National Screening Unit

National Cervical Screening Programme

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About the authors

The authors are based at UNSW, Sydney, Australia. They are part of a research group (led by A/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. Expert advisors to the group's research work include Professor Dame Valerie Beral (Director, Cancer Epidemiology Unit, University of Oxford) and Professor Bruce Armstrong (Professor of Public Health, University of Sydney). 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 2012.

Key points on performance/trends

Indicator 1 — Coverage

Target: 80% of eligible women had a screening test within the previous three years, by 31 December 2014

- Among an estimated 1,137,115 eligible women aged 25-69 years at the end of the monitoring period, 871,761 (76.7%) had a screening test in the previous three years.
- Coverage target (80% of women aged 25-69 years screened in the previous three years) was not met nationally.
- Coverage target was met for specific five-year age groups between 40-59 years.
- Coverage target was met by five of 21 DHBs.
- Coverage targets were met for European/ Other women (82.3%), but were not met for Māori (62.4%), Pacific (69.1%), or Asian (63.5%) women.
- 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.
- Coverage in women aged 20-24 years is likely to remain lower than for other ages because age is defined at the end of the monitoring period. 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.
- Three-year coverage among women aged 25-69 years (76.7%) is similar to that reported in the previous monitoring report (76.8%). It has increased in Māori, Pacific, and Asian women, but decreased somewhat in European/ Other women. Three-year coverage has decreased in younger age groups (those between 25-39 years) but increased in age groups between 40-69 years.
- Five-year coverage among women aged 25-69 years (90.5%) is similar to that in the previous monitoring report (90.9%).

Screens in women aged less than 20 years

Target: None

- In the three years to 31 December 2012, there were 11,894 women who had a cervical sample taken when they were aged less than 20 years. This is less than in the previous reporting period (12,895 women).
- This represents 1.2% of all women (of any age) who were

screened in the three-year period (compared to 1.3% in previous reporting period).
- Most of these women (84.2%) were aged 18-19 years at the time of their cervical sample.

Indicator 2

First screening events

Target: None

- There were 21,674 women who had their first screening event during the current reporting period – an increase 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

- 53 women aged between 20-69 years withdrew from the NCSP Register during this six-month period. This is broadly similar to the number of women in this age range who withdrew during the previous reporting period (44 women).

Indicator 4

Early re-screening

Target: Not yet defined

- 20.4% of a cohort of women with a negative cytology result and a recommendation to return at the routine interval had at least one cytology sample within 30 months of their index negative cytology sample.
- Early re-screening varies widely between DHBs, from 11.2% in Whanganui to 28.8% in Waitemata.
- Early re-screening occurs in all ethnic groups, but is most common among Asian women (22.4%), and least common among Pacific women (16.3%).
- Early re-screening occurs in all age groups, but is most common in women aged 20-24 years at the end of the period (27.8%) and least common in women aged 65-69 years at the end of the period (13.9%).
- Early re-screening has decreased since the previous report, from 21.7% to 20.4%.

Indicator 5 Cytology

Indicator 5.1 Cytology reporting

Seven laboratories reported on cytology during the current monitoring period. This is one fewer than in the previous reports as one laboratory ceased reporting on cytology in the current monitoring period (Medlab South Christchurch).

The proportion of cytology samples which are LBC has remained at virtually 100.0%.

Unsatisfactory cytology

Target: 1-5% for LBC

- Percent LBC samples unsatisfactory target met by three of seven laboratories, and was met nationally (1.1%). The rate of unsatisfactory samples has decreased slightly for LBC since the previous report, from 1.2% to 1.1%, and so has remained in the target range.

Negative cytology

Target: No more than 96% of satisfactory cytology samples

- Percent of samples negative target met nationally and by all seven laboratories.
- Nationally, the percent of samples which are negative (91.7%) is the same as that reported in the previous period.

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 (8.3%) is the same as that reported in the previous period.

HSIL cytology

Target: No less than 0.6% of satisfactory cytology samples

- Percent of samples HSIL target met nationally and by all seven laboratories.
- Percent of samples HSIL (1.0%) has slightly increased since the previous report (0.9%).

Indicator 5.2 Cytology positive predictive value

HSIL + SC

Target: 65% - 85% of HSIL+SC cytology samples should be

histologically confirmed as high grade

- Seven of eight laboratories met the minimum target range for HSIL+SC of at least 65%. One laboratory had a positive predictive value which was higher than the upper end of the target range (85%).
- Nationally, the positive predictive value of HSIL+SC for this monitoring period was 79.2%, which is similar to that in the previous report (79.6%).

Other cytological abnormalities

Target: None

- Nationally, the positive predictive value of ASC-H has decreased compared to the previous report (45.3% in this report, 48.4% in the previous report).
- Nationally, the positive predictive value of the combination of ASC-H+HSIL+SC has decreased compared to the previous report (67.1% in the previous report; 65.4% in the current report).
- Nationally, the proportion of glandular cytological abnormalities identified as histological high grade has increased since the previous report, from 44.7% to 50.0% (however this measure is generally based on a comparatively small number of samples; 188 with histology in the current report).

Indicator 5.3	<u>Accuracy of negative cytology reports</u> Not assessed
Indicator 5.4	<u>Histology reporting</u> **Target:** None • 14,809 histology samples were taken during the current reporting period. 494 (3.3%) of these were insufficient for diagnosis. • Results for most severe histology from 12,303 women where histology was sufficient for diagnosis are presented • 49.7% of women had histology samples which were negative/ benign • 22.3% of women had CIN2/3 or HSIL histology results. • 52 (0.4%) women had ISCC histology results, 31 (0.3%) women had invasive adenocarcinoma histology results, and two <0.05%) had adenosquamous carcinoma histology results.
Indicator 5.5	<u>Turnaround times</u> *Cytology*

Target: 90% within seven working days; 100% within 15 working days

- The seven-working-days target for cytology was met nationally (90.8% samples were reported within seven working-days), and was met by three of seven laboratories.
- The 15-working-days target was not met nationally (98.4% samples were reported within 15 working-days), and was not met by any of the seven laboratories.
- All seven laboratories had reported on at least 95% of samples within 15 days; one of the seven had reported on more than 99% of samples.
- Performance against the seven-working-days target has decreased slightly since the previous report (from 92.4% to 90.8%), and the number of labs meeting the target has decreased from five (of eight laboratories) to three (of seven laboratories).
- The overall proportion of cytology samples reported within 15-working-days (98.4%) is similar to the previous reporting period (98.6%). The number of labs meeting the target has decreased from one to none (the laboratory which had previously met this target no longer reports on cervical cytology).

Histology

Target: 90% within 5 working days; 99% within 15 working days

- Turnaround times for histology were below the target nationally (76.5% samples were reported within five working days, 94.5% within 15 working days), but the five-day target was met by six of 17 laboratories and the 15-day target was met by five of 17 laboratories.
- Nine of the 17 laboratories had reported on at least 95% of samples within 15 days.
- The overall proportion of histology samples reported within five days has increased since the previous reporting period (from 73.2% to 76.5% within five days), and is similar at 15 days (94.5% vs 94.8% in the previous report). The number of laboratories meeting the targets has increased for the five-day target (from four to six) but decreased for the 15-day target (from six to five).

Low grade cytology with associated HPV triage testing

Target: 100% within 15 working days

- There were 3,445 cytology samples with associated HPV triage testing in the current reporting period.
- Turnaround time was below target: 96.5% were reported on

within 15 working days.

- No laboratory met the target.
- The proportion reported within 15 days is lower for this subgroup of cytology (96.5%) than for cytology overall (98.4%), particularly at Canterbury Health Laboratories and LabPLUS (although the latter performed only a small number of such cytology with accompanying HPV triage tests).

Notes

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

Indicator 6

Follow-up of women with high grade cytology – histology

Histological follow-up

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

- Targets were not met nationally (for either 90 days or 180 days).
- 78.7% of women had a histology report within 90 days of their high grade cytology report; 86.1% of women had one within 180 days.
- One DHB (Southland) met the target for histological follow-up within 90 days and none within 180 days.
- Nationally, the proportion of women with histological follow-up within 90 days has decreased slightly since the previous reporting period (from 79.1% to 78.7%), as has the proportion with follow-up within 180 days (86.1% during the current reporting period, compared to 86.9% during the previous reporting period).
- Compared to the previous reporting period, the proportion of women with follow-up histology within 90 days increased for Māori, Pacific, and Asian women, but not for European/ Other women.
- The proportion of women with follow-up histology within 180 days increased compared to the previous reporting period for Māori, Pacific, and Asian women. Among European/ Other women the proportion with follow-up histology within 180 days decreased compared to the previous reporting period.
- The proportion of women with histological follow-up at 90 and 180 days increased for women aged 45-49 years, 60-64 years and 65-69 years, but decreased for women aged 50-54 years.

Any follow-up tests

Target: None

- Nationally, 195 (8.4%) women have no follow-up test report (colposcopy, subsequent cytology, histology, HPV test) within 180 days of their cytology report.
- Nationally, the proportion of women with no record of a follow-up test report at 180 days has increased since the previous reporting period (from 6.5% to 8.4%).
- Compared to the previous reporting period, the proportion of women with no follow-up test at 180 days has decreased for all ethnic groups.

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 five working days of receipt of referral. 95% or more of women who have high-grade smear abnormalities receive colposcopy within 20 working days of receipt of referral.

- There were 2,534 women with high grade cytology results who were not already under specialist management.
- This comprised 75 women with high grade results indicating a suspicion of invasive disease and 2,459 women with other high grade results.
- Among the 75 women with high grade cytology results indicating a suspicion of invasive disease, accepted referrals were recorded for 28 women; of these 28 women, 32.1% were seen within one week of their referral being accepted, and 57.1% seen within four weeks.
- Subsequent investigation by the NCSP found that 69 of the 75 women with high grade results indicating a suspicion of invasive disease had received some sort of follow-up, and virtually all of the remainder had reasons for not having follow up investigations.
- Among the 2,459 women with other high grade cytology results, accepted referrals were recorded for 2,129 women and 42.4% of those women were seen within four weeks of their referral being accepted.
- The median time between a high grade cytology report and a colposcopy visit was 15 days for women with cytology suspicious of invasive disease, and 38 days for women with other high grade cytology results.
- In total, a colposcopy visit is recorded for 2,100 (82.9%) women up to 31 December 2012 (follow-up time of at least

six and up to 12 months). Colposcopy data are believed to be incomplete, however, as this is lower than the number and proportion of women with histological follow-up within 180 days in Indicator 6 (2,182 women; 86.1%).

- Nationally, the median waiting time has increased for high grade cytology indicating suspicion of invasive disease, from 8.5 days in Report 37 to 15 days in the current report.
- For high grade cytology (no suspicion of invasive disease) the median waiting time is unchanged compared to the previous report (38 days).

Indicator 7.2 — Timeliness of colpscopic assessment – low grade cytology

Not assessed

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 14,494 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 98.1% of colposcopies.
- Presence or absence of a lesion was documented for all colposcopies.
- Colposcopic opinion regarding abnormality grade was documented for 93.3% of colposcopies where appearance was abnormal or inconclusive.
- The type of recommended follow-up was recorded for 99.1% of colposcopy visits, and the recommended timeframe for this follow-up was recorded for 98.1% of colposcopy visits.
- All of these items were completed for 92.6% of colposcopy visits.
- Colposcopic appearance was reported as abnormal in 54.7% of colposcopies, and inconclusive in 3.9% of colposcopies.
- Completion of most recommended fields is somewhat higher than in the previous monitoring report (except for the presence or absence of a lesion, which was documented in all cases in both time periods). Comparisons are complicated, however, by data issues specific to Report 37.
- Overall completion is lower, but this is not directly comparable to recent reports, as two additional fields are now assessed (recommended type and timeframe for follow-up).

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.

- 28.9% of 2,755 women with HSIL histology (CIN2/3) during January-June 2012 were treated within eight weeks of their histology report.
- Target was not met by any DHB.
- The proportion of women with histologically confirmed CIN2/3 treated within eight weeks of their histology result being reported has increased since the previous reporting period (from 25.6% to 28.9%).
- 8.2% of 2,136 women with LSIL histology (CIN1, CIN not otherwise specified) received treatment within 26 weeks of their histology report. This proportion is presented for descriptive purposes only. Treatment of histologically confirmed LSIL is not routinely recommended by the *2008 NCSP Guidelines for Cervical Screening in New Zealand*.
- Exploratory analyses suggest that treatments are under-reported in colposcopy data recorded on the NCSP Register.

Indicator 7.5 Timeliness of discharge following treatment

Target: 90% or more of women treated for CIN should have a colposcopy and smear within the within the nine-month period post treatment.

- Based on NCSP Register records, 1,468 women were treated for high grade lesions in the period July to December 2011.
- 58.9% of women treated have a record of both colposcopy and cytology within nine months after their treatment visit. 59.5% have a record of at least a colposcopy visit (with or without cytology) in the same time period.
- One DHB met the target for follow-up within nine months post-treatment.

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

- There were 874 women who met the criteria for appropriate discharge within 12 months of their treatment (67.7% of women treated). Of these women, 731 (83.6%) were discharged to their smear taker within 12 months.
- Ten 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.

- Nationally, 95.9% of women aged 30 years or more with an ASC-US cytology result, and 95.9% of women aged 30 years or more with an 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, 23.6% of women with ASC-US results and 57.3% of women with LSIL results were positive for high risk HPV.
- Positivity for high risk HPV varied by laboratory (from 12.8% to 39.0% for ASC-US, and from 50.8% to 66.0% 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 2.0% of women with an ASC-US result, and 0.7% of women with an LSIL result; 39 women in total).
- The proportion of women who were eligible for HPV triage of low grade cytology who subsequently received a triage test has increased compared to the previous reporting period for women with ASC-US results (from 94.8% to 95.9%), but has decreased slightly for women with LSIL results (from 96.1% to 95.9%).
- The proportion of women whose HPV tests were positive is somewhat lower in the current reporting period for ASC-US (23.6%, compared to 25.6% in the previous period), and also for LSIL (57.3%, compared to 58.3% in the previous period).

Indicator 8.2 HPV test volumes

Target: None set.

- Nationally, 20,655 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 (88.8% of all HPV test samples).
- HPV samples were predominantly from European/ Other women (16,660 samples; 80.7% of all HPV test samples).
- HPV test volumes were lowest at LabPLUS (857 samples; 4.1% of all HPV test samples) and highest at Southern Community Labs (7,477 samples; 36.2% of all HPV test samples).
- Overall HPV test volumes are slightly higher than those in the previous report (increased by 1.6%).
- Nationally, 16.7% HPV tests are taken for HPV triage of low grade cytology in women aged 30 years or more, 7.8% were

taken for follow-up of women treated for confirmed high grade squamous abnormalities in the previous three years, 42.9% were taken to manage women with high grade squamous cytology or histology more than three years ago, and 5.7% were taken at colposcopy (potentially to assist in resolving discordant results).

- Among the remaining 26.9% of HPV tests, it appears that a large proportion were for follow-up of historical high grade abnormalities which are not recorded on the NCSP Register (for example because they pre-date the Register, or occurred overseas) (56.2% of the remaining tests; 15.1% of all HPV tests). A smaller proportion appear to have been related to follow-up of an abnormality outside guidelines recommendations (for example non-squamous abnormalities, or low grade abnormalities in cases where the guidelines recommend referral to colposcopy).
- HPV tests in women aged less than 25 years were most commonly for post-treatment management or taken at colposcopy for other reasons (potentially to resolve discordant results). HPV tests in women aged 25 years or more were most commonly for historical testing.
- The proportion of HPV tests which are invalid is very small (0.1%).

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 is available in a separate report (Technical Specification for Monitoring Reports) available from the Ministry of Health on request.

From Report 30 onwards, monitoring has been undertaken with technical assistance of researchers based at UNSW (formerly in the Cancer Research Division at Cancer Council NSW), Sydney, Australia. This has coincided with 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 is ongoing. In particular, colposcopy indicators are not all calculated for this report due to the incompleteness of colposcopy data on the NCSP Register relating to this time period. Work is also underway to improve accuracy and completeness of ethnicity data on the Register. Other indicators, such as the accuracy of negative cytology reports, are in development and will be reported on in future.

Approval was sought and received from the National Kaitiaki Group (NKG) for access to Māori women's data from the NCSP Register, in order to calculate various Programme indicators by ethnicity.

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 http://www.nsu.govt.nz/health-professionals/1072.aspx and on request from the NCSP:
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3. Methods

Data used

The analyses in this report are based on data extracted from the NCSP Register in July 2013.

Age

Unless otherwise specified, age is defined as the woman's age at the end of the reporting period, i.e. 31 December 2012.

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 Statitics 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 2012 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) who had not had a hysterectomy prior to 31 December 2012 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 ethnic group. 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 2006 Census population, projected to 31 December 2012.

Hysterectomy prevalence estimates were updated in the previous monitoring report (Report 37). Earlier reports used estimators for 2007, which were the best estimates available at the time of the analysis, but they have now become outdated. These employed hysterectomy prevalence estimates from Craig Wright.[2] As is the case with the hysterectomy adjustors used in the current monitoring report, the previously used hysterectomy adjustors were age- and calendar year-specific; however unlike the currently employed adjustors, they were also ethnicity-specific. Further information about the previously used hysterectomy prevalence methodology can be found in the document '*Setting Outcome Targets for the National Cervical Screening Programme. A Report for the National Screening Unit. November 2003*' by S. Paul, M. Tobias, and C. Wright [2]. In light of this, changes compared to Report 36 or earlier in measures which rely on the hysterectomy-adjusted population compared to those in previous reports, particularly coverage, need to be interpreted with caution.

Ethnicity analysis

The analysis by ethnicity considered four groups – Māori, Pacific, Asian, or European/Other, based on women's priority two ethnicity codes recorded on the NCSP Register. Women for whom ethnicity information was not available were included in the "European/Other ethnic groups" category. The data download used for the current analysis (NCSP Register data as at July 2013) contained ethnicity codes for approximately 98.3% 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[3, 4]. The NCSP is continuing with work to improve the accuracy of ethnicity recording on the NCSP Register.

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

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 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 31 December 2014. 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 2012, 871,761 (76.7%) 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 meet the updated target of 80%. 1,028,635 (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 69.4% (Counties Manukau) to 85.9% (Taranaki). Five of the 21 DHBs achieved the 80% target in women aged 25-69 years at the end of the period (Figure 1, Table 32). The target coverage of 80% of women screened at least once within three years was achieved in four out of the nine five-year age groups between 25 and 69 years. Among women aged 25-69 years at the end of the period, the target was achieved for each of the specific five-year age groups between 40-59 years, but not for the five-year age groups between 25 and 39 years, or 60 and 69 years. Among women aged 25-69 years at the end of the period, coverage was lowest in women aged 25-29 years (66.5%), and was highest in women aged 45-49 years (81.4%) (Figure 2, Table 31). Coverage was also low in women aged 20-24 years (54.9%), 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% were not met for Māori, Pacific, or Asian women. Coverage in these groups for women aged 25-69 years was 62.4%, 69.1%, and 63.5% respectively. Among European/Other women, coverage achieved was 82.3% within three years (Figure 4, Table 33). Coverage for each of Māori, Pacific, or Asian women was also explored at the DHB level. Coverage in Māori women ranged from 47.0% (South Canterbury) to 78.1% (Wairarapa)(Figure 4). The target level of 80% of Māori women screened within the previous three years was not achieved in any DHB. Coverage in Pacific women ranged from 52.9% (Northland) to 100% (West Coast)(Figure 5). The target level of 80% of Pacific women screened within the previous three years was achieved in Auckland, Bay of Plenty, Hawke's Bay, Southland, Wairarapa, West Coast and Whanganui. Coverage in Asian women ranged from 55.5% (Canterbury) to 96.1% (West Coast)(*Note: Coverage calculated using population projection for 31 December 2012 based on 2006 Census data. Target 80%, hysterectomy adjusted.*

Figure 6). The target level of 80% of Asian women screened within the previous three years was achieved in Bay of Plenty, Hawke's Bay, Hutt Valley, Nelson Marlborough, Northland, South Canterbury, Tairawhiti, Wairarapa and West Coast.

When compared to the findings for three-year coverage, five-year coverage had similar patterns of variation by age, DHB, and ethnicity to three-year coverage. Five-year coverage varied by age from 58.9% in women aged 20-24 years to 95.3% in women aged 45-49 years (Figure 8, Table 34). Among women aged 25-69 years at the end of the period, it ranged from 84.2% in Counties Manukau to 98.4% in Taranaki (Figure 7, ,Table 35), and from 75.0% (Asian) to 96.2% (European/Other) (Figure 9, Table 36).

Screens in women aged less than 20 years

A total of 11,894 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 2012. This excludes two samples entered into the NCSP Register, where the apparent ages of the women were three and four years (likely representing data entry errors). A total of 1.2% of women who were screened at any age, were aged less than 20 years at the time their cervical sample was taken (Table 38).

The number of women aged less than 20 years at the time they were screened varied by DHB from 112 (West Coast) to 1,848 (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 5.4% (Mid Central) to 11.4% (West Coast). 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 10, and Table 37 to Table 39.

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 (84.2% overall; range across DHBs 75.3%- 91.5%). This may represent opportunistic screening of women aged 18-19 years. This proportion varied from 75.3% in South Canterbury to 91.5% in Capital & Coast. Where this proportion is higher, it indicates that a larger proportion of screening in women aged less than 20 years may be attributable to opportunistic screening of women aged 18-19 years; as this proportion decreases, it indicates that more of the screening in women aged under 20 years is occurring in women aged under 18 years, and less may be attributed to opportunistic screening of women aged 18-19 years.

Trends

Coverage

Overall coverage in New Zealand among women aged 25-69 years is similar in the current period (76.7% within the last three years, and 90.5% within the last five years) compared to the previous reporting period (76.8% within the last three years, and 90.9% within the last five years).

Coverage within DHBs has been relatively stable, compared to the previous monitoring period, with the possible exception of West Coast (coverage increased from 74.3% to 76.9%). Longer term trends by DHB are shown in Figure 11 and Table 41.

Trends by age are similar to those seen in the previous monitoring report, with the coverage target of 80% of women within the past three years met for women in the five-year age groups between 40-59 years, but not for women outside this age range. Coverage has increased somewhat in women aged 40-69 years, but not amongst younger women (aged 25-39 years). That is, coverage has improved to varying extents in age groups where coverage was higher, but has decreased somewhat in age groups where coverage was lower. Longer term trends by age are shown in Figure 12 and Table 42.

In contrast, coverage has increased (to varying extents) in ethnics groups where coverage was lower (Māori, Pacific and Asian women). Coverage is somewhat lower in European/ Other women than in the previous reporting period. Longer term trends by ethnicity are shown in Figure 13 and Table 43.

Screens in women aged less than 20 years

The number of women screened who are aged under 20 years has decreased from 12,694 in the previous reporting period to 11,894 in the current reporting period, as has the proportion of all women with screening events who are aged less than 20 years at the time of the event (from 1.3% to 1.2%). The number of women screened who are aged less than 20 years at the time has decreased in almost all DHBs.

The proportion of these women who were aged 18-19 years has increased somewhat since the previous reporting period (from 83.7% to 84.2%), and this increase has occurred in many DHBs (15 of 21). As in previous reports, it would appear that in New Zealand overall, screens in very young women are reducing, and where these still occur they increasingly reflect opportunistic screening of 18-19 year olds.

Comments

As discussed in Methods (Hysterectomy-adjusted population, page 13), 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 40.

In the current report, the number of Pacific women screened in the previous three years in West Coast exceeds the hysterectomy-adjusted population (but not the estimated female population). This may be because the hysterectomy adjustors used have been estimated for New Zealand as a whole, and are not ethnicity-specific or DHB-specific. In practice hysterectomy prevalence may vary by ethnicity or by DHB. Alternatively, this may be because women with a hysterectomy remained in the numerator, as described above. However, this latter possibility has existed over several reports, whereas this is the first reporting period where the number of women screened has exceeded hysterectomy-adjusted population, and coincides with the hysterectomy adjustors no longer being ethnicity-specific.

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

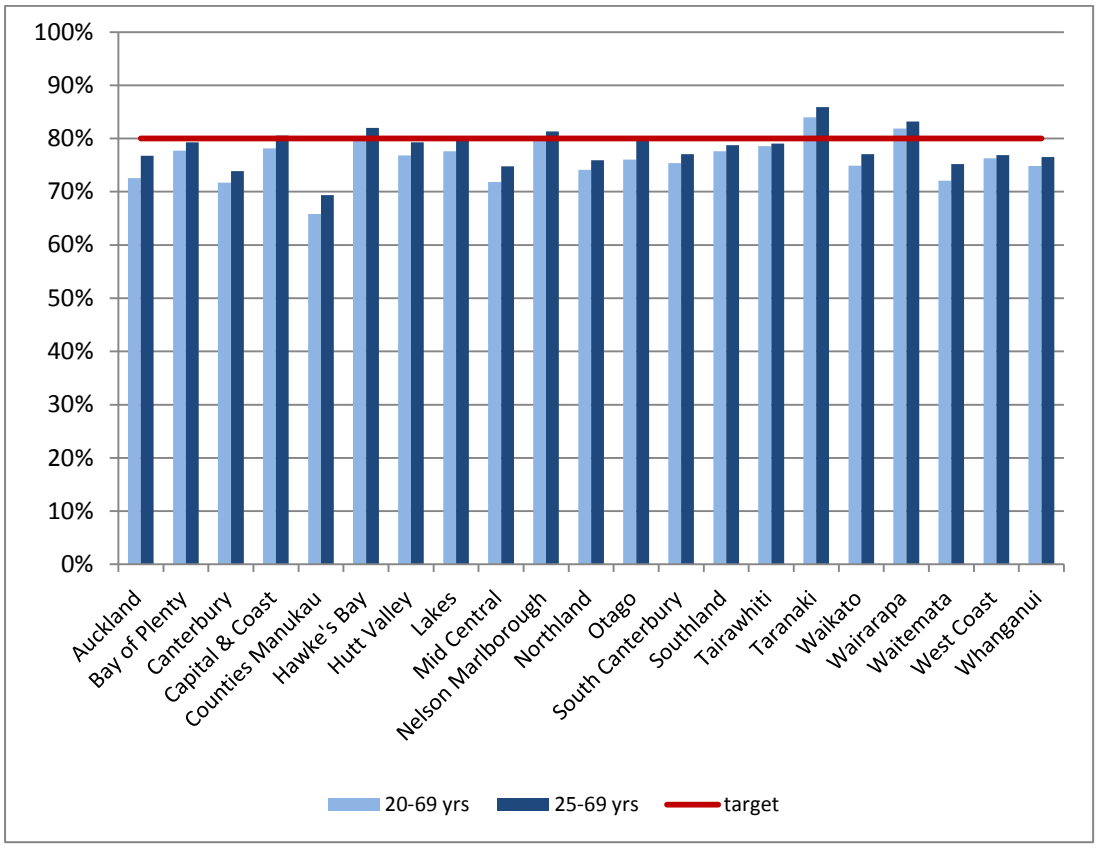
women in New Zealand without a hysterectomy, regardless of whether they are enrolled on the NCSP Register. Therefore the coverage estimates may be an underestimate of the actual coverage rates achieved, however the impact is likely to be very small.

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.

Misclassification of women's ethnicity (leading to under- and over-counting of different ethnicity groups) may be contributing in part to the differences in coverage achieved in different ethnicity groups. Our previous explorations of misclassification via ethnicity adjustors (from *Wright 2008*)[5] indicates that this is a factor, but is unlikely to explain all of the difference in observed coverage rates by ethnicity. Estimates in this report have no longer been adjusted for undercounting, since the most recent available adjustors relate to 2008, and the periods considered for coverage are wider – ranging from end-2009 to end-2012 (three-year coverage), and end-2007 to end-2012 (five-year coverage).

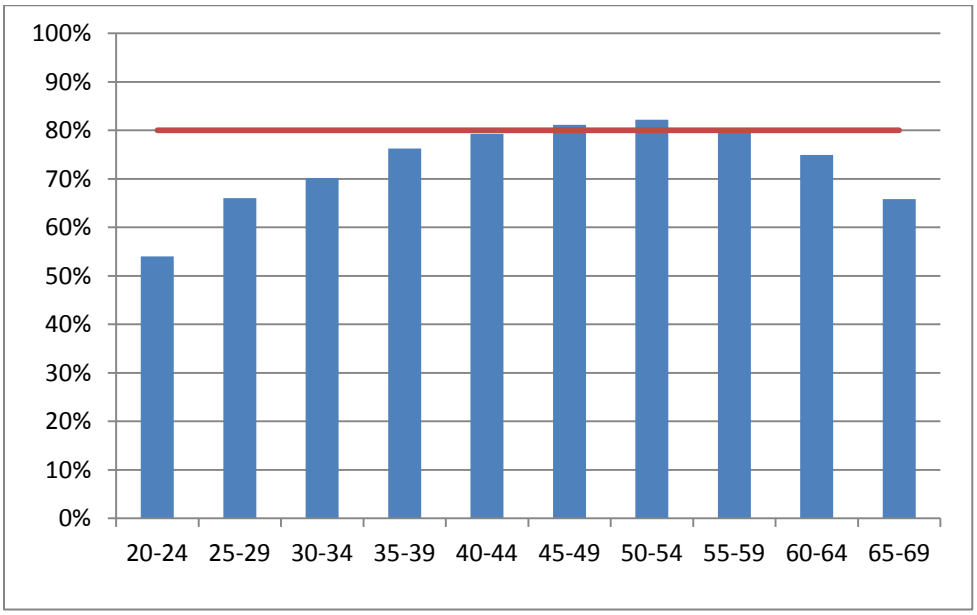
Coverage in women aged 20-24 years is likely to remain lower than for other ages and coverage in this age group should be interpreted with caution, as many women will have had a shorter period in which they were eligible for screening.

Figure 1 - Three-year coverage by DHB (women screened in the three years prior to 31 December 2012, as a proportion of hysterectomy-adjusted female population)



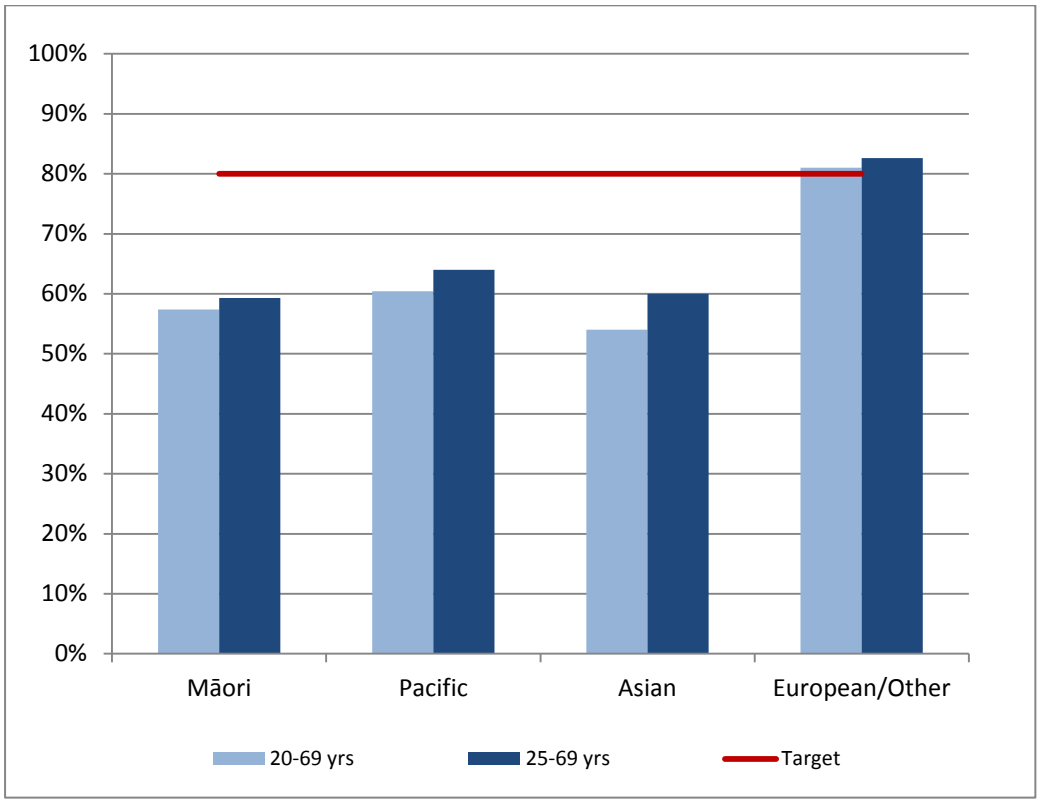
Note: Coverage calculated using population projection for 31 December 2012 based on 2006 Census data. Target 80%, hysterectomy adjusted.
See also Table 32

Figure 2 - Three-year coverage by five-year age group (women 20-69 years screened in the three years prior to 31 December 2012, as a proportion of hysterectomy-adjusted female population)



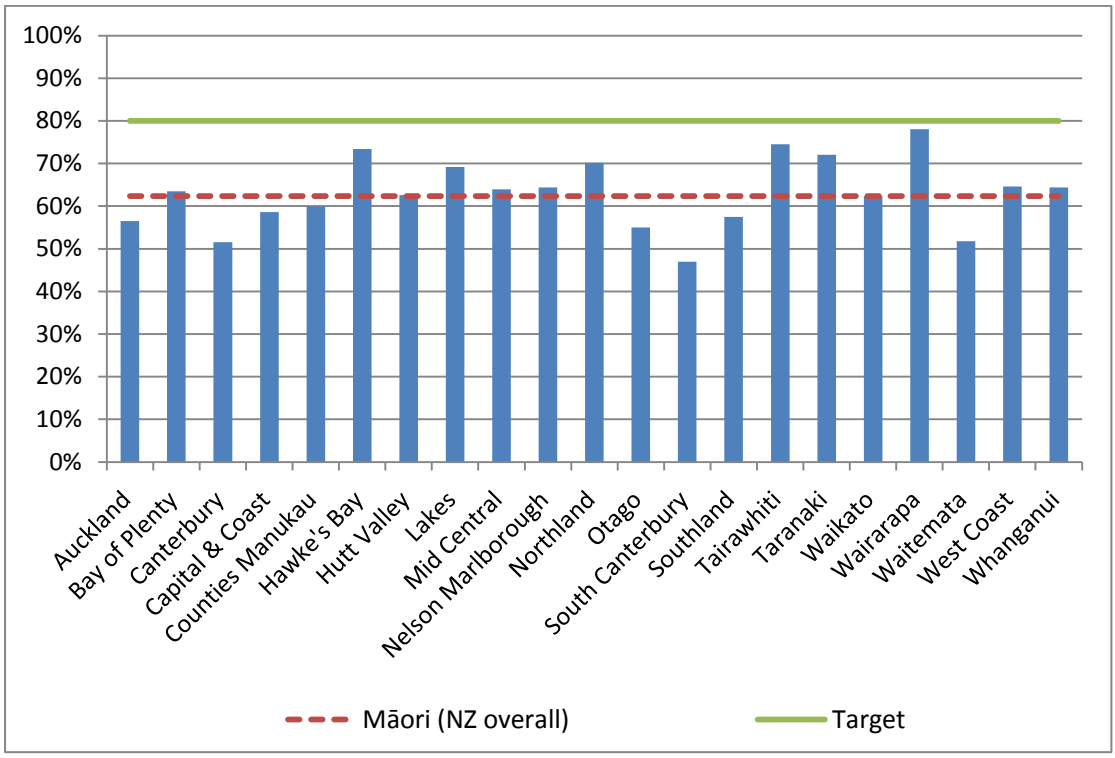
Note: Coverage calculated using population projection for 31 December 2012 based on 2006 Census data. Target (red line); 80%, hysterectomy adjusted.
See also Table 31

Figure 3 - Three-year coverage (women screened in the three years prior to 31 December 2012, as a proportion of hysterectomy-adjusted female population), by ethnicity



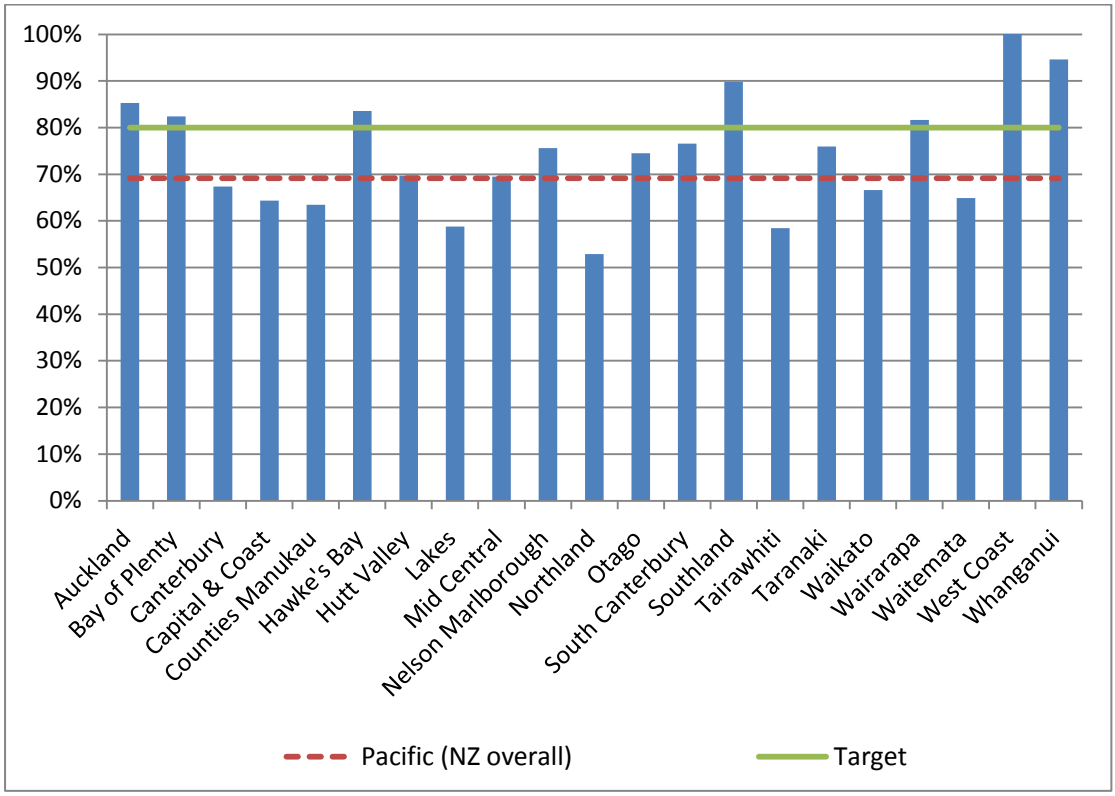
Note: Coverage calculated using population projection for 31 December 2012 based on 2006 Census data.
Target (red line); 80%, hysterectomy adjusted
See also Table 33

Figure 4 - Three-year coverage in Māori women (women 25-69 years screened in the three years prior to 31 December 2012, as a proportion of hysterectomy-adjusted female population), by DHB



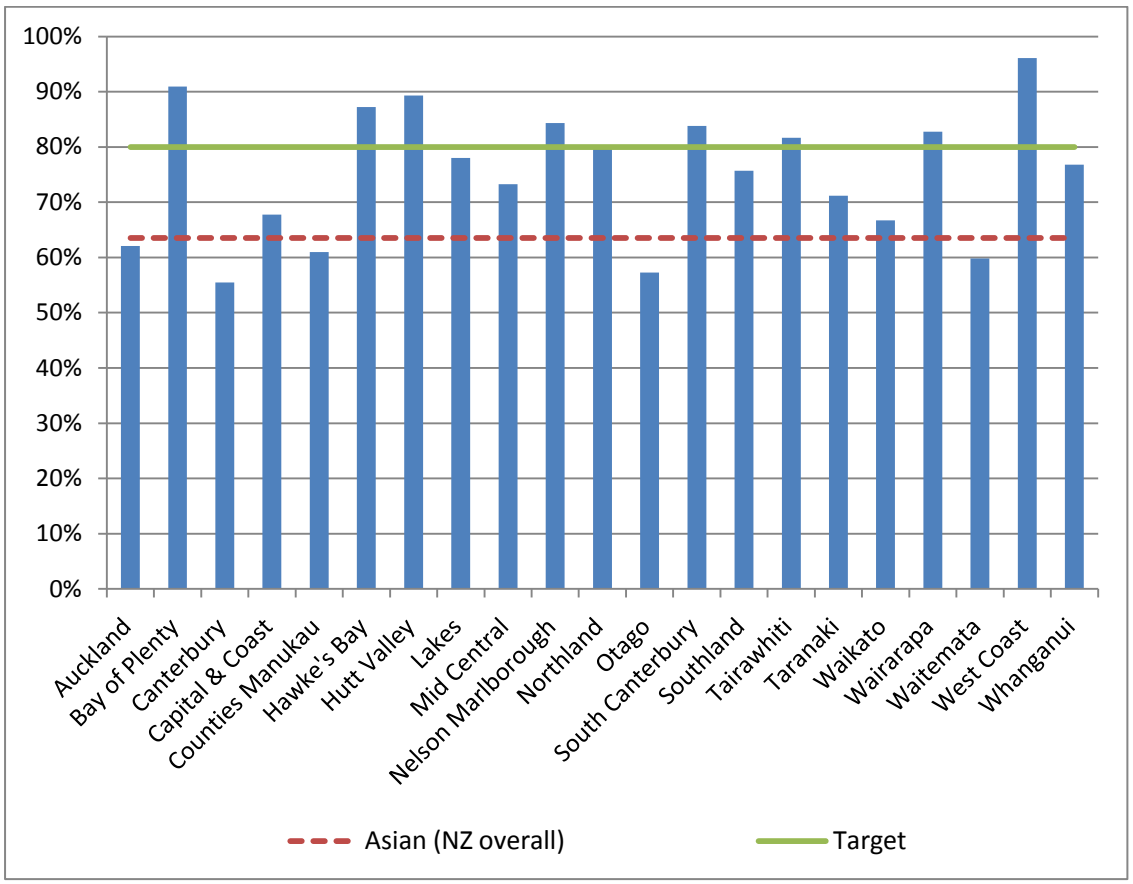
Note: Coverage calculated using population projection for 31 December 2012 based on 2006 Census data. Target 80%, hysterectomy adjusted.

Figure 5 - Three-year coverage in Pacific women (women 25-69 years screened in the three years prior to 31 December 2012, as a proportion of hysterectomy-adjusted female population), by DHB



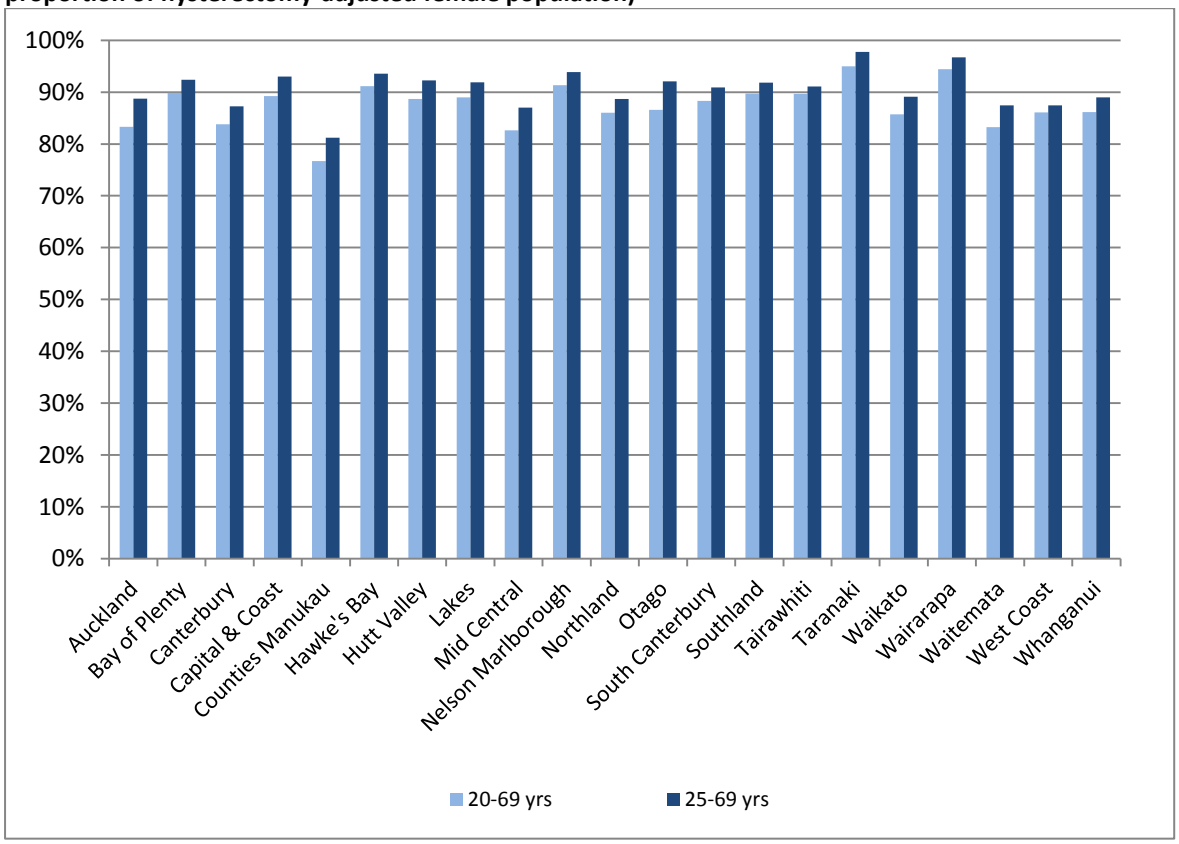
Note: Coverage calculated using population projection for 31 December 2012 based on 2006 Census data. Target 80%, hysterectomy adjusted.

Figure 6 - Three-year coverage in Asian women (women 25-69 years screened in the three years prior to 31 December 2012, as a proportion of hysterectomy-adjusted female population), by DHB



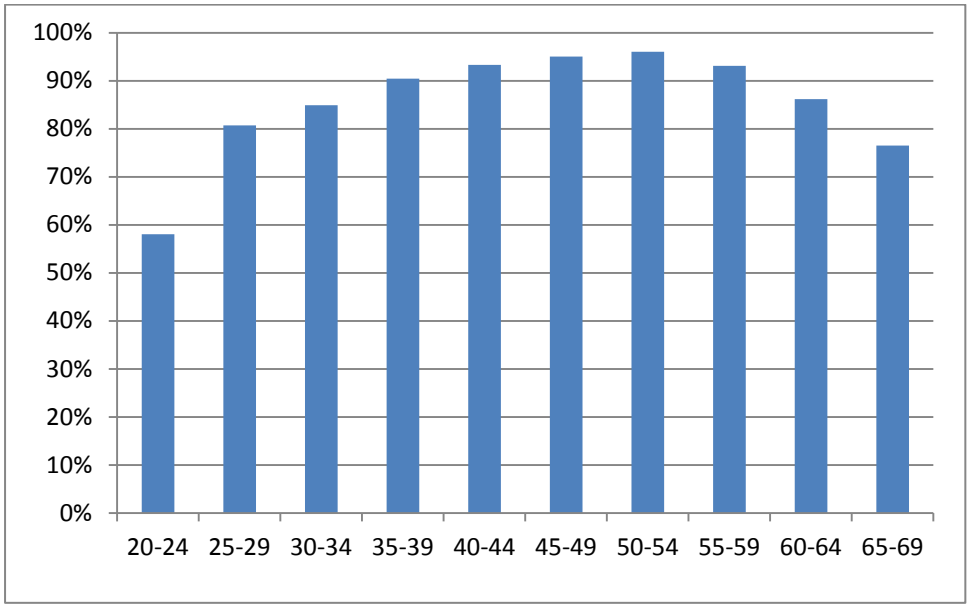
Note: Coverage calculated using population projection for 31 December 2012 based on 2006 Census data. Target 80%, hysterectomy adjusted.

Figure 7 - Five-year coverage by DHB (women screened in the five years prior to 31 December 2012, as proportion of hysterectomy-adjusted female population)



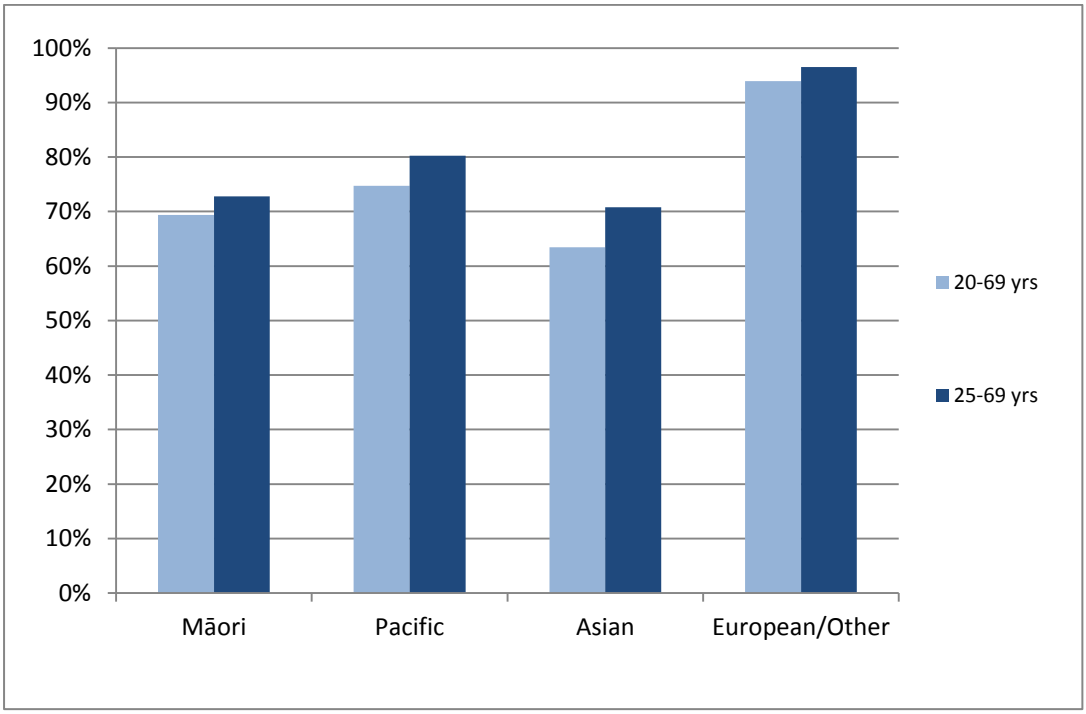
Note: Coverage calculated using population projection for 31 December 2012 based on 2006 Census data.
See also Table 35

Figure 8 - Five-year coverage by five-year age-group (women screened in the five years prior to 31 December 2012, as proportion of hysterectomy-adjusted female population)



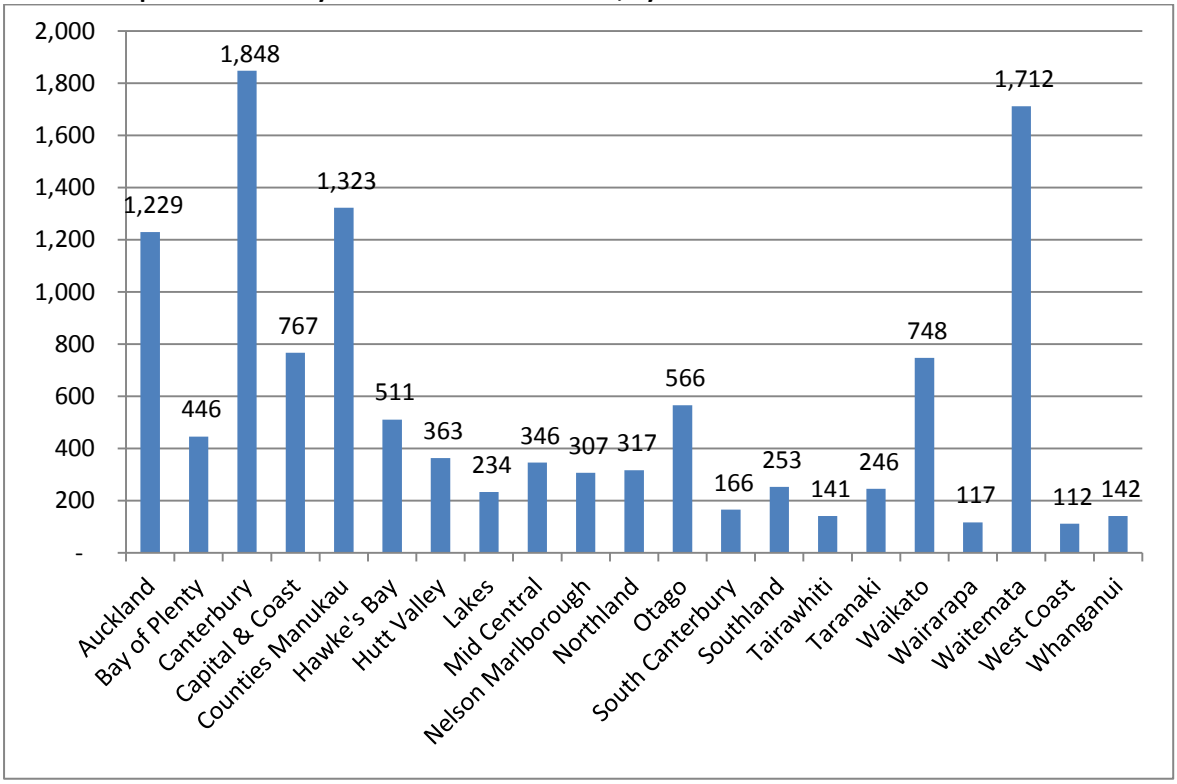
Note: Coverage calculated using population projection for 31 December 2012 based on 2006 Census data.
See also Table 34

Figure 9 - Five-year coverage by ethnicity (women screened in the five years prior to 31 December 2012, as a proportion of hysterectomy-adjusted female population)



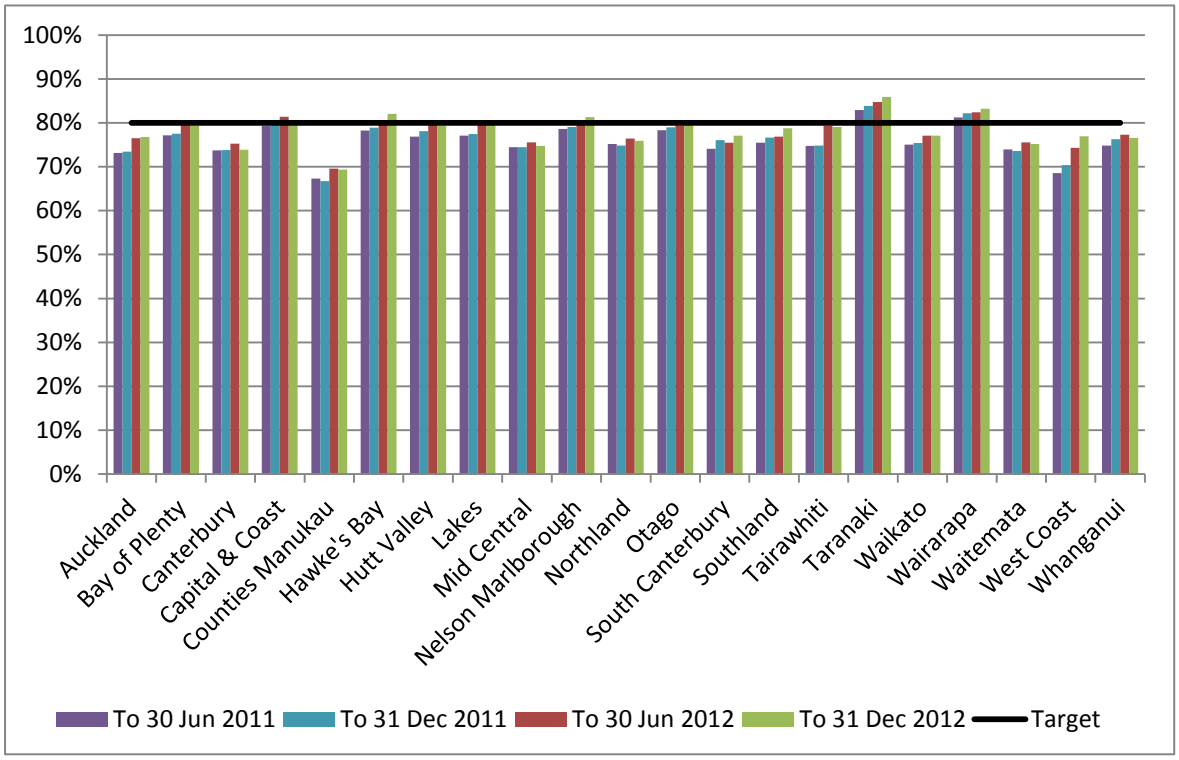
Note: Coverage calculated using population projection for 31 December 2012 based on 2006 Census data.
See also Table 36

Figure 10 - 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 2012, by DHB



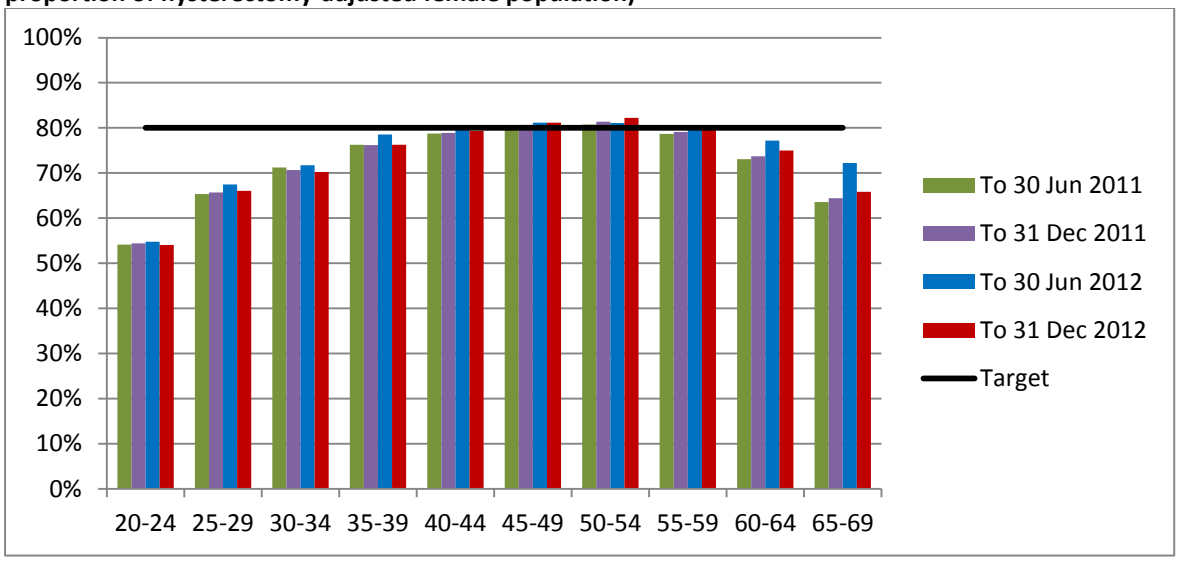
Excludes two women whose DHB was unknown and three women whose recorded age was less than ten years at the time of their cervical sample (likely data mis-entry).
See also Table 37

Figure 11 – 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)



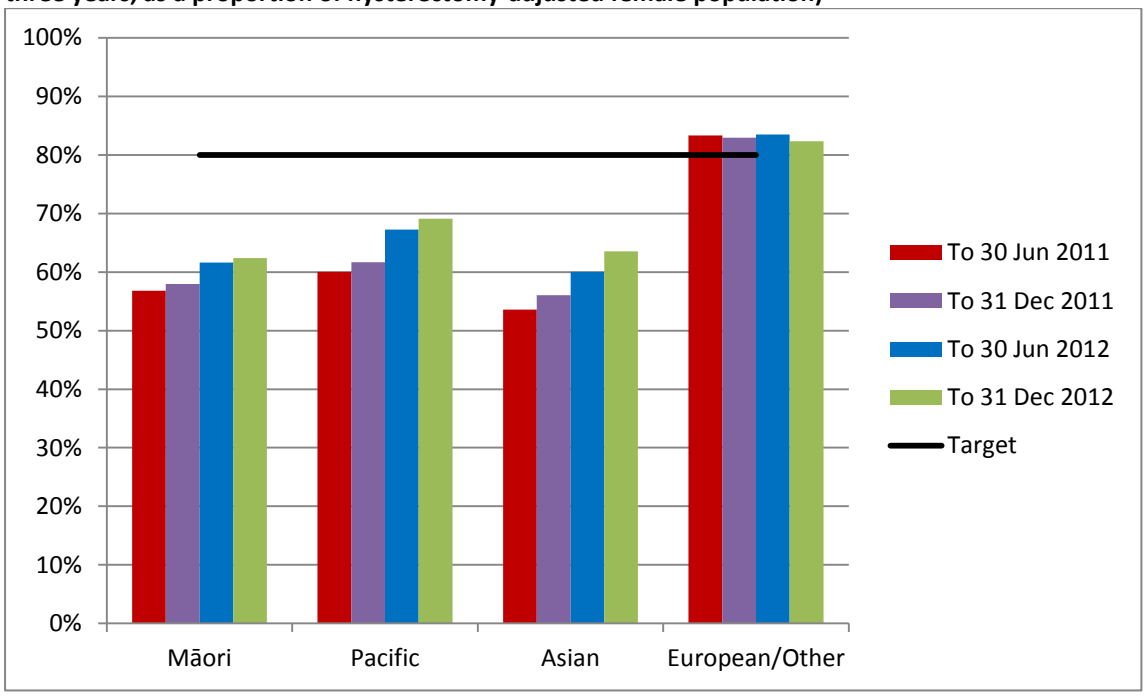
Coverage calculated using population projection at the end date shown, based on 2006 Census data.
Target 80%.
See also Table 41

Figure 12 - 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 end date shown, based on 2006 Census data.
Target 80%.
See also Table 42

Figure 13 - 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 end date shown, based on 2006 Census data.
Target 80%.
See also Table 43.

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 reporting period (i.e. 31 December 2012).

This indicator is presented as the number of women by age and DHB. 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 time period (screening event), by DHB.

Target

There are no targets for first screening events

Current Situation

21,674 women aged 20-69 years at the end of the period had their first screening event in the period 1 July to 31 December 2012. This constituted 10.2% of the 213,527 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 reporting 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. There were 10,622 women aged 20-24 who had their first screening event recorded on the register during this reporting period, accounting for 49.0% of all women aged 20-69 years with first screening events (Figure 14, Table 44). From this age group, first screening events 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 (40.2%) (Figure 15), and the highest proportion of eligible women at that age with a first screening event recorded in the current reporting period (6.7%) (Figure 16).

The DHBs with the highest number of women aged 20-69 years with first screening events were Auckland (3,916) and Waitemata (2,435). The DHBs where women with first screening events, as a proportion of all women with screening events, were the highest were Auckland (15.3%) and Capital & Coast (12.0%). The DHBs where this proportion was lowest were South Canterbury (5.9%), Tairawhiti (6.6%) and Wairarapa (6.5%) (Figure 17, Table 1).

The ethnic group with the highest number of women with first screening events was European/Other (12,291) (Table 2). The group with the highest proportion of their eligible population being screened for the first time was Asian women (2.8%), and was lowest for Māori women (1.3%) (Table 2). The proportion of women screened who were being screened for the first time was highest for Asian women (21.8%) (Table 2, Figure 18). This proportion is likely to be related to the median age of women with a first screening event, which in Asian women is comparatively high (31 years, compared with 21 years for Māori women, 27 years for Pacific women,

and 23 years for European/Other women) (Table 3).

Trends

The number of women with a first screening event recorded on the NCSP Register has increased, from 19,547 women in the previous period, to 21,674 in the current period. This appears to be predominantly driven by an increase in the number of women with first screening events in the 20-24 years age group (from 8,771 to 10,622), which had dropped to its lowest number in Report 37 since this measure was first reported (in Report 30). The proportion of the eligible population this age that this represents (6.7%) is also higher than the previous reporting period (5.5%). Across the overall eligible population aged 20-69 years, the proportion of women with screening events who are women with their first screening event being recorded on the NCSP Register (10.1%) is higher than in the previous period (9.2%).

Patterns by age, DHB, and ethnicity are broadly similar to those seen in the previous report. The observed increase in women with first screening events in the 20-24 years age group appears to have returned this number to a value comparable with previous reports excepting Report 37. As was the case in the previous report, the median age of a first screening event was older for Asian women than for Māori women and 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 2012 are shown in Figure 19 (by age), Figure 63 (by DHB), and Figure 20 (by ethnicity).

Comments

Note that 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 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, Taranaki, 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 14 - Number of first screening events by five-year age group

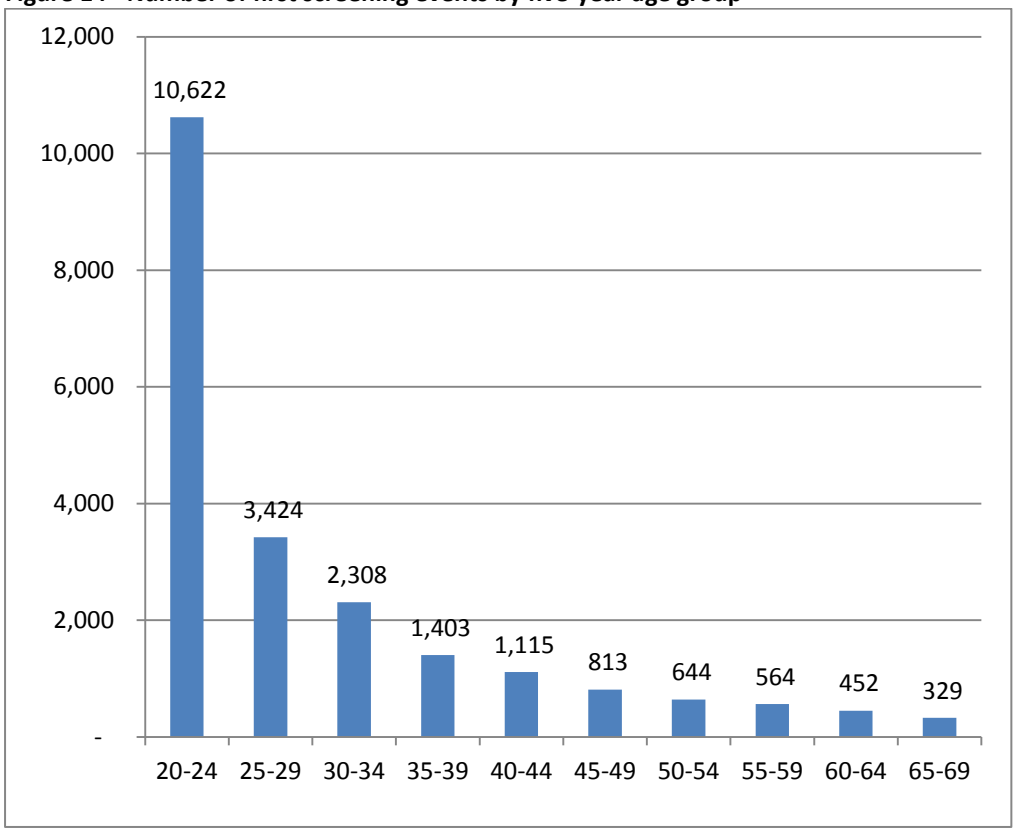


Figure 15 – Women with first screening events as a proportion of all women screened during the reporting period, by five-year age group (women aged 20-69 years at 31 December 2012)

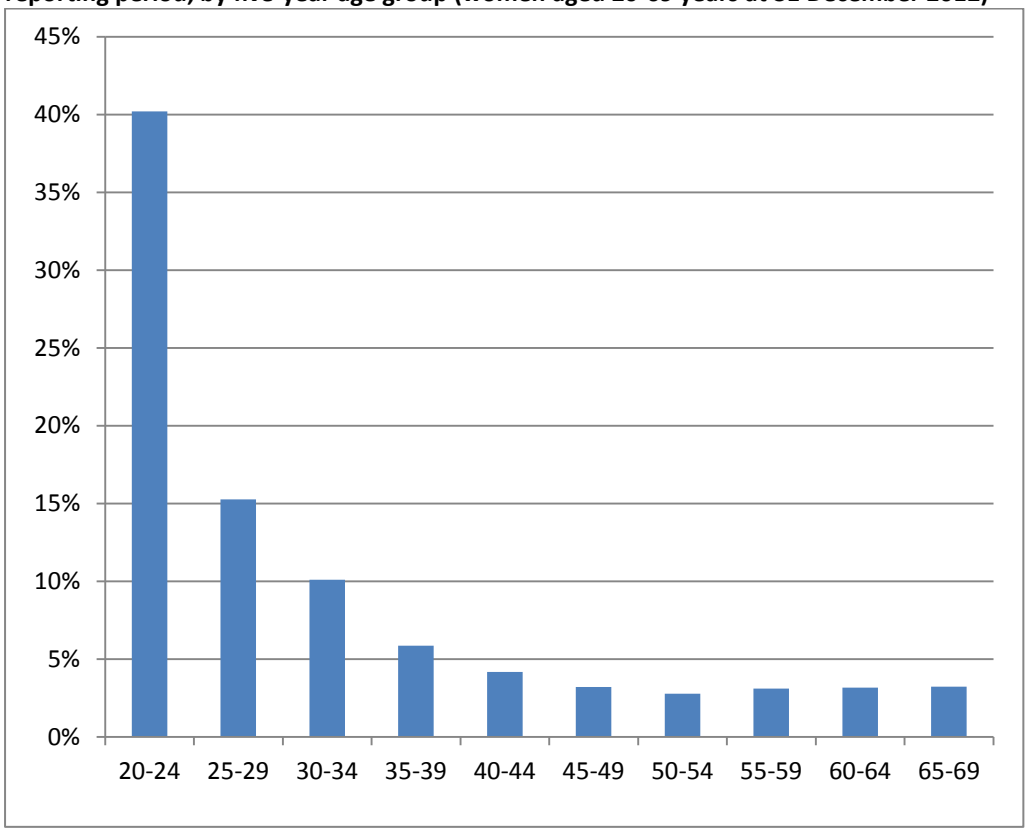
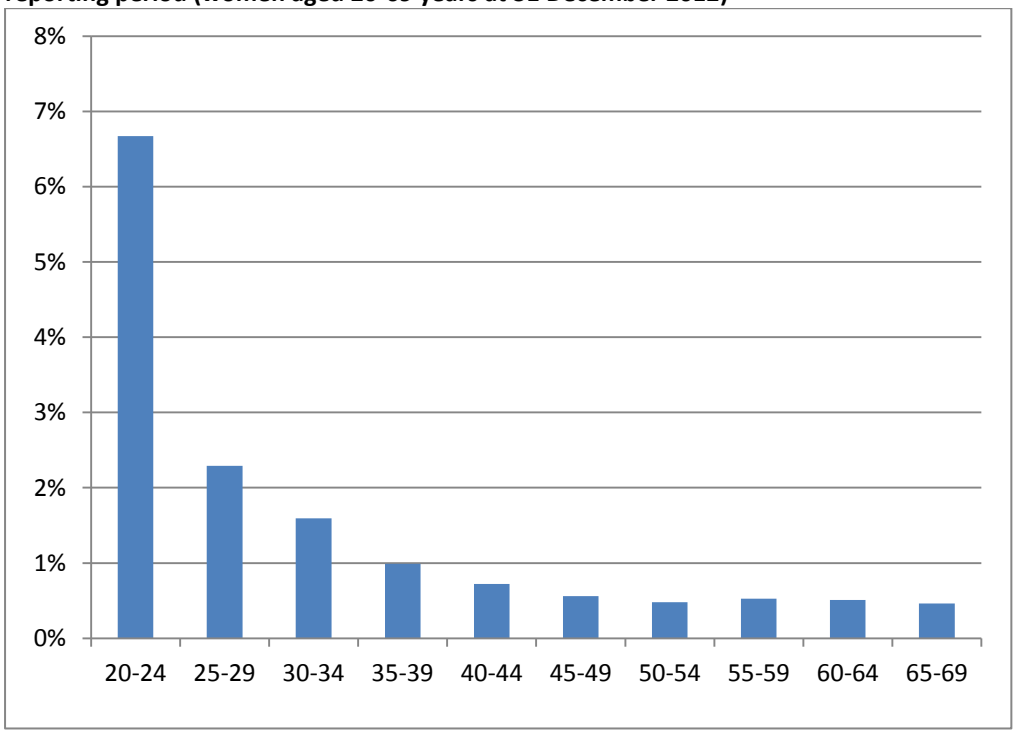


Figure 16 - Proportion of population* in that age group with their first screening event during the reporting period (women aged 20-69 years at 31 December 2012)



**Hysterectomy adjusted, 2006 Census data projected to 31 December 2012*

Figure 17 - Women with first screening events as a proportion of all women screened during the reporting period, by DHB (women aged 20-69 years at 31 December 2012)

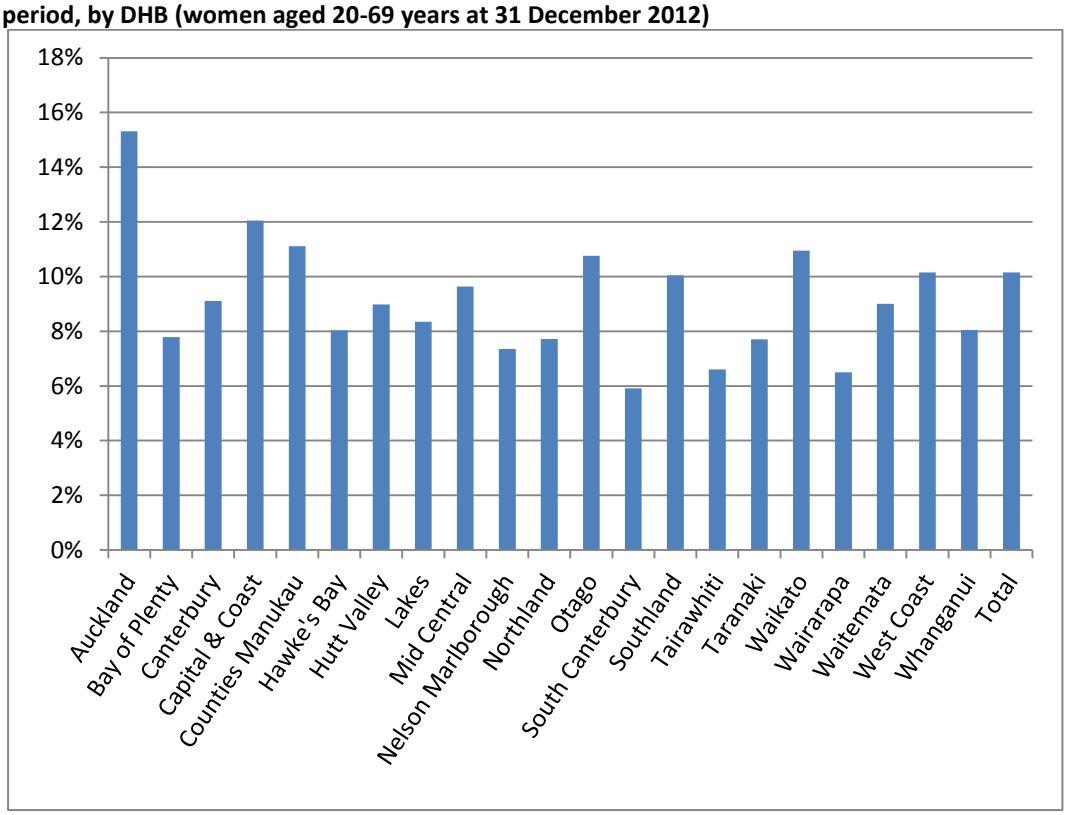


Figure 18 - Women with first screening events as a proportion of all women screened during the reporting period, by ethnicity

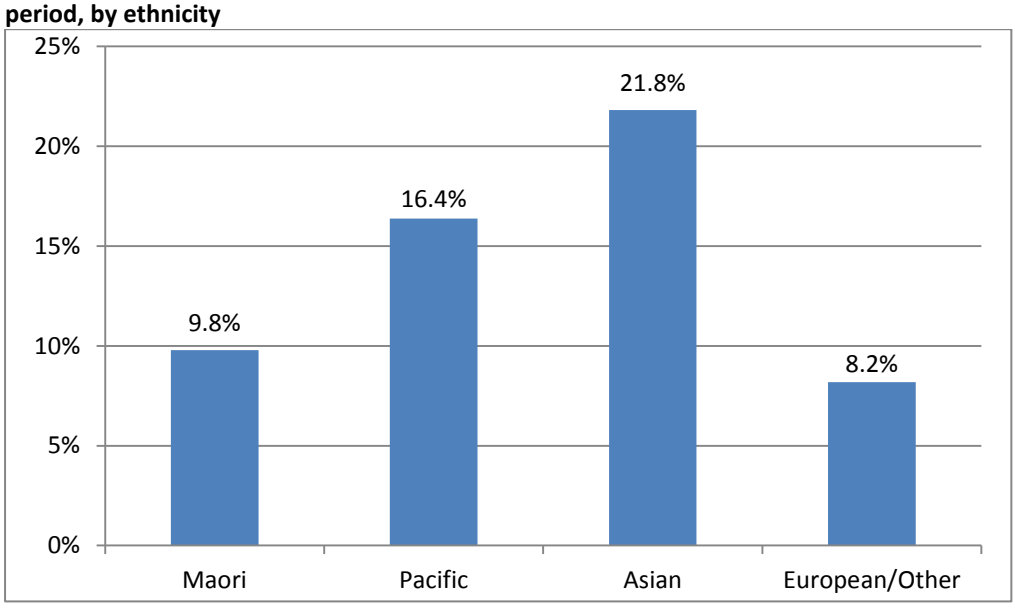


Figure 19 – Trends in the number of women with a first screening event, by age

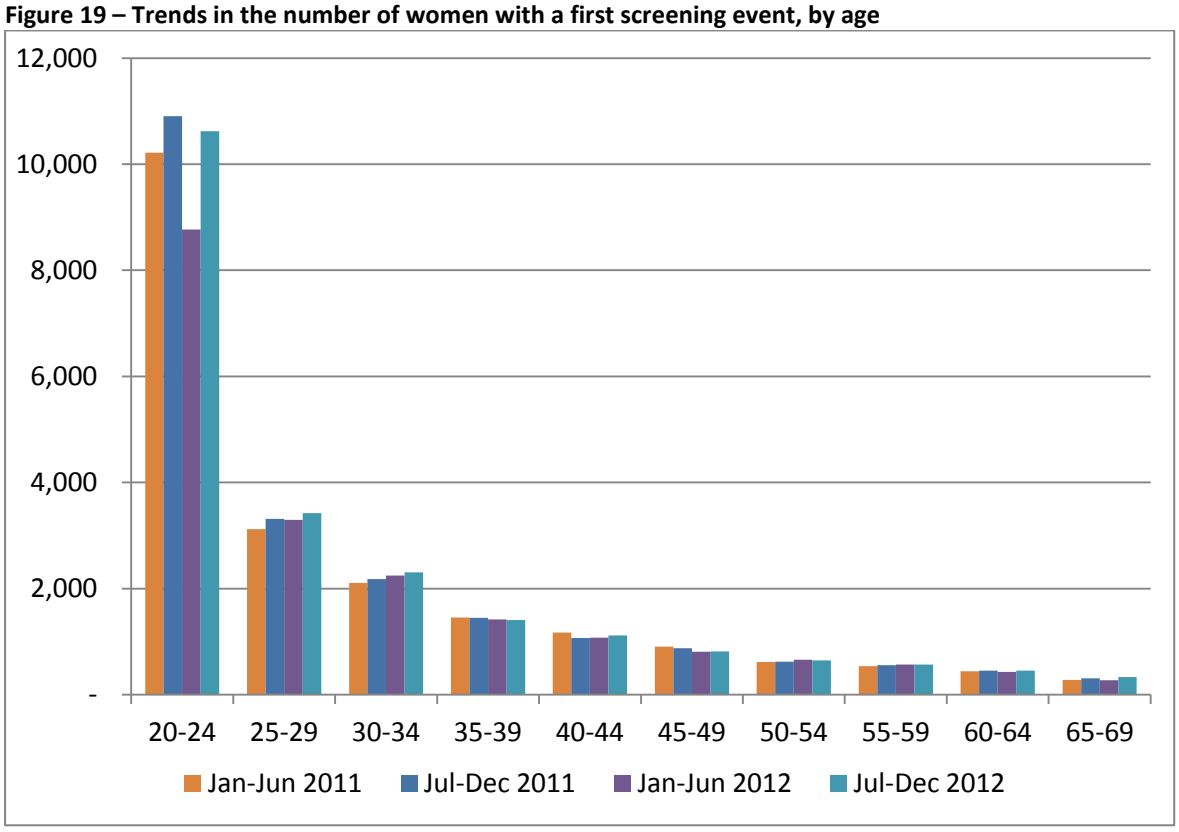


Figure 20 - Trends in the number of women with a first screening event, by ethnicity

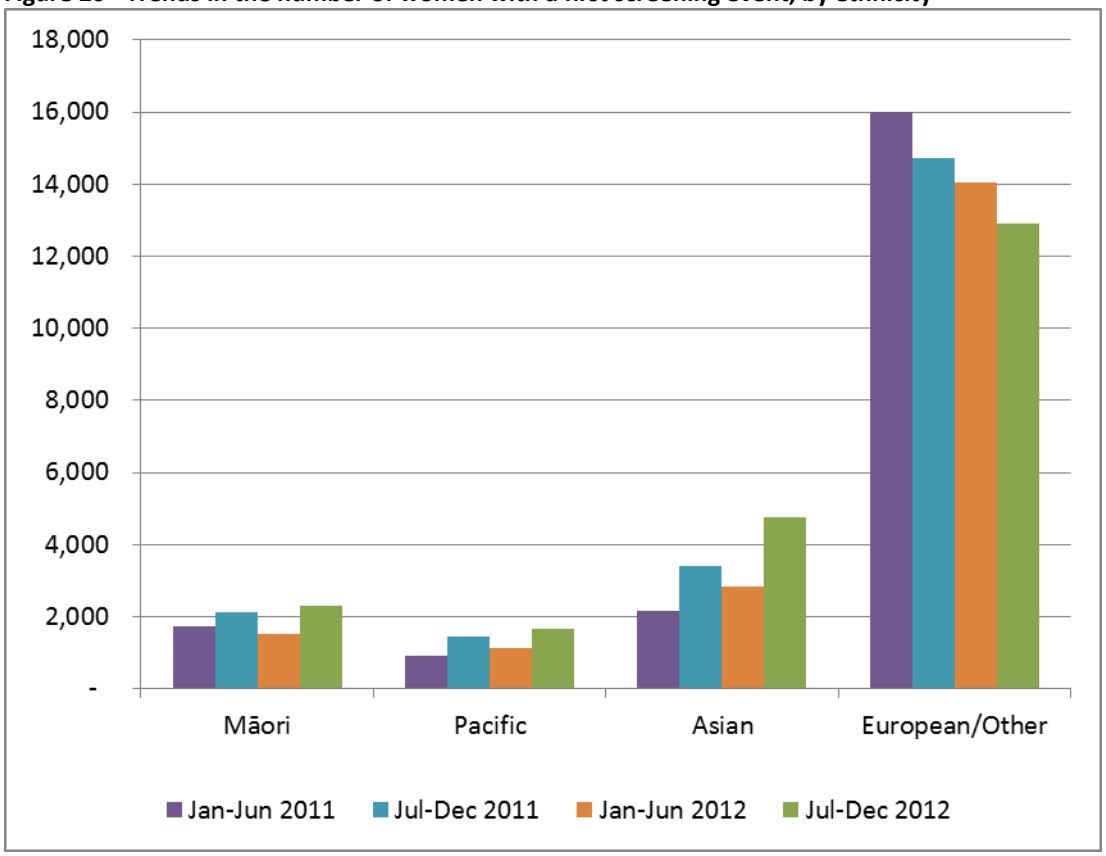


Table 1 - Women (ages 20-69 years) with first screening events as a proportion of i) total number of women with screening events, and ii) eligible women, by DHB, for period 1 July – 31 December 2012

DHB	Women with first events	As a propotion of women with a sceening event [i]		As a proportion of eligigble population [ii]	
		N	%	N	%
Auckland	3,916	25,566	15.3	152,214	2.6
Bay of Plenty	821	10,549	7.8	59,647	1.4
Canterbury	2,216	24,334	9.1	149,936	1.5
Capital & Coast	1,848	15,339	12.0	94,023	2.0
Counties Manukau	2,342	21,090	11.1	146,201	1.6
Hawke's Bay	632	7,874	8.0	42,823	1.5
Hutt Valley	577	6,428	9.0	41,243	1.4
Lakes	411	4,923	8.3	29,009	1.4
Mid Central	739	7,669	9.6	47,649	1.6
Nelson Marlborough	510	6,934	7.4	39,480	1.3
Northland	541	7,017	7.7	43,374	1.2
Otago	1,013	9,416	10.8	55,955	1.8
South Canterbury	158	2,673	5.9	15,080	1.0
Southland	570	5,673	10.0	32,384	1.8
Tairawhiti	140	2,121	6.6	12,757	1.1
Taranaki	411	5,332	7.7	30,036	1.4
Waikato	1,860	16,997	10.9	103,764	1.8
Wairarapa	127	1,956	6.5	10,830	1.2
Waitemata	2,435	27,060	9.0	163,859	1.5
West Coast	187	1,842	10.2	9,096	2.1
Whanganui	220	2,734	8.0	16,931	1.3
Total	**21,674**	**213,527**	**10.2**	**1,296,290**	**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 2006 census population projected to 31 December 2012 for that DHB, as a percent. Total women screened excludes those for whom DHB could not be ascertained.

Table 2 - 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 2012

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	2,307	23,555	9.8	175,032	1.3
Pacific	1,683	10,274	16.4	76,626	2.2
Asian	4,763	21,836	21.8	168,666	2.8
European/Other	12,921	157,873	8.2	875,965	1.5
Total	**21,674**	**213,538**	**10.1**	**1,296,290**	**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 2006 census population projected to 31 December 2012 for that DHB, as a percent

Table 3 – Median age of women with a first screening event, by ethnicity

Ethnic Group	Median Age (years)
Maori	21
Pacific	27
Asian	31
European/ Other	23
Total (all groups)	**25**

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 2012, 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, 1,446,883 women aged 20-69 years were enrolled on the NCSP Register. During the current reporting period, 53 of these women (0.004%) withdrew from the NCSP Register. In all DHBs, the number and proportion of women who withdrew was extremely small (maximum eight women in Canterbury and Waitemata; 0.02% at Tairawhiti). No women withdrew in Lakes, Mid Central, Southland, Wairarapa, West Coast or Whanganui (Figure 21). The age groups with the largest numbers and proportions of women withdrawing were women aged 55-59 years (13 women; 0.009% of those enrolled at the start of the reporting period) and 60-64 years (ten women; 0.009% of those enrolled at the start of the reporting period)(Figure 22, Table 4). The number and propoprtion of women withdrawing was extremely small for all ethnic groups. In total six Maori women (0.004%), two Pacific women (0.002%), four Asian women (0.003%) and 41 European/ Other women (0.004%) withdrew in the current monitoring period (Figure 23, Table 5).
Trends	The number of women who withdrew in the current reporting period (53 women) is somewhat higher than in the previous reporting period (44 women). The overall number of withdrawals remains 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 21 - Number of women (aged 20-69 years) who withdrew from the NCSP Register by DHB, 1 July – 31 December 2012

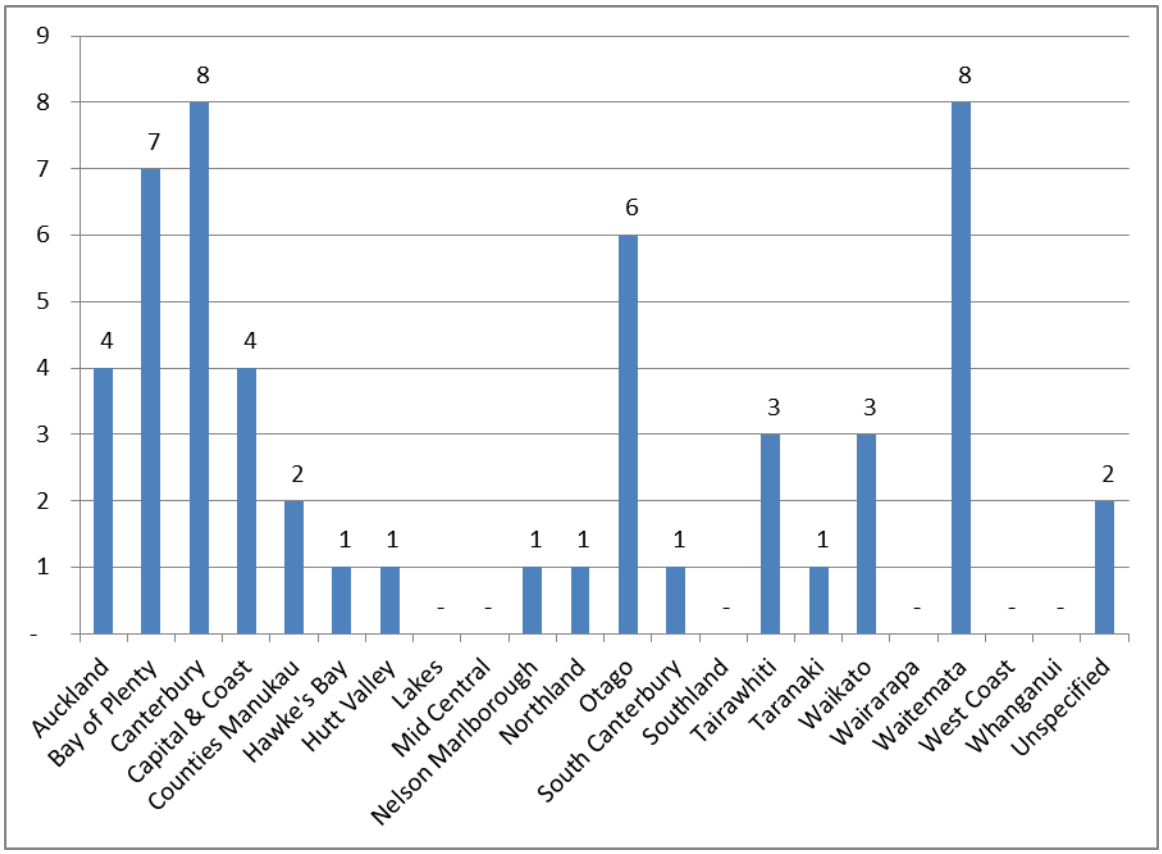


Figure 22 - Number of women who withdrew from the NCSP Register by age, 1 July – 31 December 2012

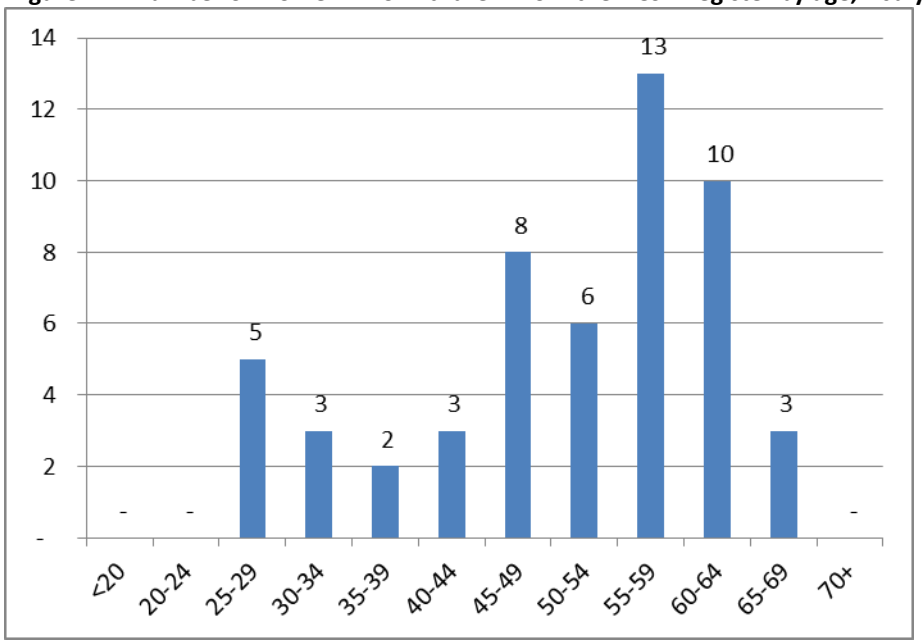


Figure 23 - Number of women (aged 20-69 years) who withdrew from the NCSP Register by ethnicity, 1 July – 31 December 2012

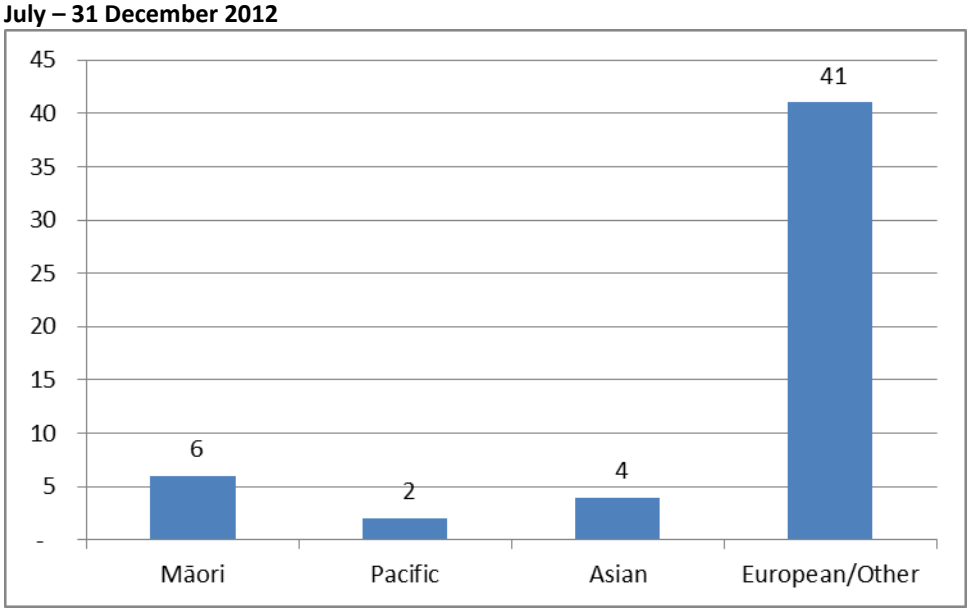


Table 4 - Number of women who withdrew from the NCSP Register 1 July – 31 December 2012 by age, and proportion of women who were enrolled at the start of the reporting period who withdrew

Age group	Women enrolled at start of period	Women who withdrew during period	
		N	% *
<20	2,297	-	-
20-24	83,869	-	-
25-29	133,891	5	0.004
30-34	156,628	3	0.002
35-39	174,281	2	0.001
40-44	195,959	3	0.002
45-49	184,914	8	0.004
50-54	174,109	6	0.003
55-59	140,766	13	0.009
60-64	115,003	10	0.009
65-69	87,463	3	0.003
70+	176,398	-	-
Total	***1,625,578***	***53***	***0.003***
Total (20-69)	**1,446,883**	**53**	**0.004**

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

Table 5 - Number of women (aged 20-69 years) who withdrew from the NCSP Register 1 July – 31 December 2012 ethnicity, and proportion of women who were enrolled at the start of the reporting period who withdrew

Age group	Women enrolled at start of period	Women who withdrew during period	
		N	% *
Māori	169,629	6	0.004
Pacific	83,601	2	0.002
Asian	138,409	4	0.003
European/Other	1,055,244	41	0.004
Total	**1,446,883**	**53**	**0.004**

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

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 2010 – 31 March 2010 (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 2010 (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 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 2012).
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	42,861 women had a smear taken in February or March 2010, 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, 8,731 (20.4%) 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 (28.8%), Wairarapa (26.8%) and Auckland (26.5%), and was least common in Whanganui (11.2%) (Figure 24, Table 46). There was also some variability by age. Younger women (aged 20-24 years at the end of the period) were most likely to be re-screened early (27.8%), and older women (aged 65-69 years) were the least likely to be re-screened early (13.9%) (Figure 25, Table 45). Rates of early re-screening are very similar across the five year age groups from 35 to 59 years.

	Among the ethnic groups considered, Asian women were the most likely to be re-screened early (22.4%). Early re-screening was least common among Pacific women (16.3%) (Figure 26, Table 47).
Trends	The level of early re-screening (20.4%) is lower than in the previous monitoring report, when it was 21.7%. DHBs with the lowest and highest levels of early re-screening are largely unchanged since the previous report. Rates of early re-screening have decreased in almost all DHBs. Increases were seen in Hutt Valley, Taranaki, Wairarapa and West Coast, however most of these DHBs (with the exception of Wairarapa) have comparatively low levels of early re-screening. Longer terms trends by DHB are shown in Figure 27. Early re-screening has reduced among almost all age groups, although there was a small increase among women aged 60-64 years. Longer terms trends by age are shown in Figure 28. Early re-screening has decreased in 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 their first smear after a period of time (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 has 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 R1 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 24 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by DHB

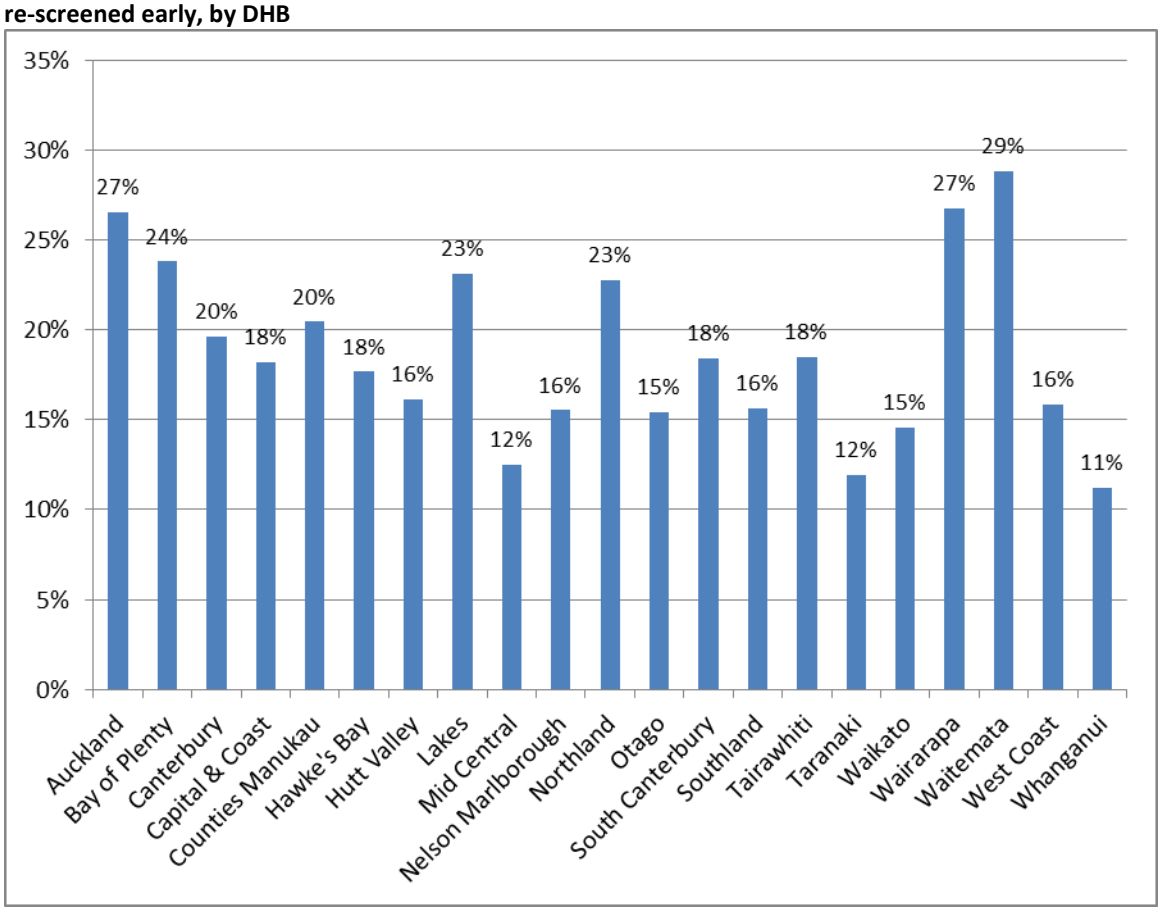


Figure 25 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by five-year age group

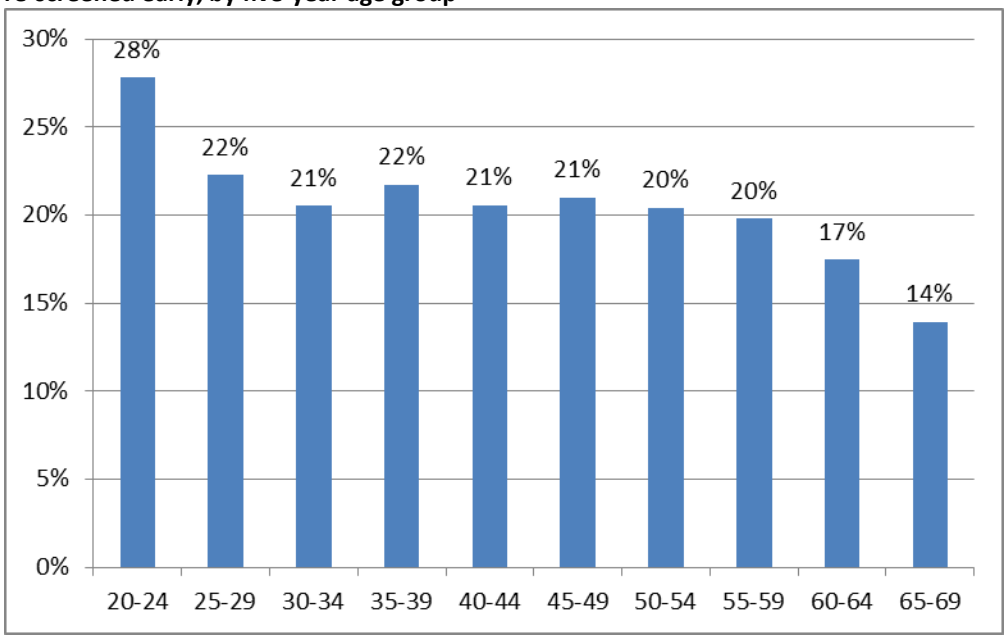


Figure 26 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by ethnicity

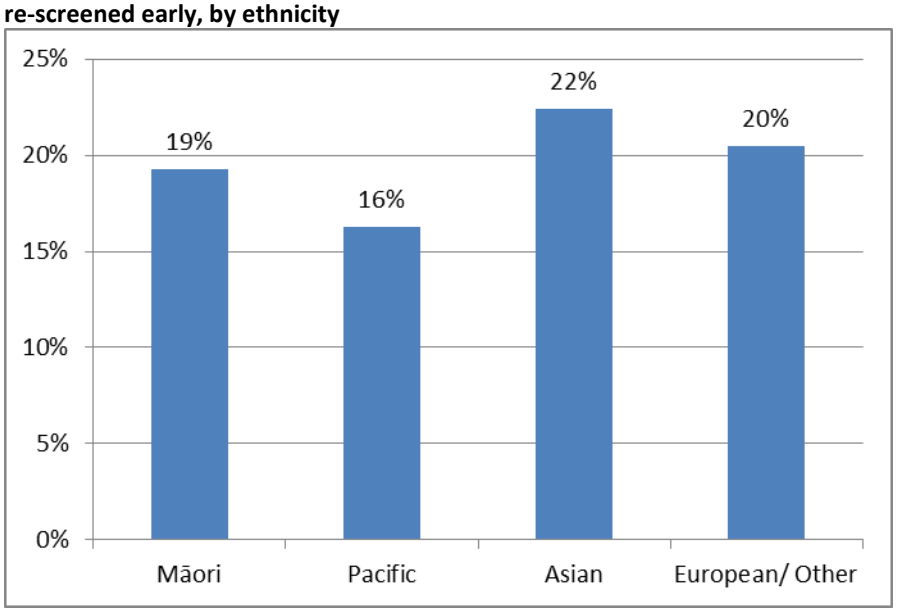


Figure 27 – Trends in the proportion of women recommended to return at the routine interval (three years) who were re-screened early, by DHB

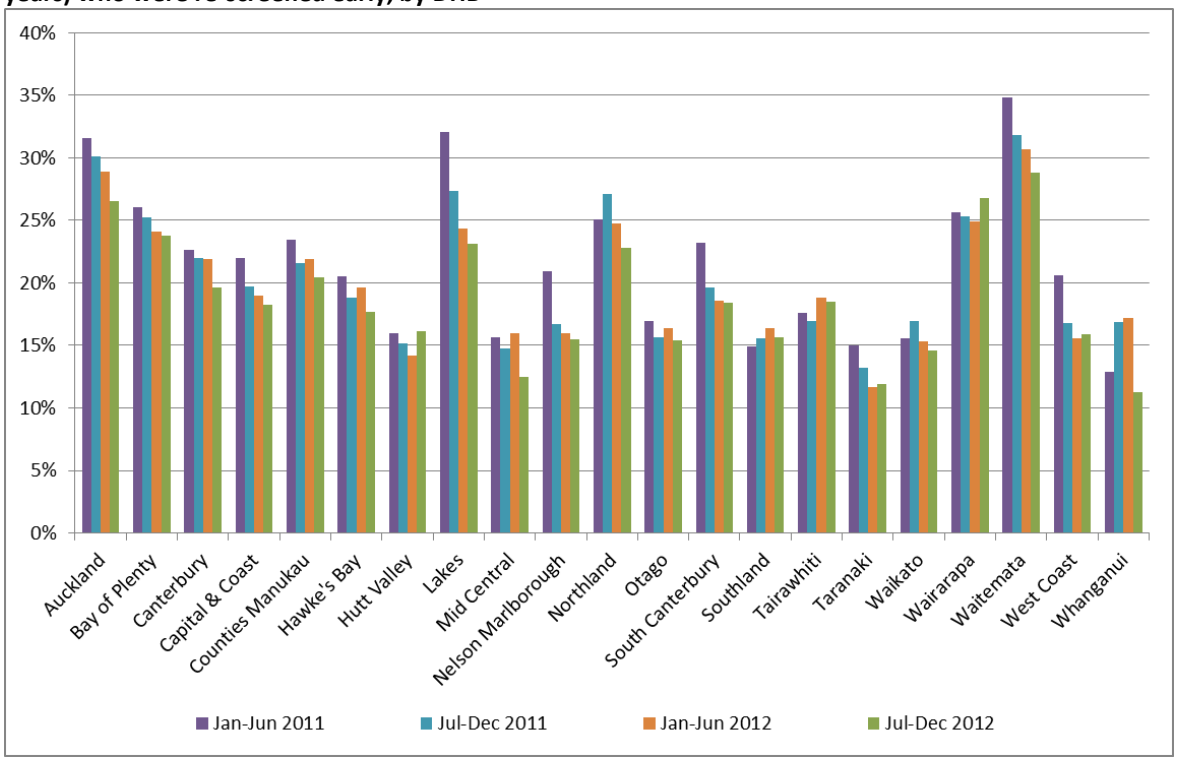
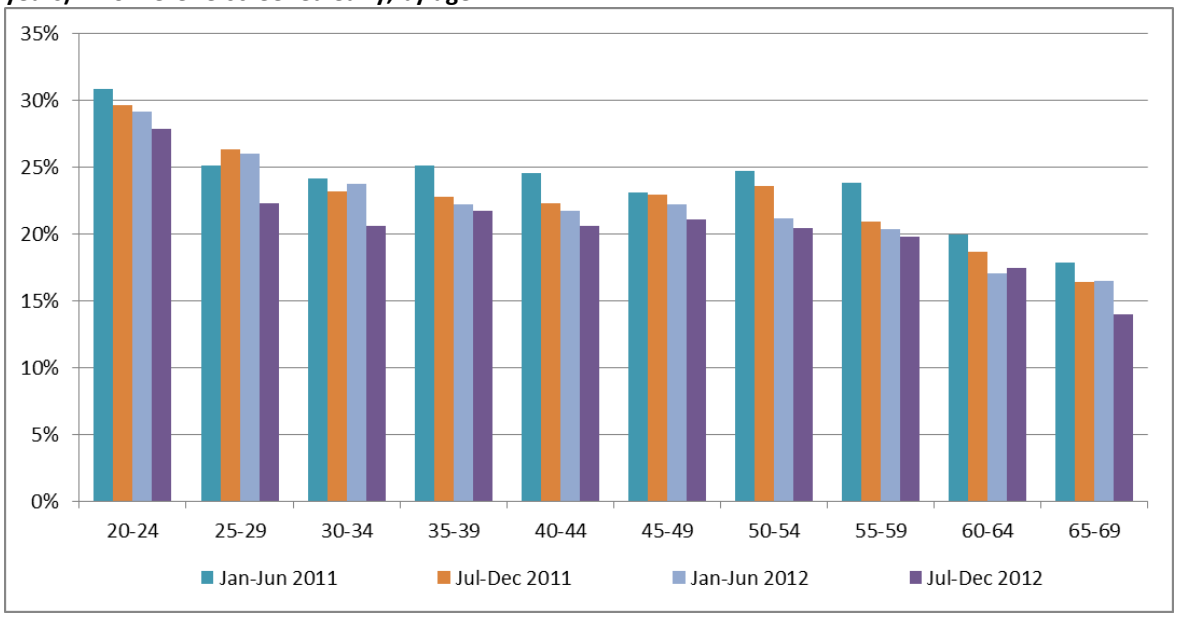


Figure 28 - Trends in the proportion of women recommended to return at the routine interval (three years) who were re-screened early, by age



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.

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	1-5% 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 0.6% of satisfactory samples reported as HSIL (Bethesda HS1 or HS2)

Current Situation

Seven laboratories reported on cytology taken during this reporting period, one less than in the previous reporting period. A total of 216,062 cytology samples were taken, over 99.9% of which were liquid-based cytology (LBC), less than 0.005% were conventional cytology, and less than 0.01% were a combination of the two (Table 6). In all laboratories, virtually all samples are LBC. Diagnostic Medlab Ltd, Medlab Central Ltd and Pathlab processed only LBC samples during this reporting period. In the remaining labs, the number of samples where conventional cytology was used (exclusively, or in conjunction with LBC) ranged from one (LabPLUS) to 14 (Southern Community Labs) (Table 6).

Unsatisfactory cytology

2,371 cytology samples (1.1%) were unsatisfactory. These are reported on in more detail in Table 7 and Table 9. The remaining satisfactory samples are reported on in more detail in Table 8, and Table 10 to Table 13.

Nationally, the unsatisfactory rate for LBC was 1.1%. Three of the seven laboratories had unsatisfactory rates within the target range for LBC (Figure 29, Table 9). No laboratories had rates above the upper target of 5%, but four laboratories had rates below the 1% lower target (Aotea Pathology Ltd 0.2%, Canterbury Health Laboratories 0.6%, Pathlab 0.2%, Southern Community Labs 0.9%).

Unsatisfactory rates for conventional cytology have not been analysed by laboratory, due to the small number of conventional cytology samples processed in each laboratory (15 samples received nationally).

Negative cytology reports

91.7% of 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 61.5 % (LabPLUS) to 95.3 % (Southern Community Labs). All seven laboratories met the target of no more than 96%.

Abnormal cytology reports

The proportion of samples which were abnormal (8.3%) also fell within the recommended range of no more than 10% (Figure 31, Table 8). This varied widely by laboratory however, from 4.7% (Southern Community Labs) to 38.5% (LabPLUS). Two laboratories exceeded the target (Canterbury Health Laboratories 12.4% and LabPLUS 38.5%).

Abnormal cytology results were most common in younger women (Table 12, Table 13).

HSIL cytology reports

Overall, 1.0 % of satisfactory cytology samples were HSIL, consistent with the target of at least 0.6% of samples (Figure 32, Table 11). Rates varied by laboratory from 0.6% (Aotea Pathlogy Ltd) to 5.6 % (LabPLUS). All

	laboratories met the HSIL target (Figure 32, Table 11). Rates of HSIL or worse were most common in women aged 20-24 years (Table 12, Table 13).
Trends	***Unsatisfactory cytology*** The unsatisfactory rate in LBC samples has decaresed slightly from 1.2% to 1.1% in the current reporting period, and therefore has remained at the target range. The number of laboratories meeting the target for unsatisfactory LBC samples (three of seven laboratories) is one fewer than it was in the previous reporting period, however the number of laboratories with unsatisfactory rates for LBC below the lower target of 1% has remained the same as in the previous reporting period (four). This is because there was one fewer laboratory reported on cytology in the current reporting period (Medlab South Christchurch). ***Negative vs abnormal cytology reports*** The proportion of satisfactory cytology samples which are negative for intraepithelial lesion or malignancy (91.7%) is the same as that in the previous reporting period, and correspondingly the proportion of cytology samples reported as abnormalities (8.3%) is also the same as in the previous reporting period. 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 range has also remained the same, at two. ***HSIL cytology reports*** The proportion of satisfactory cytology samples reported as HSIL has increased slightly from the previous monitoring report (from 0.9% to 1.0%). The number of laboratories meeting the target of at least 0.6% has remained the same (seven). However one laboratory ceased reporting on cytology at the end of the previous monitoring period. Among the seven laboratories who reported on cytology in both the current and the previous monitoring period, the number of laboratories meeting the target has increased from six to seven. Longer term trends in the proportion of satisfactory cytology samples reported as HSIL are shown in Figure 33 (trends by age) and Figure 34 (trends by laboratory).
Comments	One laboratory, Medlab South Christchurch, ceased reporting on cytology in the current reporting period. 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 a factor underlying the observed higher rate for this laboratory.

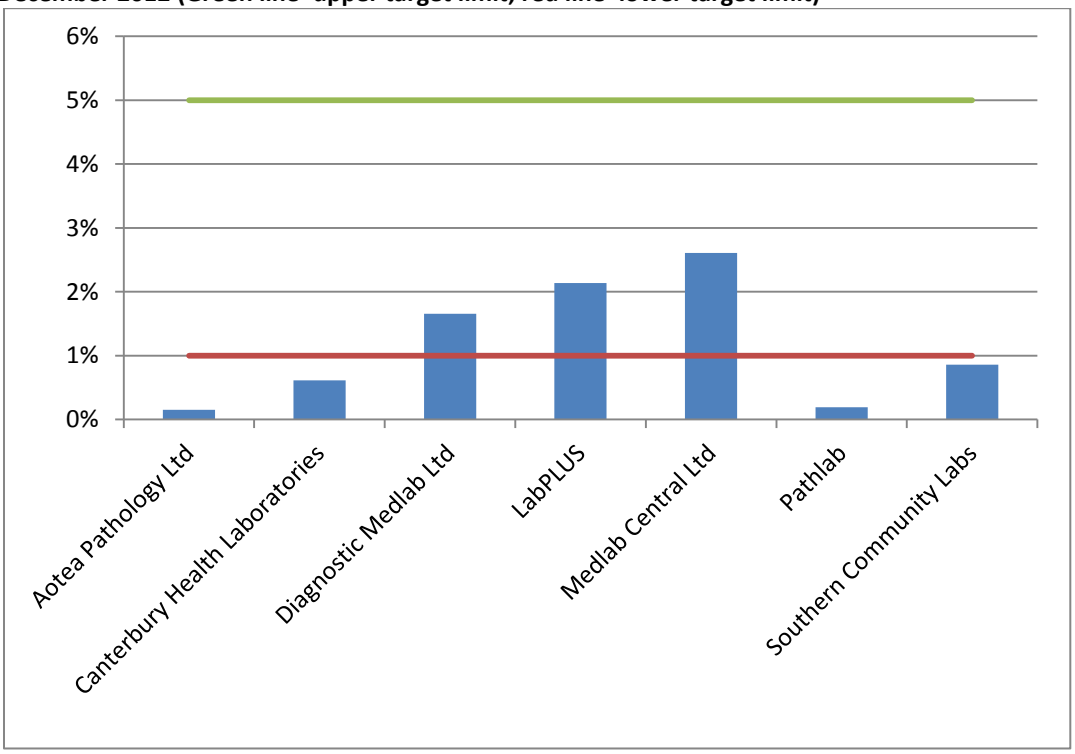
Workloads for laboratories may be regional or nationwide, and as a result, it is not always straightforward to determine the catchment population for a laboratory. Rates of negative and abnormal results for individual laboratories therefore need to be interpreted with some care, to allow for this difference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

The targets for unsatisfactory cytology applies to both types of LBC (ThinPrep and SurePath). It is uncertain if this is applicable, as the techniques used to produce slides from the liquid samples differ between test technologies - ThinPrep is a filtration-based method, whereas SurePath is a centrifugation-based method. There is limited evidence on the appropriate lower level for unsatisfactory cytology using SurePath, however results from a pooled analysis suggest that unsatisfactory rates may differ between the technologies.[6] Use of different LBC test technologies by different laboratories may be a factor in the variation in rates of unsatisfactory cytology (it is known that all laboratories with unsatisfactory rates below 1% for LBC use SurePath). The target for unsatisfactory LBC samples will be reviewed as more evidence becomes available.

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 for women aged up to 19 years. International and New Zealand data indicate that many high grade squamous cytology reports are associated with HPV types which are potentially preventable by vaccination,[7-10] and that this is particularly true for younger women.[7, 11-13] 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 22 years at the time of the current reporting period). 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.

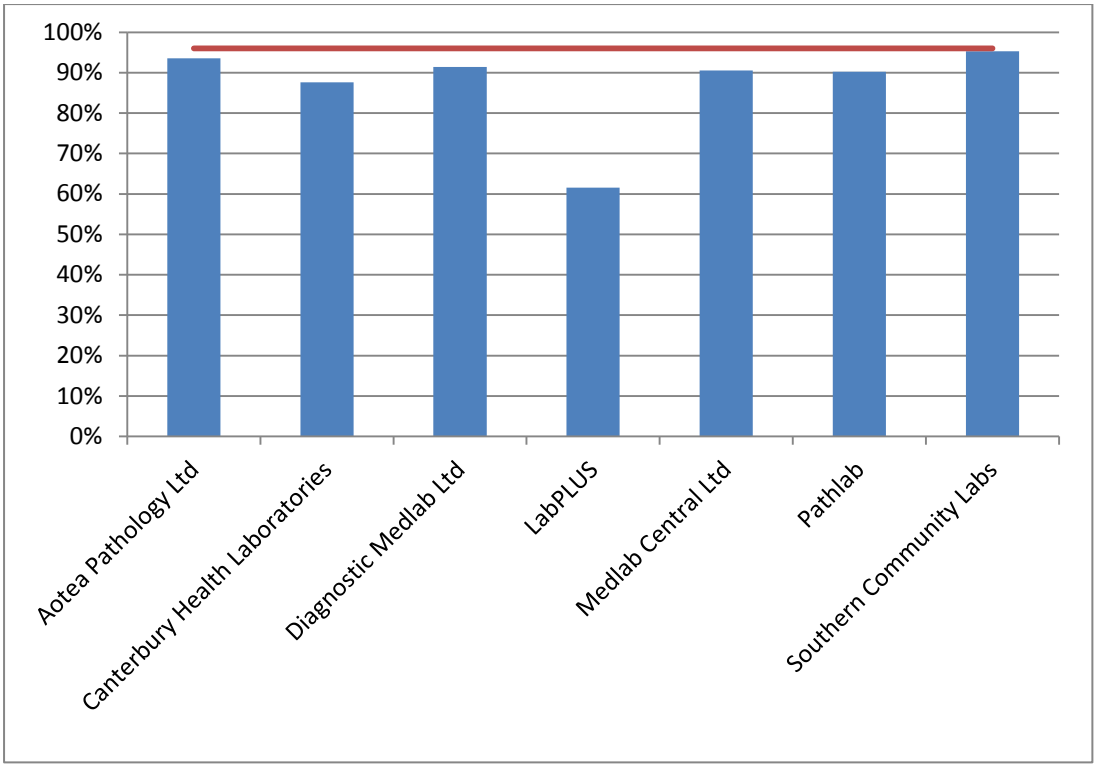
It is possible that data entry errors may be the cause of the remaining cytology tests which still appear to have involved conventional cytology only. The number of these tests is extremely small (15 tests; less than 0.01% of all samples taken during this period).

Figure 29 - Proportion of total LBC samples reported as unsatisfactory by laboratory, 1 July – 31 December 2012 (Green line=upper target limit; red line=lower target limit)



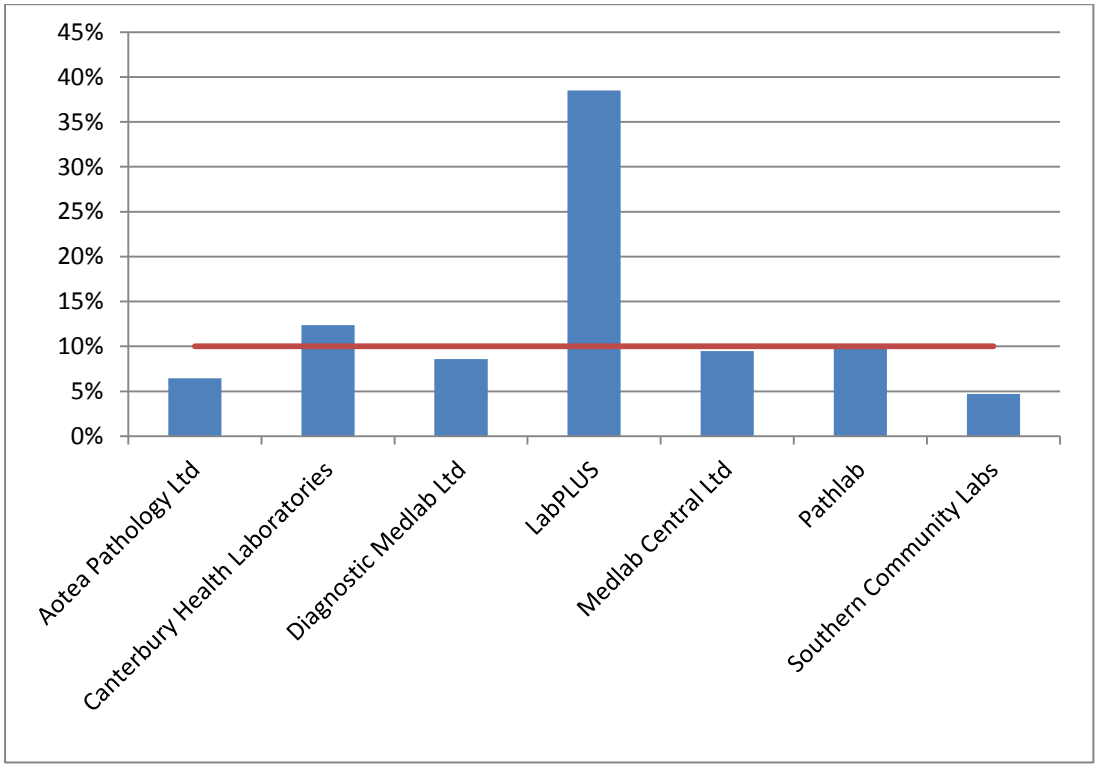
Target for LBC: 1-5%

Figure 30 - Proportion of total satisfactory samples reported as negative by laboratory, 1 July – 31 December 2012



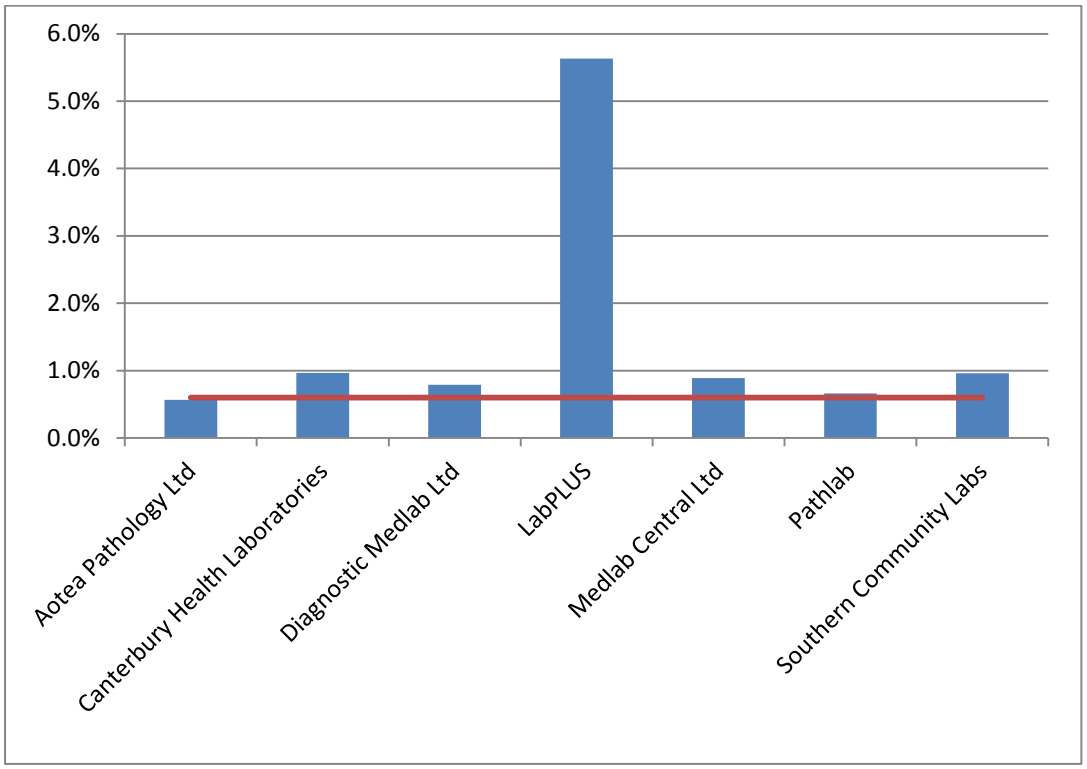
Note: Line shows negative target of no more than 96%

Figure 31 - Proportion of total satisfactory samples reported as abnormalities by laboratory, 1 July – 31 December 2012



Note: Line shows abnormal target no more than 10%

Figure 32 - Proportion of total satisfactory samples reported as HSIL by laboratory, 1 July – 31 December 2012



Note: Line shows HSIL target of no less than 0.6%

Table 6 - Laboratory cytology reporting by type of cytology sample (1 July – 31 December 2012)

Organisation	All samples	By cytology specimen type					
		LBC		Conventional		Combined	
	N	N	%	N	%	N	%
Aotea Pathology Ltd	21,311	21,309	100.0	1	<0.005	1	<0.005
Canterbury Health Laboratories	12,278	12,274	100.0	0	-	4	0.03
Diagnostic Medlab Ltd	54,497	54,497	100.0	0	-	0	-
LabPLUS	7,350	7,349	100.0	1	0.01	0	-
Medlab Central Ltd	17,918	17,918	100.0	0	-	0	-
Pathlab	21,719	21,719	100.0	0	-	0	-
Southern Community Labs	80,989	80,975	100.0	13	0.02	1	<0.005
TOTAL	**216,062**	**216,041**	**100.0**	**15**	**0.01**	**6**	**<0.005**

Notes:
Includes all samples (satisfactory and unsatisfactory)
Target total samples: ≥ 15,000 per annum
LBC refers to both ThinPrep and SurePath samples
Combined refers to instances where both conventional cytology and LBC were used

Table 7 - Satisfactory and unsatisfactory cytology reporting by laboratory (1 July – 31 December 2012)

Laboratory	All Samples	Satisfactory		Unsatisfactory	
	N	N	%	N	%
Aotea Pathology Ltd	21,311	21,278	99.8	33	0.2
Canterbury Health Laboratories	12,278	12,203	99.4	75	0.6
Diagnostic Medlab Ltd	54,497	53,595	98.3	902	1.7
LabPLUS	7,350	7,193	97.9	157	2.1
Medlab Central	17,918	17,451	97.4	467	2.6
Pathlab	21,719	21,677	99.8	42	0.2
Southern Community Labs	80,989	80,294	99.1	695	0.9
Total	**216,062**	**213,691**	**98.9%**	**2,371**	**1.1%**

See also Table 9

Table 8 - Laboratory cytology reporting by general result (1 July – 31 December 2012) – percentage of satisfactory samples

Laboratory	Negative		Abnormal	
	N	%	N	%
Aotea Pathology Ltd	19,902	93.5	1,376	6.5
Canterbury Health Laboratories	10,695	87.6	1,508	12.4
Diagnostic Medlab Ltd	48,989	91.4	4,606	8.6
LabPLUS	4,425	61.5	2,768	38.5
Medlab Central Ltd	15,797	90.5	1,654	9.5
Pathlab	19,557	90.2	2,120	9.8
Southern Community Labs	76,507	95.3	3,787	4.7
Total	**195,872**	**91.7**	**17,819**	**8.3**

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

Table 9 - Laboratory reporting of unsatisfactory results by type of cytology sample (1 July – 31 December 2012)

Laboratory	Conventional			LBC			Combined			TOTAL		
	Unsat	Total	%	Unsat	Total	%	Unsat	Total	%	Unsat	Total	%
Aotea Pathology Ltd	-	1	0.0	33	21,309	0.2	-	1	0.0	33	21,311	0.2
Canterbury Health Laboratories	-	-	-	75	12,274	0.6	-	4	0.0	75	12,278	0.6
Diagnostic Medlab Ltd	-	-	-	902	54,497	1.7	-	-	-	902	54,497	1.7
LabPLUS	-	1	0.0	157	7,349	2.1	-	-	-	157	7,350	2.1
Medlab Central Ltd	-	-	-	467	17,918	2.6	-	-	-	467	17,918	2.6
Pathlab	-	-	-	42	21,719	0.2	-	-	-	42	21,719	0.2
Southern Community Labs	-	13	0.0	695	80,975	0.9	-	1	0.0	695	80,989	0.9
Total	**-**	**15**	**0.0**	**2,371**	**216,041**	**1.1**	**-**	**6**	**0.0**	**2,371**	**216,062**	**1.1**

Target unsatisfactory: 1-5% LBC. Unsatisfactory rates for conventional and combined cytology samples were not calculated for individual laboratories due to the small number of samples.

Table 10 - Laboratory cytology reporting by cytological category (1 July – 31 December 2012) – counts

	Result									
Laboratory	**Negative**	**ASC-US**	**LSIL**	**ASC-H**	**HSIL**	**SC**	**AGC/ AIS**	**Adeno-carcinoma**	**Malignant Neoplasm**	**Total**
Aotea Pathology Ltd	19,902	499	643	103	120	1	9	1	-	21,278
Canterbury Health Laboratories	10,695	487	730	157	118	1	10	5	-	12,203
Diagnostic Medlab Ltd	48,989	1,485	2,222	415	424	5	50	5	-	53,595
LabPLUS	4,425	900	949	466	405	1	41	5	1	7,193
Medlab Central Ltd	15,797	628	699	155	155	2	10	3	2	17,451
Pathlab	19,557	729	1,021	190	143	2	30	5	-	21,677
Southern Community Labs	76,507	784	2,001	157	772	2	60	10	1	80,294
Total	**195,872**	**5,512**	**8,265**	**1,643**	**2,137**	**14**	**210**	**34**	**4**	**213,691**

Table 11 - Laboratory cytology reporting by cytological category (1 July – 31 December 2012) - percentage of all satisfactory samples

	Percentage of Laboratory's Result								
Laboratory	**Negative**	**ASC-US**	**LSIL**	**ASC-H**	**HSIL**	**SC**	**AGC/AIS**	**Adeno-carcinoma**	**Malignant Neoplasm**
Aotea Pathology Ltd	93.5	2.3	3.0	0.5	0.6	<0.005	0.04	<0.005	-
Canterbury Health Laboratories	87.6	4.0	6.0	1.3	1.0	0.01	0.08	0.04	-
Diagnostic Medlab Ltd	91.4	2.8	4.1	0.8	0.8	0.01	0.09	0.01	-
LabPLUS	61.5	12.5	13.2	6.5	5.6	0.01	0.57	0.07	0.01
Medlab Central Ltd	90.5	3.6	4.0	0.9	0.9	0.01	0.06	0.02	0.01
Pathlab	90.2	3.4	4.7	0.9	0.7	0.01	0.14	0.02	-
Southern Community Labs	95.3	1.0	2.5	0.2	1.0	<0.005	0.07	0.01	<0.005
Total	**91.7**	**2.6**	**3.9**	**0.8**	**1.0**	**0.01**	**0.10**	**0.02**	**<0.005**

Target: HSIL ≥ 0.6% reported as HSIL

Table 12 - Laboratory reporting of cytological category by five-year age group (1 July – 31 December 2012) – counts

Age Group	Cytology Result									Total
	Negative	ASC-US	LSIL	ASC-H	HSIL	SC	AGC/AIS	Adeno-carcinoma	Malignant Neoplasm	
<20	1,390	82	246	20	27	-	-	-	-	1,765
20-24	21,787	1,193	2,896	442	591	-	14	-	-	26,923
25-29	19,300	764	1,345	340	459	1	24	1	-	22,234
30-34	20,518	583	855	197	354	-	18	1	-	22,526
35-39	22,100	552	696	163	233	1	19	-	-	23,764
40-44	24,564	646	661	120	164	3	20	1	-	26,179
45-49	23,401	560	518	95	122	-	19	-	-	24,715
50-54	21,433	464	430	93	71	3	26	7	1	22,528
55-59	16,829	290	281	68	59	2	19	3	-	17,551
60-64	13,402	190	199	59	33	1	23	7	-	13,914
65-69	9,246	131	102	34	14	1	10	5	-	9,543
70+	1,897	57	36	12	8	2	18	9	3	2,042
Total	**195,867**	**5,512**	**8,265**	**1,643**	**2,135**	**14**	**210**	**34**	**4**	**213,684**

Note: Excludes seven cytology tests (five negative, two HSIL) for which the age of the woman could not be determined, as date of birth information was missing in the NCSP Register.

Table 13 - Laboratory reporting of cytological category by five-year age group (1 July – 31 December 2012) - percentage of all satisfactory samples in women that age group

Age Group	Percentage of Age Group Total								
	Negative	ASC-US	LSIL	ASC-H	HSIL	SC	AGC/AIS	Adeno-carcinoma	Malignant Neoplasm
<20	78.8	4.6	13.9	1.1	1.5	-	-	-	-
20-24	80.9	4.4	10.8	1.6	2.2	-	0.05	-	-
25-29	86.8	3.4	6.0	1.5	2.1	<0.005	0.11	<0.005	-
30-34	91.1	2.6	3.8	0.9	1.6	-	0.08	<0.005	-
35-39	93.0	2.3	2.9	0.7	1.0	<0.005	0.08	-	-
40-44	93.8	2.5	2.5	0.5	0.6	0.01	0.08	<0.005	-
45-49	94.7	2.3	2.1	0.4	0.5	-	0.08	-	-
50-54	95.1	2.1	1.9	0.4	0.3	0.01	0.12	0.03	<0.005
55-59	95.9	1.7	1.6	0.4	0.3	0.01	0.11	0.02	-
60-64	96.3	1.4	1.4	0.4	0.2	0.01	0.17	0.05	-
65-69	96.9	1.4	1.1	0.4	0.1	0.01	0.10	0.05	-
70+	92.9	2.8	1.8	0.6	0.4	0.10	0.88	0.44	0.15
Total	**91.7**	**2.6**	**3.9**	**0.8**	**1.0**	**0.01**	**0.10**	**0.02**	**<0.005**

Note: Excludes seven cytology tests (five negative, two HSIL) for which the age of the woman could not be determined, as date of birth information was missing in the NCSP Register.

Figure 33 – Trends in the proportion of total satisfactory samples reported as HSIL, by age

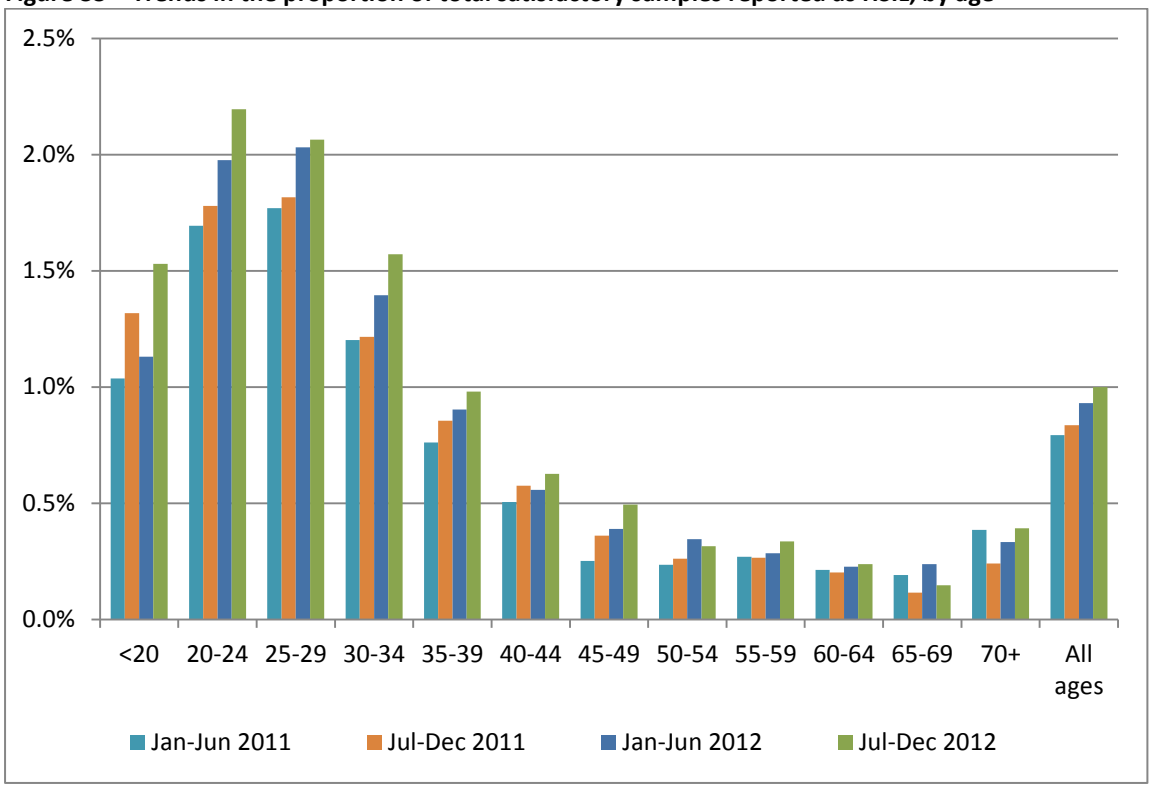
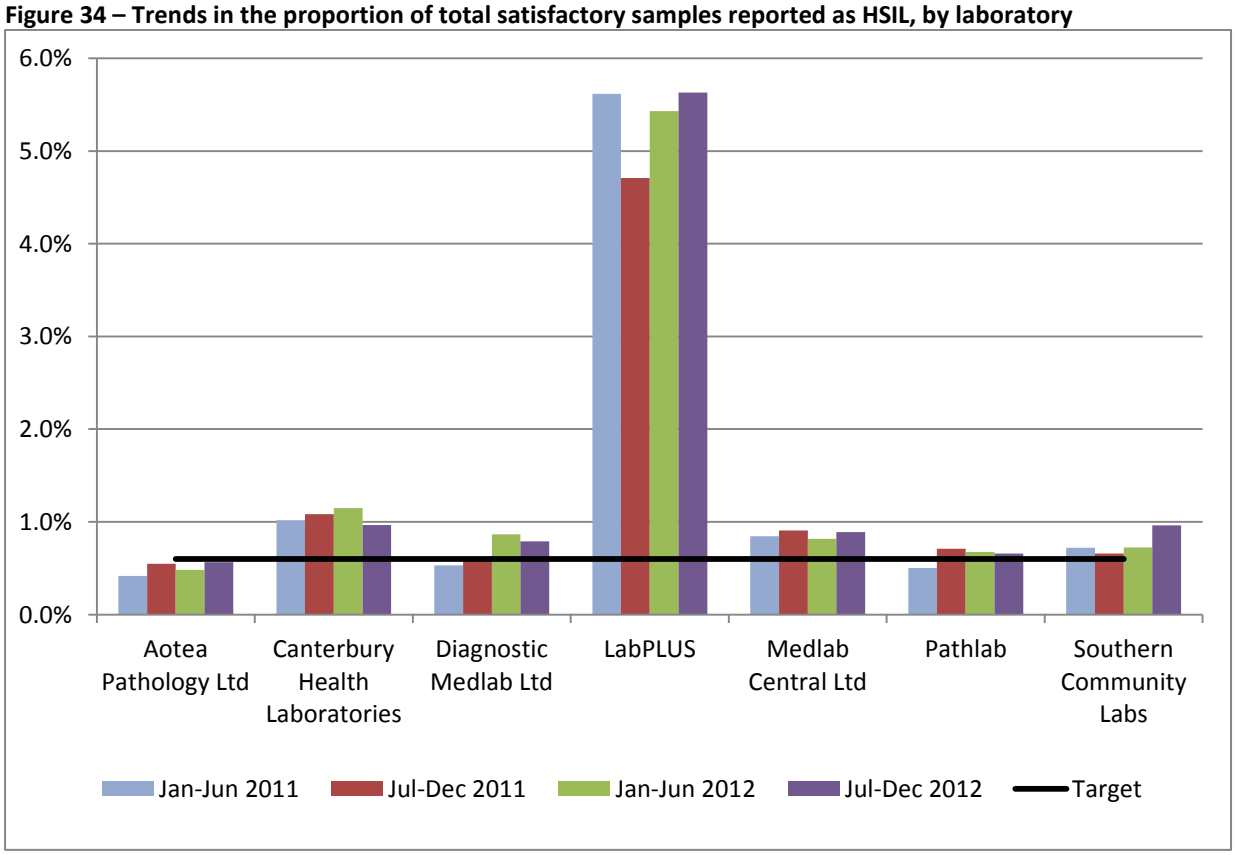


Figure 34 – Trends in the proportion of total satisfactory samples reported as HSIL, by laboratory



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 until 30 June 2012 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. Note that as this indicator includes cytology samples collected in the previous six-month reporting period, Medlab South Christchurch are still represented in this indicator, even though they did not report on cytology in the current reporting period. ***HSIL+SC*** A total of 1,845 women with HSIL or SC cytology reports were identified. Of these women, 136 (7.4%) had no histology taken in the period from five days prior to six months after the cytology sample was taken. Among the remaining 1,709 for whom there was histology, 1,354 (79.2%) had their HSIL/SC cytology confirmed by histology (Figure 35, Table 48). All laboratories achieved the minimum target of at least 65% of cytological HSIL +SC being confirmed by histology. One of the eight laboratories exceeded 85% of HSIL+SC being histologically confirmed (Medlab Central) (Figure 35, Table 48). ***Other cytological abnormalities*** Similar calculations for positive predictive value were performed for ASC-H; glandular abnormalites (AG1-AG5, AIS, AC1-AC4); and the combination of ASC-H, HSIL and SC. There are no targets for these measures. ***ASC-H*** A total of 1,489 women with a cytology report of ASC-H were identified. Of

these women, 311 (20.9%) had no histology taken in the period from five days prior to six months after the cytology sample. Among the remaining 1,178 women, 534 (45.3%) were histologically confirmed as high grade. This proportion varied by laboratory, from 31.1% (Diagnostic Medlab Ltd) to 68.5% (Canterbury Health Laboratories) (Figure 36, Table 49).

ASC-H+HSIL+SC

A total of 3,334 women had a cytology report of ASC-H, HSIL or SC. There were 447 women (13.4%) who had no histology taken in the period from five days prior to six months after the cytology sample. Among the remaining 2,887 women, 1,888 (65.4%) were histologically confirmed as high grade. This proportion varied by laboratory, from 55.6% (LabPLUS) to 81.1% (Southern Community Labs Dunedin). The combined positive predictive value across the 3,334 women with ASC-H, HSIL, and SC and histology available is shown in Figure 36 and Table 50.

Glandular abnormalities

A total of 255 women with a glandular abnormality (AG1-AG5, AIS, AC1-AC4) were identified. There were 67 women (26.3%) who had no histology taken in the period from five days prior to six months after the cytology sample. Among the remaining 188 women, 94 (50.0%) were identified as having high grade histology. This was not analysed further, as the number of samples reported on by many laboratories was too small to be meaningful.

Trends

HSIL+SC

Positive predictive value for HSIL and SC cytology has decreased slightly since the previous monitoring report (79.6% in the previous period; 79.2% 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 none to one. The proportion of cytology reports with histology available has increased for HSIL or SC (91.7% in the previous report; 92.6% in the current report).

ASC-H

Positive predictive value for ASC-H cytology has decreased, from 48.4% to 45.3%, however there is no target for this measure. The proportion of cytology reports with histology available has decreased slightly for ASC-H (from 80.1% to 79.1%).

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 (67.1%) to what it is in the current report (65.4%), however there are no targets for the positive predictive value of the combined group of ASC-H, HSIL and SC.

Glandular abnormalities

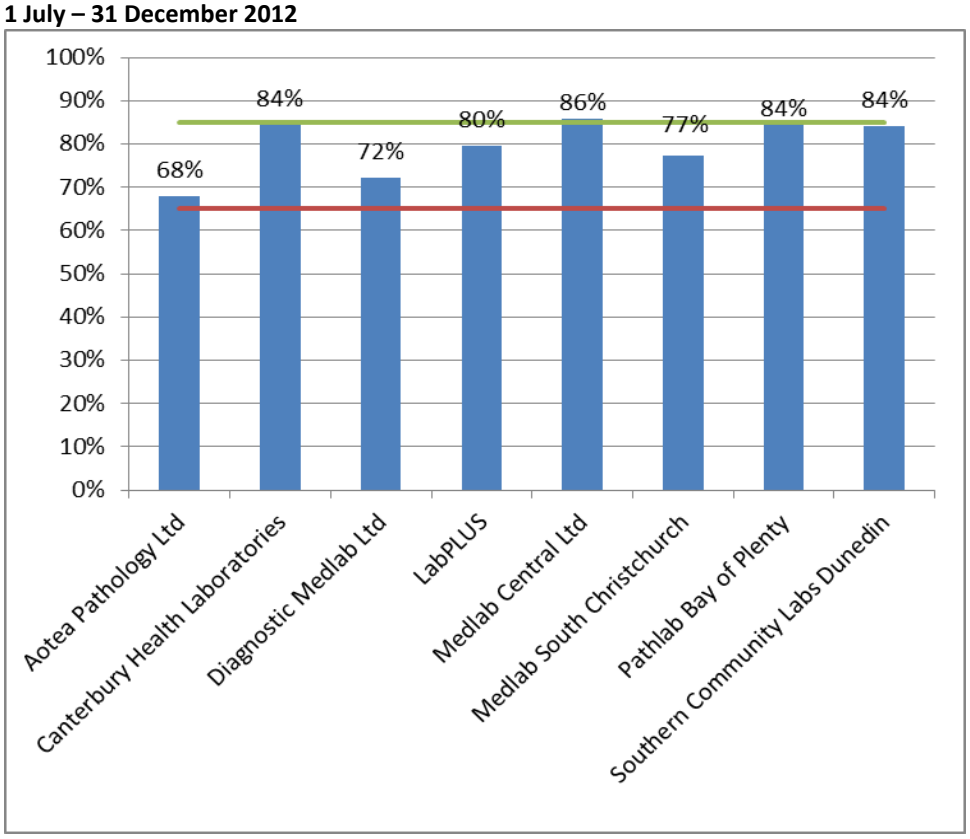
The positive predictive value of glandular abnormalities increased (from 44.7% in the previous report to 50.0% in the current report). Compared to both ASC-H cytology, and the combined group of HSIL and SC cytology, there are far fewer glandular abnormalities, and an even smaller number with histology available. The proportion of glandular abnormalities with histology available (73.7%) is less than that in the previous reporting period (75.8%), and remains less than that for ASC-H (79.1%) and HSIL+SC (92.6%). 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.

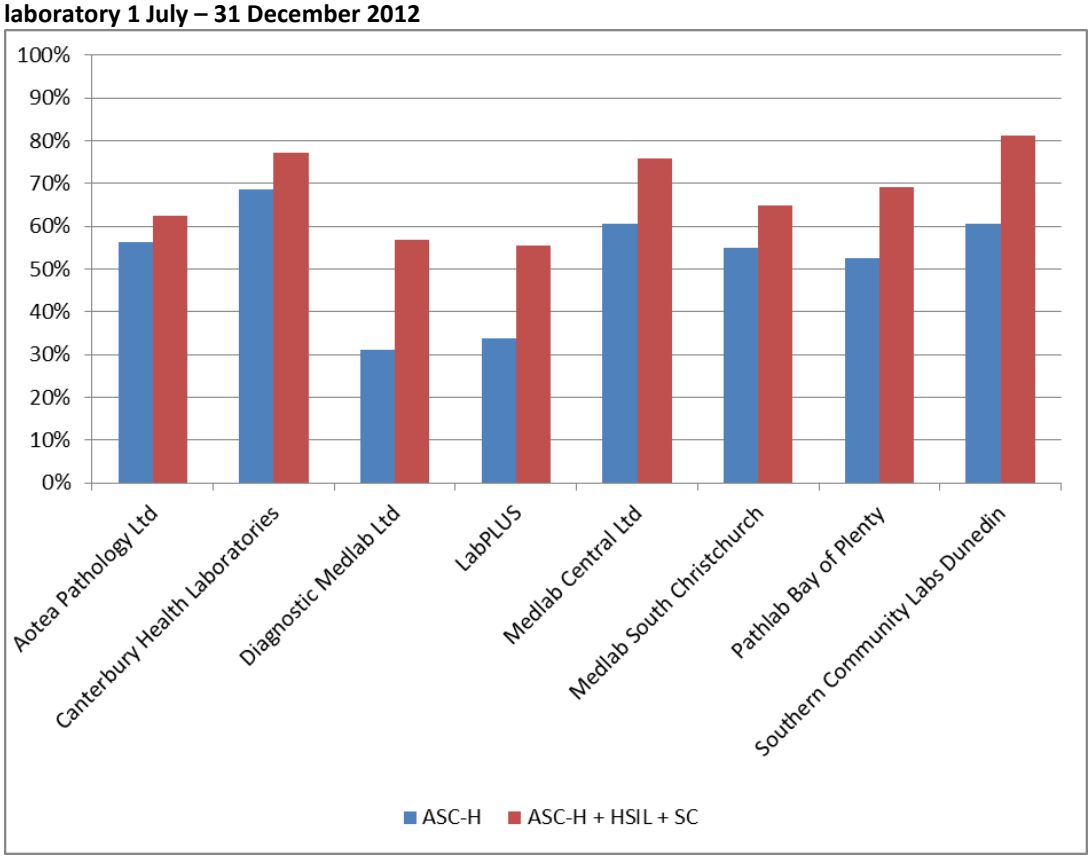
The calculations also do not discriminate between cytology taken as a screening or diagnostic test. This may be a contributing factor for some laboratories with a PPV which is higher than the upper end of the target range, particularly where the colposcopically-directed cytology and corresponding histology 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 35 - Positive predictive value for CIN2+ in women with HSIL or SC cytology reports by laboratory, 1 July – 31 December 2012



Target: 65% - 85%

Figure 36 - Positive predictive value for CIN2+ in women with other high grade cytology results, by laboratory 1 July – 31 December 2012



Indicator 5.3 – Accuracy of negative cytology reports

Definition	This indicator is under development and currently has two parts to its definition. 1. The percentage of negative cytology samples (excluding unsatisfactory samples which are reported separately) with subsequent high grade or worse histology that are upgraded to high grade or worse category following slide review. 2. The ability of a laboratory to correctly identify a negative sample.
Current Situation	Data required for this measure was not available from the NCSP Register for the current reporting period. While some data are provided by laboratories to the NCSP, methodology is not consistent between laboratories. As a result of these methodological differences, it was considered that comparisons should not be made between laboratories.

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). 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. The Ministry of Health holds the NZ licence for SNOMED CT and the NCSP is in the early stages of investigating its use. A woman's age is defined as her age at the end of the reporting period.
Target	None
Current Situation	14,809 histology samples were taken during the current reporting period. 494 (3.3%) of these were insufficient for diagnosis. The remaining 14,315 samples were taken from 12,304 women. Results for the most serious ranked test in these women are reported on in detail in Table 14 to Table 17 (one woman is excluded from these results as no severity ranking was available for her histology result). The 494 samples which were insufficient for diagnosis were taken from 483 women, 119 (25%) of whom have a record of a subsequent histology test. 49.7% of women with histology tests had negative or benign histology results (Table 14, Table 15). 23.0% of women had high grade (CIN2/3) histology results. 52 (0.4%) women had histology results which were invasive squamous cell carcinoma (ISCC), seven (0.06%) which were microinvasive SCC, 31 (0.3%) which were invasive adenocarcinoma, two (<0.05%) which were adenosquamous carcinoma and 40 (0.3%) which were adenocarcinoma in situ. The age group with the largest number of women with histology samples was women aged 20-24 years (1,938 women, Table 16). This was also the age group with the lowest rate of women with results which were negative or HPV only (34.3%, Table 17).
Trends	The proportion of women with negative or benign histology (49.7%) is similar to that reported for the previous period (49.6%). The proportion of women with HSIL histology is somewhat higher in the current period (23.0%) than in

	the previous period (22.3%). The proportions were similar to those in the previous period for women with ISCC (0.4% this period; 0.5% last period), invasive adenocarcinoma (0.3% this period; 0.3% last period), adenosquamous carcinoma (<0.05% in both periods), and adenocarcinoma in situ (0.3% this period; 0.3% 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 14 - Histology results reporting by SNOMED category

SNOMED category	Women with that diagnosis	
	N	%
Negative/normal	3,136	25.5
Inflamation	806	6.6
Microglandular hyperplasia	11	0.09
Squamous metaplasia	507	4.1
Atypia	102	0.83
HPV	1,060	8.6
Condyloma acuminatum	4	<0.05
Dysplasia/CIN NOS	58	0.47
CIN 1 (LSIL) or VAIN 1	1,955	15.9
CIN 2 (HSIL) or VAIN 2	817	6.6
CIN 3 (HSIL) or VAIN 3	1,199	9.7
HSIL not otherwise specified	817	6.6
Polyp	1,139	9.3
Other*	513	4.2
Microinvasive squamous cell carcinoma	7	0.06
Invasive squamous cell carcinoma	52	0.42
Benign glandular atypia	2	<0.05
Glandular dysplasia	-	-
Adenocarcinoma in situ	40	0.33
Invasive adenocarcinoma	31	0.25
Adenosquamous carcinoma	2	<0.05
Metastatic tumour	22	0.18
Undifferentiated carcinoma	-	-
Sarcoma	2	<0.05
Carcinosarcoma	-	-
Choriocarcinoma	-	-
Miscellaneous primary tumour	6	<0.05
Small cell carcinoma	1	<0.05
Malignant tumour, small cell type	-	-
Melanoma	1	<0.05
Other primary epithelial malignancy	13	0.11
Total	**12,303**	**100.00**

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*

Excludes one woman whose histology result did not have a severity ranking assigned

Table 15 - Histology results reporting by diagnostic group

Histology diagnosis category	Women with that histology result	
	N	%
Negative/benign (non neoplastic)	6,114	49.7
HPV	1,064	8.6
CIN1	2,115	17.2
CIN2	817	6.6
CIN3	1,199	9.7
HSIL not otherwise specified	817	6.6
Microinvasive	7	0.06
Invasive squamous cell carcinoma	52	0.42
Glandular dysplasia	-	-
Adenocarcinoma in situ	40	0.33
Invasive adenocarcinoma	31	0.25
Adenosquamous carcinoma	2	<0.05
Other cancer	45	0.37
Total	**12,303**	**100.0**

HSIL not otherwise specified = high grade squamous intraepithelial lesion, not otherwise specified/ CIN 2/3 (SNOMED code M67017; see Appendix C)
Excludes one woman whose histology result did not have a severity ranking assigned

Table 16 - Histology results by age – counts

Histology 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+	Total
Negative/benign (non neoplastic)	17	455	438	493	617	915	1,008	807	525	332	266	241	6,114
HPV	5	209	180	145	120	129	92	94	51	21	16	2	1,064
CIN1	23	541	382	289	236	230	165	109	66	34	22	18	2,115
CIN2	7	226	172	136	89	81	47	27	13	13	5	1	817
CIN3	8	279	267	223	167	108	69	33	21	14	7	3	1,199
HSIL not otherwise specified	3	222	207	151	83	55	42	29	10	7	6	2	817
Microinvasive	-	-	1	1	-	1	-	1	1	-	1	1	7
Invasive squamous cell carcinoma	-	1	2	-	6	7	6	4	6	7	4	9	52
Glandular dysplasia	-	-	-	-	-	-	-	-	-	-	-	-	-
Adenocarcinoma in situ	-	2	6	9	11	6	1	1	1	1	1	1	40
Invasive adenocarcinoma	-	3	3	1	1	-	4	2	6	3	2	6	31
Adenosquamous carcinoma	-	-	-	-	-	-	-	1	-	-	1	-	2
Other cancer	-	-	1	3	-	3	5	4	5	4	5	15	45
Total	**63**	**1,938**	**1,659**	**1,451**	**1,330**	**1,535**	**1,439**	**1,112**	**705**	**436**	**336**	**299**	**12,303**

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

Table 17 - Histology results by age – percentages

Histology 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)	27.0	23.5	26.4	34.0	46.4	59.6	70.0	72.6	74.5	76.1	79.2	80.6
HPV	7.9	10.8	10.8	10.0	9.0	8.4	6.4	8.5	7.2	4.8	4.8	0.7
CIN1	36.5	27.9	23.0	19.9	17.7	15.0	11.5	9.8	9.4	7.8	6.5	6.0
CIN2	11.1	11.7	10.4	9.4	6.7	5.3	3.3	2.4	1.8	3.0	1.5	0.3
CIN3	12.7	14.4	16.1	15.4	12.6	7.0	4.8	3.0	3.0	3.2	2.1	1.0
HSIL not otherwise specified	4.8	11.5	12.5	10.4	6.2	3.6	2.9	2.6	1.4	1.6	1.8	0.7
Microinvasive	-	-	0.1	0.1	-	0.1	-	0.1	0.1	-	0.3	0.3
Invasive squamous cell carcinoma	-	0.1	0.1	-	0.5	0.5	0.4	0.4	0.9	1.6	1.2	3.0
Glandular dysplasia	-	-	-	-	-	-	-	-	-	-	-	-
Adenocarcinoma in situ	-	0.1	0.4	0.6	0.8	0.4	0.1	0.1	0.1	0.2	0.3	0.3
Invasive adenocarcinoma	-	0.2	0.2	0.1	0.1	-	0.3	0.2	0.9	0.7	0.6	2.0
Adenosquamous carcinoma	-	-	-	-	-	-	-	0.1	-	-	0.3	-
Other cancer	-	-	0.1	0.2	-	0.2	0.3	0.4	0.7	0.9	1.5	5.0
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 100% within 15 working days (also Standard 513[14]).

Histology

Laboratories are required to report 90% of final histology results to referring colposcopists within five working days of receipt of the sample and 99% of final histology results within 15 working days of receiving the sample (also Standard 516[14]).

Cytology with associated hrHPV testing

Laboratories are required to report 100% 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 216,514 cytology samples during the current reporting period. Overall, 90.8% of cytology samples were reported on within seven working days, which is above the target. Nationally, 98.4% were reported on within 15 working days, which is below the target (Table 51).

Three laboratories met the target for 90% of cytology samples to be reported to smear takers in seven days or less (Diagnostic Medlab Ltd, Pathlab and Southern Community Labs). The proportion of samples reported on within seven working days ranged from 77.4% (LabPLUS) to 98.3% (Diagnostic Medlab Ltd) days (Figure 37, Table 51).

No laboratory met the target of 100% of samples reported within 15 working

days (Figure 38, Table 51). Of the seven laboratories, one had reported on at least 99% of cytology samples within 15 days (Diagnostic Medlab Ltd), and all seven had reported on more than 95% within 15 working days.

Histology

In the current reporting period, 17 laboratories received 14,819 histology samples. Overall 76.5% of samples were reported on within five working days, and 94.5% were reported on in 15 working days or less. These values are below the targets (Table 52).

Six laboratories met the target of 90% of final histology results to referring colposcopists within five working days of receipt of the sample (Canterbury Health Laboratories, Medlab South Christchurch, Northland Pathology Laboratory, Southern Community Labs, Taranaki Medlab andWaikato Hospital Laboratory) (Figure 39, Table 52). Five laboratories met the target of 99% of final histology results within 15 working days of receiving the sample, and four of the remaining twelve had reported on at least 95% of samples within 15 days (Figure 40, Table 52).

Low grade cytology with associated HPV triage testing

Seven laboratories received 3,363 cytology samples during the current reporting period which were associated with HPV testing for the purpose of triage of low grade abnormalities. Overall, 96.5% of these cytology samples were reported on within 15 working days, which is below the target. The proportion of cytology samples with HPV triage tests reported on within 15 days ranged from 87.5% (LabPLUS) to 99.0% (Diagnostic Medlab Ltd) (Figure 41, Table 53). The target of 100% of tests reported within 15 working days was not met by any laboratory. Nationally, the proportion of cytology reported within 15 days is lower for cytology associated with low grade triage HPV testing (96.5%), compared to cytology overall (98.4%). This is not true for all laboratories, however. The proportion of cytology tests reported within 15 days is similar regardless of whether there is an associated HPV triage test at Diagnostic Medlab Ltd, Pathlab and Southern Community Labs, however the proportion of cytology tests reported within 15 days is lower for those cytology tests with an associated HPV triage test at Aotea Pathology Ltd, Canterbury Health Laboratories (and also at LabPLUS, but based on a small number of cytology tests with associated HPV triage testing) (Figure 41).

Trends

Cytology

The overall proportion of samples reported on within seven working days decreased in this period, from 92.4% in the previous monitoring period to 90.8% in the current period. The number of laboratories meeting the cytology turnaround time target of 90% for seven working days has also decreased, from five (of eight) to three (of seven) laboratories. The proportion of samples reported on within 15 working days was very similar in the current reporting period (98.4%, compared to 98.6% in the previous reporting period). The number of laboratories meeting the target reduced from one to none, as the laboratory which met the target in the previous report did not

report on cytology in the current reporting period (Medlab South Christchurch). In the current monitoring period all seven laboratories had reported on at least 95% of samples within 15 days, which is is one more than in the previous report.

Histology

Overall, the proportion of histology samples reported on within five working days is higher than it was in the previous reporting period (76.5% during this period compared to 73.2% in the previous report), but the proportion reported on within 15 working days is also lower (94.5%, compared to 94.8% in the previous report). The number of laboratories meeting the five-working-days target is higher than in the previous reporting period (six in the current reporting period and four in the previous reporting period). In the current period, nine laboratories had reported on at least 95% of samples within 15 days, compared to 12 in the previous period.

Low grade cytology with associated HPV triage testing

Analyses performed to support previous monitoring reports had erroneously calculated the number and percentage of tests reported within 15 *days*, rather than 15 *working days* as specified by the target. Thus the turnaround time results for cytology with an HPV triage test are not directly comparable to previous reports, and previous reports are likely to have underestimated the percentage of cytology with associated HPV triage testing reported within 15 working days. The percentage of samples reported within 15 days has increased at most laboraties since that reported previously, however this may reflect the correction of the error. However in some laboratories the percentage of samples reported within 15 days has declined since the previous report, and this would represent a true decrease – this occurred at at Aotea Pathology Ltd, Canterbury Health Laboratories, LabPLUS and Pathlab.

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-

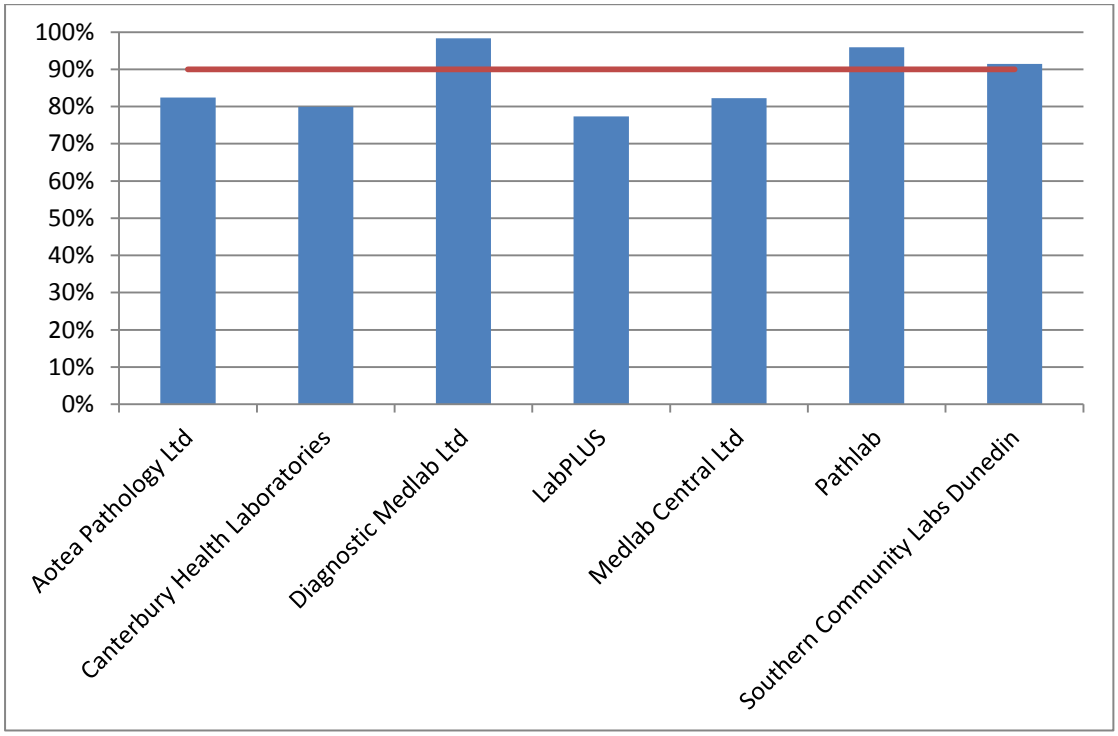
transmitted after the error was resolved. The occurrence of these errors can therefore distort (and lengthen) turnaround time, as in these cases the report date recorded in the NCSP Register does not reflect the date on which results were first communicated to the smear taker or colposcopist. The extent 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. Additonally, 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.

While performing analyses for the current report, it was found that analyses performed to support previous monitoring reports had erroneously calculated the number and percentage of cytology tests with associated HPV triage testing reported within 15 *days*, rather than 15 *working days* as specified by the target. Thus previous reports are likely to have underestimated the percentage of cytology with associated HPV triage testing reported within 15 working days. Any increases in the current report should therefore be interpreted with caution, as they may simply reflect the correction in the current report to allow 15 working days (which would require at least 19 elapsed days), rather than 15 days.

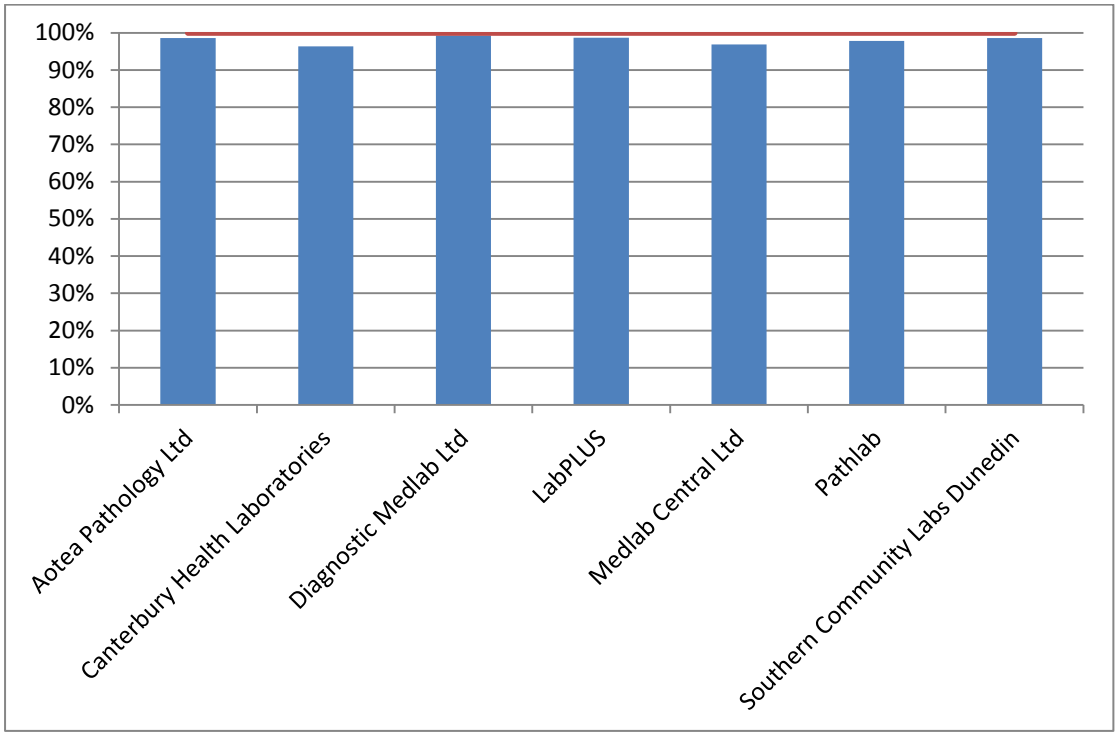
The calculations currently include public holidays which fall on a weekday as working days.

Figure 37 - Proportion of cytology samples reported within seven working days by laboratory, 1 July – 31 December 2012



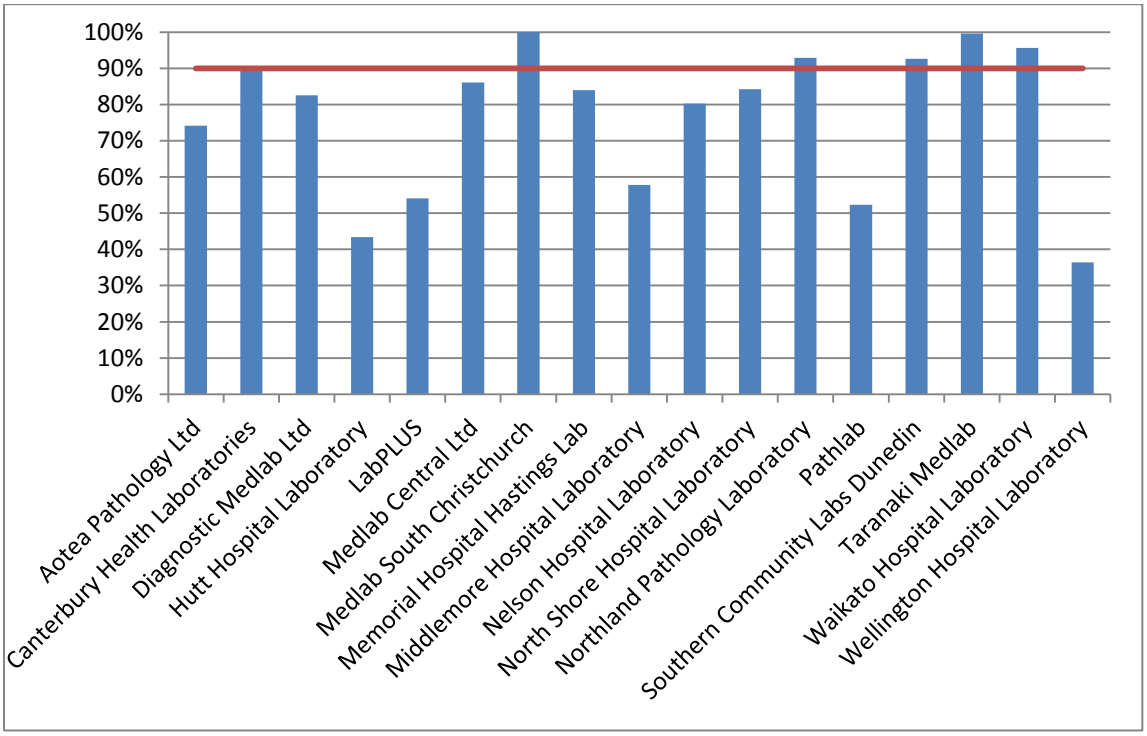
Target: 90 % within seven working days (red line)

Figure 38 - Proportion of cytology samples reported within 15 working days by laboratory, 1 July – 31 December 2012



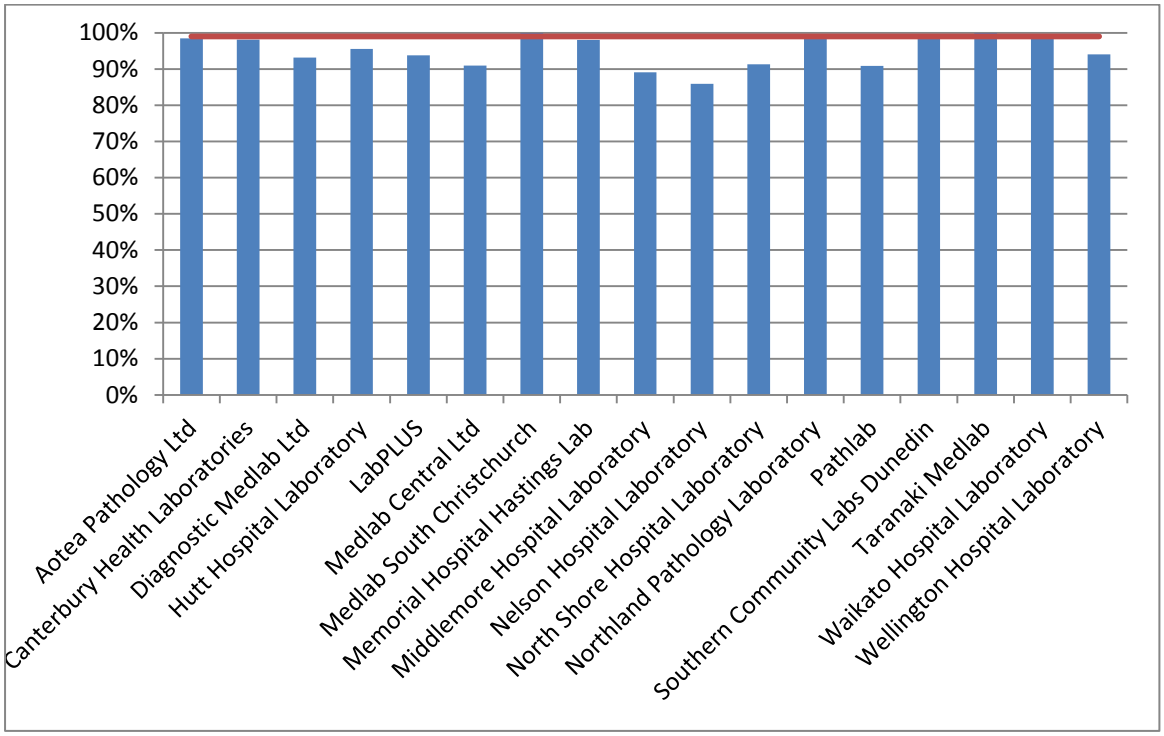
Target: 100% within 15 working days (red line)

Figure 39 - Proportion of histology samples reported within five working days by laboratory, 1 July – 31 December 2012



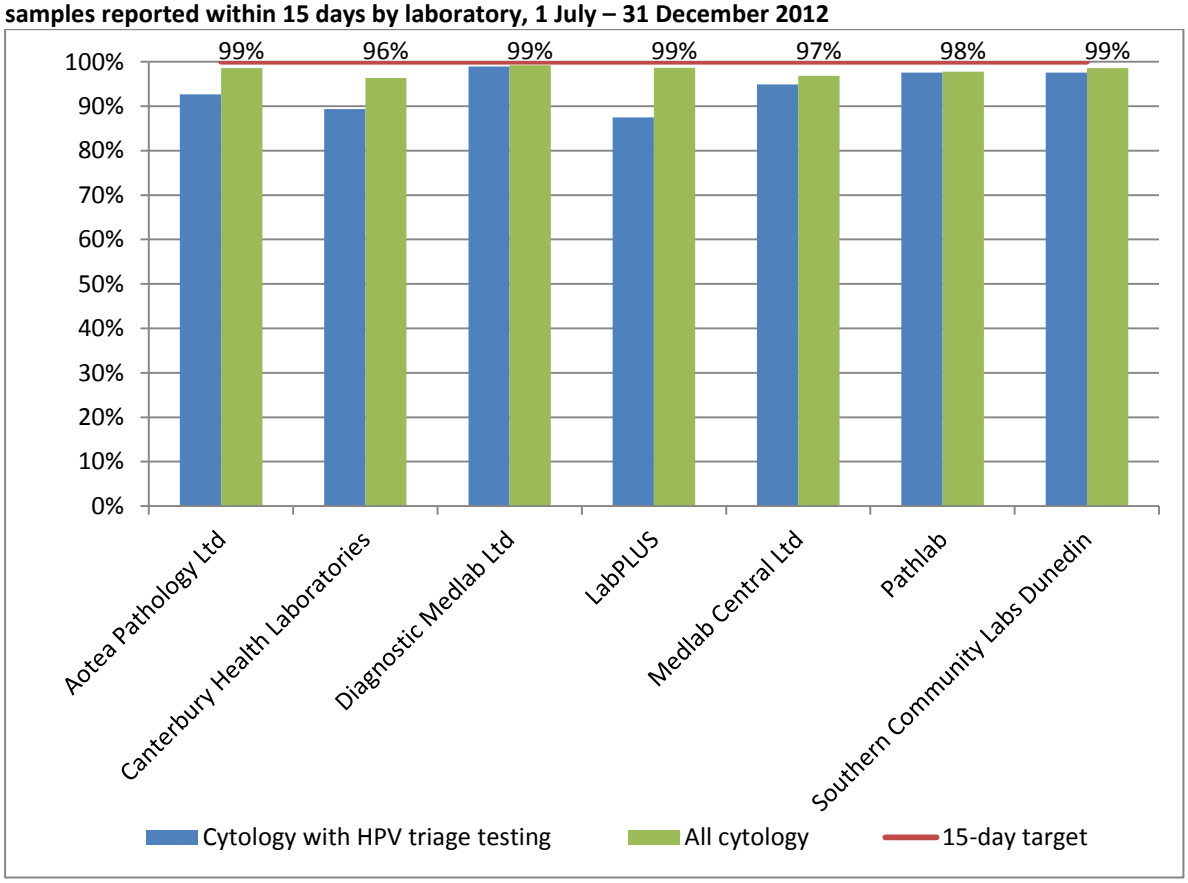
Target: 90% withing five working days (red line)

Figure 40 - Proportion of histology samples reported within 15 working days by laboratory, 1 July – 31 December 2012



Target: 99% within 15 working days(red line)

Figure 41 - Proportion of cytology samples with associated HPV triage testing and of all cytology samples reported within 15 days by laboratory, 1 July – 31 December 2012



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 from 1 January to 30 June 2012), 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 (TBS2001 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 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 2012).
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 4,067 high grade cytology results relating to samples collected in the period 1 January to 30 June 2012; 1,415 of these cytology 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 2,652 cytology results, which related to 2,534 women. Histological follow-up for these 2,534 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, 1,993 women (78.7%) had a histology report within 90 days of their cytology report, and 2,182 (86.1%) had a histology report within 180 days. This is below the target of 90% within 90 days.

The proportion of women with a histology report varied by DHB from 58.8% (Wairarapa) to 91.5% (Southland) within 90 days of their cytology report, and from 65.7% (South Canterbury) to 96.2% (Tairawhiti) within 180 days of their cytology report (Figure 42, Table 18). One DHB met the target for the proportion of women with histology within 90 days (Southland); and no DHB met the target for 180 days.

The proportion of women with a histology report also varies by age, from 61.1% (ages 65-69 years) to 87.5% (ages 30-34 years) within 90 days, and from to 68.5% (ages 65-69 years) to 93.8% (ages 30-34 years) within 180 days (Table 19). 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 64.7% (Pacific women) to 80.8% (European/Other women) (Table 20). By 180 days, however, the difference had narrowed slightly, and histology reports were available for 75.9% of Pacific women and 87.4% of Asian women (Table 21). Further breakdown by DHB and ethnicity is shown in Table 20 and Table 21, and breakdown by DHB and age is shown in Table 54 and Table 55.

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 300 women (13.7%) who had no record of any subsequent follow-up within 90 days and 156 women (7.1%) who had no record of any subsequent follow-up within 180 days on the NCSP Register (Table 56).

This varied by DHB from none (Whanganui) to 26.5% (Wairarapa) at 90 days and from none (Tairawhiti and Whanganui) to 12.0% (Waikato) at 180 days (Figure 43, Table 56). It also varied by ethnicity, from 8.1% (Asian) to 18.0% (Pacific) at 90 days and from 5.1% (Asian) to 10.5% (Pacific) at 180 days (Figure 44, Table 57).

Trends

Histological follow-up

The proportion of women with a histology report within 90 days is slightly lower than that in the previous reporting period (79.1% in the previous reporting period; 78.7% in the current period). The proportion of women with a histology report within 180 days has also decreased somewhat, from 86.9% within 180 days in the previous period to 86.1% in the current period.

The proportion of women with histological follow-up has increased overall, however, the trend still varies for individual DHBs. In a number of DHBs the proportion of women with histological follow-up has increased at 90 days (Auckland, Bay of Plenty, Canterbury, Hawke's Bay, Lakes, Southland, Tairawhiti, Waikato) or at 180 days (Bay of Plenty, Hawke's Bay, Northland, Southland, Tairawhiti, Waikato). However in some DHBs, the proportion of women with histological follow-up decreased noticeably at 90 days (Nelson Marlborough, Otago, South Canterbury, Taranaki, Wairarapa and Whanganui) and 180 days (Capital and Coast, South Canterbury, Taranaki and Whanganui). Changes in other DHBs were smaller.

The proportion of women with follow-up histology has slightly increased overall in the current monitoring period for Māori, Pacific and Asian women but decreased slightly for European/ Other women (at both 90 days and 180 days). 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 couple of DHBs).

As in previous reports, the proportion of women with histological follow-up varies substantially by age, and generally seems to be lower in women aged 55 years or more, than in women younger than 55 years. There was an overall increase in the proportion of women with follow-up histology in a number of age groups. Follow-up at both 90 days and 180 days has increased among women aged 60-64 years and 65-69 years. Follow-up at both 90 days and 180 days has decreased among women aged 50-54 years.

Women with no follow-up tests

The proportion of women with no record of a follow-up test has decreased since the previous period, from 8.4% to 6.2% at 180 days. The proportion of women with no record of a follow-up test at 90 days has not previously been reported.

Trends by DHB were complex, but reductions in the proportion of women with no follow-up test recorded were observed in 17 of the 21 DHBs, and were greatest in Tairawhiti and Whanganui. Increases were observed in some other DHBs, and were largest in Nelson Marlborough and Southland.

In the current monitoring period, the proportions of women for whom there was no follow-up test record has decreased among all ethnic groups. In Māori women the proportion of women with no follow-up tests recorded at 180 days has decreased from 12.8% to 8.9%. For Pacific women the proportion has decreased from 14.6% to 10.5%. For Asian women, the proportion has decreased from 10.4% to 5.1%. For European/ Other women the proportion has decreased from 6.8% to 5.3%.

Comments

The proportion of women with a follow-up test of any kind provides useful additional information. While 13.9% of women with high grade cytology reports had no record of a histology report within 180 days, the proportion without a record of a follow-up test of any kind was much lower (6.2%). 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).

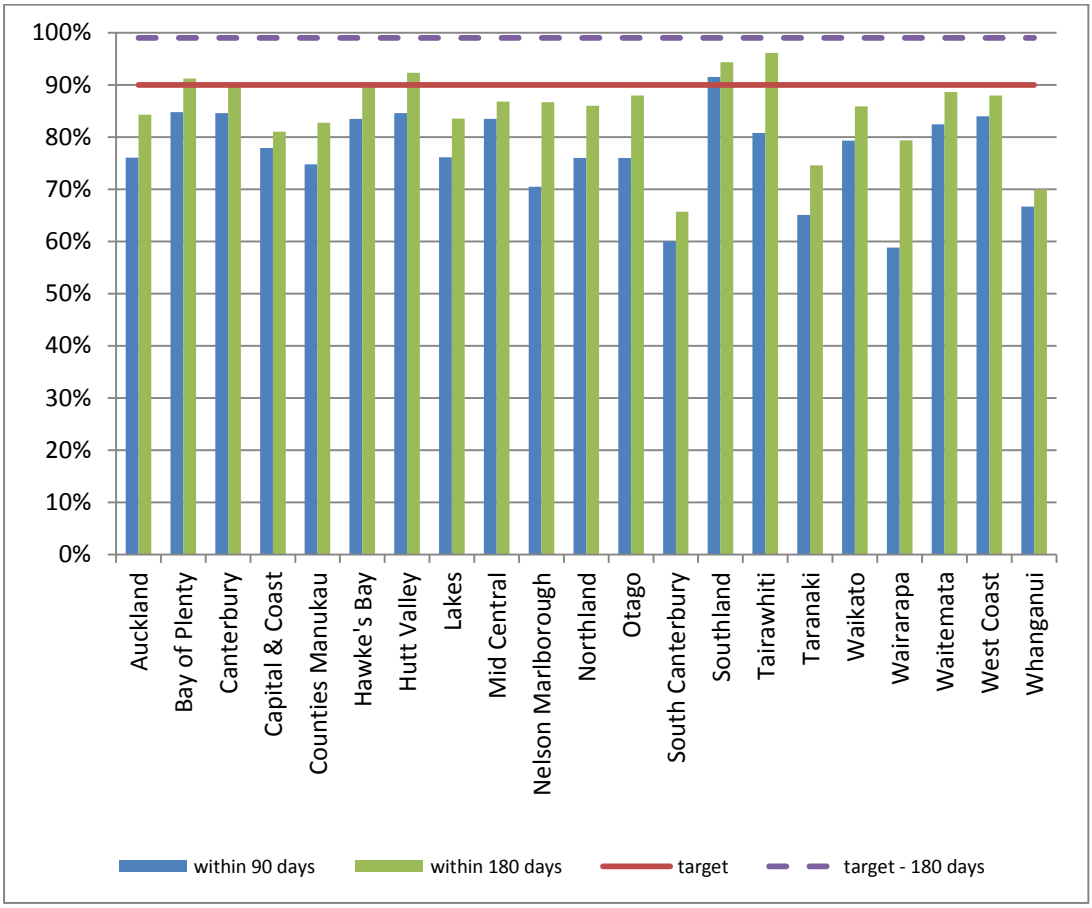
Note that while all *cytology results* which indicated that a woman was under specialist management were excluded from the measure of follow-up, not all *women* who had these cytology results were. If all cytology results for a woman indicated that she was under specialist management, she was excluded. 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)/ 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 Performance Management Analysts ensure that priority is given to follow-up of these women through DHBs. Risk is also related to the degree of abnormality including microinvasive/invasive carcinoma.

Figure 42 - 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 18 – 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	376	286	76.1	317	84.3
Bay of Plenty	125	106	84.8	114	91.2
Canterbury	260	220	84.6	235	90.4
Capital & Coast	95	74	77.9	77	81.1
Counties Manukau	313	234	74.8	259	82.7
Hawke's Bay	91	76	83.5	82	90.1
Hutt Valley	65	55	84.6	60	92.3
Lakes	67	51	76.1	56	83.6
Mid Central	91	76	83.5	79	86.8
Nelson Marlborough	105	74	70.5	91	86.7
Northland	50	38	76.0	43	86.0
Otago	75	57	76.0	66	88.0
South Canterbury	35	21	60.0	23	65.7
Southland	71	65	91.5	67	94.4
Tairawhiti	26	21	80.8	25	96.2
Taranaki	63	41	65.1	47	74.6
Waikato	184	146	79.3	158	85.9
Wairarapa	34	20	58.8	27	79.4
Waitemata	353	291	82.4	313	88.7
West Coast	25	21	84.0	22	88.0
Whanganui	30	20	66.7	21	70.0
TOTAL	**2,534**	**1,993**	**78.7**	**2,182**	**86.1**

Table 19 - Women with a histology report within 90 and 180 days of a high grade cytology report, by age

Age (years)	High grade Cytolgy	Follow-Up histology within 90 days		Follow-up histology within 180 days	
	N	N	%	N	%
<20	22	15	68.2	15	68.2
20-24	585	458	78.3	497	85.0
25-29	578	455	78.7	500	86.5
30-34	369	323	87.5	346	93.8
35-39	262	219	83.6	239	91.2
40-44	202	165	81.7	180	89.1
45-49	128	105	82.0	113	88.3
50-54	135	97	71.9	107	79.3
55-59	98	60	61.2	74	75.5
60-64	68	48	70.6	54	79.4
65-69	54	33	61.1	37	68.5
70+	33	15	45.5	20	60.6
Total	**2,534**	**1,993**	**78.7**	**2,182**	**86.1**

Table 20 - 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	18	81.8	21	67.7	51	79.7	196	75.7
Bay of Plenty	22	75.9	2	66.7	1	50.0	81	89.0
Canterbury	15	65.2	4	100.0	5	55.6	196	87.5
Capital & Coast	11	64.7	4	80.0	5	83.3	54	80.6
Counties Manukau	45	70.3	38	59.4	32	76.2	119	83.2
Hawke's Bay	18	81.8	1	100.0	4	80.0	53	84.1
Hutt Valley	8	66.7	2	66.7	5	100.0	40	88.9
Lakes	24	75.0	1	100.0	3	100.0	23	74.2
Mid Central	18	90.0	2	100.0	0	0.0	56	81.2
Nelson Marlborough	7	70.0	0	0.0	-	-	64	71.1
Northland	11	78.6	0	0.0	1	100.0	26	74.3
Otago	6	85.7	-	-	3	50.0	48	77.4
South Canterbury	2	100.0	-	-	1	100.0	18	56.3
Southland	11	84.6	-	-	0	0.0	54	93.1
Tairawhiti	10	76.9	-	-	-	-	8	88.9
Taranaki	9	56.3	0	0.0	0	0.0	32	68.1
Waikato	33	68.8	-	-	-	-	103	81.7
Wairarapa	8	80.0	2	100.0	0	0.0	10	47.6
Waitemata	31	73.8	4	44.4	36	85.7	220	84.6
West Coast	1	50.0	0	0.0	0	0.0	20	87.0
Whanganui	6	75.0	-	-	-	-	14	63.6
Total	**314**	**73.7**	**86**	**64.7**	**158**	**79.8**	**1,435**	**80.8**

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

Table 21 - 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	19	86.4	24	77.4	59	92.2	215	83.0
Bay of Plenty	24	82.8	3	100.0	1	50.0	86	94.5
Canterbury	19	82.6	4	100.0	5	55.6	207	92.4
Capital & Coast	11	64.7	4	80.0	5	83.3	57	85.1
Counties Manukau	52	81.3	46	71.9	34	81.0	127	88.8
Hawke's Bay	21	95.5	1	100.0	5	100.0	55	87.3
Hutt Valley	10	83.3	2	66.7	5	100.0	43	95.6
Lakes	29	90.6	1	100.0	3	100.0	23	74.2
Mid Central	19	95.0	2	100.0	0	0.0	58	84.1
Nelson Marlborough	8	80.0	0	0.0	-	-	80	88.9
Northland	12	85.7	0	0.0	1	100.0	30	85.7
Otago	6	85.7	-	-	5	83.3	55	88.7
South Canterbury	2	100.0	-	-	1	100.0	20	62.5
Southland	11	84.6	-	-	0	0.0	56	96.6
Tairawhiti	13	100.0	-	-	-	-	8	88.9
Taranaki	13	81.3	0	0.0	0	0.0	34	72.3
Waikato	37	77.1	-	-	-	-	111	88.1
Wairarapa	9	90.0	2	100.0	1	100.0	15	71.4
Waitemata	36	85.7	6	66.7	37	88.1	234	90.0
West Coast	1	50.0	0	0.0	0	0.0	21	91.3
Whanganui	6	75.0	-	-	-	-	15	68.2
Total	**358**	**84.0**	**101**	**75.9**	**173**	**87.4**	**1,550**	**87.2**

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

Figure 43 – Proportion of women without any follow-up test within 90 days and within 180 days of a high grade cytology report, by DHB

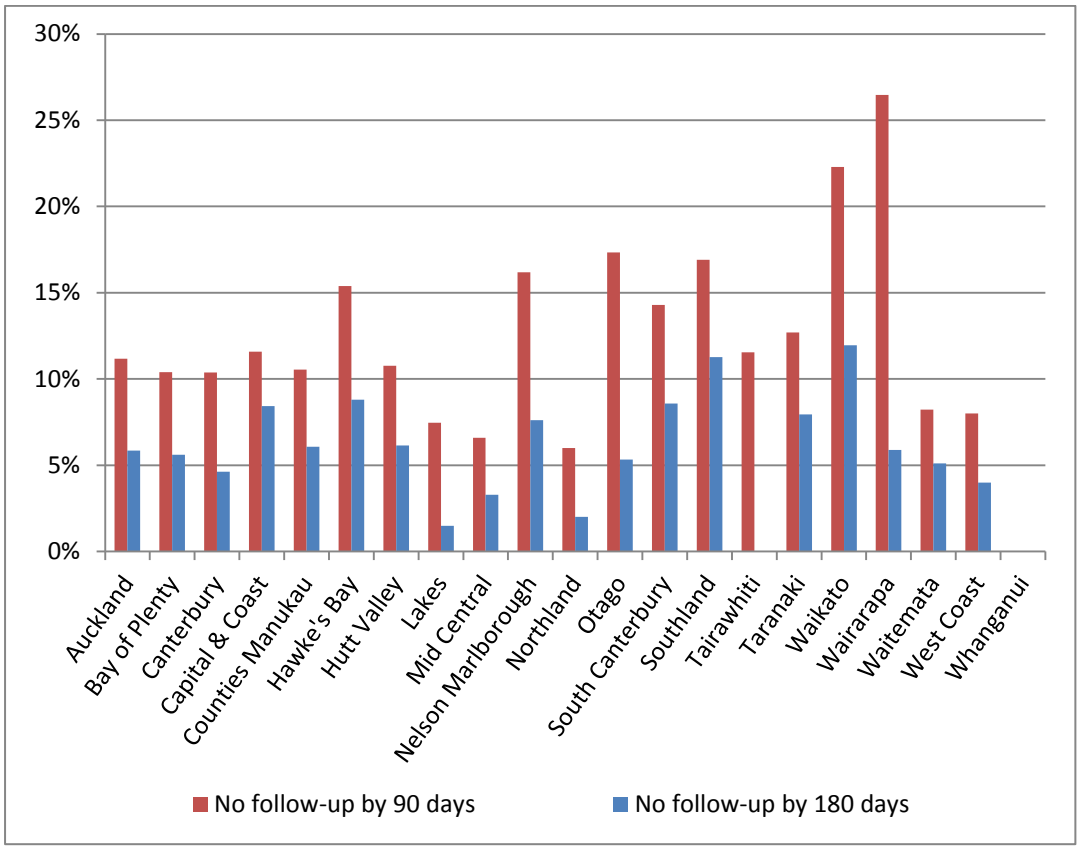
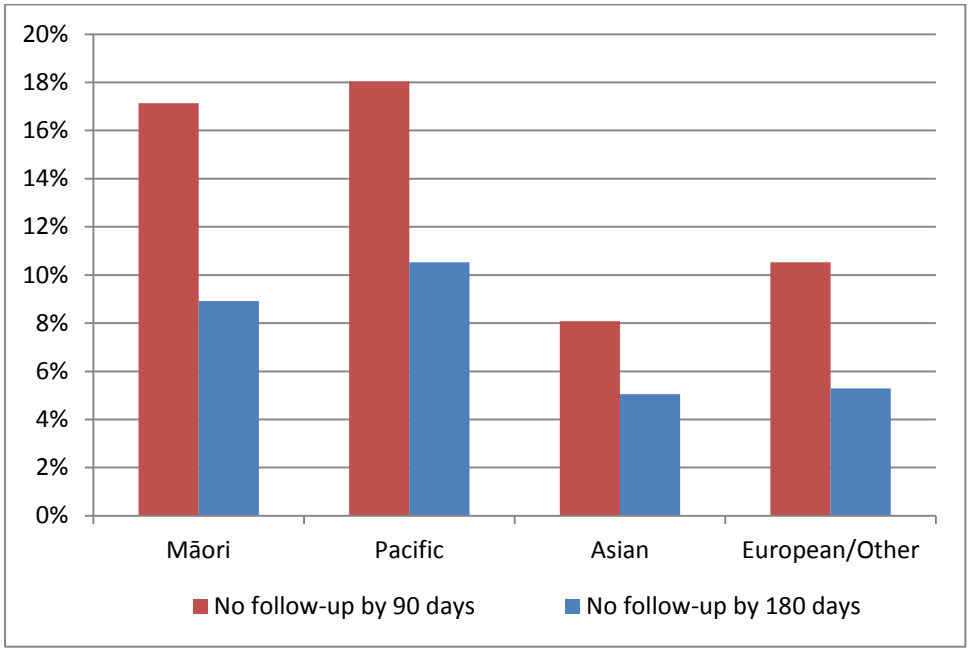


Figure 44 - Proportion of women without any follow-up test within 90 days and within 180 days of a high grade cytology report, by ethnicity



Indicator 7 – Colposcopy indicators

These indicators report on colposcopy, against the 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 (7.2, 7.6, 7.7) are still in development. It is envisioned that they will be included in future monitoring reports.

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 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 [15]. It is anticipated that completeness of colposcopy data on the NCSP Register will continue to improve over time.

Indicator 7.1 – Timeliness of colposcopic assessment – high grade cytology

Definition

This indicator measures performance against Standard 602, and is under development.

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 (equivalent to the recommended time period for follow-up).

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.

In recent reports (Reports 35 to 37), referral data were believed to be incomplete and so the timeliness of follow-up was investigated by calculating the time between the high grade cytology report date and first colposcopy attendance date. This measure is still reported here, in order to allow comparisons with previous monitoring reports. However note that this time is not directly comparable to the target, because there are multiple steps in the process between the high grade cytology report and the date the woman attends for colposcopy, several of which are beyond the control of the colposcopy clinic. Typically, a high grade cytology report will be sent back to the smear taker, who will then communicate the results to the woman, and discuss follow-up management with her. The smear taker will provide a referral for the woman to the relevant colposcopy service. Once the service has accepted the referral, they will arrange for a colposcopy appointment to be offered to the woman.

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 five working days of receipt of referral.

95% or more of women who have high-grade smear abnormalities receive colposcopy within 20 working days of receipt of referral.

The targets for this indicator rely on records of accepted referrals on the NCSP Register. It has not been possible to obtain reliable data on referrals for the current monitoring period. Therefore, timeliness will be explored by looking at the time between a cytology report and colposcopy,

acknowledging that this is not directly comparable to the target.

Current Situation

In the period 1 January – 30 June 2012, there were 2,534 women with high grade cytology results who were not already under specialist management. 75 women had results indicating suspicion of invasive disease, and the remaining 2,459 had other high grade cytology results.

Timeliness of follow-up was also investigated by calculating the time between the high grade cytology report date and first colposcopy attendance date. This time is not directly comparable to the target.

Timeliness – high grade cytology indicating suspicion of invasive disease

Accepted referrals were found for 28 of the 75 women who had high grade cytology indicating suspicion of invasive disease. Of these 28 women with a referral, nine (32.1%) have a record of a colposcopy visit on the NCSP Register within one week of their referral, and 16 (57.1%) have a visit within four weeks (Table 22).

Time between the cytology report and first colposcopy visit was also measured for these 75 women. The date that the cytology result was originally reported to the smear taker was no longer available for two women. Among the remaining 73 women, colposcopy records were found for 21 women (29%). Among these women, the median period between the cytology report date and colposcopy visit date was 15 days overall; 9.5 days among European/Other women; and 40 days among Māori women (numbers were too small for Pacific and Asian women for results to be meaningful) (Table 23). This was not analysed further by DHB, due to the small numbers of women within each DHBs with these results.

In total, 23 (31%) of the 75 women with high grade cytology indicating suspicion of invasive disease relating to a sample collected in January-June 2012 have a record of a colposcopy visit prior to 31 December 2012 (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 2,129 women (86.6%). Among the women with accepted referrals, 902 (42.4%) were seen within four weeks of their referral (Table 24, Table 25). This varied by DHB from 10.3% (Waikato) to 89.1% (Hutt Valley) (Table 24). There was also some variation by ethnicity, from 28.1% (Pacific women) to 44.2% (European women/ women from other ethnic groups) (Table 25).

Time between the cytology report and first colposcopy visit was also measured for these 2,459 women. In 34 of the 2,459 women with high grade cytology (no suspicion of invasive disease), the date that the cytology result was originally reported to the smear taker was no longer available from the NCSP Register. Among the remaining 2,425 women, colposcopy records were found for 2,043 (84%) women. Among these 2,043 women,

	the median period between the cytology report date and colposcopy visit date was 38 days. This was further analysed by DHB. The median waiting time between the high grade cytology report and the first colposcopy visit varied widely by DHB, ranging from 20 days (Northland) to 58 days (Southland)(Table 26). There was less variation by ethnicity, with the median waiting times ranging from 37 days (European/ Other women) to 46 days (Pacific women) (Table 27). In total, 2,077 (84%) of the 2,459 women with high grade cytology (but no suspicion of invasive disease) relating to a sample collected in January-June 2012 have a record of a colposcopy visit prior to 31 December 2012 (representing a follow-up period of at least six and up to 12 months after their high grade cytology).
Trends	Estimates for the the proportion of women seen within the target timeframes were not included in previous montiroing reports, because referral data were believed to be incomplete, therefore trends in these performance indicators are not reported here. Instead, the median waiting time between the cytology report and first colposcopy attendance was reported to provide some information. It was acknowledged that this measure was not directly comparable to the targets, due to the additional steps in the process which this would include and which were beyond the control of the colposcopy clinic. However as this is the only measure for which data are available prior to the current monitoring report, trends are reported here. Nationally, the median waiting time has increased for high grade cytology indicating suspicion of invasive disease, from 8.5 days in Report 37 to 15 days in the current report. The median waiting time for high grade cytology (no suspicion of invasive disease) is the same in the current and previous report (38 days).
Comments	Since this indicator relies on colposcopy data in the NCSP Register, there is the possibility that incomplete reporting of referrals and colposcopy visits has led to an underestimate of the number of women with referrals and/or follow-up colposcopy visits in a given time period. The data used in this analysis was extracted from the NCSP Register in July 2013. Note that some women presenting with unequivocal cancer may be referred directly to gynae oncology and therefore not recorded as a colposcopy visit. This indicator could not provide information which would allow the timeliness of colposcopic assessment among women with high grade cytology results to the targets. For timeliness to be compared with the guidelines, there must be a record of an accepted referral on the NCSP Register, in order to have a starting date from which to calculate the period of time between referral and colposcopy attendance. It has not been possible to obtain reliable data on referrals for the current monitoring period. In lieu of this, the time between the cytology report date and the first colposcopy visit was calculated, however this is not directly comparable to the targets. A small number of women had cytology results which suggested that the dates in the

test record had been updated. This was suggested by a colposcopy visit which occurred after the cytology sample was collected, but before the cytology report date recorded on the NCSP Register (the time between the date the cytology sample was collected and the cytology report date on the NCSP Register was also longer than usual).

Additional information about follow-up tests performed in women with high grade cytology is included in Indicator 6. The same 2,534 women (75 with suspicion of invasive disease, 2,459 other high grade cytology) are included in both this measure and Indicator 6. In Indicator 6, it was found that 2,182 (86.1%) women had histology within 180 days, and 2,378 (93.8%) had a follow-up test of some sort. Here, colposcopy records indicate that only 2,100 (82.9%) women had attended colposcopy prior to 31 December 2012. This strongly suggests that colposcopy data must be incomplete, as more women had histology within 180 days (2,182) than had colposcopy in a period of at least 181 days after their high grade cytology sample (2,100). 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; private clinics are separated out and reported on as a group in this indicator.

Women with high grade cytology indicating suspicion of invasive disease were further investigated by the National Screening Unit, to determine whether follow up had occurred. From a total of 75 cases, an outcome was available for all women. 64 women (85%) had subsequent histology and of the 11 (15%) that did not have histology, 4 (5.5%) had other follow up investigations. The remaining 7 women (9.5%) had other reasons for not having follow up investigations. Other reasons for not having follow up investigations may include that the woman has significant comorbidities, non-cervical pathology, is deceased, or has moved overseas

Some cytology results (AC1-5) may have reflected results for endometrial cells. Histology in these cases may not have been recorded on the NCSP Register, unless there was also a cervical component.

Reasons why a woman may not attend colposcopy within the recommended timeframe include both capacity limitations within the clinic, and potentially factors related to the woman requiring follow-up. Currently there is incomplete information available on the NCSP Register about colposcopy appointments which are scheduled for women where the woman reschedules or does not attend. Therefore in this indicator it is not possible to distinguish delays in attending colposcopy following high grade cytology which are due to capacity constraints which restrict the clinic's ability to offer timely appointments, and delays which may be due to an individual woman's need to reschedule an appointment or failure to attend.

Factors which may lead a woman to delay a recommended visit include caring responsibilities, planned travel, competing prior commitments, illness, or menstruation.

Table 22 – Women with a high grade cytology report (suspicion of invasive disease), accepted referral and colposcopy visit, by ethnicity

Ethnicity	HG women suspicion of invasion	Urgent referrals received	Women seen within :			
			1 week		4 weeks	
	N	N	N	%	N	%
Māori	15	8	1	12.5	4	50.0
Pacific	4	2	1	50.0	1	50.0
Asian	8	2	0	0.0	0	0.0
European/Other	48	16	7	43.8	11	68.8
Total	**75**	**28**	**9**	**32.1**	**16**	**57.1**

Table 23 – Waiting time between high grade cytology report (suspicion of invasive disease) and colposcopy visit date, by ethnicity

Ethnicity	HG women	Women seen at colposcopy*	Median waiting time†
	N	N	(days)
Māori	15	7	40
Pacific	4	1	n.r.
Asian	8	1	n.r.
European/Other	48	14	9.5
Total	**75**	**23**	**15**

** Attendence at any ccolposcopy linic, including where no referral is recorded, up to 31 December 2012 † Days between cytology report date and colposcopy date. Excludes 2 women where waiting time between cytology report and colposcopy could not be calculated because the date the cytology result was originally reported to the smear taker was no longer available from the NCSP Register n.r = not reported due to extremely small numbers of women for whom colposcopy is recorded.*

Table 24 – Women with a high grade cytology report (no suspicion of invasive disease), accepted referral and colposcopy visit, by DHB

DHB	HG women	Referrals received	Women seen within 4 weeks	
	N	N	N	%
Public clinics overall	1,986	1,732	*721*	*41.6*
Auckland	237	199	46	23.1
Bay of Plenty	89	78	40	51.3
Canterbury	217	200	47	23.5
Capital & Coast	76	71	46	64.8
Counties Manukau	253	236	67	28.4
Hawke's Bay	76	56	13	23.2
Hutt Valley	48	46	41	89.1
Lakes	62	53	32	60.4
Mid Central	83	79	53	67.1
Nelson Marlborough	79	75	14	18.7
Northland	45	45	33	73.3
Otago	56	39	10	25.6
South Canterbury	36	32	20	62.5
Southland	56	37	6	16.2
Tairawhiti	24	24	8	33.3
Taranaki	56	46	29	63.0
Waikato	152	107	11	10.3
Wairarapa	29	26	17	65.4
Waitemata	267	240	156	65.0
West Coast	21	21	17	81.0
Whanganui	24	22	15	68.2
Private Practice	473	397	*181*	*45.6*
Total	**2,459**	**2,129**	**902**	**42.4**

Table 25 – Women with a high grade cytology report (no suspicion of invasive disease), accepted referral and colposcopy visit, by ethnicity

Ethnicity	HG women	Referrals received	Women seen within 4 weeks	
	N	N	N	%
Māori	411	361	144	39.9
Pacific	129	121	34	28.1
Asian	190	167	70	41.9
European/Other	1,729	1,480	654	44.2
Total	**2,459**	**2,129**	**902**	**42.4**

Table 26 - Waiting time between high grade cytology report (no suspicion of invasive disease) and colposcopy visit date, by DHB

DHB	HG women N	Women seen at colposcopy* N	Median waiting time† (days)
Auckland	237	195	50
Bay of Plenty	89	82	34
Canterbury	217	204	49
Capital & Coast	76	69	35
Counties Manukau	253	175	50
Hawke's Bay	76	70	41.5
Hutt Valley	48	46	26
Lakes	62	59	33
Mid Central	83	80	30
Nelson Marlborough	79	74	52
Northland	45	43	20
Otago	56	52	50
South Canterbury	36	32	38
Southland	56	47	58
Tairawhiti	24	24	49
Taranaki	56	50	40
Waikato	152	132	49
Wairarapa	29	27	25
Waitemata	267	244	33
West Coast	21	21	26
Whanganui	24	23	21
Private practice	*473*	*328*	*22*
Total	**2,459**	**2,077**	**38**

** Attendence at any colposcopy clinic, including where no referral is recorded, up to 31 December 2012 † Days between cytology report date and colposcopy date. Excludes 34 women where waiting time between cytology report and colposcopy could not be calculated because the date the cytology result was originally reported to the smear taker was no longer available from the NCSP Register.*

Table 27 – Waiting time between high grade cytology report (no suspicion of invasive disease) and colposcopy visit date, by ethnicity

Ethnicity	HG women N	Women seen at colposcopy* N	Median waiting time† (days)
Māori	411	346	42
Pacific	129	82	46
Asian	190	153	38
European/Other	1,729	1,496	37
Total	**2,459**	**2,077**	**38**

** Attendence at any colposcopy clinic, including where no referral is recorded, up to 31 December 2012 † Days between cytology report date and colposcopy date. Excludes 34 women where waiting time between cytology report and colposcopy could not be calculated because the date the cytology result was originally reported to the smear taker was no longer available from the NCSP Register.*

Indicator 7.2 – Timeliness of colposcopic assessment – low grade cytology

Definition	This indicator measures performance against Standard 602. It is still under development.
Target	95% of women who have persistent low-grade abnormalities or a low-grade abnormality and positive HPV test, must receive colposcopy within 26 weeks of the colposcopy unit accepting the referral from the smear taker.

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

- visibility of the squamo-columnar junction
- presence or absence of a visible lesion
- colposcopic opinion regarding the nature of the abnormality
- recommended management and follow-up
- timeframe recommended for follow-up
- all of the above items 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) and first of the items in iv) can be assessed using data in the NCSP Register, and are reported on below. Item iii) and second half of item iv) cannot be assessed using data from the NCSP-R as the current colposcopy report form does not include this information.

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 all items, 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 14,494 colposcopy visits within the current monitoring period recorded on the NCSP Register. Documentation relating to these visits was analysed (Table 60).

Nationally, the visibility of the squamocolumnar junction was documented for 98.1% of visits; the presence or absence of a lesion was documented for 100.0% of visits; an opinion regarding the lesion grade was documented for 93.3% of visits where the presence of a lesion could not be ruled out. Additionally in the current monitoring report, documentation of the type and timeframe recommended for follow-up was examined. The type of follow-up was documented for 99.1% of visits and the timeframe for follow-up was documented for 98.1% of visits. All of these items (where relevant) were documented for 92.6% of visits. The colposcopic appearance was reported to be abnormal in 54.7% of colpscopies, and inconclusive in 3.9% of colposcopies (Table 61).

Documentation varied by DHB, as shown in Figure 45 and Table 60. Documentation of visibility of the squamocolumnar junction, varied from 94.9% (Mid Central) to 99.4% (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 78.8% (Taranaki) to 99.2% (Tairawhiti). Recording of the recommended type of follow-up ranged from 96.5% (Nelson Marlborough) to 100% (Hutt Valley, Otago, South Canterbury, Waikatao, Wairarapa, Waitemata, West Caost and Whanganui) and recording of the recommended timeframe for follow-up ranged from 92.1% (Southland) to 100% (Hutt Valley, Wairarapa and Whanganui). Overall completion rates ranged from 81.9% (Taranaki) to 97.3% (Wairarapa)(Figure 46). Abnormal colposcopic appearance ranged from 36.6% of colposcopies (Northland) to 69.6% of colposcopies (Tairawhiti). Inconclusive colposcopic appearance ranged from 0.6% of colposcopies (Tairawhiti) to 10.8% of colposcopies (Taranaki) (Table 61).

Colposcopies performed in private practice accounted for 15.3% of all colposcopies recorded on the NCSP Register in New Zealand in the current monitoring period. The percentage of colposcopies where items were completed was similar in private practice and public clinics for visibility of the squamocolumnar junction (98.3% private practice; 98.1% public clinics) and presence or absence of a lesion (100% in both private and public). Recording of the opinion regarding the abnormality grade (only assessed if colposcopic appearance was recorded as abnormal or inconclusive) was lower in private practice (91.2%) compared to public clinics overall (93.7%). Recording of recommended follow-up was also lower in private practice, including both the type of follow-up (97.1% private practice; 99.5% public clinics) and the recommended timeframe (94.4% private practice; 98.8% public clinics). Overall completion was also lower in private practice (88.4%) compared to public clinics overall (93.3%) (Table 60). Abnormal colposcopic appearance was reported somewhat less often in private practice (50.6%) compared to in public clinics (55.4%), while inconclusive colposcopic appearance was reported somewhat more often in private practice (4.9%)

than in public clinics (3.7%) (Table 61**Error! Not a valid result for table.**).

Trends

Trends are not reported for the items relating to recommended follow-up (type and timeframe), as these are being included for the first time in the current monitoring report.

Documentation for comparable colposcopy visit items has increased somewhat compared to that in the previous reporting period, where there had been a drop. In this report, visibility of the squamocolumnar junction was documented for 98.1% of visits, compared to 97.6% in the previous report. The presence or absence of a lesion was documented for all visits in both this and the previous report. An opinion regarding the lesion grade was documented for 93.3% of visits where the presence of a lesion could not be ruled out in the current report, compared to 92.7% in the previous report. All items (where relevant) were documented for 92.6% of visits in the current report, compared to 93.6% in the previous report, however the current report includes two additional items which must be reported on in order for all items to have been reported on (recommended type and timeframe for follow-up), and so this measure is not directly comparable between the two reports. Longer term trends in the completion of all required fields are shown in Figure 46.

This broad trend was mirrored across most DHBs, although documentation completion did decrease in some cases. Recording of an opinion regarding the lesion grade (where relevant) decreased in Hutt Valley, Lakes, Mid Central, Northland, Southland and Whanganui. Completion of all items increased in Capital and Coast, South Canterbury, Waikato and Wairarapa, even though the number of required items has increased since the previous report.

The broad differences between private clinics and public clinics overall are also very similar to those observed in the previous report.

The number of colposcopies recorded on the NCSP Register increased by 4.0% but larger increases were seen in some DHBs, for example Southland (52%), Whanganui (33%), Capital and Coast (28%) and Mid Central (25%). It is possible that these may represent more complete reporting of colposcopies rather than a true increase in the number of colposcopies performed, but it is not possible to ascertain this directly from the data. In contrast, there was an apparent decrease in colposcopies recorded in several DHBs, with the largest decreases observed in Auckland (33%), Taranaki (15%) and Otago (14%). Trends in the number of colposcopies recorded on the NCSP Register are shown in Figure 47.

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 July 2013.

Some items in the draft 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 http://www.nsu.govt.nz/health-professionals/1060.aspx). When data required to report on the updated standard is available on the NCSP Register, it will be included in these monitoring reports.

Figure 45 – Completion of colposcopic assessment fields, by DHB

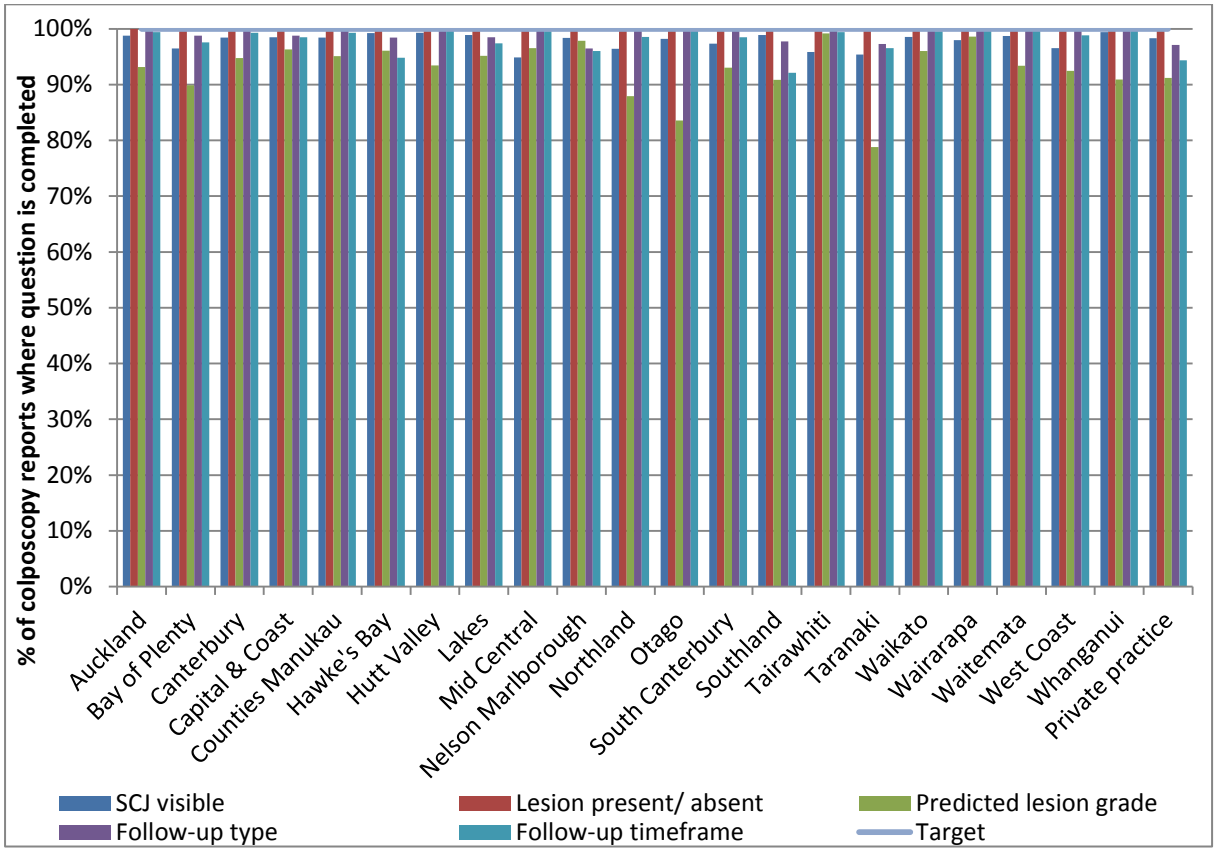
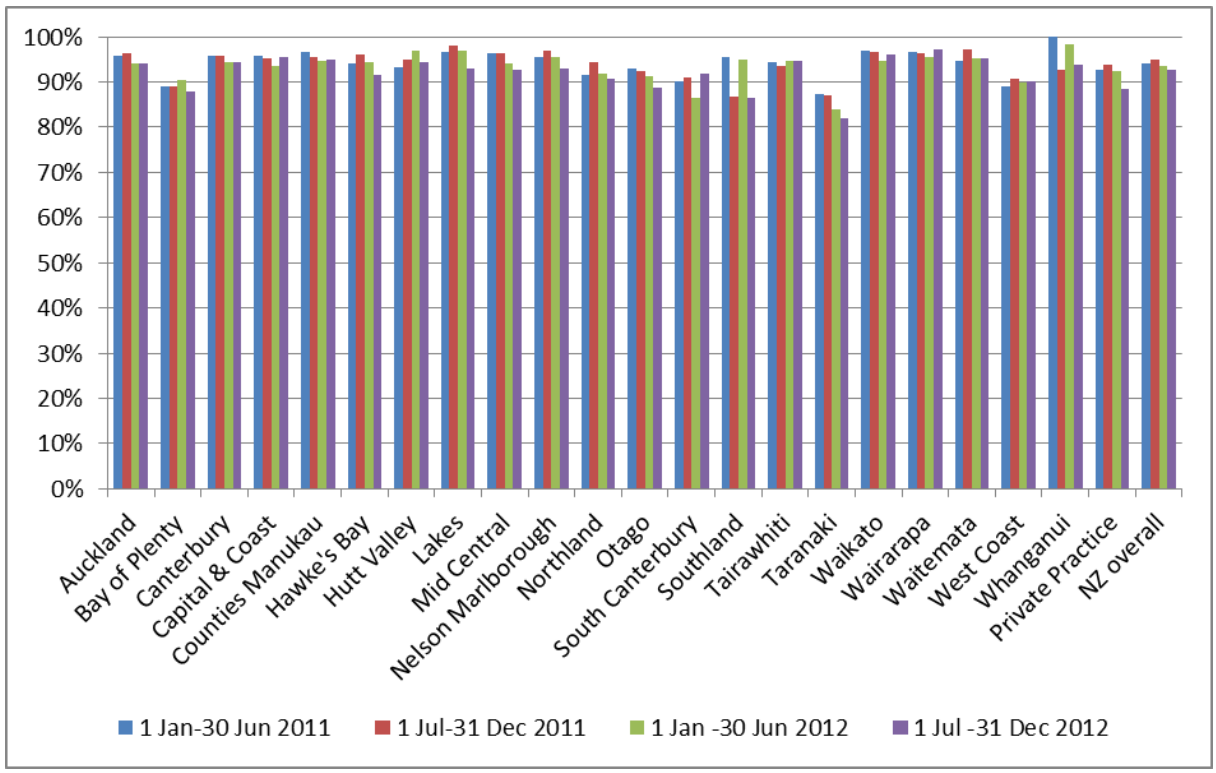
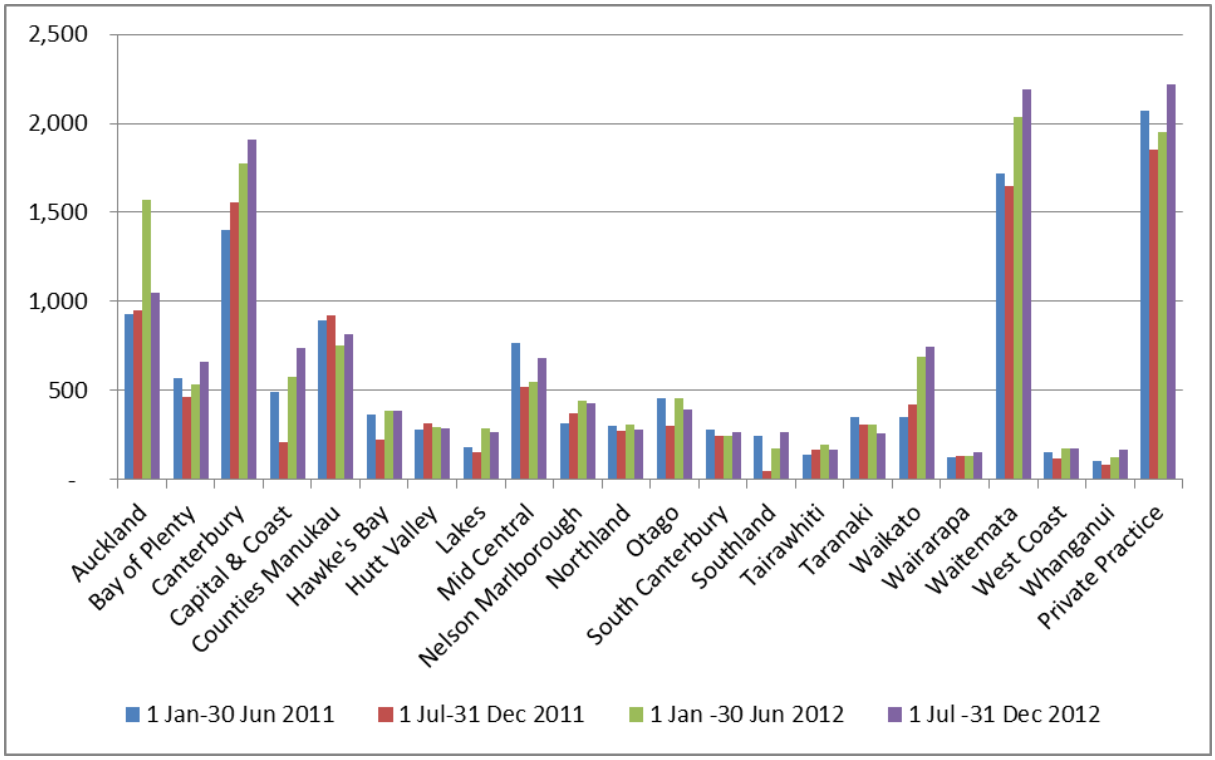


Figure 46 – Trends in the completion of all required colposcopic assessment fields, by DHB



Note: Definition of 'all fields completed' changed from 1 July 2012 as two additional fields were required (follow-up type and timeframe)

Figure 47 – Trends in the number of colposcopies recorded on the NCSP Register, by DHB



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 8 weeks of histological confirmation. Histological HSIL is defined as CIN2, CIN3, CIN2/3 or HSIL not otherwise specified (SNOMED codes M67017, M74007, M74008,M80102, M80702). Histological LSIL is not routinely treated however treatment of LSIL is included in this report for descriptive purposes and to examine the appropriateness of treatment. This report describes the 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, M74006). Note that as histological LSIL is not routinely treated (consistent with 2008 NCSP *Guidelines for Cervical Screening in New Zealand*), treatment of histological LSIL will not be compared against a target. It appears in this report for descriptive purposes only. 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 2012). 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
Current Situation	There were 2,755 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 2012). Of these women, 795 women (28.9%) were treated within eight weeks of HSIL being histologically confirmed. The proportion of women treated within eight weeks varied widely by DHB, from 14.6 % (Waitemata) to 61.8 % (West Coast). No DHB met the target of 90% of women treated within eight weeks of histological confirmation of HSIL (Figure 48, Table 28). There were 2,136 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 2012). Treatment for histological LSIL is not routinely recommended in the 2008 NCSP *Guidelines for Cervical Screening in New*

Zealand[16], and so timeliness of treatment is not compared to a target for LSIL. However for descriptive purposes, follow-up treatment records were retrieved for the 2,136 women with histological LSIL. Of these women, 175 women (8.2%) were subsequently treated (within 26 weeks of LSIL being histologically confirmed). The proportion of women subsequently treated varied widely by DHB, from 0% (Northland, Tairawhiti, Wairarapa, Whanganui) to 18.2% (South Canterbury) (Table 28).

Trends

Nationally, the proportion of women with histological HSIL who are treated within eight weeks of histological confirmation has increased, from 25.6% in the previous reporting period, to 28.9% in the current reporting period.

The proportion of women with histological LSIL who were subsequently treated (within 26 weeks of LSIL being histologically confirmed) is similar in the current report (8.2%) and the previous report (8.3%).

Timeliness of treatment improved in almost all DHBs. Timeliness of treatment decreased in Hutt Valley, South Canterbury, Waikato, Waitemata and Whanganui, however with the exception of Waitemata this follows an improvement in timeliness of treatment for these DHBs in Report 37. Timeliness of treatment also decreased for women's whose HSIL histology sample was collected in a private clinic.

Comments

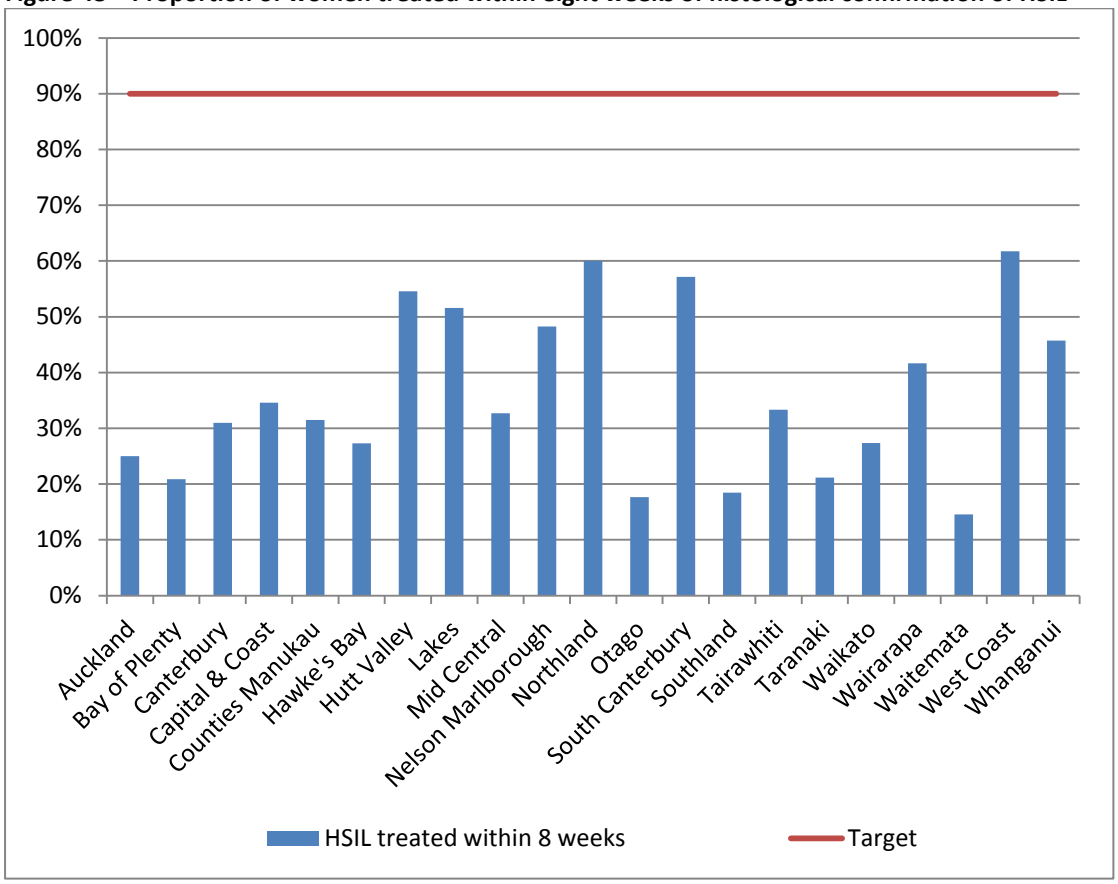
Whether or not treatment has occurred is determined for this indicator via colposcopy data in the NCSP Register. Colposcopy visit details are recorded on colposcopy visit forms, and records of these forms are uploaded onto the NCSP Register, however, it is possible that colposcopy data on the NCSP Register may be incomplete. If so, there may be cases where treatment occurred, but this has not been recorded on the NCSP Register. Therefore the results for this indicator may underestimate timeliness of treatment in cases where colposcopy data are incomplete. 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. The data used in this analysis was extracted from the NCSP Register in July 2013. An exploratory analysis was performed by attempting to match histology samples labelled as coming from treatment biospies in the period 1 January to 30 June 2012 with a corresponding colposcopy visit, in order to ascertain whether there was a record of treatment on the colposcopy form. In this exploratory analysis, there were 2,483 histology samples recorded on the NCSP Register as originating from treatment biopsies, however a corresponding colposcopy visit was recorded for only 1,067 (43%) of these, and treatment was recorded in the colposcopy visit in 914 cases (37%). This suggests that colposcopy data are incomplete, and that treatments are currently under-reported. This incomplete recording of treatment potentially affects the results for treatments for both HSIL and LSIL.

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. Note, however, that any treatment visits which are recorded are included here, regardless of where they occurred.

The updated 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. When this "decision to treat date" information is available, it will be used to calculate timeliness of treatment.

Figure 48 – 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.

Table 28 – 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)	*2,343*	*712*	*30.4*	*1,614*	*158*	*9.8*
Auckland	164	41	25.0	158	19	12.0
Bay of Plenty	134	28	20.9	102	7	6.9
Canterbury	439	136	31.0	386	31	8.0
Capital & Coast	133	46	34.6	118	9	7.6
Counties Manukau	232	73	31.5	267	40	15.0
Hawke's Bay	77	21	27.3	19	1	5.3
Hutt Valley	44	24	54.5	49	5	10.2
Lakes	62	32	51.6	32	4	12.5
Mid Central	107	35	32.7	42	1	2.4
Nelson Marlborough	85	41	48.2	53	3	5.7
Northland	60	36	60.0	2	-	-
Otago	68	12	17.6	38	3	7.9
South Canterbury	21	12	57.1	11	2	18.2
Southland	65	12	18.5	21	2	9.5
Tairawhiti	51	17	33.3	17	-	-
Taranaki	52	11	21.2	38	5	13.2
Waikato	168	46	27.4	63	3	4.8
Wairarapa	24	10	41.7	12	-	-
Waitemata	288	42	14.6	138	22	15.9
West Coast	34	21	61.8	36	1	2.8
Whanganui	35	16	45.7	12	-	-
Private Practice	*412*	*83*	*20.1*	*522*	*17*	*3.3*
Total	**2,755**	**795**	**28.9**	**2,136**	**175**	**8.2**

** CIN1, CIN not otherwise specified (SNOMED codes M67015, M67016, M74000, 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 only. † 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 histology sample was collected.*

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, CIN3, AIS or glandular dysplasia), 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.

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 should have a colposcopy and smear within the six- to 12-month period post treatment 90% or more of women treated for CIN should be discharged back to the smear taker as appropriate.
Current Situation	There were 1,468 women treated for high grade lesions in the six-month period from 1 July-31 December 2011. These women were followed up for twelve months from the date of their treatment visit. ***Follow-up post treatment*** There were 873 women (59.5%) with a follow-up colposcopy, and 865 women (58.9%) with both a follow-up colposcopy and a cytology sample in the nine month period after their treatment visit. Figure 49 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 62). The number of women with colposcopy only and no record of a cytology sample in the timeframe was at most two (Waitemata). The percentage of women treated for high grade lesions with a record of colposcopy and cytology within the nine-month period post treatment (58.9%) is below the target value of 90%. One DHB met the target of at least 90% of women receiving cytology and colposcopy within nine months post-treatment (Taranaki; Figure 49, Table 62). 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 16.7% (Southland) to 95.5% (Taranaki) (Figure 49, Table 62). ***Women discharged appropriately*** In total, 874 women (67.7% of those treated) were eligible to be discharged by 12 months after their treatment visit, and 731 of these women (83.6%) were discharged within 12 months of treatment (Table 62). Figure 50 shows how these percentages vary by DHB. The percentage of women eligible for discharge who were discharged within 12 months of treatment ranged from 25.0% (South Canterbury) to 100.0% (Bay of Plenty, Hutt Valley, Lakes)(Table 62). In some cases, the number of women eligible for discharge was small, so these results should be interpreted with caution (less than 10 women in Southland and Tairawhiti). Ten DHBs met the target of discharging 90% of women where appropriate within 12 months (Bay of Plenty, Hawke's Bay, Hutt Valley, Lakes, Northland, Otago, Southland, Waikato, Wairarapa and Whanganui). In total, 824 women were discharged within 12 months of being treated for a high grade lesion (56.1% of all women treated). There were 175 women (11.9%) who were discharged less than six months after their treatment visit.

Trends	The definitions used for follow-up have changed in this report, in order to reflect the updated colposcopy standard, and so are not all comparable to follow-up in previous reports. The proportion of women discharged appropriately to their smear taker by 12 months has increased slightly overall (from 79% to 84%). The number of DHBs meeting the target of 90% has also increased (from six to ten). Note that in many DHBs, the numbers of women treated is small, and so results are based on a small number of women (20 women or less recorded on NCSP Register for South Canterbury, Southland, Wairarapa, West Coast and Whanganui).
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 September 2012. The target that 90% or more of women treated for CIN 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 the guidelines themselves do not provide explicit guidance for when discharge back to the smear taker is appropriate. In some circumstances, women may be treated within one DHB, but referred to another DHB for follow-up. This information is not always recorded in the NCSP Register however, and for clarity in this report, women remain assigned to the DHB where their treatment was performed. However, this measure does take into account all follow-up visits which women attend, regardless of the DHB in which they may occur.

Figure 49 – Percentage of women treated with colposcopy, and both colposcopy and cytology, within nine months post-treatment

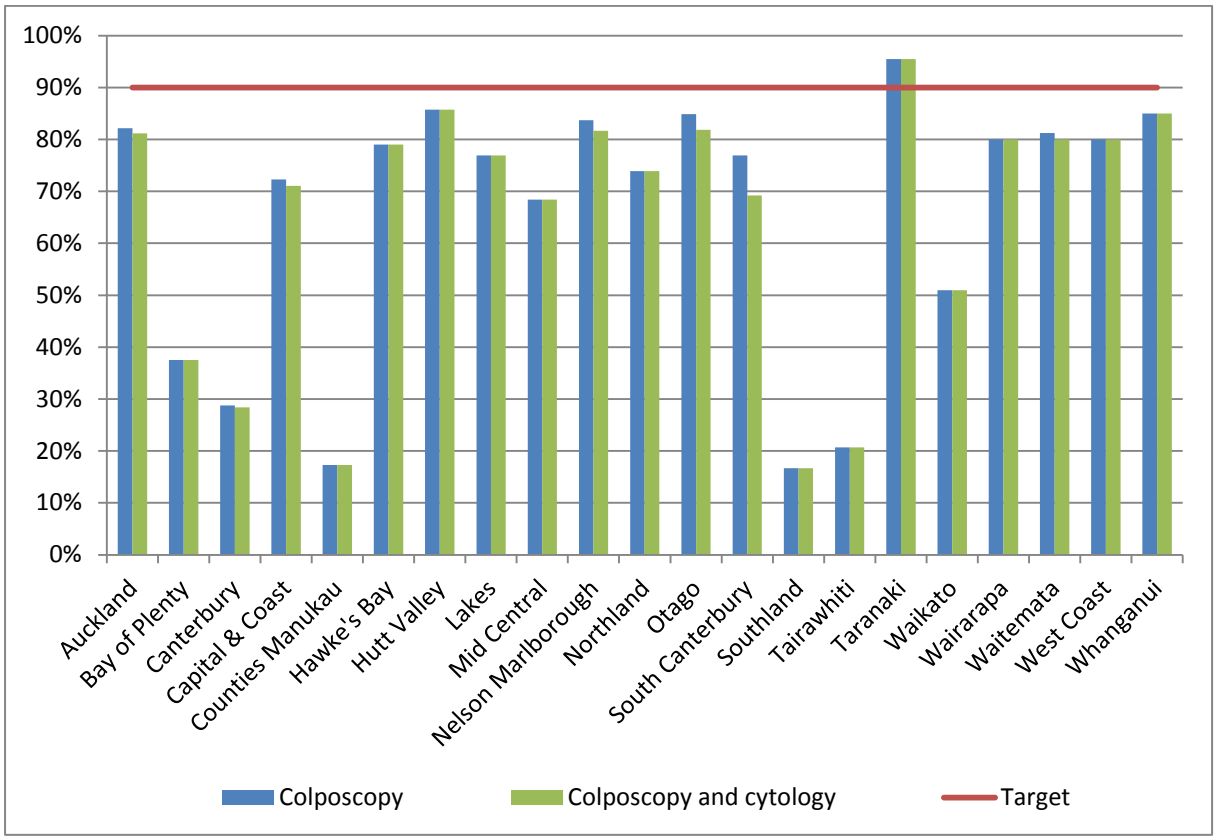
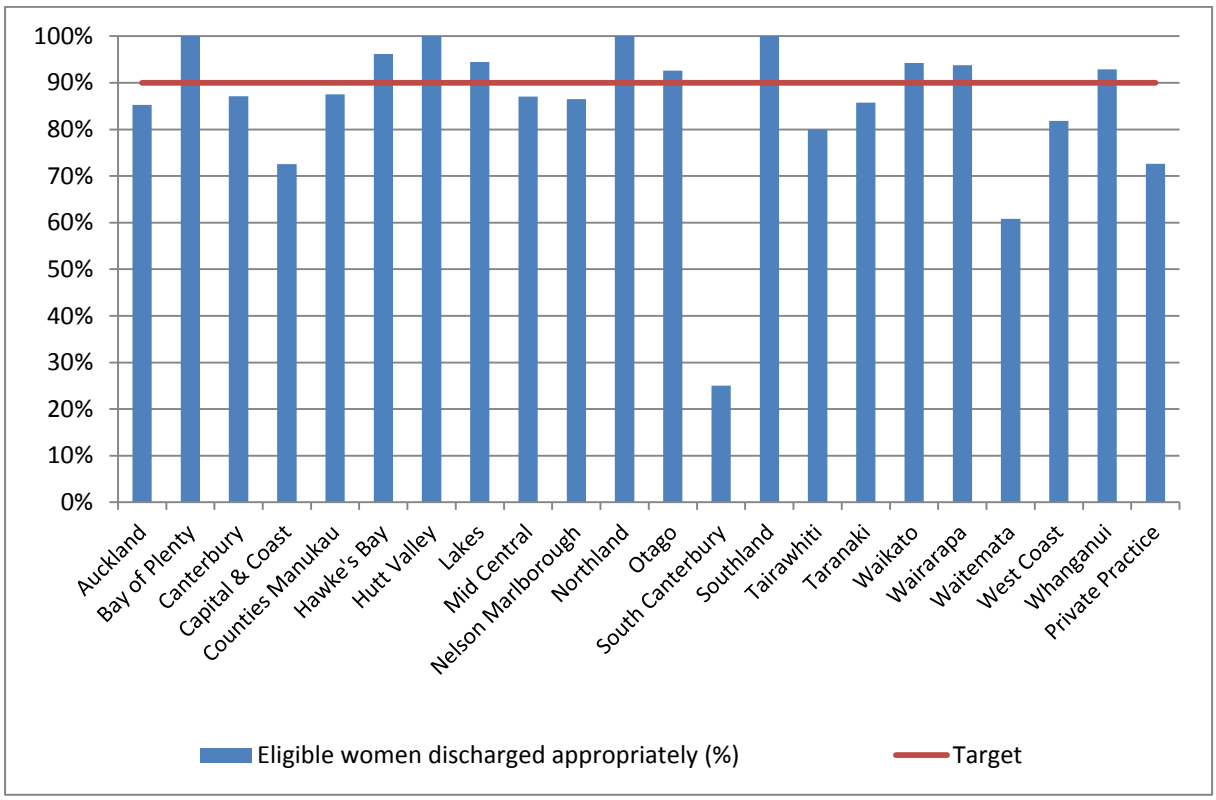


Figure 50 – Percentage of women discharged appropriately within 12 months of treatment



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)

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

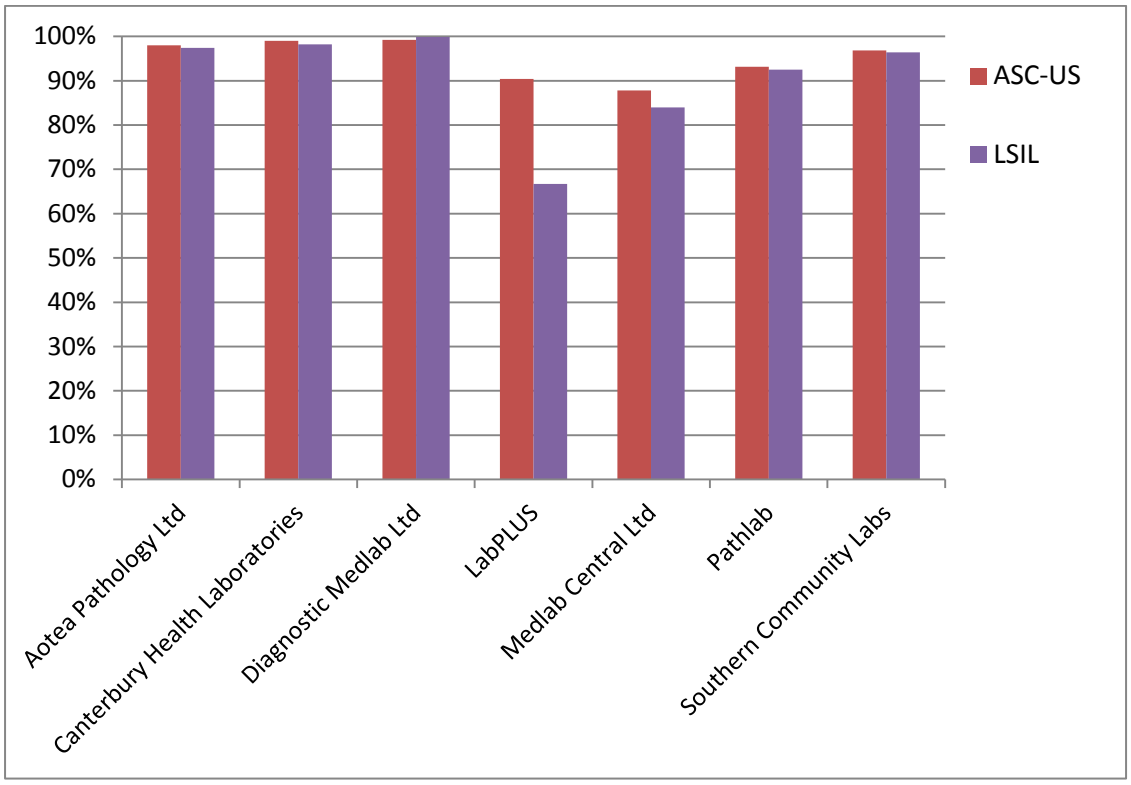
Indicator 8.1 – Triage of low grade cytology

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 positive HPV triage result, as a proportion of women with a valid HPV test (by age group, and cytology laboratory) 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). In some cases, the laboratory performing the cytology differs from that performing the HPV test. Measures are based on the laboratory which performed the cytology. 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 1,123 women aged less than 30 years and 1,924 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 2,494 women aged less than 30 years and 1,603 women aged 30 years or more. 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 an HPV triage test following ASC-US or LSIL cytology. Among these eligible women, 95.9% of women aged 30 years or more with an ASC-US cytology result, and 95.9% of women aged 30 years or more with an LSIL

	cytology result are recorded as having a subsequent HPV test (Table 64, Table 65). These proportions ranged 87.8% (Medlab Central Ltd) to 99.2% (Diagnostic Medlab Ltd) for ASC-US cytology results and from 66.7% (LabPLUS) to 99.8% (Diagnostic Medlab Ltd) for LSIL cytology results (Figure 51, Table 64, Table 65). 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 2.0% of women aged less than 30 years with ASC-US results, and 0.7% of women aged less than 30 years with LSIL results. These proportions ranged from 0% (Diagnostic Medlab Ltd, LabPLUS) to 3.9% (Aotea Pathology Ltd) for women with ASC-US results, and from 0.2% (Diagnostic Medlab Ltd) to 2.4% (Canterbury Health Laboratories) for women with LSIL results (Figure 52, Table 61, Table 65). Among women aged 30 years or more with valid HPV triage test results, the proportion who were positive for high risk HPV was 23.6% for women with ASC-US results, and 57.3% for women with LSIL results. These proportions varied by laboratory from 12.8% (LabPLUS) to 39.0% (Aotea Pathology Ltd) for women with ASC-US cytology (Figure 53), and from 50.8% (Diagnostic Medlab Limited) to 66.0% (Southern Community Labs) for women with LSIL cytology (Figure 54; excluding LabPLUS due to very small number of samples). The proportion of women whose HPV triage test was positive also varied by age. HPV positivity generally decreased with increasing age (Figure 55, Table 29, Table 23). HPV positivity among women aged 70 years or more with ASCUS cytology appears higher than in some younger women, although these results are based on smaller numbers of women (Table 23).
Trends	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 has increased since the previous report, from 94.8% to 95.9% for women with ASC-US results, and decreased slightly from 96.1% to 95.9% for women with LSIL results. The proportion of women aged less than 30 years with a subsequent HPV test is somewhat higher than that observed in the previous monitoring period for ASCUS (2.0%, compared to 1.4% in the previous report) but somewhat lower for LSIL (0.7%, compared to 0.9% in the previous report). The proportion of women aged 30 years or more who test positive for a high risk HPV type is lower for ASC-US (25.6% in the previous report; 23.6% in the current report), and also lower for LSIL (58.3% in the previous report; 57.3% in the current 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 ever having a previous high grade squamous abnormality (cytological or histological) have a record of a subsequent HPV test (39 women; 1.1%). This is similar to the previous report (40 women; 1.0%). It is uncertain whether these HPV tests

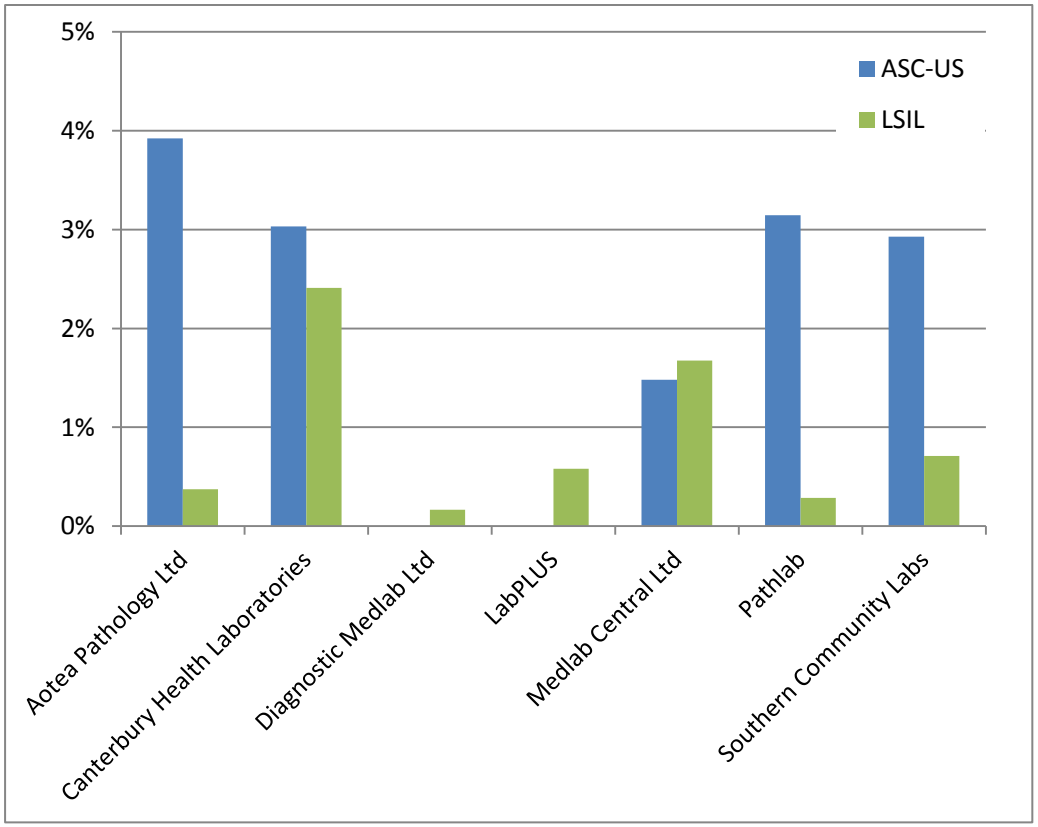
were performed for the purpose of triage, or for other reasons. In this report, we excluded women aged less than 30 years from this indicator if they had ever had a previous high grade squamous abnormality (either ASC-H/ HSIL cytology, or CIN2/3 histology). This was done in order to avoid potential inadvertent inclusion in this group women being tested for HPV 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.[17, 18] 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 have any recent abnormalities (past five years, any abnormality grade) or if they have ever had a high grade squamous abnormality recorded on the NCSP Register.

Figure 51 – 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 52 – 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 53 - Proportion of HPV triage tests which are positive following ASC-US cytology (women aged 30 years or more) , by cytology laboratory

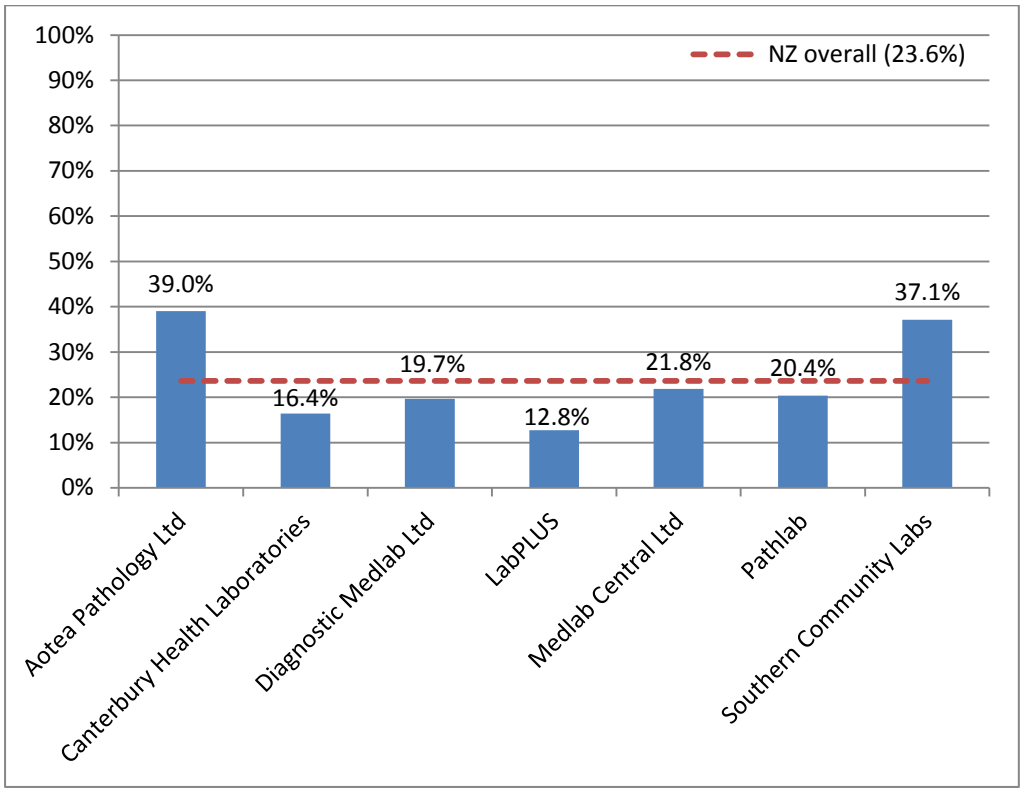
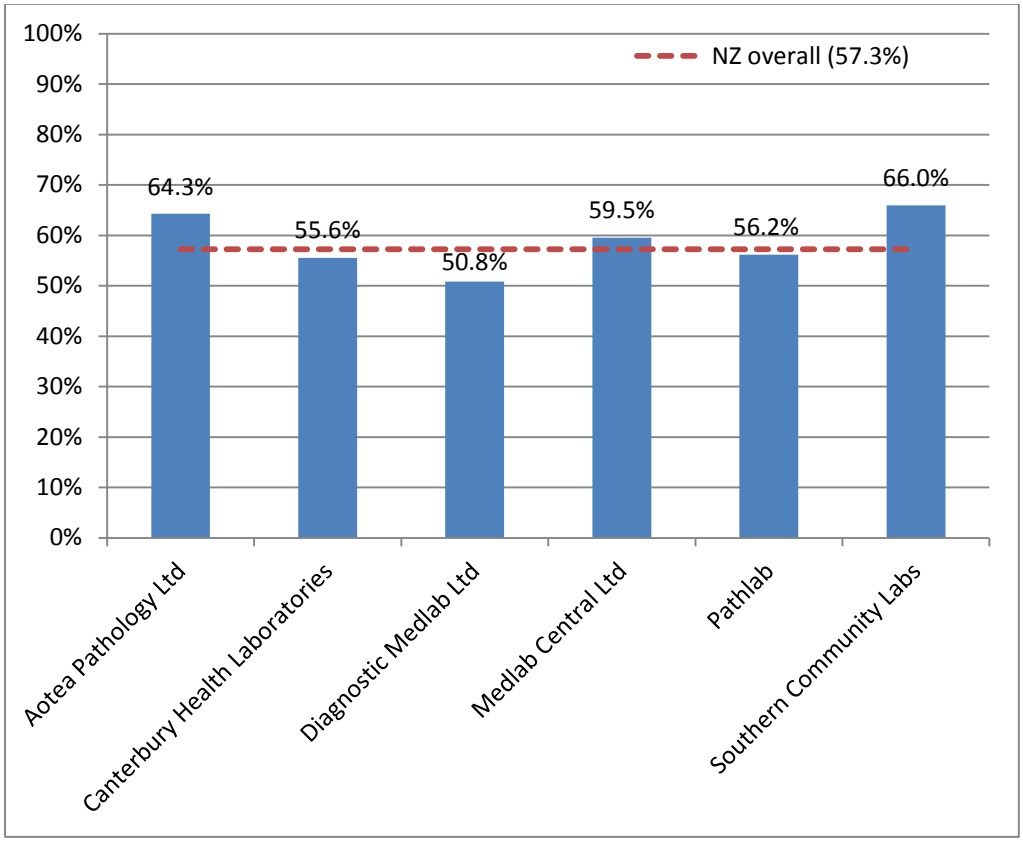
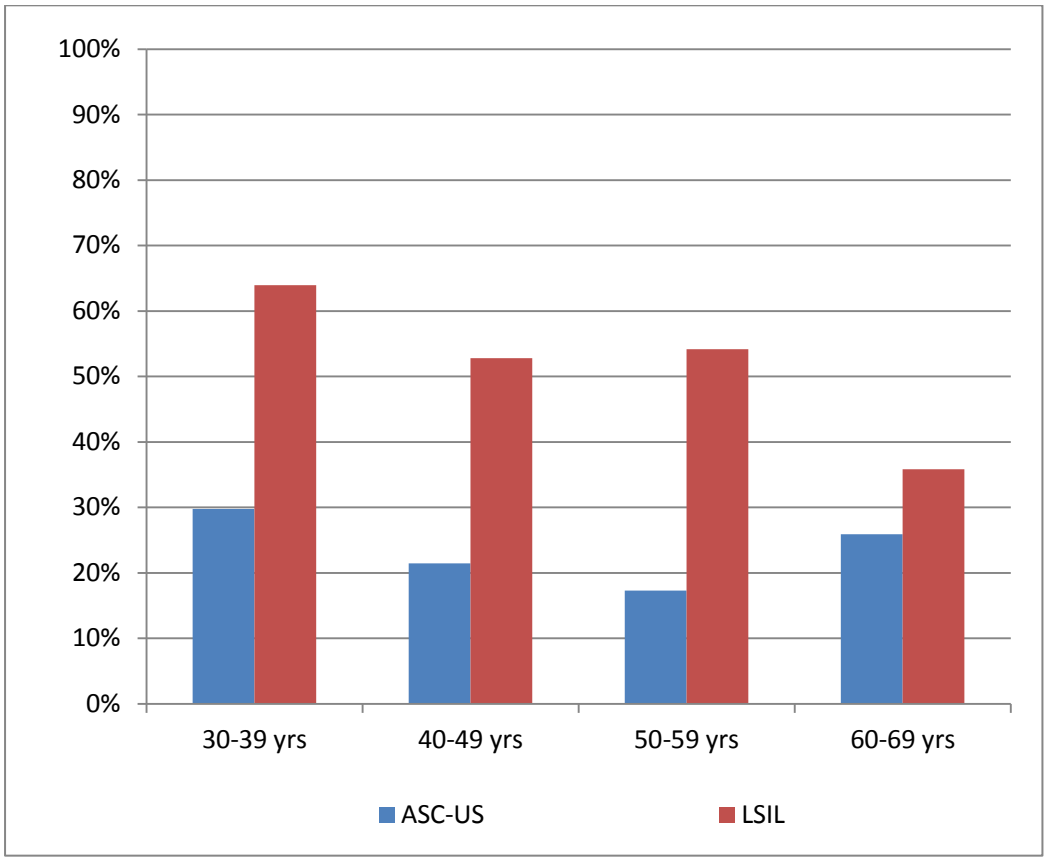


Figure 54 - Proportion of HPV triage tests which are positive following LSIL cytology (women aged 30 years or more) , by cytology laboratory



Excludes LabPLUS, due the very small number of LSIL triage tests performed (N=6).

Figure 55 – 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 29 - 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	%
Aotea Pathology Ltd	6	146	6	100.0	26	51.0	17	33.3	11	31.4	2	33.3	1	33.3
Canterbury Health Laboratories	2	201	1	50.0	19	25.3	7	9.6	4	9.8	3	27.3	0	0.0
Diagnostic Medlab Ltd	0	655	0	0.0	50	24.8	43	17.9	20	14.3	14	22.6	2	18.2
LabPLUS	0	47	0	0.0	1	6.3	3	13.0	1	50.0	1	25.0	0	0.0
Medlab Central Ltd	2	238	1	50.0	22	28.2	20	21.1	5	12.2	4	19.0	1	33.3
Pathlab	5	285	1	20.0	27	28.1	15	16.9	8	11.9	7	23.3	1	33.3
Southern Community Labs	7	272	4	57.1	32	41.6	39	39.0	18	29.5	11	39.3	1	16.7
TOTAL	**22**	**1,844**	**13**	**59.1**	**177**	**29.7**	**144**	**21.5**	**67**	**17.3**	**42**	**25.9**	**6**	**20.7**

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 30 - 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)											
	<30 yrs*	30+yrs	<30 yrs*		30-39yrs		40-49yrs		50-59yrs		60-69yrs		70+yrs	
	N	N	N	%	N	%	N	%	N	%	N	%	N	%
Aotea Pathology Ltd	1	112	0	0.0	35	70.0	25	69.4	12	52.2	0	0.0	0	0.0
Canterbury Health Laboratories	4	108	3	75.0	29	61.7	19	52.8	11	50.0	1	33.3	0	0.0
Diagnostic Medlab Ltd	1	592	1	100.0	156	56.3	84	43.5	48	52.7	12	41.4	1	50.0
LabPLUS	1	6	1	100.0	1	50.0	0	0.0	1	50.0	0	0.0	0	0.0
Medlab Central Ltd	4	131	3	75.0	41	63.1	27	60.0	8	47.1	2	50.0	0	0.0
Pathlab	1	210	0	0.0	50	64.9	48	59.3	17	45.9	3	21.4	0	0.0
Southern Community Labs	5	376	3	60.0	126	75.4	63	56.8	52	62.7	6	42.9	1	100.0
TOTAL	**17**	**1,535**	**11**	**64.7**	**438**	**63.9**	**266**	**52.8**	**149**	**54.2**	**24**	**35.8**	**2**	**50.0**

*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)*

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:

- 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 (ASC-US or LSIL) cytology was no more than six months prior to the HPV test)*
- 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)*
- Historical *(high grade squamous cytology (ASC-H/ HSIL) or histology (CIN2/3) more than three years prior to the HPV test sample)*
- Taken at colposcopy (*HPV sample collected on the same date as a colposcopy visit or a histology sample in the same woman)*
- 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 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 disclosed in this report, but the indicator remains under development.

The following measures are also reported on:

- Invalid HPV tests, as a proportion of all HPV tests, by HPV test technology

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 20,655 samples received by laboratories for HPV testing within the current reporting period. These are reported on further in Table 66 to Table 71.

Virtually all (98.9%) samples for HPV testing were from women aged 20-69 years. The large majority of women (88.8%) were aged 30 years or more (Figure 56, Table 70).

The number of samples received by laboratories for HPV testing ranged from 857 (LabPLUS; 4.1% of all HPV tests) to 7,477 (Southern Community Labs; 36.2% of all HPV tests) (Figure 57, Table 66).

Figure 58 and Table 66 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 9.5% across New Zealand – that is, on average 9.5% of cytology tests are associated with an HPV test. This ratio varied by laboratory from 6.6% (Diagnostic Medlab Ltd; ie fewer HPV tests processed in relation to cytology tests processed) to 20.2% (Canterbury Health Laboratories; ie more HPV tests processed in relation to cytology tests processed).

The proportion of tests or more whose HPV test results were invalid was 0.1% (Table 67). The proportion was also 0.1% or less for all HPV test technologies (Table 68).

The distribution of HPV tests by ethnicity is shown in Table 69.

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 3,453 (16.7%) were for triage of low grade cytology in women aged 30 years or more; 1,601 (7.8%) were for post-treatment management for women treated in the past four years; 8,861 (42.9%) was for follow-up management of women with high grade squamous cytology or histology more than three years previously (historical testing); and 1,181 (5.7%) were on samples collected at a colposcopy visit which did not fit into a previous category (possibly for resolution of discordant results). There were 5,559 (26.9%) HPV tests which did not fit into any of the previously described categories (Figure 59).

Further breakdowns of HPV tests by purpose are presented by age (Figure 60) and laboratory (Figure 61).

There were variations in HPV test purpose by age (Figure 60, Table 70). HPV triage (by the definition used here, and consistent with NCSP Guidelines) only occurred in women aged 30 years or more. In women aged less than 30 years, a comparatively larger proportion were taken as post-treatment follow-up management or taken at colposcopy for another reason. The proportion of

tests which did not fit into the prescribed categories, and were therefore classified as 'Other', broadly decreased with age up to age 30 years, then increased with increasing age from age 30 years.

HPV test purpose also varied by laboratory (Figure 61, Table 71). Among tests for which the purpose could be determined, the most common categories were historical testing (at Aotea Pathology Ltd, Canterbury Health Laboratories, Medlab Central, Pathlab, Southern Community Laboratories), HPV triage (Diagnostic Medlab Ltd), and post-treatment management (LabPLUS). In all labs, however, tests for which the purpose was unclear were quite common, varying from 20.8% at Pathlab to 42.5% at LabPLUS. The proportion of tests performed for HPV triage ranged from 6.1% (LabPLUS) to 36.9% (Diagnostic Medlab Ltd). The proportion of tests performed for post-treatment management varied from 3.5% (Diagnostic Medlab Ltd) to 21.4% (LabPLUS), while the proportion performed to follow up women with historical high grade squamous abnormalities varied from 13.0% (LabPLUS) to 52.9% (Aotea Pathology Ltd).

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 women and European/ Other women. HPV triage was the most common reason among Pacific and Asian women (Table 69).

Tests in the "Other" category were further explored. A proportion (7.7%) 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. A further 12.3% 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, not high grade, or recent high grade cytology (only). A larger proportion (56.2%) of the "Other" 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 suggested prior high grade cytology result (42.9%), but some records suggested prior high grade histology result (13.3%). 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 a recent abnormality and triage was not required (2.0%), or a record suggesting a previous low grade cytology result not explicitly recorded on the NCSP Register (3.4%). After this exploration, there remained 955 tests (17.2% of "Other" tests; 4.6% 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. This analysis was done only for HPV tests where a

	specific colposcopy record was found (N=960). Nationally, more of the HPV tests which were taken at colposcopy came from public facilities (795 tests; 83%) than from private facilities (165 tests; 17%), however this was consistent with the greater number of colposcopies performed in public clinics (Table 72). 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/ 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 6.6% of colposcopies. This value ranged from 0.1% (Capital and Coast) to 26.8% (Lakes), and was 6.5% overall across all public DHB clinics (Figure 62, Table 72). In private practice, this rate was 7.4%. No HPV tests were taken at colposcopy in Hutt Valley, Northland, Tairawhiti, Taranaki or Whanganui.
Trends	Slightly more samples were received at laboratories for HPV testing in the current reporting period (20,655) than in the previous monitoring report (20,330). The proportion of samples for HPV testing which related to woman aged less than 30 years is somewhat higher in the current reporting period (11.2%) to what it was in the previous period (10.0%). Variations in the purpose of the HPV test by age, ethnicity and laboratory, and broadly similar to that in previoius 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 58, Table 66). Other reasons for variations 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 outside New Zealand, prior to 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). These data were not available at the time of previous analyses, however previous investigations into a subset of HPV tests which fell into the 'Other' category in the Report 36 time period found a similar proportion (approximately 55%) which were associated with a synopsis reflecting a previous high grade abnormality (cytological or histogical) as that reported here (56.2%).

In previous reports, measures around invalid HPV test results were included with Indicator 8.1 – Triage of low grade cytology, as this was the first indicator relating to HPV testing included in these monitoring reports (from Report 33). These measures have been moved to Indicator 8.2 in the current report, so that invalid HPV tests are calculated for all HPV tests in the period, not only those which appear to have been performed for triage of low grade cytology.

Figure 56 - Volume of HPV test samples received by laboratories during the monitoring period, by age

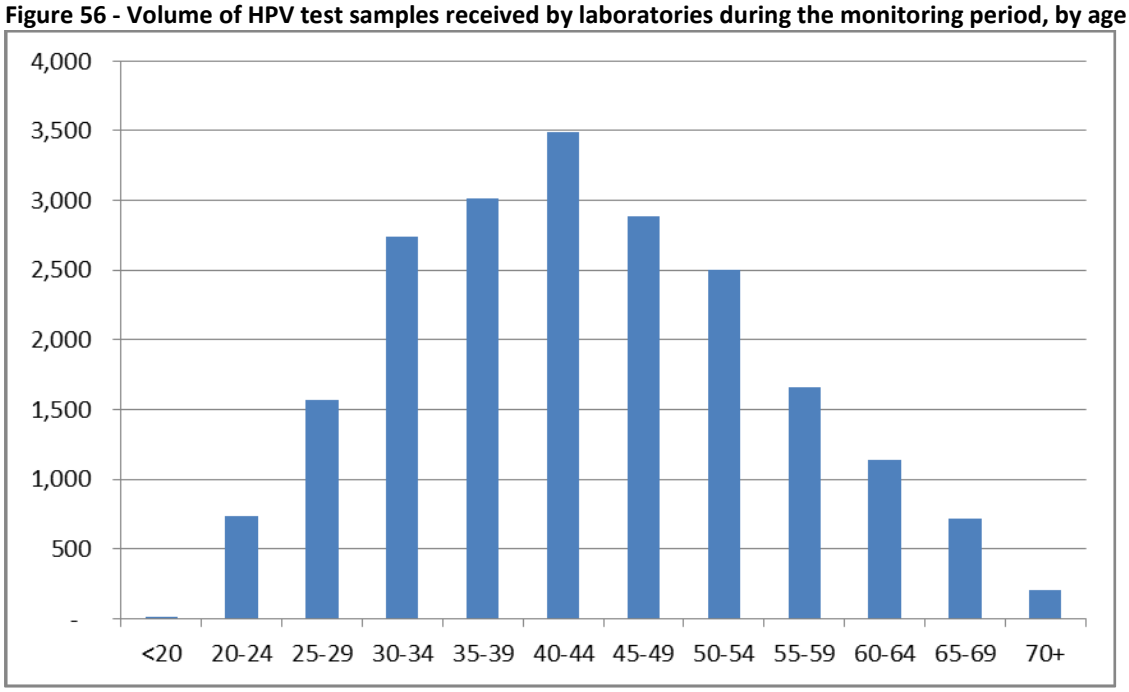


Figure 57 - Volume of HPV test samples received by laboratories during the monitoring period, by laboratory

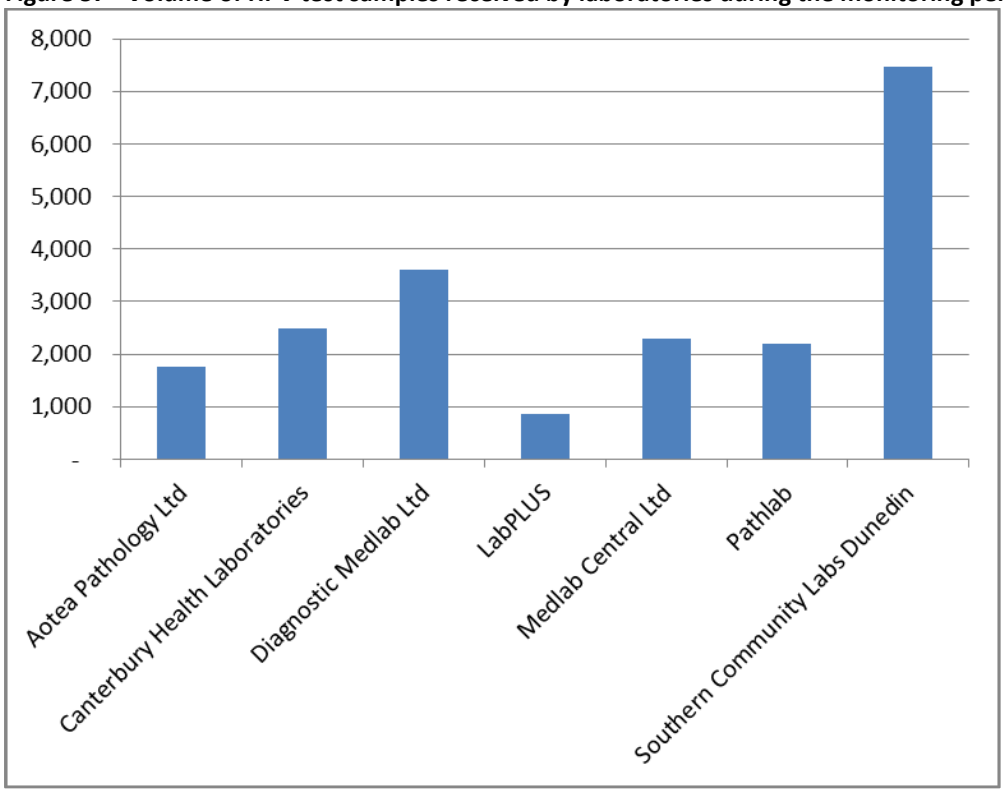
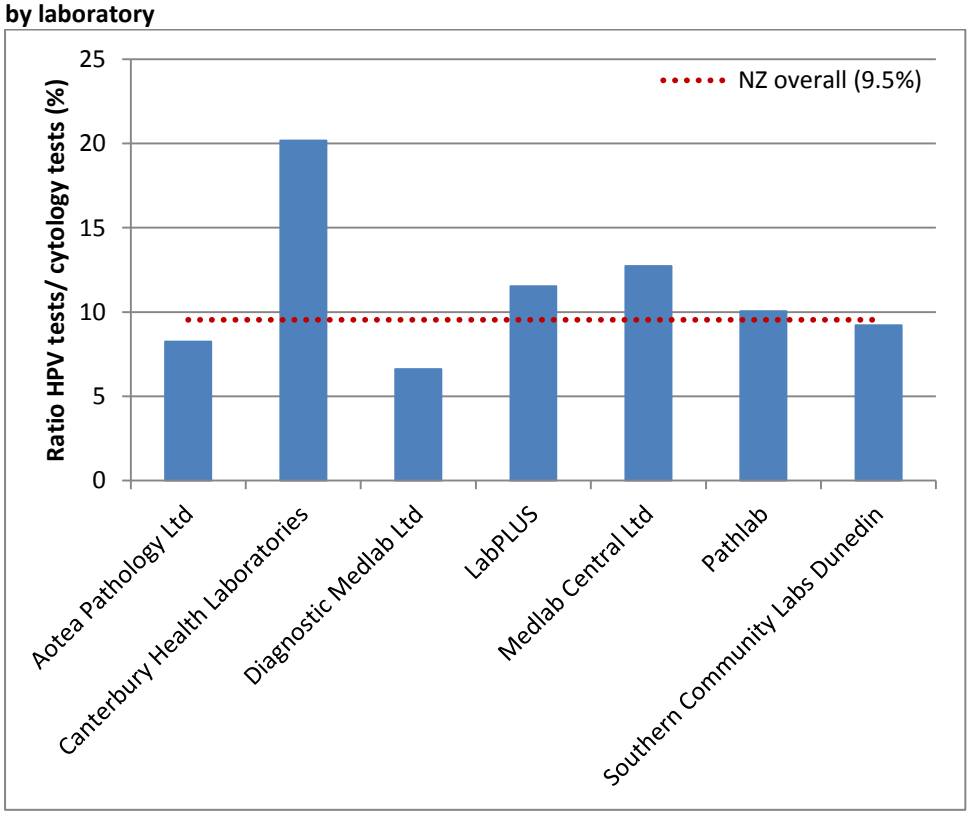


Figure 58 –HPV test samples as a percentage of cytology test samples received during the monitoring period, by laboratory



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

Figure 59 - Volume of HPV test samples received during the monitoring period, by purpose

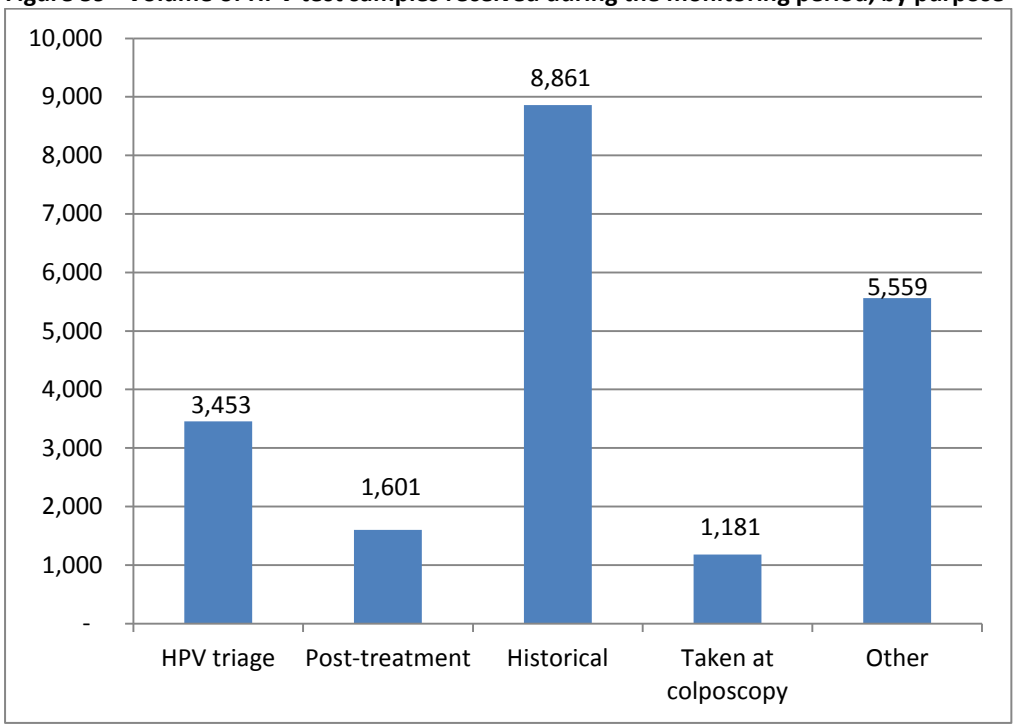


Figure 60- HPV test samples received during the monitoring period, by purpose and age

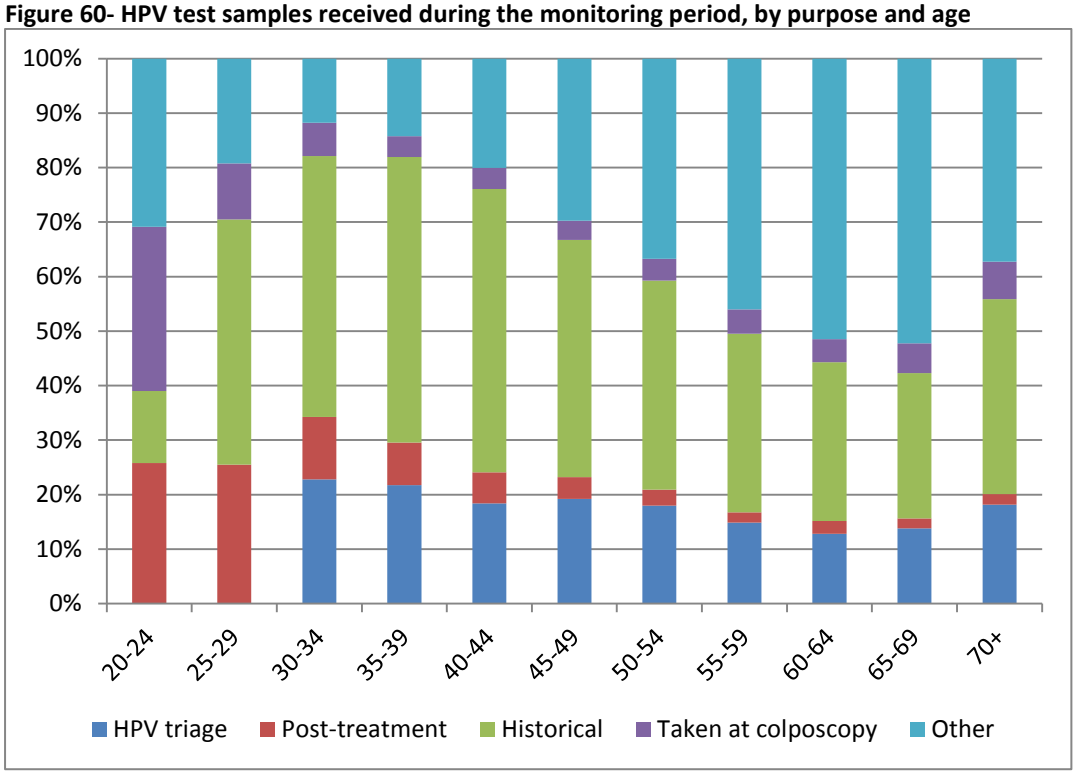


Figure 61- HPV test samples received during the monitoring period, by purpose and laboratory

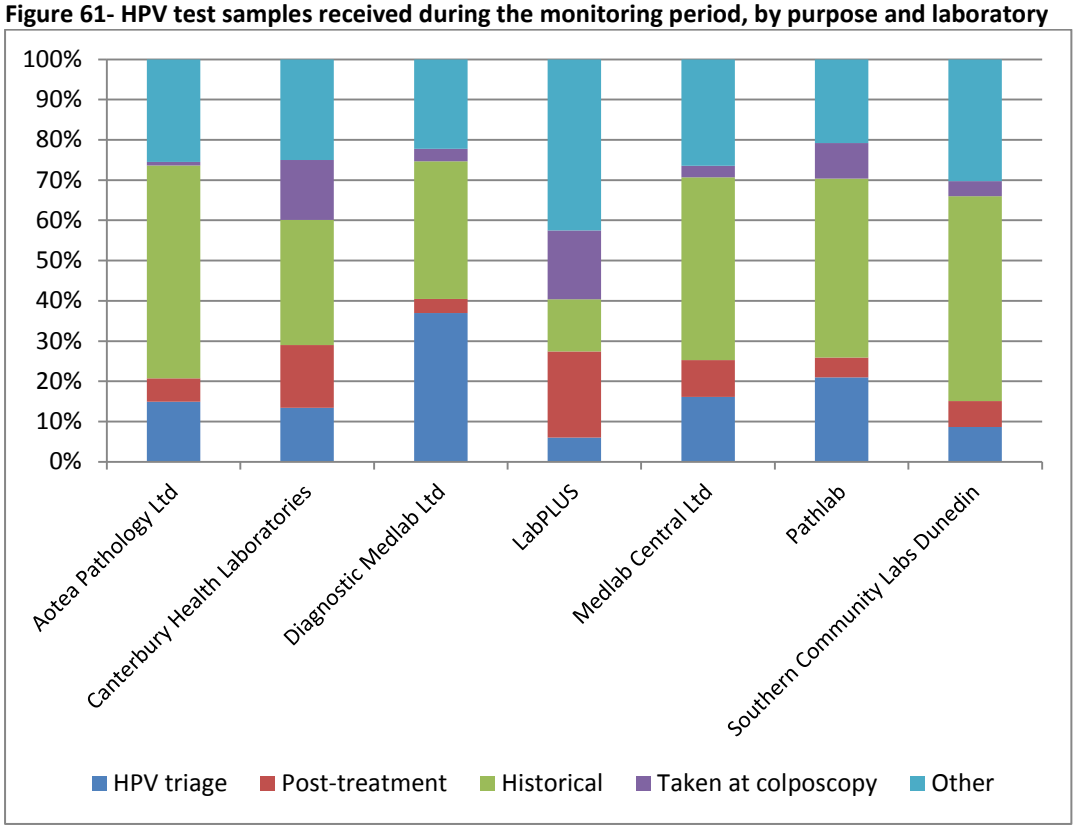
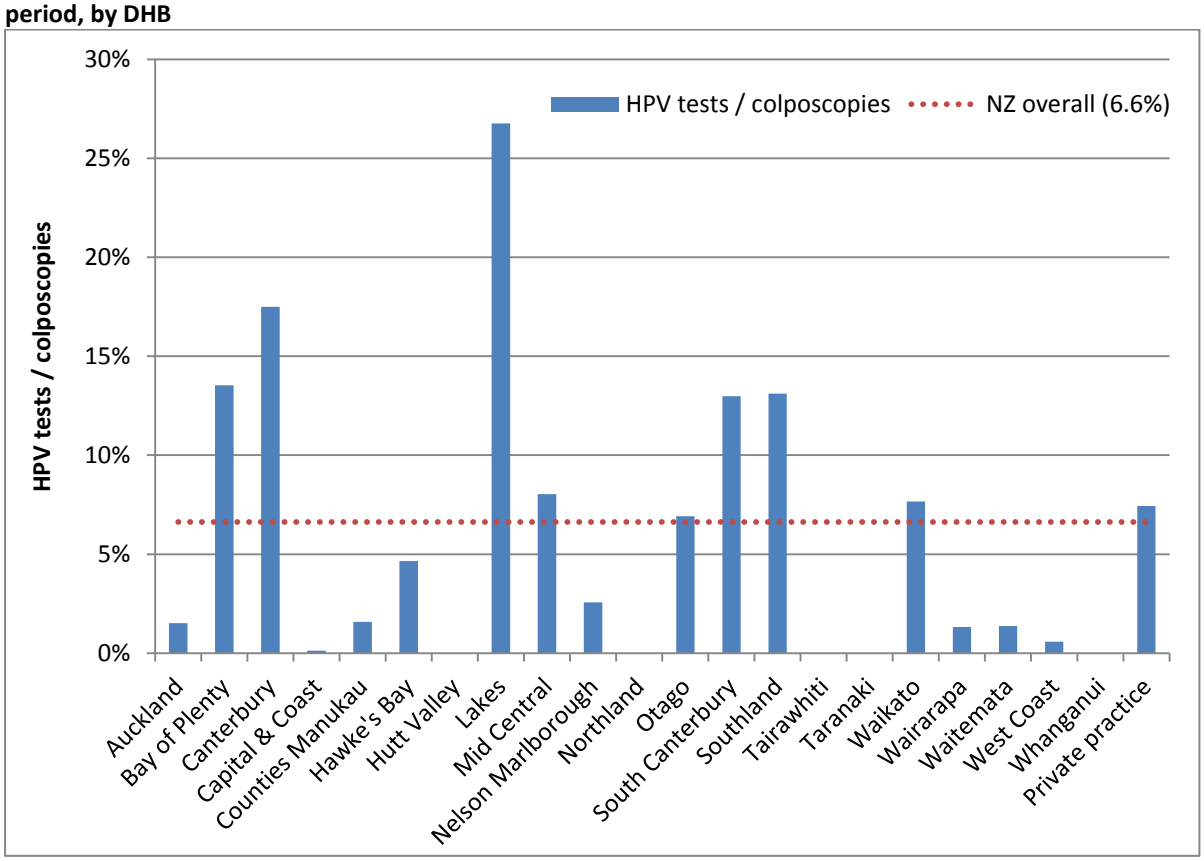


Figure 62- HPV test samples collected at colposcopy, in relation to total colposcopies performed in the period, by DHB



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 Hutt Valley, Northland, Tairawhiti, Taranaki or Whanganui.

Appendix A – Additional data

Indicator 1 - Coverage

Table 31 - Coverage by age (women 20-69 years screened in the three years prior to 31 December 2012, hysterectomy adjusted)

Age (years)	Hysterectomy-adjusted population	Women screened in the last 3 years	
		N	%
20-24	159,175	87,377	54.9
25-29	149,330	99,305	66.5
30-34	144,717	102,861	71.1
35-39	141,633	110,262	77.9
40-44	154,114	124,331	80.7
45-49	144,900	117,930	81.4
50-54	134,782	109,517	81.3
55-59	107,509	86,593	80.5
60-64	89,132	69,485	78.0
65-69	70,998	51,477	72.5
20-69	1,296,290	959,138	74.0

Table 32 - Coverage by DHB (women 25-69 years screened in the three years prior to 31 December 2012, hysterectomy adjusted)

DHB	Hysterectomy-adjusted population	Women screened in the last 3 years	
		N	%
Auckland	131,245	100,743	76.8
Bay of Plenty	53,608	42,518	79.3
Canterbury	131,628	97,222	73.9
Capital & Coast	81,114	65,354	80.6
Counties Manukau	126,870	88,008	69.4
Hawke's Bay	38,372	31,470	82.0
Hutt Valley	36,463	28,922	79.3
Lakes	25,769	20,529	79.7
Mid Central	40,902	30,578	74.8
Nelson Marlborough	35,949	29,230	81.3
Northland	39,170	29,731	75.9
Otago	46,926	37,509	79.9
South Canterbury	13,612	10,492	77.1
Southland	29,028	22,853	78.7
Tairawhiti	11,363	8,982	79.0
Taranaki	26,871	23,083	85.9
Waikato	90,432	69,693	77.1
Wairarapa	9,805	8,155	83.2
Waitemata	144,719	108,809	75.2
West Coast	8,245	6,340	76.9
Whanganui	15,025	11,501	76.5
Total	**1,137,115**	**871,722**	**76.7**

Excludes 58 women for whom DHB could not be determined

Table 33 - Coverage by ethnicity (women 25-69 years screened in the three years prior to 31 December 2012, hysterectomy adjusted)

Ethnicity	Hysterectomy adjusted population (ages 25-69 years)	Women screened in the last 3 years (ages 25-69 years)	
		N	%
Māori	144,832	90,317	62.4
Pacific	63,540	43,922	69.1
Asian	143,493	91,159	63.5
European/Other	785,250	646,363	82.3
Total	**1,137,115**	**871,761**	**76.7**

Table 34 - Coverage by age (women 20-69 years screened in the five years prior to 31 December 2012, hysterectomy adjusted)

Age (years)	Hysterectomy-adjusted population	Number of women screened in last 5 years	% screened in the last 5 years
20-24	159,175	93,791	58.9
25-29	149,330	121,328	81.2
30-34	144,717	124,395	86.0
35-39	141,633	130,750	92.3
40-44	154,114	146,306	94.9
45-49	144,900	138,081	95.3
50-54	134,782	127,906	94.9
55-59	107,509	100,171	93.2
60-64	89,132	79,892	89.6
65-69	70,998	59,806	84.2
Total	**1,296,290**	**1,122,426**	**86.6**

Table 35 - Coverage by DHB (women aged 25-69 years screened in the five years prior to 31 December 2012, hysterectomy adjusted)

DHB	Hysterectomy adjusted population	Women screened in the last 5 years	
		N	%
Auckland	131,245	119,408	91.0
Bay of Plenty	53,608	50,086	93.4
Canterbury	131,628	115,582	87.8
Capital & Coast	81,114	76,689	94.5
Counties Manukau	126,870	106,764	84.2
Hawke's Bay	38,372	36,337	94.7
Hutt Valley	36,463	34,234	93.9
Lakes	25,769	24,133	93.7
Mid Central	40,902	35,960	87.9
Nelson Marlborough	35,949	33,796	94.0
Northland	39,170	35,284	90.1
Otago	46,926	43,339	92.4
South Canterbury	13,612	12,378	90.9
Southland	29,028	26,766	92.2
Tairawhiti	11,363	10,611	93.4
Taranaki	26,871	26,432	98.4
Waikato	90,432	81,618	90.3
Wairarapa	9,805	9,532	97.2
Waitemata	144,719	128,878	89.1
West Coast	8,245	7,227	87.7
Whanganui	15,025	13,528	90.0
Total	**1,137,115**	**1,028,582**	**90.5**

Excludes 53 women for whom DHB could not be determined

Table 36 - Coverage by ethnicity – women aged 25-69 years screened in the five years prior to 31 December 2012, hysterectomy adjusted

Ethnicity	Hysterectomy adjusted population	Women screened in the last 5 years	
	N	N	%
Māori	144,832	110,910	76.6
Pacific	63,540	55,038	86.6
Asian	143,493	107,582	75.0
European/Other	785,250	755,105	96.2
TOTAL	**1,137,115**	**1,028,635**	**90.5**

Table 37 - Women under 20 years of age, and aged 15-19 years, screened in the three years prior to 31 December 2012, by DHB.

DHB	Number of women screened in last 3 years		% of population aged 15-19 years screened
	aged 10 - 19 years	aged 15-19 years	
Auckland	1,229	1,224	8.4
Bay of Plenty	446	443	6.4
Canterbury	1,848	1,845	10.4
Capital & Coast	767	766	8.0
Counties Manukau	1,323	1,315	6.6
Hawke's Bay	511	511	9.8
Hutt Valley	363	361	7.2
Lakes	234	234	6.6
Mid Central	346	345	5.4
Nelson Marlborough	307	307	8.0
Northland	317	314	6.2
Otago	566	565	7.3
South Canterbury	166	165	10.2
Southland	253	253	7.9
Tairawhiti	141	141	8.5
Taranaki	246	245	7.1
Waikato	748	746	5.7
Wairarapa	117	117	10.0
Waitemata	1,712	1,706	8.6
West Coast	112	112	11.4
Whanganui	142	142	6.7
Total	**11,894**	**11,857**	**7.8**

Excludes three women who were recorded as aged less than ten years at the time of their cervical sample

Table 38 – Women screened under 20 years of age, as a proportion of all women screened in the three years to 31 December 2012, by DHB

DHB	Number of women screened in last 3 years		Proportion of women screened who were aged < 20 years (%)
	aged < 20 years	all ages	
Auckland	1,229	112,644	1.1
Bay of Plenty	446	47,910	0.9
Canterbury	1,848	110,539	1.7
Capital & Coast	767	74,788	1.0
Counties Manukau	1,323	98,343	1.3
Hawke's Bay	511	35,470	1.4
Hutt Valley	363	32,455	1.1
Lakes	234	23,046	1.0
Mid Central	346	35,165	1.0
Nelson Marlborough	307	32,433	0.9
Northland	317	33,279	1.0
Otago	566	43,934	1.3
South Canterbury	166	11,820	1.4
Southland	253	25,743	1.0
Tairawhiti	141	10,292	1.4
Taranaki	246	25,930	0.9
Waikato	748	79,584	0.9
Wairarapa	117	9,162	1.3
Waitemata	1,712	121,431	1.4
West Coast	112	7,144	1.6
Whanganui	142	13,016	1.1
Total	**11,894**	**984,128**	**1.2**

Excludes three females whose recorded ages were less than ten years at the time of their cervical samples

Table 39 – Women screened under 20 years of age, and women aged 18-19 years when they were screened, in the three years to 31 December 2012, by DHB

DHB	Number of women screened in last 3 years		
	aged 10-19 years	aged 18-19 years	% aged 18-19 years
Auckland	1,229	1,021	83.1
Bay of Plenty	446	381	85.4
Canterbury	1,848	1,537	83.2
Capital & Coast	767	702	91.5
Counties Manukau	1,323	1,075	81.3
Hawke's Bay	511	436	85.3
Hutt Valley	363	307	84.6
Lakes	234	197	84.2
Mid Central	346	309	89.3
Nelson Marlborough	307	260	84.7
Northland	317	259	81.7
Otago	566	489	86.4
South Canterbury	166	125	75.3
Southland	253	223	88.1
Tairawhiti	141	124	87.9
Taranaki	246	207	84.1
Waikato	748	667	89.2
Wairarapa	117	98	83.8
Waitemata	1,712	1,375	80.3
West Coast	112	96	85.7
Whanganui	142	129	90.8
Total	**11,894**	**10,017**	**84.2**

Table 40 - Women aged 25-69 years screened in the three years to 31 December 2012, as a percentage of i) the hysterectomy-adjustment NZ female population and ii) the total NZ female population, by DHB

DHB	Women screened in the last 3 years (hysterectomy-adjusted)	Women screened in the last 3 years (no hysterectomy adjustment)
Auckland	74.9	69.1
Bay of Plenty	78.4	68.8
Canterbury	73.4	64.7
Capital & Coast	79.3	71.9
Counties Manukau	66.9	61.5
Hawke's Bay	81.0	71.2
Hutt Valley	78.0	69.8
Lakes	78.2	69.6
Mid Central	74.0	65.2
Nelson Marlborough	81.2	70.2
Northland	74.7	65.4
Otago	79.7	69.7
South Canterbury	77.1	66.2
Southland	78.4	69.2
Tairawhiti	77.1	69.2
Taranaki	85.4	74.7
Waikato	76.1	67.4
Wairarapa	82.7	71.2
Waitemata	73.9	66.3
West Coast	76.7	66.6
Whanganui	75.7	66.1

Table 41 - 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 2011	To 31 Dec 2011	To 30 Jun 2012	To 31 Dec 2012
Auckland	73.2%	73.4%	76.5%	76.8%
Bay of Plenty	77.1%	77.5%	79.6%	79.3%
Canterbury	73.7%	73.8%	75.2%	73.9%
Capital & Coast	79.3%	80.3%	81.4%	80.6%
Counties Manukau	67.3%	66.7%	69.6%	69.4%
Hawke's Bay	78.2%	78.9%	80.4%	82.0%
Hutt Valley	76.9%	78.1%	80.0%	79.3%
Lakes	77.0%	77.4%	79.8%	79.7%
Mid Central	74.5%	74.4%	75.5%	74.8%
Nelson Marlborough	78.6%	79.1%	80.7%	81.3%
Northland	75.2%	74.8%	76.4%	75.9%
Otago	78.3%	78.9%	79.4%	79.9%
South Canterbury	74.1%	76.1%	79.4%	77.1%
Southland	75.5%	76.6%	76.9%	78.7%
Tairawhiti	74.8%	74.8%	79.3%	79.0%
Taranaki	82.9%	83.9%	84.8%	85.9%
Waikato	75.0%	75.4%	77.1%	77.1%
Wairarapa	81.2%	82.2%	82.4%	83.2%
Waitemata	74.0%	73.6%	75.5%	75.2%
West Coast	68.5%	70.3%	74.3%	76.9%
Whanganui	74.8%	76.3%	77.3%	76.5%
Total	**74.7%**	**75.0%**	**76.8%**	**76.7%**

Note: Coverage calculated using population projection as at the end date shown, based on 2006 Census data.

Table 42 - 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 2011	To 31 Dec 2011	To 30 Jun 2012	To 31 Dec 2012
20-24	54.1%	54.4%	54.7%	54.9%
25-29	65.3%	65.7%	67.5%	66.5%
30-34	71.2%	70.7%	71.7%	71.1%
35-39	76.3%	76.2%	78.6%	77.9%
40-44	78.8%	78.9%	80.5%	80.7%
45-49	80.2%	80.6%	81.1%	81.4%
50-54	80.8%	81.4%	81.1%	81.3%
55-59	78.7%	79.1%	80.1%	80.5%
60-64	73.1%	73.7%	77.2%	78.0%
65-69	63.6%	64.4%	72.2%	72.5%

Note: Coverage calculated using population projection at the end date shown, based on 2006 Census data.

Table 43 - 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 2011	To 31 Dec 2011	To 30 Jun 2012	To 31 Dec 2012
Māori	56.8%	57.9%	61.6%	62.4%
Pacific	60.0%	61.7%	67.3%	69.1%
Asian	53.6%	56.0%	60.1%	63.5%
European/ Other	83.3%	83.0%	83.5%	82.3%
Total	**74.7%**	**75.0%**	**76.8%**	**76.7%**

Note: Coverage calculated using population projection at the end date shown, based on 2006 Census data.

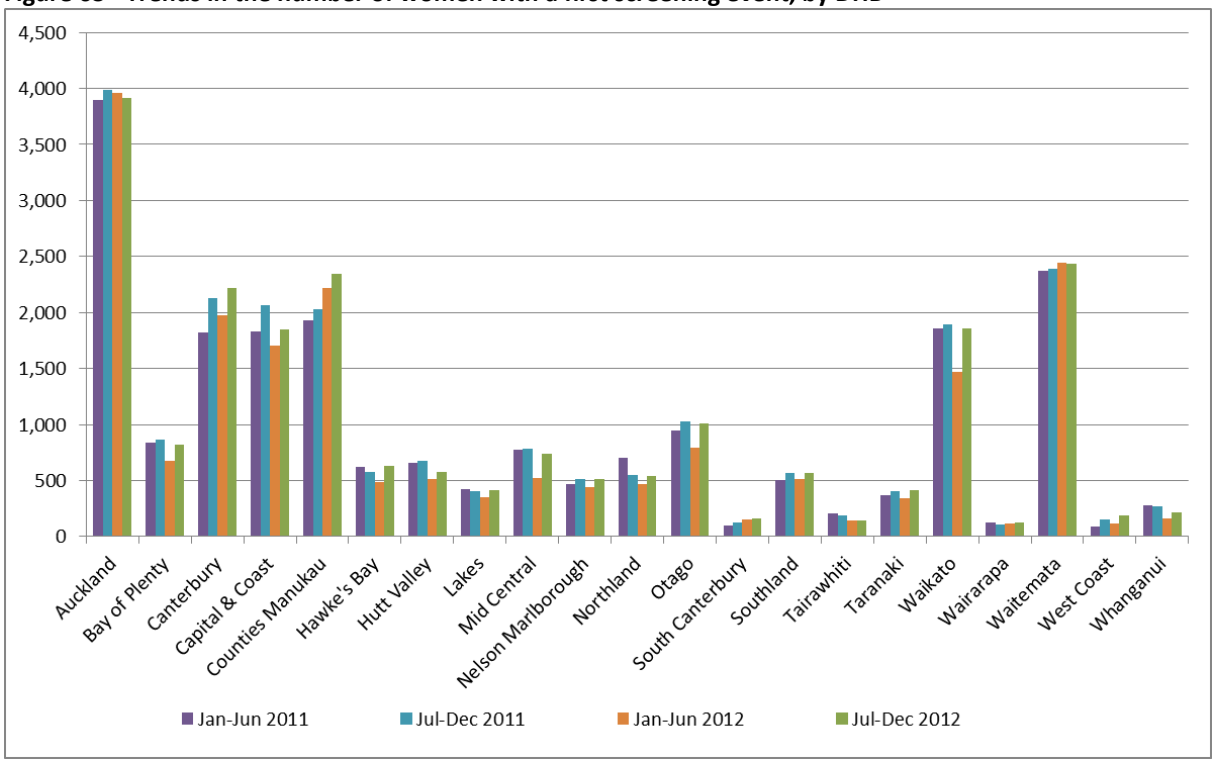
Indicator 2 – First screening events

Table 44 - Age distribution of first screening events for period 1 July – 31 December 2012

Age	Women with first events	% of first events (ages 20-69 yrs) which occurred in that age group
20-24	10,622	49.0
25-29	3,424	15.8
30-34	2,308	10.6
35-39	1,403	6.5
40-44	1,115	5.1
45-49	813	3.8
50-54	644	3.0
55-59	564	2.6
60-64	452	2.1
65-69	329	1.5
20-69 yrs	**21,674**	**100.0**

Note: Percentage = number of first screens in age group divided by total number of first screens multiplied by 100

Figure 63 - Trends in the number of women with a first screening event, by DHB



Indicator 4 – Early re-screening

Table 45 - Early re-screening by five-year age group, 1 July – 31 December 2012 (cohort method)

Age	Women recommended to return in 3 yrs	Women with >= 1 subsequent test	
		N	%
20-24	1,222	340	27.8
25-29	4,127	919	22.3
30-34	4,355	895	20.6
35-39	5,162	1,122	21.7
40-44	6,027	1,240	20.6
45-49	5,838	1,227	21.0
50-54	5,565	1,137	20.4
55-59	4,348	861	19.8
60-64	3,500	611	17.5
65-69	2,717	379	13.9
Total	**42,861**	**8,731**	**20.4**

Table 46 - Early re-screening by DHB, 1 July – 31 December 2012 (cohort method)

DHB	Women recommended to return in 3 yrs	Women with >= 1 subsequent test	
		N	%
Auckland	4,720	1,251	26.5
Bay of Plenty	2,051	488	23.8
Canterbury	5,269	1,033	19.6
Capital & Coast	3,459	630	18.2
Counties Manukau	3,977	813	20.4
Hawke's Bay	1,461	258	17.7
Hutt Valley	1,297	209	16.1
Lakes	1,057	244	23.1
Mid Central	1,491	186	12.5
Nelson Marlborough	1,540	239	15.5
Northland	1,387	316	22.8
Otago	1,887	291	15.4
South Canterbury	624	115	18.4
Southland	1,137	178	15.7
Tairawhiti	417	77	18.5
Taranaki	1,055	126	11.9
Waikato	3,243	472	14.6
Wairarapa	471	126	26.8
Waitemata	5,437	1,566	28.8
West Coast	309	49	15.9
Whanganui	570	64	11.2
Total	**42,859**	**8,731**	**20.4**

Table 47 - Early re-screening by ethnicity, 1 July – 31 December 2012 (cohort method)

Ethnicity	Women recommended to return in 3 yrs	Women with >= 1 subsequent test	
		N	%
Maori	3,950	762	19.3
Pacific	1,806	294	16.3
Asian	3,890	872	22.4
European/Other	33,215	6,803	20.5
Total	**42,861**	**8,731**	**20.4**

Indicator 5 – Laboratory indicators

Indicator 5.2 – Accuracy of cytology predicting HSIL

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

Laboratory	Histology available		HSIL confirmed by histology		No histology		Total reports
	N	%	N	%	N	%	N
Aotea Pathology Ltd	100	91.7	68	68.0	9	8.3	109
Canterbury Health Laboratories	128	97.7	108	84.4	3	2.3	131
Diagnostic Medlab Ltd	425	92.8	307	72.2	33	7.2	458
LabPLUS	319	93.3	254	79.6	23	6.7	342
Medlab Central Ltd	121	89.0	104	86.0	15	11.0	136
Medlab South Christchurch	88	94.6	68	77.3	5	5.4	93
Pathlab	128	91.4	108	84.4	12	8.6	140
Southern Community Labs Dunedin	400	91.7	337	84.3	36	8.3	436
Total	**1,709**	**92.6**	**1,354**	**79.2**	**136**	**7.4**	**1,845**

Target: 65% - 85%

Table 49 - Positive predictive value of a report of ASC-H cytology by laboratory

Laboratory	Histology available		ASC-H confirmed by histology		No histology		Total reports
	N	%	N	%	N	%	N
Aotea Pathology Ltd	94	83.2	53	56.4	19	16.8	113
Canterbury Health Laboratories	108	86.4	74	68.5	17	13.6	125
Diagnostic Medlab Ltd	251	82.8	78	31.1	52	17.2	303
LabPLUS	354	77.8	120	33.9	101	22.2	455
Medlab Central Ltd	81	68.1	49	60.5	38	31.9	119
Medlab South Christchurch	111	80.4	61	55.0	27	19.6	138
Pathlab	118	79.7	62	52.5	30	20.3	148
Southern Community Labs Dunedin	61	69.3	37	60.7	27	30.7	88
Total	**1,178**	**79.1**	**534**	**45.3**	**311**	**20.9**	**1,489**

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

Laboratory	Histology available		Abnormality confirmed by histology		No histology		Total reports
	N	%	N	%	N	%	N
Aotea Pathology Ltd	194	87.4	121	62.4	28	12.6	222
Canterbury Health Laboratories	236	92.2	182	77.1	20	7.8	256
Diagnostic Medlab Ltd	676	88.8	385	57.0	85	11.2	761
LabPLUS	673	84.4	374	55.6	124	15.6	797
Medlab Central Ltd	202	79.2	153	75.7	53	20.8	255
Medlab South Christchurch	199	86.1	129	64.8	32	13.9	231
Pathlab	246	85.4	170	69.1	42	14.6	288
Southern Community Labs Dunedin	461	88.0	374	81.1	63	12.0	524
Total	**2,887**	**86.6**	**1,888**	**65.4**	**447**	**13.4**	**3,334**

Indicator 5.5 – Laboratory turnaround time

Table 51 - Timeliness of cytology reporting by laboratory, 1 July – 31 December 2012

Laboratory	Laboratory turnaround time - cytology								
	Within 7 days		8-15 days		Total within 15 days		More than 15 days		Total
	N	%	N	%	N	%	N	%	N
Medlab Central Ltd	17,567	82.4	3,444	16.2	21,011	98.6	299	1.4	21,310
Canterbury Health Laboratories	9,832	79.9	2,020	16.4	11,852	96.4	446	3.6	12,298
Diagnostic Medlab Ltd	53,627	98.3	501	0.9	54,128	99.2	414	0.8	54,542
LabPLUS	5,754	77.4	1,581	21.3	7,335	98.6	102	1.4	7,437
Medlab Central Ltd	14,805	82.2	2,635	14.6	17,440	96.8	572	3.2	18,012
Pathlab	20,850	95.9	405	1.9	21,255	97.8	479	2.2	21,734
Southern Community Labs Dunedin	74,201	91.4	5,831	7.2	80,032	98.6	1,149	1.4	81,181
Total	**196,636**	**90.8**	**16,417**	**7.6**	**213,053**	**98.4**	**3,461**	**1.6**	**216,514**

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 52 - Timeliness of histology reporting by laboratory, 1 July – 31 December 2012

Laboratory	Laboratory turnaround time - histology								
	Within 5 days		6-15 days		Total within 15 days		More than 15 days		Total
	N	%	N	%	N	%	N	%	N
Aotea Pathology Ltd	287	74.2	94	24.3	381	98.4	6	1.6	387
Canterbury Health Laboratories	1,636	90.3	141	7.8	1,777	98.1	34	1.9	1,811
Diagnostic Medlab Ltd	1,400	82.5	181	10.7	1,581	93.2	116	6.8	1,697
Hutt Hospital Laboratory	127	43.3	153	52.2	280	95.6	13	4.4	293
LabPLUS	529	54.0	389	39.7	918	93.8	61	6.2	979
Medlab Central Ltd	972	86.1	55	4.9	1,027	91.0	102	9.0	1,129
Medlab South Christchurch	81	100.0	-	0.0	81	100.0	-	0.0	81
Memorial Hospital Hastings Lab	84	84.0	14	14.0	98	98.0	2	2.0	100
Middlemore Hospital Laboratory	888	57.8	481	31.3	1,369	89.1	168	10.9	1,537
Nelson Hospital Laboratory	57	80.3	4	5.6	61	85.9	10	14.1	71
North Shore Hospital Laboratory	1,311	84.2	110	7.1	1,421	91.3	136	8.7	1,557
Northland Pathology Laboratory	235	92.9	16	6.3	251	99.2	2	0.8	253
Pathlab	630	52.3	464	38.5	1,094	90.9	110	9.1	1,204
Southern Community Labs Dunedin	2,488	92.6	186	6.9	2,674	99.6	12	0.4	2,686
Taranaki Medlab	238	99.6	1	0.4	239	100.0	-	0.0	239
Waikato Hospital Laboratory	132	95.7	5	3.6	137	99.3	1	0.7	138
Wellington Hospital Laboratory	239	36.4	379	57.7	618	94.1	39	5.9	657
Total	**11,334**	**76.5**	**2,673**	**18.0**	**14,007**	**94.5**	**812**	**5.5**	**14,819**

Target: 90% within five working days and 100% within a reasonable time period 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 53 – Timeliness of reporting for cytology with associated HPV testing by laboratory, 1 July – 31 December 2012

	Laboratory turnaround time – cytology with HPV triage testing				
	Within 15 days		More than 15 days		Total
Laboratory	**N**	**%**	**N**	**%**	**N**
Aotea Pathology Ltd	239	92.6	19	7.4	258
Canterbury Health Laboratories	277	89.4	33	10.6	310
Diagnostic Medlab Ltd	1,242	99.0	13	1.0	1,255
LabPLUS	49	87.5	7	12.5	56
Medlab Central Ltd	352	94.9	19	5.1	371
Pathlab	477	97.5	12	2.5	489
Southern Community Labs Dunedin	609	97.6	15	2.4	624
Total	**3,245**	**96.5**	**118**	**3.5**	**3,363**

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

Table 54 - 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	3	60.0	54	75.0	74	74.7	46	83.6	35	79.5	26	78.8	16	88.9	11	64.7	7	53.8	7	77.8	6	85.7	1	25.0	286
Bay of Plenty	-	-	23	95.8	18	78.3	19	95.0	13	76.5	11	78.6	3	75.0	8	88.9	5	83.3	3	75.0	2	66.7	1	100.0	106
Canterbury	4	80.0	56	82.4	48	92.3	38	90.5	20	87.0	22	95.7	8	72.7	5	50.0	6	60.0	5	71.4	5	83.3	3	100.0	220
Capital & Coast	-	-	19	86.4	18	78.3	15	93.8	7	77.8	2	66.7	4	100.0	5	62.5	0	0.0	4	80.0	0	0.0	0	0.0	74
Counties Manukau	0	0.0	53	70.7	57	69.5	24	72.7	27	93.1	20	80.0	17	81.0	17	89.5	10	83.3	7	77.8	1	20.0	1	50.0	234
Hawke's Bay	-	-	18	81.8	15	68.2	15	93.8	8	88.9	2	66.7	7	100.0	5	100.0	1	100.0	2	100.0	1	50.0	2	100.0	76
Hutt Valley	1	100.0	10	76.9	13	81.3	9	100.0	6	100.0	8	80.0	2	66.7	3	75.0	2	100.0	1	100.0	-	-	-	-	55
Lakes	-	-	7	77.8	9	75.0	16	94.1	3	75.0	7	77.8	3	75.0	3	60.0	0	0.0	1	100.0	2	50.0	0	0.0	51
Mid Central	-	-	24	88.9	18	78.3	10	83.3	6	85.7	7	87.5	4	100.0	3	100.0	1	33.3	1	50.0	1	100.0	1	100.0	76
Nelson	-	-	15	62.5	18	72.0	11	84.6	9	69.2	7	63.6	-	-	6	100.0	3	42.9	2	100.0	2	66.7	1	100.0	74
Marlborough																									
Northland	-	-	3	50.0	7	70.0	9	90.0	6	75.0	4	100.0	4	100.0	1	33.3	1	100.0	2	66.7	1	100.0	-	-	38
Otago	1	100.0	12	66.7	11	84.6	11	100.0	8	88.9	1	33.3	5	100.0	3	60.0	3	75.0	0	0.0	-	-	2	50.0	57
South Canterbury	1	100.0	4	50.0	3	75.0	2	100.0	7	77.8	1	100.0	1	50.0	1	50.0	1	33.3	-	-	0	0.0	0	0.0	21
Southland	1	100.0	15	78.9	20	100.0	10	100.0	7	100.0	2	100.0	3	100.0	-	-	2	66.7	3	75.0	2	100.0	-	-	65
Tairawhiti	-	-	6	85.7	3	100.0	4	66.7	4	66.7	-	-	1	100.0	-	-	-	-	1	100.0	1	100.0	1	100.0	21
Taranaki	-	-	13	86.7	11	84.6	8	80.0	4	40.0	1	100.0	1	25.0	3	60.0	0	0.0	-	-	0	0.0	0	0.0	41
Waikato	-	-	43	87.8	29	76.3	28	96.6	11	91.7	13	81.3	6	66.7	7	70.0	3	37.5	3	42.9	3	75.0	0	0.0	146
Wairarapa	-	-	3	37.5	9	90.0	2	40.0	4	80.0	-	-	1	100.0	-	-	1	50.0	-	-	0	0.0	0	0.0	20
Waitemata	4	57.1	66	81.5	62	79.5	42	89.4	31	96.9	27	93.1	17	81.0	15	75.0	13	81.3	6	66.7	6	75.0	2	40.0	291
West Coast	-	-	6	75.0	5	100.0	2	100.0	2	100.0	3	100.0	1	100.0	1	50.0	1	100.0	-	-	0	0.0	-	-	21
Whanganui	-	-	8	80.0	7	100.0	2	50.0	1	100.0	1	25.0	1	100.0	0	0.0	0	0.0	-	-	-	-	-	-	20
Total	**15**	**68.2**	**458**	**78.3**	**455**	**78.7**	**323**	**87.5**	**219**	**83.6**	**165**	**81.7**	**105**	**82.0**	**97**	**71.9**	**60**	**61.2**	**48**	**70.6**	**33**	**61.1**	**15**	**45.5**	**1,993**

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

Table 55 - 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	57	79.2	52	94.5	80	80.8	52	94.5	38	86.4	30	90.9	17	94.4	15	88.2	10	76.9	7	77.8	6	85.7	2	50.0	317
Bay of Plenty	23	95.8	19	95.0	21	91.3	19	95.0	14	82.4	14	100.0	3	75.0	8	88.9	5	83.3	4	100.0	5	83.3	1	100.0	114
Canterbury	61	89.7	42	100.0	50	96.2	42	100.0	21	91.3	23	100.0	9	81.8	5	50.0	6	60.0	6	85.7	6	60.0	3	100.0	235
Capital & Coast	19	86.4	15	93.8	18	78.3	15	93.8	7	77.8	2	66.7	4	100.0	6	75.0	0	0.0	5	100.0	0	0.0	0	0.0	77
Counties Manukau	58	77.3	28	84.8	67	81.7	28	84.8	28	96.6	20	80.0	18	85.7	18	94.7	11	91.7	8	88.9	11	91.7	1	50.0	259
Hawke's Bay	19	86.4	15	93.8	18	81.8	15	93.8	9	100.0	3	100.0	7	100.0	5	100.0	1	100.0	2	100.0	1	100.0	2	100.0	82
Hutt Valley	11	84.6	9	100.0	14	87.5	9	100.0	6	100.0	10	100.0	3	100.0	3	75.0	2	100.0	1	100.0	2	100.0	-	-	60
Lakes	9	100.0	17	100.0	9	75.0	17	100.0	3	75.0	7	77.8	3	75.0	3	60.0	0	0.0	1	100.0	0	0.0	1	100.0	56
Mid Central	24	88.9	10	83.3	20	87.0	10	83.3	6	85.7	8	100.0	4	100.0	3	100.0	1	33.3	1	50.0	1	33.3	1	100.0	79
Nelson Marlborough	20	83.3	11	84.6	22	88.0	11	84.6	12	92.3	9	81.8	-	-	6	100.0	5	71.4	2	100.0	5	71.4	1	100.0	91
Northland	3	50.0	10	100.0	9	90.0	10	100.0	8	100.0	4	100.0	4	100.0	1	33.3	1	100.0	2	66.7	1	100.0	-	-	43
Otago	15	83.3	11	100.0	13	100.0	11	100.0	9	100.0	2	66.7	5	100.0	3	60.0	4	100.0	0	0.0	4	100.0	3	75.0	66
South Canterbury	4	50.0	2	100.0	3	75.0	2	100.0	7	77.8	1	100.0	2	100.0	1	50.0	2	66.7	-	-	2	66.7	0	0.0	23
Southland	16	84.2	10	100.0	20	100.0	10	100.0	7	100.0	2	100.0	3	100.0	-	-	2	66.7	4	100.0	2	66.7	-	-	67
Tairawhiti	7	100.0	6	100.0	3	100.0	6	100.0	5	83.3	-	-	1	100.0	-	-	-	-	1	100.0	-	-	1	100.0	25
Taranaki	14	93.3	8	80.0	11	84.6	8	80.0	7	70.0	1	100.0	1	25.0	4	80.0	1	33.3	-	-	1	33.3	0	0.0	47
Waikato	45	91.8	28	96.6	33	86.8	28	96.6	12	100.0	13	81.3	8	88.9	7	70.0	6	75.0	3	42.9	6	75.0	0	0.0	158
Wairarapa	4	50.0	3	60.0	10	100.0	3	60.0	5	100.0	-	-	1	100.0	-	-	2	100.0	-	-	2	100.0	2	100.0	27
Waitemata	73	90.1	46	97.9	67	85.9	46	97.9	32	100.0	27	93.1	18	85.7	17	85.0	14	87.5	7	77.8	14	87.5	2	40.0	313
West Coast	7	87.5	2	100.0	5	100.0	2	100.0	2	100.0	3	100.0	1	100.0	1	50.0	1	100.0	-	-	1	100.0	-	-	22
Whanganui	8	80.0	2	50.0	7	100.0	2	50.0	1	100.0	1	25.0	1	100.0	1	50.0	0	0.0	-	-	0	0.0	-	-	21
Total	**15**	**68.2**	**497**	**85.0**	**500**	**86.5**	**346**	**93.8**	**239**	**91.2**	**180**	**89.1**	**113**	**88.3**	**107**	**79.3**	**74**	**75.5**	**54**	**79.4**	**37**	**68.5**	**20**	**60.6**	**2,182**

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

Table 56 - Women without any follow-up test within 90 days and 180 days of a high grade cytology report, by DHB

DHB	High-grade cytology	Without a follow-up test by 90 days		Without a follow-up test by 180 days	
	N	N	%	N	%
Auckland	376	42	11.2	22	5.9
Bay of Plenty	125	13	10.4	7	5.6
Canterbury	260	27	10.4	12	4.6
Capital & Coast	95	11	11.6	8	8.4
Counties Manukau	313	33	10.5	19	6.1
Hawke's Bay	91	14	15.4	8	8.8
Hutt Valley	65	7	10.8	4	6.2
Lakes	67	5	7.5	1	1.5
Mid Central	91	6	6.6	3	3.3
Nelson Marlborough	105	17	16.2	8	7.6
Northland	50	3	6.0	1	2.0
Otago	75	13	17.3	4	5.3
South Canterbury	35	5	14.3	3	8.6
Southland	71	12	16.9	8	11.3
Tairawhiti	26	3	11.5	-	0.0
Taranaki	63	8	12.7	5	7.9
Waikato	184	41	22.3	22	12.0
Wairarapa	34	9	26.5	2	5.9
Waitemata	353	29	8.2	18	5.1
West Coast	25	2	8.0	1	4.0
Whanganui	30	-	-	-	0.0
Unspecified	-	-	-	-	-
Total	**2,182**	**300**	**13.7**	**156**	**7.1**

Table 57 - Women without any follow-up test within 90 days and 180 days of a high grade cytology report, by ethnicity

Ethnicity	High grade cytology	Without follow-up by 90 days		Without follow-up by 180 days	
	N	N	%	N	%
Māori	426	73	17.1	38	8.9
Pacific	133	24	18.0	14	10.5
Asian	198	16	8.1	10	5.1
European/Other	1,777	187	10.5	94	5.3
Total	**2,534**	**300**	**11.8**	**156**	**6.2**

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 suspicion of invasion* N	HG women N
Auckland	9	237
Bay of Plenty	6	89
Canterbury	7	217
Capital & Coast	1	76
Counties Manukau	9	253
Hawke's Bay	4	76
Hutt Valley	1	48
Lakes	1	62
Mid Central	2	83
Nelson Marlborough	2	79
Northland	1	45
Otago	6	56
South Canterbury	1	36
Southland	1	56
Tairawhiti	1	24
Taranaki	1	56
Waikato	8	152
Wairarapa	2	29
Waitemata	7	267
West Coast	0	21
Whanganui	1	24
Private practice	*4*	*473*
Total	**75**	**2,459**

** High grade cytology with suspicion of invasive disease (includes NZ modified Bethesda codes HS2, SC, AC1-5) or with recommendation for urgent referral (R10, R14). There were no women referred with suspicion of invasive disease in West Coast.*

Table 59 - Women with cytological suspicion of invasive disease, by cytology result subcategory

Cytology result sub-category	Total women N	Women with accepted referral N
HS2	19	14
SC	10	4
AC1-5	38	6
R10, R14	8	4
Total	**75**	**28**

Indicator 7.3 – Adequacy of documenting colposcopic assessment

Table 60 - Completion of colposcopic assessment fields, by DHB

DHB	Total colposcopies N	% of colposcopies performed where items are completed					
		SCJ visibility	Presence/ absence lesion	Opinion re abnormality grade	Follow-up type	Follow-up timeframe	All items complete
Public clinics overall	*12,277*	*98.1*	*100.0*	*93.7*	*99.5*	*98.8*	*93.3*
Auckland	1,051	98.8	100.0	93.1	99.9	99.4	94.1
Bay of Plenty	658	96.5	100.0	89.9	98.8	97.6	88.0
Canterbury	1,909	98.4	100.0	94.7	99.8	99.3	94.3
Capital & Coast	735	98.5	100.0	96.3	98.8	98.5	95.5
Counties Manukau	819	98.4	100.0	95.1	99.9	99.3	94.9
Hawke's Bay	387	99.2	100.0	96.1	98.4	94.8	91.5
Hutt Valley	290	99.3	100.0	93.4	100.0	100.0	94.5
Lakes	269	98.9	100.0	95.1	98.5	97.4	92.9
Mid Central	685	94.9	100.0	96.6	99.9	99.6	92.7
Nelson Marlborough	428	98.4	100.0	97.9	96.5	96.0	93.0
Northland	279	96.4	100.0	87.9	99.6	98.6	90.7
Otago	390	98.2	100.0	83.6	100.0	99.7	88.7
South Canterbury	262	97.3	100.0	93.1	100.0	98.5	92.0
Southland	267	98.9	100.0	90.9	97.8	92.1	86.5
Tairawhiti	168	95.8	100.0	99.2	100.0	99.4	94.6
Taranaki	260	95.4	100.0	78.8	97.3	96.5	81.9
Waikato	743	98.5	100.0	96.0	100.0	99.6	96.0
Wairarapa	150	98.0	100.0	98.6	100.0	100.0	97.3
Waitemata	2,189	98.7	100.0	93.4	100.0	99.6	95.3
West Coast	174	96.6	100.0	92.4	100.0	98.9	90.2
Whanganui	164	99.4	100.0	90.9	100.0	100.0	93.9
Private practice	*2,217*	*98.3*	*100.0*	*91.2*	*97.1*	*94.4*	*88.4*
Total	**14,494**	**98.1**	**100.0**	**93.3**	**99.1**	**98.1**	**92.6**

Table 61 – Summary of colposcopic recording and appearance findings, by DHB

DHB	Total colposcopies	SCJ visible*	Colposcopic appearance (as % of colposcopies where items are completed)	
	N	N	Abnormal	Inconclusive
Public clinics overall	*12,277*	*12,042*	*55.4*	*3.7*
Auckland	1,051	1,038	58.1	4.3
Bay of Plenty	658	635	59.4	6.7
Canterbury	1,909	1,879	64.2	3.6
Capital & Coast	735	724	50.1	1.9
Counties Manukau	819	806	59.0	3.1
Hawke's Bay	387	384	63.3	2.6
Hutt Valley	290	288	68.6	4.8
Lakes	269	266	65.4	3.3
Mid Central	685	650	53.3	1.9
Nelson Marlborough	428	421	64.3	1.4
Northland	279	269	36.6	5.0
Otago	390	383	48.2	9.5
South Canterbury	262	255	51.1	3.8
Southland	267	264	55.8	5.6
Tairawhiti	168	161	69.6	0.6
Taranaki	260	248	40.0	10.8
Waikato	743	732	55.3	2.3
Wairarapa	150	147	46.7	0.7
Waitemata	2,189	2,161	45.1	3.2
West Coast	174	168	63.2	5.2
Whanganui	164	163	54.9	5.5
Private practice	*2,217*	*2,180*	*50.6*	*4.9*
Total	**14,494**	**14,222**	**54.7**	**3.9**

* Field has been completed

Indicator 7.5 – Timely discharge of women after treatment

Table 62 – 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	101	82	81.2	61	66.3	52	85.2
Bay of Plenty	48	18	37.5	26	70.8	26	100.0
Canterbury	285	81	28.4	155	59.6	135	87.1
Capital & Coast	83	59	71.1	51	77.1	37	72.5
Counties Manukau	110	19	17.3	16	38.2	14	87.5
Hawke's Bay	62	49	79.0	52	87.1	50	96.2
Hutt Valley	42	36	85.7	29	71.4	29	100.0
Lakes	26	20	76.9	18	73.1	17	94.4
Mid Central	76	52	68.4	54	72.4	47	87.0
Nelson Marlborough	49	40	81.6	37	85.7	32	86.5
Northland	46	34	73.9	23	58.7	23	100.0
Otago	33	27	81.8	27	81.8	25	92.6
South Canterbury	13	9	69.2	12	92.3	3	25.0
Southland	6	1	16.7	1	83.3	1	100.0
Tairawhiti	29	6	20.7	5	24.1	4	80.0
Taranaki	22	21	95.5	21	95.5	18	85.7
Waikato	106	54	50.9	70	72.6	66	94.3
Wairarapa	20	16	80.0	16	90.0	15	93.8
Waitemata	165	132	80.0	102	67.3	62	60.8
West Coast	15	12	80.0	11	80.0	9	81.8
Whanganui	20	17	85.0	14	75.0	13	92.9
Private Practice	*111*	*80*	*72.1*	*73*	*76.6*	*53*	*72.6*
Total	**1,468**	**865**	**58.9**	**874**	**67.7**	**731**	**83.6**

Table 63 – 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	101	83	82.2	82	81.2
Bay of Plenty	48	18	37.5	18	37.5
Canterbury	285	82	28.8	81	28.4
Capital & Coast	83	60	72.3	59	71.1
Counties Manukau	110	19	17.3	19	17.3
Hawke's Bay	62	49	79.0	49	79.0
Hutt Valley	42	36	85.7	36	85.7
Lakes	26	20	76.9	20	76.9
Mid Central	76	52	68.4	52	68.4
Nelson Marlborough	49	41	83.7	40	81.6
Northland	46	34	73.9	34	73.9
Otago	33	28	84.8	27	81.8
South Canterbury	13	10	76.9	9	69.2
Southland	6	1	16.7	1	16.7
Tairawhiti	29	6	20.7	6	20.7
Taranaki	22	21	95.5	21	95.5
Waikato	106	54	50.9	54	50.9
Wairarapa	20	16	80.0	16	80.0
Waitemata	165	134	81.2	132	80.0
West Coast	15	12	80.0	12	80.0
Whanganui	20	17	85.0	17	85.0
Private practice	*111*	*80*	*72.1*	*80*	*72.1*
Total	**1,468**	**873**	**59.5**	**865**	**58.9**

Indicator 8 – HPV tests

Indicator 8.1 – Triage of low grade cytology

Table 64 – Triage testing of women with ASC-US cytology

	Total ASC-US results		Women with an HPV test			
	women aged < 30yrs	women aged 30+ yrs	women aged < 30yrs		women aged 30+ yrs	
Laboratory	**N**	**N**	**N**	**%**	**N**	**%**
Aotea Pathology Ltd	153	149	6	3.9	146	98.0
Canterbury Health Laboratories	66	203	2	3.0	201	99.0
Diagnostic Medlab Ltd	197	662	0	0.0	657	99.2
LabPLUS	174	52	0	0.0	47	90.4
Medlab Central Ltd	135	271	2	1.5	238	87.8
Pathlab	159	306	5	3.1	285	93.1
Southern Community Labs	239	281	7	2.9	272	96.8
Total	**1,123**	**1,924**	**22**	**2.0**	**1,846**	**95.9**

** 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 65 – 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**	**%**
Aotea Pathology Ltd	267	116	1	0.4	113	97.4
Canterbury Health Laboratories	166	110	4	2.4	108	98.2
Diagnostic Medlab Ltd	598	595	1	0.2	594	99.8
LabPLUS	172	9	1	0.6	6	66.7
Medlab Central Ltd	239	156	4	1.7	131	84.0
Pathlab	348	227	1	0.3	210	92.5
Southern Community Labs	704	390	5	0.7	376	96.4
Total	**2,494**	**1,603**	**17**	**0.7**	**1,538**	**95.9**

** 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*

Indicator 8.2 – HPV test volumes

Table 66 – 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	
Aotea Pathology Ltd	1,756	8.5	8.2
Canterbury Health Laboratories	2,480	12.0	20.2
Diagnostic Medlab Ltd	3,605	17.5	6.6
LabPLUS	857	4.1	11.5
Medlab Central Ltd	2,294	11.1	12.7
Pathlab	2,186	10.6	10.1
Southern Community Labs	7,477	36.2	9.2
Total	**20,655**	**100.0**	**9.5**

Table 67 – Invalid HPV tests, by laboratory

Laboratory	HPV tests	Valid		Invalid	
	N	N	%	N	%
Aotea Pathology Ltd	1,756	1,755	99.9	1	0.1
Canterbury Health Laboratories	2,480	2,479	100.0	1	0.0
Diagnostic Medlab Ltd	3,605	3,595	99.7	10	0.3
LabPLUS	857	856	99.9	1	0.1
Medlab Central Ltd	2,294	2,294	100.0	-	0.0
Pathlab	2,186	2,183	99.9	3	0.1
Southern Community Labs	7,477	7,477	100.0	-	0.0
Total	**20,655**	**20,639**	**99.9**	**16**	**0.1**

Table 68 – Validity of HPV triage tests, by test technology

Test technology	Total HPV tests		Valid		Invalid	
	N	%	N	%	N	%
Abbott RealTime	9,957	*48.2*	9,956	100.0	1	0.0
Roche COBAS 4800	10,698	*51.8*	10,683	99.9	15	0.1
Total	**20,655**	***100.0***	**20,639**	**99.9**	**16**	**0.1**

Table 69 - Volume of HPV test samples received during the monitoring period, by purpose and ethnicity

	HPV triage		Post-treatment		Historical		Taken at colposcopy		Other		Total	
Age	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Māori	411	16.5	225	9.1	1,209	48.6	124	5.0	517	20.8	2,486	12.0
Pacific	218	41.0	41	7.7	134	25.2	37	7.0	102	19.2	532	2.6
Asian	360	36.8	89	9.1	240	24.6	85	8.7	203	20.8	977	4.7
European/Other	2,464	14.8	1,246	7.5	7,278	43.7	935	5.6	4,737	28.4	16,660	80.7
Total	**3,453**	**16.7**	**1,601**	**7.8**	**8,861**	**42.9**	**1,181**	**5.7**	**5,559**	**26.9**	**20,655**	**100.0**

Table 70 - Volume of HPV test samples received during the monitoring period, by purpose and age

	HPV triage		Post-treatment		Historical		Taken at colposcopy		Other		Total	
Age	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
<20	-	0.0	1	0.0	2	14.3	6	42.9	5	35.7	-	0.1
20-24	-	0.0	189	25.8	97	13.2	221	30.2	226	30.8	733	3.5
25-29	-	0.0	399	25.5	705	45.0	161	10.3	301	19.2	1,566	7.6
30-34	625	22.8	314	11.5	1,313	47.9	167	6.1	323	11.8	2,742	13.3
35-39	655	21.7	235	7.8	1,579	52.4	116	3.8	429	14.2	3,014	14.6
40-44	642	18.4	199	5.7	1,814	52.0	135	3.9	701	20.1	3,491	16.9
45-49	554	19.2	115	4.0	1,254	43.5	101	3.5	857	29.7	2,881	13.9
50-54	449	18.0	74	3.0	958	38.4	99	4.0	918	36.7	2,498	12.1
55-59	246	14.9	31	1.9	543	32.8	74	4.5	762	46.0	1,656	8.0
60-64	146	12.8	27	2.4	332	29.1	48	4.2	587	51.5	1,140	5.5
65-69	99	13.8	13	1.8	191	26.7	39	5.4	374	52.2	716	3.5
70+	37	18.1	4	2.0	73	35.8	14	6.9	76	37.3	204	1.0
Total	**3,453**	**16.7**	**1,601**	**7.8**	**8,861**	**42.9**	**1,181**	**5.7**	**5,559**	**26.9**	**20,641**	**100.0**

Excludes 14 women for whom date of birth information was not available

Table 71 - Volume of HPV test samples received during the monitoring period, by purpose and laboratory

	HPV triage		Post-treatment		Historical		Taken at colposcopy		Other		Total
Laboratory	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	
Aotea Pathology Ltd	262	14.9	102	5.8	929	52.9	15	0.9	448	25.5	1,756
Canterbury Health Laboratories	332	13.4	387	15.6	771	31.1	370	14.9	620	25.0	2,480
Diagnostic Medlab Ltd	1,332	36.9	126	3.5	1,234	34.2	112	3.1	801	22.2	3,605
LabPLUS	52	6.1	183	21.4	111	13.0	147	17.2	364	42.5	857
Medlab Central Ltd	370	16.1	210	9.2	1,042	45.4	65	2.8	607	26.5	2,294
Pathlab	459	21.0	108	4.9	971	44.4	194	8.9	454	20.8	2,186
Southern Community Labs Dunedin	646	8.6	485	6.5	3,803	50.9	278	3.7	2,265	30.3	7,477
Total	**3,453**	**16.7**	**1,601**	**7.8**	**8,861**	**42.9**	**1,181**	**5.7**	**5,559**	**26.9**	**20,655**

Table 72 - 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	*795*	*12,277*	*6.5*
Auckland	16	1,051	1.5
Bay of Plenty	89	658	13.5
Canterbury	334	1,909	17.5
Capital & Coast	1	735	0.1
Counties Manukau	13	819	1.6
Hawke's Bay	18	387	4.7
Hutt Valley	-	290	-
Lakes	72	269	26.8
Mid Central	55	685	8.0
Nelson Marlborough	11	428	2.6
Northland	-	279	-
Otago	27	390	6.9
South Canterbury	34	262	13.0
Southland	35	267	13.1
Tairawhiti	-	168	-
Taranaki	-	260	-
Waikato	57	743	7.7
Wairarapa	2	150	1.3
Waitemata	30	2,189	1.4
West Coast	1	174	0.6
Whanganui	-	164	-
Private practice	*165*	*2,217*	*7.4*
Total	**960**	**14,494**	**6.6**

HPV tests/ colposcopy can be interpreted broadly as the percentage of colposcopies within this DHB/ sector where a sample is collected for HPV testing. Includes only HPV test samples where a colposcopy report record exists.

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 vaginalis
O2	There are fungal organisms morphologically consistent with Candida species
O3	There is a shift in microbiological flora suggestive of bacterial vaginosis
O4	There are bacteria morphologically consistent with Actinomyces species
O5	There are cellular changes consistent with Herpes simplex virus
OT1	There are reactive cellular changes present (optional free text)
OT2	There are endometrial cells present in a woman over the age of 40 years
OT3	There are atrophic cellular changes present
ASL	There are atypical squamous cells of undetermined significance (ASC-US) present
ASH	There are atypical squamous cells present. A high grade squamous intraepithelial lesion cannot be excluded (ASC-H)
LS	There are abnormal squamous cells consistent with a low grade squamous intraepithelial lesion (LSIL; CIN1/HPV)
HS1	There are abnormal squamous cells consistent with a high grade squamous intraepithelial lesion (HSIL). The features are consistent with CINII or CINIII
HS2	There are abnormal squamous cells consistent with a high grade squamous intraepithelial lesion (HSIL) with features suspicious for invasion

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

Appendix C – SNOMED categories for histological samples

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

Appendix D – Indicator Definitions Targets and Reporting Details

Positive predictive value calculations

Table 73 – 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
Otago	General Gynae Department – Dunedin Hospital Dunedin Public Hospital

DHB	Colposcopy clinics included*
	Dunedin Colposcopy Clinic
South Canterbury	Timaru Hospital - Colp/Gynae
Southland	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 facilities to a DHB was provided by the NCSP

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
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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