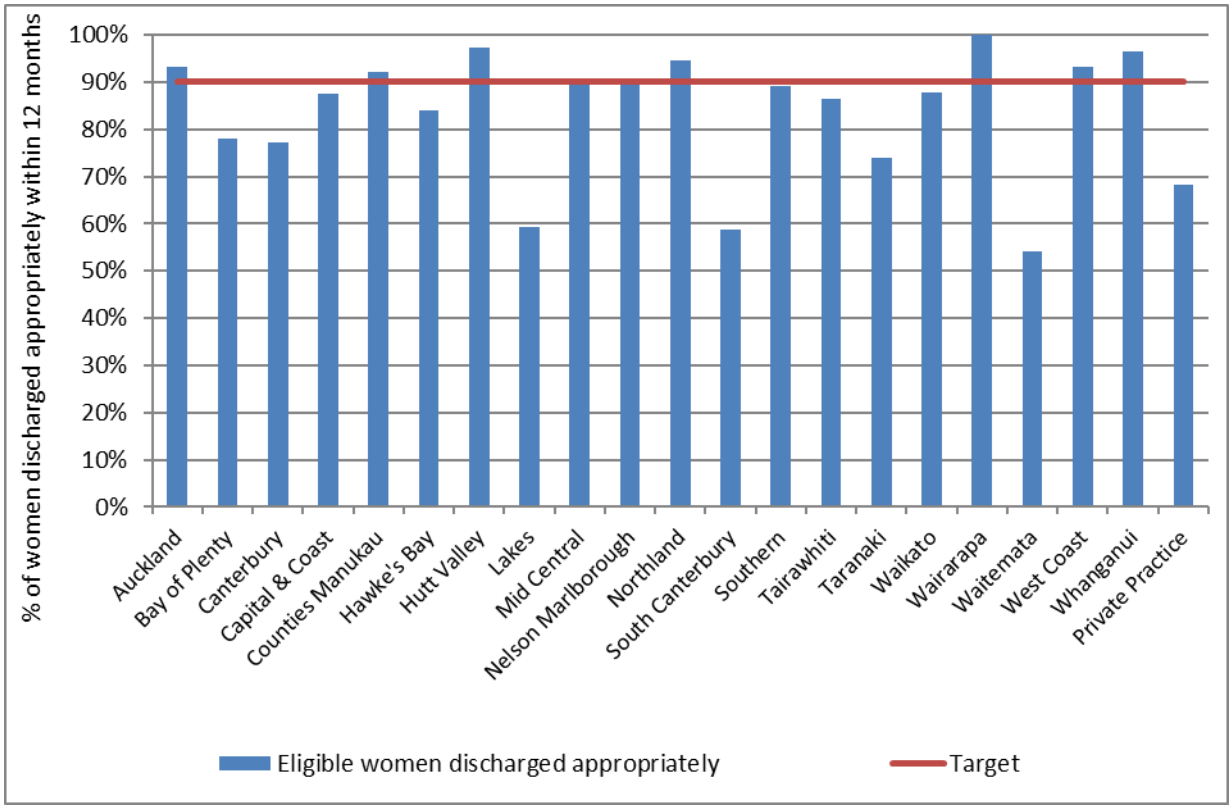


Figure 84 – Percentage of women discharged appropriately within 12 months of treatment



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 Historical HPV tests for follow-up of women with previous 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 (ie 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 (ie 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 attending for cytology due to symptoms. 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, ie 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 872 women aged less than 30 years and 1,747 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 2,275 women aged less than 30 years and 1,569 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, 96.0% of women aged 30 years or more with an ASC-US cytology result, and 96.8% of women aged 30 years or more with an LSIL cytology result are recorded as having a subsequent HPV test (Table 69, Table 70). These proportions ranged 88.3% (Medlab Central Ltd) to 100% (Canterbury Health Laboratories) for ASC-US cytology results and from 87.4% (Medlab Central Ltd) to 98.6% (Canterbury Health Laboratories) for LSIL cytology results (Figure 85, Table 69, Table 70).

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 substantially lower. Subsequent HPV tests are recorded in the NCSP Register for 1.4% of women aged less than 30 years with ASC-US results, and 0.6% of women aged less than 30 years with LSIL results. These proportions ranged from no women (Aotea Pathology Ltd) to 2.4% (Southern Community Labs) for women with ASC-US results, and from no women (Aotea Pathology Ltd, LabPLUS, Medlab Central Ltd and Pathlab) to 0.8% (Southern Community Labs) for women with LSIL results (Figure 86, Table 70).

Positive triage tests

Among women aged 30 years or more with valid HPV triage test results, the proportion who were positive for high risk HPV was 24.2% for women with ASC-US results, and 59.1% for women with LSIL results. These proportions varied by laboratory from 14.8% (LabPLUS) to 39.4% (Aotea Pathology Ltd) for women with ASC-US cytology (Figure 87), and from 47.2% (LabPLUS) to 81.7% (Aotea Pathology Ltd) for women with LSIL cytology (Figure 88). Note that these proportions should be interpreted cautiously for LabPLUS due to the small number of women (53 women aged 30 years or more with valid HPV triage test results, 25 of these women positive for high risk HPV).

The proportion of women whose HPV triage test was positive also varied by age. Among women 30 years or older, HPV positivity rates were highest for those aged 30-39 years (30.4% for women with ASC-US cytology, 66.7% 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 20.6% and 23.1%). For women with LSIL results, the positivity rates were between 43.7% and 56.9% for these 10-year age groups (Figure 89, 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 one year prior to the current reporting period (ie [Comments]). In this period, there were 477 women with an ASC-US cytology result and positive HPV triage

test, and 934 who had an LSIL cytology result and positive HPV triage test. 442 (92.7%) of the women with ASC-US who were triage positive and 849 (90.9%) 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, 329 (74.4%) and 651 (76.7%) 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 24.3% for ASC-US and 23.7% for LSIL (Table 71, Table 72). These percentages varied by laboratory from 18.0% (Diagnostic Medlab Ltd) to 34.1% (Medlab Central Ltd) for ASC-US and from 14.4% (Diagnostic Medlab Ltd) to 36.2% (Canterbury Health Laboratories) for LSIL (Figure 90; note that this excludes LabPLUS, as for this time period there were no triage positive women with CIN2+ histology).

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 18.1% for ASC-US and 18.1% for LSIL (Table 71, Table 72). These percentages varied by laboratory from 13.6% (Diagnostic Medlab Ltd) to 28.6% (Canterbury Health Laboratories) for ASC-US and from 10.7% (Diagnostic Medlab Ltd) to 34.0% (Canterbury Health Laboratories) for LSIL (Figure 91). These are also compared with the corresponding percentages of women of women who attended colposcopy within six months with CIN2+ histology for women with ASC-H and HSIL cytology, by laboratory, in Figure 92.

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 93), and as a percentage of women with colposcopy recorded (Figure 94). Among women aged 30-69 years, the percentage of women with CIN2+ histology within 12 months decreased with increasing age for ASC-US. For LSIL this pattern was less clear; the highest percentage of CIN2+ histology was seen for women aged 40-49, 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 higher than in the previous report for women with ASC-US results (96.3% in the previous period compared to 97.5% in the current period), and the same for women with LSIL results (96.8% in the previous period compared to 96.8% 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 (0.7% in the previous period compared to 1.4% in the current period for ASC-US, 0.4% in the previous period compared to 0.6% 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 was similar for ASC-US (24.0% in the previous report; 24.2% in the current report), and also for LSIL (61.0% in the previous report; 59.1% in the current report).

Histological outcomes in triage positive women who attended colposcopy

92.7% 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, similar to the 90.2% seen for the previous report. For the current report 74.4% of these women with colposcopy also had a histology record, compared with 73.9% for the previous report, and of these women with a histology record, the histology result was CIN2+ for 24.3% of women in the current report, compared with 21.0% in the previous report. When histological outcomes were considered as a proportion of women with colposcopy, rather than histology, the corresponding figures were 18.1% in the current report versus 15.5% in the previous report.

For women with LSIL cytology and a positive HPV triage test in the reference period for the current report, 90.9% had a record of colposcopy and/or histology within 12 months of their result, which was very similar to the 90.5% of women in the previous report. For the current report 76.7% of these women with colposcopy also had a histology record, compared with 77.5% for the previous report, and of these women with a histology record, the histology result was CIN2+ for 23.7% of women in the current report, compared with 21.7% in the previous report. When histological outcomes were considered as a proportion of women with colposcopy, rather than histology, the corresponding figures were 18.1% for the current report and 16.8% for the previous report.

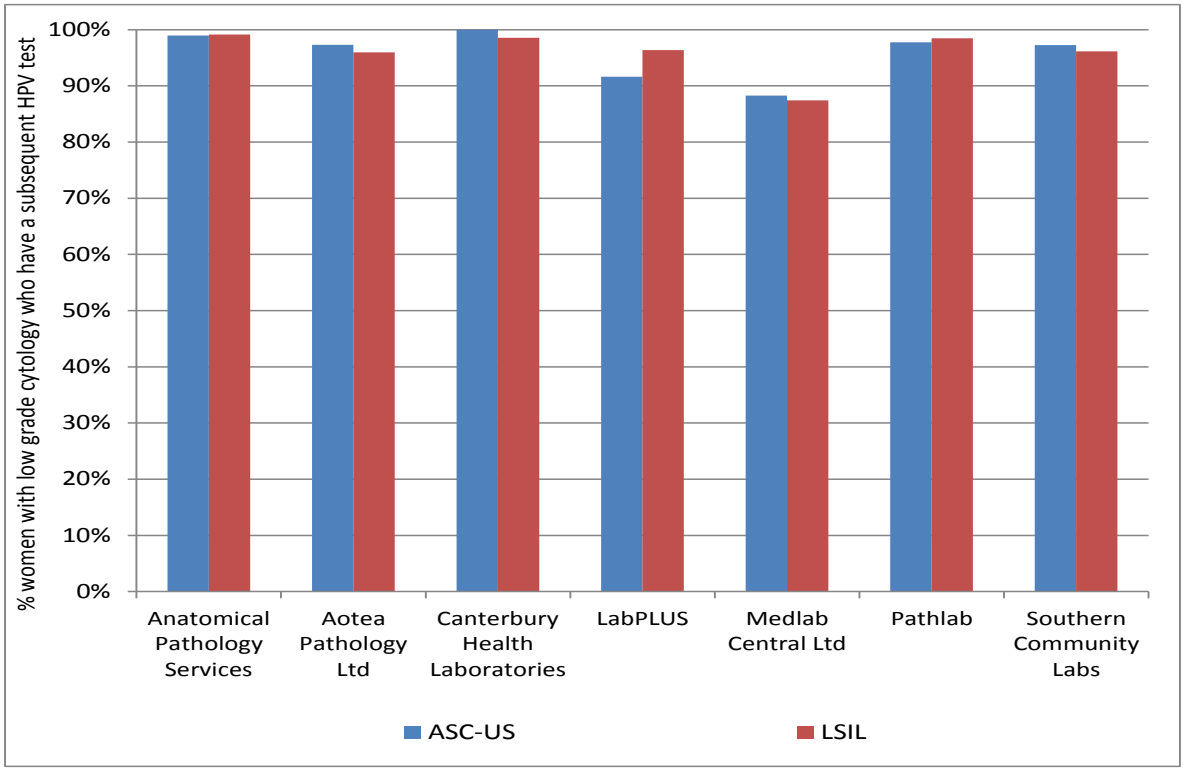
Comments

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 (25 women). This is slightly more than in the previous report (16 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 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.[14, 15] 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.

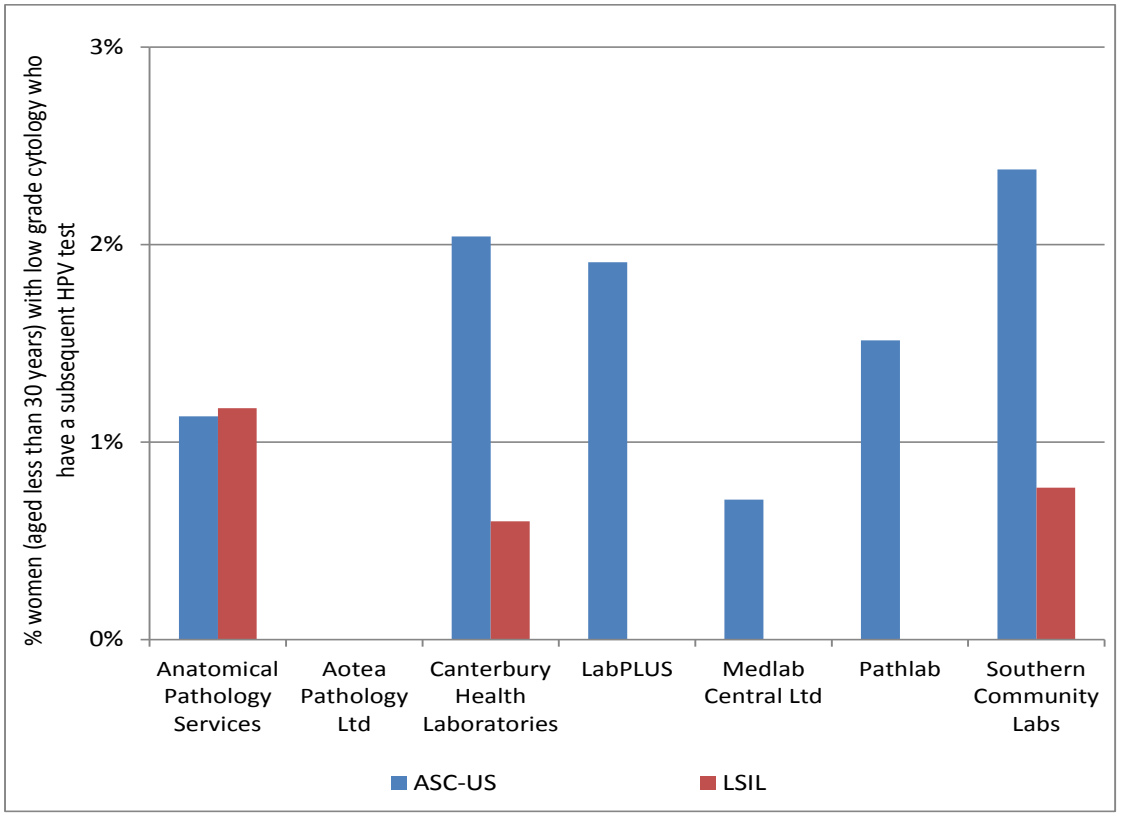
On 1 February 2015 Diagnostic Medlab Ltd closed and Anatomical Pathology Services (owned by Auckland DHB) opened. This largely resulted in Diagnostic Medlab Ltd's work moving to Anatomical Pathology Services. Results in this section relating to ASC-US and LSIL cytology collected in the current monitoring period (1 July - 31 December 2015) were processed by Anatomical Pathology Services, and are reported accordingly; however results relating to histological outcomes in women with ASC-US and LSIL cytology who were hrHPV triage positive were collected in the period 12 months prior to the current monitoring period (ie in 1 July - 31 December 2014). These tests were processed by Diagnostic Medlab Ltd, and are likewise reported accordingly.

Figure 85 – 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 86 – 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 87 - Proportion of HPV triage tests which are positive following ASC-US cytology (women aged 30 years or more), by cytology laboratory

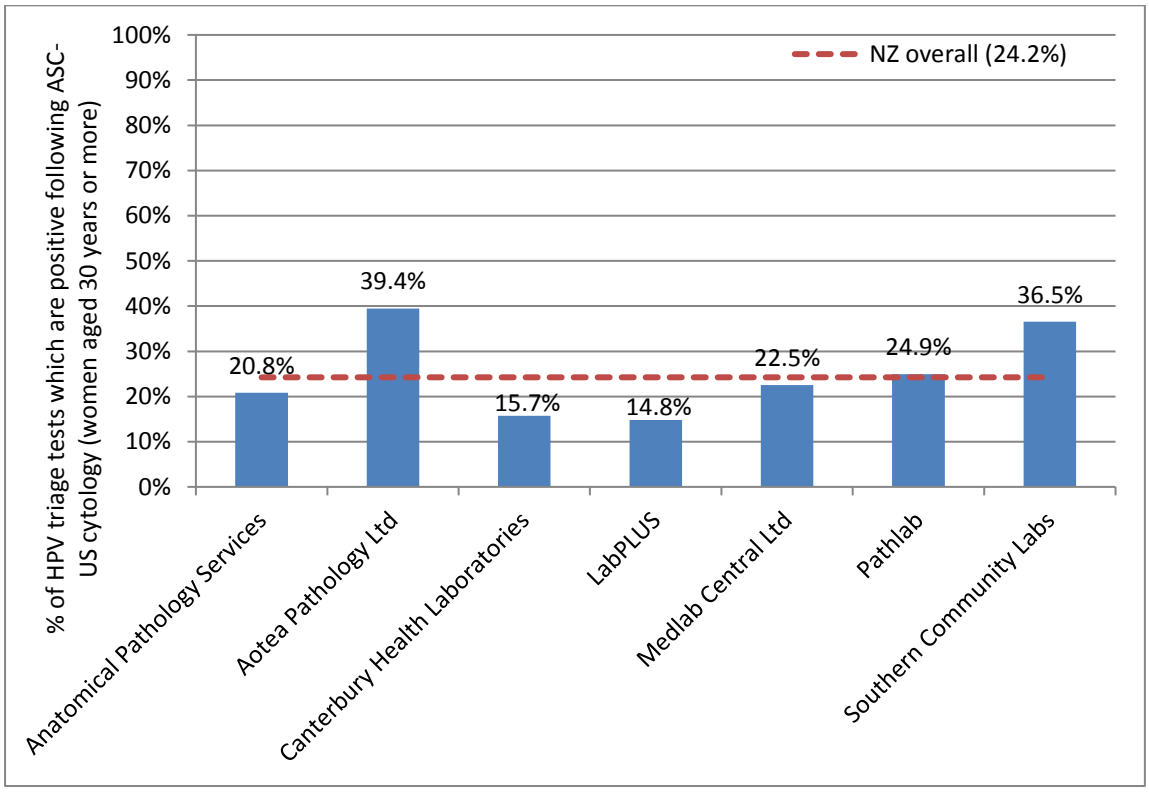


Figure 88 - Proportion of HPV triage tests which are positive following LSIL cytology (women aged 30 years or more), by cytology laboratory

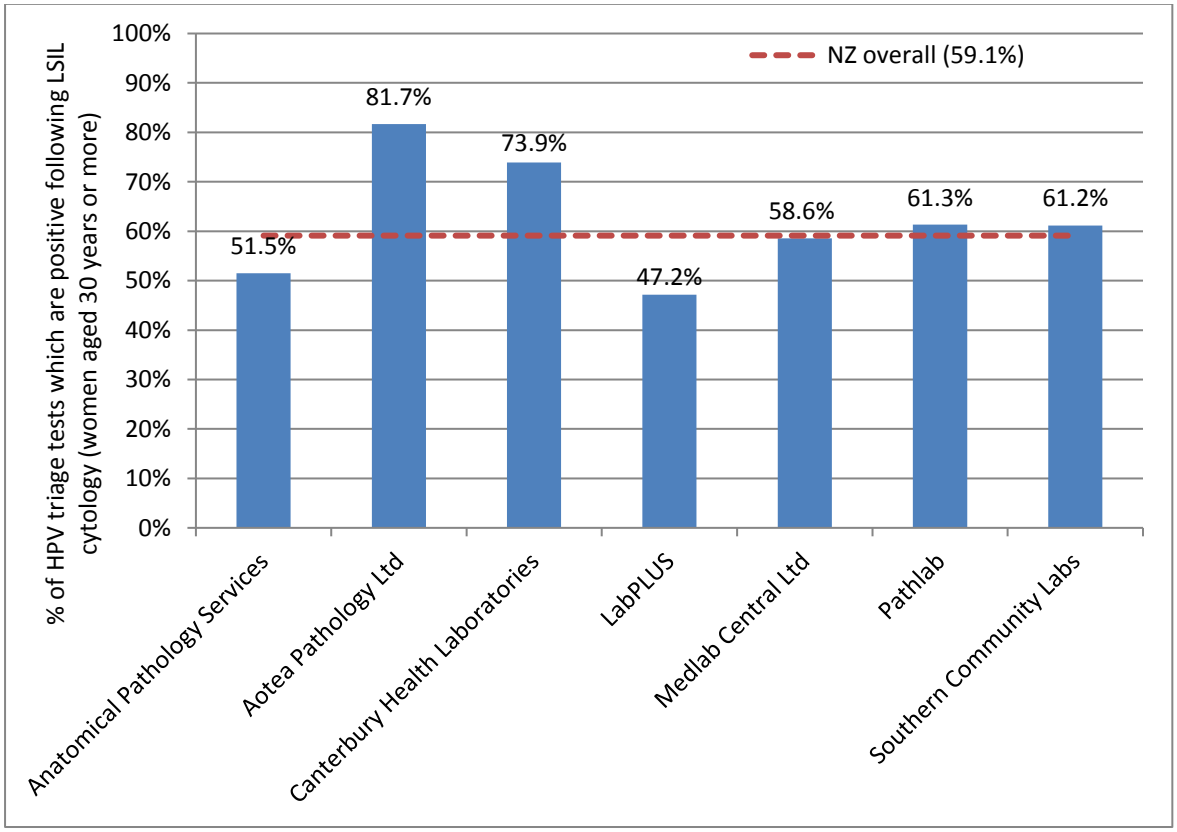
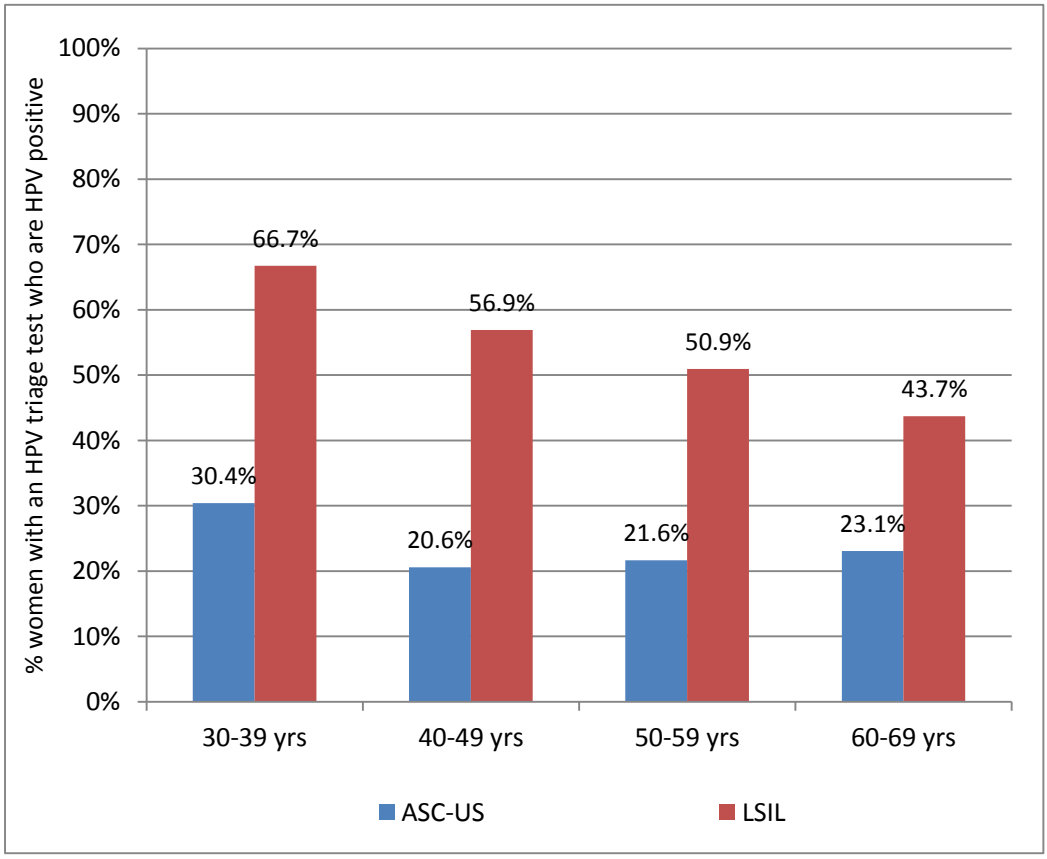


Figure 89 – Proportion of women with an HPV triage test who are HPV positive, by age and cytology result



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	475	1	50.0	41	29.5	31	18.9	14	13.5	13	20.0	0	0.0
Aotea Pathology Ltd	0	109	0	0.0	18	52.9	10	30.3	12	35.3	3	37.5	0	0.0
Canterbury Health Laboratories	1	172	1	100.0	13	22.8	8	12.7	5	11.9	1	10.0	0	0.0
LabPLUS	3	142	1	33.3	8	16.7	3	7.1	8	22.2	2	15.4	0	0.0
Medlab Central Ltd	1	271	0	0.0	30	31.6	16	15.5	11	20.0	4	22.2	0	0.0
Pathlab	2	257	2	100.0	21	26.3	19	24.1	16	24.6	7	23.3	1	33.3
Southern Community Labs	3	249	1	33.3	31	38.8	30	35.7	19	33.3	9	36.0	2	66.7
Anatomical Pathology Services	2	475	1	50.0	41	29.5	31	18.9	14	13.5	13	20.0	0	0.0

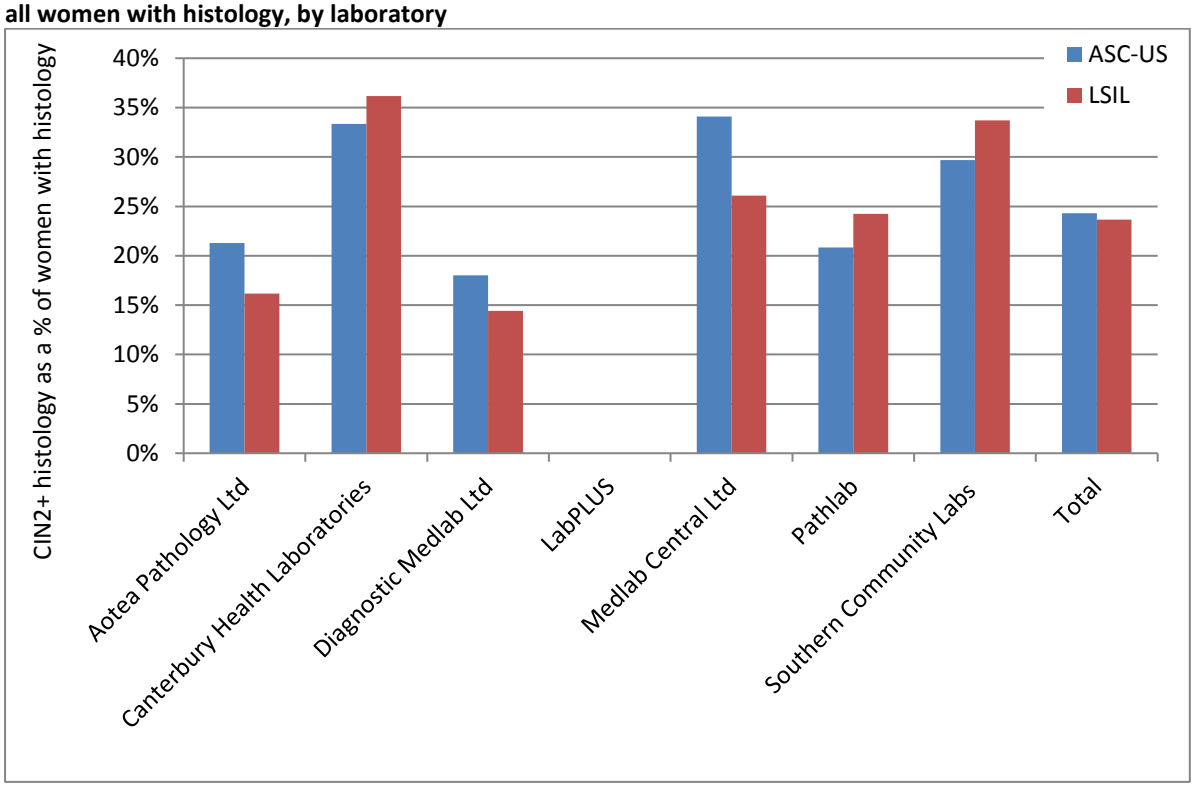
Excludes women with abnormal cytology in the five years preceding their low grade cytology sample. Additionally excludes women with any previous squamous high grade (cytology or histology)*

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	462	3	50.0	129	60.6	67	47.5	29	41.4	13	34.2	0	0.0
Aotea Pathology Ltd	0	71	-	-	29	82.9	17	85.0	7	70.0	5	83.3	0	0.0
Canterbury Health Laboratories	1	69	0	0.0	27	73.0	12	75.0	11	78.6	1	50.0	0	0.0
LabPLUS	0	53	-	-	16	64.0	6	33.3	3	37.5	0	0.0	0	0.0
Medlab Central Ltd	0	111	-	-	31	70.5	17	51.5	14	53.8	3	37.5	0	0.0
Pathlab	0	256	-	-	61	64.9	49	62.8	34	59.6	12	48.0	1	50.0
Southern Community Labs	6	497	5	83.3	144	69.6	108	60.3	41	46.6	11	47.8	0	0.0
Total	**13**	**1,519**	**8**	**61.5**	**437**	**66.7**	**276**	**56.9**	**139**	**50.9**	**45**	**43.7**	**1**	**33.3**

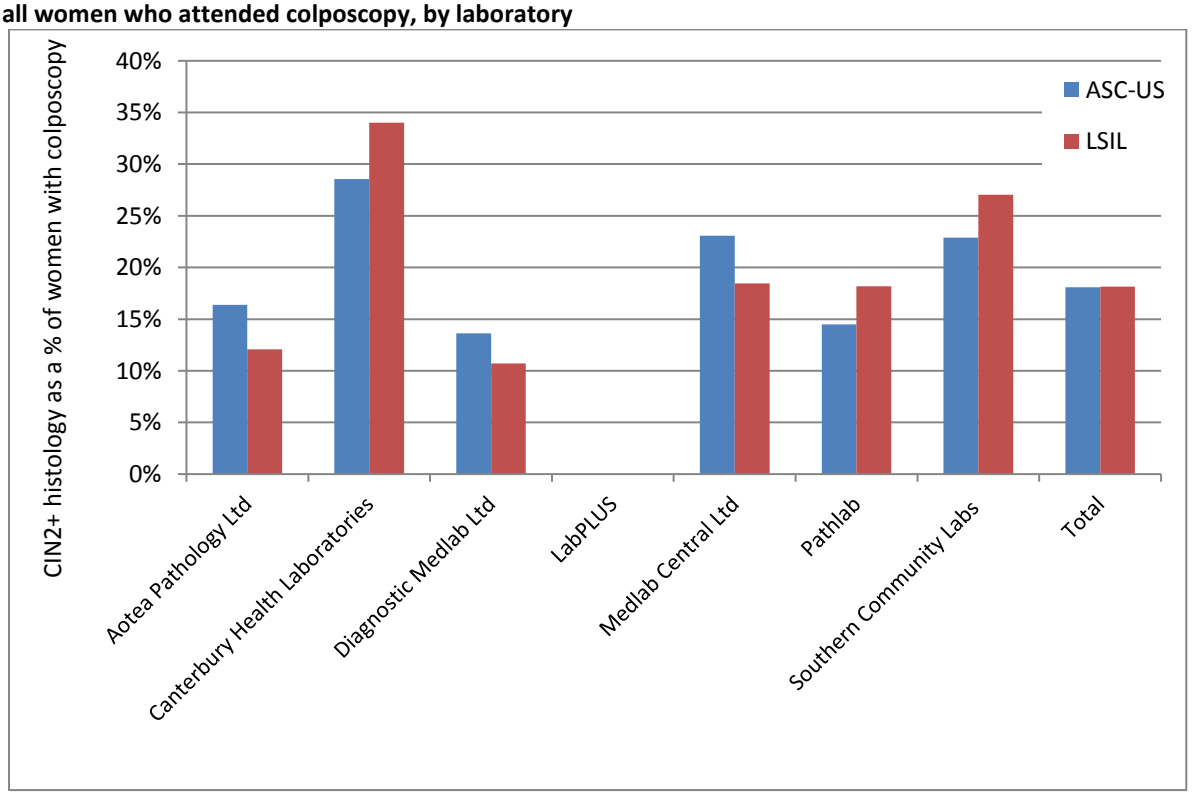
*Excludes women with abnormal cytology in the five years preceding their low grade cytology sample * Additionally excludes women with any previous squamous high grade (cytology or histology)*

Figure 90 - Triage positive women with histologically-confirmed CIN2+ within 12 months, as a percentage of all women with histology, by laboratory



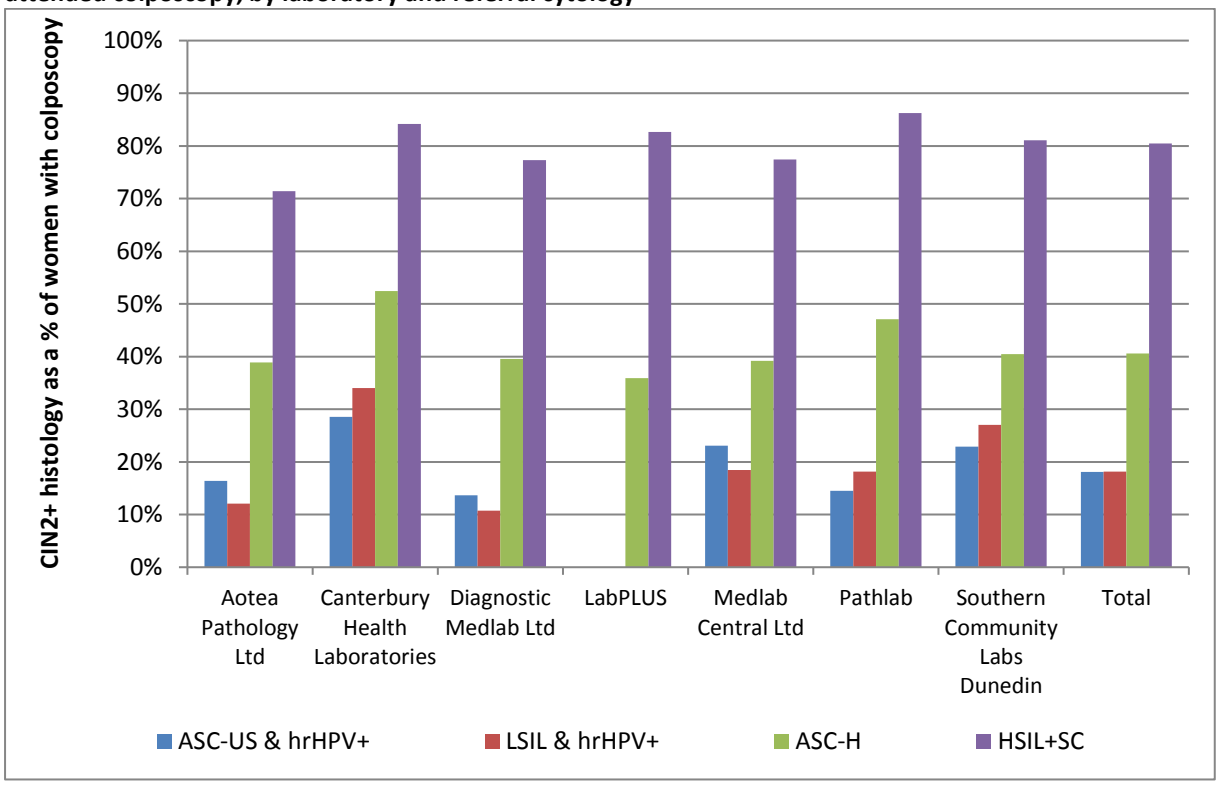
There were no women with cytology samples processed by LabPLUS who had histologically-confirmed CIN2+ for this reporting period.

Figure 91 - 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 histologically-confirmed CIN2+ for this reporting period.

Figure 92 - 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 histologically-confirmed CIN2+ for this reporting period.

Figure 93 - Triage positive women with histologically-confirmed CIN2+ within 12 months, as a percentage of women with histology recorded, by age

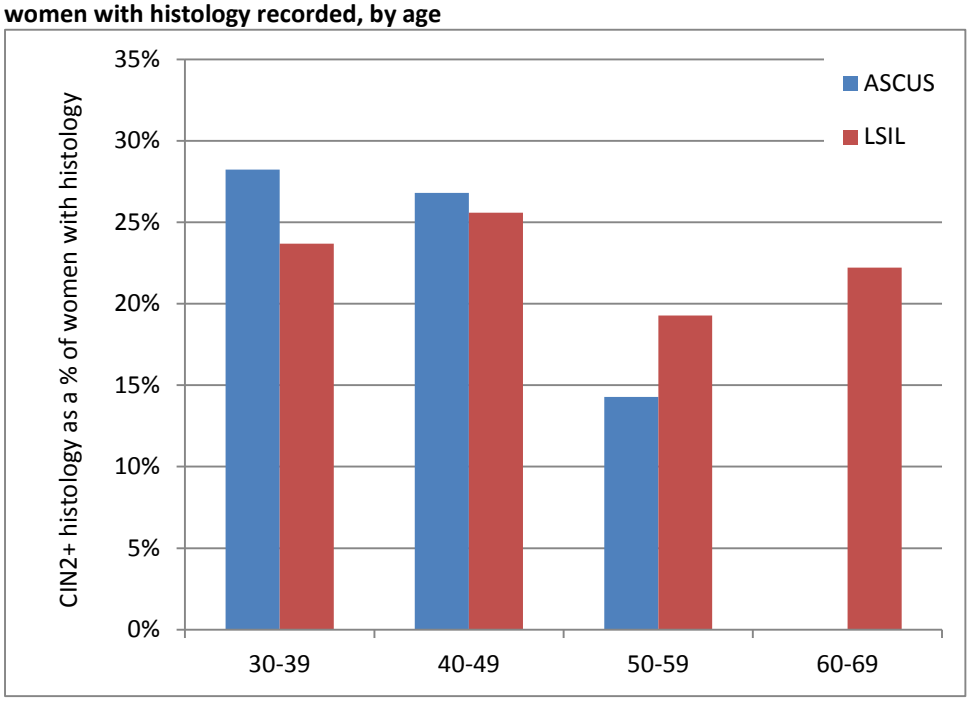
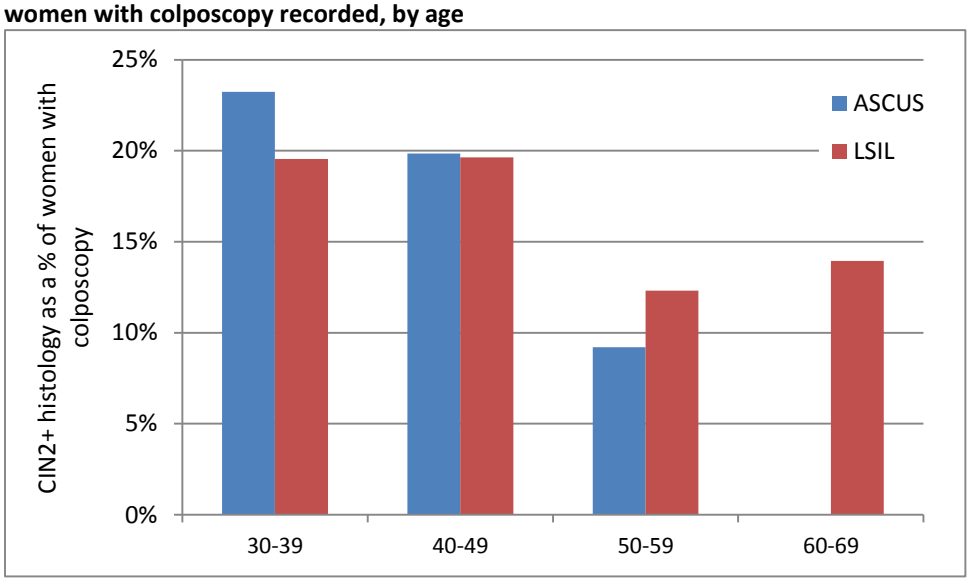


Figure 94 - Triage positive women with histologically-confirmed CIN2+ within 12 months, as a percentage of women with colposcopy recorded, by age



There were no ASC-US triage positive women aged 60-69 years who had histologically-confirmed CIN2+ for this reporting period

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 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 HrHPV tests for other purposes and the need to eliminate HrHPV tests for other purposes. For this reason the purpose of HrHPV tests are discussed in this report, but the indicator remains under development.

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 cytology sample was collected.

Target

Targets have not yet been set.

Current Situation

Overall volumes

There were 20,466 samples received by laboratories for HPV testing within the current reporting period. These are reported on further in Table 73 to Table 78.

Virtually all (98.6%) samples for HPV testing were from women aged 20-69 years. The large majority of women (86.5%) were aged 30 years or more (Figure 95, Table 77).

The number of samples received by laboratories for HPV testing ranged from 833 (Aotea Pathology Ltd; 4.1% of all HPV tests) to 6,998 (Southern Community Labs; 34.2% of all HPV tests) (Figure 96, Table 73).

Figure 97 and Table 73 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 9.3% across New Zealand – that is, on average 9.3% of cytology tests are associated with an HPV test. This ratio varied by laboratory from 6.4% (Aotea Pathology Ltd; ie fewer HPV tests processed in relation to cytology tests processed than national average) to 14.7% (Canterbury Health Laboratories; ie more HPV tests processed in relation to cytology tests processed than national average).

The proportion of HPV tests with invalid results was 0.1% (Table 74). The proportion was small for both HPV test technologies reported (Table 75).

The distribution of HPV tests by ethnicity is shown in Table 76.

Purpose of HPV tests

These HPV tests were further analysed in order to ascertain the purpose for which they were performed. Nationally, it was estimated that 2,660 (13.0%) were for post-treatment management for women treated in the past four years; 7,977 (39.0%) was for follow-up management of women with high grade squamous cytology or histology more than three years previously (historical testing); 880 (4.3%) were on samples collected at a colposcopy visit which did not fit into a previous category (possibly for resolution of discordant results); and 3,033 (14.8%) were for triage of low grade cytology in women aged 30 years or more. There were 5,916 (28.9%) HPV tests that did not fit into any of the previously described categories (Figure 98).

Further breakdowns of HPV tests by purpose are presented by age (Figure 99), laboratory (Figure 100), and ethnicity (Table 76).

There were variations in HPV test purpose by age (Figure 99, Table 77). 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 follow-up management. 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 49 years. Tests which did not fit into the prescribed categories, and were therefore classified as 'Other', were the most common classification among women aged 55 years and older.

HPV test purpose also varied by laboratory (Figure 100, Table 78). Among tests for which the purpose could be determined, the most common categories were historical testing (at Anatomical Pathology Services, Aotea Pathology Ltd, Canterbury Health Laboratories, Medlab Central, Pathlab, Southern Community Laboratories) and HPV triage testing (LabPLUS). In all labs, however, tests for which the purpose was unclear were quite common, varying from 16.2% at Canterbury Health Laboratories to 41.9% at LabPLUS. The proportion of tests performed for post-treatment management varied from 8.8% (Pathlab) to 21.7% (Canterbury Health Laboratories), while the proportion performed to follow up women with historical high grade squamous abnormalities varied from 17.3% (LabPLUS) to 47.3% (Pathlab). The proportion of tests where the sample was collected at colposcopy but not for one of the previous purposes ranged from 0.2% (Aotea Pathology Ltd) to 19.0% (Canterbury Health Laboratories). The proportion of tests performed for HPV triage ranged from 9.9% (Southern Community Labs) to 19.6% (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 76).

Tests in the 'Other' category were further explored. A proportion of the 'Other' tests (3.2%; 192 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 5.5% occurred after treatment, but did not meet the criteria for post-treatment management because they occurred within 6 months of treatment (1.8%; 108 tests), or after treatment of either a non-squamous high grade (1.0%; 59 tests) or a non-high grade (2.7%; 158 tests). A further 18.4% 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 (8.1%; 481 tests), not high grade (0.2%; 14 tests), or the high grade squamous cytology was less than three years ago (10.0%; 594 tests).

A larger proportion of the "Other" tests (35.9%; 2,121 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 (29.2%; 1,729 tests), but some suggested prior high grade histology (6.6%; 392 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 (2.5%; 150 tests), or a record suggesting a previous low grade cytology not explicitly recorded on the NCSP Register (3.2%; 189 tests). After this exploration, there

remained 1,850 tests (31.3% of "Other" tests; 9.0% 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 (608 tests; 89.8%) than from private facilities (69 tests; 10.2%). 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 sector, 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 7.1% of colposcopies. In DHBs where HPV tests were collected at colposcopy, this value ranged from 0.1% (Capital & Coast) to 25.9% (Lakes), and was 7.5% overall across all public DHB clinics (Figure 101, Table 79). In private practice, this rate was 4.7%. No HPV tests were taken at colposcopy in Hawke's Bay, Hutt Valley, Tairawhiti, Taranaki, West Coast or Whanganui.

Trends

More samples were received at laboratories for HPV testing in the current reporting period (20,466) than in the previous monitoring report (19,103; an increase of 0.6%). This was not consistent across all test purpose categories – there was an increase in tests performed for historical testing (from 37.4% to 39.0%) and test which did not fit into prescribed categories (from 28.3% to 28.9%), while the number of tests decreased for post treatment management (from 13.7% to 13.0%), triage of low grade cytology (from 15.9% to 14.8%), and HPV testing taken at colposcopy (from 4.6% to 4.3%).

The number of samples received by Pathlab for HPV testing in the current report period increased (from 2,739 to 2,814) compared with the previous report period. The number received by LabPLUS also increased (from 740 to 986 tests). The number of samples received by the remaining laboratories varied by less than three percent from the number received in the previous period.

Variations in the purpose of the HPV test by age and ethnicity were broadly similar to that in previous reports. 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 97, Table 73). 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. 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. 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 histogical) reported here (35.9%) is similar to that in the previous report (34.7%), but the number of tests in this category has increased since the previous report (from 1,874 to 2,121). 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 95 - Volume of HPV test samples received by laboratories during the monitoring period, by age

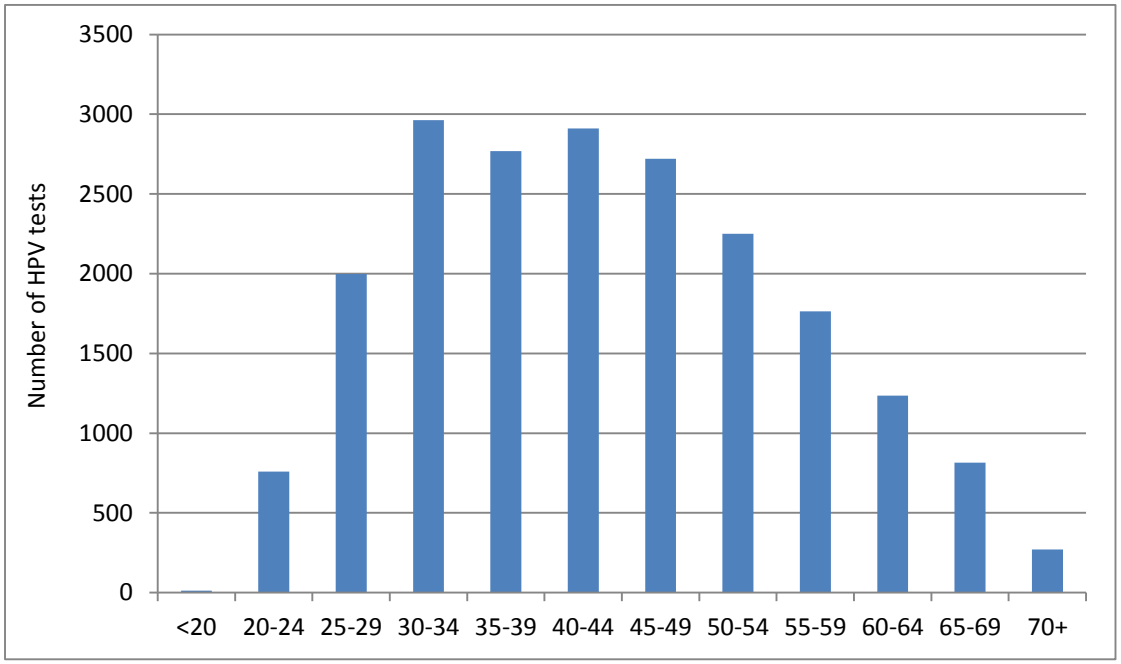


Figure 96 - Volume of HPV test samples received by laboratories during the monitoring period, by laboratory

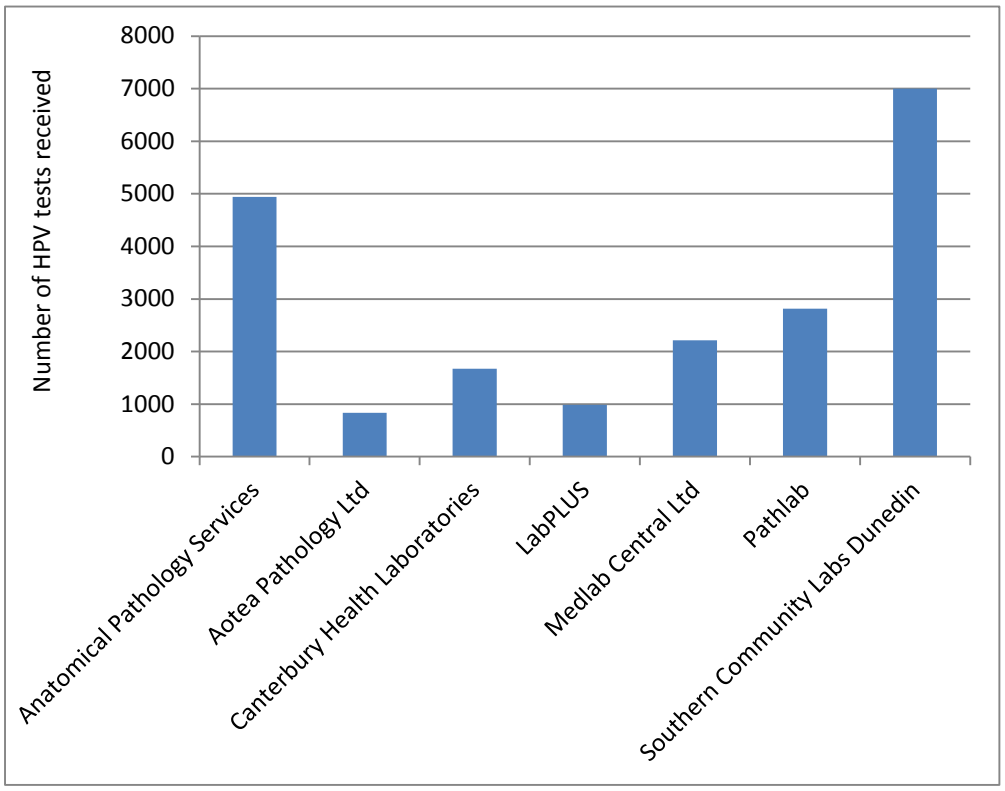
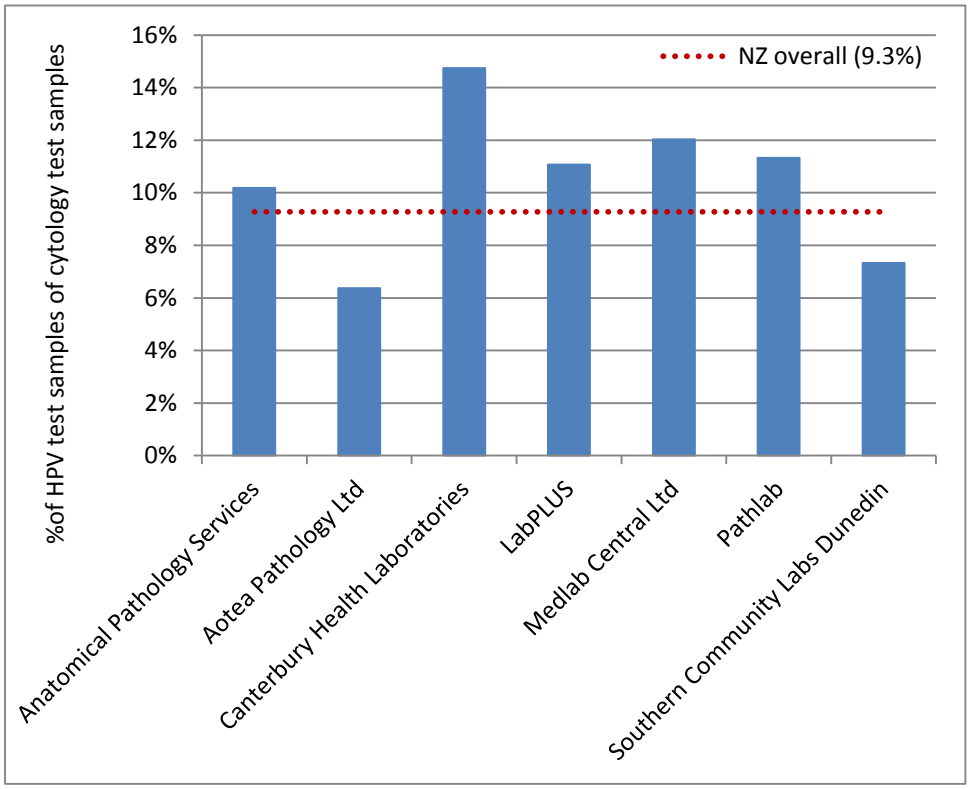


Figure 97 –HPV test samples as a percentage of cytology test samples received during the monitoring period, by laboratory



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

Figure 98 - Volume of HPV test samples received during the monitoring period, by purpose

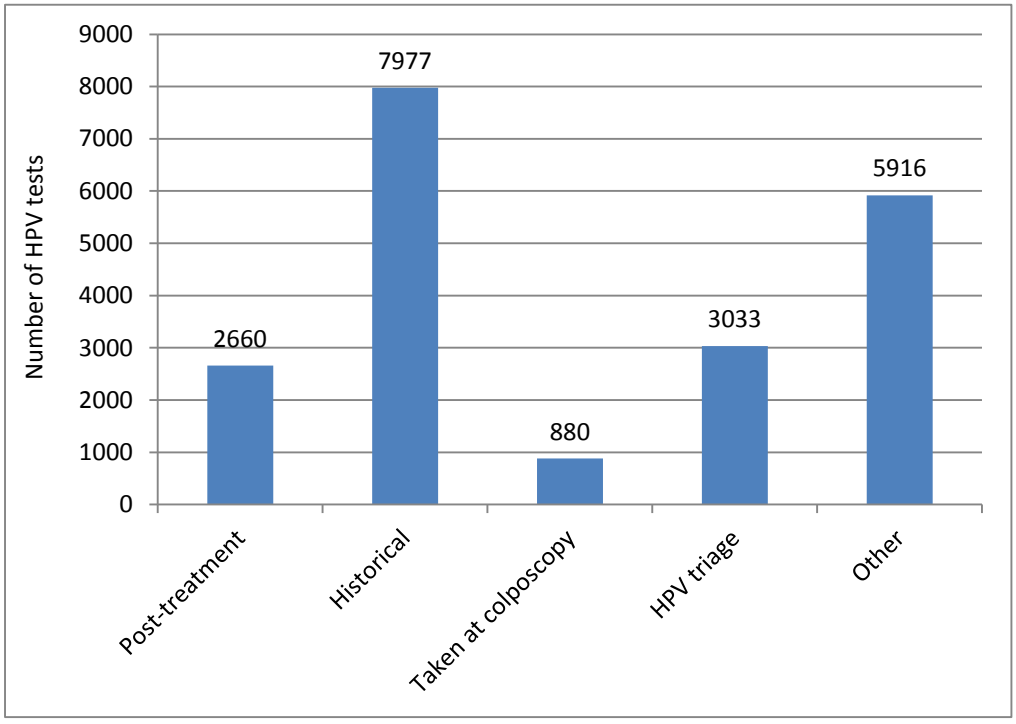


Figure 99- HPV test samples received during the monitoring period, by purpose and age

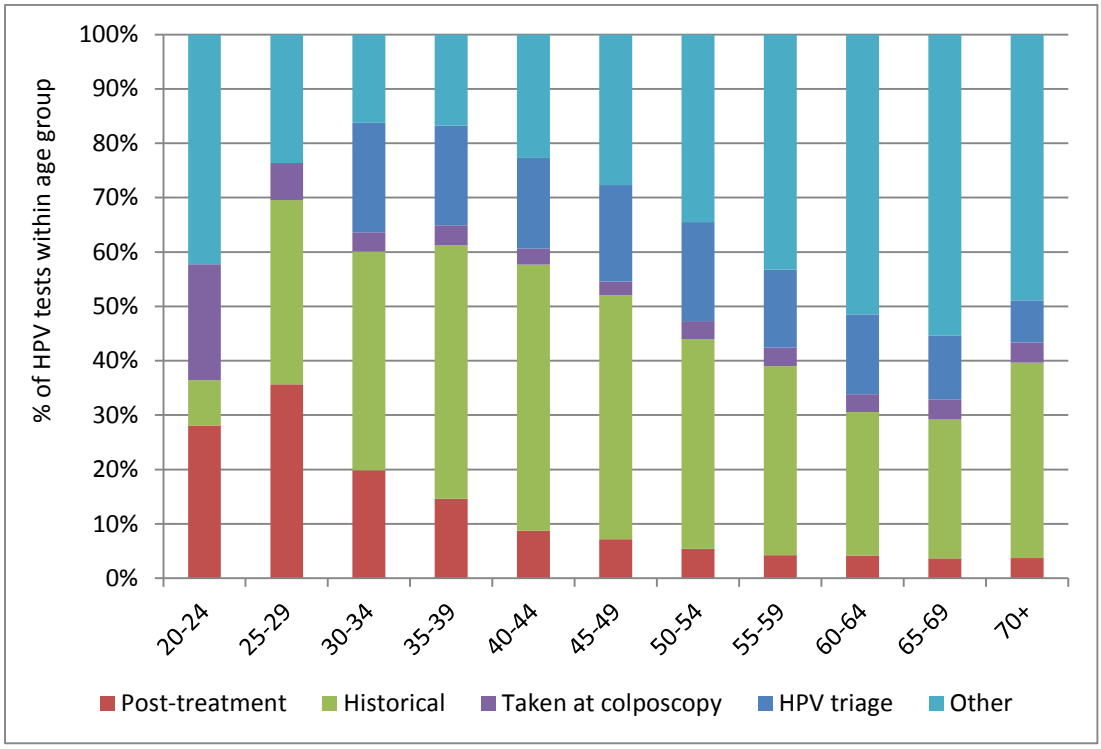


Figure 100- HPV test samples received during the monitoring period, by purpose and laboratory

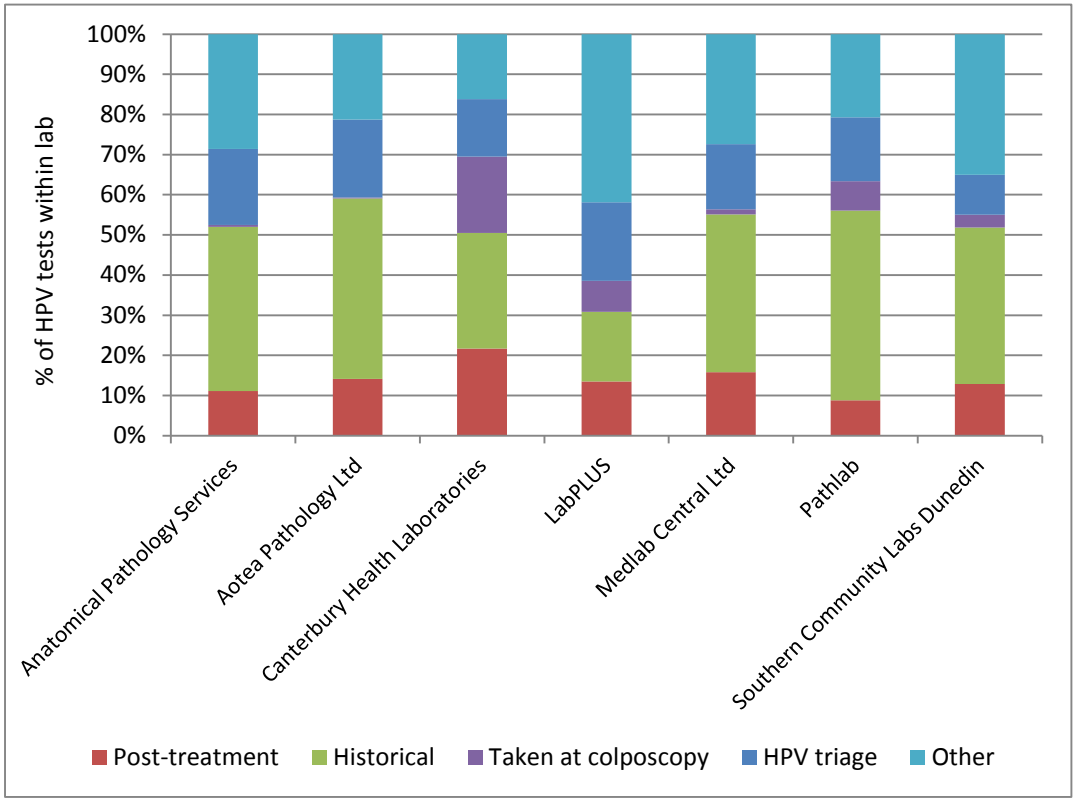
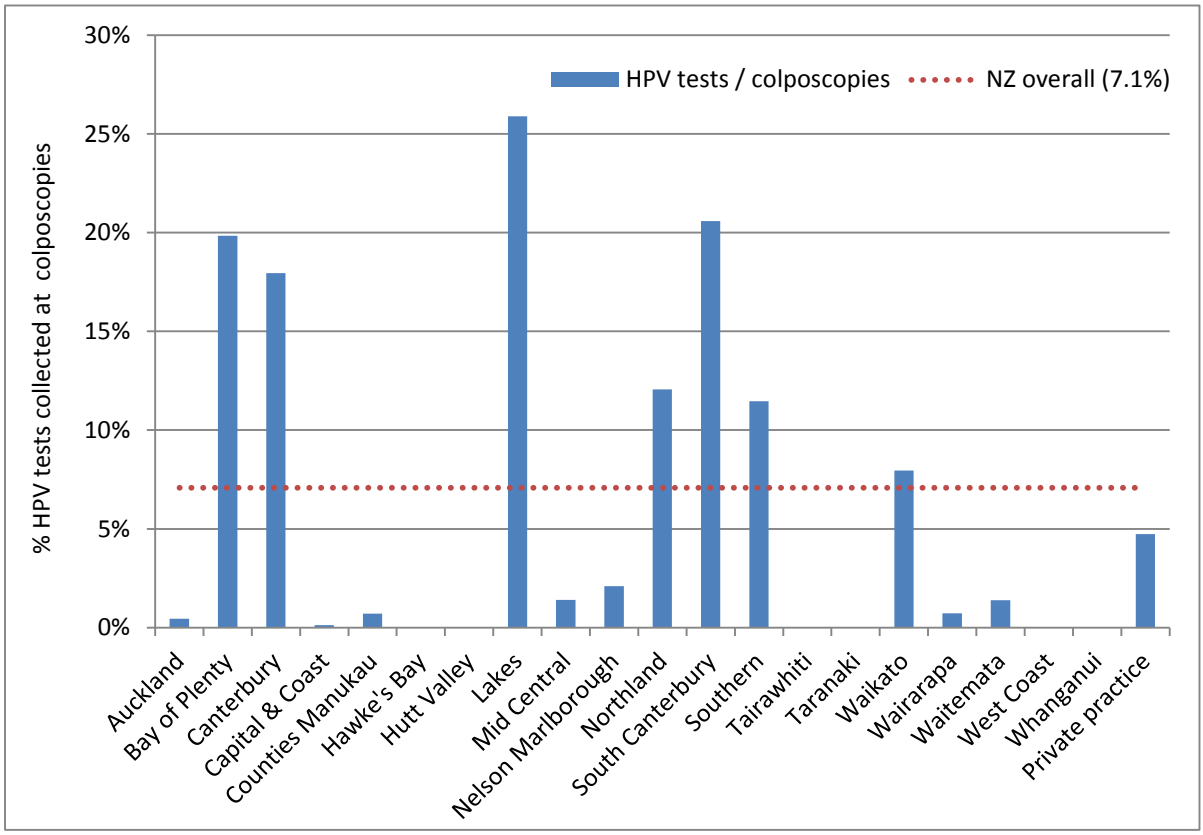


Figure 101- HPV test samples collected at colposcopy, in relation to total colposcopies performed in the period, by DHB



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 or Whanganui.

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 more than three years ago may benefit from two rounds of dual cytology and hrHPV 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 hrHPV 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

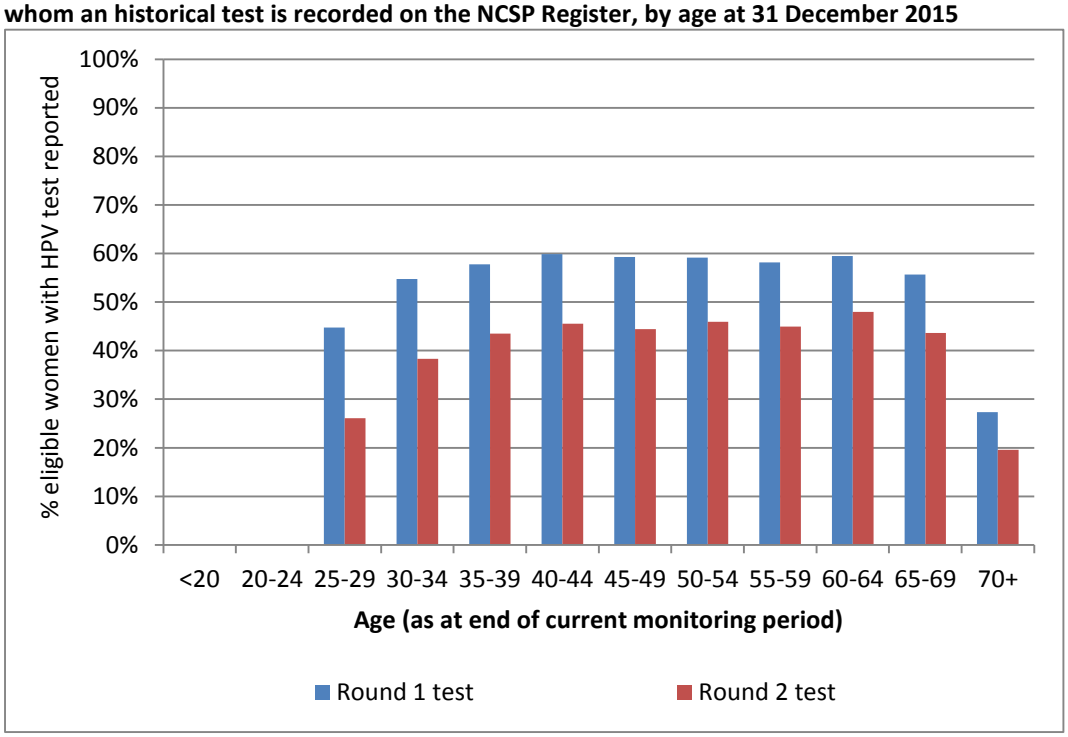
	they were not performed for the purpose of historical testing. After excluding those tests, the first HPV test in each woman was defined as her Round 1 historical test. A Round 2 historical test was defined as the first HPV test which occurred at least 9 months after a Round 1 historical test. Measures reported by age are based on the age of the women at the end of the current reporting period (31 December 2015). 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 50,509 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, 49,658 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 very few women eligible for historical testing who were aged less than 25 years at the end of the current monitoring period (no women aged less than 20 years; 1 women aged 20-24 years); however this is not unexpected, as these women would generally have been less than 20 years old on 1 October 2009 (Table 80). ***HPV tests performed for historical reasons*** Overall, 28,494 (57.4%) of the women eligible for historical testing have a Round 1 historical test recorded on the NCSP Register. There were 21,597 women who also have a Round 2 historical test (43.5% of eligible women; 75.8% of those with a Round 1 test). The proportion of women with historical tests varied by age. Among women aged at least 25 years at the end of the current reporting period, the proportion of eligible women with a historical test varied from 44.8% (25-29 years) to 59.9% (40-44 years) for Round 1 tests, and from 26.1% (25-29 years) to 48.0% (60-64 years) for Round 2 tests (Figure 102, Table 80). The proportion of eligible women with historical tests also varied by DHB, from 39.6% (Auckland and Counties Manukau) to 76.4% (Nelson Marlborough) for Round 1 tests, and from 24.9% (Counties Manukau) to 66.8% (Nelson Marlborough) for Round 2 tests (Figure 103, Table 81). 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 109). The proportion of eligible women with Round 1 historical tests ranged from 37.4% in Pacific women to 59.8% in European/ Other women (Figure 104, Table 82). For Round 2 tests, this proportion ranged from 25.8% in Pacific women to 46.3% 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 105) or by ethnicity (Figure 106).
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, ethnicity and virtually every age group. An exception is in women aged 25-29 years at the end of the current monitoring period; Round 1 historical tests decreased from 45.8% to 44.8% and Round 2 tests from 26.9% to 26.1%.
Comments	This indicator is still under development, and will continue to be refined in future monitoring reports. For example, planned refinements include reporting on the proportion of the Round 1 and Round 2 historical tests where hrHPV was detected, and on how many women are able to be returned to routine screening after two rounds of negative cytology and hrHPV 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 (March 2015), 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 hrHPV testing. It is intended that future monitoring reports will also incorporate reporting on the use of hrHPV tests for the purpose of post-treatment management as a separate sub-indicator within Indicator 8.

Figure 102 - 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 31 December 2015



No women aged less than 20 at the end of the current reporting period were eligible for historical testing.

Figure 103 - 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

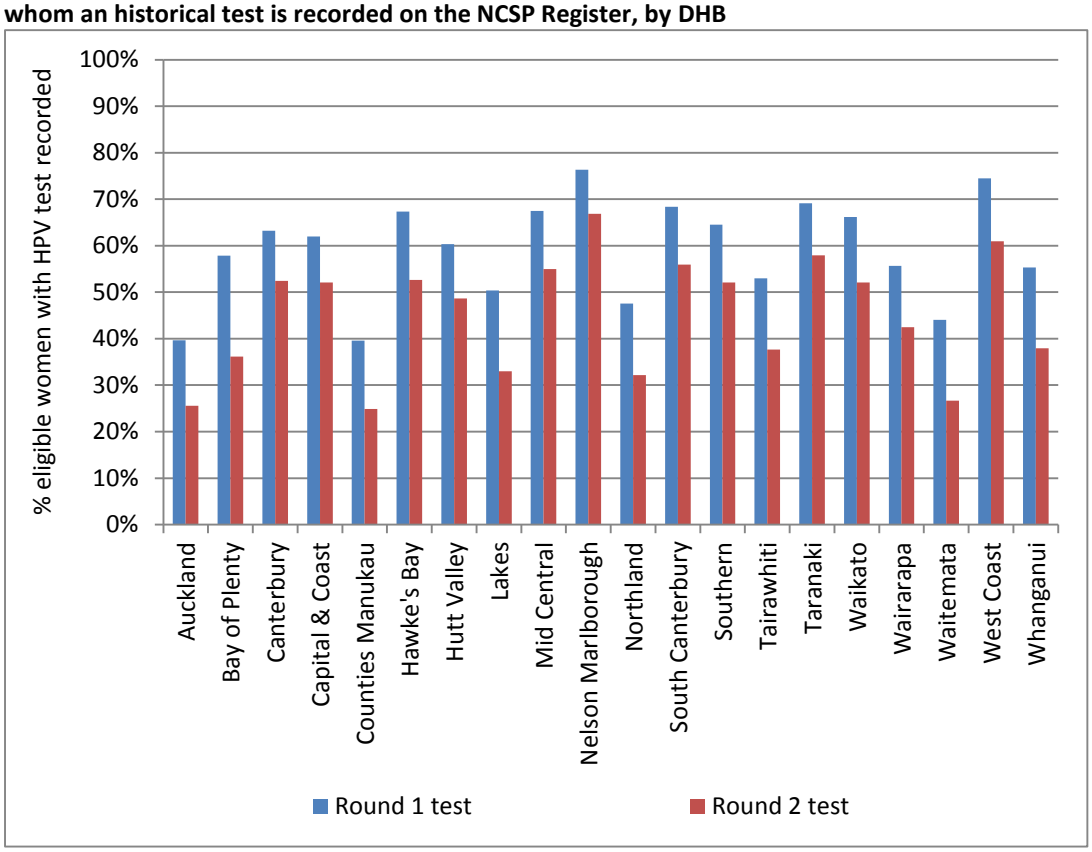


Figure 104 - Proportion of eligible women with squamous high grade abnormality more than 3 years ago for whom an historical test is recorded on the NCSP Register, by ethnicity

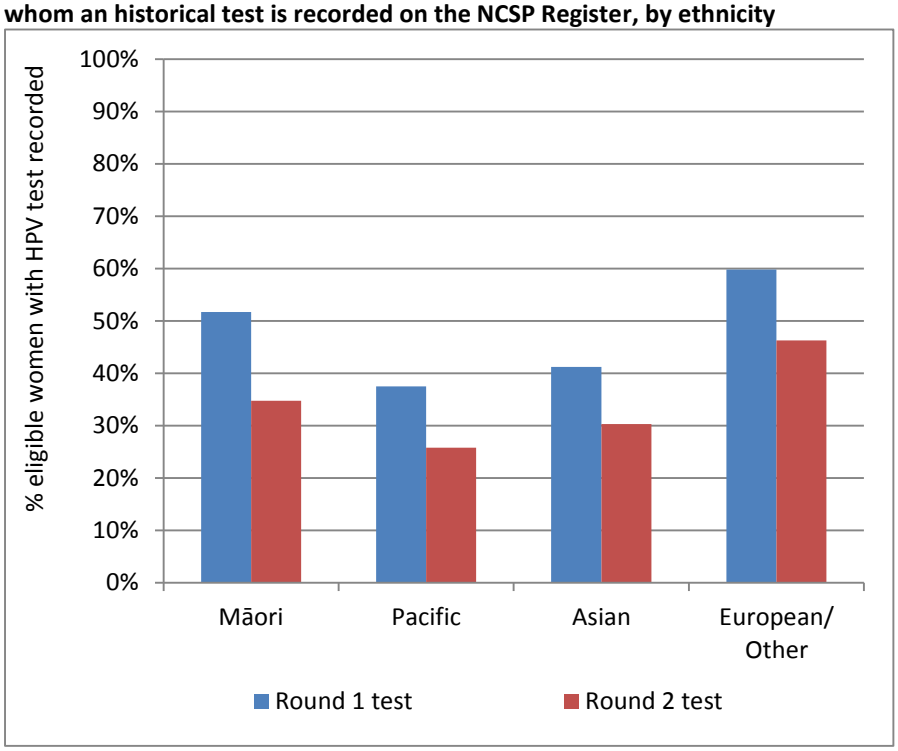
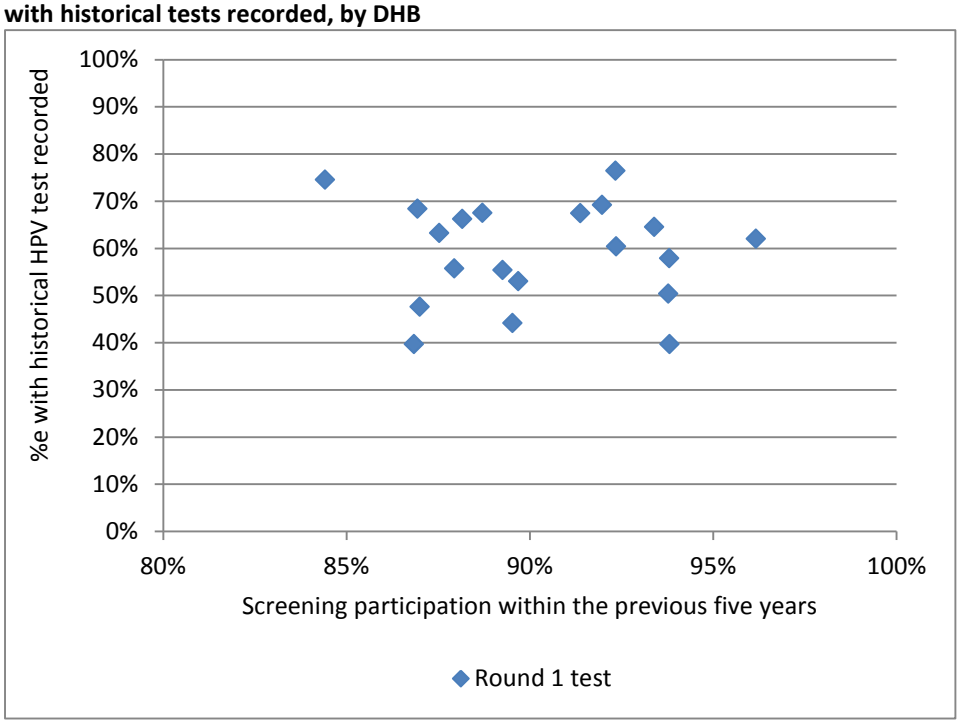
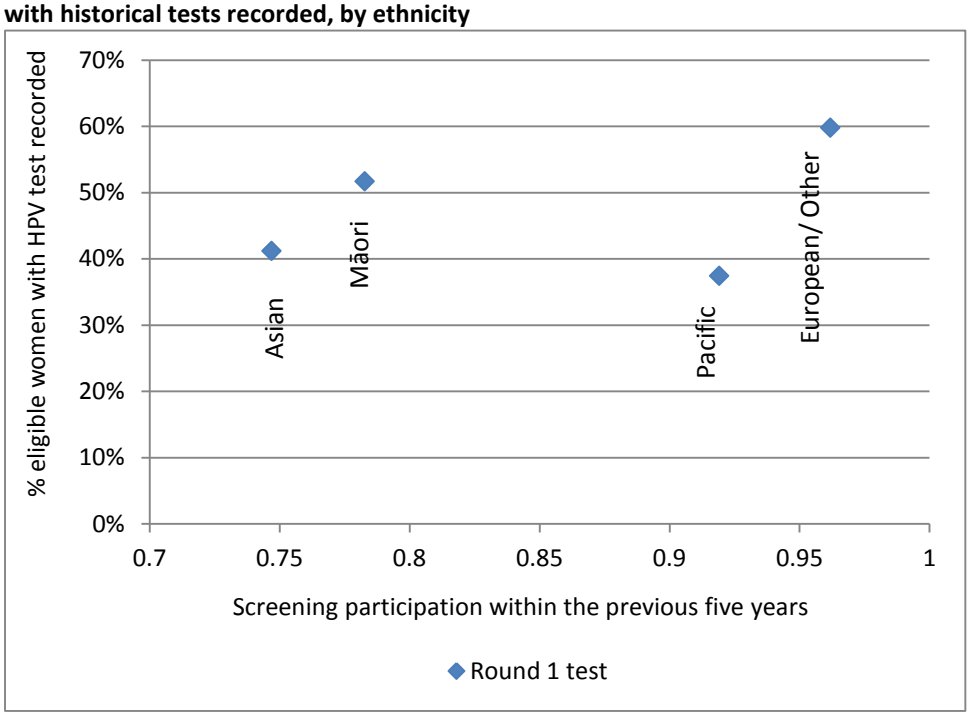


Figure 105 – Relationship between women screened in the previous five years and proportion of women with historical tests recorded, by DHB



Each dot represents a DHB.

Figure 106 - 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 A – Additional data

Indicator 1 - Coverage

Indicator 1.1 – Three-year coverage

Table 22 - Coverage by age (women 20-69 years screened in the three years prior to 31 December 2015, hysterectomy adjusted)

Age	Hysterectomy adjusted population	Women screened in the last 3 years	
	N	N	%
20-24	160,845	83,855	52.1
25-29	158,745	104,697	66.0
30-34	147,128	106,461	72.4
35-39	137,758	106,508	77.3
40-44	148,980	118,799	79.7
45-49	147,461	119,678	81.2
50-54	141,404	114,477	81.0
55-59	121,768	98,232	80.7
60-64	97,954	77,706	79.3
65-69	82,931	62,377	75.2
20-69	**1,344,974**	**992,790**	**73.8**

Table 23 - Coverage by DHB (women 25-69 years screened in the three years prior to 31 December 2015, hysterectomy adjusted)

DHB	Hysterectomy adjusted population	Women screened in the last 3 years	
	N	N	%
Auckland	132,812	105,412	79.4
Bay of Plenty	55,800	44,707	80.1
Canterbury	135,673	101,218	74.6
Capital & Coast	80,033	64,400	80.5
Counties Manukau	132,735	97,246	73.3
Hawke's Bay	40,251	30,719	76.3
Hutt Valley	37,991	29,632	78.0
Lakes	26,333	20,590	78.2
Mid Central	42,212	31,899	75.6
Nelson Marlborough	38,055	30,677	80.6
Northland	41,711	30,017	72.0
South Canterbury	14,818	11,243	75.9
Southern	77,997	62,048	79.6
Tairawhiti	11,764	8,604	73.1
Taranaki	29,980	23,744	79.2
Waikato	97,340	73,134	75.1
Wairarapa	11,047	8,246	74.6
Waitemata	153,682	117,629	76.5
West Coast	8,706	6,254	71.8
Whanganui	15,189	11,509	75.8
Total	***1,184,129***	***908,928***	***76.8***

Excludes 7 women for whom DHB could not be determined

Table 24 - Coverage by ethnicity (women 25-69 years screened in the three years prior to 31 December 2015, hysterectomy adjusted)

Ethnicity	Hysterectomy adjusted population (ages 25-69 years)	Women screened in the last 3 years (ages 25-69 years)	
		N	%
Māori	156,406	98,525	63.0
Pacific	66,090	49,035	74.2
Asian	171,535	110,610	64.5
European/Other	790,098	650,765	82.4
Total	**1,184,129**	**908,935**	**76.8**

Table 25 - Coverage by age (women 20-69 years screened in the five years prior to 31 December 2015, hysterectomy adjusted)

Age	Hysterectomy adjusted population	Women screened in the last 5 years	
		N	%
20-24	160,845	89,546	55.7
25-29	158,745	128,098	80.7
30-34	147,128	128,304	87.2
35-39	137,758	126,671	92.0
40-44	148,980	139,816	93.8
45-49	147,461	140,165	95.1
50-54	141,404	133,783	94.6
55-59	121,768	113,254	93.0
60-64	97,954	89,137	91.0
65-69	82,931	72,109	87.0
20-69	**1,344,974**	**1,160,883**	**86.3**

Table 26 - Coverage by DHB (women aged 25-69 years screened in the five years prior to 31 December 2015, hysterectomy adjusted)

DHB	Hysterectomy adjusted population	Women screened in the last 5 years	
	N	N	%
Auckland	132,812	124,605	93.8
Bay of Plenty	55,800	52,347	93.8
Canterbury	135,673	118,767	87.5
Capital & Coast	80,033	76,973	96.2
Counties Manukau	132,735	115,277	86.8
Hawke's Bay	40,251	36,783	91.4
Hutt Valley	37,991	35,089	92.4
Lakes	26,333	24,695	93.8
Mid Central	42,212	37,448	88.7
Nelson Marlborough	38,055	35,143	92.3
Northland	41,711	36,291	87.0
South Canterbury	14,818	12,883	86.9
Southern	77,997	72,851	93.4
Tairawhiti	11,764	10,551	89.7
Taranaki	29,980	27,575	92.0
Waikato	97,340	85,818	88.2
Wairarapa	11,047	9,716	88.0
Waitemata	153,682	137,600	89.5
West Coast	8,706	7,350	84.4
Whanganui	15,189	13,559	89.3
Total	**1,184,129**	**1,071,321**	**90.5**

Excludes 16 women for whom DHB could not be determined

Table 27 - Coverage by ethnicity – women aged 25-69 years screened in the five years prior to 31 December 2015, hysterectomy adjusted

Ethnicity	Hysterectomy adjusted population	Women screened in the last 5 years	
	N	N	%
Māori	156,406	122,437	78.3
Pacific	66,090	60,753	91.9
Asian	171,535	128,142	74.7
European/Other	790,098	760,005	96.2
TOTAL	**1,184,129**	**1,071,337**	**90.5**

Table 28 - Women aged 25-69 years screened in the five years prior to 31 December 2015, by ethnicity and DHB (hysterectomy adjusted)

	Māori		Pacific		Asian		European/Other	
DHB	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Auckland	6,804	71.0	12,535	102.1	32,397	77.7	72,869	105.2
Bay of Plenty	9,779	80.3	614	76.8	2,492	70.7	39,462	100.4
Canterbury	6,123	65.6	2,398	90.3	9,351	70.6	100,895	91.4
Capital & Coast	6,004	77.6	4,332	85.0	8,862	77.6	57,775	103.6
Counties Manukau	14,350	79.6	23,351	93.7	26,557	74.4	51,019	94.3
Hawke's Bay	8,141	91.7	1,072	92.7	1,358	75.4	26,212	92.2
Hutt Valley	4,642	85.6	2,310	88.6	3,824	87.0	24,313	95.1
Lakes	7,127	87.8	473	86.8	1,344	67.5	15,751	100.4
Mid Central	5,737	82.8	866	88.7	2,208	70.5	28,637	91.9
Nelson Marlborough	2,606	81.9	381	84.1	1,205	71.0	30,951	94.6
Northland	10,131	80.4	431	63.0	1,118	66.7	24,611	92.0
South Canterbury	576	59.3	108	103.8	385	68.3	11,814	89.6
Southern	4,242	68.0	1,029	92.0	2,889	65.6	64,691	97.7
Tairawhiti	4,655	87.5	189	75.0	240	69.2	5,467	93.6
Taranaki	3,473	78.6	210	76.4	902	65.8	22,990	96.1
Waikato	14,390	75.5	1,933	81.2	6,355	72.3	63,140	94.1
Wairarapa	1,362	86.9	154	91.1	235	71.0	7,965	88.7
Waitemata	8,627	69.0	8,095	87.8	25,834	74.6	95,044	97.7
West Coast	629	74.3	57	74.0	205	59.8	6,459	86.8
Whanganui	3,031	86.6	214	67.3	381	81.2	9,933	91.1
NZ OVERALL		**78.3**		**91.9**		**74.7**		**96.2**

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 31 December 2015, 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	645	645	4.2
Bay of Plenty	319	318	4.7
Canterbury	1,251	1,249	7.4
Capital & Coast	542	541	5.1
Counties Manukau	632	630	3.2
Hawke's Bay	259	258	4.9
Hutt Valley	201	201	4.3
Lakes	131	129	3.7
Mid Central	285	285	4.6
Nelson Marlborough	223	222	5.5
Northland	139	137	2.6
South Canterbury	95	94	5.5
Southern	643	642	5.6
Tairawhiti	53	53	3.2
Taranaki	191	189	5.3
Waikato	490	488	3.6
Wairarapa	68	67	5.2
Waitemata	1,004	1,003	5.1
West Coast	53	53	6.2
Whanganui	75	75	3.9
Unspecified	-	-	-
Total	**7,299**	**7,279**	**4.7**

Table 30 – Women screened under 20 years of age, as a proportion of all women screened in the three years to 31 December 2015, by DHB

DHB	Women screened in last 3 years aged < 20 years	all ages	Proportion of women screened who were aged < 20 years (%)
Auckland	645	116,381	0.6
Bay of Plenty	319	49,839	0.6
Canterbury	1,251	114,422	1.1
Capital & Coast	542	73,529	0.7
Counties Manukau	632	107,772	0.6
Hawke's Bay	259	34,289	0.8
Hutt Valley	201	32,870	0.6
Lakes	131	22,814	0.6
Mid Central	285	36,423	0.8
Nelson Marlborough	223	33,655	0.7
Northland	139	33,180	0.4
South Canterbury	95	12,518	0.8
Southern	643	71,121	0.9
Tairawhiti	53	9,628	0.6
Taranaki	191	26,485	0.7
Waikato	490	82,921	0.6
Wairarapa	68	9,199	0.7
Waitemata	1,004	130,291	0.8
West Coast	53	7,008	0.8
Whanganui	75	12,881	0.6
Unspecified	-	-	-
Total	**7,299**	**1,017,226**	**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 31 December 2015, by DHB

	Number of women screened in last 3 years		
DHB	**aged 10-19 years**	**aged 18-19 years**	**% aged 18-19 years**
Auckland	645	592	91.8
Bay of Plenty	319	282	88.4
Canterbury	1,251	1,092	87.3
Capital & Coast	542	515	95.0
Counties Manukau	632	553	87.5
Hawke's Bay	259	227	87.6
Hutt Valley	201	176	87.6
Lakes	131	109	83.2
Mid Central	285	270	94.7
Nelson Marlborough	223	198	88.8
Northland	139	122	87.8
South Canterbury	95	72	75.8
Southern	643	596	92.7
Tairawhiti	53	47	88.7
Taranaki	191	164	85.9
Waikato	490	456	93.1
Wairarapa	68	53	77.9
Waitemata	1,004	853	85.0
West Coast	53	46	86.8
Whanganui	75	73	97.3
Unspecified	-	-	-
Total	**7,299**	**6,496**	**89.0**

Table 32 - Women (25-69 years) screened in the three years to 31 December 2015, 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)	(no hysterectomy adjustment)
Auckland	79.4	71.4
Bay of Plenty	80.1	69.9
Canterbury	74.6	65.8
Capital & Coast	80.5	71.8
Counties Manukau	73.3	65.4
Hawke's Bay	76.3	66.5
Hutt Valley	78.0	69.0
Lakes	78.2	68.6
Mid Central	75.6	66.3
Nelson Marlborough	80.6	69.9
Northland	72.0	62.4
South Canterbury	75.9	65.8
Southern	79.6	69.9
Tairawhiti	73.1	64.3
Taranaki	79.2	69.6
Waikato	75.1	66.2
Wairarapa	74.6	64.6
Waitemata	76.5	67.9
West Coast	71.8	62.8
Whanganui	75.8	65.9

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 30 Jun 2014	To 31 Dec 2014	To 30 Jun 2015	To 31 Dec 2015
Auckland	74.6%	78.8%	79.1%	79.4%
Bay of Plenty	78.1%	78.9%	79.5%	80.1%
Canterbury	74.1%	75.2%	74.5%	74.6%
Capital & Coast	78.2%	81.4%	80.5%	80.5%
Counties Manukau	69.4%	71.5%	72.5%	73.3%
Hawke's Bay	80.1%	77.0%	76.4%	76.3%
Hutt Valley	78.4%	77.8%	77.6%	78.0%
Lakes	78.2%	78.0%	77.8%	78.2%
Mid Central	74.2%	74.8%	74.6%	75.6%
Nelson Marlborough	81.2%	80.2%	80.6%	80.6%
Northland	74.0%	72.5%	71.9%	72.0%
South Canterbury	78.7%	75.6%	75.2%	75.9%
Southern	79.4%	79.3%	79.6%	79.6%
Tairawhiti	74.3%	72.5%	72.0%	73.1%
Taranaki	86.0%	80.2%	79.5%	79.2%
Waikato	76.7%	74.4%	74.7%	75.1%
Wairarapa	82.1%	75.2%	74.8%	74.6%
Waitemata	75.6%	76.2%	76.3%	76.5%
West Coast	78.6%	74.9%	73.5%	71.8%
Whanganui	74.6%	74.9%	75.7%	75.8%
Total	**76.0%**	**76.5%**	**76.5%**	**76.8%**

Coverage calculated using population projection at the date shown based on 2013 Census data for 31 Dec 2014 and 30 Jun 2015, and 2006 Census data for 31 Dec 2013 and 30 Jun 2014.

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 30 Jun 2014	To 31 Dec 2014	To 30 Jun 2015	To 31 Dec 2015
20-24	53.6%	53.8%	52.7%	52.1%
25-29	65.9%	66.8%	66.0%	66.0%
30-34	69.0%	72.3%	72.0%	72.4%
35-39	76.2%	76.7%	76.7%	77.3%
40-44	79.8%	79.2%	79.3%	79.7%
45-49	80.8%	80.7%	80.8%	81.2%
50-54	80.7%	80.9%	80.8%	81.0%
55-59	80.2%	80.0%	80.6%	80.7%
60-64	78.9%	78.5%	79.1%	79.3%
65-69	73.8%	74.0%	74.5%	75.2%

Coverage calculated using population projection at the date shown based on 2013 Census data for 31 Dec 2014 and 30 Jun 2015, and 2006 Census data for 31 Dec 2013 and 30 Jun 2014.

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 30 Jun 2014	To 31 Dec 2014	To 30 Jun 2015	To 31 Dec 2015
Māori	62.3%	61.7%	62.2%	63.0%
Pacific	69.0%	72.1%	73.0%	74.2%
Asian	65.1%	62.6%	63.5%	64.5%
European/ Other	81.2%	82.7%	82.4%	82.4%
Total	**76.0%**	**76.5%**	**76.5%**	**76.8%**

Coverage calculated using population projection at the date shown based on 2013 Census data for 31 Dec 2014 and 30 Jun 2015, and 2006 Census data for 31 Dec 2013 and 30 Jun 2014.

Indicator 1.2 – Regularity of screening

Table 36 - Routine (3-yearly) repeat screening interval (number of cytology tests), by ethnicity, 2011-2015

	Māori women			Pacific women			Asian women			European/Other women		
Quarter	Early	On-time	Late	Early	On-time	Late	Early	On-time	Late	Early	On-time	Late
Jan-Mar 2011	1,226	2,185	1,443	457	879	578	1,241	2,136	731	9,939	21,972	7,094
Apr-Jun 2011	1,221	2,709	1,676	442	1,153	666	1,436	2,625	836	10,656	25,482	8,132
Jul-Sep 2011	1,198	2,583	1,546	485	1,181	625	1,301	2,662	834	9,935	26,040	8,040
Oct-Dec 2011	1,021	2,248	1,366	362	1,021	599	1,069	2,221	754	8,769	23,403	7,640
Jan-Mar 2012	1,084	2,314	1,456	445	1,056	610	1,225	2,480	815	9,580	23,648	8,034
Apr-Jun 2012	1,088	2,535	1,640	444	1,169	738	1,288	2,749	910	9,184	25,212	8,447
Jul-Sep 2012	1,062	2,685	1,597	420	1,188	638	1,197	2,731	925	8,815	25,559	8,305
Oct-Dec 2012	938	2,464	1,525	336	1,020	593	1,062	2,453	798	8,252	24,247	8,240
Jan-Mar 2013	941	2,398	1,475	352	1,075	647	1,103	2,597	900	8,284	23,060	8,023
Apr-Jun 2013	1,032	2,636	1,625	384	1,214	674	1,240	2,947	1,014	8,960	25,753	8,813
Jul-Sep 2013	980	2,707	1,634	374	1,432	772	1,148	3,308	1,076	8,375	27,003	8,731
Oct-Dec 2013	794	2,452	1,578	298	1,219	644	979	2,748	963	7,635	24,765	8,378
Jan-Mar 2014	977	2,695	1,596	334	1,221	796	1,071	2,929	1,040	7,782	24,207	8,815
Apr-Jun 2014	919	2,910	1,707	340	1,310	763	1,210	3,243	1,021	8,107	26,049	8,890
Jul-Sep 2014	962	3,032	1,710	313	1,428	763	1,050	3,645	1,126	7,622	28,008	8,725
Oct-Dec 2014	820	2,859	1,661	333	1,381	798	950	3,172	1,026	7,101	26,899	8,117
Jan-Mar 2015	957	2,793	1,780	321	1,318	816	1,066	3,274	1,189	7,659	26,436	9,204
Apr-Jun 2015	963	3,135	1,991	325	1,540	975	1,140	3,841	1,432	7,851	28,674	9,985
Jul-Sep 2015	872	3,474	2,007	320	1,510	837	1,025	3,752	1,127	7,121	29,328	9,131
Oct-Dec 2015	874	3,224	1,874	331	1,489	914	942	3,571	1,153	6,864	27,968	9,197

Table 37 - Routine (3-yearly) repeat screening interval (number of cytology tests), by age, 2011-2015

	20-29			30-39			40-49			50-59			60-69		
Quarter	Early	On-time	Late	Early	On-time	Late	Early	On-time	Late	Early	On-time	Late	Early	On-time	Late
Jan-Mar 2011	2,390	2,674	1,271	2,999	5,623	2,900	3,547	7,544	2,874	2,622	6,650	1,830	1,305	4,681	971
Apr-Jun 2011	2,408	2,800	1,305	3,212	6,448	3,265	3,821	9,016	3,347	2,954	8,035	2,266	1,360	5,670	1,127
Jul-Sep 2011	2,321	2,811	1,273	2,889	6,366	3,293	3,592	9,192	3,209	2,789	8,305	2,217	1,328	5,792	1,053
Oct-Dec 2011	1,920	2,442	1,287	2,484	5,568	2,996	3,096	7,989	3,031	2,448	7,654	1,991	1,273	5,240	1,054
Jan-Mar 2012	2,299	2,805	1,329	2,896	5,912	3,249	3,378	8,125	3,159	2,563	7,474	2,151	1,198	5,182	1,027
Apr-Jun 2012	2,027	2,795	1,282	2,724	6,119	3,252	3,307	8,859	3,467	2,625	8,234	2,420	1,321	5,658	1,314
Jul-Sep 2012	1,916	2,762	1,235	2,587	6,135	3,243	3,259	9,054	3,397	2,538	8,441	2,414	1,194	5,771	1,176
Oct-Dec 2012	1,741	2,603	1,257	2,285	5,552	3,110	2,922	8,284	3,255	2,400	8,014	2,297	1,240	5,731	1,237
Jan-Mar 2013	1,952	2,721	1,320	2,452	5,692	3,183	2,877	7,884	3,091	2,295	7,504	2,296	1,104	5,329	1,155
Apr-Jun 2013	1,849	2,841	1,229	2,599	6,076	3,363	3,354	9,000	3,556	2,608	8,432	2,592	1,206	6,201	1,386
Jul-Sep 2013	1,824	3,021	1,281	2,384	6,378	3,290	3,040	9,580	3,564	2,468	9,112	2,695	1,161	6,359	1,383
Oct-Dec 2013	1,539	2,620	1,297	2,139	5,620	3,114	2,710	8,485	3,216	2,226	8,404	2,584	1,092	6,055	1,352
Jan-Mar 2014	1,789	2,930	1,324	2,370	5,874	3,391	2,757	8,486	3,396	2,164	8,113	2,618	1,084	5,649	1,518
Apr-Jun 2014	1,762	2,933	1,290	2,444	6,274	3,305	2,893	9,040	3,573	2,327	8,964	2,750	1,150	6,301	1,463
Jul-Sep 2014	1,724	3,013	1,311	2,181	6,490	3,370	2,749	9,834	3,493	2,192	9,874	2,718	1,101	6,902	1,432
Oct-Dec 2014	1,527	2,793	1,182	2,002	6,026	3,215	2,551	9,226	3,303	2,062	9,459	2,514	1,062	6,807	1,388
Jan-Mar 2015	1,853	3,055	1,380	2,312	6,348	3,596	2,592	9,030	3,699	2,169	8,971	2,829	1,077	6,417	1,485
Apr-Jun 2015	1,722	3,161	1,416	2,401	6,784	3,843	2,749	10,008	4,138	2,262	9,989	3,161	1,145	7,248	1,825
Jul-Sep 2015	1,527	3,246	1,342	2,149	6,933	3,611	2,516	10,217	3,734	2,073	10,451	2,917	1,073	7,217	1,498
Oct-Dec 2015	1,459	3,241	1,366	1,960	6,381	3,525	2,457	9,693	3,728	2,085	9,720	2,987	1,050	7,217	1,532

Table 38 - 12 month repeat screening interval (number of cytology tests), by ethnicity, 2011-2015

	Māori women			Pacific women			Asian women			European/Other women		
Quarter	Early	On-time	Late	Early	On-time	Late	Early	On-time	Late	Early	On-time	Late
Jan-Mar 2011	228	1,501	2,323	85	562	937	134	1,186	1,382	1,148	10,852	10,562
Apr-Jun 2011	213	1,785	2,687	91	675	1,139	149	1,423	1,666	1,173	12,751	11,469
Jul-Sep 2011	142	1,844	2,640	45	687	1,013	108	1,511	1,696	923	13,367	11,601
Oct-Dec 2011	145	1,725	2,477	36	600	1,039	104	1,349	1,352	885	12,222	10,806
Jan-Mar 2012	196	1,548	2,500	62	612	1,097	119	1,266	1,476	1,100	11,372	11,494
Apr-Jun 2012	176	1,676	2,552	45	616	1,176	140	1,458	1,611	946	11,258	11,056
Jul-Sep 2012	171	1,850	2,648	68	635	1,050	118	1,610	1,690	852	11,968	11,312
Oct-Dec 2012	127	1,487	2,479	46	564	1,034	122	1,338	1,533	748	11,040	10,729
Jan-Mar 2013	168	1,415	2,471	62	547	1,055	119	1,290	1,565	920	9,932	10,584
Apr-Jun 2013	137	1,446	2,554	49	554	1,197	124	1,427	1,752	912	10,764	11,179
Jul-Sep 2013	141	1,537	2,631	42	614	1,225	109	1,687	1,688	767	10,629	11,213
Oct-Dec 2013	117	1,433	2,345	28	530	1,047	86	1,328	1,629	733	9,889	10,384
Jan-Mar 2014	184	1,310	2,527	55	500	1,187	110	1,349	1,645	816	9,063	10,659
Apr-Jun 2014	155	1,353	2,524	38	565	1,082	99	1,463	1,682	792	9,392	10,185
Jul-Sep 2014	107	1,404	2,432	33	556	1,043	88	1,727	1,693	679	9,610	10,327
Oct-Dec 2014	113	1,230	2,468	35	497	1,122	88	1,372	1,696	655	8,848	9,801
Jan-Mar 2015	130	1,189	2,636	41	468	1,169	125	1,357	1,926	811	8,540	10,692
Apr-Jun 2015	108	1,305	2,629	47	528	1,279	120	1,523	2,087	738	8,665	10,402
Jul-Sep 2015	111	1,409	2,652	38	562	1,100	78	1,496	1,902	634	8,957	9,886
Oct-Dec 2015	114	1,310	2,685	39	575	1,290	90	1,430	1,850	633	8,534	9,559

Table 39 - 12 month repeat screening interval (number of cytology tests), by age, 2011-2015

	20-29			30-39			40-49			50-59			60-69		
Quarter	Early	On-time	Late	Early	On-time	Late	Early	On-time	Late	Early	On-time	Late	Early	On-time	Late
Jan-Mar 2011	633	3,871	4,345	384	3,192	4,310	316	3,347	3,616	173	2,443	2,072	89	1,248	861
Apr-Jun 2011	625	4,411	4,768	361	3,683	4,756	329	4,146	4,103	198	2,922	2,288	113	1,472	1,046
Jul-Sep 2011	451	4,581	4,824	304	3,723	4,803	236	4,325	4,009	132	3,195	2,311	95	1,585	1,003
Oct-Dec 2011	458	4,165	4,559	253	3,332	4,042	230	3,967	3,837	144	2,863	2,292	85	1,569	944
Jan-Mar 2012	621	4,087	4,564	349	3,241	4,641	255	3,453	4,091	167	2,662	2,299	85	1,355	972
Apr-Jun 2012	544	4,209	4,529	237	3,150	4,381	257	3,567	3,961	179	2,676	2,467	90	1,406	1,057
Jul-Sep 2012	486	4,530	4,732	255	3,357	4,457	242	3,800	4,001	146	2,841	2,450	80	1,535	1,060
Oct-Dec 2012	389	4,065	4,468	229	2,892	4,296	194	3,376	3,716	151	2,634	2,277	80	1,462	1,018
Jan-Mar 2013	510	4,096	4,594	277	2,772	4,232	256	2,837	3,671	143	2,256	2,145	83	1,223	1,033
Apr-Jun 2013	471	4,208	4,750	294	3,009	4,360	225	3,135	3,932	151	2,449	2,522	81	1,390	1,118
Jul-Sep 2013	409	4,367	5,039	253	2,903	4,383	201	3,178	3,856	133	2,545	2,426	63	1,474	1,053
Oct-Dec 2013	336	4,037	4,572	222	2,601	3,885	187	2,872	3,594	148	2,280	2,306	71	1,390	1,048
Jan-Mar 2014	487	3,976	4,868	271	2,510	4,124	209	2,555	3,546	130	2,026	2,358	68	1,155	1,122
Apr-Jun 2014	474	4,051	4,536	229	2,634	4,022	161	2,775	3,471	135	2,068	2,289	85	1,245	1,155
Jul-Sep 2014	351	4,304	4,762	216	2,685	4,024	164	2,758	3,481	116	2,253	2,175	60	1,297	1,053
Oct-Dec 2014	352	3,965	4,558	181	2,359	3,846	163	2,328	3,322	116	2,078	2,266	79	1,217	1,095
Jan-Mar 2015	481	4,105	5,108	252	2,334	4,202	163	2,191	3,639	137	1,788	2,324	74	1,136	1,150
Apr-Jun 2015	416	4,112	4,842	232	2,495	4,142	179	2,354	3,660	113	1,882	2,513	73	1,178	1,240
Jul-Sep 2015	352	4,287	4,880	185	2,552	3,923	140	2,381	3,400	112	2,022	2,294	72	1,182	1,043
Oct-Dec 2015	369	4,150	4,734	185	2,311	4,026	133	2,274	3,227	124	1,926	2,285	65	1,188	1,112

Indicator 2 – First screening events

Table 40 - Age distribution of first screening events for period 1 July - 31 December 2015

Age	Women with first events	% of first events (ages 20-69 yrs) which occurred in that age group
20-24	11,390	49.0
25-29	4,006	17.2
30-34	2,702	11.6
35-39	1,584	6.8
40-44	1,005	4.3
45-49	714	3.1
50-54	527	2.3
55-59	528	2.3
60-64	498	2.1
65-69	305	1.3
20-69 yrs	***23,259***	100.0

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

Table 41 - 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 July - 31 December 2015

DHB	Women with first events	As a proportion of women with a screening event		As a proportion of eligible population	
	N	N	%	N	%
Auckland	3,548	25,924	13.7	155,579	2.3
Bay of Plenty	876	11,064	7.9	61,541	1.4
Canterbury	2,588	23,963	10.8	153,531	1.7
Capital & Coast	1,902	14,988	12.7	93,964	2.0
Counties Manukau	3,112	23,097	13.5	152,502	2.0
Hawke's Bay	577	7,387	7.8	44,486	1.3
Hutt Valley	586	6,555	8.9	42,362	1.4
Lakes	439	4,905	9.0	29,198	1.5
Mid Central	821	8,160	10.1	48,401	1.7
Nelson Marlborough	471	6,645	7.1	41,319	1.1
Northland	551	7,128	7.7	46,072	1.2
South Canterbury	189	2,653	7.1	16,161	1.2
Southern	1,693	14,827	11.4	90,619	1.9
Tairawhiti	173	2,161	8.0	13,169	1.3
Taranaki	424	5,306	8.0	33,128	1.3
Waikato	1,802	17,836	10.1	110,973	1.6
Wairarapa	107	1,964	5.4	12,173	0.9
Waitemata	3,075	28,152	10.9	173,285	1.8
West Coast	103	1,386	7.4	9,595	1.1
Whanganui	222	2,879	7.7	16,916	1.3
Total	**23,259**	**216,980**	**10.7**	**1,344,974**	**1.7**

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 31 December 2015 for that DHB, as a percent. Total women screened and women with first events exclude those for whom DHB could not be ascertained.

Table 42 - 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 July - 31 December 2015

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	2,716	25,809	10.5	186,865	1.5
Pacific	1,885	11,954	15.8	79,786	2.4
Asian	5,720	25,892	22.1	198,613	2.9
European/Other	12,938	153,325	8.4	879,710	1.5
Total	**23,259**	**216,980**	**10.7**	**1,344,974**	**1.7**

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 2015 for that ethnicity group, as a percent.

Table 43 – Median age of women with a first screening event, by ethnicity, for period 1 July - 31 December 2015

Ethnic Group	Median Age	Mean Age
Māori	22	24.8
Pacific	25	30.0
Asian	31	34.7
European/Other	23	27.4

Indicator 3 – Withdrawal rates

Table 44 - Number of women who withdrew from the NCSP Register 1 July - 31 December 2015 by age, and proportion of women who were enrolled at the start of the reporting period who withdrew

Age	Enrolled at start	Women withdrawn	
	N	N	%
<20	1,088	-	0
20-24	78,439	3	0.004
25-29	140,677	-	0.000
30-34	162,813	2	0.001
35-39	172,132	2	0.001
40-44	194,093	-	0.000
45-49	195,532	1	0.001
50-54	188,909	4	0.002
55-59	163,396	2	0.001
60-64	131,856	2	0.002
65-69	109,938	3	0.003
70+	224,626	-	0.000
Total (all ages)	**1,763,499**	**19**	**0.001**
Total (20-69)	**1,537,785**	**19**	**0.001**

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

Table 45 - Number of women (aged 20-69 years) who withdrew from the NCSP Register 1 July - 31 December 2015 by ethnicity, and proportion of women who were enrolled at the start of the reporting period who withdrew

Ethnicity	Enrolled at start	Women withdrawn	
	N	N	%
Māori	186,782	-	0.000
Pacific	94,216		0.000
Asian	168,265	2	0.001
European/Other	1,088,522	17	0.002
Total	**1,537,785**	**19**	**0.001**

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

Indicator 4 – Early re-screening

Table 46 - Early re-screening by five-year age group

Age	Women recommended to return in 3 years	Women with >1 subsequent test	
		N	%
20-24	1,167	247	21.2
25-29	3,809	654	17.2
30-34	4,288	746	17.4
35-39	4,770	780	16.4
40-44	5,549	877	15.8
45-49	5,685	811	14.3
50-54	5,407	806	14.9
55-59	4,531	617	13.6
60-64	3,691	458	12.4
65-69	3,038	315	10.4
All ages	**41,935**	**6,311**	**15.0**

Table 47 - Early re-screening by DHB

DHB	Women recommended to return in 3 years	Women with >1 subsequent test	
		N	%
Auckland	4,720	904	19.2
Bay of Plenty	2,079	357	17.2
Canterbury	4,855	796	16.4
Capital & Coast	3,323	345	10.4
Counties Manukau	4,018	545	13.6
Hawke's Bay	1,404	205	14.6
Hutt Valley	1,320	140	10.6
Lakes	1,063	138	13.0
Mid Central	1,459	129	8.8
Nelson Marlborough	1,532	169	11.0
Northland	1,355	205	15.1
South Canterbury	539	97	18.0
Southern	2,945	406	13.8
Tairawhiti	323	25	7.7
Taranaki	1,092	122	11.2
Waikato	3,338	415	12.4
Wairarapa	445	76	17.1
Waitemata	5,321	1,157	21.7
West Coast	293	38	13.0
Whanganui	509	42	8.3
Unspecified	2	-	
Total	**41,933**	**6,311**	**15.1**

Table 48 - Early re-screening by ethnicity

Ethnicity	Women recommended to return in 3 years	Women with >1 subsequent test	
		N	%
Māori	4,167	570	13.7
Pacific	1,948	219	11.2
Asian	4,418	690	15.6
European/ Other	31,402	4,832	15.4
Total	**41,935**	**6,311**	**15.0**

Indicator 5 – Laboratory indicators

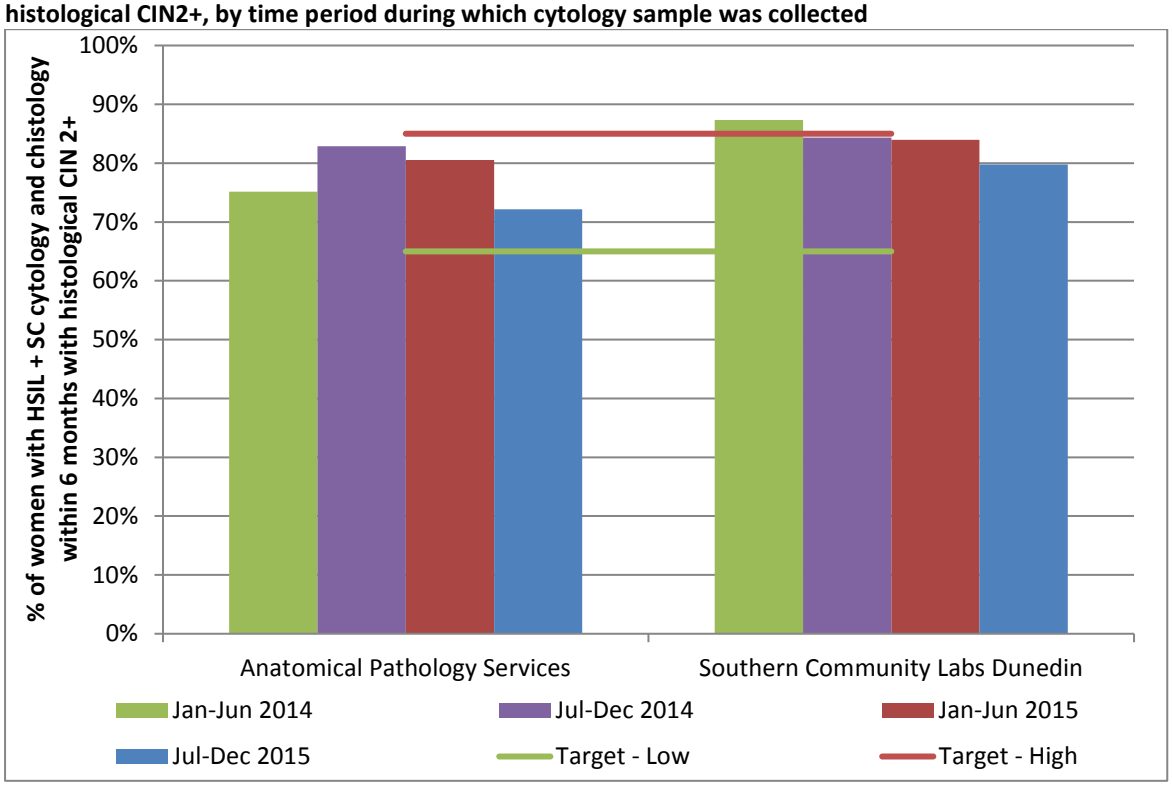
Indicator 5.1 – Laboratory cytology reporting

Table 49 – 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	0.74%	0.78%
Aotea Pathology Ltd	0.40%	0.44%
Canterbury Health Laboratories	1.12%	1.30%
LabPLUS	2.85%	3.33%
Medlab Central Ltd	0.78%	0.84%
Pathlab	0.51%	0.54%
Southern Community Labs	1.15%	1.23%
Total	**0.82%**	**1.14%**

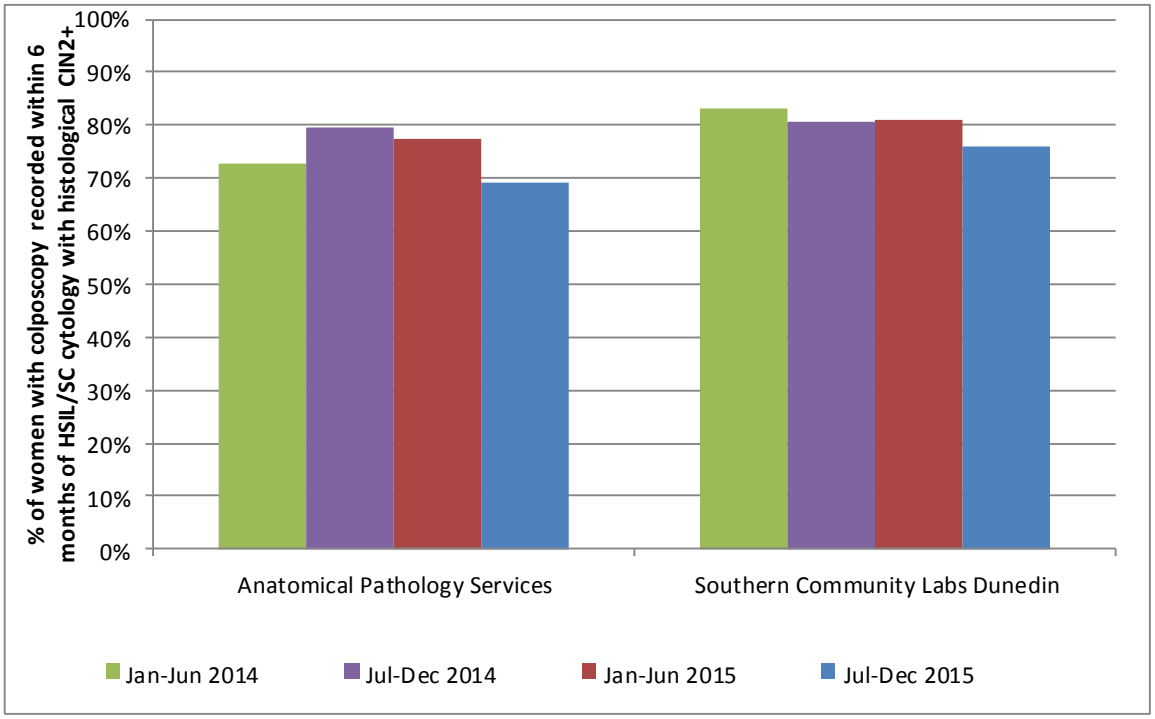
** Age-standardised to the NZ 2013 Census population (females, ages 20-69 years)*

Figure 107 – Proportion of women with HSIL or SC cytology and histology within 6 months who have histological CIN2+, by time period during which cytology sample was collected



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 108 - Proportion of women with HSIL or SC cytology and colposcopy within 6 months who have histological CIN2+, by time period during which cytology sample was collected



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

Table 50 - Positive predictive value of a report of HSIL+SC cytology by laboratory

Lab	Histology available		HSIL confirmed by histology		No histology		Total reports
	N	%	N	%	N	%	N
Anatomical Pathology Services	190	90.5	153	80.5	20	9.5	210
Aotea Pathology Ltd	86	93.5	65	75.6	6	6.5	92
Canterbury Health Laboratories	116	93.5	101	87.1	8	6.5	124
LabPLUS	194	94.6	167	86.1	11	5.4	205
Medlab Central Ltd	157	89.7	127	80.9	18	10.3	175
Pathlab	116	97.5	100	86.2	3	2.5	119
Southern Community Labs	679	94.2	570	83.9	42	5.8	721
Total	**1,538**	**93.4**	**1,283**	**83.4**	**108**	**6.6**	**1,646**

Target: 65% - 85%

Table 51 - Positive predictive value of a report of ASC-H cytology by laboratory

Lab	Histology available		HSIL confirmed by histology		No histology		Total reports
	N	%	N	%	N	%	N
Anatomical Pathology Services	190	82.6	83	43.7	40	17.4	230
Aotea Pathology Ltd	61	79.2	28	45.9	16	20.8	77
Canterbury Health Laboratories	99	96.1	54	54.5	4	3.9	103
LabPLUS	305	85.0	125	41.0	54	15.0	359
Medlab Central Ltd	71	69.6	38	53.5	31	30.4	102
Pathlab	126	86.9	65	51.6	19	13.1	145
Southern Community Labs	109	76.2	55	50.5	34	23.8	143
Total	**961**	**82.9**	**448**	**46.6**	**198**	**17.1**	**1,159**

Table 52 - Positive predictive value of a report of ASC-H + HSIL + SC cytology by laboratory

Lab	Histology available		HSIL confirmed by histology		No histology		Total reports
	N	%	N	%	N	%	N
Anatomical Pathology Services	380	86.4	236	62.1	60	13.6	440
Aotea Pathology Ltd	147	87.0	93	63.3	22	13.0	169
Canterbury Health Laboratories	215	94.7	155	72.1	12	5.3	227
LabPLUS	499	88.5	292	58.5	65	11.5	564
Medlab Central Ltd	228	82.3	165	72.4	49	17.7	277
Pathlab	242	91.7	165	68.2	22	8.3	264
Southern Community Labs	788	91.2	625	79.3	76	8.8	864
Total	**2,499**	**89.1**	**1,731**	**69.3**	**306**	**10.9**	**2,805**

Indicator 5.5 – Laboratory turnaround time

Table 53 - Timeliness of cytology reporting by laboratory, 1 July - 31 December 2015

	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	47,218	97.3	1,108	2.3	48,326	99.6	190	0.4	48,516
Aotea Pathology Ltd	12,652	96.8	414	3.2	13,066	100.0	1	0.0	13,067
Canterbury Health Laboratories	10,054	88.5	1,137	10.0	11,191	98.5	167	1.5	11,358
LabPLUS	8,215	92.3	576	6.5	8,791	98.7	113	1.3	8,904
Medlab Central Ltd	17,084	92.8	944	5.1	18,028	97.9	380	2.1	18,408
Pathlab	22,431	90.3	2,209	8.9	24,640	99.2	203	0.8	24,843
Southern Community Labs	91,804	96.2	1,871	2.0	93,675	98.2	1,731	1.8	95,406
Total	**209,458**	**95.0**	**8,259**	**3.7**	**217,717**	**98.7**	**2,785**	**1.3**	**220,502**

Target: 90% within seven working days and 100% 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 reporting period. Indicator 5.1 shows the total number of cytology samples* taken *during the period.*

Table 54 - Timeliness of histology reporting by laboratory, 1 July - 31 December 2015

	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	1,649	96.5	40	2.3	1,689	98.9	19	1.1	1,708
Aotea Pathology Ltd	197	97.5	3	1.5	200	99.0	2	1.0	202
Canterbury Health Laboratories	1,606	94.5	49	2.9	1,655	97.4	44	2.6	1,699
Capital & Coast District Health Board Pathology	408	56.9	62	8.6	470	65.6	247	34.4	717
Hutt Hospital Laboratory	163	42.6	32	8.4	195	50.9	188	49.1	383
LabPLUS	874	91.6	40	4.2	914	95.8	40	4.2	954
Medlab Central Ltd	1,059	95.4	11	1.0	1,070	96.4	40	3.6	1,110
Memorial Hospital Hastings Lab	53	71.6	1	1.4	54	73.0	20	27.0	74
Middlemore Hospital Laboratory	914	89.4	75	7.3	989	96.8	33	3.2	1,022
Nelson Hospital Laboratory	128	97.7	1	0.8	129	98.5	2	1.5	131
North Shore Hospital Laboratory	1,206	98.2	16	1.3	1,222	99.5	6	0.5	1,228
Northland Pathology Laboratory	215	74.9	20	7.0	235	81.9	52	18.1	287
Pathlab	930	88.4	74	7.0	1,004	95.4	48	4.6	1,052
Southern Community Labs Dunedin	2,769	99.1	8	0.3	2,777	99.4	17	0.6	2,794
Taranaki Medlab	379	99.5	1	0.3	380	99.7	1	0.3	381
Waikato Hospital Laboratory	179	93.2	2	1.0	181	94.3	11	5.7	192
Total	**12,729**	**91.4**	**435**	**3.1**	**13,164**	**94.5**	**770**	**5.5**	**13,934**

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 reporting period, while 5.4 includes all histology samples* taken *within the reporting period*

Table 55 – Timeliness of reporting for cytology with associated HPV testing by laboratory, 1 July - 31 December 2015

	Laboratory turnaround time - cytology with HPV testing				
	Within 15 days		More than 15 days		Total
Laboratory	N	%	N	%	N
Anatomical Pathology Services	914	99.1	8	0.9	922
Aotea Pathology Ltd	173	100.0	-	0.0	173
Canterbury Health Laboratories	218	93.6	15	6.4	233
LabPLUS	194	96.0	8	4.0	202
Medlab Central Ltd	374	97.9	8	2.1	382
Pathlab	502	99.0	5	1.0	507
Southern Community Labs Dunedin	713	99.6	3	0.4	716
Total	**3,088**	**98.5**	**47**	**1.5**	**3,135**

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

Table 56 - 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	1	100.0	30	66.7	51	81.0	36	85.7	28	73.7	18	78.3	9	75.0	15	62.5	9	69.2	1	33.3	4	100.0	2	50.0	204
Bay of Plenty	-	-	13	86.7	25	96.2	12	70.6	10	62.5	6	85.7	7	87.5	5	71.4	4	100.0	3	75.0	3	75.0	1	100.0	89
Canterbury	-	-	45	91.8	69	89.6	33	91.7	22	91.7	15	93.8	15	100.0	10	76.9	4	57.1	3	60.0	4	100.0	1	100.0	221
Capital & Coast	-	-	13	81.3	31	100.0	15	88.2	11	84.6	7	87.5	4	100.0	4	50.0	6	100.0	2	66.7	-	-	0	0.0	93
Counties Manukau	-	-	27	69.2	36	80.0	31	81.6	17	81.0	13	86.7	19	95.0	11	78.6	12	80.0	4	100.0	2	50.0	0	0.0	172
Hawke's Bay	-	-	9	90.0	27	90.0	12	80.0	3	75.0	8	80.0	7	77.8	2	100.0	6	66.7	2	66.7	2	66.7	1	50.0	79
Hutt Valley	-	-	6	85.7	10	100.0	7	100.0	4	100.0	3	100.0	2	100.0	1	100.0	1	100.0	3	100.0	1	50.0	1	100.0	39
Lakes	-	-	7	70.0	11	84.6	5	55.6	2	66.7	2	100.0	2	100.0	1	100.0	-	-	-	-	1	50.0	1	50.0	32
Mid Central	-	-	12	70.6	12	85.7	16	88.9	5	100.0	6	100.0	4	80.0	2	100.0	2	50.0	1	50.0	1	100.0	1	100.0	62
Nelson Marlborough	-	-	7	100.0	5	100.0	13	92.9	5	100.0	8	88.9	2	100.0	2	66.7	3	50.0	2	66.7	1	100.0	-	-	48
Northland	-	-	12	85.7	11	91.7	10	62.5	3	75.0	0	0.0	3	60.0	4	80.0	4	100.0	2	66.7	1	50.0	-	-	50
South Canterbury	1	100.0	2	100.0	-	-	5	100.0	0	0.0	6	100.0	1	100.0	-	-	0	0.0	1	100.0	-	-	0	0.0	16
Southern	-	-	15	83.3	30	88.2	26	96.3	15	93.8	16	100.0	6	100.0	5	71.4	6	100.0	3	50.0	3	75.0	2	66.7	127
Tairawhiti	-	-	8	88.9	9	75.0	6	75.0	2	66.7	2	66.7	-	-	2	100.0	-	-	-	-	1	100.0	0	0.0	30
Taranaki	-	-	9	81.8	19	86.4	10	83.3	3	75.0	1	100.0	4	100.0	6	100.0	0	0.0	3	100.0	1	100.0	-	-	56
Waikato	1	100.0	23	71.9	50	89.3	20	87.0	20	100.0	12	85.7	15	88.2	9	75.0	9	75.0	3	42.9	5	100.0	1	100.0	168
Wairarapa	1	100.0	1	100.0	7	87.5	5	83.3	2	100.0	0	0.0	1	100.0	0	0.0	-	-	-	-	-	-	-	-	17
Waitemata	3	100.0	43	93.5	53	80.3	34	89.5	24	92.3	15	88.2	14	82.4	10	76.9	8	66.7	10	83.3	1	50.0	6	66.7	221
West Coast	0	0.0	3	60.0	5	100.0	2	66.7	1	100.0	-	-	1	100.0	2	100.0	-	-	1	100.0	-	-	-	-	15
Whanganui	-	-	8	80.0	4	66.7	6	100.0	2	66.7	1	100.0	2	50.0	1	100.0	0	0.0	2	100.0	-	-	-	-	26
Total	**7**	**87.5**	**293**	**80.7**	**465**	**86.9**	**304**	**85.2**	**179**	**84.0**	**139**	**87.4**	**118**	**87.4**	**92**	**74.2**	**74**	**71.8**	**46**	**70.8**	**31**	**77.5**	**17**	**54.8**	**1,765**

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

Table 57 - 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	1	100.0	34	75.6	57	90.5	38	90.5	31	81.6	21	91.3	11	91.7	16	66.7	9	69.2	1	33.3	4	100.0	3	75.0	226
Bay of Plenty	-	-	14	93.3	25	96.2	16	94.1	15	93.8	6	85.7	7	87.5	5	71.4	4	100.0	3	75.0	3	75.0	1	100.0	99
Canterbury	-	-	48	98.0	74	96.1	35	97.2	24	100.0	15	93.8	15	100.0	11	84.6	4	57.1	4	80.0	4	100.0	1	100.0	235
Capital & Coast	-	-	15	93.8	31	100.0	15	88.2	12	92.3	7	87.5	4	100.0	4	50.0	6	100.0	2	66.7	-	-	0	0.0	96
Counties Manukau	-	-	33	84.6	38	84.4	33	86.8	20	95.2	13	86.7	20	100.0	12	85.7	14	93.3	4	100.0	4	100.0	0	0.0	191
Hawke's Bay	-	-	9	90.0	27	90.0	12	80.0	3	75.0	9	90.0	8	88.9	2	100.0	9	100.0	2	66.7	2	66.7	1	50.0	84
Hutt Valley	-	-	6	85.7	10	100.0	7	100.0	4	100.0	3	100.0	2	100.0	1	100.0	1	100.0	3	100.0	2	100.0	1	100.0	40
Lakes	-	-	8	80.0	12	92.3	8	88.9	2	66.7	2	100.0	2	100.0	1	100.0	-	-	-	-	1	50.0	1	50.0	37
Mid Central	-	-	14	82.4	14	100.0	17	94.4	5	100.0	6	100.0	4	80.0	2	100.0	3	75.0	1	50.0	1	100.0	1	100.0	68
Nelson Marlborough	-	-	7	100.0	5	100.0	13	92.9	5	100.0	8	88.9	2	100.0	3	100.0	3	50.0	3	100.0	1	100.0	-	-	50
Northland	-	-	12	85.7	11	91.7	14	87.5	3	75.0	0	0.0	4	80.0	4	80.0	4	100.0	2	66.7	2	100.0	-	-	56
South Canterbury	1	100.0	2	100.0	-	-	5	100.0	1	100.0	6	100.0	1	100.0	-	-	0	0.0	1	100.0	-	-	0	0.0	17
Southern	-	-	15	83.3	34	100.0	26	96.3	15	93.8	16	100.0	6	100.0	5	71.4	6	100.0	4	66.7	3	75.0	3	100.0	133
Tairawhiti	-	-	9	100.0	10	83.3	6	75.0	2	66.7	2	66.7	-	-	2	100.0	-	-	-	-	1	100.0	0	0.0	32
Taranaki	-	-	9	81.8	21	95.5	10	83.3	3	75.0	1	100.0	4	100.0	6	100.0	0	0.0	3	100.0	1	100.0	-	-	58
Waikato	1	100.0	25	78.1	51	91.1	20	87.0	20	100.0	12	85.7	15	88.2	10	83.3	10	83.3	6	85.7	5	100.0	1	100.0	176
Wairarapa	1	100.0	1	100.0	7	87.5	5	83.3	2	100.0	0	0.0	1	100.0	0	0.0	-	-	-	-	-	-	-	-	17
Waitemata	3	100.0	44	95.7	59	89.4	34	89.5	24	92.3	15	88.2	14	82.4	10	76.9	9	75.0	12	100.0	1	50.0	6	66.7	231
West Coast	0	0.0	3	60.0	5	100.0	2	66.7	1	100.0	-	-	1	100.0	2	100.0	-	-	1	100.0	-	-	-	-	15
Whanganui	-	-	8	80.0	4	66.7	6	100.0	2	66.7	1	100.0	2	50.0	1	100.0	0	0.0	2	100.0	-	-	-	-	26
Total	**7**	**87.5**	**316**	**87.1**	**495**	**92.5**	**322**	**90.2**	**194**	**91.1**	**143**	**89.9**	**123**	**91.1**	**97**	**78.2**	**82**	**79.6**	**54**	**83.1**	**35**	**87.5**	**19**	**61.3**	**1,887**

' – ' 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 58 - 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	196	169
Bay of Plenty	97	92
Canterbury	206	195
Capital & Coast	91	87
Counties Manukau	179	171
Hawke's Bay	88	68
Hutt Valley	38	37
Lakes	40	39
Mid Central	76	71
Nelson Marlborough	51	50
Northland	58	56
South Canterbury	20	15
Southern	130	119
Tairawhiti	35	33
Taranaki	59	55
Waikato	175	160
Wairarapa	21	19
Waitemata	199	188
West Coast	17	12
Whanganui	33	33
Private practice	*324*	*197*
Total	**2,133**	**1,866**

Table 59 – 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	343	314	189	60.2	263	83.8
Pacific	102	94	43	45.7	69	73.4
Asian	179	153	103	67.3	136	88.9
European/Other	1,446	1,263	901	71.3	1,162	92.0
Total	**2,070**	**1,824**	**1,236**	**67.8**	**1,630**	**89.4**

Table 60 – 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	*1,753*	*1,630*	*1,119*	*68.7*	*1,485*	*91.1*
Auckland	186	167	93	55.7	142	85.0
Bay of Plenty	93	89	73	82.0	84	94.4
Canterbury	201	191	158	82.7	178	93.2
Capital & Coast	89	85	76	89.4	82	96.5
Counties Manukau	173	167	64	38.3	144	86.2
Hawke's Bay	85	66	49	74.2	63	95.5
Hutt Valley	34	33	32	97.0	33	100.0
Lakes	37	37	24	64.9	34	91.9
Mid Central	74	70	46	65.7	62	88.6
Nelson Marlborough	49	48	17	35.4	42	87.5
Northland	58	56	45	80.4	49	87.5
South Canterbury	20	15	12	80.0	15	100.0
Southern	128	118	70	59.3	112	94.9
Tairawhiti	35	33	21	63.6	27	81.8
Taranaki	59	55	47	85.5	50	90.9
Waikato	169	154	99	64.3	137	89.0
Wairarapa	21	19	18	94.7	19	100.0
Waitemata	192	182	137	75.3	169	92.9
West Coast	17	12	9	75.0	11	91.7
Whanganui	33	33	29	87.9	32	97.0
Private Practice	*317*	*194*	*117*	*60.3*	*145*	*74.7*
Total	**2,070**	**1,824**	**1,236**	**67.8**	**1,630**	**89.4**

Table 61 - Women with cytological suspicion of invasive disease, by cytology result subcategory

Cytology result sub-category	Total women	Women with accepted referral
	N	N
HS2	24	20
SC	8	6
AC1-5	27	13
R10, R14	4	3
Total	**63**	**42**

Indicator 7.2 – Timeliness of colposcopic assessment – low grade cytology

Table 62 - Follow-up of women with persistent low grade cytology/ low grade cytology and positive hrHPV 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	501	443	88.4	412	82.2	406	91.6	398	89.8
Bay of Plenty	270	239	88.5	246	91.1	228	95.4	211	88.3
Canterbury	286	262	91.6	271	94.8	256	97.7	247	94.3
Capital & Coast	246	234	95.1	235	95.5	230	98.3	228	97.4
Counties Manukau	358	331	92.5	293	81.8	280	84.6	262	79.2
Hawke's Bay	117	100	85.5	103	88.0	94	94.0	59	59.0
Hutt Valley	84	77	91.7	76	90.5	72	93.5	66	85.7
Lakes	82	76	92.7	76	92.7	74	97.4	69	90.8
Mid Central	143	140	97.9	134	93.7	133	95.0	125	89.3
Nelson Marlborough	71	58	81.7	58	81.7	55	94.8	46	79.3
Northland	70	66	94.3	64	91.4	62	93.9	57	86.4
South Canterbury	16	15	93.8	13	81.3	13	86.7	13	86.7
Southern	133	117	88.0	121	91.0	112	95.7	88	75.2
Tairawhiti	42	42	100.0	39	92.9	39	92.9	31	73.8
Taranaki	54	41	75.9	45	83.3	38	92.7	38	92.7
Waikato	257	239	93.0	223	86.8	216	90.4	200	83.7
Wairarapa	42	37	88.1	41	97.6	36	97.3	35	94.6
Waitemata	448	412	92.0	403	90.0	387	93.9	383	93.0
West Coast	39	33	84.6	39	100.0	33	100.0	32	97.0
Whanganui	60	57	95.0	54	90.0	53	93.0	51	89.5
Private practice	*750*	*373*	*49.7*	*704*	*93.9*	*327*	*87.7*	*319*	*85.5*
Total	**4,069**	**3,392**	**83.4**	**3,650**	**89.7**	**3,144**	**92.7**	**2,958**	**87.2**

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

Table 63 - Follow-up of women with persistent low grade cytology/ low grade cytology and positive hrHPV 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	504	456	90.5	429	85.1	399	87.5	362	79.4
Pacific	205	188	91.7	168	82.0	159	84.6	149	79.3
Asian	379	314	82.8	337	88.9	291	92.7	279	88.9
European/Other	2,981	2,434	81.7	2,716	91.1	2,295	94.3	2,168	89.1
Total	**4,069**	**3,392**	**83.4**	**3,650**	**89.7**	**3,144**	**92.7**	**2,958**	**87.2**

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

Indicator 7.3 – Adequacy of documenting colposcopic assessment

Table 64 - 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	8,110	97.9	100.0	92.0	91.3	90.8	93.2
Auckland	225	98.2	100.0	94.2	51.1	50.2	94.2
Bay of Plenty	489	95.7	100.0	87.2	99.8	98.4	88.5
Canterbury	1,660	99.2	100.0	92.6	100.0	99.6	94.0
Capital & Coast	756	98.9	100.0	91.3	90.1	89.8	94.3
Counties Manukau	423	98.8	100.0	92.8	59.3	58.9	94.3
Hawke's Bay	415	96.4	100.0	88.2	89.4	88.7	89.2
Hutt Valley	284	99.3	100.0	95.6	100.0	99.3	96.1
Lakes	112	96.4	100.0	93.7	80.4	80.4	92.0
Mid Central	778	96.8	100.0	93.7	98.5	98.1	93.2
Nelson Marlborough	143	97.9	100.0	93.9	76.9	76.9	93.7
Northland	141	97.9	100.0	87.0	67.4	67.4	93.6
South Canterbury	136	99.3	100.0	90.9	100.0	100.0	94.1
Southern	785	96.4	100.0	91.5	96.1	95.8	92.4
Tairawhiti	183	97.8	100.0	92.1	100.0	100.0	93.4
Taranaki	143	96.5	100.0	88.4	90.9	90.9	90.2
Waikato	239	98.7	100.0	96.3	80.3	79.9	96.2
Wairarapa	138	97.1	100.0	94.9	100.0	99.3	94.2
Waitemata	723	98.1	100.0	89.9	87.4	86.3	92.8
West Coast	125	96.8	100.0	94.3	100.0	100.0	93.6
Whanganui	212	99.5	100.0	93.3	95.3	95.3	96.7
Private practice	*1,456*	*96.5*	*100.0*	*90.2*	*97.3*	*95.8*	*90.8*
Total	**9,566**	**97.7**	**100.0**	**91.8**	**92.2**	**91.6**	**92.8**

Table 65 – 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	*8,110*	*7,943*	*56.2%*	*4.9%*
Auckland	225	221	64.4%	4.0%
Bay of Plenty	489	468	48.7%	7.2%
Canterbury	1,660	1,647	66.3%	5.3%
Capital & Coast	756	748	50.1%	4.8%
Counties Manukau	423	418	57.9%	4.5%
Hawke's Bay	415	400	54.2%	7.2%
Hutt Valley	284	282	69.4%	3.2%
Lakes	112	108	66.1%	4.5%
Mid Central	778	753	57.6%	3.9%
Nelson Marlborough	143	140	64.3%	4.2%
Northland	141	138	33.3%	5.0%
South Canterbury	136	135	51.5%	5.1%
Southern	785	757	49.3%	4.6%
Tairawhiti	183	179	50.8%	4.4%
Taranaki	143	138	53.1%	7.0%
Waikato	239	236	64.9%	2.5%
Wairarapa	138	134	53.6%	2.9%
Waitemata	723	709	48.1%	5.4%
West Coast	125	121	66.4%	4.0%
Whanganui	212	211	39.6%	2.8%
Private practice	*1,456*	*1,405*	*53.8%*	*5.8%*
Total	**9,566**	**9,348**	**55.9%**	**5.0%**

** Field has been completed*

Table 66 – 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	*4,561*	*3,709*	*81.3%*	*395*	*131*	*33.2%*	*3,154*	*710*	*0.2*
Auckland	145	119	82.1	9	1	11.1	71	10	14.1
Bay of Plenty	238	195	81.9	35	11	31.4	216	18	8.3
Canterbury	1,101	828	75.2	88	28	31.8	471	109	23.1
Capital & Coast	379	337	88.9	36	11	30.6	341	73	21.4
Counties Manukau	245	215	87.8	19	4	21.1	159	18	11.3
Hawke's Bay	225	193	85.8	30	25	83.3	160	99	61.9
Hutt Valley	197	167	84.8	9	3	33.3	78	11	14.1
Lakes	74	59	79.7	5	1	20.0	33	3	9.1
Mid Central	448	317	70.8	30	5	16.7	300	52	17.3
Nelson Marlborough	92	81	88.0	6	5	83.3	45	12	26.7
Northland	47	45	95.7	7	0	0.0	87	27	31.0
South Canterbury	70	52	74.3	7	5	71.4	59	16	27.1
Southern	387	332	85.8	36	10	27.8	362	96	26.5
Tairawhiti	93	62	66.7	8	2	25.0	82	30	36.6
Taranaki	76	68	89.5	10	1	10.0	57	6	10.5
Waikato	155	145	93.5	6	4	66.7	78	19	24.4
Wairarapa	74	65	87.8	4	1	25.0	60	8	13.3
Waitemata	348	323	92.8	39	9	23.1	336	93	27.7
West Coast	83	56	67.5	5	4	80.0	37	7	18.9
Whanganui	84	50	59.5	6	1	16.7	122	3	2.5
Private practice	*784*	*639*	*81.5*	*85*	*52*	*61.2*	*587*	*161*	*27.4*
Total	**5,345**	**4,348**	**81.3**	**480**	**183**	**38.1**	**3,741**	**871**	**23.3**

Indicator 7.5 – Timely discharge of women after treatment

Table 67 – 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	128	113	88.3	90	70.3	84	93.3
Bay of Plenty	49	19	38.8	32	65.3	25	78.1
Canterbury	178	140	78.7	141	79.2	109	77.3
Capital & Coast	87	73	83.9	73	83.9	64	87.7
Counties Manukau	154	130	84.4	115	74.7	106	92.2
Hawke's Bay	72	55	76.4	56	77.8	47	83.9
Hutt Valley	49	37	75.5	38	77.6	37	97.4
Lakes	40	19	47.5	27	67.5	16	59.3
Mid Central	96	79	82.3	77	80.2	70	90.9
Nelson Marlborough	41	34	82.9	38	92.7	34	89.5
Northland	51	45	88.2	38	74.5	36	94.7
South Canterbury	20	16	80.0	17	85.0	10	58.8
Southern	136	58	42.6	101	74.3	90	89.1
Tairawhiti	30	12	40.0	22	73.3	19	86.4
Taranaki	28	18	64.3	23	82.1	17	73.9
Waikato	158	110	69.6	124	78.5	109	87.9
Wairarapa	17	14	82.4	14	82.4	14	100.0
Waitemata	169	153	90.5	124	73.4	67	54.0
West Coast	18	13	72.2	15	83.3	14	93.3
Whanganui	34	31	91.2	29	85.3	28	96.6
Private Practice	*118*	*71*	*60.2*	*88*	*74.6*	*60*	*68.2*
Total	**1,673**	**1,240**	**74.1**	**1,282**	**76.6**	**1,056**	**82.4**

Table 68 – 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	128	113	88.3	113	88.3
Bay of Plenty	49	20	40.8	19	38.8
Canterbury	178	141	79.2	140	78.7
Capital & Coast	87	73	83.9	73	83.9
Counties Manukau	154	132	85.7	130	84.4
Hawke's Bay	72	57	79.2	55	76.4
Hutt Valley	49	37	75.5	37	75.5
Lakes	40	19	47.5	19	47.5
Mid Central	96	79	82.3	79	82.3
Nelson Marlborough	41	34	82.9	34	82.9
Northland	51	45	88.2	45	88.2
South Canterbury	20	16	80.0	16	80.0
Southern	136	58	42.6	58	42.6
Tairawhiti	30	13	43.3	12	40.0
Taranaki	28	19	67.9	18	64.3
Waikato	158	115	72.8	110	69.6
Wairarapa	17	14	82.4	14	82.4
Waitemata	169	153	90.5	153	90.5
West Coast	18	14	77.8	13	72.2
Whanganui	34	31	91.2	31	91.2
Private practice	*118*	*73*	*61.9*	*71*	*60.2*
Total	**1,673**	**1,256**	**75.1**	**1,240**	**74.1**

Indicator 8 – HPV tests

Indicator 8.1 – Triage of low grade cytology

Table 69 – 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	177	481	2	1.1	476	99.0
Aotea Pathology Ltd	90	112	0	0.0	109	97.3
Canterbury Health Laboratories	49	172	1	2.0	172	100.0
LabPLUS	157	155	3	1.9	142	91.6
Medlab Central Ltd	141	307	1	0.7	271	88.3
Pathlab	132	264	2	1.5	258	97.7
Southern Community Labs	126	256	3	2.4	249	97.3
Total	**872**	**1,747**	**12**	**1.4**	**1,677**	**96.0**

** 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 70 – 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	512	466	6	1.2	462	99.1
Aotea Pathology Ltd	166	74	0	0.0	71	95.9
Canterbury Health Laboratories	167	70	1	0.6	69	98.6
LabPLUS	125	55	0	0.0	53	96.4
Medlab Central Ltd	177	127	0	0.0	111	87.4
Pathlab	348	260	0	0.0	256	98.5
Southern Community Labs	780	517	6	0.8	497	96.1
Total	**2,275**	**1,569**	**13**	**0.6**	**1,519**	**96.8**

** 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 71 – 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	%†	%‡
Aotea Pathology Ltd	62	61	98.4	47	75.8	10	16.4	21.3
Canterbury Health Laboratories	29	28	96.6	24	82.8	8	28.6	33.3
Diagnostic Medlab Ltd§	150	132	88.0	100	66.7	18	13.6	18.0
LabPLUS	6	4	66.7	2	33.3	0	0.0	0.0
Medlab Central Ltd	67	65	97.0	44	65.7	15	23.1	34.1
Pathlab	73	69	94.5	48	65.8	10	14.5	20.8
Southern Community Labs	90	83	92.2	64	71.1	19	22.9	29.7
Total	**477**	**442**	**92.7**	**329**	**69.0**	**80**	**18.1**	**24.3**

** % 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 (ie in* [Comments]*), to allow for sufficient follow-up time for colposcopy/ histology. § 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.*

Table 72 - 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	%†	%‡
Aotea Pathology Ltd	92	91	98.9	68	73.9	11	12.1	16.2
Canterbury Health Laboratories	50	50	100.0	47	94.0	17	34.0	36.2
Diagnostic Medlab Ltd§	319	280	87.8	208	65.2	30	10.7	14.4
LabPLUS	11	9	81.8	5	45.5	0	0.0	-
Medlab Central Ltd	68	65	95.6	46	67.6	12	18.5	26.1
Pathlab	145	132	91.0	99	68.3	24	18.2	24.2
Southern Community Labs	249	222	89.2	178	71.5	60	27.0	33.7
Total	**934**	**849**	**90.9**	**651**	**69.7**	**154**	**18.1**	**23.7**

** % 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 (ie in* [Comments]*), to allow for sufficient follow-up time for colposcopy/ histology. § 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 8.2 – HPV test volumes

Table 73 – 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	4,944	24.2	10.2
Aotea Pathology Ltd	833	4.1	6.4
Canterbury Health Laboratories	1,675	8.2	14.7
LabPLUS	986	4.8	11.1
Medlab Central Ltd	2,216	10.8	12.0
Pathlab	2,814	13.7	11.3
Southern Community Labs	6,998	34.2	7.3
Total	**20,466**	**100.0**	**9.3**

Table 74 – Invalid HPV tests, by laboratory

Laboratory	Total	Valid		Invalid	
	N	N	%	N	%
Anatomical Pathology Services	4,944	4,938	99.9	6	0.1
Aotea Pathology Ltd	833	833	100.0	-	-
Canterbury Health Laboratories	1,675	1,675	100.0	-	-
LabPLUS	986	986	100.0	-	-
Medlab Central Ltd	2,216	2,216	100.0	-	-
Pathlab	2,814	2,798	99.4	16	0.6
Southern Community Labs	6,998	6,997	100.0	1	<0.05
Total	**20,466**	**20,443**	**99.9**	**23**	**0.1**

Table 75 – Validity of HPV triage tests, by test technology

Test technology	Total HPV tests		Valid		Invalid	
	N	%	N	%	N	%
Abbott RealTime	8,673	*42.4*	8,672	100.0	1	0.0
Roche COBAS 4800*	11,793	*57.6*	11,771	99.8	22	0.2
Total	**20,466**	**100.0**	**20,443**	**99.9**	**23**	**0.1**

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

	Post-treatment		Historical		Taken at colposcopy		HPV triage		Other		Total
Age	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**
Māori	396	14.5	1,204	44.0	96	3.5	396	14.5	643	23.5	2,735
Pacific	73	11.5	222	34.9	14	2.2	179	28.1	148	23.3	636
Asian	184	13.8	328	24.6	52	3.9	434	32.6	333	25.0	1,331
European/Other	2,007	12.7	6,223	39.5	718	4.6	2,024	12.8	4,792	30.4	15,764
Total	**2,660**	**13.0**	**7,977**	**39.0**	**880**	**4.3**	**3,033**	**14.8**	**5,916**	**28.9**	**20,466**

Table 77 - 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	-	0.0	-	-	5	41.7	-	0.0	7	58.3	12
20-24	213	28.0	64	8.4	162	21.3	-	0.0	321	42.2	760
25-29	712	35.7	677	33.9	136	6.8	-	0.0	472	23.6	1,997
30-34	589	19.9	1,191	40.2	105	3.5	597	20.1	481	16.2	2,963
35-39	406	14.7	1,289	46.6	102	3.7	507	18.3	464	16.8	2,768
40-44	255	8.8	1,423	48.9	87	3.0	485	16.7	660	22.7	2,910
45-49	196	7.2	1,220	44.8	69	2.5	483	17.8	753	27.7	2,721
50-54	122	5.4	869	38.6	74	3.3	410	18.2	776	34.5	2,251
55-59	75	4.3	613	34.8	60	3.4	252	14.3	763	43.3	1,763
60-64	52	4.2	326	26.4	40	3.2	182	14.7	636	51.5	1,236
65-69	30	3.7	208	25.5	30	3.7	96	11.8	451	55.3	815
70+	10	3.7	97	35.9	10	3.7	21	7.8	132	48.9	270
Total	**2,660**	**13.0**	**7,977**	**39.0**	**880**	**4.3**	**3,033**	**14.8**	**5,916**	**28.9**	**20,466**

Table 78 - Volume of HPV test samples received during the monitoring period, by purpose and laboratory

	Post-treatment		Historical		Taken at colposcopy		HPV triage		Other		Total
Age	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**
Anatomical Pathology Services	548	11.1	2,022	40.9	24	0.5	938	19.0	1,412	28.6	4,944
Aotea Pathology Ltd	118	14.2	374	44.9	2	0.2	162	19.4	177	21.2	833
Canterbury Health Laboratories	364	21.7	482	28.8	318	19.0	240	14.3	271	16.2	1,675
LabPLUS	133	13.5	171	17.3	76	7.7	193	19.6	413	41.9	986
Medlab Central Ltd	351	15.8	870	39.3	28	1.3	360	16.2	607	27.4	2,216
Pathlab	248	8.8	1,330	47.3	205	7.3	448	15.9	583	20.7	2,814
Southern Community Labs Dunedin	898	12.8	2,728	39.0	227	3.2	692	9.9	2,453	35.1	6,998
Total	**2,660**	**13.0**	**7,977**	**39.0**	**880**	**4.3**	**3,033**	**14.8**	**5,916**	**28.9**	**20,466**

Table 79 - 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	*608*	*8,110*	*7.5*
Auckland	1	225	0.4
Bay of Plenty	97	489	19.8
Canterbury	298	1,660	18.0
Capital & Coast	1	756	0.1
Counties Manukau	3	423	0.7
Hawke's Bay	-	415	-
Hutt Valley	-	284	-
Lakes	29	112	25.9
Mid Central	11	778	1.4
Nelson Marlborough	3	143	2.1
Northland	17	141	12.1
South Canterbury	28	136	20.6
Southern	90	785	11.5
Tairawhiti	-	183	-
Taranaki	-	143	-
Waikato	19	239	7.9
Wairarapa	1	138	0.7
Waitemata	10	723	1.4
West Coast	-	125	-
Whanganui	-	212	-
Private practice	69	1,456	4.7
Total	**677**	**9,566**	**7.1**

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 80 - Women eligible for and proportion who have received HPV testing for a historical high grade abnormality, by age at 31 December 2015

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	1	1	-	0.0	-	0.0
25-29	355	353	158	44.8	92	26.1
30-34	3,750	3,737	2,046	54.7	1,431	38.3
35-39	7,659	7,611	4,399	57.8	3,310	43.5
40-44	10,872	10,813	6,474	59.9	4,927	45.6
45-49	9,583	9,502	5,631	59.3	4,222	44.4
50-54	7,064	6,950	4,113	59.2	3,193	45.9
55-59	4,690	4,595	2,672	58.2	2,066	45.0
60-64	2,798	2,719	1,618	59.5	1,304	48.0
65-69	1,702	1,622	903	55.7	708	43.6
70+	2,035	1,755	480	27.4	344	19.6
Total	**50,509**	**49,658**	**28,494**	**57.4**	**21,597**	**43.5**

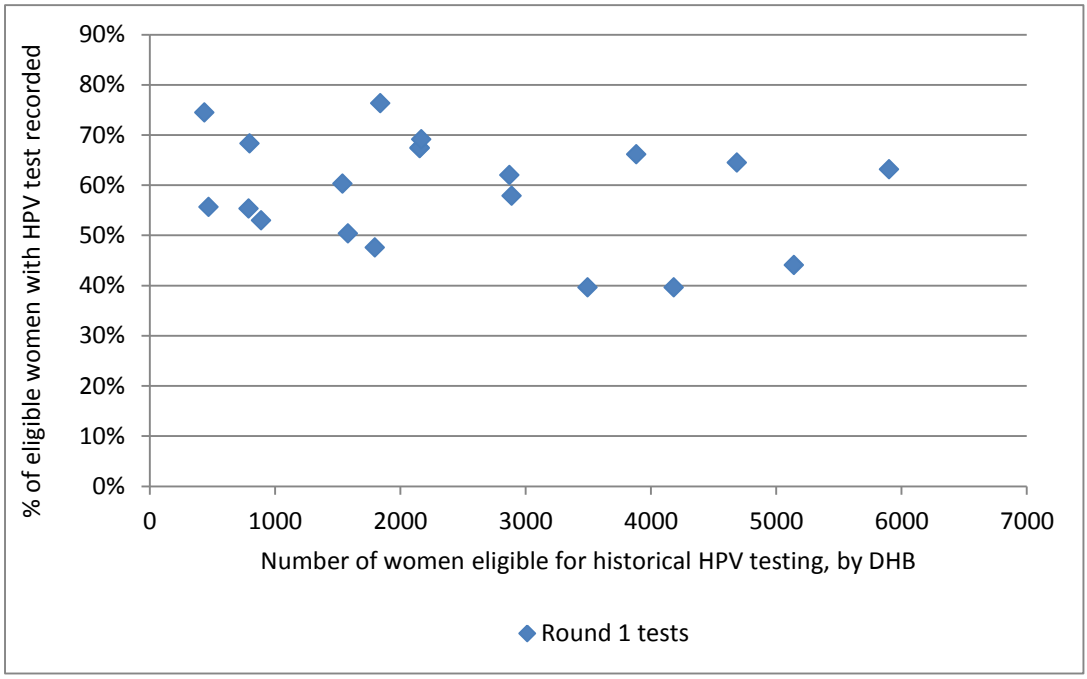
** Women are not followed up in the current report if they are no longer alive at the end of the current monitoring period; or if they have since had a non-squamous high grade abnormality (no longer eligible for HPV testing to follow-up historical high grade abnormality).*

Table 81 - 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	4,231	4,182	1,658	39.6	1,069	25.6
Bay of Plenty	2,941	2,888	1,671	57.9	1,043	36.1
Canterbury	5,991	5,900	3,728	63.2	3,093	52.4
Capital & Coast	2,900	2,870	1,779	62.0	1,495	52.1
Counties Manukau	3,559	3,494	1,384	39.6	869	24.9
Hawke's Bay	2,199	2,154	1,451	67.4	1,134	52.6
Hutt Valley	1,562	1,537	927	60.3	748	48.7
Lakes	1,608	1,581	796	50.3	521	33.0
Mid Central	2,202	2,154	1,453	67.5	1,184	55.0
Nelson Marlborough	1,869	1,840	1,405	76.4	1,230	66.8
Northland	1,845	1,797	855	47.6	578	32.2
South Canterbury	814	796	544	68.3	445	55.9
Southern	4,754	4,686	3,022	64.5	2,442	52.1
Tairawhiti	904	887	470	53.0	334	37.7
Taranaki	2,217	2,166	1,497	69.1	1,255	57.9
Waikato	3,947	3,883	2,568	66.1	2,022	52.1
Wairarapa	477	469	261	55.7	199	42.4
Waitemata	5,228	5,140	2,265	44.1	1,372	26.7
West Coast	442	435	324	74.5	265	60.9
Whanganui	806	788	436	55.3	299	37.9
Unspecified	*13*	*11*	-	*0.0*	-	*0.0*
Total	**50,509**	**49,658**	**28,494**	**57.4**	**21,597**	**43.5**

** 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 109 – 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.

Table 82 - 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	7,742	7,560	3,907	51.7	2,626	34.7
Pacific	1,224	1,199	449	37.4	309	25.8
Asian	1,680	1,669	687	41.2	505	30.3
European/Other	39,863	39,230	23,451	59.8	18,157	46.3
Total	**50,509**	**49,658**	**28,494**	**57.4**	**21,597**	**43.5**

** 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).*

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 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 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 83 – 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

DHB	Colposcopy clinics included*
Southern	General Gynae Department – Dunedin Hospital 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
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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