National Screening Unit

National Cervical Screening Programme

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About the authors

The authors are based at the University of New South Wales (formerly in the Cancer Research Division at Cancer Council NSW, 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 January – 30 June 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 1,121,040 eligible women aged 25-69 years at the end of the monitoring period, 76.8% had a screening test in the previous three years.
- Coverage target was not met nationally (80% of women aged 25-69 years screened in the previous three years).
- Coverage target was met for specific five-year age groups between 40-59 years.
- Coverage target was met by 6 of 21 DHBs.
- Coverage targets were met for European/ Other women, but were not met for Māori, Pacific, or Asian 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.
- Undercounting of some ethnic groups may partially explain the disparities between ethnic groups.
- Three-year coverage among women aged 25-69 years (76.8%) is slightly higher overall to that reported in the previous monitoring report (75.0%). It has increased in virtually all age groups, and in 17 of the 21 DHBs.
- Five-year coverage among women aged 25-69 years (90.9%) is slightly higher than in the previous monitoring report (88.3%).

Screens in women aged less than 20 years

Target: None

- In the three years to 30 June 2012, there were 12,695 women who had a cervical sample taken when they were aged less than 20 years. This is less than in the previous reporting period (13,748 women).
- This represents 1.3% of all women (of any age) who were screened in the three-year period (compared to 1.4% in previous reporting period).

- Most of these women (83.7%) were aged 18-19 years at the time of their cervical sample.

Indicator 2 — First screening events

Target: None

- There were 19,547 women who had their first screening event during the current reporting period – slightly less than in the previous reporting period.
- First screening events generally occur among young women (median age 26 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

- 44 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 (39 women).

Indicator 4 — Early re-screening

Target: Not yet defined

- 21.7% of a cohort of women with a recommendation to return at the routine interval had at least one cytology sample within 30 months of their index cytology sample.
- Early re-screening varies widely between DHBs, from 11.7% in Taranaki to 30.7% in Waitemata.
- Early re-screening occurs in all ethnic groups, but is most common among Asian women (23.7%), and least common among Pacific women (18.0%).
- Early re-screening occurs in all age groups, but is most common in women aged 20-24 years at the end of the period (29.2%) and least common in women aged 65-69 years at the end of the period (16.4%).
- Early re-screening has decreased since the previous report.

Indicator 5 — Cytology

Indicator 5.1 Cytology reporting

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

Unsatisfactory cytology

Target: 1-5% for LBC

- Percent of LBC samples unsatisfactory target met by four of eight laboratories, and was met nationally (1.2%). The rate of unsatisfactory samples has increased for LBC since the previous report, from 1.1% to 1.2%, and so has remained at the target range.

Negative cytology

Target: No more than 96% of satisfactory cytology samples

- Percent of samples negative target met nationally and by all eight laboratories.
- Nationally, the percent of samples which are negative (91.7%) is somewhat lower than that reported in the previous period (92.1%).

Abnormal cytology

Target: No more than 10% of satisfactory cytology samples

- Percent of samples abnormal target met nationally and by six of eight laboratories.
- Nationally, the percent of samples which are abnormal (8.3%) is somewhat higher than that reported in the previous period (7.9%).

HSIL cytology

Target: No less than 0.6% of satisfactory cytology samples

- Percent of samples HSIL target met nationally and by seven of eight laboratories. One lab has been below the target level over multiple monitoring reports.
- Percent of samples HSIL (0.9%) has slightly increased since the previous report (0.8%).

Indicator 5.2 Cytology positive predictive value

HSIL + SC

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

- All eight laboratories met the target range for HSIL+SC of 65% - 85% samples confirmed as histological high grade.

- Nationally, the positive predictive value of HSIL+SC for this monitoring period was 80%, which is lower than in the previous report (83.5%).

Other cytological abnormalities

Target: None

- Nationally, the positive predictive value of ASC-H has decreased compared to the previous report (48.4% in this report, 51.4% in the previous report).
- Nationally, the positive predictive value of the combination of ASC-H+HSIL+SC has decreased compared to the previous report (70.9% in the previous report; 67.1% in the current report).
- Nationally, the positive predictive value of glandular abnormalities has decreased since the previous report, from 57.6% to 44.7% (however this measure is generally based on a comparatively small number of samples; 150 with histology in the current report).

Indicator 5.3 — Accuracy of negative cytology reports

Not assessed

Indicator 5.4 — Histology reporting

Target: None

- 14,451 histology samples were taken during the current reporting period. 388 (2.7%) of these were insufficient for diagnosis.
- Results for most severe histology from 11,935 women are presented
- 49.6% of women had histology samples which were negative/ benign
- 22.3% of women had CIN2/3 or HSIL histology results.
- 57 (0.5%) women had ISCC histology results, 39 (0.3%) women had invasive adenocarcinoma histology results, and none had adenosquamous carcinoma histology results.

Indicator 5.5 — Turnaround times

Cytology

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

- The seven-working-days target for cytology was met nationally (92.4% samples were reported within seven working-days), and was met by five of eight laboratories.
- The 15-working-days target was not met nationally (98.6%

samples were reported within 15 working-days), but was met by one of eight laboratories.

- Six of the eight laboratories had reported on at least 95% of samples within 15 days; four of the eight had reported on more than 99% of samples.
- Performance against the seven-working-days target has decreased slightly since the previous report (from 93.0% to 92.4%), and the number of labs meeting the target has remained the same (five).
- The overall proportion of cytology samples reported within 15-working-days has remained the same since the previous report (98.6%) and the number of labs meeting the target has stayed the same (one).

Histology

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

- Turnaround times for histology were below the target nationally (73.2% samples were reported within five working days, 94.8% within 15 working days), but targets were met by four of 17 laboratories (five-day target) and six of 17 laboratories (15-day target).
- 11 of the 17 laboratories had reported on at least 95% of samples within 15 days.
- The overall proportion of histology samples reported within five and 15 days has decreased since the previous reporting period (from 78.9% to 73.2% within five days, and from 95.7% to 94.8% within 15 days), and the number of laboratories meeting the five-day target has also decreased (four) and remained the same for the 15-day target (six).

Cytology with associated HPV triage testing

Target: 100% within 15 working days

- There were 3,410 cytology samples with associated HPV triage testing in the current reporting period.
- Turnaround time was below target: 97.4% were reported on within 15 working days.
- One laboratory met the target
- The proportion reported within 15 days is somewhat lower for this subgroup of cytology (97.4%) than for cytology overall (98.6%), particularly at LabPLUS and Southern Community Labs Dunedin (although the former performed only a small number of such HPV 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).
- 79.1% of women had a histology report within 90 days of their high grade cytology report; 86.9% of women had one within 180 days.
- One DHB (West Coast) 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 increased since the previous reporting period (from 78.4% to 79.1%), as has the proportion with follow-up within 180 days (86.9% during the current reporting period, compared to 85.9% during the previous reporting period).
- Compared to the previous reporting period, the proportion of women with follow-up histology within 90 days increased for all ethnic groups.
- The proportion of women with follow-up histology within 180 days increased compared to the previous reporting period for Māori, Pacific, and European/ Other women. Among Asian 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 20-24 years, 30-34 years, 50-54 years and 60-64 years, but this sometimes followed an observed decrease in the previous reporting period.

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 remained the same for all ethnic groups.

Indicator 7 Colposcopy

Indicator 7.1 Timeliness of colpscopic assessment – high grade cytology

Target: Not reported against in this report, as referral data believed to be unreliable.

- There were 2,321 women with high grade cytology results who were not already under specialist management.
- This comprised 65 women with high grade results indicating a suspicion of invasive disease and 2,256 women with other high grade results.
- The median time between a high grade cytology report and a colposcopy visit was 8.5 days for women with cytology suspicious of invasive disease, and 38 days for women with other high grade cytology results.
- A colposcopy visit is recorded for 1,953 (84.1%) women up to June 30 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 (2,018 women; 86.9%).
- Nationally, the median waiting time has decreased for high grade cytology indicating suspicion of invasive disease, from 11 days in Report 36 to 8.5 days in the current report.
- For high grade cytology (no suspicion of invasive disease) the median waiting time has increased from 36 days in the previous report, to 38 days in the current report.

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 13,941 colposcopy visits recorded on the NCSP Register, no DHB nor the aggregate of colposcopy visits to private practice met the target of 100% completion of all recommended fields.
- The degree of visibility of the squamocolumnar junction was documented for 97.6% of colposcopies.
- Presence or absence of a lesion was documented for all colposcopies.
- Colposcopic opinion regarding abnormality grade was documented for 92.7% of colposcopies where appearance was abnormal or inconclusive.

- All of these items were completed for 93.6% of colposcopy visits.
- Colposcopic appearance was reported as abnormal in 54.0% of colposcopies, and inconclusive in 4.2% of colposcopies.
- Completion of most recommended fields is somewhat less 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.

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.

- 25.6% of 2,722 women with HSIL histology (CIN2/3) during July-December 2011 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 decreased since the previous reporting period (from 28.4% to 25.6%).
- 8.3% of 1,942 women with LSIL histology (CIN1, CIN not otherwise specified) were subsequently treated (considering a period of up to 26 weeks of their histology report). This proportion is presented for descriptive purposes and assessing appropriateness of treatment only. Timeliness is not assessed for treatment of histologically confirmed LSIL as treatment of histologically confirmed LSIL is not routinely recommended by the *2008 NCSP Guidelines for Cervical Screening in New Zealand*.

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 six to 12 month period post treatment.

- 1,283 women were treated for high grade lesions in the period January to June 2011.
- 51.1% of women treated for CIN have a record of both colposcopy and cytology at least six but no more than 12 months after their treatment visit. 52.6% have a record of at least a colposcopy visit (with or without cytology) in the same time period.
- No DHB met the target for follow-up within the period six to 12 months post-treatment.

Target: 90% or more of women treated for CIN should be

discharged back to the smear taker as appropriate.

- There were 525 women who met the criteria for appropriate discharge within 12 months of their treatment (40.9% of women treated). Of these women, 415 (79.0%) were discharged to their smear taker within 12 months.
- Six DHBs met the target of discharging 90% or more women who were eligible for discharge within 12 months.
- 720 (56.1%) of women were discharged within 12 months of their treatment visit.
- 174 (13.6%) of women were discharged less than six months after their treatment visit.

Indicator 8 HPV testing

Indicator 8.1 HPV triage of low grade cytology

Target: None set.

- Nationally, 94.8% of women aged 30 years or more with an ASC-US cytology result, and 96.1% 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, 26% of women with ASC-US results and 58% of women with LSIL results were positive for high risk HPV.
- Positivity for high risk HPV varied by laboratory (from 10% to 55% for ASC-US, and from 29% to 69% for LSIL)
- Positivity for high risk HPV generally decreased with increasing age.
- Small numbers of HPV triage tests occur in women aged under 30 years (in 1.4% of women with an ASC-US result, and 0.9% of women with an LSIL result; 40 women in total)
- Nationally, the proportion of HPV triage tests which are invalid is generally small (0.1% for all tests). Rates of invalid tests were 0 across laboratories.
- 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 (from 93.3% to 94.8% for women with ASC-US results, and has increased from 92.2% to 96.1% for women with LSIL results).
- The proportion of women whose HPV tests were positive were slightly higher in the current reporting period for ASC-US (26%, compared to 25% in the previous period), and slightly lower for LSIL (58%, compared to 61% in the previous period).

Indicator 8.2 HPV test volumes

Target: None set.

- Nationally, 20,330 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 (90.0% of all HPV test samples)
- HPV samples were predominantly from European/ Other women (16,687 samples; 82.1% of all HPV test samples).
- HPV test volumes were lowest at LabPLUS (692 samples; 3.4% of all HPV test samples) and highest at Southern Community Labs (6,048 samples; 29.7% of all HPV test samples).
- Overall HPV test volumes are slightly higher than those in the previous report (increased by 1%).
- Nationally, 16.9% HPV tests are taken for HPV triage of low grade cytology in women aged 30 years or more, 7.3% were taken for follow-up of women treated in the previous three years, 44.0% were taken to manage women with high grade squamous cytology more than three years ago but subsequent negative cytology, and 4.6% were taken at colposcopy (potentially to assist in resolving discordant results).
- Among the remainder (27.1%), it is likely that a large proportion were for follow-up of historical high grade abnormalities which are not specifically recorded on the NCSP Register (for example because they pre-date the Register, or occurred overseas). In these cases, it is not possible to determine if the previous high grade was squamous or glandular (in the latter case HPV testing is not recommended by the guidelines). 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).

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 on the website:

http://www.nsu.govt.nz/files/NCSP/Tech_specs_vda5_April_2011__generic.pdf

From Report 30 onwards, monitoring has been undertaken with technical assistance of the Cancer Council of New South Wales (CCNSW). 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, some colposcopy indicators are not calculated for this report due to the incompleteness of colposcopy data on the NCSP Register relating to this time period. These indicators will be reported on when the data has improved. 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 (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:
Email: Ivan_Rowe@moh.govt.nz
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3. Methods

Data used

The analyses in this report are based on data extracted from the NCSP Register in September 2012. Data linking each screening programme event to a participant's identifier was re-extracted in October and December 2012.

The data warehouse previously used to provide data for the monitoring reports analyses was not available in the timeframe when this monitoring report was produced. As a result, data were provided in a different format to that for previous monitoring reports. Consequently, extensive pre-processing and reconstruction were undertaken to reconfigure the data, and additional work was required in order to verify that results in previous reports could be reproduced.

Age

Unless otherwise specified, age is defined as the woman's age at the end of the reporting period, i.e. 30 June 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 Minsitry of Health. Hysterectomy incidence was estimated by fitting models to observed data on hysterectomies obtained from public and private hospital discharge data and estimates of the usually resident female population from Statistics New Zealand. The resulting estimates of hysterectomy incidence and survival in single-year age groups by calendar year were then used to estimate the prevalence of hysterectomy by five-year age group (among women aged 20-69 years) and calendar year (1988 to 2014). The 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.

The hysterectomy prevalence data were applied to New Zealand population estimates from Statistics New Zealand so that estimates of the number of women in the New Zealand population (by age and ethnicity) who had not had a hysterectomy prior to 30 June 2012 were obtained. Hysterectomy prevalence figures for the whole population (the denominator) were not available by DHB, so age- and ethnicity-specific hysterectomy adjustments were applied equally across each DHB. 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 30 June 2012.

Hysterectomy prevalence estimates have been updated since the previous monitoring report. The previous report used estimators for 2007, which were the best estimates available at the time of the analysis, but they have are 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. In light of this, changes 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 September 2012) contained ethnicity codes for approximately 91% 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 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.

Prior to Monitoring Report 30 (covering the period 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 30 (1 July to 31 December 2008), 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 30 June 2012, 861,015 (76.8%) women aged 25-69 at the end of the current reporting period had at least one cervical sample taken during the previous three years. This does not meet the updated target of 80%. 1,019,024 (90.9%) 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 69.6% (Counties Manukau) to 84.8% (Taranaki). Six of the 21 DHBs achieved the 80% target in women aged 25-69 years at the end of the period (Figure 1, Table 27). 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 (67.5%), and was highest in women aged 45-49 years and 50-54 years (81.1%) (Figure 2, Table 26). Coverage was also low in women aged 20-24 years (54.7%), 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 61.6%, 67.3%, and 60.1% respectively. Among European/Other women, coverage achieved was 83.5% within three years (Figure 4, Table 28). Coverage for each of Māori, Pacific, or Asian women was also explored at the DHB level. Coverage in Māori women ranged from 46% (South Canterbury) to 76% (Waitemata)(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% (Northland) to 96% (West Coast)(Figure 5). The target level of 80% of Pacific women screened within the previous three years was achieved in Auckland, Southland, Taranaki, Wairarapa, West Coast and Whanganui. Coverage in Asian women ranged from 55% (Waitemata) to 88% (Hutt Valley)(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 and Wairarapa.

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 95.5% in women aged 45-49 years (Figure 8, Table 29). Among women aged 25-69 years at the end of the period, it ranged from 84.5% in Counties Manukau to 97.5% in Taranaki (Figure 7, Table 30), and from 70.7% (Asian) to 97.9% (European/Other) (Figure 9, Table 31).
Figure 7

Screens in women aged less than 20 years

A total of 12,694 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 30 June 2012. This excludes three samples entered into the NCSP Register, where the apparent ages of the women were one, two and four years (likely representing data entry errors). 1.3% of women who were screened at any age, were aged less than 20 years at the time their cervical sample was taken (Table 33).

The number of women aged less than 20 years at the time they were screened varied by DHB from 111 (West Coast) to 1,985 (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 this represents women who were aged 15-19 years at the time of their screening event and the events occurred over a three year period, whereas

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 5.5% (Mid Central) to 11.1% (Canterbury and 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 32 to Table 34.

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 (83.7% overall; range across DHBs 78.3%- 91.5%). This may represent opportunistic screening of women aged 18-19 years. This proportion varied from 78.3% in South Canterbury to 91.5% in Capital & Coast. Where this proportion is higher, it is 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 (76.8% within the last three years, and 90.9% within the last five years) compared to the previous reporting period (75.0% within the last three years, and 88.3% 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 70.3% to 74.3%) and Auckland (coverage increased from 73.4% to 76.5%). Longer term trends by DHB are shown in Figure 11 and Table 36.

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. Among women in the younger age groups (20-24 years and 25-29 years), coverage has increased but, the absolute increase is small (less than two percent). Coverage has increased in older age groups (ages 60-64 years and 65-69 years). Longer term trends by age are shown in Figure 12 and Table 37.

Coverage has also remained relatively stable within ethnic groups. There

have been significant increases in three-year coverage among Māori, Pacific and Asian women, and a small icrease among European/ Other women since the previous reporting period. Longer term trends by ethnicity are shown in Figure 13 and Table 38.

Screens in women aged less than 20 years

The number of women screened who are aged under 20 years has decreased from 13,748 in the previous reporting period to 12,694 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 1.4% to 1.3%). The number of women screened who are aged less than 20 years at the time has decreased in all DHBs.

The proportion of these women who were aged 18-19 years has increased somewhat since the previous reporting period (from 82% to 83.7%), and this increase has occurred in many DHBs (19 of 21). Bay of Plenty and Taranaki remained the same as in the previous reporting period. Therefore 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 12), 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 35.

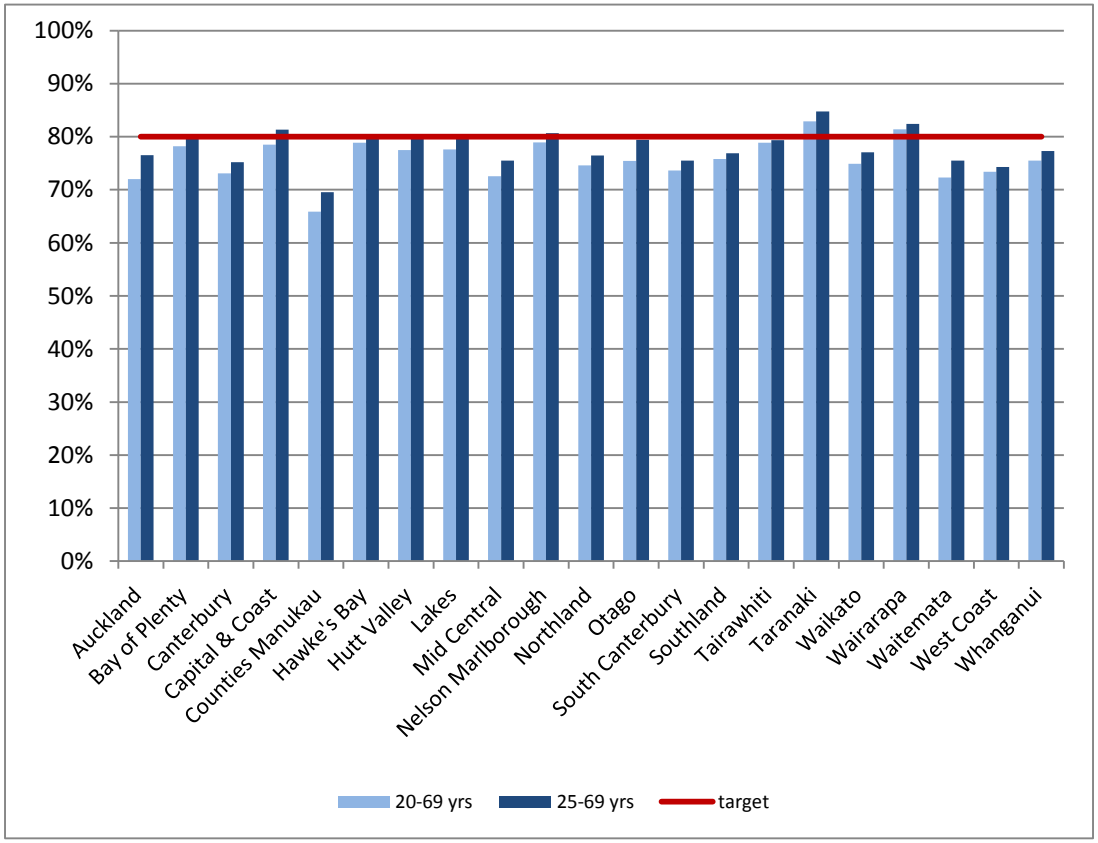
Counts of women screened used to estimate coverage (numerator) exclude women who are not enrolled on the NCSP Register, whereas the hysterectomy-adjusted population estimates (denominator) represent all women in New Zealand without a hysterectomy, regardless of whether they are enrolled on the NCSP Register. 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 recent monitoring reports. As a result, coverage estimates in the current report are not directly comparable to previous estimates and so trends should be interpreted with caution. It is envisioned that updated trends will be examined in the Annual Report covering 2010/2011, where coverage for recent years will be 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 2007, and the periods considered for coverage are wider – ranging from mid-2008 to mid-2011 (three-year coverage), and mid-2006 to mid-2011 (five-year coverage).

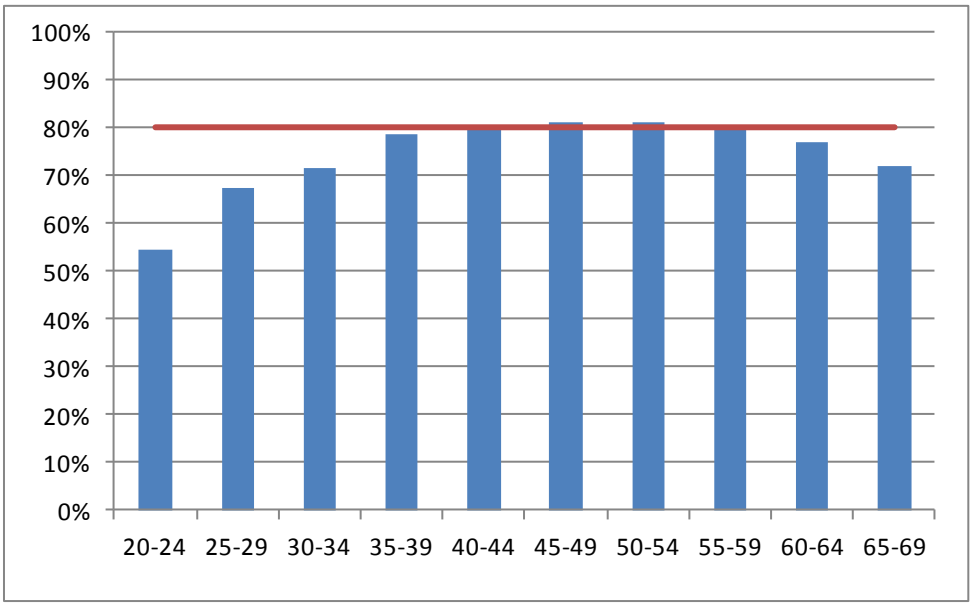
Coverage in women aged 20-24 years is likely to remain lower than for other ages and coverage in this age group should be interpreted with caution, as many women will have had a shorter period in which they were eligible for screening.

Figure 1 - Three-year coverage by DHB (women screened in the three years prior to 30 June 2012, as a proportion of hysterectomy-adjusted female population)



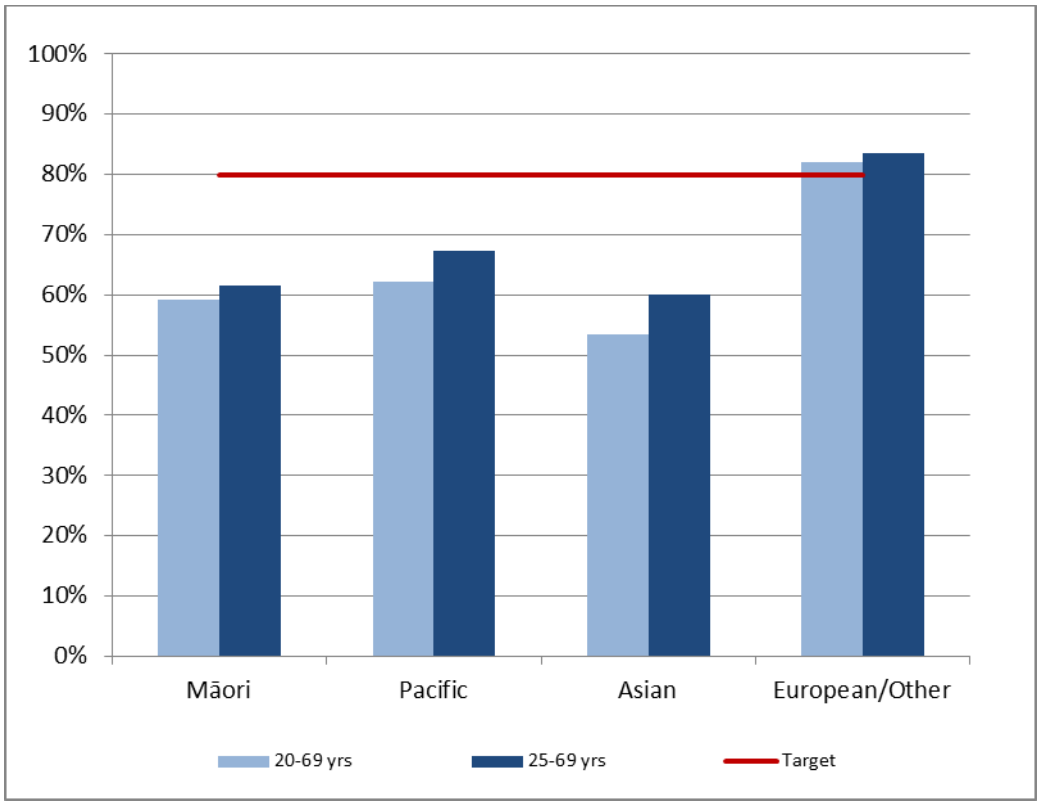
Note: Coverage calculated using population projection for mid-2012 based on 2006 Census data. Target 80%, hysterectomy adjusted.
See also Table 27

Figure 2 - Three-year coverage by five-year age group (women 20-69 years screened in the three years prior to 30 June 2012, as a proportion of hysterectomy-adjusted female population)



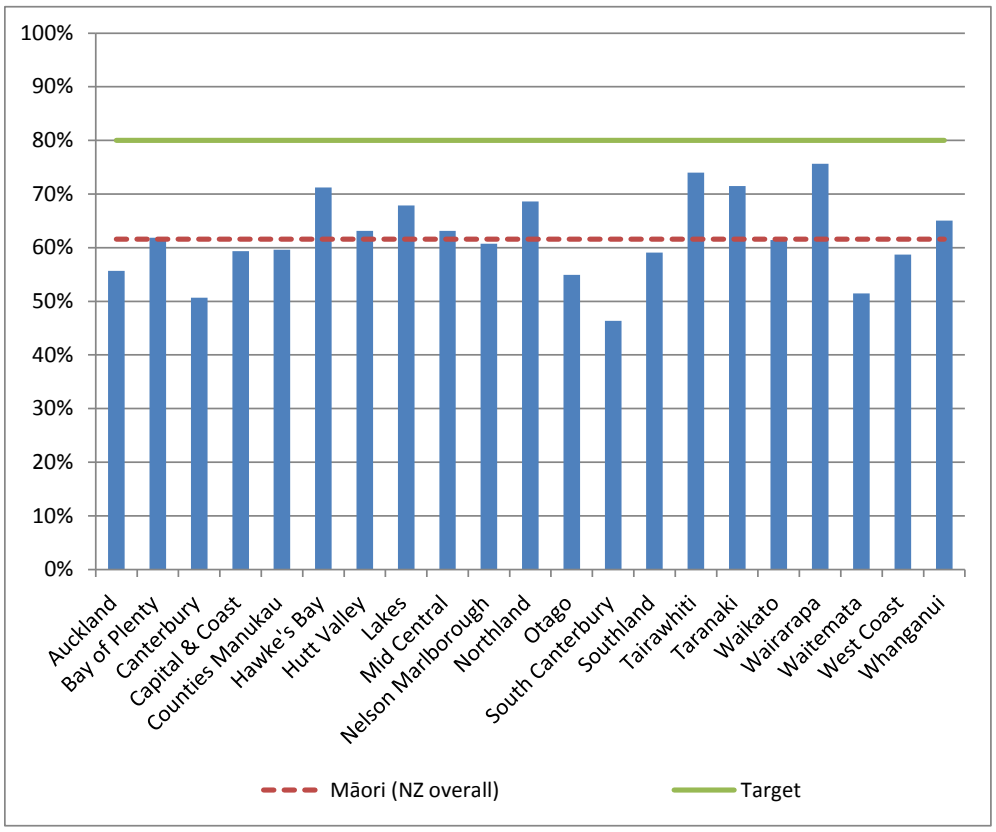
Note: Coverage calculated using population projection for mid-2012 based on 2006 Census data.
Target (red line); 80%, hysterectomy adjusted.
See also Table 26

Figure 3 - Three-year coverage (women screened in the three years prior to 30 June 2012, as a proportion of hysterectomy-adjusted female population), by ethnicity



Note: Coverage calculated using population projection for mid-2012 based on 2006 Census data.
Target (red line); 80%, hysterectomy adjusted
See also Table 28

Figure 4 - Three-year coverage in Māori women (women 25-69 years screened in the three years prior to 30 June 2012, as a proportion of hysterectomy-adjusted female population), by DHB



Note: Coverage calculated using population projection for mid-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 30 June 2012, as a proportion of hysterectomy-adjusted female population), by DHB

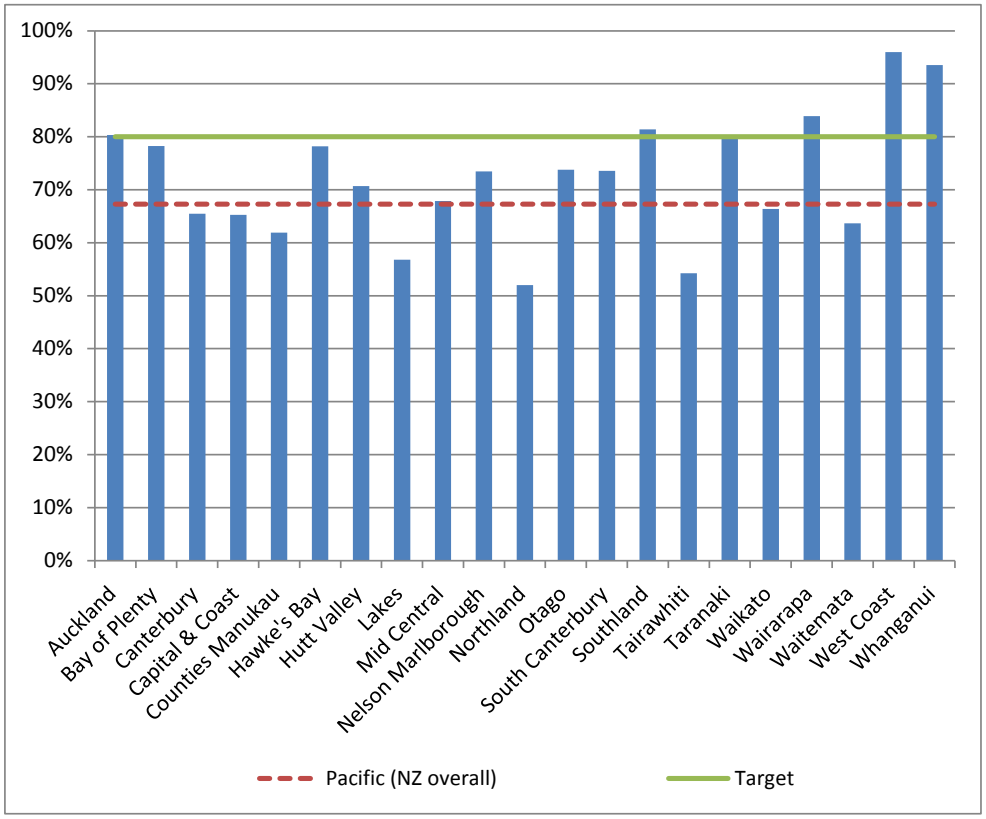


Figure 6 - Three-year coverage in Asian women (women 25-69 years screened in the three years prior to 30 June 2012, as a proportion of hysterectomy-adjusted female population), by DHB

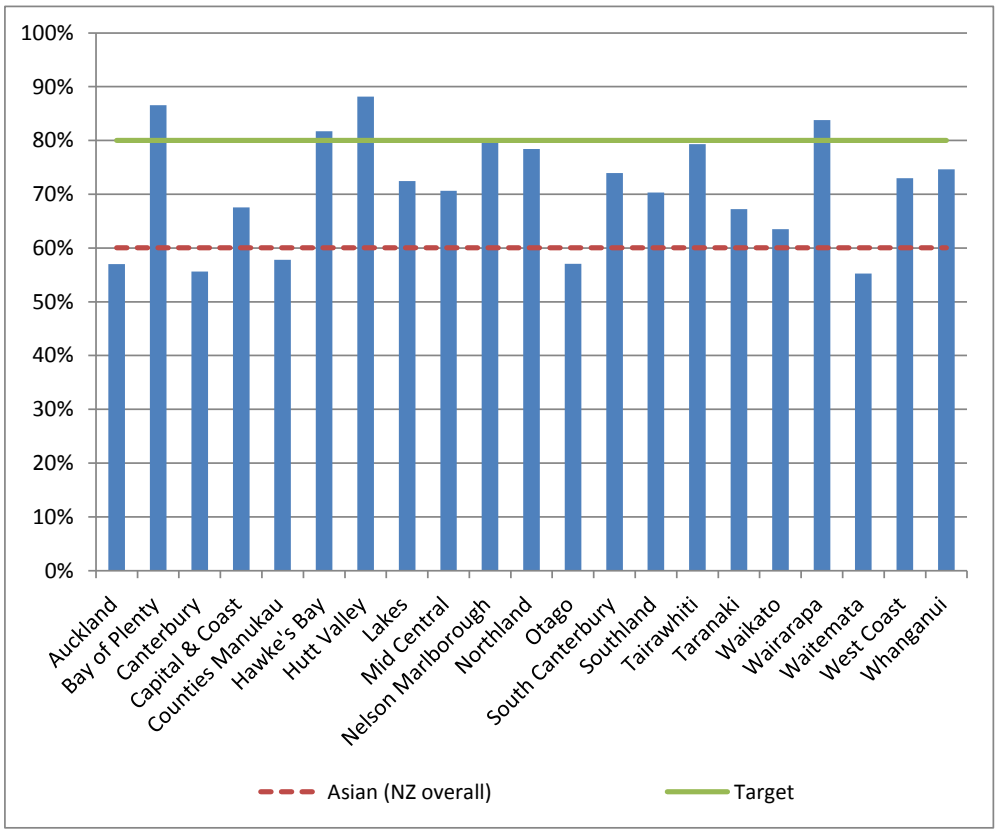
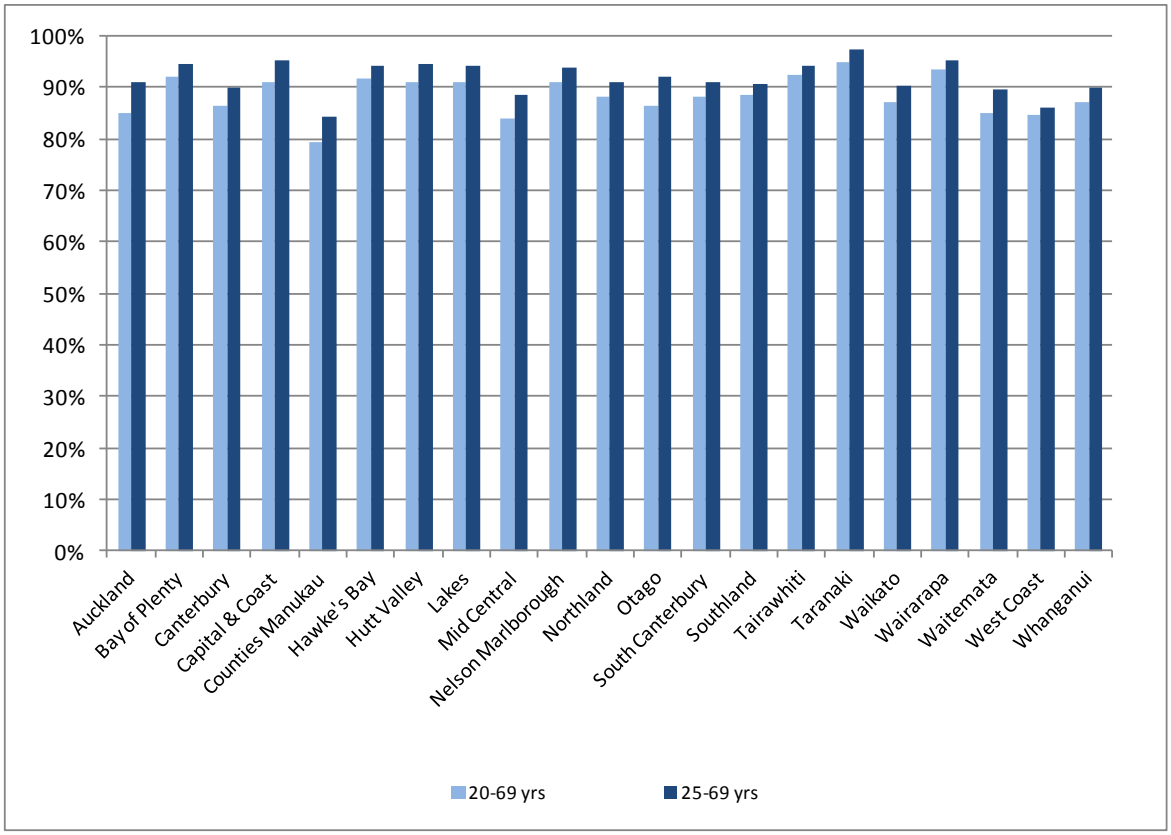
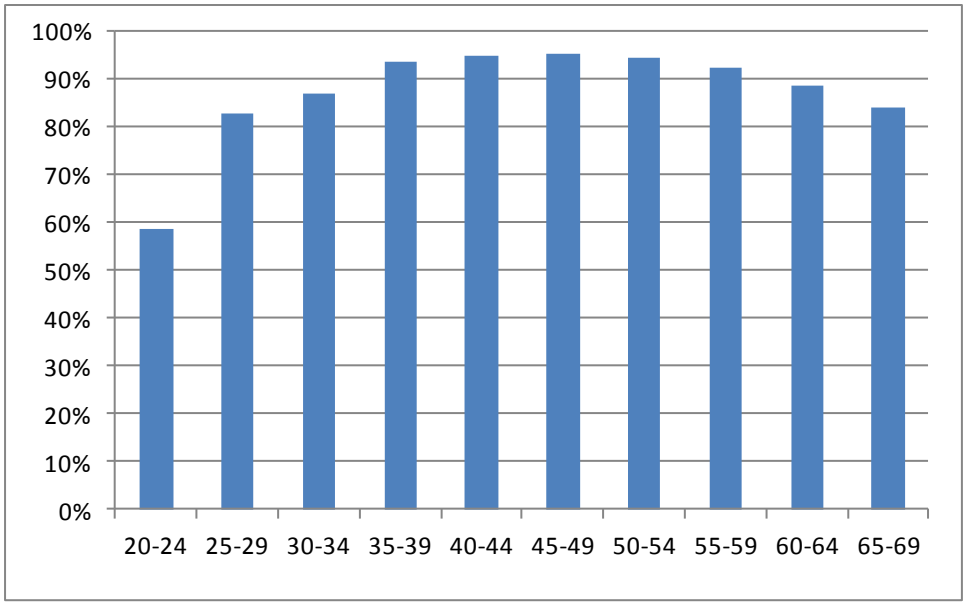


Figure 7 - Five-year coverage by DHB (women screened in the five years prior to 30 June 2012, as proportion of hysterectomy-adjusted female population)



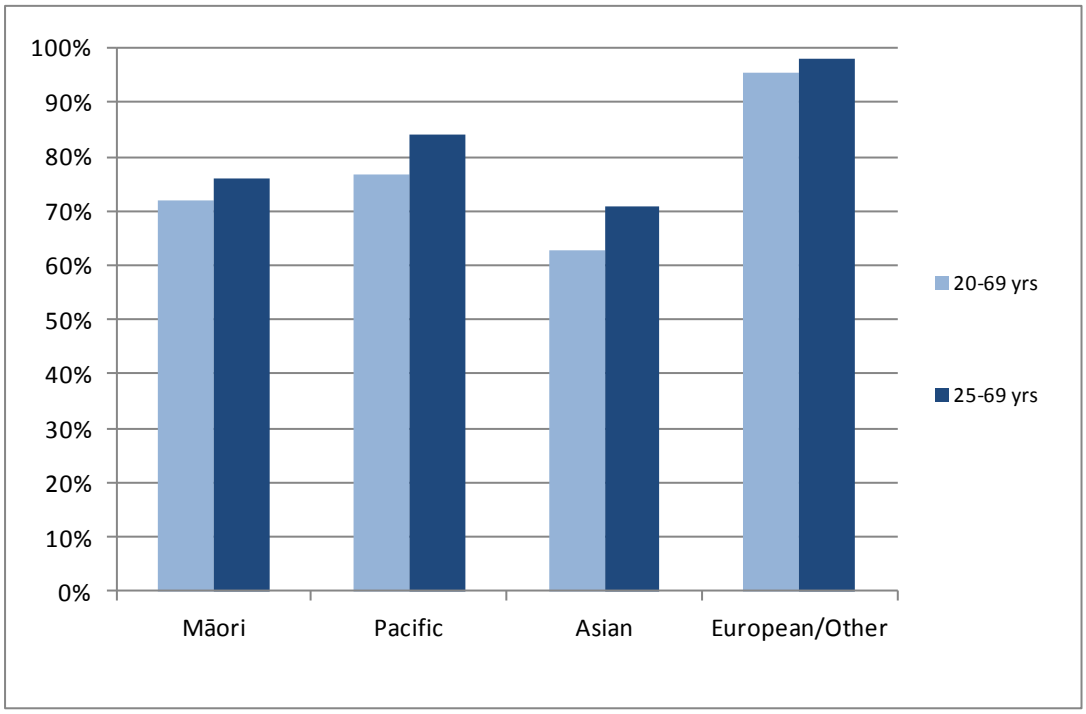
Note: Coverage calculated using population projection for mid-2012 based on 2006 Census data.
See also Table 30

Figure 8 - Five-year coverage by five-year age-group (women screened in the five years prior to 30 June 2012, as proportion of hysterectomy-adjusted female population)



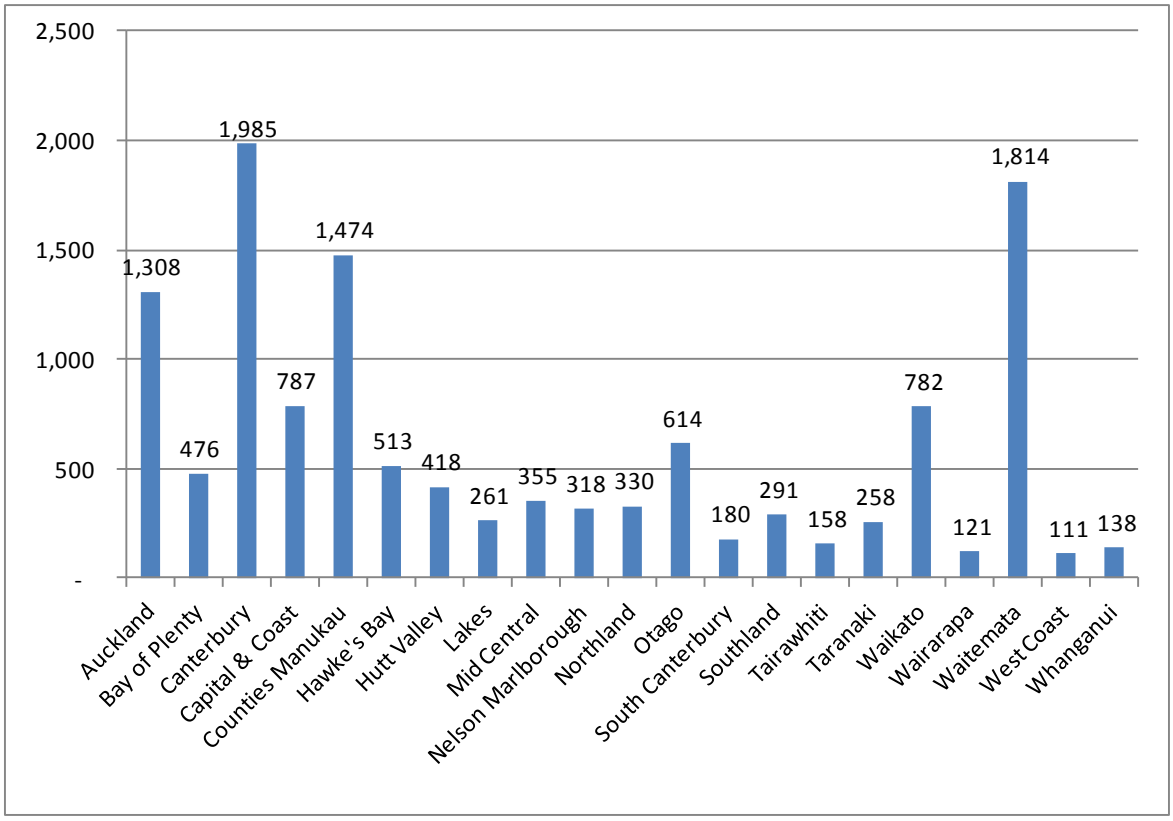
Note: Coverage calculated using population projection for mid-2012 based on 2006 Census data.
See also Table 29

Figure 9 - Five-year coverage by ethnicity (women screened in the five years prior to 30 June 2012, as a proportion of hysterectomy-adjusted female population)



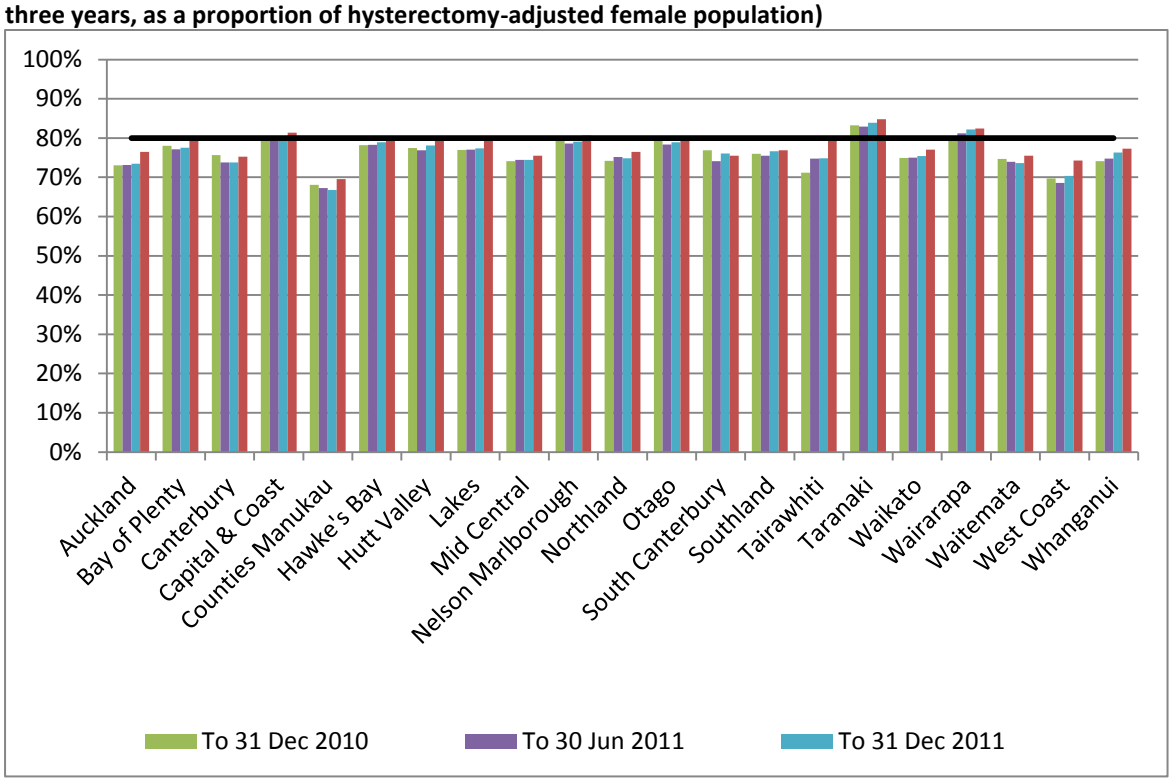
Note: Coverage calculated using population projection for mid-2012 based on 2006 Census data. See also Table 31

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 30 June 2012, by DHB



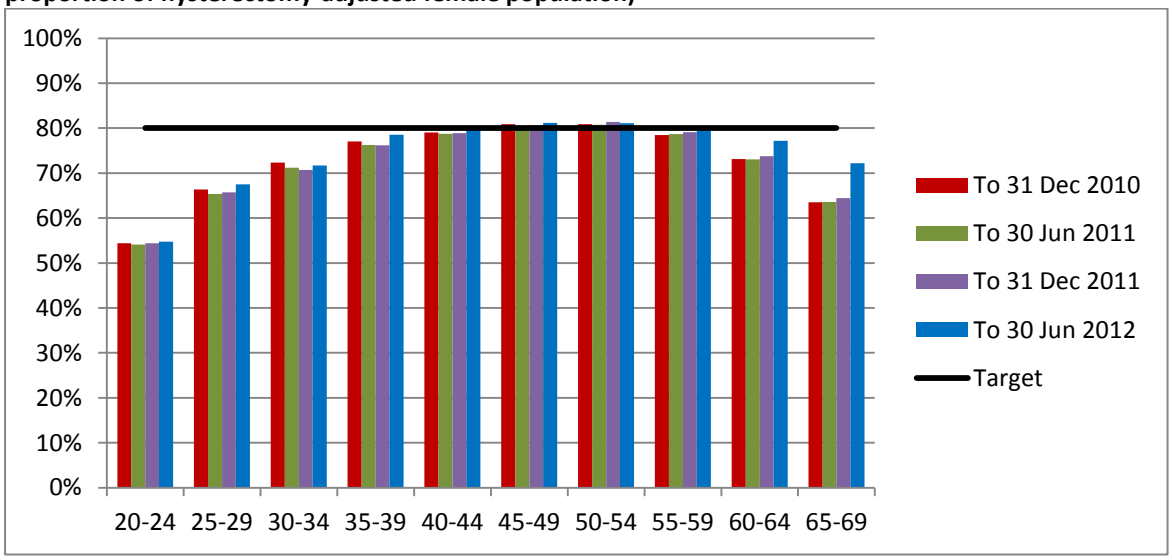
Excludes two women whose DHB was unknown and three women whose recorded age was less than ten years at the time of their cervical sample (likely data mis-entry).
See also Table 32

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)



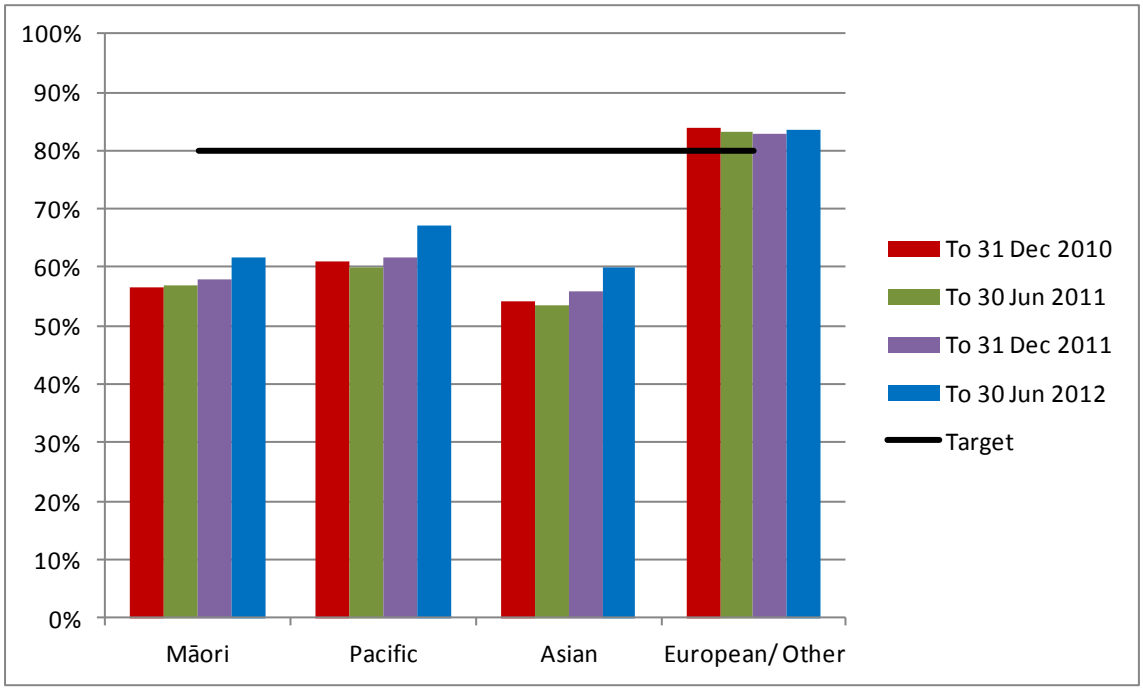
Coverage calculated using population projection at the end date shown, based on 2006 Census data.
Target 80%.
See also Table 36

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 37

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 38.

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. 30 June 2012).

This indicator is presented as the number of women with a first screening event by age, ethnicity 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

19,547 women aged 20-69 years at the end of the period had their first screening event in the period 1 January to 30 June 2012. This constituted 9.2% of the 212,091 women aged 20-69 years with a cervical sample taken in the period (screening event), and 1.5% of the eligible population. The median age (at the end of the reporting period) of women with a first event recorded was 26 years.

The age group with the highest number of first screening events was women aged 20-24 years. 8,771 women aged 20-24 had their first screening event recorded on the register during this reporting period, accounting for 33.5% of all women aged 20-69 years with first screening events (Figure 14, Table 39). 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 (44.9%) (Figure 15), and the highest proportion of eligible women at that age with a first screening event recorded in the current reporting period (5.5%) (Figure 16).

The DHBs with the highest number of women aged 20-69 years with first screening events were Auckland (3,956) and Waitemata (2,447). The DHBs where women with first screening events, as a proportion of all women with screening events, were the highest were Auckland (15.2%), Capital & Coast (10.6%) and Counties Manukau (10.5%). The DHBs where this proportion was lowest were South Canterbury (6.1%) and Wairarapa (6.0%) (Figure 17, Table 1).

The ethnic group with the highest number of women with first screening events was European/Other (14,042) (Table 2). The group with the highest proportion of their eligible population being screened for the first time was Asian women (1.7%), and was lowest for Māori women (0.9%) (Table 2). The proportion of women screened who were being screened for the first time was highest for Asian women (14.7%) (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 22 years for Māori women, 26 years for Pacific women, and 25 years for European/Other women) (Table 3).

Trends

The number of women with a first screening event recorded on the NCSP Register has decreased, from 21,715 women in the previous period, to 19,547 in the current period. This appears to be driven by a drop in the number of women with first screening events in the 20-24 years age group (from 10,908 to 8,771), and is the lowest number of first events in this age group since this measure was first reported, in Report 30. The proportion of the eligible population this age that this represents (5.5%) is also lower than the previous reporting period (6.9%). 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 (9.2%) is lower than in the previous period (10.2%).

Patterns by age, DHB, and ethnicity are broadly similar to those seen in the previous report, apart from the reduction in women with first screening events in the 20-24 years age group. 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 30 June 2012 are shown in Figure 19 (by age), Figure 58 (by DHB), and Figure 20 (by ethnicity).

Comments

Note that this indicator can only measure the number of women with their first screening event where this occurred in New Zealand, and is recorded on the NCSP 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, or higher abnormality rates, as the latter require women to return more frequently). For example the DHB with the highest coverage, Taranaki, does not have a particularly high proportion of women with first events. 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

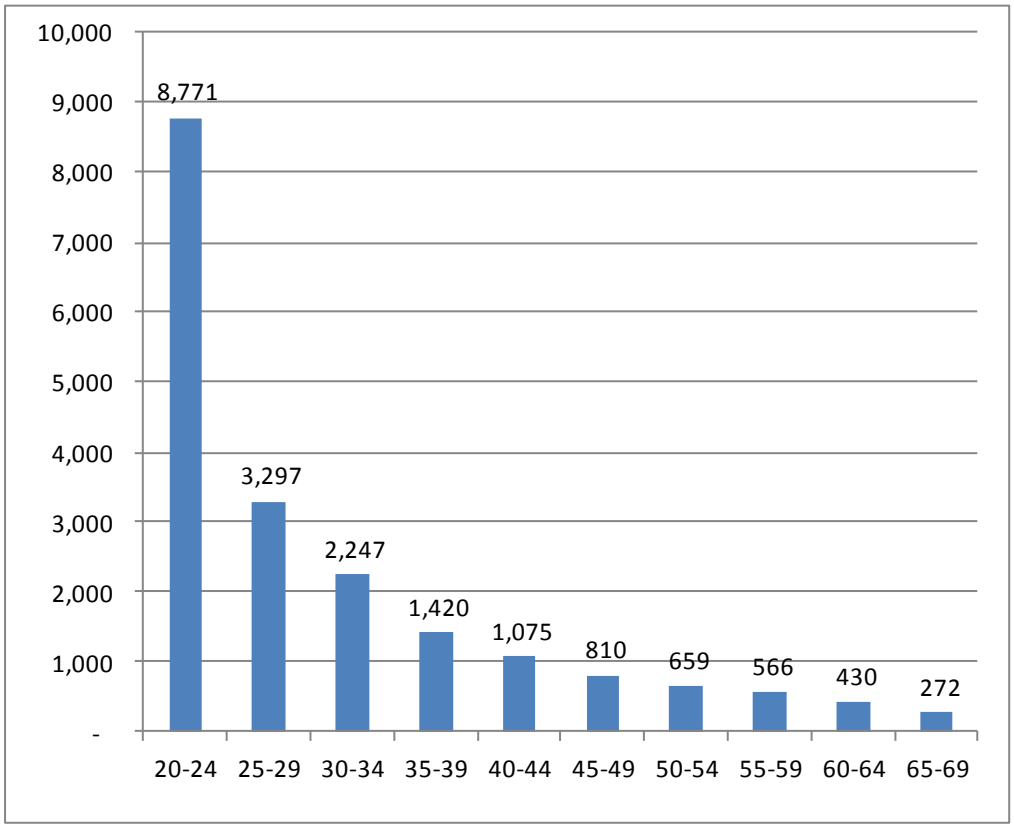


Figure 15 – Women with first screening events as a proportion of all women screened during the reporting period, by five-year age group (women aged 20-69 years at 30 June 2012)

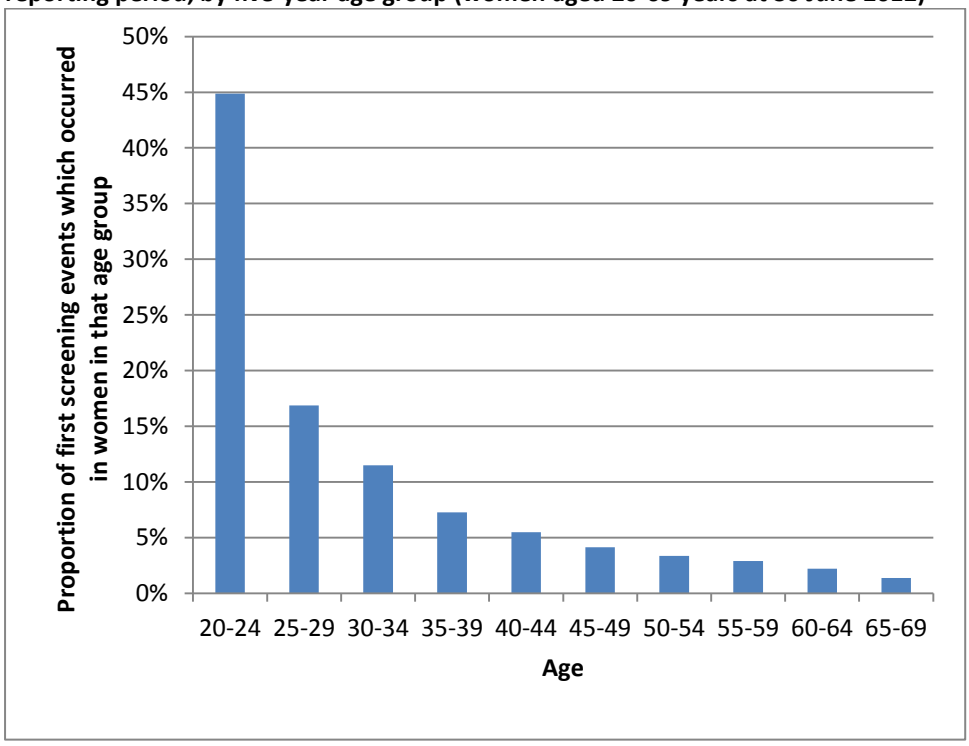
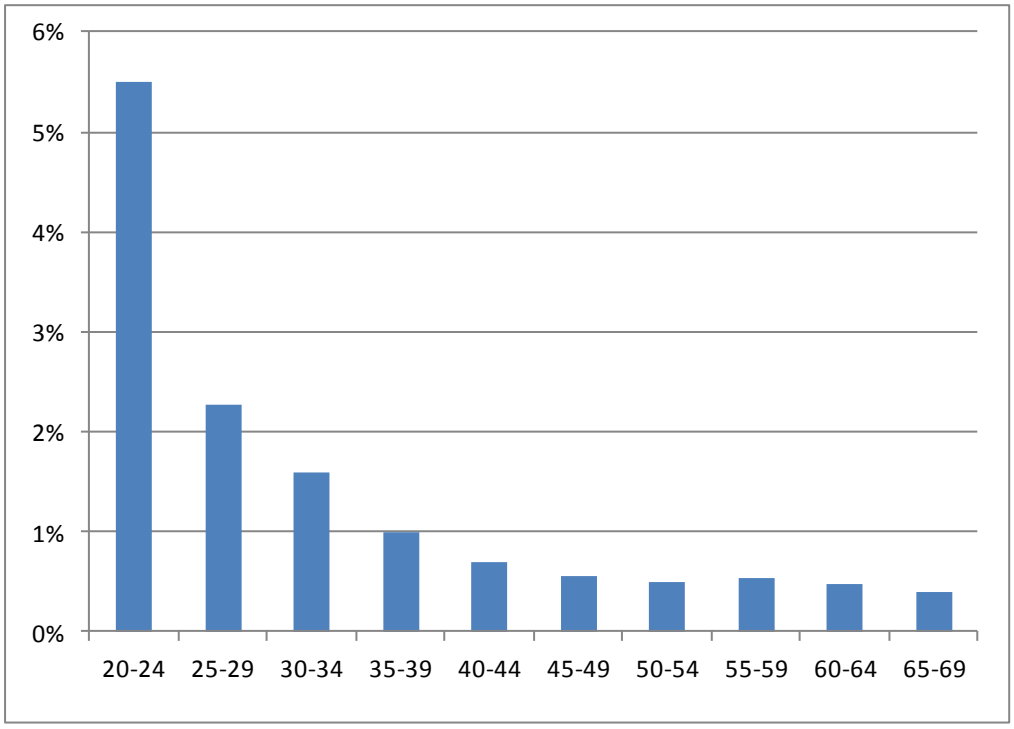


Figure 16 - Proportion of population* in that age group with their first screening event during the reporting period (women aged 20-69 years at 30 June 2012)



**Hysterectomy adjusted, 2006 Census data projected to 30 June 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 30 June 2012)

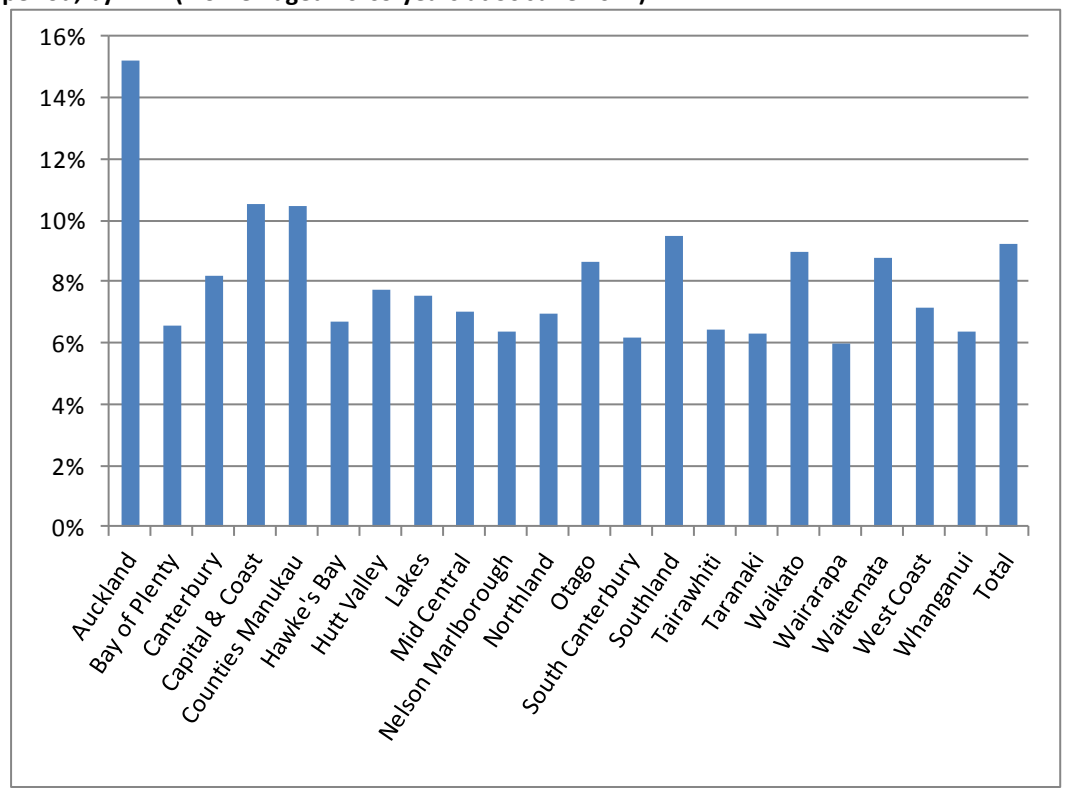


Figure 18 - Women with first screening events as a proportion of all women screened during the reporting period, by ethnicity

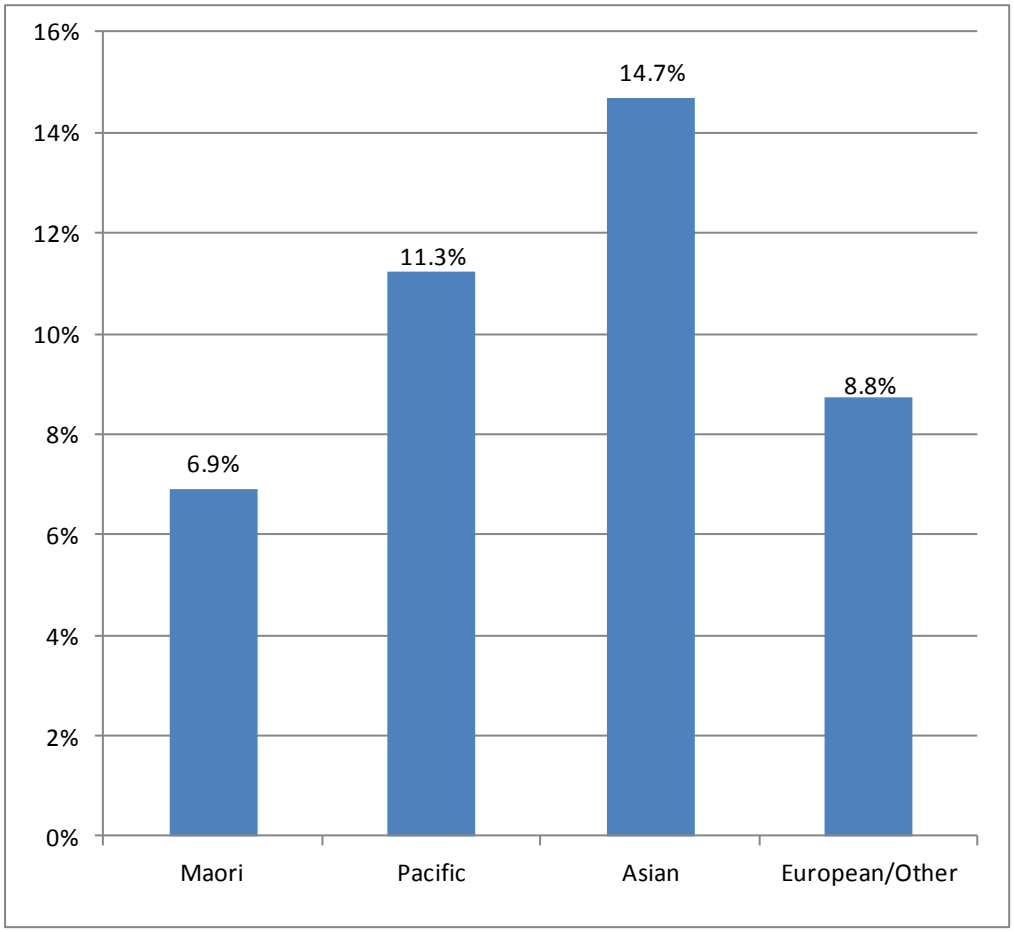


Figure 19 – Trends in the number of women with a first screening event, by age

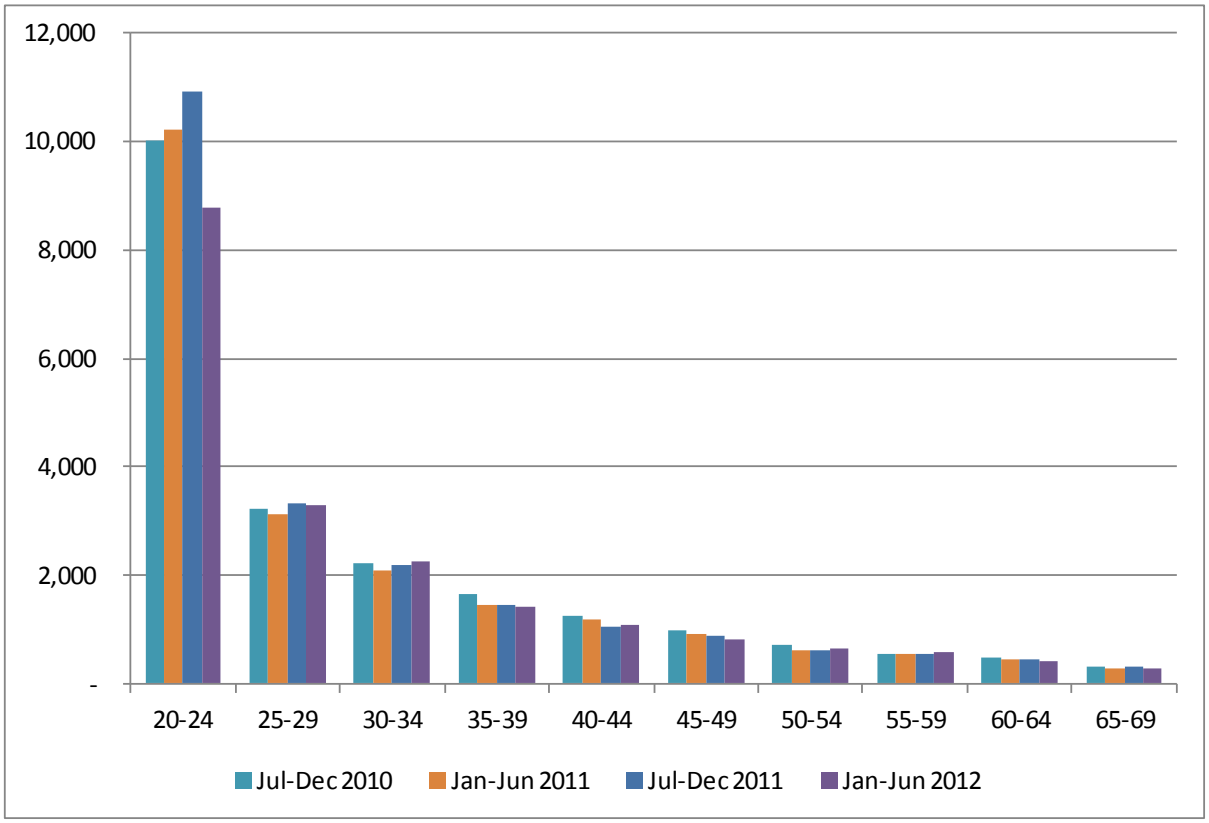


Figure 20 - Trends in the number of women with a first screening event, by ethnicity

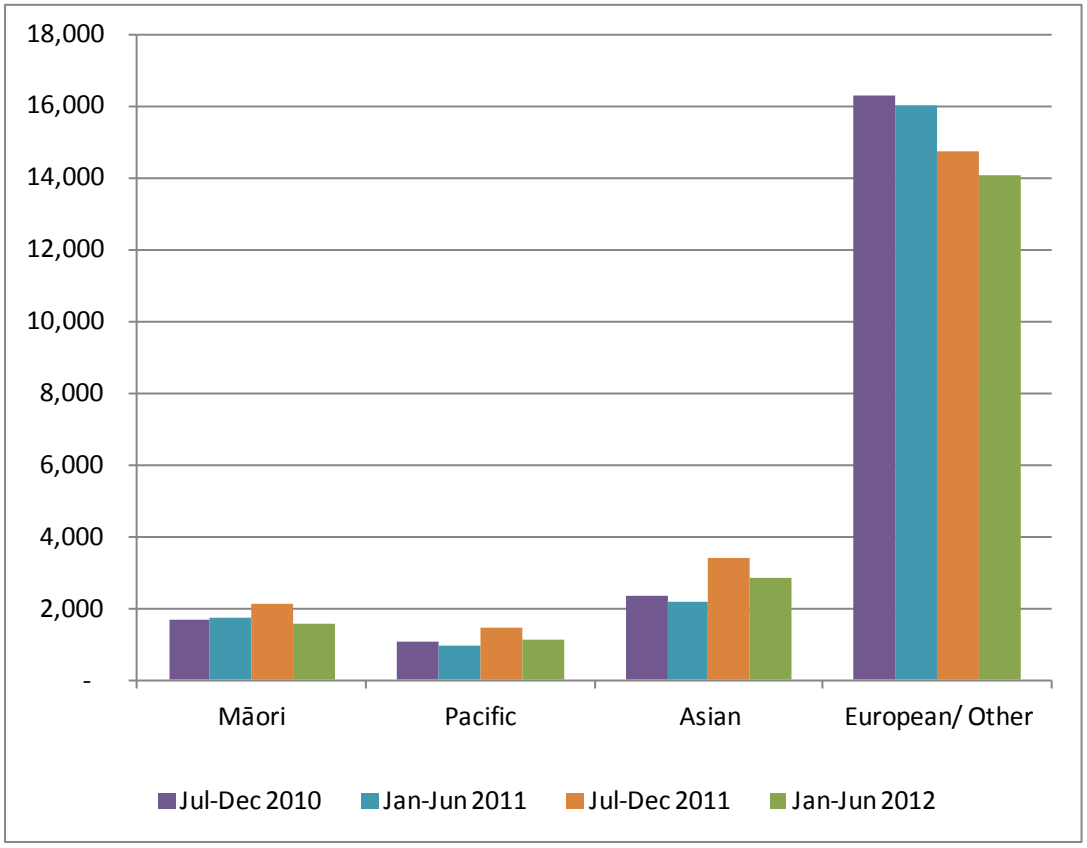


Table 1 - Women (ages 20-69 years) with first screening events as a proportion of i) total number of women with screening events, and ii) eligible women, by DHB, for period 1 January – 30 June 2012

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	3,956	26,039	15.2	149,858	2.6
Bay of Plenty	674	10,228	6.6	58,344	1.2
Canterbury	1,971	24,024	8.2	145,932	1.4
Capital & Coast	1,700	16,088	10.6	93,313	1.8
Counties Manukau	2,222	21,228	10.5	144,143	1.5
Hawke's Bay	484	7,200	6.7	42,731	1.1
Hutt Valley	511	6,608	7.7	40,962	1.2
Lakes	353	4,697	7.5	28,709	1.2
Mid Central	518	7,407	7.0	47,108	1.1
Nelson Marlborough	443	6,924	6.4	39,396	1.1
Northland	466	6,696	7.0	42,837	1.1
Otago	789	9,127	8.6	56,127	1.4
South Canterbury	156	2,537	6.1	15,118	1.0
Southland	512	5,379	9.5	32,625	1.6
Tairawhiti	141	2,181	6.5	12,657	1.1
Taranaki	338	5,372	6.3	30,065	1.1
Waikato	1,467	16,371	9.0	102,734	1.4
Wairarapa	120	2,004	6.0	10,908	1.1
Waitemata	2,447	27,863	8.8	161,217	1.5
West Coast	112	1,560	7.2	8,985	1.2
Whanganui	163	2,545	6.4	16,840	1.0
Total	**19,543**	**212,078**	**9.2**	**1,280,609**	**1.5**

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 30 June 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 2011

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	1,541	22,334	6.9	174,334	0.9
Pacific	1,125	9,997	11.3	76,026	1.5
Asian	2,839	19,350	14.7	166,131	1.7
European/Other	14,042	160,410	8.8	864,118	1.6
Total	**19,547**	**212,091**	**9.2**	**1,280,609**	**1.5**

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 30 June 2012 for that DHB, as a percent

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

Ethnic Group	Median Age
Māori	22
Pacific	26
Asian	31
European/ Other	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 31 December 2010, 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	During the current reporting period, 44 women withdrew from the NCSP Register. Results were not able to be analysed further by DHB, age, or ethnicity for the current reporting period, due to limitations in the data from the NCSP Register.
Trends	The number of women who withdrew in the current reporting period (44 women) is slightly higher than in the previous reporting period (39 aged 20-69 years; 39 any age). The overall number of withdrawals remain 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.

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 August 2009 – 30 September 2009 (inclusive), who i) were aged 20 – 66 years at the time the smear was taken (and hence remained within the screening target age throughout the period); and ii) were given a recommendation to return at the regular interval of three years as a result of their smear in August/ September 2009 (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 30 June 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	40,930 women had a smear taken in August or September 2009, 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, 8,865 (21.7%) 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 (30.7%) and Auckland (28.9%), and was least common in Taranaki (11.7%) (Figure 21, Table 41). 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 (29.2%), and older women (aged 65-69 years) were the least likely to be re-screened early (16.4%) (Figure 22, Table 40). 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 (23.7%). Early re-screening was least common among Pacific women (18.0%) (Figure 23, Table 42).
Trends	The level of early re-screening is lower than in the previous monitoring report, when it was 22.5%. 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 most DHBs, but increases were seen in Counties Manukau, Hawke's Bay, Mid Central, Otago, Southland, Tairawhiti and Whanganui. Longer terms trends by DHB are shown in Figure 24. Early re-screening has reduced among almost all age groups, although the downward trend is less clear among women aged 25-34 years. Longer terms trends by age are shown in Figure 25. Early re-screening has also decreased in all ethnic groups except for Māori women who experienced a slight increase (from 20.6% to 21.8%).
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 21 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by DHB

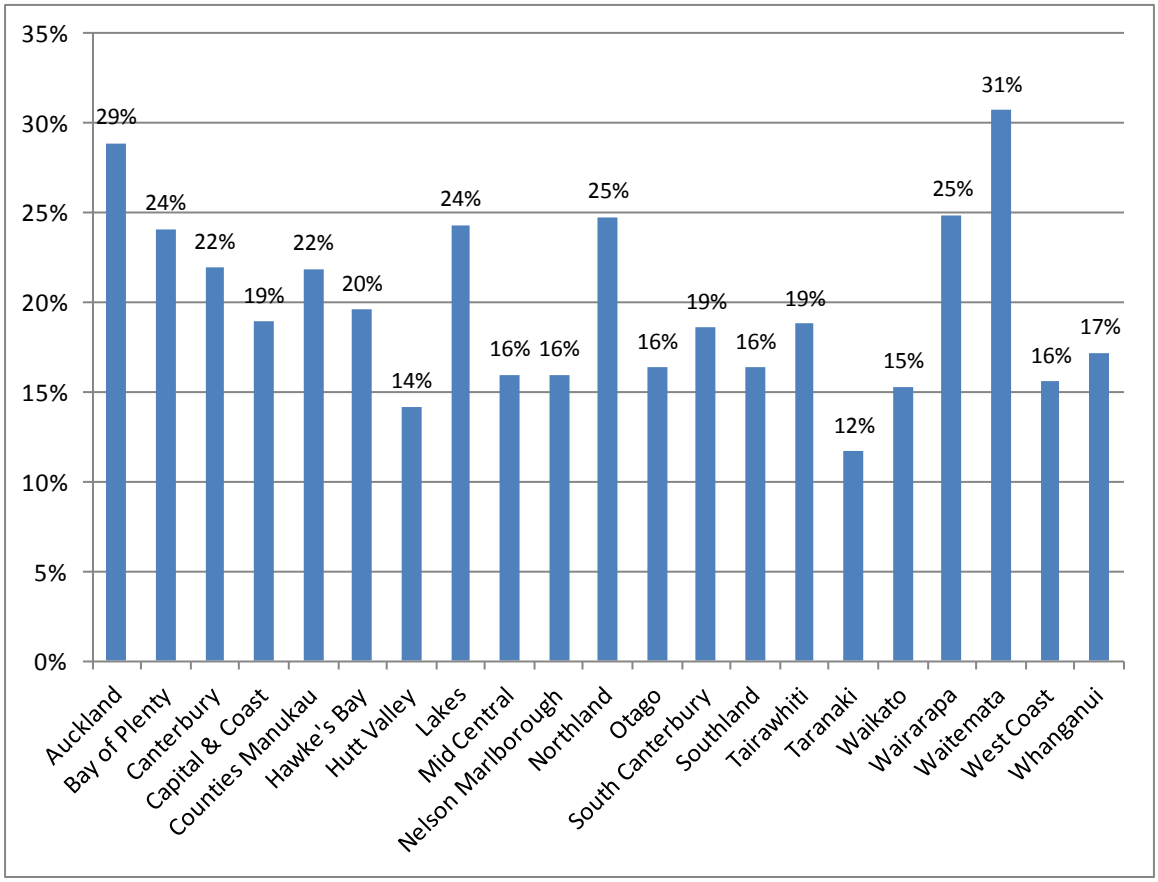


Figure 22 - Proportion of women recommended to return a the routine interval (three years) who were re-screened early, by five-year age group

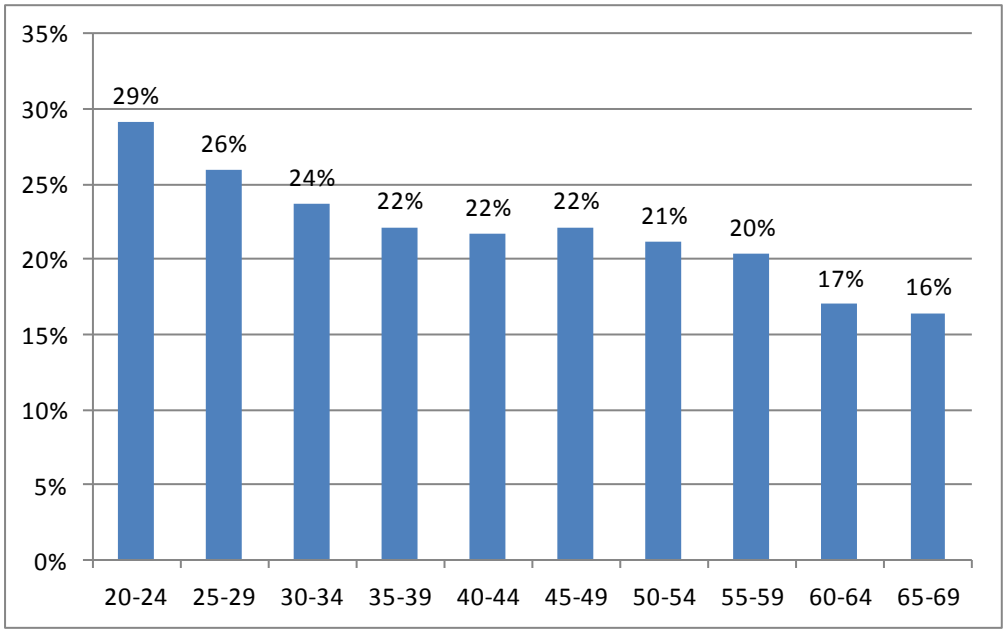


Figure 23 - Proportion of women recommended to return a the routine interval (three years) who were re-screened early, by ethnicity

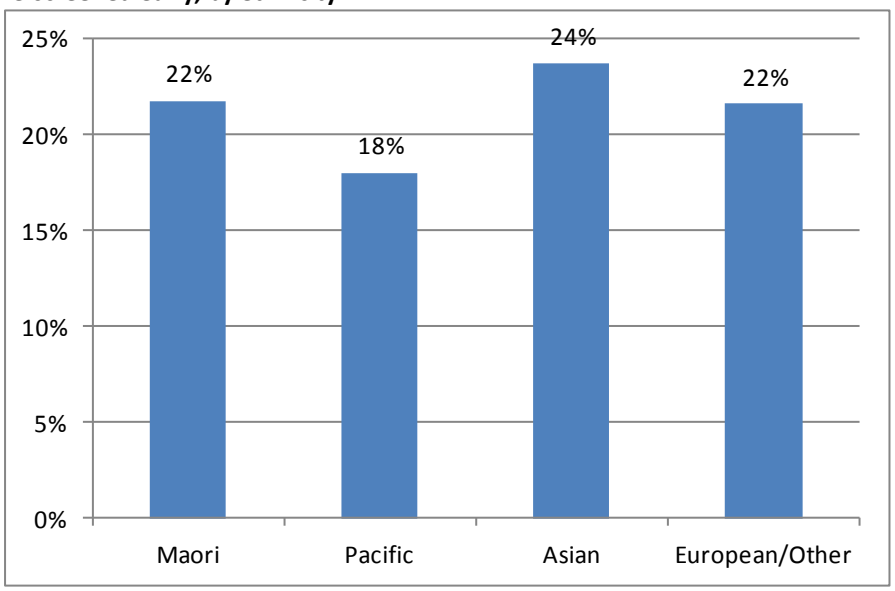


Figure 24 – Trends in the proportion of women recommended to return at the routine interval (three years) who were re-screened early, by DHB

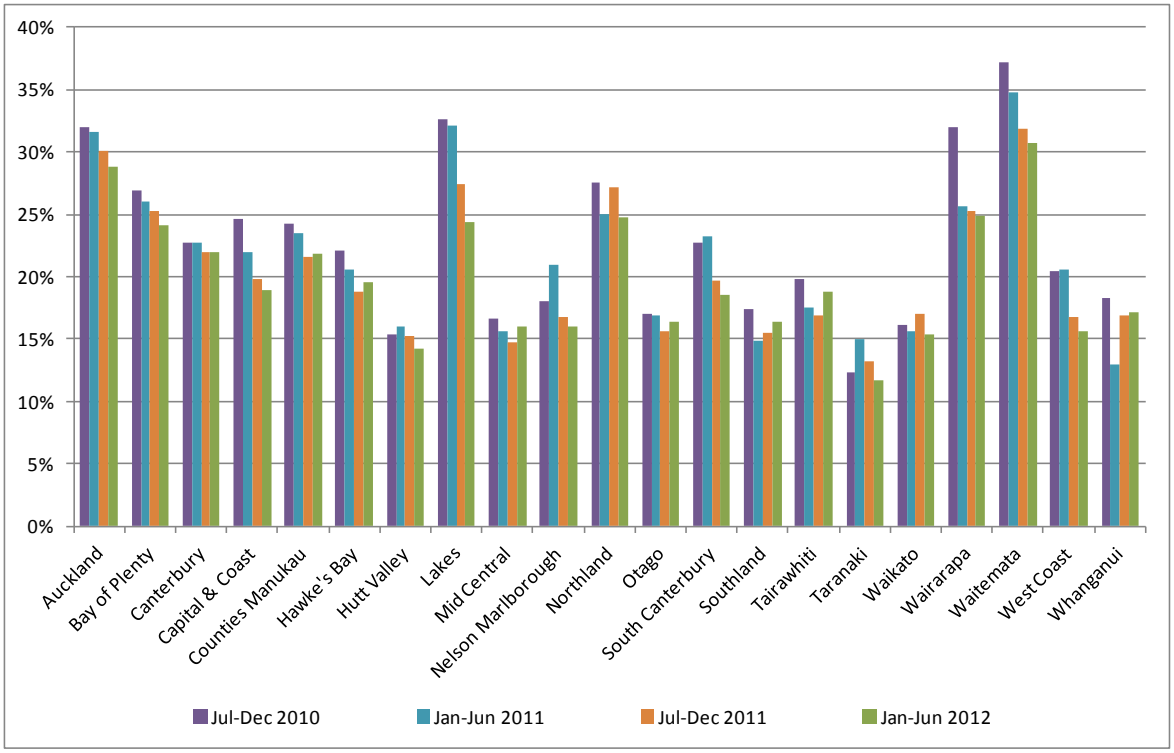
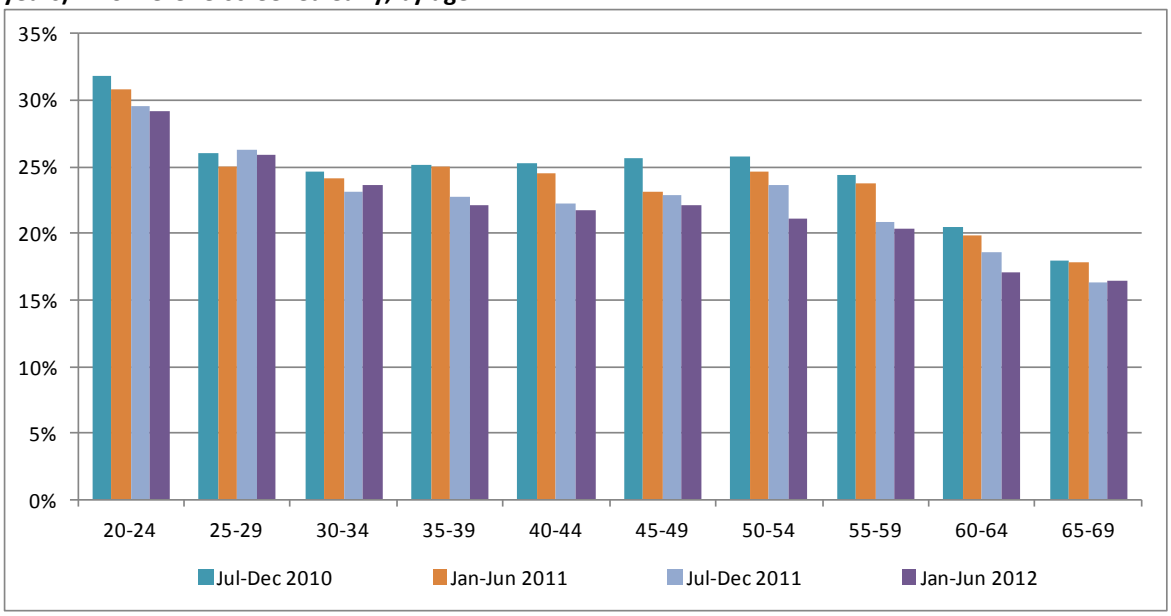


Figure 25 - Trends in the proportion of women recommended to return at the routine interval (three years) who were re-screened early, by age



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 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

Eight laboratories reported on cytology taken during this reporting period. A total of 222,958 cytology samples were taken, over 99.9% of which were liquid-based cytology (LBC), less than 0.01% were conventional cytology, and less than 0.01% were a combination of the two (Table 4). In all laboratories, virtually all samples are LBC. Diagnostic Medlab Ltd, Medlab South Christchurch 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 (Aotea Pathology Ltd, LabPLUS and Medlab Central) to seven (Canterbury Health Laboratories and Southern Community Labs) (Table 4).

Unsatisfactory cytology

2,728 cytology samples (1.2%) were unsatisfactory. These are reported on in more detail in Table 5 and Table 7. The remaining satisfactory samples are reported on in more detail in Table 6, and Table 8 to Table 11.

Nationally, the unsatisfactory rate for LBC was 1.2%. Four of the eight laboratories had unsatisfactory rates within the target range for LBC (Figure 26, Table 7). 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 0.5%, Pathlab 0.2%, Southern Community Labs 0.7%).

Unsatisfactory rates for conventional cytology have not been analysed by laboratory, due to the small number of conventional cytology samples processed in each laboratory (six 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 61.1 % (LabPLUS) to 95.7 % (Southern Community Labs). All eight 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 28, Table 8). This varied widely by laboratory however, from 4.3% (Southern Community Labs) to 38.9% (LabPLUS). Two laboratories exceeded the target (Canterbury Health Laboratories 11.1% and LabPLUS 38.9%).

Abnormal cytology results were most common in younger women (Table 10, Table 11).

HSIL cytology reports

Overall, 0.9 % of satisfactory cytology samples were HSIL, consistent with the target of at least 0.6% of samples (Figure 29, Table 9). Rates varied by laboratory from 0.5% (Aotea Pathlogy Ltd) to 5.4 % (LabPLUS). One laboratory had a rate of HSIL below target levels (Aotea Pathlogy Ltd 0.5%)

(Figure 29, Table 9).

Rates of HSIL or worse were most common in women aged 25-29 years (Table 10, Table 11).

Trends

Unsatisfactory cytology

The unsatisfactory rate in LBC samples has risen slightly from 1.1% to 1.2% in the current reporting period, and therefore has remained at the target range.

The number of laboratories meeting the target for unsatisfactory LBC samples (four of eight laboratories) has remained the same as it was in the previous reporting period. The number of laboratories with unsatisfactory rates for LBC below the lower target of 1% has also remained the same as the previous reporting period (four).

Negative vs abnormal cytology reports

The proportion of satisfactory cytology samples which are negative for intraepithelial lesion or malignancy (91.7%) is the slightly lower than that in the previous reporting period (92.1%), and correspondingly the proportion of cytology samples reported as abnormalities (8.3%) is higher than that in the previous reporting period (7.9%). As in the previous reporting period, all laboratories met the target for negative cytology. The number meeting the target for abnormal samples has remained the same at six since the previous reporting period, and conversely 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 0.8% to 0.9%). The number of laboratories meeting the target of at least 0.6% has remained the same (seven).

Longer term trends in the proportion of satisfactory cytology samples reported as HSIL are shown in Figure 30 (trends by age) and Figure 31 (trends by laboratory).

Comments

High rates of abnormal samples from LabPLUS are consistent with previous reports, and as discussed in previous monitoring reports it is thought that the case-mix of this laboratory (ie a higher 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

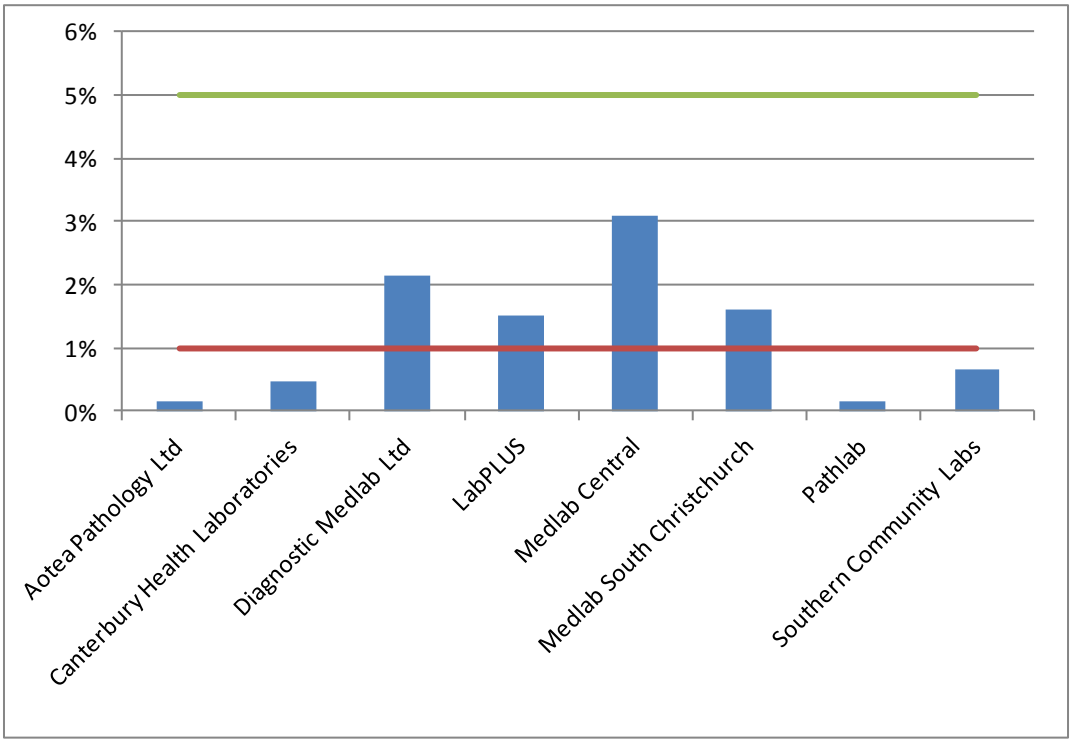
therefore need to be interpreted with some care, to allow for this difference in workloads.

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 data indicate that many high grade squamous cytology reports are associated with HPV types which are potentially preventable by vaccination,[7-9] and that this is particularly true for younger women.[10-12] 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.

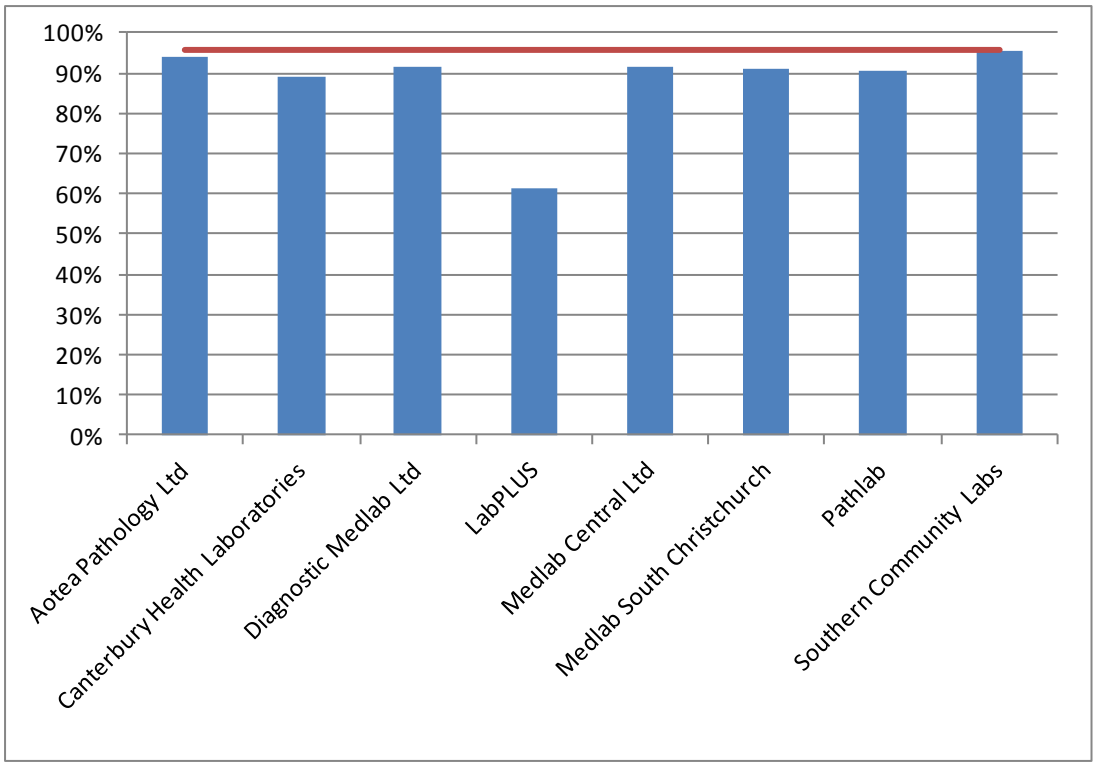
It is possible that data entry errors may be the cause of the remaining cytology tests which still appear to have involved conventional cytology only. The number of these tests is extremely small (six tests; less than 0.01% of all samples taken during this period).

Figure 26 - Proportion of total LBC samples reported as unsatisfactory by laboratory, 1 January – 30 June 2012 (Green line=upper target limit; red line=lower target limit)



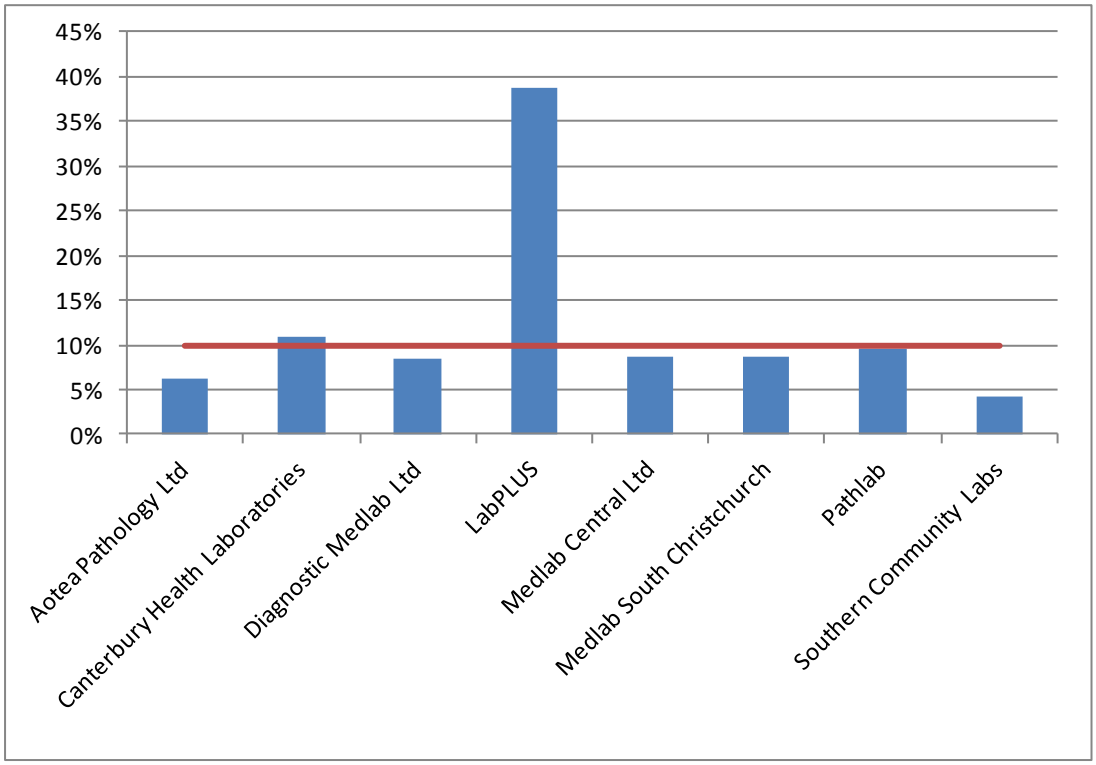
Target for LBC: 1-5%

Figure 27 - Proportion of total satisfactory samples reported as negative by laboratory, 1 January – 30 June 2012



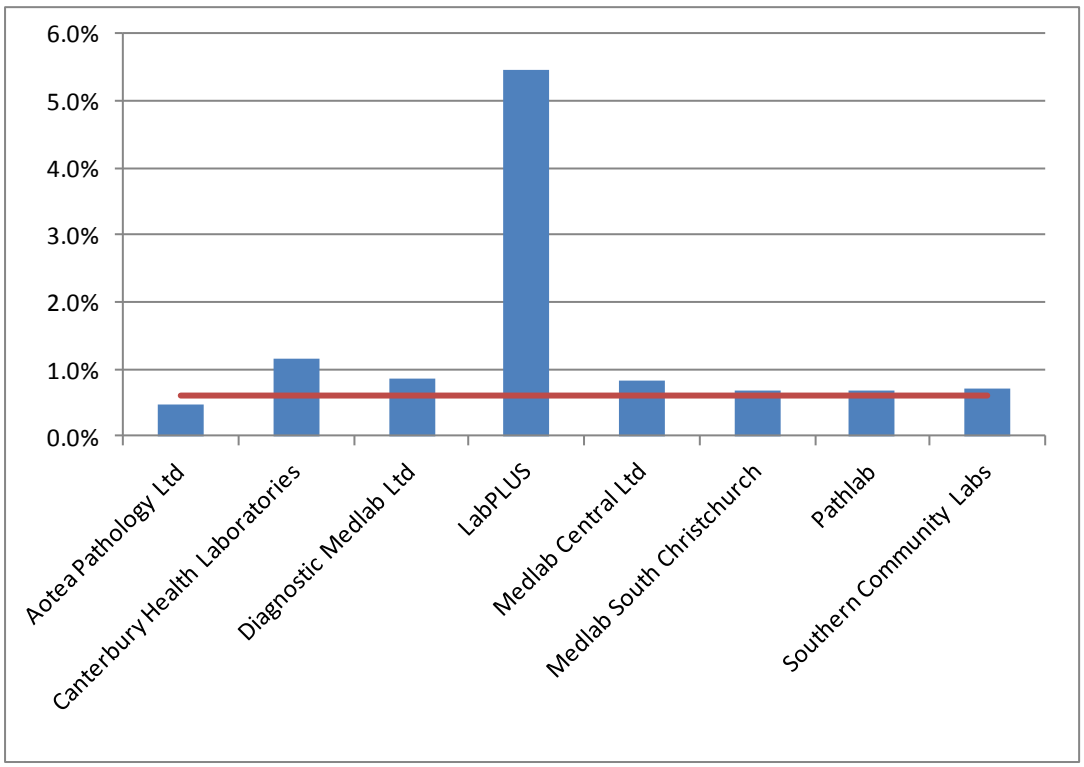
Note: Line shows negative target of no more than 96%

Figure 28 - Proportion of total satisfactory samples reported as abnormalities by laboratory, 1 January – 30 June 2012



Note: Line shows abnormal target no more than 10%

Figure 29 - Proportion of total satisfactory samples reported as HSIL by laboratory, 1 January – 30 June 2012



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

Table 4 - Laboratory cytology reporting by type of cytology sample (1 January – 30 June 2012)

Organisation	All samples	By cytology specimen type					
		LBC		Conventional		Combined	
	N	N	%	N	%	N	%
Aotea Pathology Ltd	22,767	22,766	>99.9	1	<0.01	0	0.0
Canterbury Health Laboratories	12,684	12,677	>99.9	1	<0.01	6	0.05
Diagnostic Medlab Ltd	56,037	56,037	100.0	0	0.0	0	0.0
LabPLUS	8,225	8,224	>99.9	0	0.0	1	<0.01
Medlab Central Ltd	18,056	18,055	>99.9	0	0.0	1	<0.01
Medlab South Christchurch	15,079	15,079	100.0	0	0.0	0	0.0
Pathlab	21,457	21,457	100.0	0	0.0	0	0.0
Southern Community Labs	68,653	68,646	>99.9	4	<0.01	3	<0.01
TOTAL	**222,958**	**22,941**	**>99.9**	**6**	**<0.01**	**11**	**<0.01**

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 5 - Satisfactory and unsatisfactory cytology reporting by laboratory (1 January – 30 June 2012)

Laboratory	All Samples	Satisfactory		Unsatisfactory	
	N	N	%	N	%
Aotea Pathology Ltd	22,767	22,728	99.8%	39	0.2%
Canterbury Health Laboratories	12,684	12,622	99.5%	62	0.5%
Diagnostic Medlab Ltd	56,037	54,827	97.8%	1,210	2.2%
LabPLUS	8,225	8,101	98.5%	124	1.5%
Medlab Central	18,056	17,499	96.9%	557	3.1%
Medlab South Christchurch	15,079	14,834	98.4%	245	1.6%
Pathlab	21,457	21,420	99.8%	37	0.2%
Southern Community Labs	68,653	68,199	99.3%	454	0.7%
Total	**222,958**	**220,230**	**98.8%**	**2,728**	**1.2%**

See also Table 7

Table 6 - Laboratory cytology reporting by general result (1 January – 30 June 2012) – percentage of satisfactory samples

Laboratory	Negative		Abnormal	
	N	%	N	%
Aotea Pathology Ltd	21,330	93.8	1,398	6.2
Canterbury Health Laboratories	11,215	88.9	1,407	11.1
Diagnostic Medlab Ltd	50,205	91.6	4,622	8.4
LabPLUS	4,953	61.1	3,148	38.9
Medlab Central Ltd	15,983	91.3	1,516	8.7
Medlab South Christchurch	13,522	91.2	1,312	8.8
Pathlab	19,382	90.5	2,038	9.5
Southern Community Labs	65,255	95.7	2,944	4.3
Total	**201,845**	**91.7**	**18,385**	**8.3**

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

Table 7 - Laboratory reporting of unsatisfactory results by type of cytology sample (1 January – 30 June 2012)

Laboratory	Conventional			LBC			Combined			TOTAL		
	Unsat	Total	%	Unsat	Total	%	Unsat	Total	%	Unsat	Total	%
Aotea Pathology Ltd	-	1	0.0	39	22,766	0.2	-	-	0.0	39	22,767	0.2
Canterbury Health Laboratories	-	1	0.0	62	12,677	0.5	-	6	0.0	62	12,684	0.5
Diagnostic Medlab Ltd	-	-	0.0	1,210	56,037	2.2	-	-	0.0	1,210	56,037	2.2
LabPLUS	-	-	0.0	124	8,224	1.5	-	1	0.0	124	8,225	1.5
Medlab Central Ltd	-	-	0.0	556	18,055	3.1	1	1	100.0	557	18,056	3.1
Medlab South Christchurch	-	-	0.0	245	15,079	1.6	-	-	0.0	245	15,079	1.6
Pathlab	-	-	0.0	37	21,457	0.2	-	-	0.0	37	21,457	0.2
Southern Community Labs	-	4	0.0	454	68,646	0.7	-	3	0.0	454	68,653	0.7
Total	**-**	**6**	**0.0**	**2,727**	**222,941**	**1.2**	**1**	**11**	**9.1**	**2,728**	**222,958**	**1.2**

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 8 - Laboratory cytology reporting by cytological category (1 January – 30 June 2012) – counts

Laboratory	Result									Total
	Negative	ASC-US	LSIL	ASC-H	HSIL	SC	AGC/ AIS	Adeno-carcinoma	Malignant Neoplasm	
Aotea Pathology Ltd	21,330	514	641	117	110	-	14	2	-	22,728
Canterbury Health Laboratories	11,215	383	719	140	147	-	12	5	1	12,622
Diagnostic Medlab Ltd	50,205	1,324	2,416	342	476	5	50	8	1	54,827
LabPLUS	4,953	1,151	908	593	441	-	48	3	4	8,101
Medlab Central Ltd	15,983	593	621	135	147	1	16	3	-	17,499
Medlab South Christchurch	13,522	500	530	160	100	1	18	1	2	14,834
Pathlab	19,382	666	1,014	182	147	2	20	5	2	21,420
Southern Community Labs	65,255	594	1,687	110	495	5	36	17	-	68,199
Total	**201,845**	**5,725**	**8,536**	**1,779**	**2,063**	**14**	**214**	**44**	**10**	**220,230**

Table 9 - Laboratory cytology reporting by cytological category (1 January – 30 June 2012) - percentage of all satisfactory samples

Laboratory	Percentage of Laboratory's Result								
	Negative	ASC-US	LSIL	ASC-H	HSIL	SC	AGC/AIS	Adeno-carcinoma	Malignant Neoplasm
Aotea Pathology Ltd	93.8	2.3	2.8	0.5	0.5	-	0.06	0.01	-
Canterbury Health Laboratories	88.9	3.0	5.7	1.1	1.2	-	0.10	0.04	0.01
Diagnostic Medlab Ltd	91.6	2.4	4.4	0.6	0.9	0.01	0.09	0.01	<0.005
LabPLUS	61.1	14.2	11.2	7.3	5.4	-	0.59	0.04	0.05
Medlab Central Ltd	91.3	3.4	3.5	0.8	0.8	0.01	0.09	0.02	-
Medlab South Christchurch	91.2	3.4	3.6	1.1	0.7	0.01	0.12	0.01	0.01
Pathlab	90.5	3.1	4.7	0.8	0.7	0.01	0.09	0.02	0.01
Southern Community Labs	95.7	0.9	2.5	0.2	0.7	0.01	0.05	0.02	-
Total	**91.7**	**2.6**	**3.9**	**0.8**	**0.9**	**0.01**	**0.10**	**0.02**	**<0.005**

Target: HSIL ≥ 0.6% reported as HSIL

Table 10 - Laboratory reporting of cytological category by five-year age group (1 January – 30 June 2012) – counts

Age Group	Cytology Result									Total
	Negative	ASC-US	LSIL	ASC-H	HSIL	SC	AGC/AIS	Adeno-carcinoma	Malignant Neoplasm	
<20	1,609	103	255	42	23	-	2	-	-	2,034
20-24	22,145	1,349	2,901	499	543	1	9	-	-	27,447
25-29	20,479	800	1,458	369	480	-	21	2	-	23,609
30-34	21,770	654	954	205	334	1	20	3	-	23,941
35-39	23,681	596	750	161	230	-	31	1	1	25,451
40-44	25,664	580	728	132	152	1	28	2	2	27,289
45-49	23,919	545	490	94	98	1	14	1	-	25,162
50-54	21,610	443	378	88	78	2	29	8	-	22,636
55-59	16,871	303	243	78	50	1	18	3	2	17,569
60-64	13,181	176	189	47	31	4	20	4	2	13,654
65-69	8,942	103	99	41	22	-	14	8	-	9,229
70+	1,964	43	51	14	7	3	7	12	3	2,104
Total	**201,835**	**5,695**	**8,496**	**1,770**	**2,048**	**14**	**213**	**44**	**10**	**220,125**

Note: Excludes 14 cytology tests (10 negative, 2 ASCUS, 2 LSIL) for which the age of the woman could not be determined, as date of birth information was missing in the NCSP Register, and also excludes 91 abnormal cytology tests (general assessment code = G2), as link between date of birth and detailed interpretation data was missing in the NCSP Register.

Table 11 - Laboratory reporting of cytological category by five-year age group (1 January – 30 June 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	79.1	5.1	12.5	2.1	1.1	-	0.10	-	-
20-24	80.7	4.9	10.6	1.8	2.0	<0.005	0.03	-	-
25-29	86.7	3.4	6.2	1.6	2.0	-	0.09	0.01	-
30-34	90.9	2.7	4.0	0.9	1.4	<0.005	0.08	0.01	-
35-39	93.0	2.3	2.9	0.6	0.9	-	0.12	<0.005	<0.005
40-44	94.0	2.1	2.7	0.5	0.6	<0.005	0.10	0.01	0.01
45-49	95.1	2.2	1.9	0.4	0.4	<0.005	0.06	<0.005	-
50-54	95.5	2.0	1.7	0.4	0.3	0.01	0.13	0.04	-
55-59	96.0	1.7	1.4	0.4	0.3	0.01	0.10	0.02	0.01
60-64	96.5	1.3	1.4	0.3	0.2	0.03	0.15	0.03	0.01
65-69	96.9	1.1	1.1	0.4	0.2	-	0.15	0.09	-
70+	93.3	2.0	2.4	0.7	0.3	0.14	0.33	0.57	0.14
Total	**91.7**	**2.6**	**3.9**	**0.8**	**0.9**	**0.01**	**0.10**	**0.02**	**<0.005**

Note: Excludes 14 cytology tests (10 negative, 2 ASCUS, 2 LSIL) for which the age of the woman could not be determined, as date of birth information was missing in the NCSP Register, and also excludes 91 abnormal cytology tests (general assessment code = G2), as link between date of birth and detailed interpretation data was missing in the NCSP Register.

Figure 30 – Trends in the proportion of total satisfactory samples reported as HSIL, by age

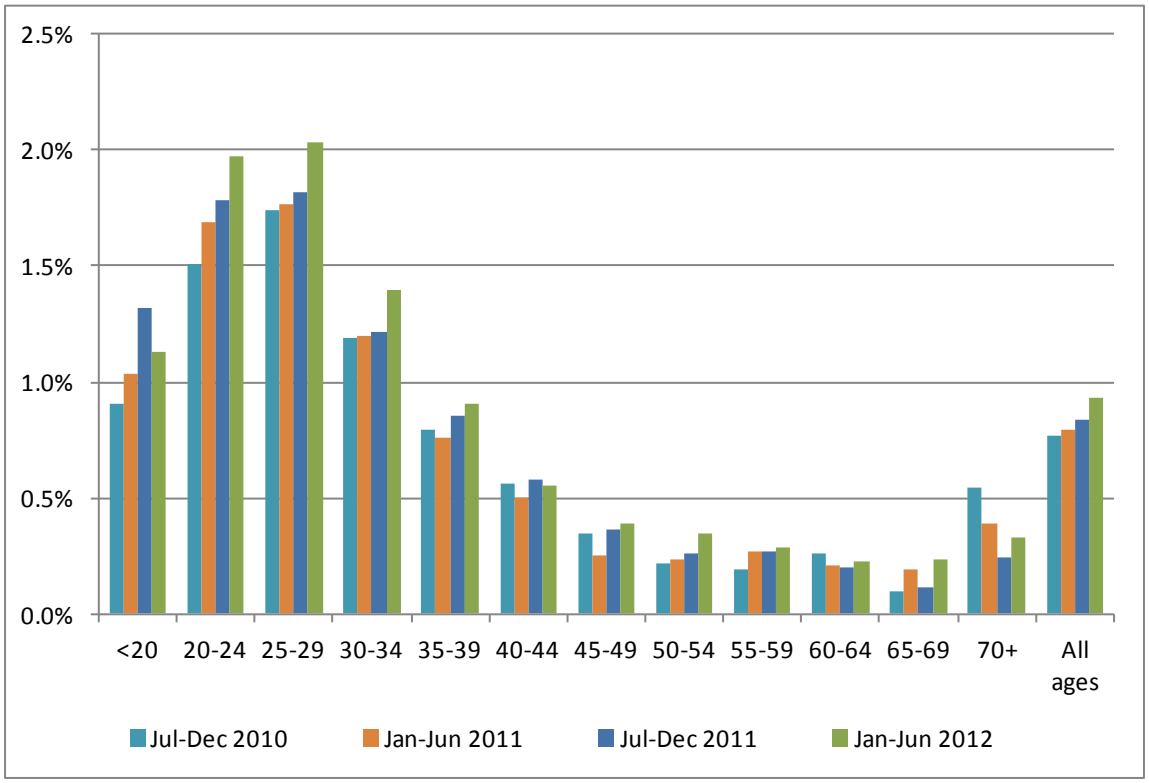
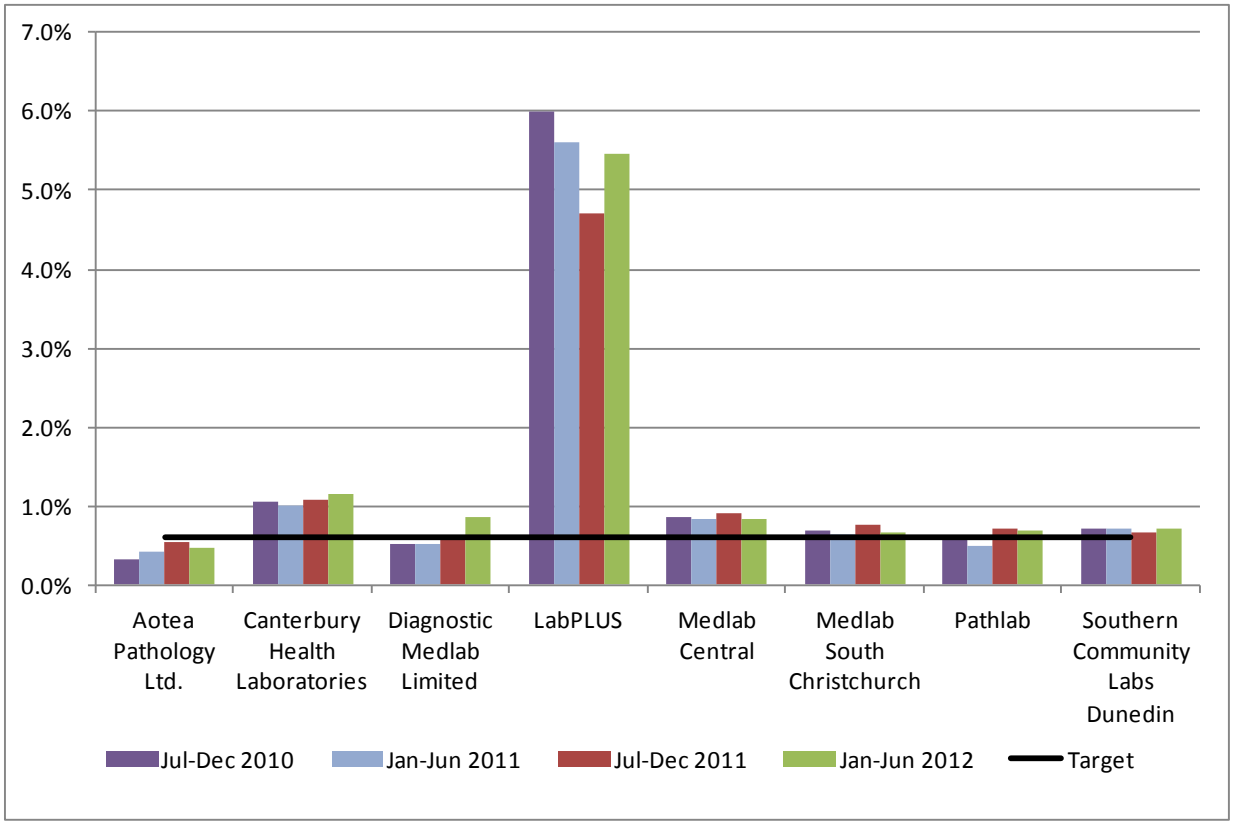


Figure 31 – Trends in the proportion of total satisfactory samples reported as HSIL, by laboratory



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 July until 31 December 2011 inclusive) were identified. Where a woman had multiple samples or a report had multiple interpretation codes, the most serious cytology result category reported was used. If there were two cytology test results for a woman of the same grade, the earliest one was used. Histology samples taken up to five days prior to and up to six months after the cytology sample were then retrieved for women with a high grade cytology report. Where there were multiple histology reports for a woman in the period, the most serious abnormality category was used. ***HSIL+SC*** 1,664 women with HSIL or SC cytology reports were identified. 138 of these women (8.3%) had no histology taken in the period from five days prior to six months after the cytology sample was taken. Among the remaining 1,526 for whom there was histology, 1,215 (79.6%) had their HSIL/SC cytology confirmed by histology (Figure 32, Table 43). All laboratories achieved the minimum target of at least 65% of cytological HSIL +SC being confirmed by histology. None of the eight laboratories exceeded 85% of HSIL+SC being histologically confirmed (Figure 32, Table 43). ***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*** 1,286 women with a cytology report of ASC-H were identified. 256 (19.9%) had no histology taken in the period from five days prior to six months after the cytology sample. Among the remaining 1,030 women, 499 (48.4%) were histologically confirmed as high grade. This proportion varied by laboratory, from 37.6% (LabPLUS) to 64.0% (Aotea Pathology Ltd) (Figure 33, Table 44).

ASC-H+HSIL+SC

A total of 2,950 women had a cytology report of ASC-H, HSIL or SC. 394 (13.4%) had no histology taken in the period from five days prior to six months after the cytology sample. Among the remaining 2,556 women, 1,714 (67.1%) were histologically confirmed as high grade. This proportion varied by laboratory, from 58.8% (Medlab South Christchurch) to 79.3% (Southern Community Labs Dunedin). The combined positive predictive value across the 2,556 women with ASC-H, HSIL, and SC and histology available is shown in Figure 33 and Table 45.

Glandular abnormalities

198 women with a glandular abnormality (AG1-AG5, AIS, AC1-AC4) were identified. 48 women (24.2%) had no histology taken in the period from five days prior to six months after the cytology sample. Among the remaining 150 women, 67 women (44.7%) were identified as having histological high grade. 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 since the previous monitoring report (83.5% in the previous period; 79.6% 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 decreased from four to none. The proportion of cytology reports with histology available has increased for HSIL or SC (90.3% in the previous report; 91.7% in the current report).

ASC-H

Positive predictive value for ASC-H cytology has decreased, from 51.4% to 48.4%, however there is no target for this measure. The proportion of cytology reports with histology available has decreased for ASC-H (from 81.3% to 80.1%).

ASC-H+HSIL+SC

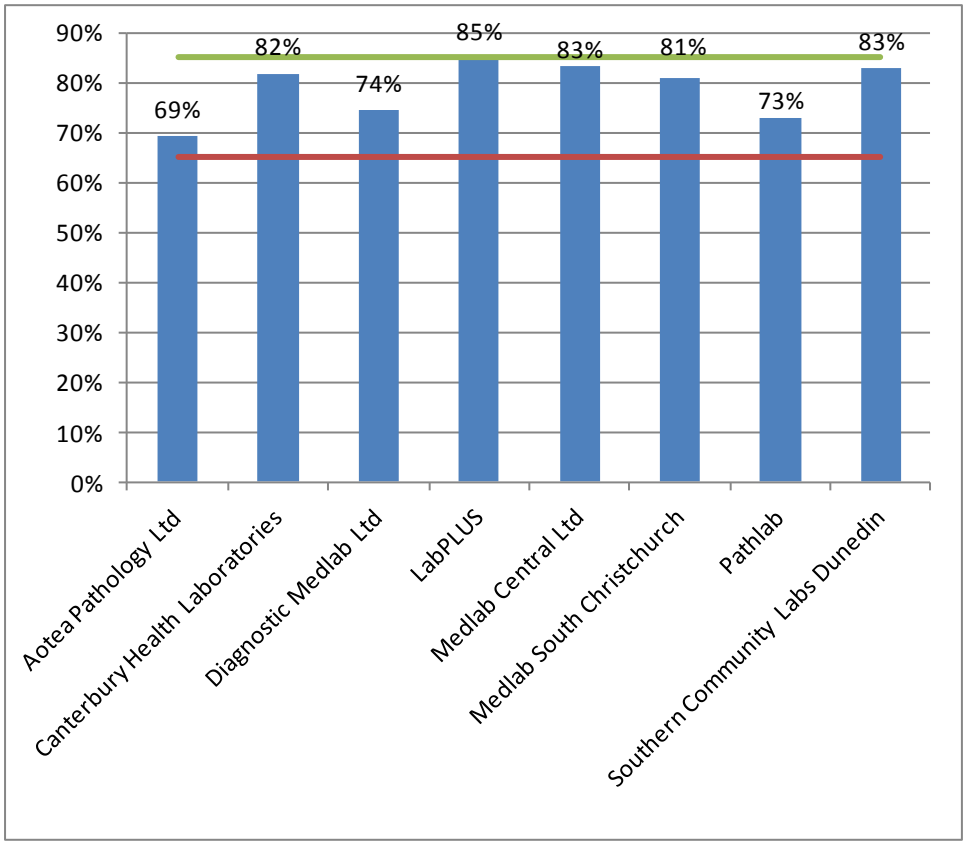
The positive predictive value for the combined group ASC-H, HSIL and SC has decreased from what it was in the previous report (70.9%) to what it is in the current report (67.1%), however there are no targets for the positive predictive value of the combined group of ASC-H, HSIL and SC.

Glandular abnormalities

The positive predictive value of glandular abnormalities decreased (from 57.6% in the previous report to 44.7% in the current report). Compared to both ASC-H cytology, and the combined group of HSIL and SC cytology, there are far fewer glandular abnormalities, and an even smaller number with

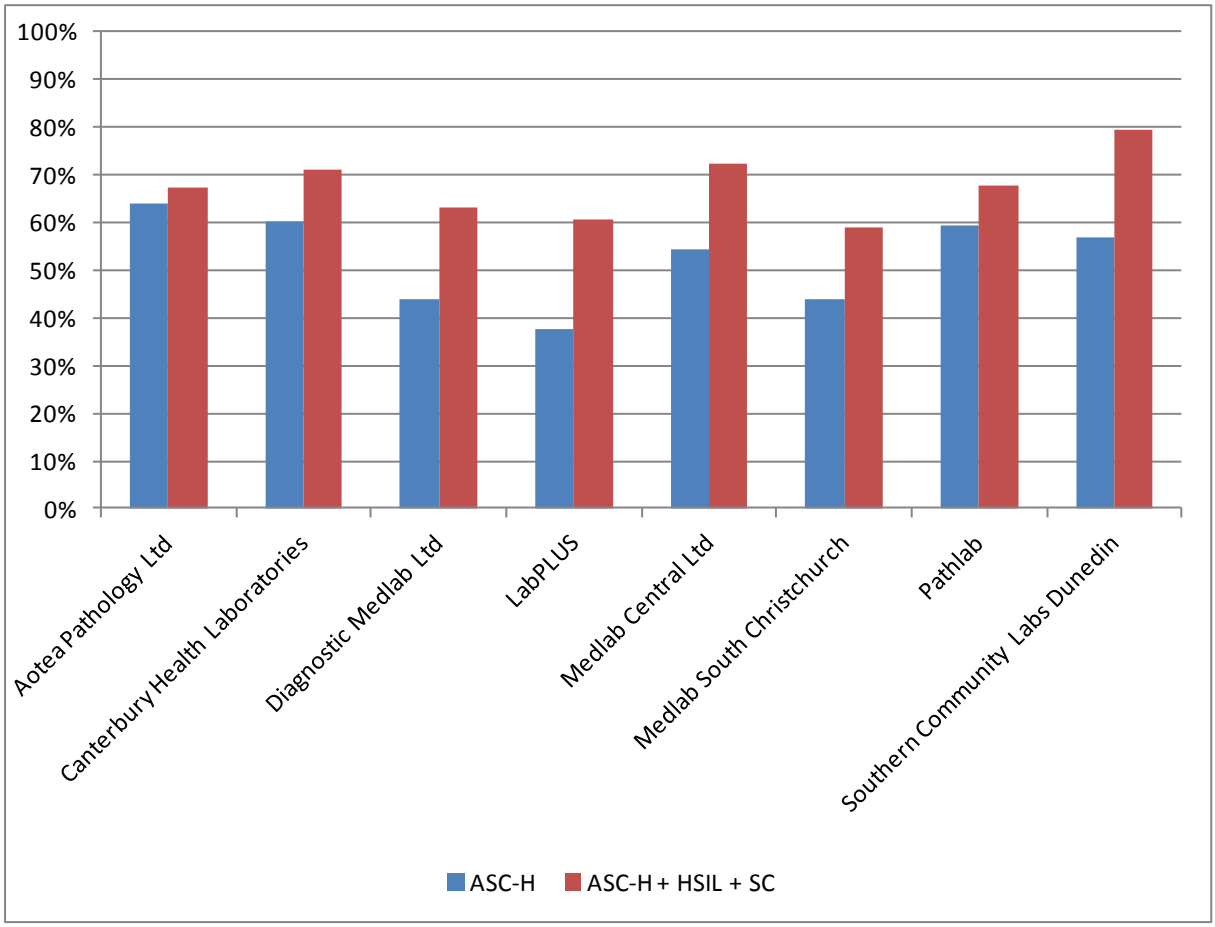
	histology available. The proportion of glandular abnormalities with histology available (75.8%) is greater than that in the previous reporting period (74.6%), but remains less than that for ASC-H (80.1%) and HSIL+SC (91.7%). Due to the small number of samples involved, glandular abnormalities were not 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 32 - Positive predictive value for CIN2+ in women with HSIL or SC cytology reports by laboratory, 1 January – 30 June 2012



Target: 65% - 85%

Figure 33 - Positive predictive value for CIN2+ in women with other high grade cytology results, by laboratory 1 January – 30 June 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	14,451 histology samples were taken during the current reporting period. 388 (2.7%) of these were insufficient for diagnosis. The remaining 14,063 samples were taken from 11,935 women. Results for these women are reported on in detail in Table 14 - Table 17. The 388 samples which were insufficient for diagnosis were taken from 378 women, 58 (15%) of whom have a record of a subsequent histology test. 49.6% of women with histology tests had negative or benign histology results (Table 12, Table 13). 22.3% of women had high grade (CIN2/3) histology results. 57 (0.5%) women had histology results which were invasive squamous cell carcinoma (ISCC), six (0.05%) which were microinvasive SCC, 35 (0.3%) which were invasive adenocarcinoma, none which were adenosquamous carcinoma and 31 (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 (1,716 women, Table 14). This was also the age group with the lowest rate of women with results which were negative or HPV only (31.4%, Table 15).
Trends	The proportion of women with negative or benign histology (49.6%) is slightly lower than that reported for the previous period (51.6%). The proportion of women with HSIL histology is slightly lower in the current period (22.3%) than in the previous period (22.7%) The proportions were the similar to those in the previous period for women with ISCC (0.5% this period; 0.5% last period), invasive adenocarcinoma (0.3% this period; 0.3% last period),

	adenosquamous carcinoma (none in this period; <0.05% last period), and adenocarcinoma in situ (0.3% this period; 0.2% 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. This is likely to be contributing to the higher number of women with adenocarcinoma histology on the NCSP Register compared to the Cancer Registry.

Table 12 - Histology results reporting by SNOMED category

SNOMED category	Women with that diagnosis	
	N	%
Negative/normal	3,043	25.5
Inflamation	816	6.8
Microglandular hyperplasia	22	0.18
Squamous metaplasia	500	4.2
Atypia	105	0.9
HPV	1,148	9.6
Condyloma acuminatum	8	0.1
Dysplasia/CIN NOS	76	0.6
CIN 1 (LSIL) or VAIN 1	1,835	15.4
CIN 2 (HSIL) or VAIN 2	758	6.4
CIN 3 (HSIL) or VAIN 3	1,171	9.8
HSIL not otherwise specified	733	6.1
Polyp	1,014	8.5
Other*	525	4.4
Microinvasive squamous cell carcinoma	6	0.1
Invasive squamous cell carcinoma	57	0.5
Benign glandular atypia	-	-
Glandular dysplasia	1	<0.05
Adenocarcinoma in situ	31	0.3
Invasive adenocarcinoma	35	0.3
Adenosquamous carcinoma	-	-
Metastatic tumour	20	0.2
Undifferentiated carcinoma	1	<0.05
Sarcoma	-	-
Carcinosarcoma	1	<0.05
Choriocarcinoma	-	-
Miscellaneous primary tumour	6	0.1
Small cell carcinoma	2	<0.05
Malignant tumour, small cell type	-	-
Melanoma	-	-
Other primary epithelial malignancy	21	0.2
Total	**11,935**	**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*

Table 13 - Histology results reporting by diagnostic group

Histology diagnosis category	Women with that histology result	
	N	%
Negative/benign (non neoplastic)	5,920	49.6
HPV	1,156	9.7
CIN1	2,016	16.9
CIN2	758	6.4
CIN3	1,171	9.8
HSIL not otherwise specified	733	6.1
Microinvasive	6	0.05
Invasive squamous cell carcinoma	57	0.5
Glandular dysplasia	1	<0.05
Adenocarcinoma in situ	31	0.3
Invasive adenocarcinoma	35	0.3
Adenosquamous carcinoma	-	-
Other cancer	51	0.4
Total	**11,935**	**100.00**

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

Table 14 - 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)	25	346	424	458	576	912	1,059	822	456	301	190	246	5,815
HPV	10	192	138	145	98	100	98	67	31	21	7	1	908
CIN1	15	471	352	282	182	179	155	90	52	37	17	6	1,838
CIN2	13	212	179	94	88	52	29	19	12	7	3	3	711
CIN3	10	289	259	186	136	87	57	30	25	16	10	2	1,107
HSIL not otherwise specified	6	202	178	117	99	70	38	14	10	7	1	1	743
Microinvasive	-	-	1	-	3	-	-	-	-	-	1	-	5
Invasive squamous cell carcinoma	-	-	4	9	5	9	2	7	5	3	5	6	55
Adenocarcinoma in situ	-	4	4	4	4	4	1	2	2	-	-	1	26
Invasive adenocarcinoma	-	-	3	4	4	2	4	1	7	3	5	6	39
Adenosquamous carcinoma	-	-	-	-	-	-	1	-	-	-	-	-	1
Other cancer	-	-	1	2	-	-	1	3	6	2	6	8	29
Total	**79**	**1,716**	**1,543**	**1,301**	**1,195**	**1,415**	**1,445**	**1,055**	**606**	**397**	**245**	**280**	**11,277**

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

Table 15 - 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)	31.6	20.2	27.5	35.2	48.2	64.5	73.3	77.9	75.2	75.8	77.6	87.9
HPV	12.7	11.2	8.9	11.1	8.2	7.1	6.8	6.4	5.1	5.3	2.9	0.4
CIN1	19.0	27.4	22.8	21.7	15.2	12.7	10.7	8.5	8.6	9.3	6.9	2.1
CIN2	16.5	12.4	11.6	7.2	7.4	3.7	2.0	1.8	2.0	1.8	1.2	1.1
CIN3	12.7	16.8	16.8	14.3	11.4	6.1	3.9	2.8	4.1	4.0	4.1	0.7
HSIL not otherwise specified	7.6	11.8	11.5	9.0	8.3	4.9	2.6	1.3	1.7	1.8	0.4	0.4
Microinvasive	-	-	0.1	-	0.3	-	-	-	-	-	0.4	-
Invasive squamous cell carcinoma	-	-	0.3	0.7	0.4	0.6	0.1	0.7	0.8	0.8	2.0	2.1
Adenocarcinoma in situ	-	0.2	0.3	0.3	0.3	0.3	0.1	0.2	0.3	-	-	0.4
Invasive adenocarcinoma	-	-	0.2	0.3	0.3	0.1	0.3	0.1	1.2	0.8	2.0	2.1
Adenosquamous carcinoma	-	-	-	-	-	-	0.1	-	-	-	-	-
Other cancer	-	-	0.1	0.2	-	-	0.1	0.3	1.0	0.5	2.4	2.9
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[13]).

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[13]).

Cytology with associated HPV 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.

Current Situation

Cytology

Eight laboratories received 222,455 cytology samples during the current reporting period. Overall, 92.4% of cytology samples were reported on within seven working days, which is above the target. Nationally, 98.6% were reported on within 15 working days, which is below the target (Table 46).

Five laboratories met the target for 90% of cytology samples to be reported to smear-takers in seven days or less (Aotea Pathology Ltd, Diagnostic Medlab Ltd, Medlab South Christchurch, Pathlab and Southern Community Labs Dunedin). The proportion of samples reported on within seven working days ranged from 80.4% (Canterbury Health Laboratories) to 100.0% (Medlab South Christchurch).

One laboratory met the target of 100% of samples reported within 15 working days (Medlab South Christchurch) (Figure 16, Figure 17, Table 46). Of the remaining seven laboratories, four had reported on at least 99% of cytology samples within 15 days (Aotea Pathology Ltd, Diagnostic Medlab

Ltd, Pathlab and Southern Community Labs Dunedin), and another one laboratory had reported on more than 95% within 15 working days.

Histology

17 laboratories received 14,449 histology samples in the current reporting period. Overall 73.2% of samples were reported on within five working days, and 94.8% were reported on in 15 working days or less. These values are below the targets (Table 47).

Four laboratories met the target of 90% of final histology results to referring colposcopists within five working days of receipt of the sample (Medlab South Christchurch, Northland Pathology Laboratory, Taranaki Medlab and Southern Community Labs Dunedin) (Figure 18, Table 47). Six laboratories met the target of 99% of final histology results within 15 working days of receiving the sample, and six of the remaining eleven had reported on at least 95% of samples within 15 days (Figure 19, Table 47).

Cytology with associated HPV triage testing

Eight laboratories received 3,410 cytology samples during the current reporting period which were associated with HPV testing for the purpose of triage of low grade abnormalities. Overall, 97.4% 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 89.4% (LabPLUS) to 100.0% (Aotea Pathology Limited and Medlab South Christchurch) (Figure 38, Table 48). The target of 100% of tests reported within 15 working days was met by two laboratories (Aotea Pathology Limited and Medlab South Christchurch). Nationally, the proportion of cytology reported within 15 days is somewhat lower for cytology associated with low grade triage HPV testing (97.4%), compared to cytology overall (98.6%). This is not true for all laboratories, however. Generally, the proportion of cytology tests reported within 15 days is similar regardless of whether there is an associated HPV triage test, however the proportion of cytology tests reported within 15 days is somewhat lower for those cytology tests with an associated HPV triage test at Southern Community Labs Dunedin (and also at LabPLUS, but based on a small number of cytology tests with associated HPV triage testing) (Figure 38).

Trends

Cytology

The overall proportion of samples reported on within seven working days decreased slightly in this period, from 93.0% in the previous monitoring period to 92.4% in the current period. The number of laboratories meeting the cytology turnaround time target of 90% for seven working days has remained the same in the current monitoring period, at five of the eight laboratories. The proportion of samples reported on within 15 working days was the same in the current reporting period (98.6%, compared to 98.6% in the previous reporting period) and the number of laboratories meeting the target remained the same as in the previous report (one). In the current monitoring period six of the eight laboratories had reported on at least 95%

of samples within 15 days, which is is one less then in the previous report.

Histology

Overall, the proportion of histology samples reported on within five working days is lower than it was in the previous reporting period (73.2% during this period compared to 78.9% in the previous report), and the proportion reported on within 15 working days is also lower (94.8%, compared to 95.7% in the previous report). The number of laboratories meeting the five-working-days target is lower than in the previous reporting period (four in the current reporting period and five in the previous reporting period). In the current period, 12 laboratories had reported on at least 95% of samples within 15 days which is the same as in the previous period.

Cytology with associated HPV triage testing

Turnaround time for cytology with an HPV triage test has increased since the previous report – from 96.5% to 97.4% within 15 days. The number of laboratories meeting the target has also increased, from one to two. The proportion of samples reported within 15 working days has increased at Canterbury Health Laboratories, LabPLUS, Pathlab, and Southern Community Labs Dunedin.

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.

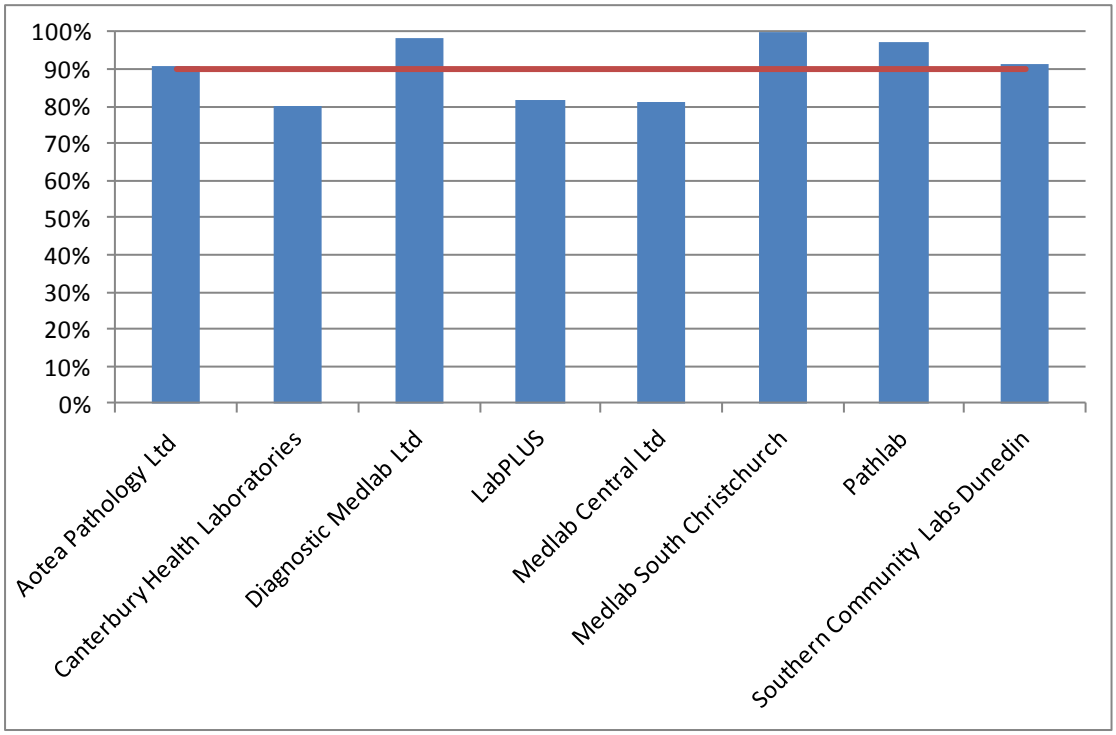
When errors are detected in the NCSP Register, the report date in the NCSP Register is updated to reflect the date on which the report was re-transmitted after the error was resolved. The occurrence of these errors can therefore distort (and lengthen) turnaround time, as in these cases the report date 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 explanantions 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 (and screening history for the woman checked). 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.

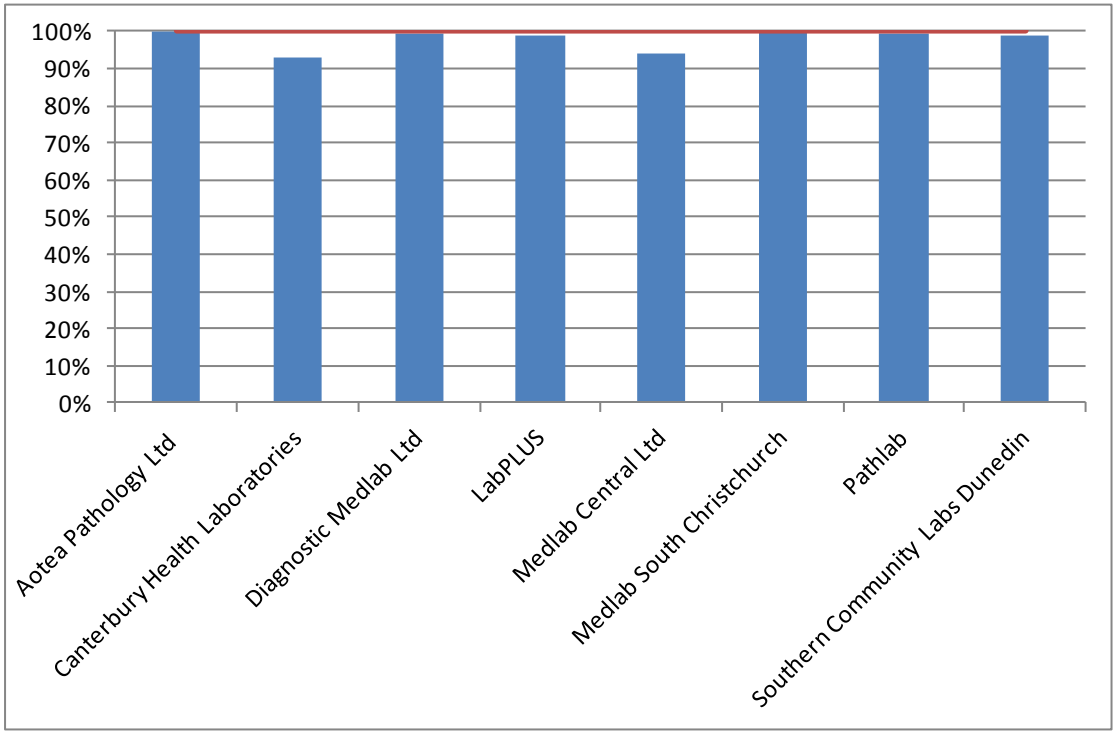
The calculations currently include public holidays which fall on a weekday as working days.

Figure 34 - Proportion of cytology samples reported within seven working days by laboratory, 1 January – 30 June 2012



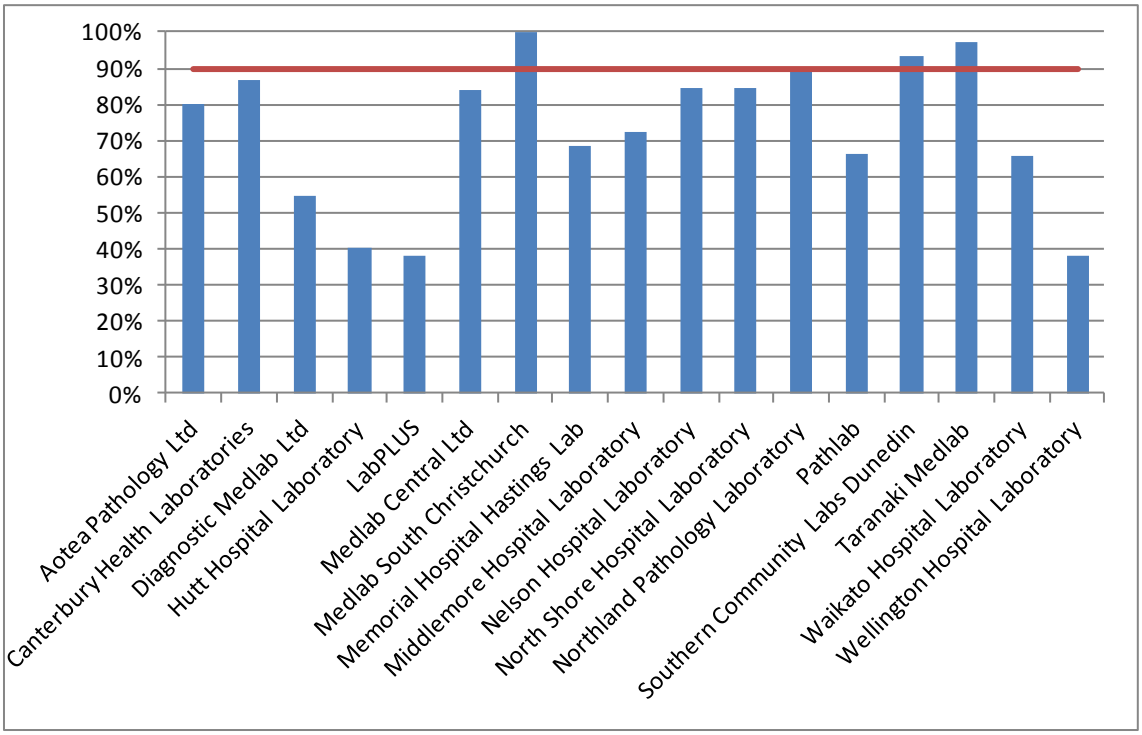
Target: 90 % within seven working days (red line)

Figure 35 - Proportion of cytology samples reported within 15 working days by laboratory, 1 January – 30 June 2012



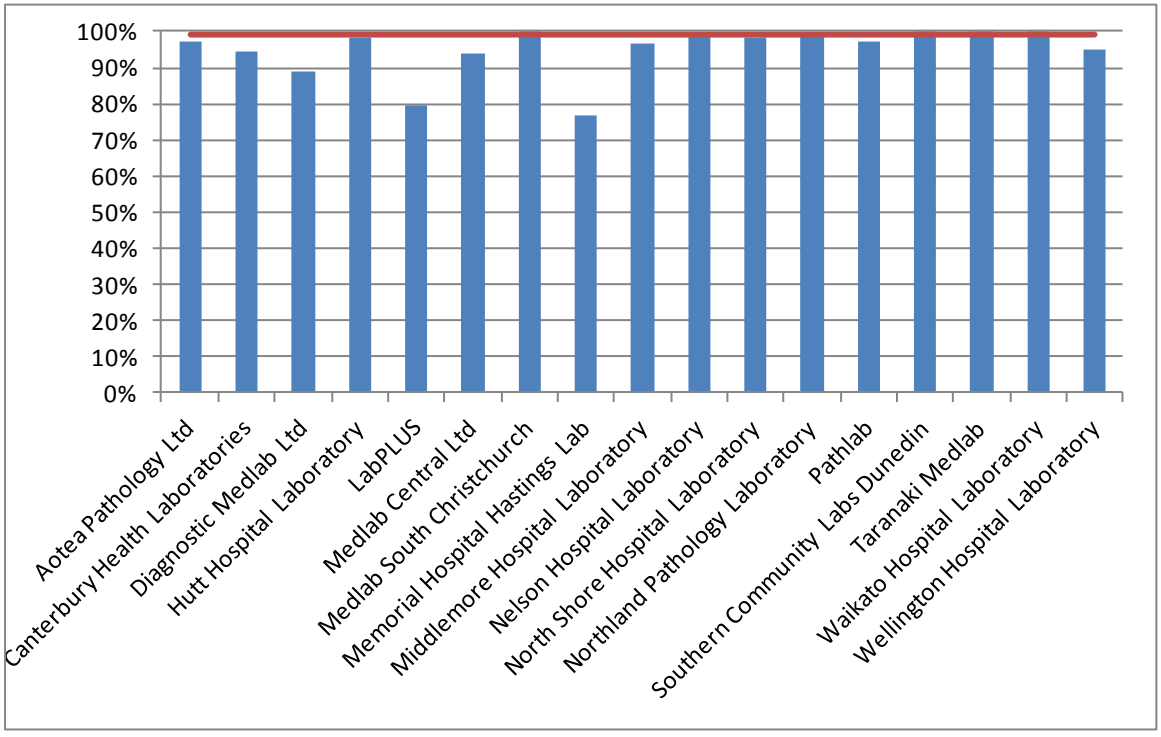
Target: 100% within 15 working days (red line)

Figure 36 - Proportion of histology samples reported within five working days by laboratory, 1 January – 30 June 2012



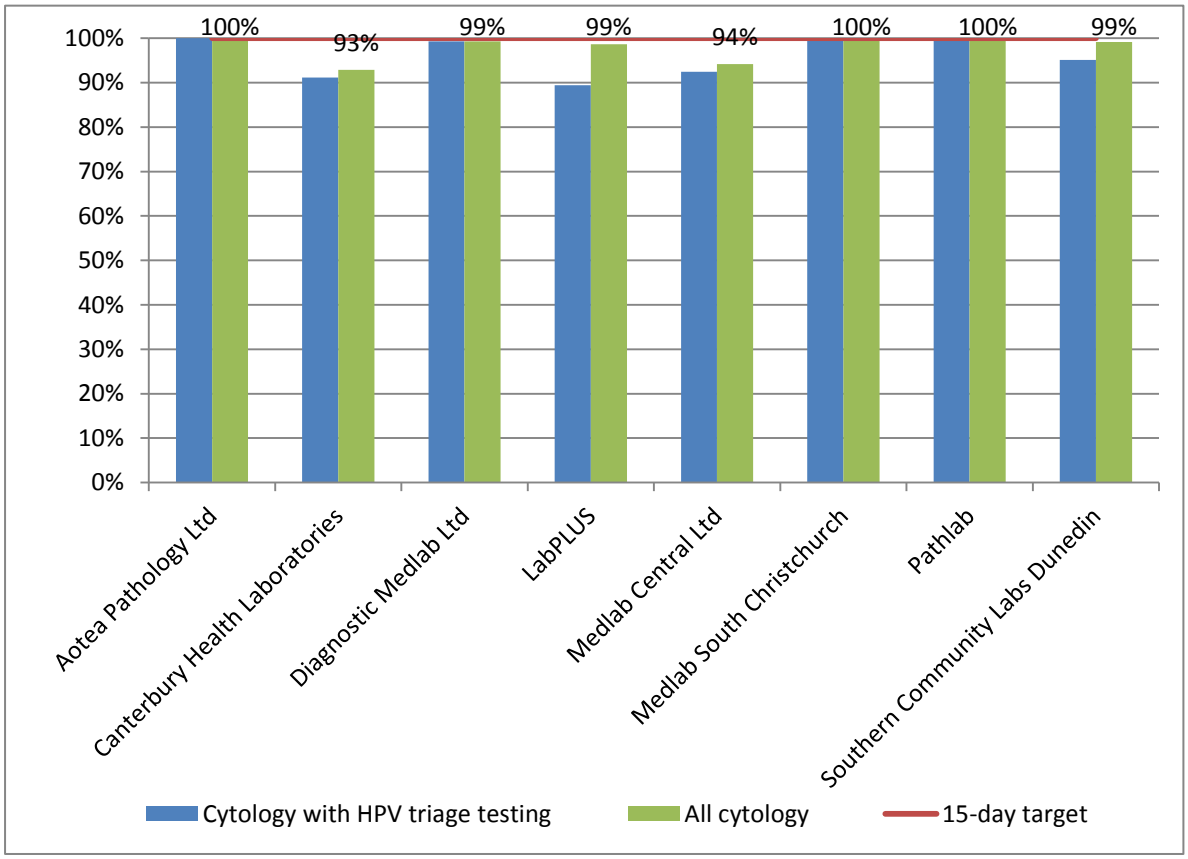
Target: 90% withing five working days (red line)

Figure 37 - Proportion of histology samples reported within 15 working days by laboratory, 1 January – 30 June 2012



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

Figure 38 - Proportion of cytology samples with associated HPV triage testing and of all cytology samples reported within 15 days by laboratory, 1 January – 30 June 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 July to 31 December 2011), 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 tests 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 30 June 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 3,683 high grade cytology results relating to samples collected in the period 1 July to 31 December 2011; 1,155 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 2,528 cytology results, which related to 2,321 women. Histological follow-up for these 2,321 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, 1,836 women (79.1%) had a histology report within 90 days of their cytology report, and 2,018 (86.9%) 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 50.0% (Tairawhiti) to 91.7% (West Coast) within 90 days of their cytology report, and from 79.2% (Northland) to 95.8% (West Coast) within 180 days of their cytology report (Figure 39, Table 49). One DHB met the target for the proportion of women with histology within 90 days (West Coast); and no DHB met the target for 180 days. The proportion of women with a histology report also varies by age, from 44.1% (ages 65-69 years) to 87.5% (ages 30-34 years) within 90 days, and from to 61.8% (ages 60-64 years) to 91.8% (ages 30-34 years) within 180 days (Table 50). 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, it ranged from 63.1% (Pacific women) to 81.9% (European/Other women). By 180 days, however, the difference had narrowed slightly, and histology reports were available for 74.8% of Pacific women and 89.2% of European women/women from other ethnic groups (Table 16, Table 17). Further breakdown by DHB and ethnicity is shown in Table 16 and Table 17, and breakdown by DHB and age is shown in Table 18 and Table 19. ***Women with no follow-up tests*** When follow-up tests of any kind (colposcopy, histology, HPV test, or subsequent cytology test) were considered, there remained 195 women (8.4%) who had no record of any subsequent follow-up within 180 days on

the NCSP Register (Table 51).

This varied by DHB at 180 days from 1.8% (Lakes) to 17.1% (Waikato) (Figure 40, Table 51). It also varied by ethnicity, from 6.8% (European/Other ethnic groups) to 14.6% (Pacific) at 180 days (Figure 41, Table 52).

Trends

Histological follow-up

The proportion of women with a histology report within 90 days is higher than that in the previous reporting period (78.4% in the previous reporting period; 79.1% in the current period). The proportion of women with a histology report within 180 days has also increased, from 85.9% within 180 days in the previous period to 86.9% 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, Canterbury, Counties Manukau, Hawke's Bay, Nelson Marlborough, Taranaki, Waitemata, West Coast and Whanganui) and at 180 days (Auckland, Capital & Coast, Counties Manukau, Hawke's Bay, Mid Central, Nelson Marlborough, Waitemata, West Coast and Whanganui). However in some DHBs, the proportion of women with histological follow-up decreased noticeably at 90 days (Lakes, Otago, Tairawhiti and Wairarapa) and 180 days (Lakes, South Canterbury, Tairawhiti and Wairarapa). 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 and European/ Other women (at both 90 days and 180 days). The proportion of Pacific women with follow-up histology has increased at both 90 days and 180 days in the current monitoring period, although results in this group tend to be more variable as they are based on a smaller number of women than are results for the other ethnic groups. The proportion of Asian women with follow-up histology has increased at 90 days and decreased slightly at 180 days in the current monitoring period. 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 20-24 years, 30-34 years, 50-54 years and 60-64 years. Follow-up at 90 days (but not at 180 days) has decreased among women aged 35-39 years, suggesting that the balance of follow-up in the two time periods in these women has moved towards the latter half of the period (ie between

91-180 days). Follow-up at both 90 days and 180 days has decreased among women aged 40-44 years, 45-49 years, 55-59 years, and 65-69 years.

Women with no follow-up tests

The proportion of women with no record of a follow-up test has increased since the previous period, from 6.5% to 8.4% at 180 days.

Trends by DHB were complex, but reductions in the proportion of women with no follow-up test recorded were observed in 6 of the 21 DHBs, and were greatest in Nelson Marlborough and Southland. Increases were observed in some other DHBs, and were largest in Hutt Valley, Mid Central, Tairawhiti, Taranaki, Waikato and Wairarapa. In Mid Central, Taranaki, Waikato and Whanganui this proportion is the highest observed since reporting began on this measure.

In the current monitoring period, the proportions of women for whom there was no follow-up test record has increased among all ethnic groups. In Māori women the proportion of women with no follow-up tests recorded at 180 days has increased from 6.4% to 12.8%. For Pacific women the proportion has increased from 9.3% to 14.6%. For Asian women, the proportion has increased from 9.0% to 10.4%. For European/ Other women the proportion has increased from 6.2% to 6.8%.

Comments

The proportion of women with a follow-up test of any kind provides useful additional information. While 13.1% 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 (8.4%). 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

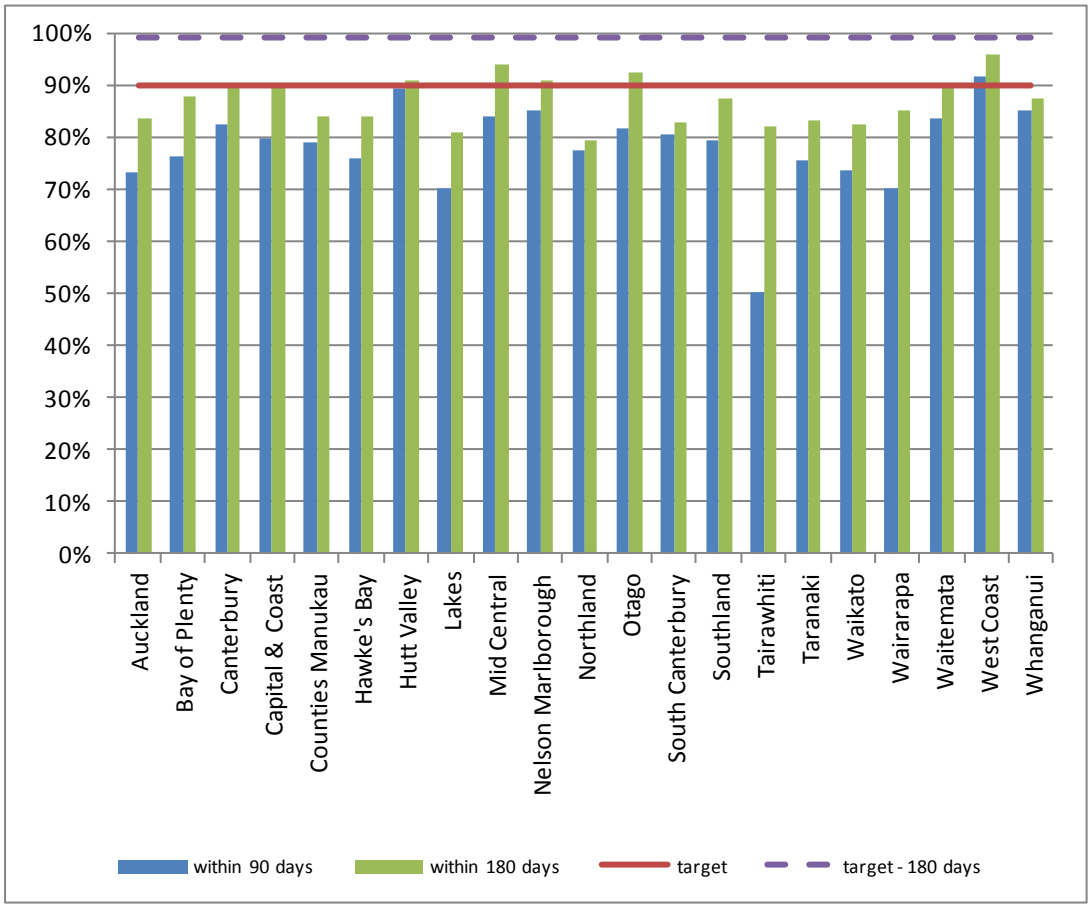
the period. All of the cytology tests selected for follow up had recommendation codes which indicated that referral or further assessment was recommended.

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 39 - 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 16 - 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	10	90.9	10	55.6	27	58.7	127	77.9
Bay of Plenty	20	66.7	2	66.7	4	100.0	55	79.7
Canterbury	20	74.1	5	100.0	9	75.0	252	83.2
Capital & Coast	11	68.8	5	71.4	4	66.7	79	83.2
Counties Manukau	36	69.2	25	62.5	24	85.7	107	87.0
Hawke's Bay	25	69.4	2	100.0	4	66.7	45	80.4
Hutt Valley	15	88.2	1	33.3	3	75.0	40	95.2
Lakes	23	71.9	0	0.0	0	0.0	17	68.0
Mid Central	19	90.5	-	-	-	-	45	81.8
Nelson Marlborough	6	85.7	0	0.0	0	0.0	79	84.9
Northland	10	71.4	-	-	-	-	31	79.5
Otago	6	85.7	-	-	-	-	55	80.9
South Canterbury	2	66.7	-	-	0	0.0	31	81.6
Southland	10	76.9	-	-	-	-	39	81.3
Tairawhiti	6	46.2	0	0.0	1	50.0	7	53.8
Taranaki	9	56.3	-	-	2	100.0	38	82.6
Waikato	44	74.6	3	75.0	1	33.3	85	73.9
Wairarapa	2	50.0	0	0.0	0	0.0	12	75.0
Waitemata	11	64.7	-	-	-	-	169	84.9
West Coast	4	100.0	0	0.0	1	100.0	17	89.5
Whanganui	7	87.5	-	-	0	0.0	27	84.4
Total	**296**	**72.7**	**65**	**63.1**	**118**	**76.6**	**1,357**	**81.9**

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

Table 17 - 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	10	90.9	14	77.8	35	76.1	140	85.9
Bay of Plenty	24	80.0	2	66.7	4	100.0	63	91.3
Canterbury	22	81.5	5	100.0	9	75.0	276	91.1
Capital & Coast	15	93.8	7	100.0	4	66.7	85	89.5
Counties Manukau	42	80.8	27	67.5	26	92.9	109	88.6
Hawke's Bay	27	75.0	2	100.0	5	83.3	50	89.3
Hutt Valley	15	88.2	2	66.7	3	75.0	40	95.2
Lakes	26	81.3	0	0.0	0	0.0	20	80.0
Mid Central	20	95.2	-	-	-	-	52	94.5
Nelson Marlborough	6	85.7	0	0.0	0	0.0	85	91.4
Northland	11	78.6	-	-	-	-	31	79.5
Otago	7	100.0	-	-	-	-	62	91.2
South Canterbury	2	66.7	-	-	0	0.0	32	84.2
Southland	11	84.6	-	-	-	-	42	87.5
Tairawhiti	10	76.9	0	0.0	1	50.0	12	92.3
Taranaki	10	62.5	-	-	2	100.0	41	89.1
Waikato	47	79.7	3	75.0	2	66.7	97	84.3
Wairarapa	3	75.0	0	0.0	0	0.0	14	87.5
Waitemata	13	76.5	-	-	-	-	182	91.5
West Coast	4	100.0	0	0.0	1	100.0	18	94.7
Whanganui	8	100.0	-	-	0	0.0	27	84.4
Total	**333**	**81.8**	**77**	**74.8**	**130**	**84.4**	**1,478**	**89.2**

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

Table 18 - Women with a histology report within 90 days of a high grade cytology report, by DHB and age

	<20		20-24		25-29		30-34		35-39		40-44		45-49		50-54		55-59		60-64		65-69		70+		Total
DHB	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	
Auckland	1	100.0	41	69.5	39	72.2	30	85.7	22	73.3	14	77.8	9	56.3	6	100.0	7	77.8	4	80.0	1	33.3	0	0.0	174
Bay of Plenty	-	-	18	78.3	16	84.2	11	64.7	10	83.3	7	77.8	6	66.7	6	85.7	0	0.0	4	80.0	1	100.0	2	66.7	81
Canterbury	4	80.0	84	84.0	58	86.6	41	89.1	36	87.8	14	70.0	17	81.0	10	76.9	11	57.9	5	83.3	4	57.1	2	100.0	286
Capital & Coast	-	-	18	78.3	26	96.3	23	95.8	13	72.2	9	75.0	5	62.5	1	33.3	1	33.3	1	50.0	0	0.0	2	66.7	99
Counties Manukau	2	66.7	45	72.6	49	86.0	26	83.9	22	91.7	16	94.1	13	81.3	6	85.7	4	44.4	4	66.7	3	50.0	2	40.0	192
Hawke's Bay	1	100.0	14	70.0	10	71.4	12	85.7	11	84.6	8	61.5	7	87.5	4	66.7	4	66.7	2	100.0	3	100.0	-	-	76
Hutt Valley	2	100.0	9	81.8	13	81.3	8	100.0	12	92.3	6	100.0	3	100.0	4	100.0	1	100.0	-	-	0	0.0	1	100.0	59
Lakes	-	-	10	66.7	8	61.5	8	88.9	5	62.5	1	100.0	1	100.0	1	100.0	2	50.0	2	66.7	-	-	2	100.0	40
Mid Central	-	-	22	88.0	13	81.3	11	84.6	2	100.0	5	83.3	3	60.0	4	80.0	5	100.0	2	100.0	0	0.0	-	-	67
Nelson Marlborough	-	-	16	84.2	16	69.6	18	100.0	11	91.7	4	57.1	9	100.0	8	100.0	2	66.7	1	100.0	-	-	-	-	85
Northland	-	-	8	72.7	11	84.6	3	75.0	6	100.0	7	100.0	1	25.0	1	100.0	2	66.7	2	66.7	-	-	0	0.0	41
Otago	-	-	18	81.8	13	72.2	10	100.0	10	100.0	7	100.0	1	100.0	1	25.0	2	100.0	1	50.0	-	-	0	0.0	63
South Canterbury	1	100.0	14	77.8	4	66.7	5	100.0	5	100.0	2	66.7	1	100.0	-	-	0	0.0	-	-	-	-	1	100.0	33
Southland	1	100.0	15	83.3	16	84.2	7	100.0	4	80.0	2	100.0	1	100.0	2	100.0	2	50.0	0	0.0	0	0.0	0	0.0	50
Tairawhiti	-	-	3	60.0	2	25.0	3	75.0	2	40.0	2	50.0	-	-	-	-	2	100.0	-	-	-	-	-	-	14
Taranaki	-	-	16	88.9	9	75.0	6	85.7	7	63.6	1	33.3	2	66.7	2	100.0	1	100.0	2	40.0	2	100.0	1	100.0	49
Waikato	3	75.0	38	80.9	27	71.1	20	76.9	14	82.4	13	86.7	6	75.0	4	50.0	7	63.6	1	50.0	0	0.0	0	0.0	133
Wairarapa	-	-	2	40.0	2	66.7	4	100.0	2	100.0	2	100.0	0	0.0	2	100.0	-	-	-	-	0	0.0	-	-	14
Waitemata	3	75.0	60	89.6	43	87.8	25	86.2	21	80.8	29	90.6	18	85.7	12	70.6	5	62.5	7	63.6	0	0.0	1	100.0	224
West Coast	-	-	7	100.0	4	80.0	4	100.0	2	100.0	1	100.0	1	100.0	1	100.0	1	100.0	0	0.0	1	100.0	-	-	22
Whanganui	-	-	6	85.7	13	100.0	4	100.0	4	80.0	4	80.0	2	100.0	1	100.0	0	0.0	0	0.0	-	-	-	-	34
Total	**18**	**81.8**	**464**	**79.7**	**392**	**80.0**	**279**	**87.5**	**221**	**82.8**	**154**	**81.1**	**106**	**76.3**	**76**	**77.6**	**59**	**62.8**	**38**	**63.3**	**15**	**44.1**	**14**	**53.8**	**1,836**

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

Table 19 - 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	51	86.4	30	85.7	44	81.5	30	85.7	25	83.3	16	88.9	11	68.8	6	100.0	9	100.0	5	100.0	1	33.3	0	0.0	199
Bay of Plenty	21	91.3	13	76.5	16	84.2	13	76.5	12	100.0	9	100.0	9	100.0	6	85.7	0	0.0	4	80.0	0	0.0	2	66.7	93
Canterbury	91	91.0	44	95.7	62	92.5	44	95.7	37	90.2	19	95.0	19	90.5	11	84.6	13	68.4	5	83.3	13	68.4	2	100.0	312
Capital & Coast	20	87.0	23	95.8	27	100.0	23	95.8	15	83.3	10	83.3	7	87.5	3	100.0	2	66.7	1	50.0	2	66.7	2	66.7	111
Counties Manukau	50	80.6	27	87.1	50	87.7	27	87.1	23	95.8	16	94.1	15	93.8	6	85.7	5	55.6	5	83.3	5	55.6	2	40.0	204
Hawke's Bay	15	75.0	12	85.7	12	85.7	12	85.7	12	92.3	11	84.6	7	87.5	4	66.7	5	83.3	2	100.0	5	83.3	-	-	84
Hutt Valley	9	81.8	8	100.0	13	81.3	8	100.0	13	100.0	6	100.0	3	100.0	4	100.0	1	100.0	-	-	1	100.0	1	100.0	60
Lakes	13	86.7	9	100.0	9	69.2	9	100.0	5	62.5	1	100.0	1	100.0	1	100.0	3	75.0	2	66.7	3	75.0	2	100.0	46
Mid Central	24	96.0	13	100.0	15	93.8	13	100.0	2	100.0	6	100.0	4	80.0	4	80.0	5	100.0	2	100.0	5	100.0	-	-	75
Nelson Marlborough	17	89.5	18	100.0	20	87.0	18	100.0	11	91.7	5	71.4	9	100.0	8	100.0	2	66.7	1	100.0	2	66.7	-	-	91
Northland	8	72.7	3	75.0	12	92.3	3	75.0	6	100.0	7	100.0	1	25.0	1	100.0	2	66.7	2	66.7	2	66.7	0	0.0	42
Otago	21	95.5	10	100.0	17	94.4	10	100.0	10	100.0	7	100.0	1	100.0	2	50.0	2	100.0	1	50.0	2	100.0	0	0.0	71
South Canterbury	14	77.8	5	100.0	5	83.3	5	100.0	5	100.0	2	66.7	1	100.0	-	-	0	0.0	-	-	0	0.0	1	100.0	34
Southland	16	88.9	7	100.0	18	94.7	7	100.0	5	100.0	2	100.0	1	100.0	2	100.0	3	75.0	0	0.0	3	75.0	0	0.0	55
Tairawhiti	4	80.0	4	100.0	5	62.5	4	100.0	4	80.0	4	100.0	-	-	-	-	2	100.0	-	-	2	100.0	-	-	23
Taranaki	16	88.9	7	100.0	10	83.3	7	100.0	9	81.8	2	66.7	2	66.7	2	100.0	1	100.0	2	40.0	1	100.0	1	100.0	54
Waikato	41	87.2	22	84.6	29	76.3	22	84.6	16	94.1	14	93.3	6	75.0	7	87.5	7	63.6	2	100.0	7	63.6	1	50.0	149
Wairarapa	4	80.0	4	100.0	2	66.7	4	100.0	2	100.0	2	100.0	0	0.0	2	100.0	-	-	-	-	-	-	-	-	17
Waitemata	64	95.5	26	89.7	44	89.8	26	89.7	23	88.5	29	90.6	21	100.0	14	82.4	5	62.5	8	72.7	5	62.5	1	100.0	240
West Coast	7	100.0	4	100.0	4	80.0	4	100.0	2	100.0	1	100.0	1	100.0	1	100.0	1	100.0	1	100.0	1	100.0	-	-	23
Whanganui	6	85.7	4	100.0	13	100.0	4	100.0	4	80.0	4	80.0	2	100.0	1	100.0	0	0.0	1	50.0	0	0.0	-	-	35
Total	**18**	**81.8**	**512**	**88.0**	**427**	**87.1**	**293**	**91.8**	**241**	**90.3**	**173**	**91.1**	**121**	**87.1**	**85**	**86.7**	**68**	**72.3**	**44**	**73.3**	**21**	**61.8**	**15**	**57.7**	**2,018**

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

Figure 40 – Proportion of women without any follow-up test within 180 days of a high grade cytology report, by DHB

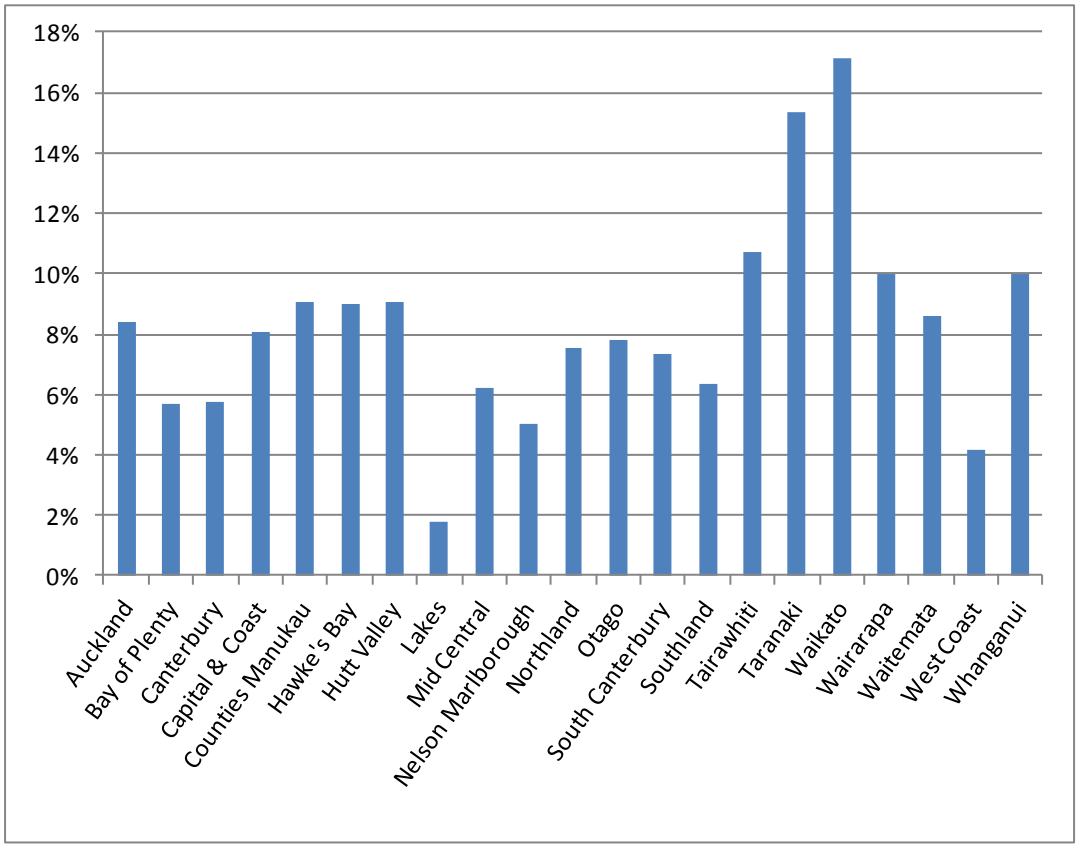
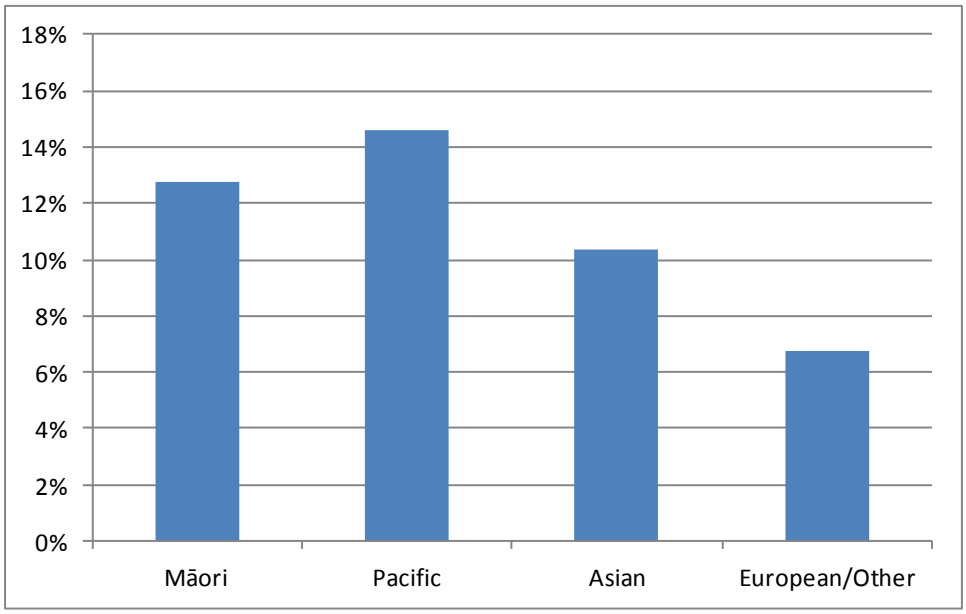


Figure 41 - Proportion of women without any follow-up test within 180 days of a high grade cytology report, by ethnicity



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.[14] 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.

Referral data for the current monitoring period are believed to be incomplete, therefore timeliness of colposcopic assessment in relation to the referral date could not be assessed in this report. Instead, the timeliness of follow-up was 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 however, 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 smeartaker, who will then communicate the results to the woman, and discuss follow-up management with her. The smeartaker 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 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).

	For the remaining women, the first colposcopy visit recorded on the NCSP Register which occurred after the cytology report date and no later than the end of the current monitoring period was retrieved (regardless of the DHB where it occurred and with or without an accepted referral). 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. For women who did not attend colposcopy prior to the end of the current monitoring period, DHB is assigned based on the DHB of the facility which accepted the referral for that woman (where the referral was accepted no later than four weeks prior to the end of the current monitoring period). If there were multiple referrals for the same woman which occurred after the cytology sample, the most recently accepted referral within the timeframe was used. For women who neither attended colposcopy nor had an accepted referral with any DHB, DHB is assigned on the basis of the health facility where their high grade cytology sample was collected. Since cytology samples were collected in the six months prior to the current reporting period, this allows a follow-up period of at least six months for all women (and up to 12 months for some women) where a woman can attend colposcopy and be assigned to a DHB, or alternately have a referral accepted by a DHB. High grade cytology tests indicating that a woman was already under specialist management (TBS=R13) were excluded from this measure.
Target	95% or more of women who have evidence of clinical suspicion of invasive carcinoma, or a suspicion of invasive disease (TBS codes HS2, SC, AC1-AC5), receive colposcopy or a gynaecological assessment within 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 July – 31 December 2011, there were 2,321 women with high grade cytology results who were not already under specialist management. There were 65 women who had results indicating suspicion of invasive disease, and the remaining 2,256 women had other high grade cytology results. Referral data for these women are believed to be incomplete, therefore timeliness of colposcopic assessment in relation to the referral date could not be assessed. Instead, the timeliness of follow-up was 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

For one of the 65 women who had high grade cytology indicating suspicion of invasive disease, the date that the cytology result was reported to the smeartaker was no longer available. Among the remaining 64 women, colposcopy records were found for 28 women (44%). Among these women, the median period between the cytology report date and colposcopy visit date was nine days overall; eight days among European/Other women; and 14 days among Māori women (numbers were too small for Pacific and Asian women for results to be meaningful)(Table 20). This was not analysed further by DHB, due to the small numbers of women within each DHBs with these results.

In total, 29 (45%) of the 65 women with high grade cytology indicating suspicion of invasive disease relating to a sample collected in July-December 2011 have a record of a colposcopy visit prior to 30 June 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)

In five of the 2,256 women with high grade cytology (no suspicion of invasive disease), the date that the cytology result was reported to the smeartaker was no longer available from the NCSP Register. Among the remaining 2,251 women, colposcopy records were found for 1,919 (85%) women. Among these 1,919 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 25 days (Northland) to 122 days (Capital and Coast)(Table 21). There was less variation by ethnicity, with the median waiting times ranging from 37 days (Pacific and European/ Other women) to 45 days (Māori women) (Table 22).

In total, 1,924 (85%) of the 2,256 women with high grade cytology (but no suspicion of invasive disease) relating to a sample collected in July-December 2011 have a record of a colposcopy visit prior to 30 June 2012 (representing a follow-up period of at least six and up to 12 months after their high grade cytology).

Trends

Nationally, the median waiting time has decreased for high grade cytology indicating suspicion of invasive disease, from 11 days in Report 36 to 8.5 days in the current report. For high grade cytology (no suspicion of invasive disease) the median waiting time has increased somewhat, from 36 days in the previous report, to 38 days in the current report.

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 September 2012.

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. This is because there are several steps in the process from 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 smeartaker, who will then communicate the results to the woman, and discuss follow-up management with her. The smeartaker 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. Therefore, by using the cytology report date rather than the date the colposcopy clinic received and accepted the referral, other factors are included in this time period which are beyond the control of the colposcopy service, including the time between the report being sent to the smeartaker's clinic and when it is seen and actioned by the smeartaker; and potential delays in contacting the woman to discuss results and arrange follow-up. A small number of women had cytology test records which suggested that the report date in the NCSP Register 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).

Additionally there may be a delay between the first scheduled colposcopy visit and the first visit date, for example if the woman needs to reschedule or does not attend for a scheduled appointment. 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, so at the present time it is not possible to take this into account in assessing this indicator. It is envisioned that in future the date of the first scheduled colposcopy visit will be available on the NCSP Register, as this date is now included in the reporting requirements in the updated colposcopy standard (effective from 1 July 2013). 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. 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.

Additional information about follow-up tests performed in women with high grade cytology is included in Indicator 6. The same 2,321 women (65 with suspicion of invasive disease, 2,256 other high grade cytology) are included in both this measure and Indicator 6. In Indicator 6, it was found that 2,018 women (86.9%) of women had histology within 180 days, and 2,126 (91.6%) had a follow-up test of some sort. Here, colposcopy records indicate that only 1,953 (84.1%) women had attended colposcopy prior to 30 June 2012. This strongly suggests that colposcopy data must be incomplete, as more women had histology within 180 days than had colposcopy in a period of at least 181 days after their high grade cytology sample. Note that there may be some differences in results by DHB, however, since in Indicator 6 the DHB assigned to a woman is her own DHB (or, where this information is not available on the NCSP Register, the DHB of her responsible health facility, based on the clinic's geographic location). In this indicator, women are assigned to a DHB based on either the DHB where they attended colposcopy, or the most recent DHB to which they have been referred (for women without colposcopy visits), or to the DHB of the health facility where the high grade cytology sample was collected (for women with no referral and no colposcopy visit). Additionally, only public clinics are assigned a DHB; private clinics are separated out and reported on as a group in this indicator.

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

Table 20 – 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	13	6	14
Pacific	5	-	-
Asian	2	1	7
European/Other	45	21	8
Total	**65**	**28**	**8.5**

** Up to 30 June 2012 † Days between cytology report date and colposcopy date, among women who attended by the end of the monitoring period. Excludes one woman whose original cytology report date was no longer available on the NCSP Register.*

Table 21 - 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	144	118	47.5
Bay of Plenty	81	76	41.5
Canterbury	267	248	45
Capital & Coast	64	58	122
Counties Manukau	187	159	35
Hawke's Bay	83	78	41.5
Hutt Valley	50	50	32
Lakes	42	40	34
Mid Central	72	69	28
Nelson Marlborough	91	86	48
Northland	42	42	25
Otago	69	64	52.5
South Canterbury	41	38	35.5
Southland	48	40	43
Tairawhiti	27	26	70
Taranaki	50	44	31.5
Waikato	160	137	42
Wairarapa	22	21	28
Waitemata	195	172	33
West Coast	24	23	38
Whanganui	39	27	54
Private practice	*458*	*303*	*21*
Total	**2,256**	**1,919**	**38**

** Up to 30 June 2012 † Days between cytology report date and colposcopy date, among women who attended by the end of the monitoring period. Excludes five women whose original cytology report dates were no longer available on the NCSP Register.*

Table 22 – 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	394	330	45
Pacific	98	71	37
Asian	152	120	37.5
European/Other	1,612	1,398	37
Total	**2,256**	**1,919**	**38**

** Up to 30 June 2012 † Days between cytology report date and colposcopy date, among women who attended by the end of the monitoring period. Excludes five women whose original cytology report dates were no longer available on 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 • 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. 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. The current colposcopy form is available at: http://www.nsu.govt.nz/files/NCSP/Colposcopy_Visit_Reporting_Form_Latest_2012.pdf 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). Similarly, 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 13,941 colposcopy visits within the current monitoring period recorded on the NCSP Register. Documentation relating to these visits was

analysed.

Nationally, the visibility of the squamocolumnar junction was documented for 97.6% 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 92.7% of visits where the presence of a lesion could not be ruled out; and all of these items (where relevant) were documented for 93.6% of visits. The colposcopic appearance was reported to be abnormal in 54.0% of colpscopies, and inconclusive in 4.2% of colposcopies (Table 57).

Documentation varied by DHB, as shown in Figure 42 and Table 56. Documentation of visibility of the squamocolumnar junction, varied from 93.1% (Taranaki) to 100.0% (Hutt Valley and 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 72.9% (Taranaki) to 99.1% (Mid Central). Overall completion rates ranged from 84.0% (Taranaki) to 98.4% (Whanganui). Abnormal colposcopic appearance ranged from 33.3% of colposcopies (Taranaki) to 71.3% of colposcopies (Hutt Valley). Inconclusive colposcopic appearance ranged from 0.5% of colposcopies (Mid Central) to 12.4% of colposcopies (Taranaki)(Table 57).

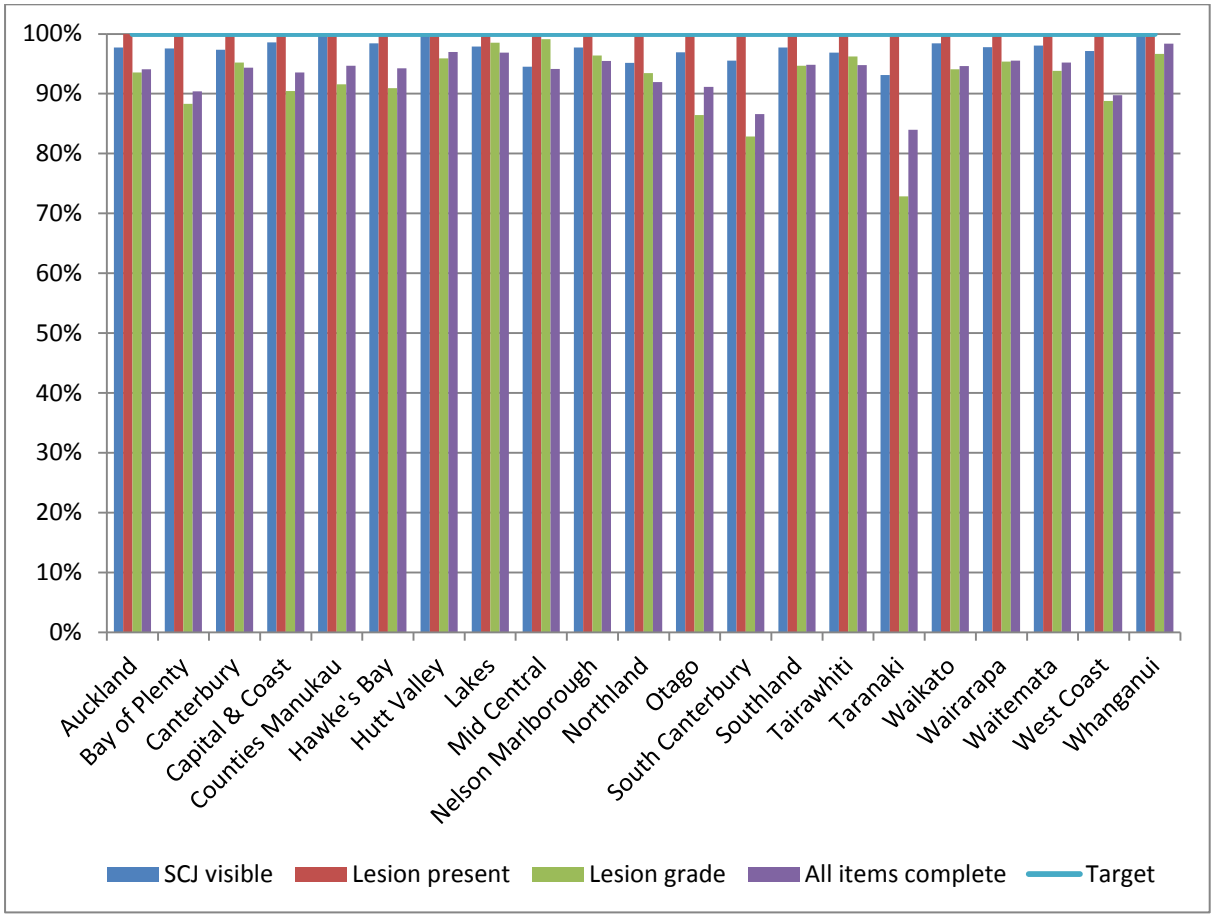
Colposcopies performed in private practice accounted for 14% of all colposcopies recorded on the NCSP Register in New Zealand in the current monitoring period. The percentage of colposcopies where items were completed was similar in private practice and public clinics for visibility of the squamocolumnar junction (97.9% private practice; 97.6% 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 (90.5%) compared to public clinics overall (93.1%), and overall completion was also lower in private practice (92.5%) compared to public clinics overall (93.8%) (Table 56). Abnormal colposcopic appearance was reported slightly less often in private practice (52.5%) compared to in public clinics (54.3%), while inconclusive colposcopic appearance was reported somewhat more often in private practice (5.5%) than in public clinics (4.0%) (Table 57).

Trends

Documentation for most of the colposcopy visit items, and overall completeness, has decreased somewhat compared to that in the previous reporting period, but not recording the presence or absence of a lesion, where completion was 100% in both periods. In this report, visibility of the squamocolumnar junction was documented for 97.6% of visits, compared to 98.1% 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 92.7% of visits where the presence of a lesion could not be ruled out in the current report, compared to 94.2% in the previous report. All of these items (where relevant) were documented for 93.6% of visits in the current report, compared to 94.9% in the previous report.

	This broad trend was mirrored across most DHBs, although documentation did improve in some cases. Recording whether or not the squamocolumnar junction was visible increased in Bay of Plenty, Counties Manukau, Hawke's Bay, Hutt Valley, South Canterbury, Southland, Tairawhiti, Taranaki, Wairarapa and Whanganui. Recording of an opinion regarding the lesion grade increased in Hutt Valley, Lakes, Mid Central, Northland, Southland and Whanganui. Completion of all items increased in Bay of Plenty, Hutt Valley, Southland, Tairawhiti and Whanganui.
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 September 2012. 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.

Figure 42 – Completion of colposcopic assessment fields, by DHB



Indicator 7.4 – Timeliness and appropriateness of treatment

Definition	This indicator measures performance against Standard 605. Timeliness is assessed via 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 July – 31 December 2011). 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 2,722 women with a histological diagnosis of CIN2/3 (associated with histology samples collected in the previous six months, and reported at least eight weeks prior to 30 June 2012). Of these women, 698 women (25.6%) were treated within eight weeks of HSIL being histologically confirmed. The proportion of women treated within eight weeks varied widely by DHB, from 0 % (none of one woman with a high grade histology sample collected in Counties Manukau DHB clinic) to 80.0 % (South Canterbury). No DHB met the target of 90% of women treated within eight weeks of histological confirmation of HSIL (Figure 43, Table 23).

There were 1,942 women with a histological diagnosis of LSIL (associated with histology samples collected in the previous six months, and reported at least 26 weeks prior to 30 June 2012). Timeliness of treatment will not be compared to a target for LSIL, because treatment is not routinely recommended in the 2008 NCSP *Guidelines for Cervical Screening in New Zealand*[15] for histological LSIL. However for descriptive purposes, follow-up treatment records were retrieved for the 1,942 women with histological LSIL. Of these women, 161 women (8.3%) were treated. The proportion of women treated varied widely by DHB, from 0% (Counties Manukau, Mid Central, Northland, Otago, Southland, West Coast, Whanganui) to 15.4% (Lakes) (Table 23).

Trends

Nationally, the proportion of women with histological HSIL who are treated within eight weeks of histological confirmation has decreased, from 28.4% in the previous reporting period, to 25.6% in the current reporting period.

Timeliness of treatment improved in Hutt Valley, Northland, Otago, South Canterbury, Waikato, Wairarapa and Whanganui, but not in other DHBs. Timeliness of treatment also decreased for women's whose HSIL histology sample was collected in a private clinic.

The proportion of women with histological LSIL who were treated (considering a follow-up consistent follow-up period for all women of up to 26 weeks after the LSIL was histologically confirmed) is higher in the current report (8.3%) compared to the previous report (7.1%).

Comments

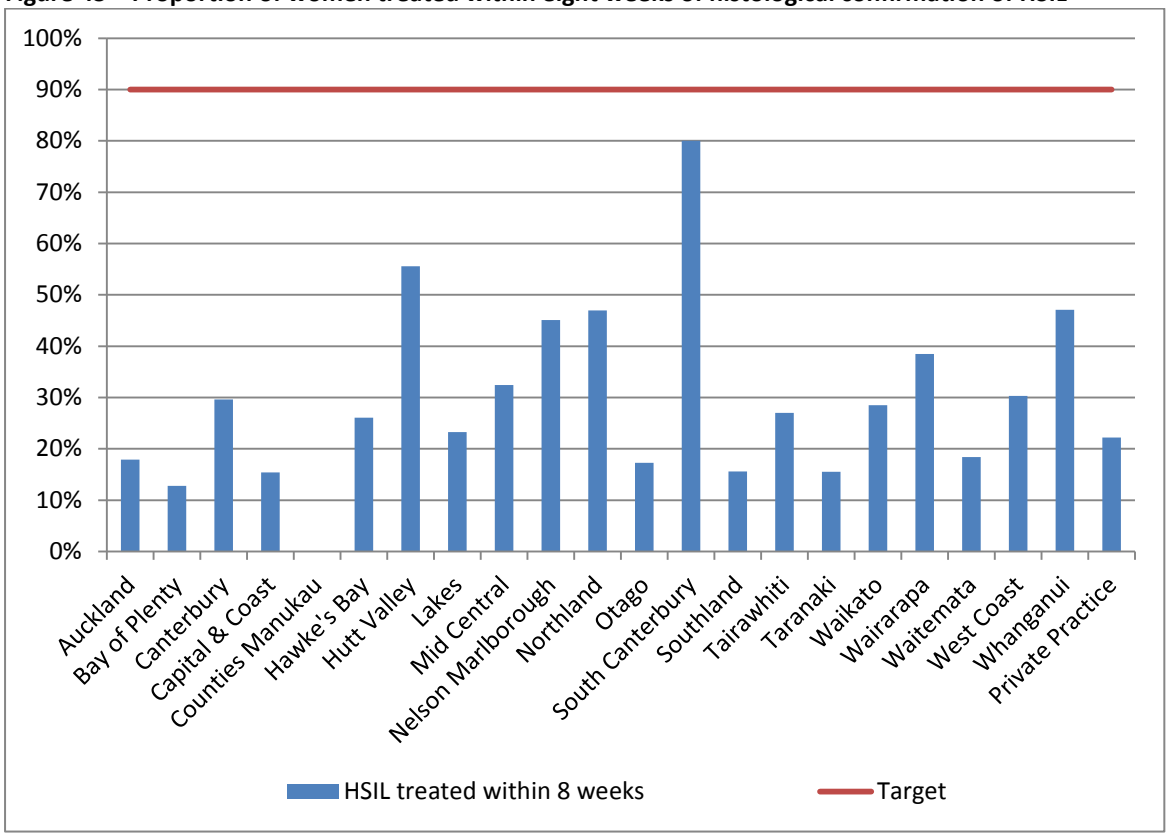
Whether or not treatment has occurred is determined for this indicator via colposcopy data in the NCSP Regsiter. Colposcopy visit details are recorded on colposcopy visit forms, and records of these forms are uploaded onto the NCSP Register, however, it is possible that colposcopy data on the NCSP Register 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. The data used in this analysis was extracted from the NCSP Register in September 2012.

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. However, in assessing timeliness of treatment, this report takes into account any treatments for a woman which are recorded on the NCSP Register (via colposcopy data), regardless of where treatment 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 43 – 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 23 – Timeliness and appropriateness of treatment, by DHB

DHB	Women with CIN2/3	Treated within 8 weeks		Women with histological LSIL*	Women treated*	
	N	N	%	N	N	%
Public clinics (overall)	*1,876*	*510*	*27.2*	*1,127*	*79*	*7.0*
Auckland	151	27	17.9	150	10	6.7
Bay of Plenty	133	17	12.8	69	1	1.4
Canterbury	398	118	29.6	353	24	6.8
Capital & Coast	65	10	15.4	42	3	7.1
Counties Manukau	1	-	-	-	-	-
Hawke's Bay	92	24	26.1	17	1	5.9
Hutt Valley	54	30	55.6	37	5	13.5
Lakes	43	10	23.3	26	4	15.4
Mid Central	114	37	32.5	47	-	-
Nelson Marlborough	71	32	45.1	75	5	6.7
Northland	66	31	47.0	9	-	-
Otago	58	10	17.2	18	-	-
South Canterbury	20	16	80.0	15	2	13.3
Southland	45	7	15.6	4	-	-
Tairawhiti	37	10	27.0	25	2	8.0
Taranaki	58	9	15.5	32	3	9.4
Waikato	165	47	28.5	57	4	7.0
Wairarapa	26	10	38.5	16	1	6.3
Waitemata	212	39	18.4	95	14	14.7
West Coast	33	10	30.3	28	-	-
Whanganui	34	16	47.1	12	-	-
Private Practice	*846*	*188*	*22.2*	*815*	*82*	*10.1*
Total	**2,722**	**698**	**25.6**	**1,942**	**161**	**8.3**

** 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. . A consistent follow-up period of 26 weeks since the date of their LSIL histology report is used for all women.*

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.

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 6-12 months after their treatment
- receive colposcopy and cytology within the period 6-12 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.

Based on advice from the NCSP Advisory Group, women were defined as eligible for discharge if they had a colposcopy visit and cytology test in the period six to 12 months 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 smeartaker/ 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 1,283 women treated for high grade lesions in the six-month period from 1 January-30 June 2011. These women were followed up for twelve months from the date of their treatment visit. ***Follow-up post treatment*** There were 675 women (52.6%) with a follow-up colposcopy, and 656 women (51.1%) with both a follow-up colposcopy and a cytology sample in the period of at least six and no more than 12 months after their treatment visit. 174 women (13.6%) had already been discharged prior to six months after their treatment visit. Figure 44 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 from six to 12 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 58). The number of women with colposcopy only and no record of a cytology sample in the timeframe was very small, and varied from zero (Auckland, Capital & Coast, Hawke's Bay, Lakes, Nelson Marlborough, South Canterbury, Southland, Taranaki, Wairarapa, West Coast and Whanganui) to three (Bay of Plenty). The percentage of women treated for high grade lesions with a record of colposcopy and cytology within the six- to 12-month period post treatment (51.1%) is below the target value of 90%. No DHB met the target of at least 90% of women receiving cytology and colposcopy within the period of at least six but no more than 12 months post-treatment (Figure 44, Table 58). The percentage of treated women with a record of both follow-up colposcopy and a cytology sample in the period from six to 12 months post-treatment varied by DHB from 13.3% (Whanganui) to 83.3% (Nelson Marlborough) (Figure 44, Table 58). There were 174 women (13.6%) who were discharged within six months of their treatment. (Table 59). This varied by DHB from no women (Hawke's Bay, Nelson Marlborough, Tairawhiti) to 82.6% (Taranaki). ***Women discharged appropriately*** In total, 525 women (40.9% of those treated) were eligible to be discharged by 12 months after their treatment visit, and 415 of these women (79.0%) were discharged within 12 months of treatment (Table 58). Figure 45 shows how the percentage of women discharged appropriately within 12 months varies by DHB. The percentage of women eligible for discharge who were discharged within 12 months of treatment ranged from 0% (Auckland) to 100.0% (Hawke's Bay, Hutt Valley, Lakes, Tairawhiti)(Table 58). 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 Bay of Plenty, Capital & Coast, Lakes, Nelson Marlborough, South Canterbury, Southland, Tairawhiti, Taranaki and Wairarapa; no women were eligible in Whanganui). Six DHBs met the target of discharging 90%of women where appropriate within 12 months (Hawke's Bay, Hutt Valley, Lakes, Northland, Tairawhiti and Waikato). In total, 720 women were discharged within 12 months of being treated for a high grade lesion (56.1% of all women treated).
Trends	Nationally, the proportion of women treated who have follow-up colposcopy and cytology has decreased in the period six to 12 months post-treatment (from 57.1% to 51.1%). A similar trend was seen when considering the proportion of women treated who have follow-up colposcopy (with or without cytology). This trend was also reflected in most DHBs. Some DHBs had overall increases in the proportions for women with follow-up, both colposcopy and cytology, and colposcopy with or without cytology (Hawke's Bay, Mid Central, Otago, South Canterbury, Tairawhiti, Waikato, Waitemata), but decreases in both of these proportions were observed in many DHBs (Bay of Plenty, Canterbury, Capital & Coast, Counties Manukau, Hutt Valley, Lakes, Northland, Southland, Taranaki, Wairarapa, West Coast, Whanganui). The proportion of women discharged appropriately to their smeartaker by 12 months has increased slightly overall (from 78.4% to 79%). The number of DHBs meeting the target of 90% has remained unchanged (six). 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 in Auckland, Lakes, Nelson Marlborough, South Canterbury, Tairawhiti, Wairarapa, Whanganui).
Comments	Since this indicator relies on colposcopy data in the NCSP Register, there is the possibility that incomplete reporting of colposcopy or treatment visits has led to an underestimate of the number of women treated, 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 44 – Percentage of women treated with colposcopy, and both colposcopy and cytology, in the period from six to 12 months after treatment

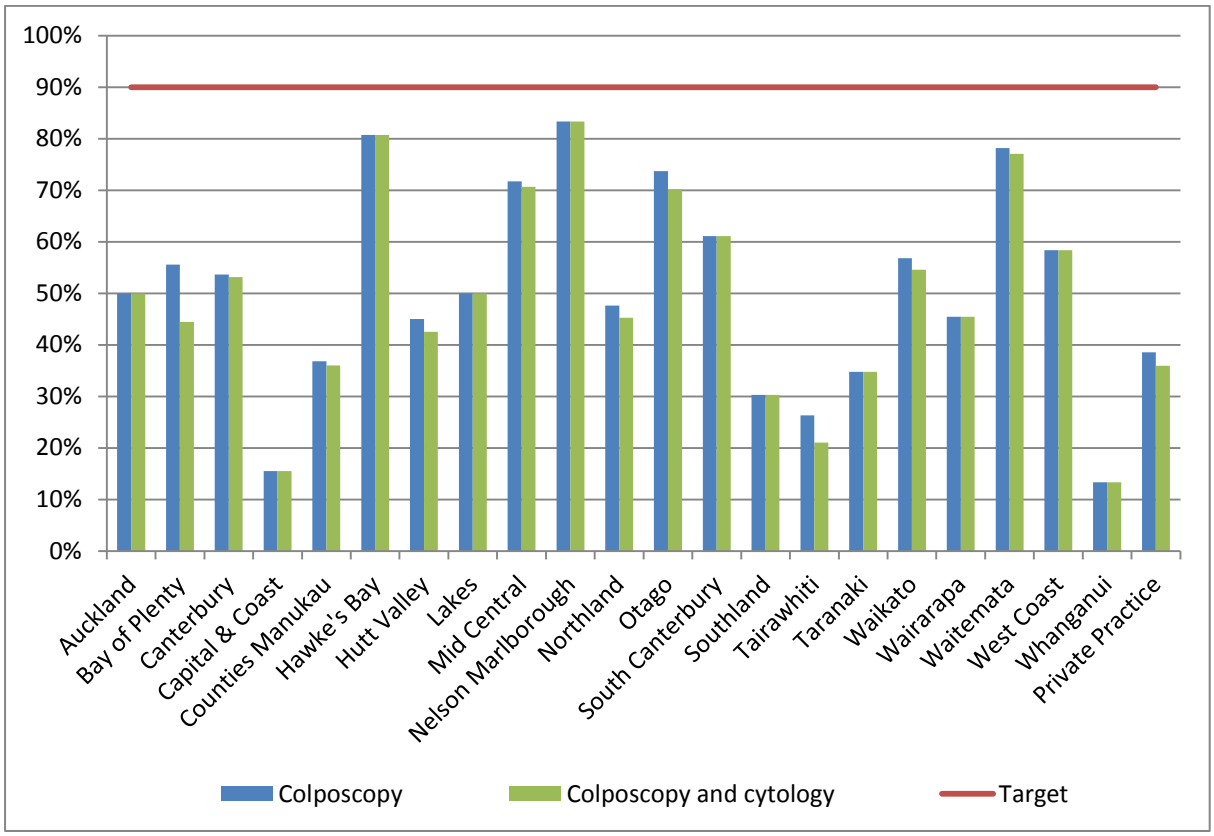
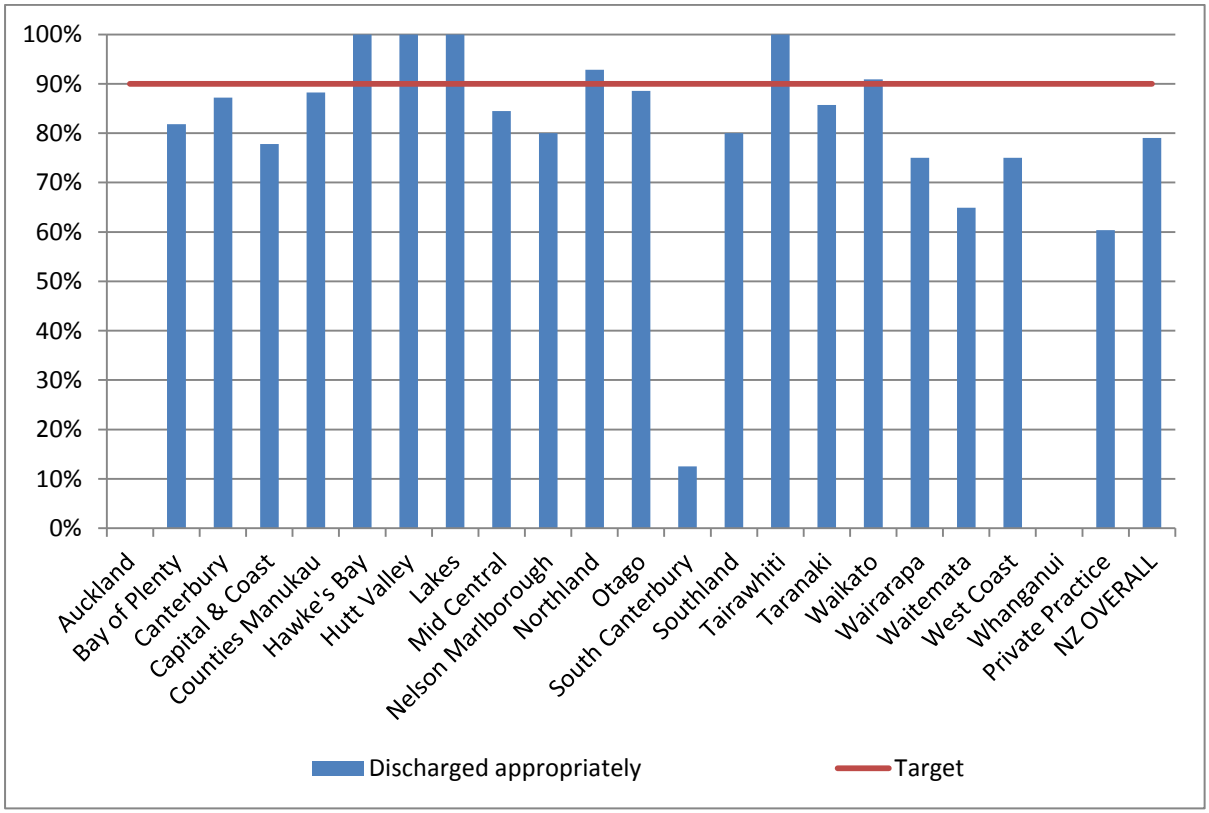


Figure 45 – Percentage of women discharged appropriately within 12 months of treatment



No women were eligible for discharge in Whanganui. Small numbers of women eligible for discharge in some DHBs

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 an invalid HPV test result, as a proportion of those with a subsequent HPV test (by age group, and laboratory which performed the HPV test)
- Women with positive HPV triage result, as a proportion of women with a valid HPV test (by age group, and cytology laboratory)

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).

The following measures are also reported on:

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

In some cases, the laboratory performing the cytology differs from that performing the HPV test. Measures reporting by laboratory which show i) the proportion of women with a triage test, and ii) the proportion of those women with a positive HPV triage test, are based on the laboratory which performed the cytology. Measures reporting on the proportion of HPV triage test results which are valid versus invalid are based on the laboratory which performed the HPV test.

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

Target	Targets have not yet been set.
Current Situation	There were 1,249 women aged less than 30 years and 1,827 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 2,542 women aged less than 30 years and 1,711 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, 94.8% of women aged 30 years or more with an ASC-US cytology result, and 96.1% of women aged 30 years or more with an LSIL cytology result are recorded as having a subsequent HPV test (Table 60, Table 61). These proportions ranged 86.7% (Pathlab) to 99.7% (Diagnostic Medlab Ltd) for ASC-US cytology results and from 77.8% (LabPLUS) to 100.0% (Medlab South Christchurch) for LSIL cytology results (Figure 46, Table 60, Table 61). HPV triage is not included in the recommendations for women aged less than 30 years, and accordingly the proportions of women aged less than 30 years with a subsequent HPV test are substantially lower. Subsequent HPV tests are recorded in the NCSP Register for 1.4% of women aged less than 30 years with ASC-US results, and 0.9% of women aged less than 30 years with LSIL results. These proportions ranged from 0% (Diagnostic Medlab Ltd and LabPLUS) to 13.2% (Canterbury Health Laboratories) for women with ASC-US results, and from 0.2% (Diagnostic Medlab Ltd) to 4.1% (Canterbury Health Laboratories) for women with LSIL results (Figure 47, Table 60, Table 61). The proportion of women aged 30 years or more whose HPV test results were invalid was 0.1% (Table 62, Table 63). The proportion was also 0.1% or less for all HPV test technologies (Table 64). Among women aged 30 years or more with valid HPV triage test results, the proportion who were positive for high risk HPV was 26% for women with ASC-US results, and 58% for women with LSIL results. These proportions varied by laboratory from 10% (LabPLUS) to 55% (Pathlab) for women with ASC-US cytology (Figure 48), and from 29% (LabPLUS) to 69% (Aotea Pathology Ltd) for women with LSIL cytology (Figure 49). The proportion of women whose HPV triage test was positive also varied by age. HPV positivity generally decreased with increasing age (Figure 50, Table 24, 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 93.3% to 94.8% for women with ASC-US results, and increased from 92.2% to 96.1% for women with LSIL results. The proportion of women aged less than 30 years

with a subsequent HPV test is similar to that observed in the previous monitoring period, for both ASCUS and LSIL .

The proportion of women whose tests are invalid remains very small.

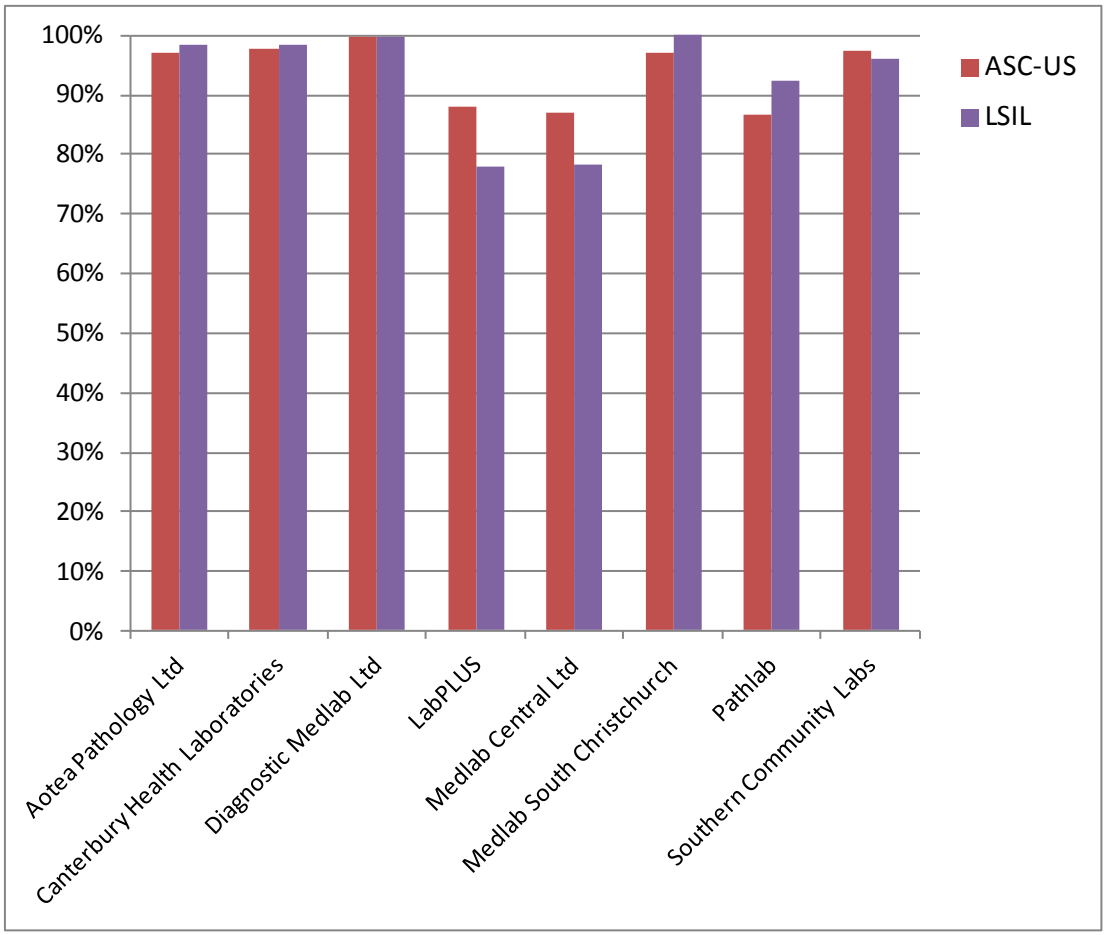
The proportion of women aged 30 years or more who test positive for a high risk HPV type is similar for ASC-US (25.5% in the previous report; 25.6% in the current report), and is lower for LSIL than that reported in the previous monitoring report (60.8% in the previous report; 58.3% in the current report).

Comments

A small number of women (N=40) aged less than 30 years with low grade results, no recent abnormalities (in the previous five years) and no record of any previous high grade squamous abnormlity (cytological or histological) have a record of a subsequent HPV test. 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.[16,17]

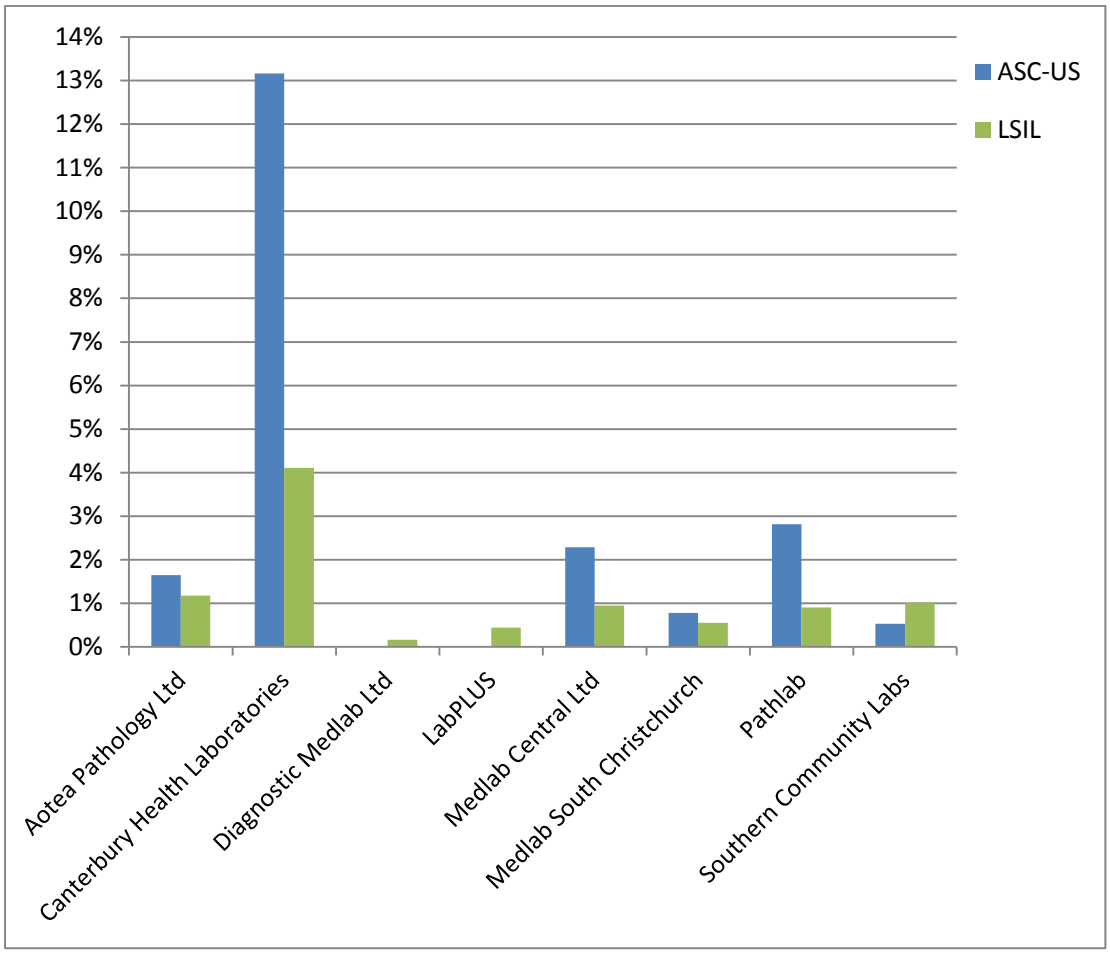
The NCSP Register does not contain codes for all of the HPV test technologies used. In particular, there is no code for cobas® 4800 (Roche), and these tests appear to be coded as either Roche Amplicor or Other. In the current monitoring report, we have attempted to correct the estimates for the validity of HPV tests by test technology type to reflect the actual test used. Based on information provided by the laboratories, all laboratories used only one HPV test type during this period - either Abbott RealTime (Canterbury Health Laboratories, Southern Community Labs) or cobas® 4800 (Aotea, Diagnostic Medlab Ltd, LabPLUS, Medlab Central Ltd, Medlab South Christchurch and Pathlab). Therefore test technology types were recoded for the purposes of this analysis based on the laboratory where they were processed.

Figure 46 – 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 47 – 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 48 - Proportion of HPV triage tests which are positive following ASC-US cytology (women aged 30 years or more) , by cytology laboratory

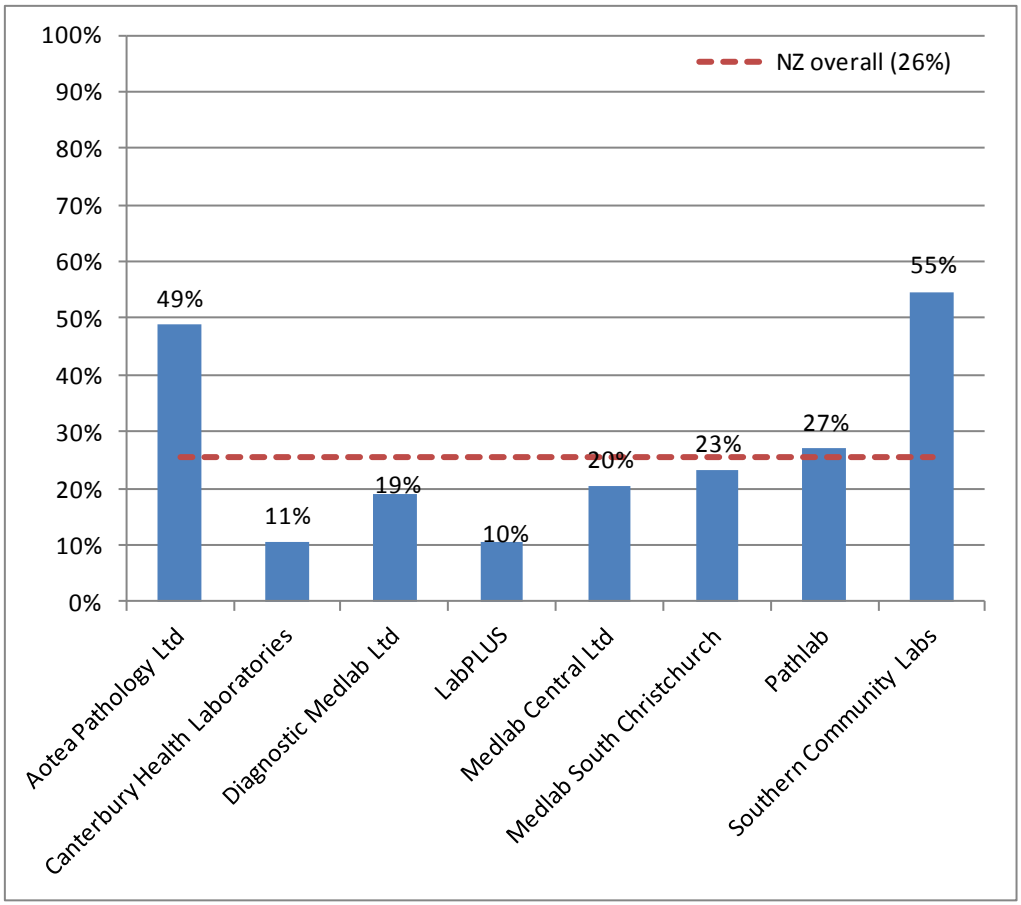


Figure 49 - Proportion of HPV triage tests which are positive following LSIL cytology (women aged 30 years or more) , by cytology laboratory

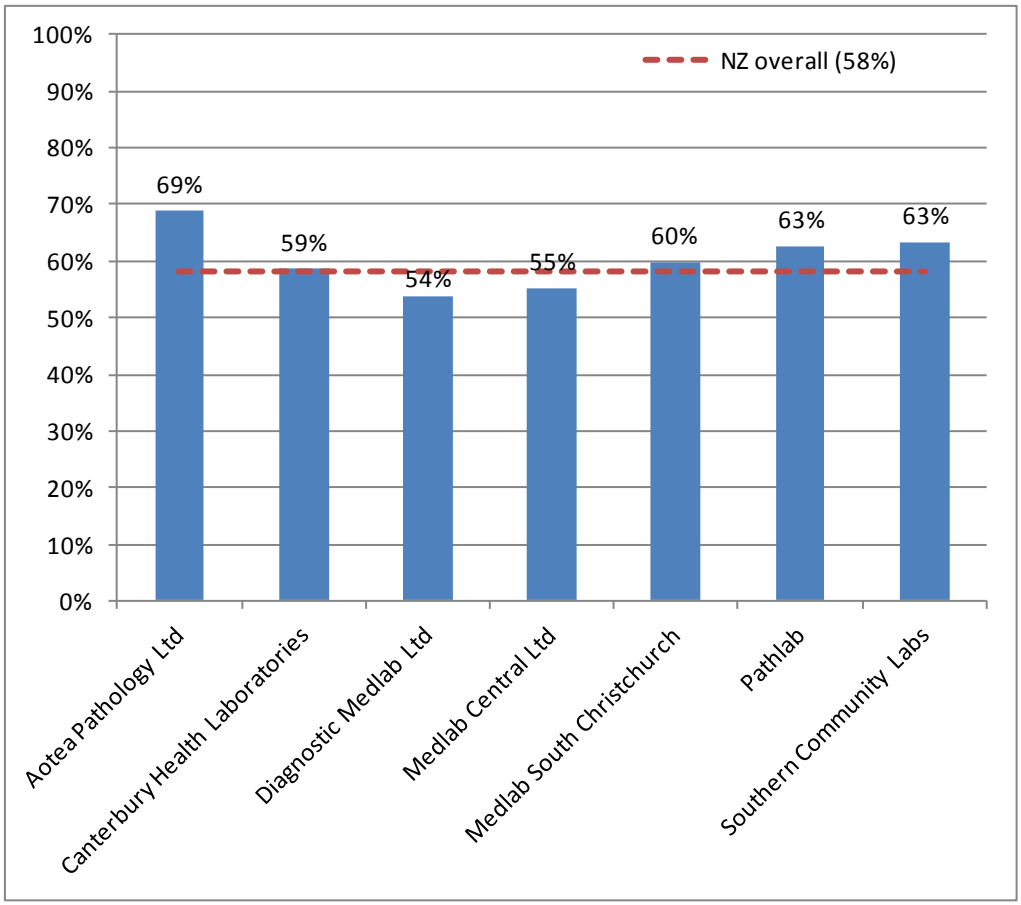
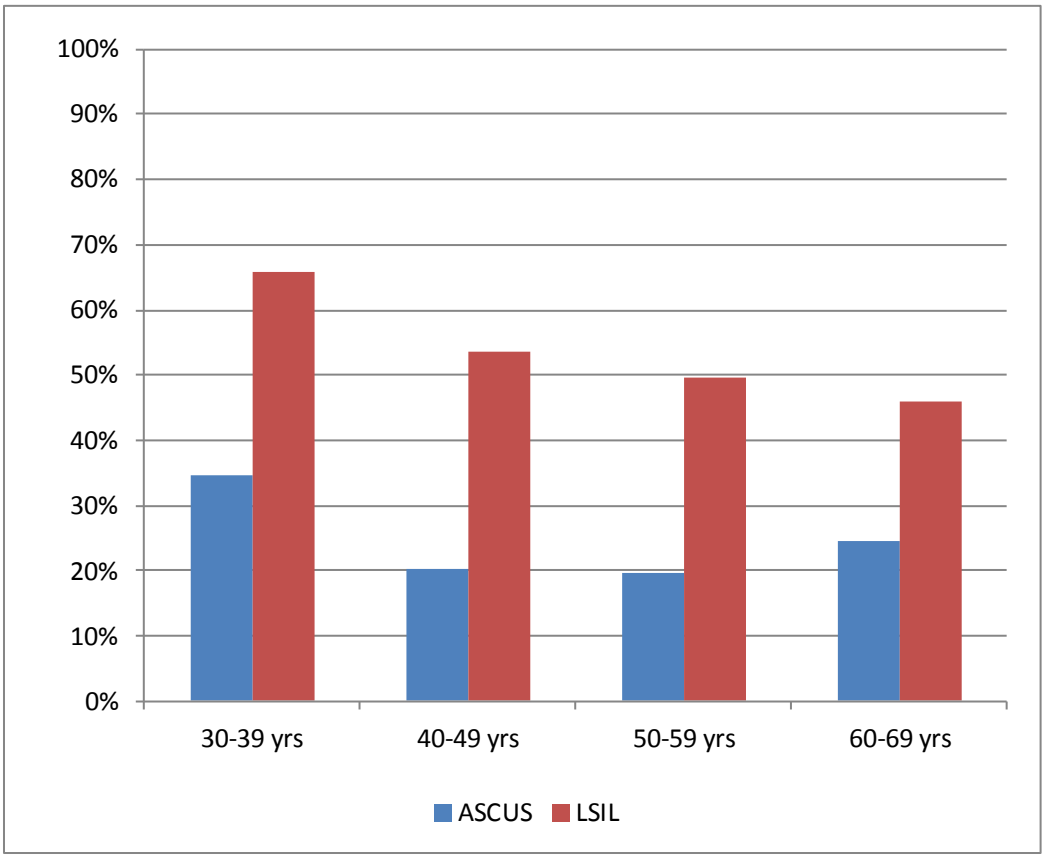


Figure 50 – Proportion of women with an HPV triage test who are HPV positive, by age and cytology result



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 24 - 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	3	135	3	100.0	36	54.5	18	51.4	10	37.0	2	28.6	0	0.0
Canterbury Health Laboratories	5	161	0	0.0	9	13.6	3	6.4	2	5.9	3	23.1	0	0.0
Diagnostic Medlab Ltd	0	581	0	0.0	55	27.6	29	13.8	18	15.0	8	16.7	0	0.0
LabPLUS	0	58	0	0.0	3	13.6	2	8.3	0	0.0	1	50.0	0	0.0
Medlab Central Ltd	3	210	2	66.7	17	26.2	13	16.7	9	18.8	3	16.7	1	100.0
Medlab South Christchurch	1	172	1	100.0	20	31.7	8	14.0	6	14.3	6	66.7	0	0.0
Pathlab	4	234	3	75.0	26	39.4	16	20.3	14	24.1	7	24.1	0	0.0
Southern Community Labs	1	179	1	100.0	51	63.0	30	53.6	14	42.4	3	33.3	0	0.0
TOTAL	**17**	**1,730**	**10**	**58.8**	**217**	**34.6**	**119**	**20.3**	**73**	**19.7**	**33**	**24.4**	**1**	**10.0**

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

Table 25 - 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	3	125	3	100.0	51	76.1	24	63.2	9	64.3	2	33.3	0	0.0
Canterbury Health Laboratories	6	111	5	83.3	29	54.7	24	60.0	9	75.0	3	50.0	0	0.0
Diagnostic Medlab Ltd	1	713	1	100.0	218	62.3	116	48.3	32	39.0	15	41.7	2	40.0
LabPLUS	1	7	0	0.0	0	0.0	2	50.0	0	0.0	0	0.0	0	0.0
Medlab Central Ltd	2	105	1	50.0	30	60.0	16	50.0	10	55.6	2	50.0	0	0.0
Medlab South Christchurch	1	87	0	0.0	24	68.6	21	58.3	5	45.5	2	40.0	0	0.0
Pathlab	3	209	3	100.0	68	70.1	34	53.1	19	61.3	9	60.0	1	50.0
Southern Community Labs	6	286	4	66.7	97	73.5	57	59.4	19	47.5	8	50.0	0	0.0
TOTAL	**23**	**1,643**	**17**	**73.9**	**517**	**65.8**	**294**	**53.5**	**103**	**49.5**	**41**	**46.1**	**3**	**30.0**

*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:

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

ii) 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)*

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

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

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

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

As this indicator is still being developed, tests in the 'Other' category were explored further. The number of tests that fell into the 'Other' category was found to be relatively high in this report, but this analysis is nonetheless indicative of the 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.

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

Target

This is a new measure, and targets have not yet been set.

Current Situation

Overall volumes

There were 20,330 samples received by laboratories for HPV testing within the current reporting period. These are reported on further in Table 65 to Table 68.

Virtually all (98.9%) samples for HPV testing were from women aged 20-69 years. The large majority of women (90.0%) were aged 30 years or more (Figure 51, Table 67).

The majority of HPV tests (82.1%) were performed on cervical samples from European/Other women, and the number of HPV tests performed was smallest among Pacific women (445, or 2.2% of all HPV tests) (Table 66).

The number of samples received by laboratories for HPV testing ranged from 692 (LabPLUS; 3.4% of all HPV tests) to 6,048 (Southern Community Labs; 29.7% of all HPV tests) (Figure 52, Table 65).

Figure 53 and Table 65 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 9.1% across New Zealand – that is, on average 9.1% of cytology tests are associated with an HPV test. This ratio varied by laboratory from 6.0% (Diagnostic Medlab Ltd; ie fewer HPV tests processed in relation to cytology tests processed) to 16.0% (Canterbury Health Laboratories; ie more HPV tests processed in relation to cytology tests processed).

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 3,438 (16.9%) were for triage of low grade cytology in women aged 30 years or more; 1,477 (7.3%) were for post-treatment management for women treated in the past four years; 8,955 (44.0%) was for follow-up management of women with high grade squamous cytology or histology more than three years previously (historical testing); and 945 (4.6%) were on samples collected at a colposcopy visit which did not fit into a previous category (possibly for resolution of discordant results). The remaining 5,515 (27.1%) HPV tests did not fit into any of the previously described categories, and therefore it is unclear what the purpose of the test was (Figure 54).

Further breakdowns of HPV tests by purpose are presented by age (Figure 55) and laboratory (Figure 56).

There were variations in HPV test purpose by age (Figure 55, Table 67). 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 56, Table 68). 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, Medlab South Christchurch, 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 20.0% at Pathlab to 38.2% at LabPLUS. The proportion of tests performed for HPV triage ranged from 7.4% (Southern Community Laboratories) to 40.5% (Diagnostic Medlab Ltd). The proportion of tests performed for post-treatment management varied from 2.8% (Diagnostic Medlab Ltd) to 22.8% (LabPLUS), while the proportion performed to follow up women with historical high grade squamous abnormalities varied from 16.6% (LabPLUS) to 51.9% (Southern Community Laboratories).

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 66).

HPV tests at colposcopy

HPV tests taken at colposcopy were further explored, based on the DHB of the colposcopy clinic where the sample was taken, and whether or not it was a public or a private clinic. Nationally, more of the HPV tests which were taken at colposcopy came from public facilities (615; 83%) than from private facilities (130; 17%), however this was consistent with the greater number of colposcopies performed in public clinics (Table 69). 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 in colposcopy volumes 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 5.3% of colposcopies. This value ranged from 0.4% (Counties Manukau) to 25.5% (Lakes), and was 5.1% overall across all public DHB clinics (Figure 57, Table 69). In private practice, this rate was 6.7%. No HPV tests were taken at colposcopy in Hutt Valley, Northland, Tairawhiti, Taranaki, Wairarapa, West Coast or Whanganui.

Trends

Slightly fewer samples were received at laboratories for HPV testing in the current reporting period (20,330) than in the previous monitoring report (21,244). Unlike the previous report, this is a comparatively small change of

4% (compared to an increase of approximately 18% which occurred over the previous reporting period).

The proportion of samples for HPV testing which related to woman aged less than 30 years is broadly similar in the current reporting period (8.6%) to what it was in the previous period (9.0%).

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 53, Table 65). 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 the 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 may in future be used 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 this analysis, however investigations into a subset of HPV tests which fell into the 'Other' category found a high proportion (approximately two thirds) were associated with a synopsis reflecting a previous high grade abnormality (cytological or histogical).

Figure 51 - Volume of HPV test samples received by laboratories during the monitoring period, by age

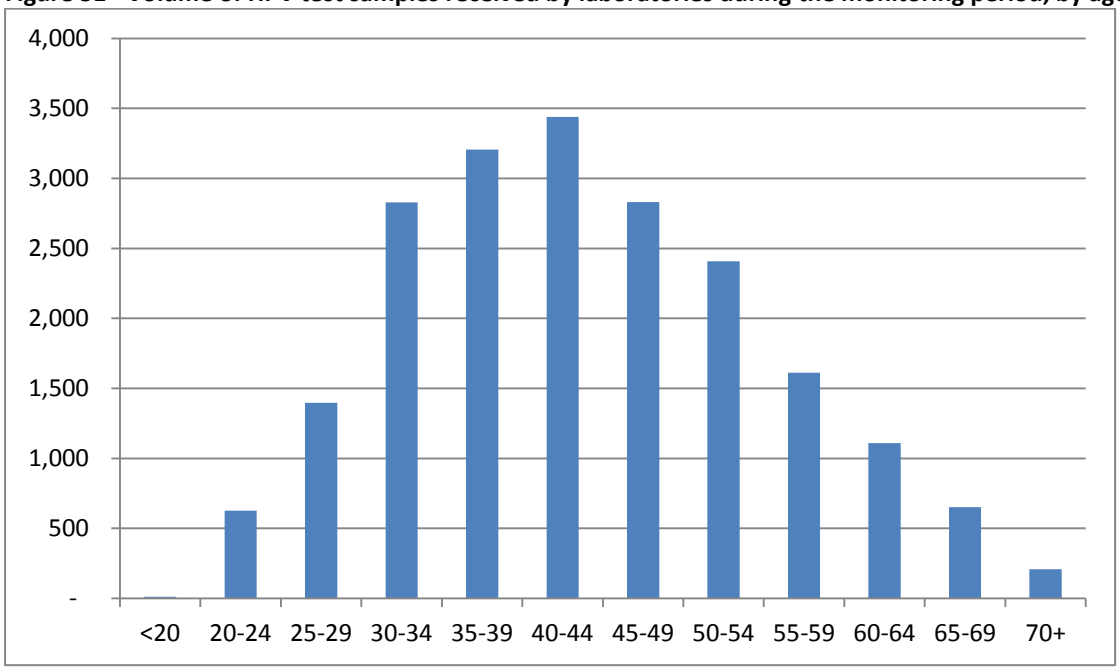


Figure 52 - Volume of HPV test samples received by laboratories during the monitoring period, by laboratory

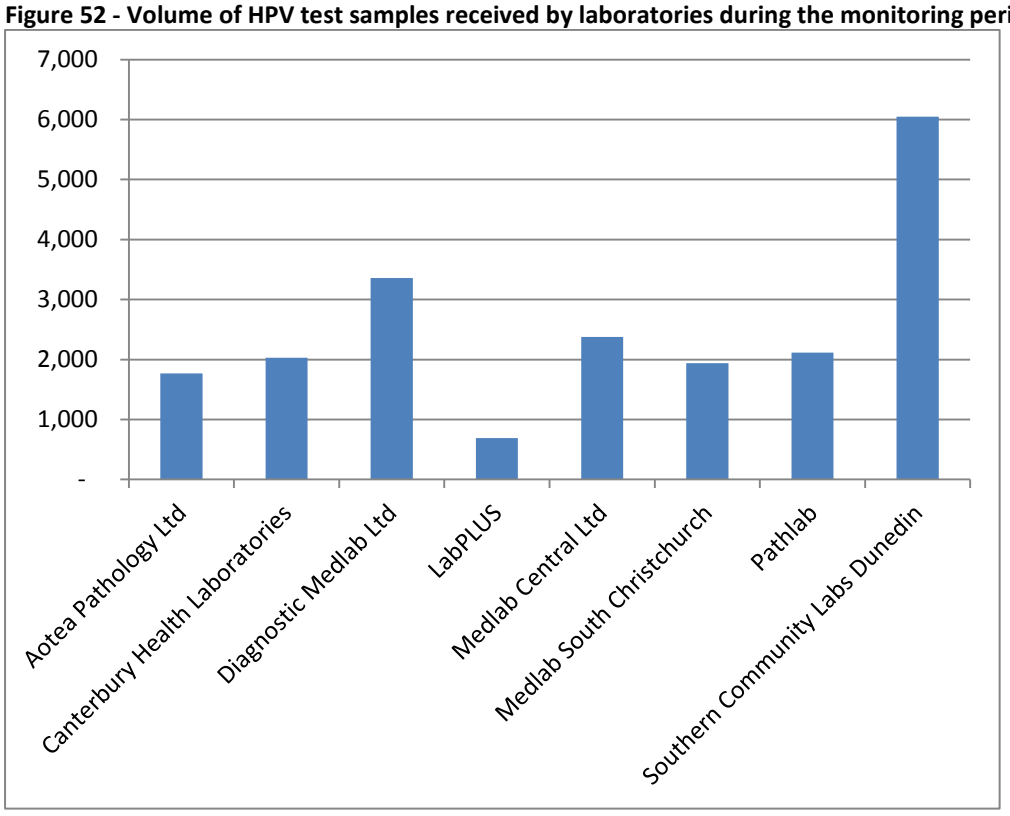
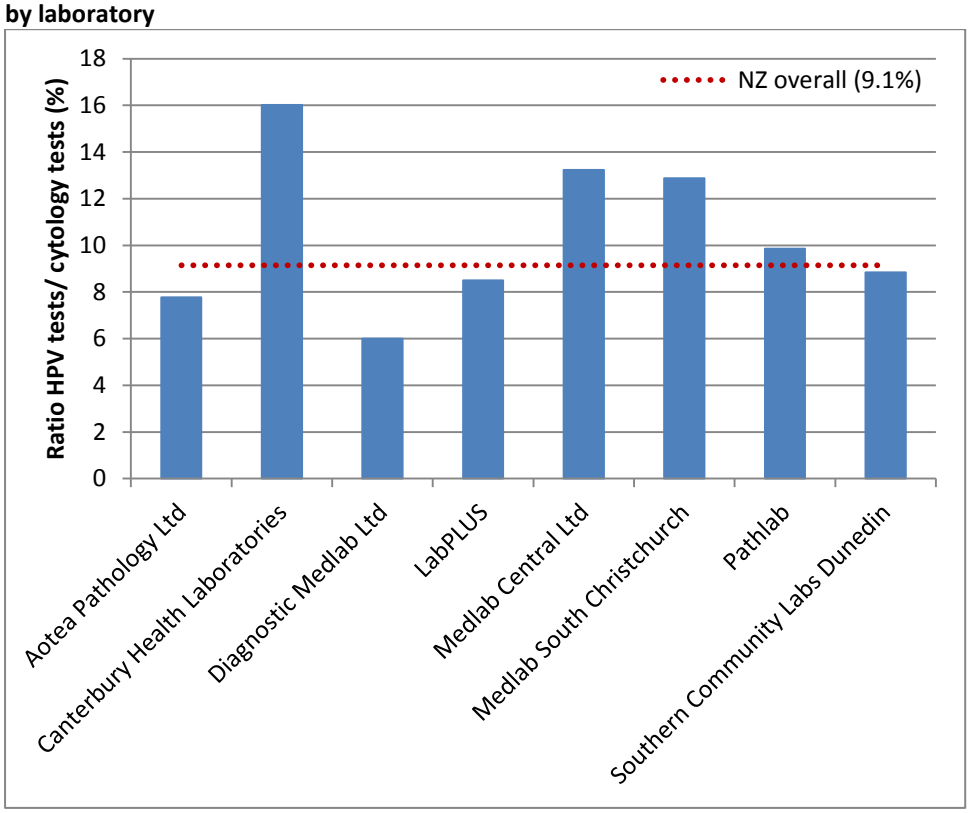


Figure 53 –HPV test samples as a percentage of cytology test samples received during the monitoring period, by laboratory



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

Figure 54 - Volume of HPV test samples received during the monitoring period, by purpose

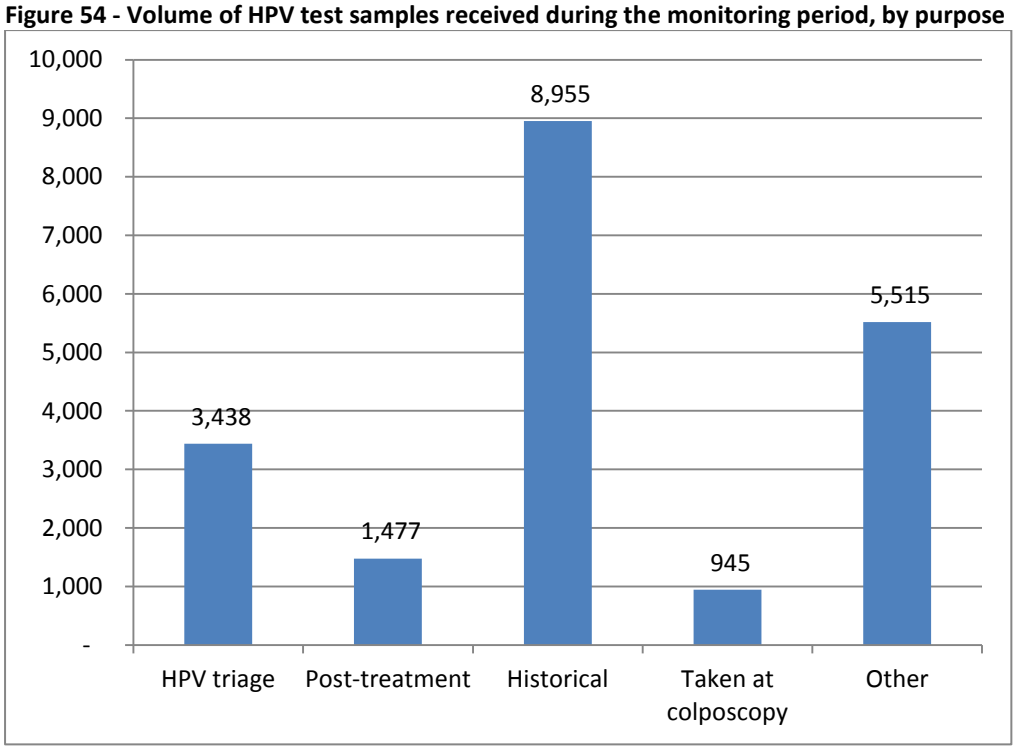


Figure 55- HPV test samples received during the monitoring period, by purpose and age

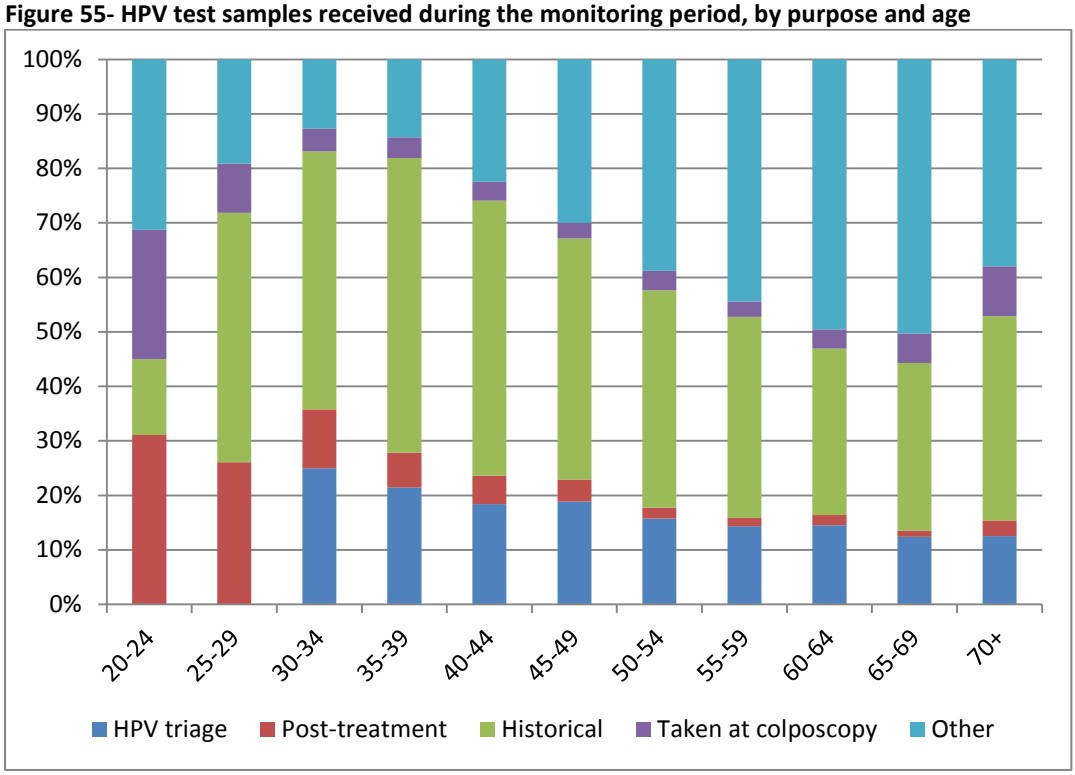


Figure 56- HPV test samples received during the monitoring period, by purpose and laboratory

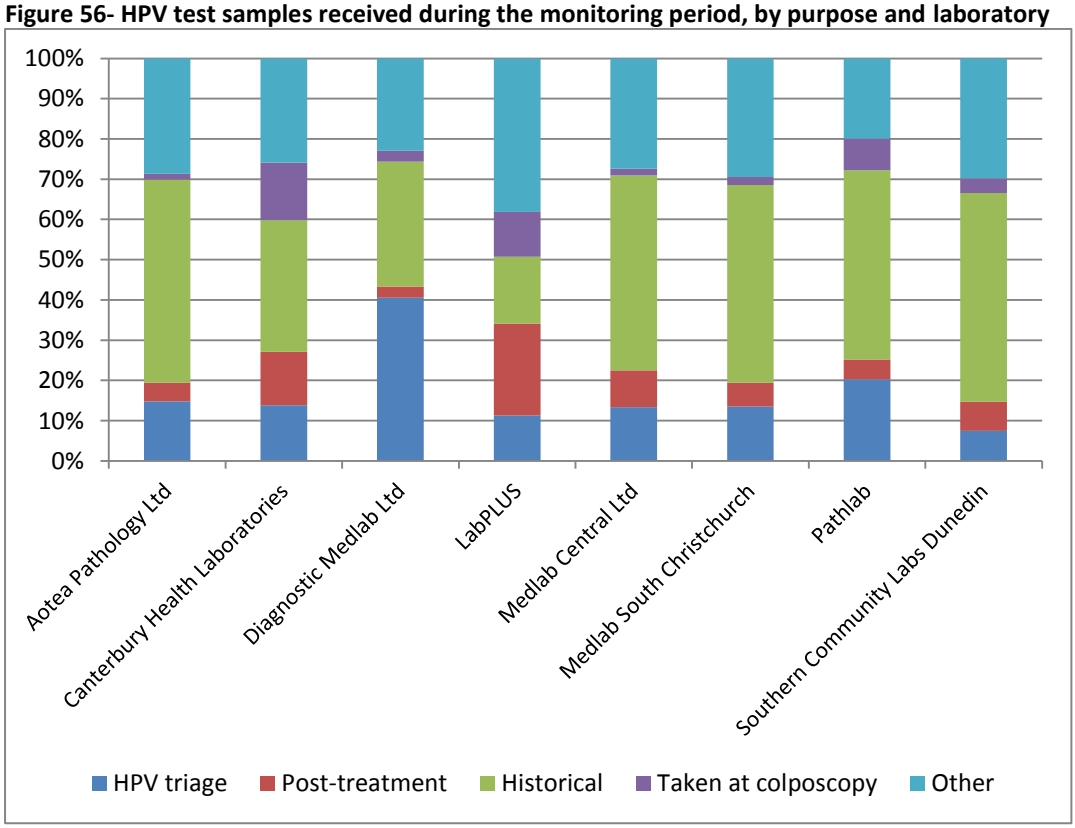
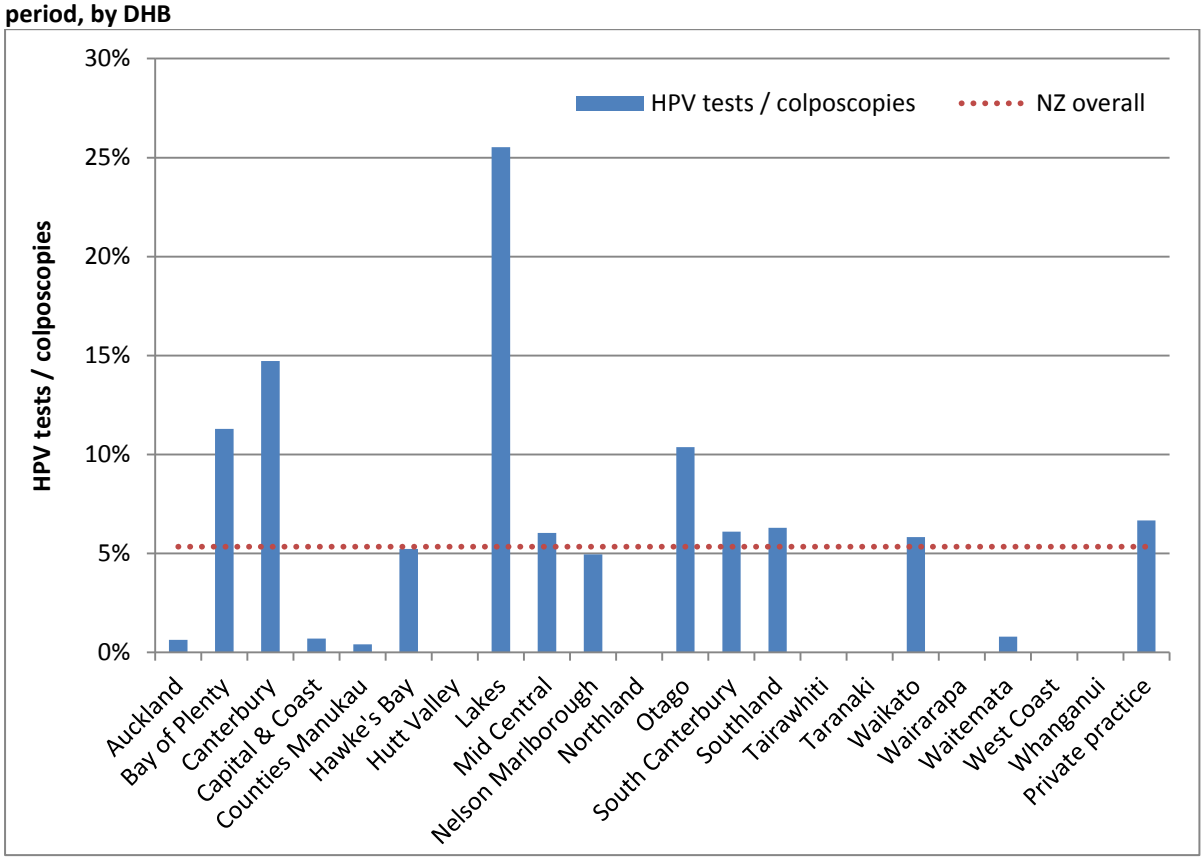


Figure 57- HPV test samples collected at colposcopy, in relation to total colposcopies performed in the period, by DHB



HPV tests/ colposcopy can be interpreted broadly as the percentage of colposcopies within this DHB/ sector where a sample is collected for HPV testing.

Appendix A – Additional data

Indicator 1 - Coverage

Table 26 - Coverage by age (women 20-69 years screened in the three years prior to 30 June 2012, hysterectomy adjusted)

Age (years)	Hysterectomy-adjusted population	Women screened in the last 3 years	
		N	%
20-24	159,569	87,357	54.7
25-29	144,970	97,824	67.5
30-34	141,300	101,332	71.7
35-39	141,491	111,153	78.6
40-44	153,434	123,478	80.5
45-49	144,757	117,457	81.1
50-54	132,698	107,575	81.1
55-59	105,553	84,534	80.1
60-64	88,688	68,461	77.2
65-69	68,149	49,201	72.2
20-69	**1,280,609**	**948,372**	**74.1**

Table 27 - Coverage by DHB (women 25-69 years screened in the three years prior to 30 June 2012, hysterectomy adjusted)

DHB	Hysterectomy-adjusted population	Women screened in the last 3 years	
		N	%
Auckland	128,817	98,540	76.5
Bay of Plenty	52,443	41,735	79.6
Canterbury	128,122	96,375	75.2
Capital & Coast	80,067	65,139	81.4
Counties Manukau	124,667	86,719	69.6
Hawke's Bay	38,197	30,716	80.4
Hutt Valley	36,158	28,912	80.0
Lakes	25,450	20,312	79.8
Mid Central	40,400	30,512	75.5
Nelson Marlborough	35,792	28,867	80.7
Northland	38,611	29,512	76.4
Otago	46,858	37,210	79.4
South Canterbury	13,608	10,271	75.5
Southland	29,186	22,431	76.9
Tairawhiti	11,247	8,923	79.3
Taranaki	26,860	22,766	84.8
Waikato	89,458	68,942	77.1
Wairarapa	9,896	8,154	82.4
Waitemata	142,140	107,336	75.5
West Coast	8,127	6,037	74.3
Whanganui	14,936	11,548	77.3
Total	**1,121,040**	**860,957**	**76.8**

Excludes 58 women for whom DHB could not be determined

Table 28 - Coverage by ethnicity (women 25-69 years screened in the three years prior to 30 June 2012, hysterectomy adjusted)

Ethnicity	Hysterectomy adjusted population (ages 25-69 years)	Women screened in the last 3 years (ages 25-69 years)	
		N	%
Māori	143,795	88,559	61.6
Pacific	62,909	42,315	67.3
Asian	140,918	84,628	60.1
European/Other	773,418	645,513	83.5
Total	**1,121,040**	**861,015**	**76.8**

Table 29 - Coverage by age (women 20-69 years screened in the five years prior to 30 June 2012, hysterectomy adjusted)

Age (years)	Hysterectomy-adjusted population	Number of women screened in last 5 years	% screened in the last 5 years
20-24	159,569	94,053	58.9
25-29	144,970	120,077	82.8
30-34	141,300	123,079	87.1
35-39	141,491	132,376	93.6
40-44	153,434	145,882	95.1
45-49	144,757	138,215	95.5
50-54	132,698	125,649	94.7
55-59	105,553	97,816	92.7
60-64	88,688	78,690	88.7
65-69	68,149	57,240	84.0
Total	**1,280,609**	**1,113,077**	**86.9**

Table 30 - Coverage by DHB (women aged 25-69 years screened in the five years prior to 30 June 2012, hysterectomy adjusted)

DHB	Hysterectomy adjusted population	Women screened in the last 5 years	
		N	%
Auckland	128,817	117,279	91.0
Bay of Plenty	52,443	49,514	94.4
Canterbury	128,122	115,127	89.9
Capital & Coast	80,067	76,259	95.2
Counties Manukau	124,667	105,346	84.5
Hawke's Bay	38,197	36,020	94.3
Hutt Valley	36,158	34,240	94.7
Lakes	25,450	23,959	94.1
Mid Central	40,400	35,787	88.6
Nelson Marlborough	35,792	33,536	93.7
Northland	38,611	35,119	91.0
Otago	46,858	43,178	92.1
South Canterbury	13,608	12,371	90.9
Southland	29,186	26,422	90.5
Tairawhiti	11,247	10,596	94.2
Taranaki	26,860	26,194	97.5
Waikato	89,458	80,914	90.4
Wairarapa	9,896	9,436	95.4
Waitemata	142,140	127,202	89.5
West Coast	8,127	6,998	86.1
Whanganui	14,936	13,451	90.1
Total	**1,121,040**	**1,018,948**	**90.9**

Excludes 76 women for whom DHB could not be determined

Table 31 - Coverage by ethnicity – women aged 25-69 years screened in the five years prior to 30 June 2012, hysterectomy adjusted

Ethnicity	Hysterectomy adjusted population	Women screened in the last 5 years	
	N	N	%
Māori	143,795	109,288	76.0
Pacific	62,909	52,831	84.0
Asian	140,918	99,659	70.7
European/Other	773,418	757,246	97.9
TOTAL	**1,121,040**	**1,019,024**	**90.9**

Table 32 - Women under 20 years of age, and aged 15-19 years, screened in the three years prior to 30 June 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	1,308	1,303	8.8
Bay of Plenty	476	473	6.8
Canterbury	1,985	1,978	11.1
Capital & Coast	787	787	8.1
Counties Manukau	1,474	1,466	7.3
Hawke's Bay	513	513	9.8
Hutt Valley	418	416	8.2
Lakes	261	261	7.4
Mid Central	355	354	5.5
Nelson Marlborough	318	318	8.2
Northland	330	326	6.4
Otago	614	614	7.9
South Canterbury	180	179	10.9
Southland	291	291	9.1
Tairawhiti	158	158	9.3
Taranaki	258	257	7.4
Waikato	782	780	5.9
Wairarapa	121	120	9.8
Waitemata	1,814	1,808	9.1
West Coast	111	111	11.1
Whanganui	138	137	6.3
Unspecified	*2*		
Total	**12,694**	**12,650**	**8.2**

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

Table 33 – Women screened under 20 years of age, as a proportion of all women screened in the three years to 30 June 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	1,308	110,240	1.2
Bay of Plenty	476	47,186	1.0
Canterbury	1,985	109,809	1.8
Capital & Coast	787	74,589	1.1
Counties Manukau	1,474	97,189	1.5
Hawke's Bay	513	34,792	1.5
Hutt Valley	418	32,539	1.3
Lakes	261	22,805	1.1
Mid Central	355	35,181	1.0
Nelson Marlborough	318	32,063	1.0
Northland	330	33,113	1.0
Otago	614	43,765	1.4
South Canterbury	180	11,587	1.6
Southland	291	25,378	1.1
Tairawhiti	158	10,250	1.5
Taranaki	258	25,635	1.0
Waikato	782	78,850	1.0
Wairarapa	121	9,183	1.3
Waitemata	1,814	119,972	1.5
West Coast	111	6,819	1.6
Whanganui	138	13,078	1.1
Unspecified	*2*		
Total	**12,694**	**974,023**	**1.3**

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

Table 34 – Women screened under 20 years of age, and women aged 18-19 years when they were screened, in the three years to 1 January – 30 June 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	1,308	1,076	82.3
Bay of Plenty	476	401	84.2
Canterbury	1,985	1,654	83.3
Capital & Coast	787	720	91.5
Counties Manukau	1,474	1,177	79.9
Hawke's Bay	513	430	83.8
Hutt Valley	418	345	82.5
Lakes	261	224	85.8
Mid Central	355	324	91.3
Nelson Marlborough	318	268	84.3
Northland	330	274	83.0
Otago	614	518	84.4
South Canterbury	180	141	78.3
Southland	291	249	85.6
Tairawhiti	158	129	81.6
Taranaki	258	214	82.9
Waikato	782	696	89.0
Wairarapa	121	100	82.6
Waitemata	1,814	1,465	80.8
West Coast	111	95	85.6
Whanganui	138	121	87.7
Unspecified	*2*		*0.0*
Total	**12,694**	**10,621**	**83.7**

Table 35 - Women aged 25-69 years screened in the three years to 30 June 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)	(no hysterectomy adjustment)
Auckland	76.5	68.8
Bay of Plenty	79.6	69.0
Canterbury	75.2	65.8
Capital & Coast	81.4	72.6
Counties Manukau	69.6	61.7
Hawke's Bay	80.4	69.8
Hutt Valley	80.0	70.3
Lakes	79.8	69.7
Mid Central	75.5	65.9
Nelson Marlborough	80.7	69.7
Northland	76.4	65.9
Otago	79.4	69.4
South Canterbury	75.5	64.9
Southland	76.9	67.6
Tairawhiti	79.3	69.5
Taranaki	84.8	73.7
Waikato	77.1	67.5
Wairarapa	82.4	70.7
Waitemata	75.5	66.6
West Coast	74.3	64.4
Whanganui	77.3	66.7

Table 36 - Trends in three-year coverage by DHB (women screened in the previous three years, as a percentage of the hysterectomy-adjusted female population)

DHB	To 31 Dec 2010	To 30 Jun 2011	To 31 Dec 2011	To 30 Jun 2012
Auckland	73.0%	73.2%	73.4%	76.5%
Bay of Plenty	78.0%	77.1%	77.5%	79.6%
Canterbury	75.7%	73.7%	73.8%	75.2%
Capital & Coast	79.8%	79.3%	80.3%	81.4%
Counties Manukau	68.1%	67.3%	66.7%	69.6%
Hawke's Bay	78.2%	78.2%	78.9%	80.4%
Hutt Valley	77.4%	76.9%	78.1%	80.0%
Lakes	77.0%	77.0%	77.4%	79.8%
Mid Central	74.1%	74.5%	74.4%	75.5%
Nelson Marlborough	79.4%	78.6%	79.1%	80.7%
Northland	74.2%	75.2%	74.8%	76.4%
Otago	79.3%	78.3%	78.9%	79.4%
South Canterbury	76.9%	74.1%	76.1%	75.5%
Southland	76.0%	75.5%	76.6%	76.9%
Tairawhiti	71.1%	74.8%	74.8%	79.3%
Taranaki	83.3%	82.9%	83.9%	84.8%
Waikato	75.0%	75.0%	75.4%	77.1%
Wairarapa	80.3%	81.2%	82.2%	82.4%
Waitemata	74.7%	74.0%	73.6%	75.5%
West Coast	69.7%	68.5%	70.3%	74.3%
Whanganui	74.1%	74.8%	76.3%	77.3%

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

Table 37 - Trends in three-year coverage by age (women screened in the previous three years, as a percentage of the hysterectomy-adjusted female population)

Age	To 31 Dec 2010	To 30 Jun 2011	To 31 Dec 2011	To 30 Jun 2012
20-24	54.4%	54.1%	54.4%	54.7%
25-29	66.3%	65.3%	65.7%	67.5%
30-34	72.3%	71.2%	70.7%	71.7%
35-39	77.0%	76.3%	76.2%	78.6%
40-44	79.0%	78.8%	78.9%	80.5%
45-49	80.9%	80.2%	80.6%	81.1%
50-54	80.9%	80.8%	81.4%	81.1%
55-59	78.5%	78.7%	79.1%	80.1%
60-64	73.1%	73.1%	73.7%	77.2%
65-69	63.5%	63.6%	64.4%	72.2%

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

Table 38 - Trends in three-year coverage by ethnicity (women screened in the previous three years, as a percentage of the hysterectomy-adjusted female population)

Ethnicity	To 31 Dec 2010	To 30 Jun 2011	To 31 Dec 2011	To 30 Jun 2012
Māori	56.4%	56.8%	57.9%	61.6%
Pacific	60.9%	60.0%	61.7%	67.3%
Asian	54.3%	53.6%	56.0%	60.1%
European/ Other	83.8%	83.3%	83.0%	83.5%
NZ overall	**75.2%**	**74.7%**	**75.0%**	**76.8%**

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

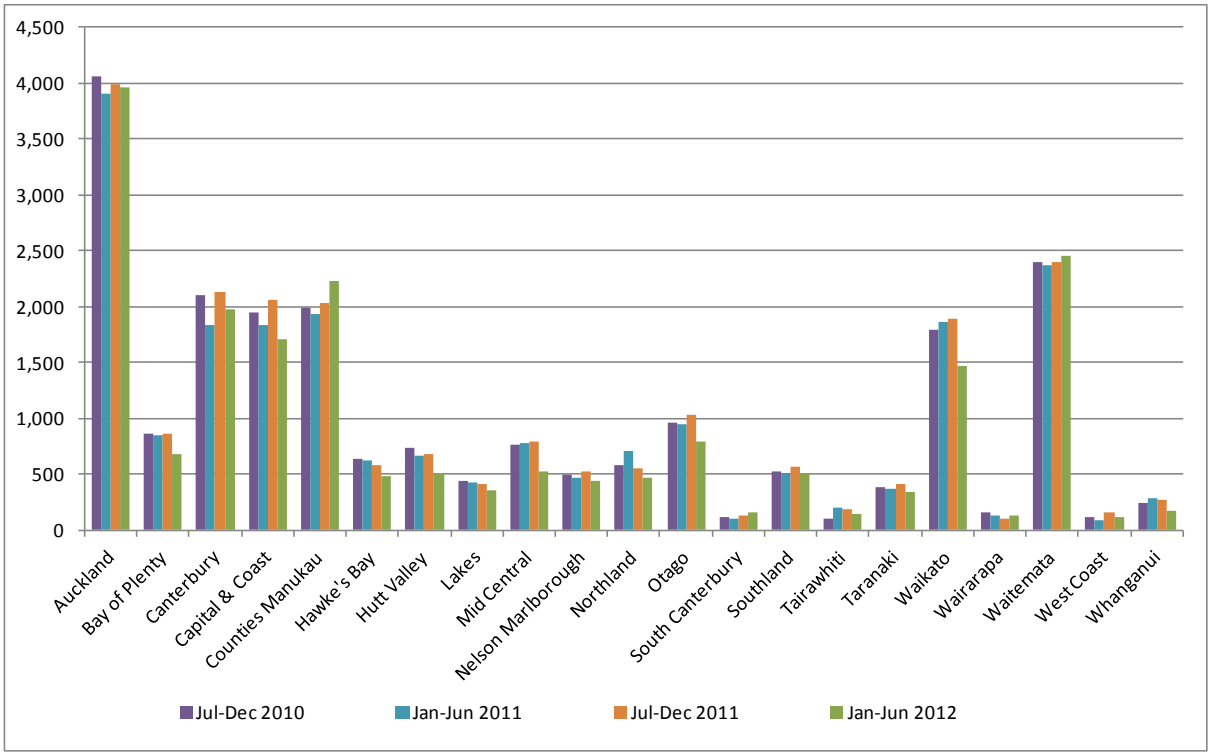
Indicator 2 – First screening events

Table 39 - Age distribution of first screening events for period 1 January – 30 June 2012

Age	Women with first events	% of first events (ages 20-69 yrs) which occurred in that age group
20-24	8,771	44.9
25-29	3,297	16.9
30-34	2,247	11.5
35-39	1,420	7.3
40-44	1,075	5.5
45-49	810	4.1
50-54	659	3.4
55-59	566	2.9
60-64	430	2.2
65-69	272	1.4
20-69 yrs	**19,547**	

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

Figure 58 - Trends in the number of women with a first screening event, by DHB



Indicator 4 – Early re-screening

Table 40 - Early re-screening by five-year age group, 1 January – 30 June 2012 (cohort method)

Age	Women recommended to return in 3 yrs	Women with >= 1 subsequent test	
		N	%
20-24	1,259	367	29.2
25-29	3,587	931	26.0
30-34	3,980	943	23.7
35-39	4,697	1,041	22.2
40-44	5,766	1,252	21.7
45-49	5,765	1,277	22.2
50-54	5,367	1,136	21.2
55-59	4,334	882	20.4
60-64	3,595	612	17.0
65-69	2,580	424	16.4
Total	**40,930**	**8,865**	**21.7**

Table 41 - Early re-screening by DHB, 1 January – 30 June 2012 (cohort method)

DHB	Women recommended to return in 3 yrs	Women with >= 1 subsequent test	
		N	%
Auckland	4,275	1,234	28.9
Bay of Plenty	2,115	510	24.1
Canterbury	4,693	1,028	21.9
Capital & Coast	3,411	646	18.9
Counties Manukau	3,918	857	21.9
Hawke's Bay	1,475	289	19.6
Hutt Valley	1,417	201	14.2
Lakes	1,008	245	24.3
Mid Central	1,567	250	16.0
Nelson Marlborough	1,354	216	16.0
Northland	1,345	333	24.8
Otago	1,829	299	16.3
South Canterbury	463	86	18.6
Southland	1,025	168	16.4
Tairawhiti	378	71	18.8
Taranaki	1,011	118	11.7
Waikato	3,227	494	15.3
Wairarapa	462	115	24.9
Waitemata	5,076	1,558	30.7
West Coast	263	41	15.6
Whanganui	617	106	17.2
Unspecified	*1*	-	*0.0*
Total	**40,930**	**8,865**	**21.7**

Table 42 - Early re-screening by ethnicity, 1 January – 30 June 2012 (cohort method)

Ethnicity	Women recommended to return in 3 yrs	Women with >= 1 subsequent test	
		N	%
Māori	3,981	867	21.8
Pacific	1,779	321	18.0
Asian	3,782	897	23.7
European/Other	31,388	6,780	21.6
Total	**40,930**	**8,865**	**21.7**

Indicator 5 – Laboratory indicators

Indicator 5.2 – Accuracy of cytology predicting HSIL

Table 43 - 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	114	90.5	79	69.3	12	9.5	126
Canterbury Health Laboratories	110	94.8	90	81.8	6	5.2	116
Diagnostic Medlab Ltd	273	91.6	203	74.4	25	8.4	298
LabPLUS	269	94.4	228	84.8	16	5.6	285
Medlab Central Ltd	139	90.8	116	83.5	14	9.2	153
Medlab South Christchurch	114	92.7	92	80.7	9	7.3	123
Pathlab	130	92.2	95	73.1	11	7.8	141
Southern Community Labs Dunedin	377	89.3	312	82.8	45	10.7	422
Total	**1,526**	**91.7**	**1,215**	**79.6**	**138**	**8.3**	**1,664**

Target: 65% - 85%

Table 44 - 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	75	82.4	48	64.0	16	17.6	91
Canterbury Health Laboratories	111	86.0	67	60.4	18	14.0	129
Diagnostic Medlab Ltd	160	80.4	70	43.8	39	19.6	199
LabPLUS	279	78.8	105	37.6	75	21.2	354
Medlab Central Ltd	88	76.5	48	54.5	27	23.5	115
Medlab South Christchurch	170	81.7	75	44.1	38	18.3	208
Pathlab	89	77.4	53	59.6	26	22.6	115
Southern Community Labs Dunedin	58	77.3	33	56.9	17	22.7	75
Total	**1,030**	**80.1**	**499**	**48.4**	**256**	**19.9**	**1,286**

Table 45 - 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	189	87.1	127	67.2	28	12.9	217
Canterbury Health Laboratories	221	90.2	157	71.0	24	9.8	245
Diagnostic Medlab Ltd	433	87.1	273	63.0	64	12.9	497
LabPLUS	548	85.8	333	60.8	91	14.2	639
Medlab Central Ltd	227	84.7	164	72.2	41	15.3	268
Medlab South Christchurch	284	85.8	167	58.8	47	14.2	331
Pathlab	219	85.5	148	67.6	37	14.5	256
Southern Community Labs Dunedin	435	87.5	345	79.3	62	12.5	497
Total	**2,556**	**86.6**	**1,714**	**67.1**	**394**	**13.4**	**2,950**

Indicator 5.5 – Laboratory turnaround time

Table 46 - Timeliness of cytology reporting by laboratory, 1 January – 30 June 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
Aotea Pathology Ltd	20,722	91.0	2,026	8.9	22,748	99.9	19	0.1	22,767
Canterbury Health Laboratories	10,172	80.4	1,587	12.5	11,759	92.9	897	7.1	12,656
Diagnostic Medlab Ltd	54,948	98.2	635	1.1	55,583	99.3	393	0.7	55,976
LabPLUS	6,641	81.6	1,389	17.1	8,030	98.7	109	1.3	8,139
Medlab Central Ltd	14,648	81.4	2,284	12.7	16,932	94.1	1,053	5.9	17,985
Medlab South Christchurch	15,082	100.0	-	0.0	15,082	100.0	-	0.0	15,082
Pathlab	20,860	97.3	487	2.3	21,347	99.5	97	0.5	21,444
Southern Community Labs Dunedin	62,488	91.3	5,358	7.8	67,846	99.2	560	0.8	68,406
Total	**205,561**	**92.4**	**13,766**	**6.2**	**219,327**	**98.6**	**3,128**	**1.4**	**222,455**

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 47 - Timeliness of histology reporting by laboratory, 1 January – 30 June 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	294	79.9	64	17.4	358	97.3	10	2.7	368
Canterbury Health Laboratories	1,558	86.9	132	7.4	1,690	94.3	102	5.7	1,792
Diagnostic Medlab Ltd	984	54.8	612	34.1	1,596	89.0	198	11.0	1,794
Hutt Hospital Laboratory	125	40.2	180	57.9	305	98.1	6	1.9	311
LabPLUS	382	37.9	423	41.9	805	79.8	204	20.2	1,009
Medlab Central Ltd	874	83.7	108	10.3	982	94.1	62	5.9	1,044
Medlab South Christchurch	179	100.0	-	0.0	179	100.0	-	0.0	179
Memorial Hospital Hastings Lab	67	68.4	8	8.2	75	76.5	23	23.5	98
Middlemore Hospital Laboratory	956	72.3	321	24.3	1,277	96.5	46	3.5	1,323
Nelson Hospital Laboratory	421	84.4	74	14.8	495	99.2	4	0.8	499
North Shore Hospital Laboratory	1,199	84.7	196	13.8	1,395	98.5	21	1.5	1,416
Northland Pathology Laboratory	243	90.0	26	9.6	269	99.6	1	0.4	270
Pathlab	721	66.1	338	31.0	1,059	97.2	31	2.8	1,090
Southern Community Labs Dunedin	1,905	93.4	130	6.4	2,035	99.8	4	0.2	2,039
Taranaki Medlab	246	97.2	7	2.8	253	100.0	-	0.0	253
Waikato Hospital Laboratory	141	65.6	74	34.4	215	100.0	-	0.0	215
Wellington Hospital Laboratory	285	38.1	426	56.9	711	94.9	38	5.1	749
Total	**10,580**	**73.2**	**3,119**	**21.6**	**13,699**	**94.8**	**750**	**5.2**	**14,449**

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 48 – Timeliness of reporting for cytology with associated HPV testing by laboratory, 1 January – 30 June 2012

	Laboratory turnaround time – cytology with HPV triage testing				
	Within 15 days		More than 15 days		Total
Laboratory	**N**	**%**	**N**	**%**	**N**
Aotea Pathology Ltd	266	100.0	-	0.0	266
Canterbury Health Laboratories	258	91.2	25	8.8	283
Diagnostic Medlab Ltd	1,287	99.3	9	0.7	1,296
LabPLUS	59	89.4	7	10.6	66
Medlab Central Ltd	295	92.5	24	7.5	319
Medlab South Christchurch	261	100.0	-	0.0	261
Pathlab	449	99.8	1	0.2	450
Southern Community Labs Dunedin	446	95.1	23	4.9	469
Total	**3,321**	**97.4**	**89**	**2.6**	**3,410**

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

Table 49 – 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	238	174	73.1	199	83.6
Bay of Plenty	106	81	76.4	93	87.7
Canterbury	347	286	82.4	312	89.9
Capital & Coast	124	99	79.8	111	89.5
Counties Manukau	243	192	79.0	204	84.0
Hawke's Bay	100	76	76.0	84	84.0
Hutt Valley	66	59	89.4	60	90.9
Lakes	57	40	70.2	46	80.7
Mid Central	80	67	83.8	75	93.8
Nelson Marlborough	100	85	85.0	91	91.0
Northland	53	41	77.4	42	79.2
Otago	77	63	81.8	71	92.2
South Canterbury	41	33	80.5	34	82.9
Southland	63	50	79.4	55	87.3
Tairawhiti	28	14	50.0	23	82.1
Taranaki	65	49	75.4	54	83.1
Waikato	181	133	73.5	149	82.3
Wairarapa	20	14	70.0	17	85.0
Waitemata	268	224	83.6	240	89.6
West Coast	24	22	91.7	23	95.8
Whanganui	40	34	85.0	35	87.5
Total	**2,321**	**1,836**	**79.1**	**2,018**	**86.9**

Table 50 - 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	18	81.8	18	81.8
20-24	582	464	79.7	512	88.0
25-29	490	392	80.0	427	87.1
30-34	319	279	87.5	293	91.8
35-39	267	221	82.8	241	90.3
40-44	190	154	81.1	173	91.1
45-49	139	106	76.3	121	87.1
50-54	98	76	77.6	85	86.7
55-59	94	59	62.8	68	72.3
60-64	60	38	63.3	44	73.3
65-69	34	15	44.1	21	61.8
70+	26	14	53.8	15	57.7
Total	**2,321**	**1,836**	**79.1**	**2,018**	**86.9**

Table 51 - Women without any follow-up test within 180 days of a high grade cytology report, by DHB

DHB	High-grade cytology N	Without a follow-up test by 180 days N	%
Auckland	238	20	8.4
Bay of Plenty	106	6	5.7
Canterbury	347	20	5.8
Capital & Coast	124	10	8.1
Counties Manukau	243	22	9.1
Hawke's Bay	100	9	9.0
Hutt Valley	66	6	9.1
Lakes	57	1	1.8
Mid Central	80	5	6.3
Nelson Marlborough	100	5	5.0
Northland	53	4	7.5
Otago	77	6	7.8
South Canterbury	41	3	7.3
Southland	63	4	6.3
Tairawhiti	28	3	10.7
Taranaki	65	10	15.4
Waikato	181	31	17.1
Wairarapa	20	2	10.0
Waitemata	268	23	8.6
West Coast	24	1	4.2
Whanganui	40	4	10.0
Total	**2,321**	**195**	**8.4**

Table 52 - Women without any follow-up test within 180 days of a high grade cytology report, by ethnicity

Ethnicity	High-grade cytology N	Without a follow-up test by 180 days N	%
Māori	407	52	12.8
Pacific	103	15	14.6
Asian	154	16	10.4
European/Other	1,657	112	6.8
Total	**2,321**	**195**	**8.4**

Indicator 7 – Colposcopy indicators

Indicator 7.1 – Timeliness of colposcopic assessment – high grade cytology

Table 53 - Women with high grade cytology (including cytological suspicion of invasive disease), by DHB

DHB	HG women suspicion of invasion* N	HG women N
Auckland	5	146
Bay of Plenty	1	82
Canterbury	12	267
Capital & Coast	4	65
Counties Manukau	8	186
Hawke's Bay	0	83
Hutt Valley	4	50
Lakes	0	45
Mid Central	1	72
Nelson Marlborough	0	91
Northland	2	42
Otago	3	69
South Canterbury	0	41
Southland	1	49
Tairawhiti	0	27
Taranaki	4	51
Waikato	2	161
Wairarapa	1	22
Waitemata	1	194
West Coast	1	24
Whanganui	0	41
Private practice	*15*	*448*
Total	**65**	**2,256**

** High grade cytology with suspicion of invasive disease (includes NZ modified Bethesda codes HS2, SC, AC1-5). There were no women referred with suspicion of invasive disease in Hawke's Bay, Mid Central, Southland, or Wairarapa.*

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

Ethnicity	HG women suspicion of invasion* N	HG women N
Māori	13	394
Pacific	5	98
Asian	2	152
European/Other	45	1,612
Total	**65**	**2,256**

** High grade cytology with suspicion of invasive disease (includes NZ modified Bethesda codes HS2, SC, AC1-5).*

Table 55 - Women with cytological suspicion of invasive disease, by cytology result subcategory

Cytology result sub-category	Total women N
HS2	18
SC	14
AC1-5	31
R10, R14	2
Total	**65**

Indicator 7.3 – Adequacy of documenting colposcopic assessment

Table 56 - 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	All items complete
Auckland	1,567	97.7	100.0	93.6	94.1
Bay of Plenty	531	97.6	100.0	88.3	90.4
Canterbury	1,772	97.3	100.0	95.2	94.4
Capital & Coast	573	98.6	100.0	90.4	93.5
Counties Manukau	753	99.7	100.0	91.6	94.7
Hawke's Bay	383	98.4	100.0	90.9	94.3
Hutt Valley	296	100.0	100.0	95.9	97.0
Lakes	286	97.9	100.0	98.5	96.9
Mid Central	547	94.5	100.0	99.1	94.1
Nelson Marlborough	444	97.7	100.0	96.4	95.5
Northland	311	95.2	100.0	93.5	92.0
Otago	453	96.9	100.0	86.5	91.2
South Canterbury	246	95.5	100.0	82.9	86.6
Southland	175	97.7	100.0	94.7	94.9
Tairawhiti	192	96.9	100.0	96.2	94.8
Taranaki	306	93.1	100.0	72.9	84.0
Waikato	686	98.4	100.0	94.1	94.6
Wairarapa	135	97.8	100.0	95.4	95.6
Waitemata	2,035	98.0	100.0	93.8	95.2
West Coast	176	97.2	100.0	88.8	89.8
Whanganui	123	100.0	100.0	96.7	98.4
Public clinics (overall)	*11,990*	*97.6*	*100.0*	*93.1*	*93.8*
Private practice	1,951	97.9	100.0	90.5	92.5
Total	**13,941**	**97.6**	**100.0**	**92.7**	**93.6**

Table 57 – Summary of colposcopic appearance findings, by DHB

DHB	Total colposcopies N	Colposcopic appearance (as % of colposcopies where items are completed)	
		Abnormal	Inconclusive
Auckland	1,567	52.8	3.6
Bay of Plenty	531	58.4	7.7
Canterbury	1,772	65.4	3.3
Capital & Coast	573	49.6	5.2
Counties Manukau	753	55.0	5.0
Hawke's Bay	383	44.4	4.4
Hutt Valley	296	71.3	3.0
Lakes	286	69.2	1.0
Mid Central	547	60.1	0.5
Nelson Marlborough	444	60.1	2.3
Northland	311	46.0	3.2
Otago	453	43.7	6.8
South Canterbury	246	47.2	9.8
Southland	175	61.1	3.4
Tairawhiti	192	66.7	2.6
Taranaki	306	33.3	12.4
Waikato	686	60.1	3.8
Wairarapa	135	45.9	2.2
Waitemata	2,035	44.7	2.9
West Coast	176	58.5	7.4
Whanganui	123	47.2	1.6
Public clinics (overall)	*11,990*	*54.3*	*4.0*
Private practice	1,951	52.5	5.5
Total	**13,941**	**54.0**	**4.2**

Indicator 7.5 – Timely discharge of women after treatment

Table 58 – Follow-up of treated women with colposcopy and cytology in the period from six to 12 months post-treatment, and discharge of eligible women

DHB	Total treatments	With colposcopy & cytology in period 6-12 months post-treatment		Eligible for discharge	% of women treated	Women discharged appropriately	
	N	N	%	N		N	% of eligible
Auckland	2	1	50.0	1	50.0	0	0
Bay of Plenty	27	12	44.4	11	40.7	9	81.8
Canterbury	192	102	53.1	78	40.6	68	87.2
Capital & Coast	71	11	15.5	9	12.7	7	77.8
Counties Manukau	125	45	36.0	34	27.2	30	88.2
Hawke's Bay	57	46	80.7	43	75.4	43	100.0
Hutt Valley	40	17	42.5	14	35.0	14	100.0
Lakes	10	5	50.0	3	30.0	3	100.0
Mid Central	92	65	70.7	45	48.9	38	84.4
Nelson Marlborough	6	5	83.3	5	83.3	4	80.0
Northland	42	19	45.2	14	33.3	13	92.9
Otago	57	40	70.2	35	61.4	31	88.6
South Canterbury	18	11	61.1	8	44.4	1	12.5
Southland	33	10	30.3	5	15.2	4	80.0
Tairawhiti	19	4	21.1	3	15.8	3	100.0
Taranaki	23	8	34.8	7	30.4	6	85.7
Waikato	44	24	54.5	22	50.0	20	90.9
Wairarapa	11	5	45.5	4	36.4	3	75.0
Waitemata	183	141	77.0	114	62.3	74	64.9
West Coast	24	14	58.3	12	50.0	9	75.0
Whanganui	15	2	13.3	0	0.0	0	n/a
Private Practice	*192*	*69*	*35.9*	*58*	*30.2*	*35*	*60.3*
NZ OVERALL	**1,283**	**656**	**51.1**	**525**	**40.9**	**415**	**79.0**

Table 59 – Follow-up of treated women in the period from six to 12 months post-treatment, and women discharged prior to six months post-treatment

	Total treatments	Discharged within 6 months		Colposcopy in period 6-12 months post-treatment		Colposcopy & cytology in period 6-12 months post-treatment	
DHB	**N**	**N**	*%*	**N**	**%**	**N**	**%**
Auckland	2	1	50.0	1	50.0	1	50.0
Bay of Plenty	27	6	22.2	15	55.6	12	44.4
Canterbury	192	5	2.6	103	53.6	102	53.1
Capital & Coast	71	1	1.4	11	15.5	11	15.5
Counties Manukau	125	7	5.6	46	36.8	45	36.0
Hawke's Bay	57	0	0.0	46	80.7	46	80.7
Hutt Valley	40	13	32.5	18	45.0	17	42.5
Lakes	10	0	0.0	5	50.0	5	50.0
Mid Central	92	17	18.5	66	71.7	65	70.7
Nelson Marlborough	6	0	0.0	5	83.3	5	83.3
Northland	42	11	26.2	20	47.6	19	45.2
Otago	57	6	10.5	42	73.7	40	70.2
South Canterbury	18	2	11.1	11	61.1	11	61.1
Southland	33	1	3.0	10	30.3	10	30.3
Tairawhiti	19	0	0.0	5	26.3	4	21.1
Taranaki	23	19	82.6	8	34.8	8	34.8
Waikato	44	3	6.8	25	56.8	24	54.5
Wairarapa	11	3	27.3	5	45.5	5	45.5
Waitemata	183	14	7.7	143	78.1	141	77.0
West Coast	24	1	4.2	14	58.3	14	58.3
Whanganui	15	7	46.7	2	13.3	2	13.3
Private practice	*192*	*57*	*29.7*	*74*	*38.5*	*69*	*35.9*
Total	**1,283**	**174**	**13.6**	**675**	**52.6**	**656**	**51.1**

Indicator 8 – HPV tests

Indicator 8.1 – Triage of low grade cytology

Table 60 – 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	182	139	3	1.6	135	97.1
Canterbury Health Laboratories	38	165	5	13.2	161	97.6
Diagnostic Medlab Ltd	191	585	0	0.0	583	99.7
LabPLUS	249	66	0	0.0	58	87.9
Medlab Central Ltd	131	241	3	2.3	210	87.1
Medlab South Christchurch	128	177	1	0.8	172	97.2
Pathlab	142	270	4	2.8	234	86.7
Southern Community Labs	188	184	1	0.5	179	97.3
Total	**1,249**	**1,827**	**17**	**1.4**	**1,732**	**94.8**

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

Table 61 – 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	254	127	3	1.2	125	98.4
Canterbury Health Laboratories	146	113	6	4.1	111	98.2
Diagnostic Medlab Ltd	604	717	1	0.2	714	99.6
LabPLUS	226	9	1	0.4	7	77.8
Medlab Central Ltd	211	134	2	0.9	105	78.4
Medlab South Christchurch	181	87	1	0.6	87	100.0
Pathlab	330	226	3	0.9	209	92.5
Southern Community Labs	590	298	6	1.0	286	96.0
Total	**2,542**	**1,711**	**23**	**0.9**	**1,644**	**96.1**

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

Table 62 – Invalid HPV triage tests following ASC-US cytology, by laboratory

	Total ASC-US results		Women with invalid HPV results			
	aged < 30yrs	aged 30+ yrs	aged < 30yrs		aged 30+ yrs	
Laboratory	**N**	**N**	**N**	**%**	**N**	**%**
Aotea Pathology Ltd	3	135	0	0	0	0.0
Canterbury Health Laboratories	5	161	0	0	0	0.0
Diagnostic Medlab Ltd	0	584	0	0	2	0.3
LabPLUS	0	58	0	0	0	0.0
Medlab Central Ltd	3	210	0	0	0	0.0
Medlab South Christchurch	1	172	0	0	0	0.0
Pathlab	4	232	0	0	0	0.0
Southern Community Labs	1	180	0	0	0	0.0
Total	**17**	**1,732**	**0**	**0**	**2**	**0.1**

** Where the laboratory which performed the cytology test differs from the laboratory which performed the HPV test, classification is according to the laboratory which performed the HPV test, therefore laboratory totals may differ from those in Table 60*

Table 63 – Invalid HPV triage tests following LSIL cytology, by laboratory

	Total LSIL results		Women with invalid HPV results			
	aged < 30yrs	aged 30+ yrs	aged < 30yrs		aged 30+ yrs	
Laboratory	**N**	**N**	**N**	**%**	**N**	**%**
Aotea Pathology Ltd	3	125	0	0	0	0.0
Canterbury Health Laboratories	6	111	0	0	0	0.0
Diagnostic Medlab Ltd	2	713	0	0	1	0.1
LabPLUS	0	9	0	0	0	0.0
Medlab Central Ltd	2	105	0	0	0	0.0
Medlab South Christchurch	1	87	0	0	0	0.0
Pathlab	3	207	0	0	0	0.0
Southern Community Labs	6	287	0	0	0	0.0
Total	**23**	**1,644**	**0**	**0**	**1**	**0.1**

** Where the laboratory which performed the cytology test differs from the laboratory which performed the HPV test, classification is according to the laboratory which performed the HPV test, therefore laboratory totals may differ from those in Table 61*

Table 64 – Validity of HPV triage tests, by test technology

Test technology	Total HPV triage test results	Invalid		Valid	
	N	N	%	N	%
Abbott RealTime	757	-	0	757	100
Digene HC2	-	-	0.0	-	0.0
Roche Amplicor	-	-	0.0	-	0.0
Roche COBAS 4800	2,659	3	0.1	2,656	99.9
Total	**3,416**	**3**	**0.1**	**3,413**	**99.9**

Indicator 8.2 – HPV test volumes

Table 65 – 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	1,770	8.7	7.8
Canterbury Health Laboratories	2,028	10.0	16.0
Diagnostic Medlab Ltd	3,357	16.5	6.0
LabPLUS	692	3.4	8.5
Medlab Central Ltd	2,379	11.7	13.2
Medlab South Christchurch	1,941	9.5	12.9
Pathlab	2,115	10.4	9.9
Southern Community Labs	6,048	29.7	8.8
Total	**20,330**	**100.0**	**9.1**

Table 66 - Volume of HPV test samples received during the monitoring period, by purpose and ethnicity

Age	HPV triage		Post-treatment		Historical		Taken at colposcopy		Other		Total
	N	%	N	%	N	%	N	%	N	%	
Māori	392	17.0	217	9.4	1,133	49.0	100	4.3	469	20.3	2,311
Pacific	181	40.7	33	7.4	133	29.9	17	3.8	81	18.2	445
Asian	337	38.0	74	8.3	244	27.5	61	6.9	171	19.3	887
European/Other	2,528	15.1	1,153	6.9	7,445	44.6	767	4.6	4,794	28.7	16,687
Total	**3,438**	**16.9**	**1,477**	**7.3**	**8,955**	**44.0**	**945**	**4.6**	**5,515**	**27.1**	**20,330**

Table 67 - 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**	**%**	
<20	-	0.0	2	18.2	-	0.0	3	27.3	6	54.5	11
20-24	-	0.0	195	31.1	87	13.9	149	23.8	196	31.3	627
25-29	-	0.0	365	26.1	639	45.7	127	9.1	267	19.1	1,398
30-34	706	25.0	307	10.9	1,338	47.3	118	4.2	360	12.7	2,829
35-39	688	21.5	205	6.4	1,733	54.1	122	3.8	458	14.3	3,206
40-44	632	18.4	181	5.3	1,734	50.4	119	3.5	772	22.5	3,438
45-49	534	18.9	115	4.1	1,251	44.2	82	2.9	849	30.0	2,831
50-54	379	15.7	48	2.0	961	39.9	86	3.6	934	38.8	2,408
55-59	231	14.3	25	1.6	594	36.8	46	2.9	716	44.4	1,612
60-64	161	14.5	21	1.9	339	30.5	39	3.5	550	49.5	1,110
65-69	81	12.4	7	1.1	201	30.8	35	5.4	328	50.3	652
70+	26	12.5	6	2.9	78	37.5	19	9.1	79	38.0	208
Total	**3,438**	**16.9**	**1,477**	**7.3**	**8,955**	**44.0**	**945**	**4.6**	**5,515**	**27.1**	**20,330**

Table 68 - 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	261	14.7	82	4.6	894	50.5	25	1.4	508	28.7	1,770
Canterbury Health Laboratories	280	13.8	270	13.3	663	32.7	290	14.3	525	25.9	2,028
Diagnostic Medlab Ltd	1,361	40.5	94	2.8	1,042	31.0	91	2.7	769	22.9	3,357
LabPLUS	78	11.3	158	22.8	115	16.6	77	11.1	264	38.2	692
Medlab Central Ltd	318	13.4	217	9.1	1,153	48.5	39	1.6	652	27.4	2,379
Medlab South Christchurch	262	13.5	114	5.9	954	49.1	39	2.0	572	29.5	1,941
Pathlab	429	20.3	104	4.9	994	47.0	166	7.8	422	20.0	2,115
Southern Community Labs Dunedin	449	7.4	438	7.2	3,140	51.9	218	3.6	1,803	29.8	6,048
Total	**3,438**	**16.9**	**1,477**	**7.3**	**8,955**	**44.0**	**945**	**4.6**	**5,515**	**27.1**	**20,330**

Table 69 - 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	*615*	*11,990*	*5.1*
Auckland	10	1,567	0.6
Bay of Plenty	60	531	11.3
Canterbury	261	1,772	14.7
Capital & Coast	4	573	0.7
Counties Manukau	3	753	0.4
Hawke's Bay	20	383	5.2
Hutt Valley	-	296	-
Lakes	73	286	25.5
Mid Central	33	547	6.0
Nelson Marlborough	22	444	5.0
Northland	-	311	-
Otago	47	453	10.4
South Canterbury	15	246	6.1
Southland	11	175	6.3
Tairawhiti	-	192	-
Taranaki	-	306	-
Waikato	40	686	5.8
Wairarapa	-	135	-
Waitemata	16	2,035	0.8
West Coast	-	176	-
Whanganui	-	123	-
Private practice	*130*	*1,951*	*6.7*
Total	**745**	**13,941**	**5.3**

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

Appendix B – Bethesda 2001 New Zealand Modified (2005)

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 70 – 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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