National Screening Unit

National Cervical Screening Programme

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About the authors

The authors are based in the Prince of Wales Clinical School, University of NSW, Sydney, Australia (previously at Cancer Research Division, 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 to 30 June 2011.

Key points on performance/trends

Indicator 1 — Coverage

Target: 75% of eligible women had a screening test within the previous three years

- Coverage target was not met nationally (74.7% of women aged 25-69 years screened in the previous three years).
- Coverage target was met for specific five-year age groups between 35-59 years.
- Coverage target was met by 12 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 five-year age groups between 25-64 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 coverage among women aged 25-69 years is slightly lower overall to that reported in the previous monitoring report, and has decreased among women aged 20-34 years, but has increased in 6 of the 21 DHBs.
- Five-year coverage among women aged 25-69 years is slightly higher than in the previous monitoring report.

Screens in women aged less than 20 years

Target: None

- In the three years to 30 June 2011, there were 14,792 women who had a cervical sample taken when they were aged less than 20 years. This is less than in the previous reporting period (16,263 women).
- This represents 1.5% of all women (of any age) who were screened in the three-year period (compared to 1.7% in previous reporting period).
- Most of these women (81%) were aged 18-19 years at the time of their cervical sample.

Indicator 2	First screening events **Target:** None • There were 20,835 women who had their first screening event during the current reporting period – slightly fewer than in the previous reporting period. • First screening events generally occur among young women (median age 25 years). • Asian women appear to have their first screening event at a later age (median age of Asian women with a first screening event 32 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 (0.003% of within this age group who were enrolled at 30 June 2011). This is very similar to the number of women in this age range who withdrew during the previous reporting period (52 women).
Indicator 4	Early re-screening **Target:** Not yet defined • 23.7% 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 12.9% in Whanganui to 34.8% in Waitemata. • Early re-screening occurs in all ethnic groups, but is most common among Asian women (28.3%), and least common among Pacific women (18.1%). • Early re-screening occurs in all age groups, but is most common in women aged 20-24 years at the end of the period (30.8%) and least common in women aged 65-69 years at the end of the period (17.9%). • Early re-screening has decreased since the previous report.
Indicator 5	Laboratory Indicators
Indicator 5.1	Cytology reporting The proportion of cytology samples which are LBC has continued to increase since the previous reporting period, from 99.8% to

99.9%

Unsatisfactory cytology

Target: 1-5% for LBC; 1-8% for conventional cytology

- Percent LBC samples unsatisfactory target met by four of eight laboratories, and was met nationally (1.0%). The rate of unsatisfactory samples has increased for LBC since the previous report, from 0.6% to 1.0%, and so has returned to the target range nationally.

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 (92.3%) is similar to that reported in the previous period (91.8%).

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 (7.7%) is somewhat lower than that reported in the previous period (8.2%).

HSIL cytology

Target: No less than 0.6% of satisfactory cytology samples

- Percent of samples HSIL target met nationally and by five of eight laboratories. Two of these labs have been below the target level over multiple monitoring reports.
- Percent of samples HSIL (0.8%) is unchanged since the previous report.

Indicator 5.2 <u>Cytology positive predictive value</u>

HSIL + SC

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

- All of the eight laboratories met the minimum target for HSIL+SC of 65%.
- One of the eight laboratories exceeded the maximum target for HSIL+SC of 85%.
- Nationally, the positive predictive value of HSIL+SC for this monitoring period was 82.1%, which is higher than in the

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	previous report (80.9%). *Other cytological abnormalities* **Target:** None • Nationally, the positive predictive value of ASC-H is similar to that in the previous report (51.1% in this report, 51.3% in the previous report). • Nationally, the positive predictive value of the combination of ASC-H+HSIL+SC is similar to that in the previous report (69.8% in the previous report; 70.0% in the current report).
Indicator 5.3	Accuracy of negative cytology reports Not assessed
Indicator 5.4	Histology reporting **Target:** None • 12,664 histology samples were taken during the current reporting period; 365 (2.9%) were insufficient for diagnosis. • Results for the most severe histology from the 10,803 women with satisfactory histology are presented • 51.3% of women had histology samples which were negative/ benign • 22.5% of women had CIN2/3 or HSIL histology results. • 52 (0.5%) women had ISCC 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 (93.8% samples were reported within seven working-days), and was met by six of eight laboratories. • The 15-working-days target was not met nationally (98.0% 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 improved substantially since the previous report, both in terms of the overall proportion of cytology reported on (from 78.6% to 93.8%), and the number of labs meeting the target (from two to six). • The overall proportion of cytology samples reported within

15-working-days has increased since the previous report (from 96.5% to 98.0%), but 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 (76.9% samples were reported within five working days, 94.6% within 15 working days), but targets were met by five of 17 laboratories (five-day target) and seven of 17 laboratories (15-day target).
- 16 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 80.9% to 76.9% within five days, and from 96.1% to 94.6% within 15 days), however the number of laboratories meeting the five-day target (five) and the 15-day target (seven) remained the same.

Cytology with associated HPV triage testing

Target: 100% within 15 working days

- There were 3,122 cytology samples with associated HPV triage testing in the current reporting period.
- Turnaround time was below target: 96.6% were reported within 15 working days.
- One laboratory met the target.
- The proportion reported within 15 working days is somewhat lower for this subgroup of cytology (96.6%) than for cytology overall (98.0%).

Notes

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

Indicator 6

<u>Follow-up of women with high grade cytology – histology</u>

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).
- Nationally, the proportion of women with histological follow-

up within 90 days has decreased since the previous reporting period (from 78.3% to 73.8%), as has the proportion with follow-up within 180 days, although to a lesser extent (83.2% during the current reporting period, compared to 84.9% during the previous reporting period).

- No DHB met the targets for histological follow-up within 90 days and within 180 days.
- Compared to the previous reporting period, the proportion of women with follow-up histology within 90 days decreased for European/ Other women, and increased for Pacific women. Among Māori and Asian women the proportion with follow-up histology within 90 days was similar to that in the previous reporting period.
- The proportion of women with follow-up histology within 180 days decreased compared to the previous reporting period for European/ Other women. Among Māori, Pacific and Asian women the proportion with follow-up histology within 180 days was very similar to that in the previous reporting period.
- The proportion of women with histological follow-up at 90 and 180 days decreased for women aged 25-29 years, 35-39 years, 40-44 years and 50-54 years, but this generally a followed an observed increase in the previous reporting period.

Any follow-up tests

Target: None

- Nationally, 124 (5.8%) women have no follow-up test report (colposcopy, subsequent cytology, histology, HPV test) within 180 days of their cytology report. This represents a decrease compared to the previous reporting period (from 7.0% to 5.8%).
- Compared to the previous reporting period, the proportion of women with no follow-up test at 180 days has decreased for all ethnic groups.

Indicator 7	<u>Colposcopy</u>
Indicator 7.1	<u>Timeliness of colpscopic assessment – high grade cytology</u>

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

- There were 2,171 women with high grade cytology results who were not already under specialist management. This comprised 70 women with high grade results indicating a suspicion of invasive disease and 2,101 women with other high grade results.
- The median time between a high grade cytology report and a colposcopy visit was 11 days for women with cytology suspicious of invasive disease, and 35 days for women with

other high grade cytology results.

- A colposcopy visit is recorded for 1,834 (84%) women up to June 30 2011 (follow-up time of at least six and up to 12 months)..

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. • There were reports relating to 13,314 visits recorded on the NCSP Register (as at September 2012). • Based on 12,476 colposcopy visits recorded on the NCSP Register (as at March 2012), one DHB met the target of 100% completion of all recommended fields. • The degree of visibility of the squamocolumnar junction was documented for 97.9% of colposcopies. • Presence or absence of a lesion was documented for 100% of colposcopies. • Colposcopic opinion regarding abnormality grade was documented for 93.2% of colposcopies where appearance was abnormal or inconclusive. • All of these items were completed for 94.2% of colposcopy visits. • Colposcopic appearance was recorded as abnormal in 53.0% of colposcopies, and inconclusive in 4.2% of colposcopies.
Indicator 7.4	Timeliness of treatment Not assessed
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. • 53.6% of women treated for CIN 2/3 have a record of both colposcopy and cytology at least six but no more than 12 months after their treatment visit • Target was met by one DHB **Target:** 90% or more of women treated for CIN should be discharged back to the smear taker as appropriate.

- There were 519 women who met the criteria for appropriate discharge within 12 months of their treatment (45.3% of women treated). Of these women who were eligible for discharge, 407 (78.4%) were discharged to their smear taker within 12 months.
- Eleven DHBs met the target of discharging 90% or more women who were eligible for discharge within 12 months.
- 218 (19.0%) 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, 94.2% of women aged 30 years or more with an ASC-US cytology result, and 92.1% 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, 29% of women with ASC-US results and 60% of women with LSIL results were positive for high risk HPV.
- Positivity for high risk HPV varied by laboratory (from 11% to 54% for ASC-US, and from 50% to 75% 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 0.9% of women with an ASC-US result, and 1.0% of women with an LSIL result; 37 women in total)
- Nationally, the proportion of HPV triage tests which are invalid is small (less than 0.5% nationally). Rates of invalid tests varied across laboratories, but were below 2% in all cases.
- 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 91.7% to 94.2% for women with ASC-US results, and from 88.0% to 92.1% for women with LSIL results).
- The proportion of women whose HPV tests were positive was somewhat higher in the current reporting period (29%, compared to 27% in the previous period for ASC-US, and 60%, compared to 57% in the previous period for LSIL).

Indicator 8.2 HPV test volumes

Target: None set.

Overall volumes

- Nationally, 18,010 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 (90.8% of all HPV test samples)
- HPV samples were predominantly from European/ Other women (14,893 samples; 82.7% of all HPV test samples).
- HPV test volumes were lowest at LabPLUS (616 samples; 3.4% of all HPV test samples) and highest at Southern Community Labs (5,389 samples; 29.9% of all HPV test samples).
- Overall HPV test volumes have increased (by 25.0%) since the previous report, although this is consistent with the phasing in of HPV testing as a recent recommendation.

Purpose of HPV test

- Nationally, 18.1% HPV tests are taken for HPV triage of low grade cytology in women aged 30 years or more, 5.7% were taken for follow-up of women treated in the previous four years, 42.8% were taken to manage women with high grade squamous cytology or histology more than three years ago but subsequent negative cytology, and 3.5% were taken at colposcopy (potentially to assist in resolving discordant results).
- Among the remaining 30.0%, it seems likely that some were taken to follow up a previous abnormality where this was not consistent with guidelines recommendations (for example a glandular lesion, recent high grade cytology, or low grade cytology in cases where colposcopy referral rather than triage is recommended), and potentially a large proportion relate to a previous abnormality which is not recorded on the NCSP Register.

HPV tests collected at colposcopy

- Nationally, HPV tests taken at colposcopy mostly originate from public DHB clinics (372 versus 123 from private practice). The percentage of colposcopies performed which are associated with collection of an HPV test sample varies by DHB (from 0.3% to 23.9%), and between public clinics (3.6% overall) and private practice (5.9%). There were six DHBs where no HPV tests were collected at 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/health-professionals/1063.aspx
From Report 30 onwards, monitoring has been undertaken with technical assistance of researchers at Cancer Council of New South Wales (CCNSW)(now located at UNSW, Australia). This has coincided with use of a new reporting format, incorporating more explicit definitions and utilising data from the newly developed NCSP Register, so earlier reports are not fully comparable with Report 30 onwards.

The development of these reports is ongoing. In particular, 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 Programme.

3. Methods

Data used

Most of the analyses in this report are based on data extracted from the NCSP Register in September 2011.

Data were re-extracted in March 2012 for one colposcopy indicator (Indicator 7.3, Adequacy of documenting colposcopic assessment), and again in September 2012 for the remaining colposcopy indicators (Indicator 7.1 Timeliness of colposcopic assessment – high grade cytology; Indicator 7.5 Timely discharge of women after treatment) and for HPV test volumes (Indicator 8.2). Data linking each screening programme event to a participant's identifier was re-extracted in October and December 2012 and used in Indicators 7.1, 7.5 and 8.2.

Age

Unless otherwise specified, age is defined as the woman's age at the end of the reporting period, i.e. 30 June 2011.

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 the Public Health Intelligence unit of the Ministry of Health. The hysterectomy prevalence was estimated by extracting information about procedures from hospital discharge data. Central estimates of survival and hysterectomy incidence in five-year age groups and five-year periods by ethnicity were then used to determine the prevalence of hysterectomy in all age groups, ethnicities and years. The 2007 data was taken from these estimates (the most recent data available). Further information about the 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.

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 2011 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 2011.

While the hysterectomy prevalence estimates were the best estimates available at the time of the analysis, they are becoming outdated. They relate to 2007, while this report covers a period up until the end of June 2011. In light of these limitations, measures which rely on the hysterectomy-adjusted population, particularly coverage, need to be interpreted with caution. It is also possible that the extent to which the estimated hysterectomy-adjusted population differs from the true population may vary by ethnicity and/ or by DHB. This may occur, for example if the age-specific prevalence of hysterectomy has changed more in some DHBs or ethnic groups than in others.

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 12 September 2011) contained ethnicity codes for approximately 94% 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[1] [2]. The NCSP is continuing with work to improve the accuracy of ethnicity recording on the register.

Previous reports by the Health & Disability Intelligence Unit investigated potential ethnic undercounting in the NCSP Register, by comparing NCSP Register data to data from the National Health Index (NHI) and Register of Births, Deaths & Marriages (BDM). Undercounting of Māori, Pacific, and Asian women (and as a result, overcounting of European/Other women) was found, although the degree to which this occurred varied by age-group, and has changed over time. Undercounting was estimated to be around 20% for each of the Māori, Pacific, and Asian groups in 2007. Undercounting may result in underestimates for some measures (for example coverage, first screening events, withdrawals) in Māori, Pacific, and Asian women, and overestimates for these measures in European/Other women.

[1] Ministry of Health, 2004. *Ethnicity Data Protocols for the Health and Disability Sector* Wellington; Ministry of Health. Available at www.moh.govt.nz

[2] Ministry of Health, 2006. *Asian Health Chart Book* Wellington, Ministry of Health. Available at www.moh.govt.nz

The second Health & Disability Intelligence Unit report (*Wright 2008*)[3] calculated ethnicity adjustors for NCSP Register data in the period 1998-2007, based on the data from NHI and BDM. The effect of the ethnicity adjustors is to increase the number of women included in each measure who are Māori, Pacific, or Asian to compensate for undercounting, and thus to reduce it for European/Other. In this monitoring report, ethnicity adjustors for 2007 from *Wright 2008* are applied to counts derived from the NSCP Register to explore the potential impact of under-counting on ethnicity-specific coverage. Unadjusted estimates for coverage are provided as the main results, consistent with previous monitoring reports; adjusted estimates are provided for illustrative purposes. Adjustors are not directly applicable to the full time period covered by this report however, so adjusted measures should be interpreted with caution.

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 Australia and the UK.

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.

[3] Craig Wright. Health & Disability Intelligence Unit. Report Number 2: Accuracy of Ethnicity Data in the National Cervical Screening Programme Register (NCSP-R). September 2008.

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	75% of eligible women within three years
Current Situation	As at 30 June 2011, 851,287 (74.7%) women aged 25-69 at the end of the current reporting period had at least one cervical sample taken during the previous three years. This is slightly below the the target of 75%. 1,003,323 (88.1%) 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 67.3% (Counties Manukau) to 82.9% (Taranaki). 12 of the 21 DHBs achieved the 75% target in women aged 25-69 years at the end of the period (Figure 1, Table 28). The target coverage of 75% of women screened at least once within three years was achieved in half of the five-year age groups between 20 and 69 years (Figure 2, Table 27). The target was achieved for each of the specific five-year age groups between 35-59 years, but not for the five-year age groups between 20 and 34 years, or 60 and 69 years. Coverage was lowest in women aged 20-24 years (54.1%), however many women in this age group were not eligible for screening for the entire three-year period. Coverage was highest in women aged 50-54 years (80.8%). Three-yearly coverage also varied by ethnicity. Coverage targets of 75% were not met for Māori, Pacific, or Asian women. Coverage in these groups for women aged 25-69 years was 56.8%, 60.0%, and 53.6% respectively. Among European/Other women, coverage achieved was 83.3% within three

years (Figure 3, Table 29). Undercounting of some ethnic groups on the NCSP Register may account for some of this discrepancy. We explored the impact on the results of applying ethnicity adjustors estimated by Wright (*Wright 2008*), to re-weight the counts of women screened based on the level of under- and over-counting for different ethnic groups. As expected, the adjustment narrows the gap between the groups, such that it ranges from 66.6% (Pacific) to 77.4% (European/ Other) among women aged 25-69 years, and from 62.4% (Asian and Pacific) to 75.7% (European/ Other) among women aged 20-69 years. Adjusted estimates are shown in Table 30 and Table 31.

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 58.5% in women aged 20-24 years to 94.1% in women aged 50-54 years (Figure 5, Table 32). Among women aged 25-69 years at the end of the period, it ranged from 80.5% in Counties Manukau to 95.8% in Taranaki (Figure 4,Table 33), and from 62.9% (Asian) to 97.4% (European/Other) (Figure 6, Table 34).

Screens in women aged less than 20 years

A total of 14,792 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 2011. This excludes two samples entered into the NCSP Register, where the apparent ages of the women were zero and seven years. 1.5% of women who were screened at any age, were aged less than 20 years at the time their cervical sample was taken (Table 36).

The number of women aged less than 20 years at the time they were screened varied by DHB from 99 (West Coast) to 2,376 (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, while 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 5.9% (Whanganui) to 13.2% (Canterbury). Some smaller DHBs screen a relatively low number of women when they are younger than 20 years, but because the population is small this equates to screening women aged less than 20 years old at a comparatively high rate (for example South Canterbury and Wairarapa). Details of screens of women aged less than 20 years by DHB are presented

in Figure 7, and Table 35 to Table 37.

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 (81% overall; range across DHBs 72%-92%; Table 37). This may represent opportunistic screening of women aged 18-19 years. This proportion varied from 72% in South Canterbury to 92% in Mid Central. Where this proportion is higher, it indicates that a larger proportion of screening in women aged less than 20 years may be attributable to opportunistic screening of women aged 18-19 years; as this proportion decreases, it indicates that more of the screening in women aged under 20 years is occurring in women aged under 18 years, and less may be attributed to opportunistic screening of women aged 18-19 years.

Trends

Coverage

Overall coverage in New Zealand among women aged 25-69 years is similar in the current period (74.7% within the last three years, and 88.1% within the last five years) compared to the previous reporting period (75.2% within the last three years, and 87.8% within the last five years).

Coverage within DHBs has been relatively stable, compared to the previous monitoring period, with the possible exception of South Canterbury (coverage decreased from 76.9% to 74.1%) and Tairawhiti (coverage increased from 71.1% to 74.8%).

Trends by age are similar to those seen in the previous monitoring report, with the coverage target of 75% of women within the past three years met for women in the five-year age groups between 35-59 years, but not for women outside this age range. Among women in the younger age groups (20-24, 25-29, and 30-34 years), coverage has fallen slightly for the second consecutive reporting period, although the absolute drop is small (less than two percentage points in all cases over the two reporting periods).

Coverage has also remained relatively stable within ethnic groups. There has been a small increase in three-year coverage among Māori women, and small decreases among Pacific, Asian and European/ Other women since the previous reporting period.

Screens in women aged less than 20 years

The number of women screened who are aged under 20 years has decreased from 16,263 in the previous reporting period to 14,792 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 1.7% to 1.5%). 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 since the previous reporting period (from 79% to 81%), and this increase

has occurred in almost all DHBs (20 of 21). A decrease was seen in West Coast (from 77.1% to 73.7%), however this may partly reflect small numbers within this DHB. 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

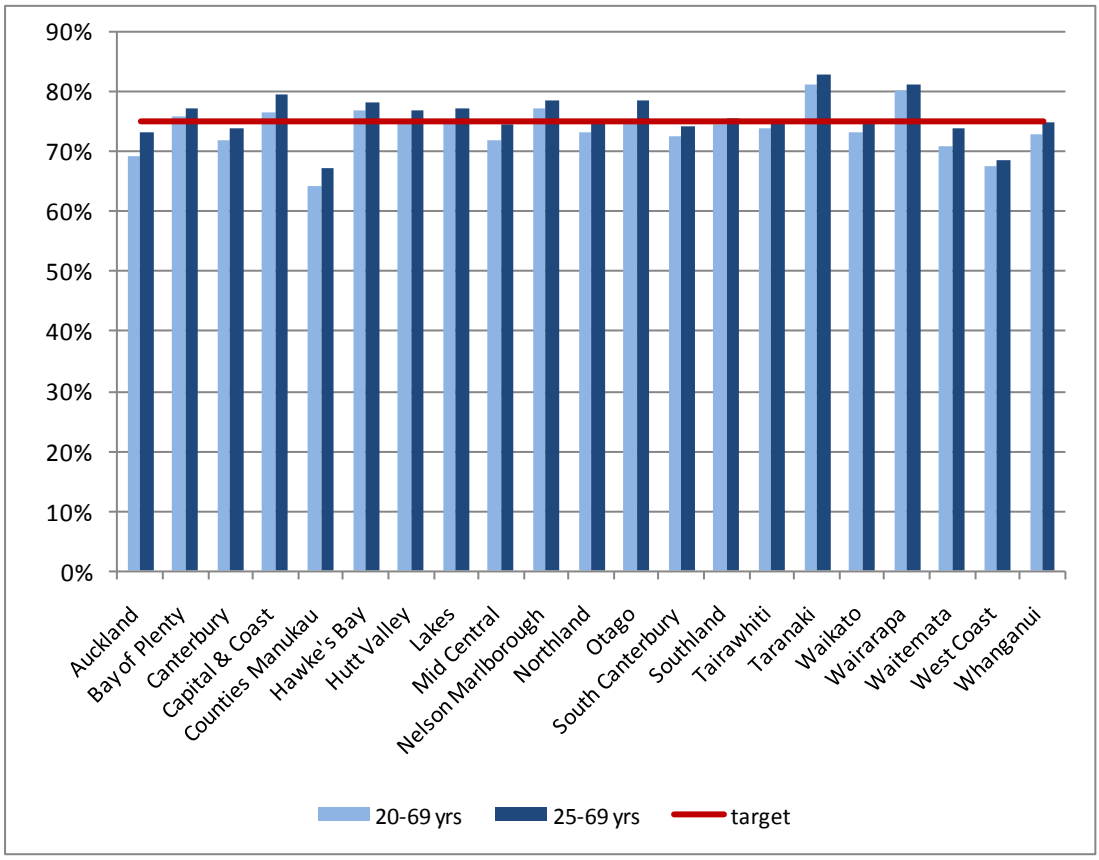
As discussed in Methods (Hysterectomy-adjusted population, page 11), the hysterectomy prevalence used to make the adjustment includes all women with a hysterectomy, some of whom may still require cervical screening. These women will have been removed from the denominator, but may still appear in the numerator. Additionally, while the hysterectomy prevalence estimates were the best estimates available at the time of the analysis, they are becoming outdated. They relate to 2007, while this report covers a period up until the end of June 2011. In light of these limitations, coverage must be interpreted with some caution.

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.

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 exploration of misclassification via ethnicity adjustors indicates that this is a factor, but is unlikely to explain all of the difference in observed coverage rates by ethnicity. Estimates which have adjusted for undercounting should be interpreted with caution however, since 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). As is the case for the primary (unadjusted) estimates, they also rely on the accuracy of the hysterectomy-adjusted population estimate.

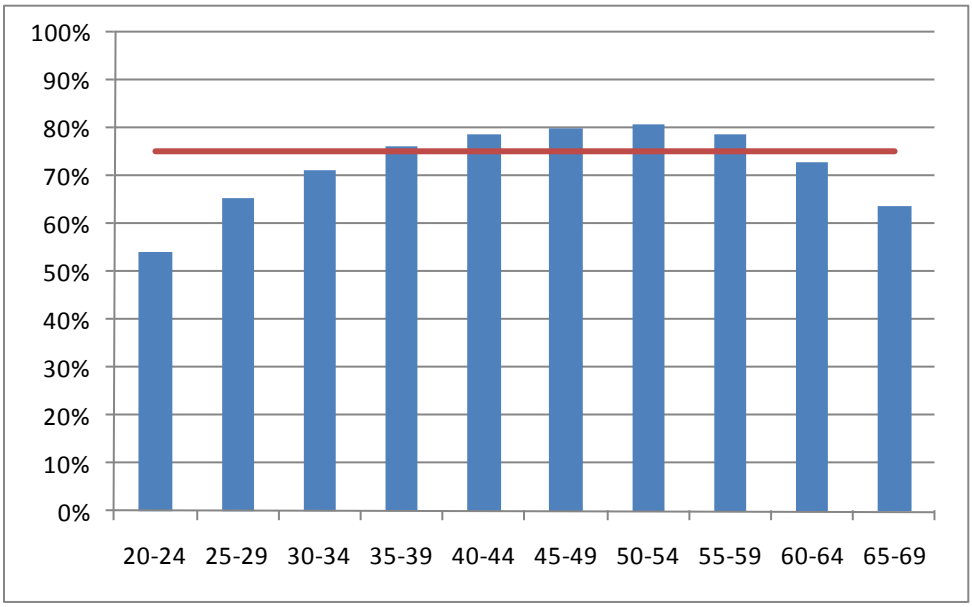
Coverage in women aged 20-24 years is likely to remain lower than for other ages and coverage in this age group should be interpreted with caution, as many women will have had a shorter period in which they were eligible for screening.

Figure 1 - Three-year coverage by DHB (women screened in the three years prior to 30 June 2011, as a proportion of hysterectomy-adjusted female population)



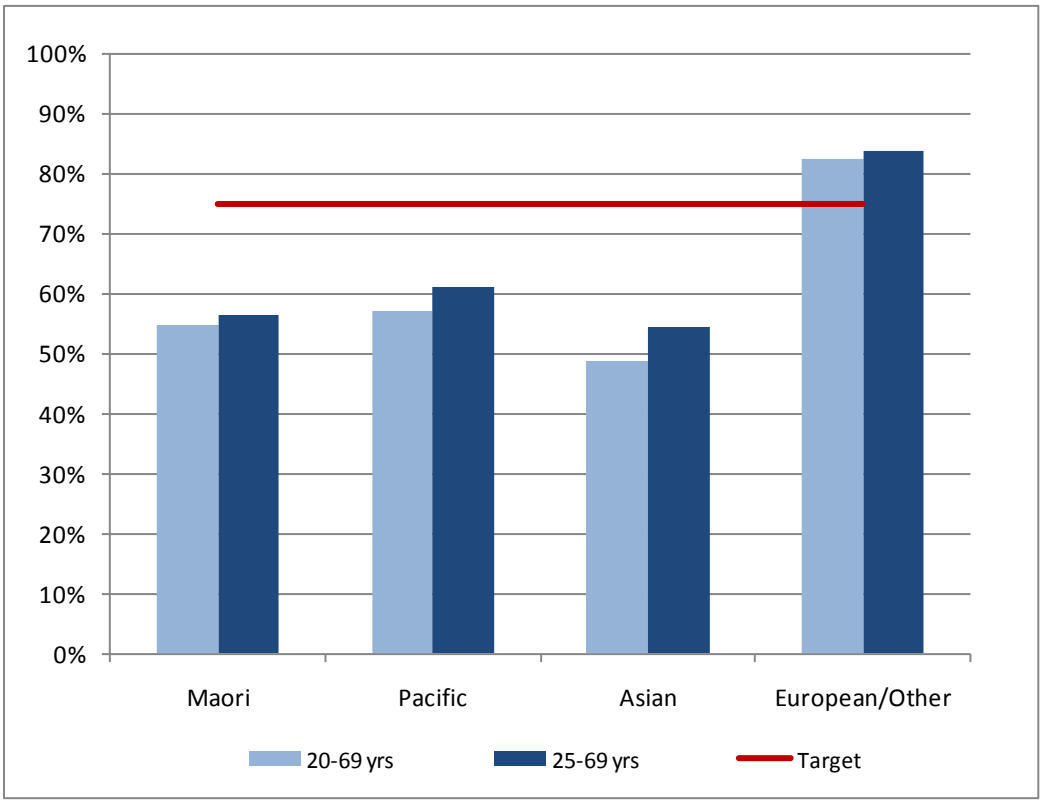
Note: Coverage calculated using population projection for mid-2011 based on 2006 Census data. Target 75%, hysterectomy adjusted.

Figure 2 - Three-year coverage by five-year age group (women 20-69 years screened in the three years prior to 30 June 2011, as a proportion of hysterectomy-adjusted female population)



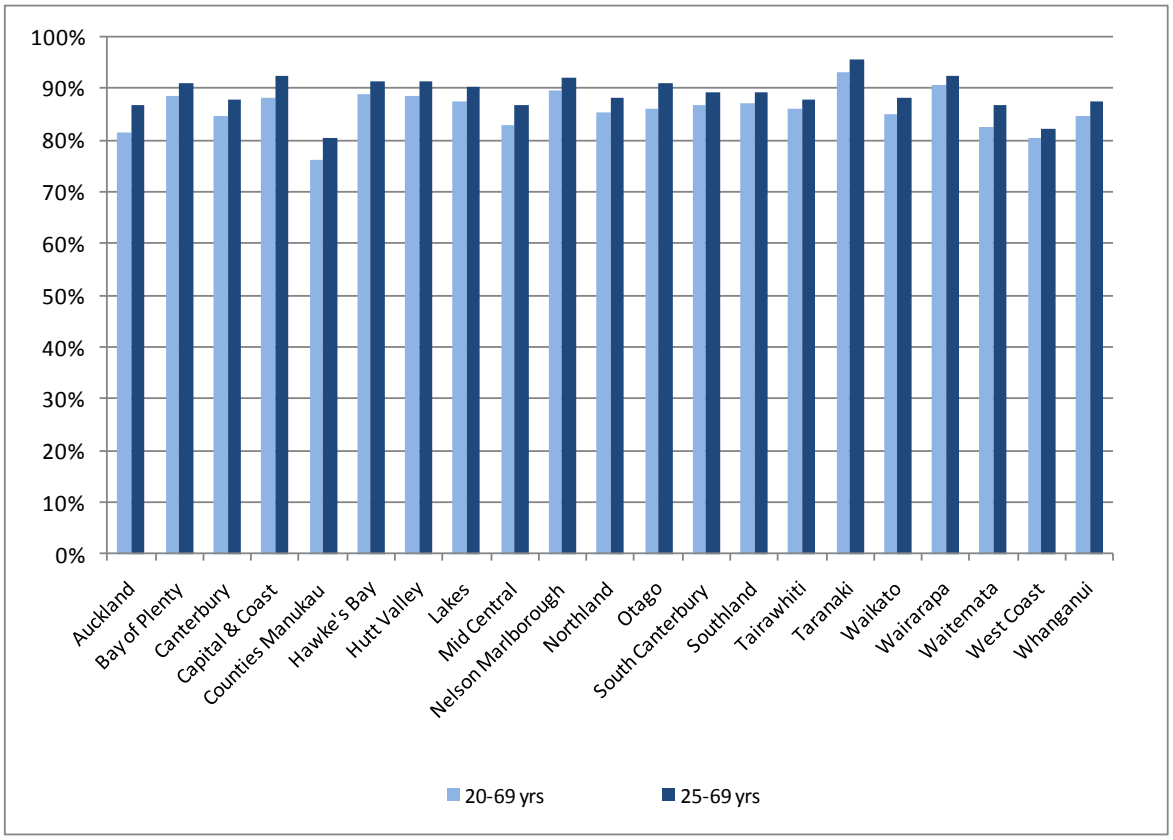
Note: Coverage calculated using population projection for mid-2011 based on 2006 Census data. Target 75% (red line); hysterectomy adjusted.

Figure 3 - Three-year coverage by ethnicity (women screened in the three years prior to 30 June 2011, as a proportion of hysterectomy-adjusted female population)



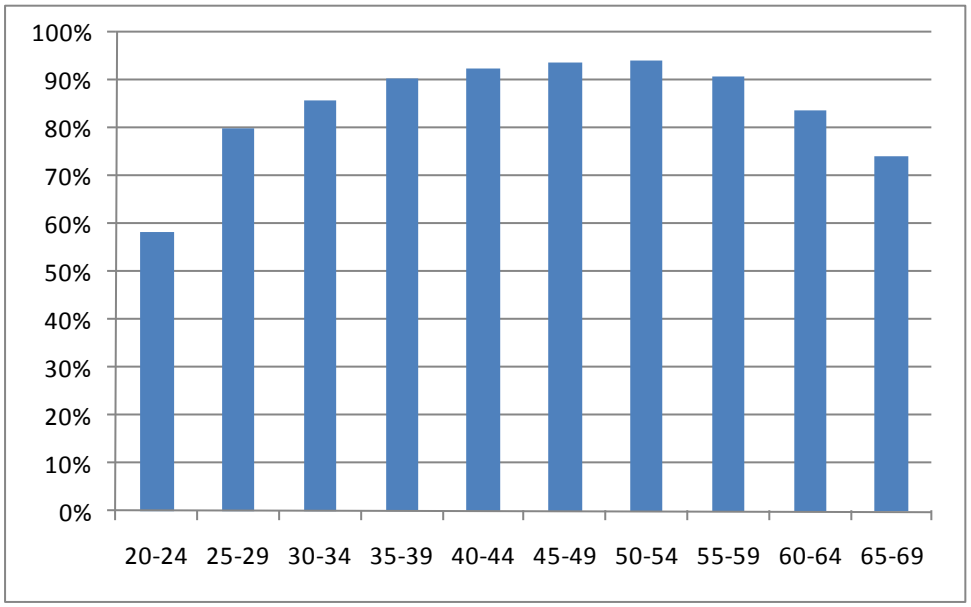
Note: Coverage calculated using population projection for mid-2011 based on 2006 Census data. Target 75%, hysterectomy adjusted.

Figure 4 - Five-year coverage by DHB (women screened in the five years prior to 30 June 2011, as proportion of hysterectomy-adjusted female population)



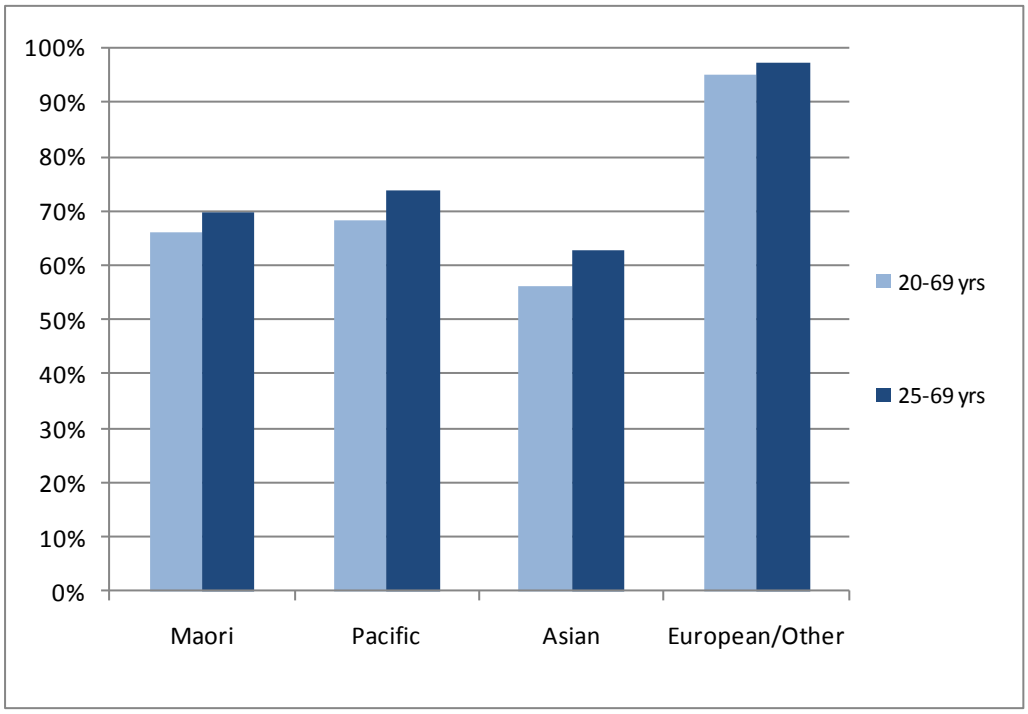
Note: Coverage calculated using population projection for mid-2011 based on 2006 Census data.

Figure 5 - Five-year coverage by five-year age-group (women screened in the five years prior to 30 June 2011, as proportion of hysterectomy-adjusted female population)



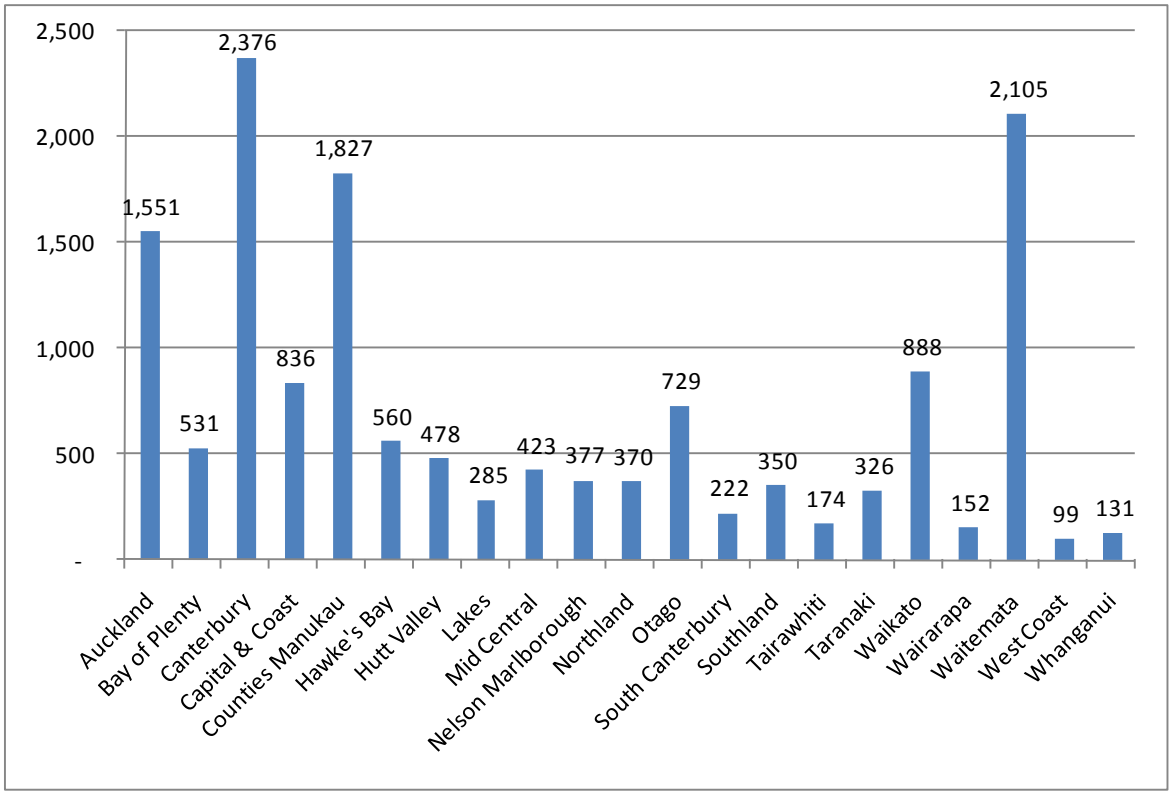
Note: Coverage calculated using population projection for mid-2011 based on 2006 Census data.

Figure 6 - Five-year coverage by ethnicity (women screened in the five years prior to 30 June 2011, as a proportion of hysterectomy-adjusted female population)



Note: Coverage calculated using population projection for mid-2011 based on 2006 Census data.

Figure 7 - 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 2011, by DHB



Excludes 2 women whose DHB was unknown. See also Table 35 for rates which take into account the variation in population size between DHBs.

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 2011).

This indicator is presented as the number of women with first screening events by age and DHB. It is also presented as a proportion of all women in the eligible population (defined as the hysterectomy-adjusted population, aged 20-69 years), and as a proportion of all women with a cervical sample taken during this time period (screening event), by DHB.

Target

There are no targets for first screening events

Current Situation

20,835 women aged 20-69 years at the end of the period had their first screening event in the period 1 January to 30 June 2011. This constituted 9.9% of the 209, 589 women aged 20-69 years with a cervical sample taken in the period (screening event), and 1.6% of the eligible population. The median age (at the end of the reporting period) of women with a first event recorded was 25 years.

The age group with the highest number of first screening events was women aged 20-24 years (Figure 8). 10,217 women aged 20-24 had their first screening event recorded on the register during this reporting period, accounting for 49.0% of all women aged 20-69 years with first screening events (Figure 8, 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 (39.6%) (Figure 9), and the highest proportion of eligible women at that age with a first screening event recorded in the current reporting period (6.5%) (Figure 10).

The DHBs with the highest number of women aged 20-69 years with first screening events were Auckland (3,899) and Waitemata (2,375)(Table 1). The DHBs where women with first screening events, as a proportion of all women with screening events, was the highest were Auckland (15.3%), and Capital & Coast (11.7%). The DHB where this proportion was lowest was South Canterbury (5.5%) (Figure 11, Table 1).

The ethnic group with the highest number of women with first screening events was European/Other (16,010) (Table 2). The group with the highest proportion of their eligible population being screened for the first time was also European/Other women (1.8%), and was lowest for Māori women (1.0%) (Table 2). The proportion of women screened who were being screened for the first time was highest for Asian women (12.3%) (Table 2, Figure 12). 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 (32 years, compared with 22 years for Māori women, 28 years for Pacific women, and 24 years for European/Other women) (Table 3).

Trends

The number of women with a first screening event recorded on the NCSP Register has decreased slightly, from 21,359 women in the previous period, to 20,835 in the current period. The proportion of the eligible population that this represents (1.6%) is slightly lower than the previous reporting period. The proportion of women with screening events who are women with their first screening event being recorded on the NCSP Register (9.9%) is also slightly lower than in the previous period (10.1%).

Patterns by age, DHB, and ethnicity are very similar to those seen in the previous report. As was the case in the previous report, the median age of a first screening event was older for Asian and Pacific 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.

Comments

Note that this indicator can only measure the number of women with their first screening event where this has 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 8 - Number of first screening events by five-year age group

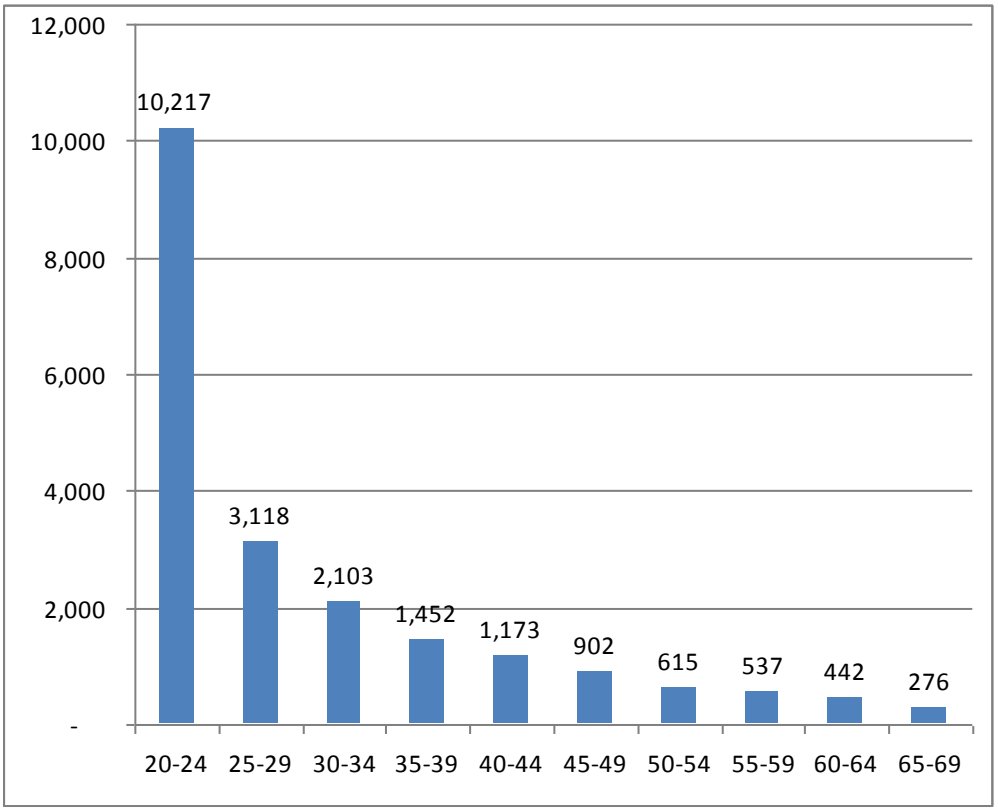


Figure 9 – Women with first screening events as a proportion of all women screened during the reporting period, by five-year age group (women aged 20-69 years at 30 June 2011)

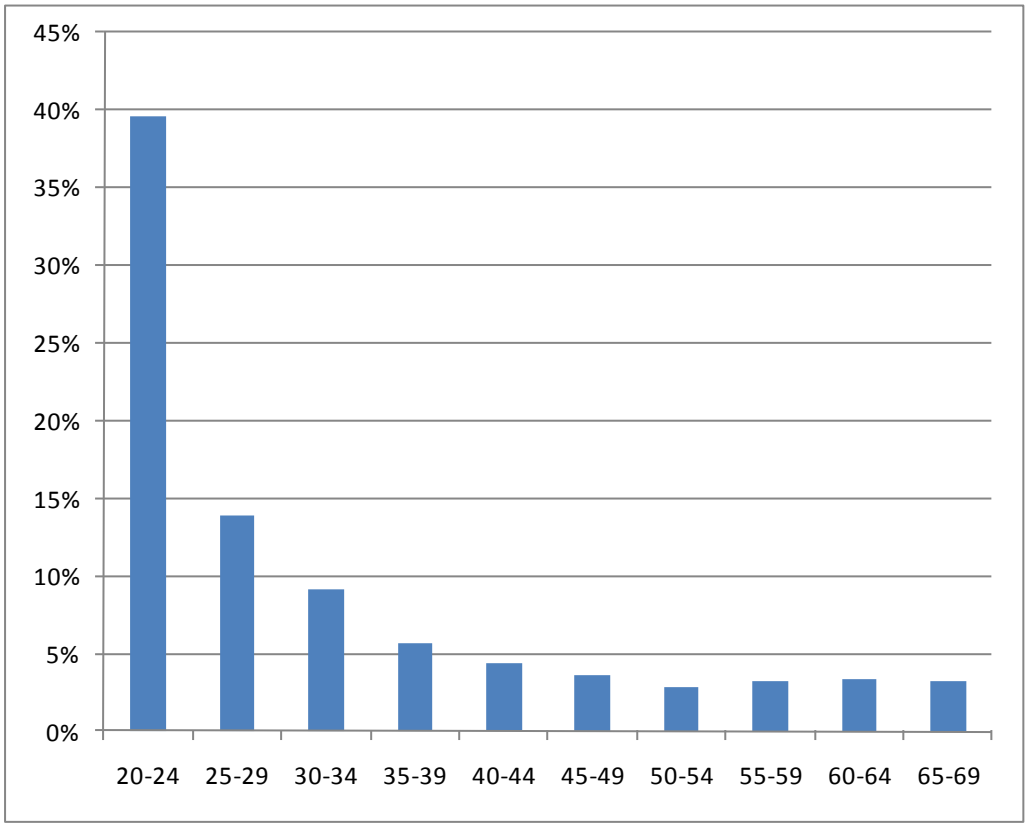
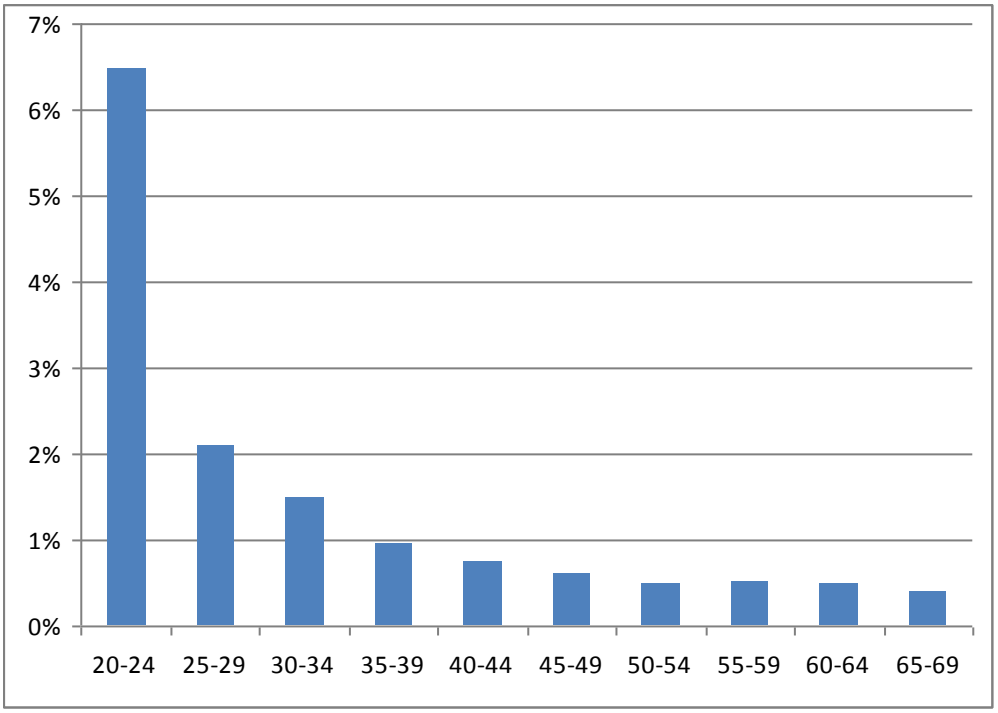


Figure 10 - Proportion of population* in that age group with their first screening event during the reporting period (women aged 20-69 years at 30 June 2011)



**Hysterectomy adjusted, 2006 Census data projected to mid-2011*

Figure 11 - 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 2011)

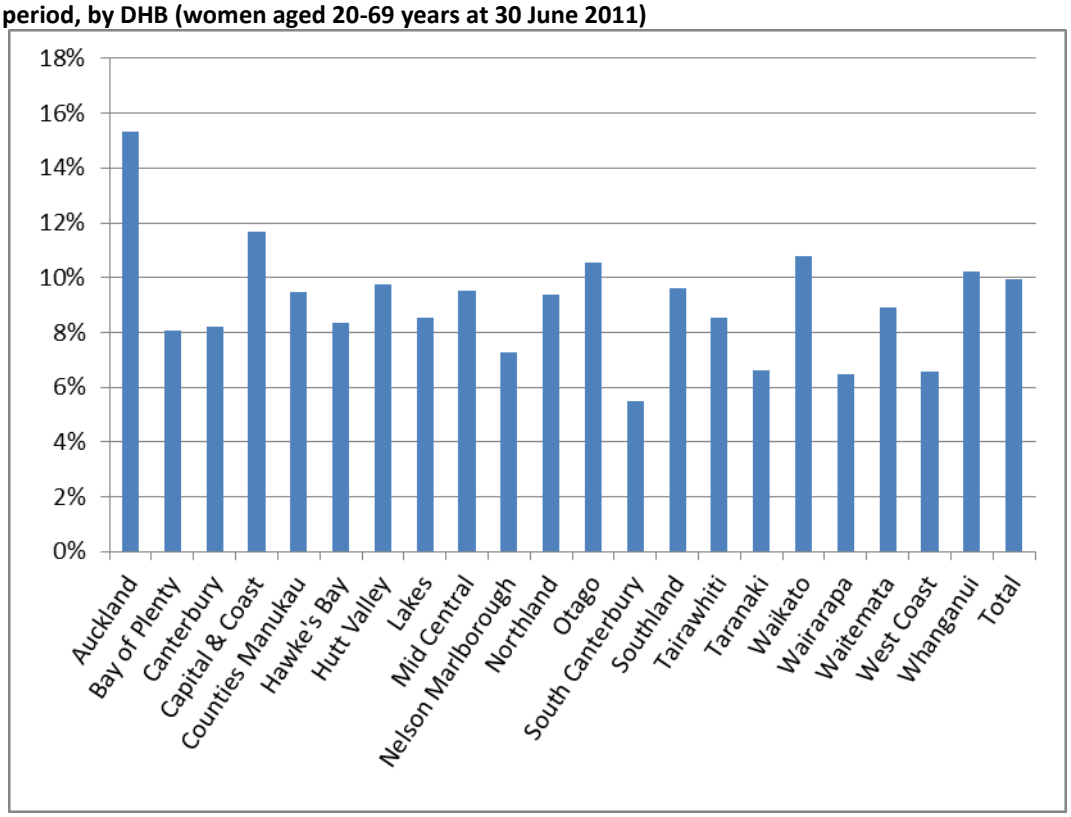


Figure 12 - Women with first screening events as a proportion of all women screened during the reporting period, by ethnicity

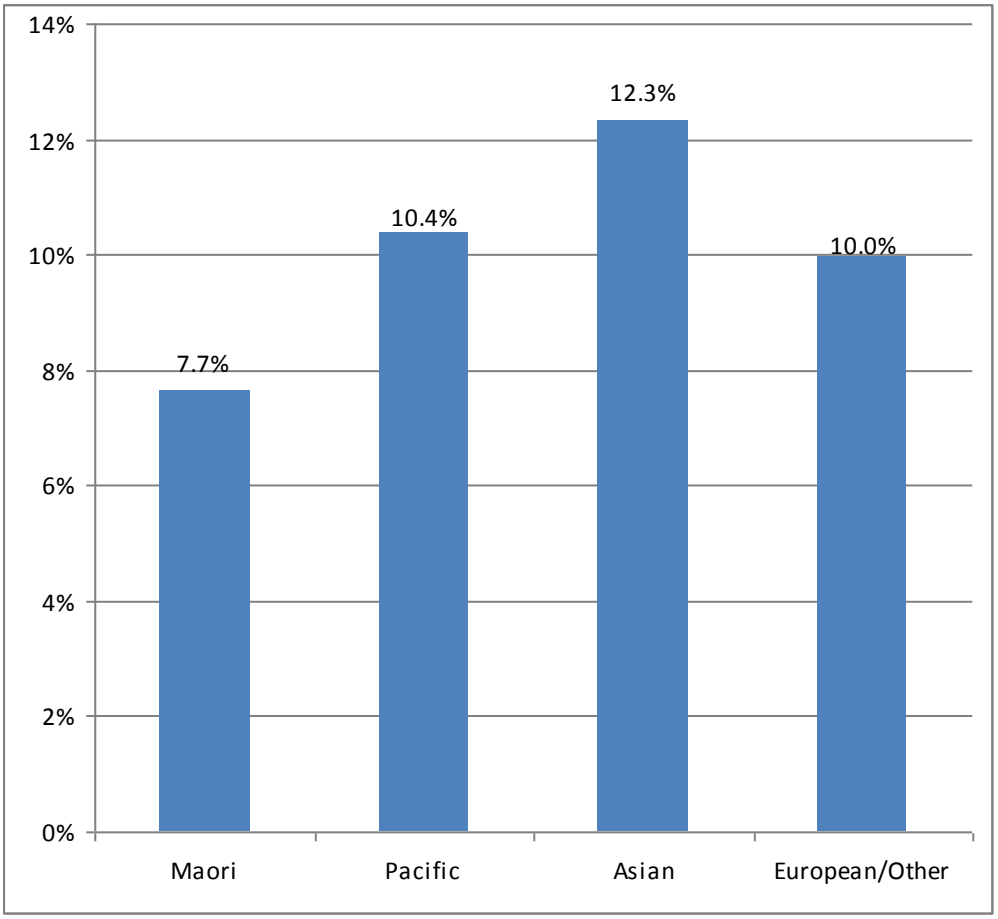


Table 1 - Women (ages 20-69 years) with first screening events as a proportion of i) total number of women with screening events, and ii) eligible women, by DHB, for period 1 January to 30 June 2011

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	3,899	25,433	15.3	151,639	2.6
Bay of Plenty	839	10,423	8.0	59,250	1.4
Canterbury	1,826	22,224	8.2	149,036	1.2
Capital & Coast	1,827	15,630	11.7	94,091	1.9
Counties Manukau	1,933	20,436	9.5	146,506	1.3
Hawke's Bay	620	7,412	8.4	43,247	1.4
Hutt Valley	658	6,472	9.8	41,837	1.6
Lakes	427	5,007	8.5	29,443	1.5
Mid Central	773	8,113	9.5	47,794	1.6
Nelson Marlborough	472	6,513	7.2	39,396	1.2
Northland	706	7,541	9.4	43,728	1.6
Otago	950	8,990	10.6	55,863	1.7
South Canterbury	101	1,833	5.5	15,153	0.7
Southland	508	5,298	9.6	32,401	1.6
Tairawhiti	203	2,380	8.5	13,003	1.6
Taranaki	369	5,576	6.6	30,149	1.2
Waikato	1,854	17,190	10.8	103,899	1.8
Wairarapa	126	1,951	6.5	10,914	1.2
Waitemata	2,375	26,714	8.9	162,906	1.5
West Coast	90	1,369	6.6	9,147	1.0
Whanganui	279	2,733	10.2	17,218	1.6
Total	**20,835**	**209,508**	**9.9**	**1,296,621**	**1.6**

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 June 2011 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 January to 30 June 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	%
Maori	1,735	22,675	7.7	178,823	1.0
Pacific	924	8,894	10.4	79,363	1.2
Asian	2,166	17,548	12.3	168,634	1.3
European/Other	16,010	160,472	10.0	869,800	1.8
Total	**20,835**	**209,589**	**9.9**	**1,296,621**	**1.6**

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 June 2011 for that DHB, as a percent

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

Ethnic Group	Median Age
Maori	22
Pacific	28
Asian	32
European/Other	24

Indicator 3 – Withdrawal rates

Definition	The number of women, by age-group, DHB, and ethnicity, who are 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	At the commencement of the reporting period, 1,400,705 women aged 20-69 years, and 1,559,037 women in total were enrolled on the NCSP Register. 45 women withdrew from the NCSP Register during the reporting period, 44 of whom were aged 20-69 years at the end of the monitoring period (0.003% of women who were enrolled at the commencement of the period) (Table 4). In all DHBs the proportion of those enrolled at the beginning of the period who withdrew was extremely small (maximum 0.02% in Tairawhiti). The DHBs with the largest number of withdrawals were Bay of Plenty (six women) and Waitemata (five women) (Figure 13, Table 40). No women withdrew in Hutt Valley, Northland, South Canterbury, Wairarapa, West Coast or Whanganui during this period (Table 40). The age groups (within the target age group of 20-69 years) with the largest proportion of women withdrawing among those who were enrolled at the beginning of the period were women who were aged 60-64 years at the end of the period (0.007%) (Table 4, Figure 14). In all ethnic groups the number and proportion of women aged 20-69 years withdrawing was extremely small (six Māori women (0.004%); no Pacific women; two Asian women (0.002%), 36 European/Other women (0.003%)) (Table 5, Figure 15).
Trends	The number of women who withdrew in the current reporting period (44 aged 20-69 years, 45 any age) is slightly lower than in the previous reporting period (52 aged 20-69 years; 52 any age), however the proportion is unchanged. 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.

Figure 13 - Number of women (aged 20-69 years) who withdrew from the NCSP Register by DHB, 1 January to 30 June 2011

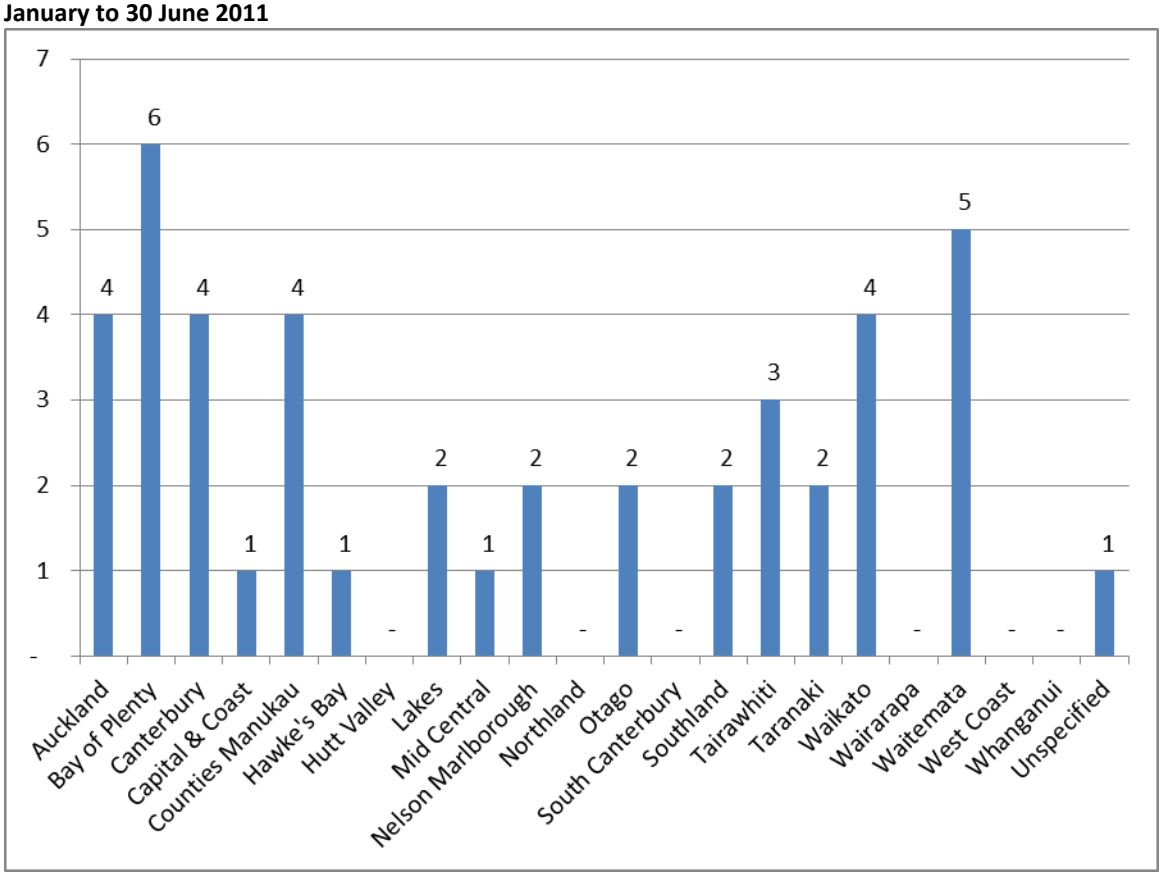


Figure 14 - Number of women who withdrew from the NCSP Register by age, 1 January to 30 June 2011

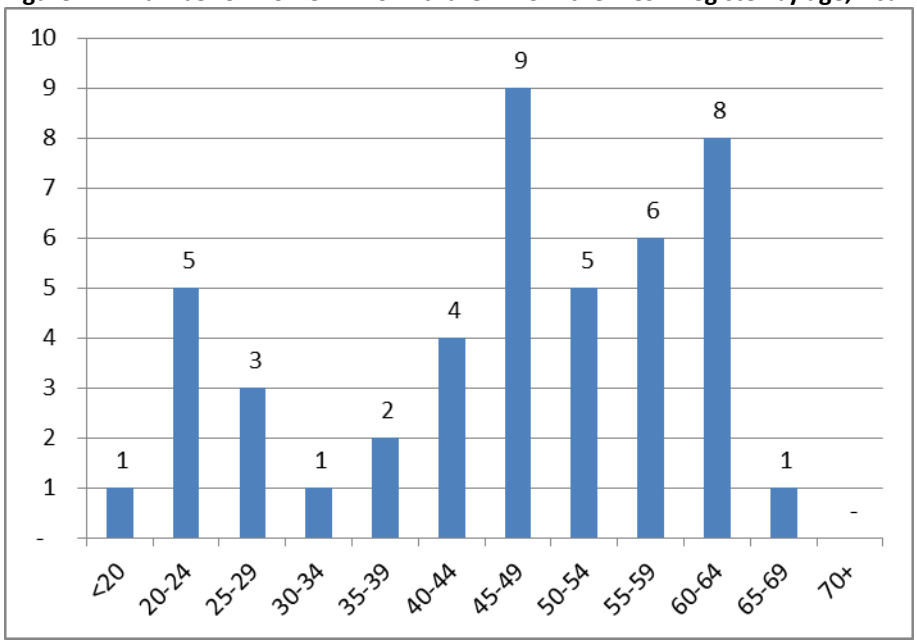


Figure 15 - Number of women (aged 20-69 years) who withdrew from the NCSP Register by ethnicity, 1 January to 30 June 2011

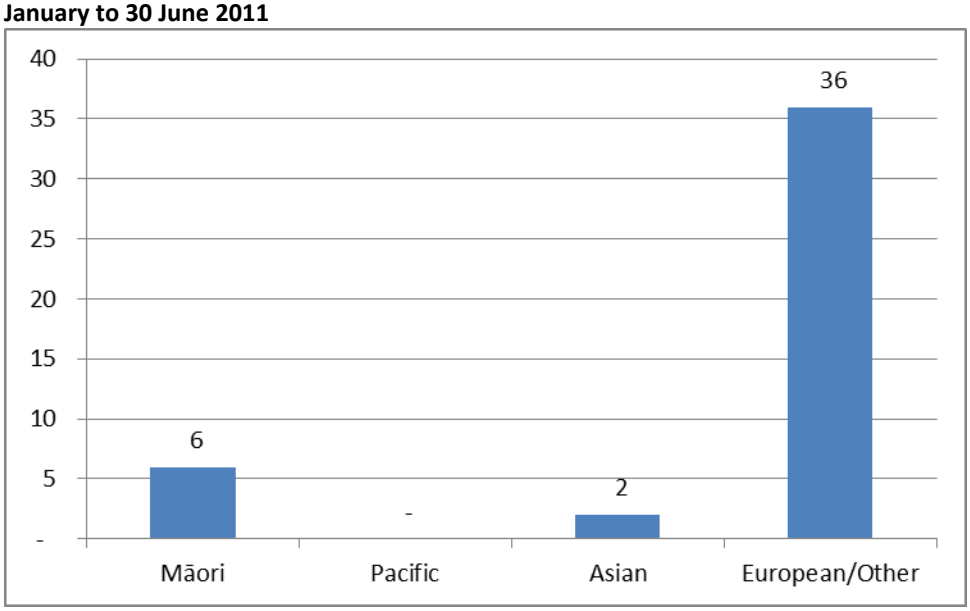


Table 4 - Number of women who withdrew from the NCSP Register 1 January to 30 June 2011 by age, and proportion of women who were enrolled at the start of the reporting period who withdrew

Age group	Women enrolled at start of period	Women who withdrew during period	
		N	% *
<20	3,462	1	0.03
20-24	83,477	5	0.006
25-29	132,714	3	0.002
30-34	154,335	1	0.001
35-39	180,161	2	0.001
40-44	189,663	4	0.002
45-49	182,729	9	0.005
50-54	161,904	5	0.003
55-59	130,575	6	0.005
60-64	109,098	8	0.007
65-69	76,049	1	0.001
70+	154,870	-	0.000
Total (all ages)	**1,559,037**	**45**	**0.003**
Total (ages 20-69)	**1,400,705**	**44**	**0.003**

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

Table 5 - Number of women (aged 20-69 years) who withdrew from the NCSP Register 1 January to 30 June 2011 by ethnicity, and proportion of women who were enrolled at the start of the reporting period who withdrew

Age group	Women enrolled at start of period	Women who withdrew during period	
		N	% *
Māori	158,957	6	0.004
Pacific	74,857	-	0.000
Asian	116,655	2	0.002
European/Other	1,050,236	36	0.003
Total	**1,400,705**	**44**	**0.003**

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

Indicator 4 – Early re-screening

Definition

The proportion of women who returned for a smear within 30 months (2.5 years) of their index smear is calculated for a cohort of women. The cohort comprises women with an index smear taken between 1 February 2008 – 31 March 2008 (inclusive), who i) were aged 20 – 66 years at the time the smear was taken (and hence remained within the screening target age throughout the period); and ii) were given a recommendation to return at the regular interval of three years as a result of their smear in February/ March 2008 (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 2011).

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

40,630 women had a smear taken in August or September 2008, 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, 9,644 (23.7%) 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 (34.8%) and Lakes (32.1%) and Auckland (31.5%), and was least common in Whanganui (12.9%) (Figure 16, Table 42).

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 (30.8%), and older women (aged 65-69 years) were the least likely to be re-screened early (17.9%) (Figure 17, Table 41). Rates of early re-screening are very similar across the five year age groups from 25 to 59 years.

	Among the ethnic groups considered, Asian women were the most likely to be re-screened early (28.3%). Early re-screening was least common among Pacific women (18.1%) (Figure 18, Table 43).
Trends	The level of early re-screening is lower than in the previous monitoring report, when it was 24.7%. DHBs with the lowest and highest levels of early re-screening are largely unchanged since the previous report, except for the substantial drop in Whanganui (from 18.3% to 12.9%), which brought it to the lowest rate among the DHBs. Rates of early re-screening have decreased in most DHBs, but increases were seen in Nelson Marlborough, South Canterbury and Taranaki. Early re-screening has reduced among all age groups, although the reductions have been smallest among women aged 20-24 years (the age group with the highest level of re-screening), and women aged 65-69 years (the age group with the lowest level of early re-screening). Early re-screening has also decreased in all ethnic groups.
Comments	Early re-screening was assessed based on cytology recommendation codes, in order to exclude from the early re-screening group women with a negative smear for whom an earlier screening visit is appropriate. Thus, only women with a recommendation that their next screening visit be in three years were eligible for inclusion in the early re-screening group (that is, in both the numerator and the denominator). Women excluded from the early re-screening group would include those who had just had their first smear or their first smear after a period of time (NCSP policy is to recommend a one year follow-up), women with atrophic changes for whom a repeat after oestrogen is recommended, women with an abnormal history or clinical symptoms, and those already under specialist care. Prior to Report 30, calculation of this indicator has not explicitly used recommendation codes to define the group of women of interest, and therefore the estimates for this measure may not be directly comparable to reports prior to Report 30. It is important to note that whilst early re-screening rates appear to be relatively high in women aged 20-24 years, three-year coverage is much lower in this age-group. While a small proportion of women in this age group may be screened more frequently than recommended, a much larger proportion is under-screened or unscreened. In some cases, early re-screening may be the result of women being re-screened early in response to clinical symptoms, and this is appropriate. We have used the NZ Modified Bethesda recommendation code for urgent referral regardless of cytological findings (R14) to try and exclude some of these cases from the count of women re-screened early, but this probably does not exclude all screens performed in response to clinical symptoms. Note that the accuracy of this calculation is reliant on the correct use of R1

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

Figure 16 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by DHB

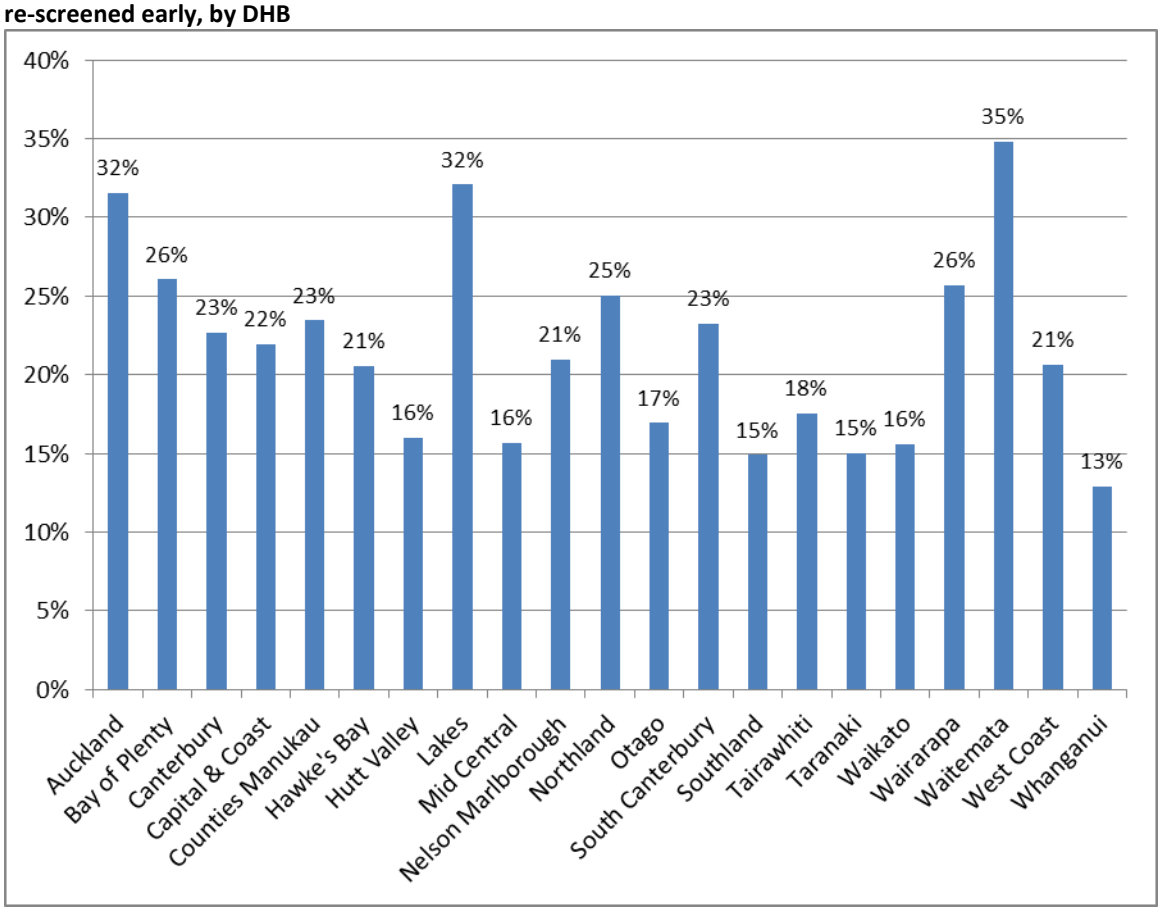


Figure 17 - Proportion of women recommended to return a the routine interval (three years) who were re-screened early, by five-year age group

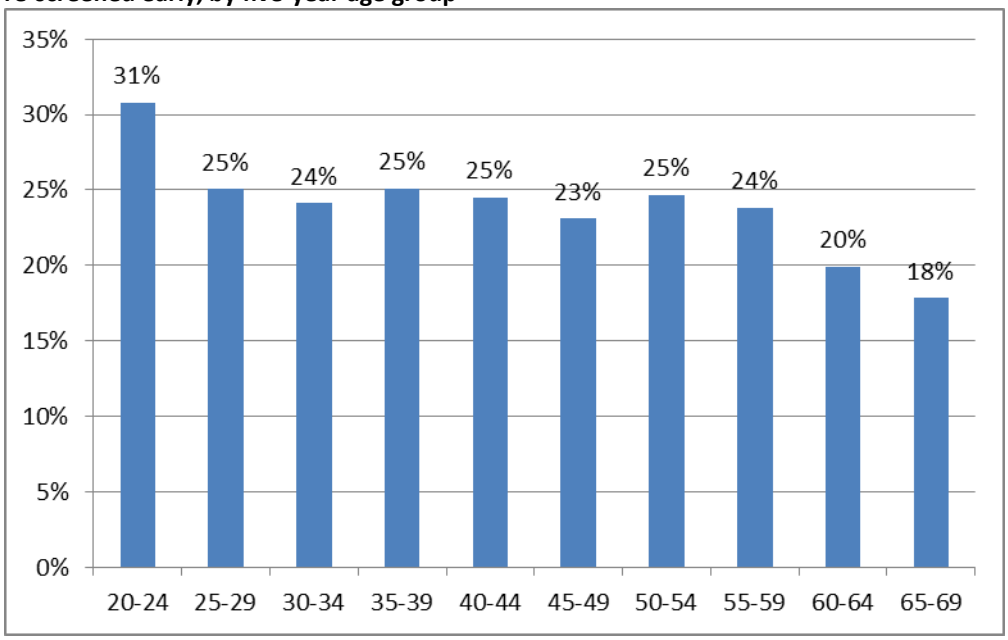
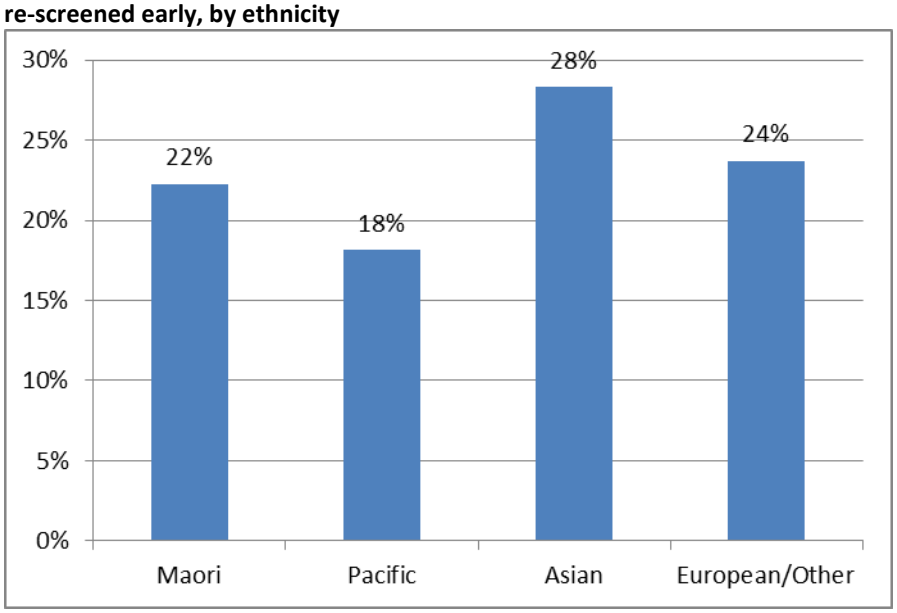


Figure 18 - Proportion of women recommended to return a the routine interval (three years) who were re-screened early, by ethnicity



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 214,946 cytology samples were taken, 99.9% of which were liquid-based cytology (LBC), 0.03% were conventional cytology, and 0.04% were a combination of the two (Table 6). In all laboratories, virtually all samples are LBC. Diagnostic Medlab Ltd and Pathlab processed only LBC during this reporting period. In the remaining labs, the number of non-LBC samples ranged from one (Medlab Central Ltd) to 114 (Southern Community Labs) (Table 6).

Unsatisfactory cytology

2,117 cytology samples (1.0% of all samples) were unsatisfactory. These are reported on in more detail in Table 7 and Table 9. The remaining satisfactory samples are reported on in more detail in Table 8, and Table 10 to Table 13.

Nationally, the unsatisfactory rate for LBC was 1.0%. Four of the eight laboratories had unsatisfactory rates within the target range for LBC (Figure 19, Table 9). No laboratories had rates above the upper target of 5%, but four laboratories had rates below the 1% lower target (Aotea Pathology Ltd 0.1%, Canterbury Health Laboratories 0.3%, Pathlab 0.1%, Southern Community Labs 0.6%).

Unsatisfactory rates for conventional cytology have not been analysed further by laboratory, due to the small number of conventional cytology samples processed in each laboratory (54 samples nationally).

Negative cytology reports

92.3% 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 66.4% (LabPLUS) to 95.6% (Southern Community Labs). All eight laboratories met the target of no more than 96%.

Abnormal cytology reports

The proportion of samples which were abnormal (7.7%) also fell within the recommended range of no more than 10% (Figure 21, Table 8). This varied widely by laboratory however, from 4.4% (Southern Community Labs) to 33.6% (LabPLUS). Two laboratories exceeded the target (Canterbury Health Laboratories 12.0% and LabPLUS 33.6%).

Abnormal cytology results were most common in younger women aged less than 30 years (Table 12, Table 13).

HSIL cytology reports

Overall, 0.8% of cytology samples were HSIL, consistent with the target of at least 0.6% of samples (Figure 22, Table 11). Rates varied by laboratory from 0.4% (Aotea Pathlogy Ltd) to 5.6% (LabPLUS). Three laboratories had rates of HSIL below target levels (Aotea Pathlogy Ltd 0.4%, Diagnostic Medlab Ltd 0.5% and Pathlab 0.5%) (Figure 22, Table 11). Aotea Pathology Ltd and Diagnostic Medlab have had HSIL rates below target levels over a number of

reporting periods.

Among women in the screening target age range, rates of HSIL or worse were most common in women aged 25-29 years (Table 12, Table 13).

Trends

Unsatisfactory cytology

The unsatisfactory rate in LBC samples has risen from 0.6% to 1.0% in the current reporting period, and therefore has returned to the target range.

The number of laboratories meeting the target for unsatisfactory LBC samples (four of eight laboratories) is one more than in the previous reporting period. The number of laboratories with unsatisfactory rates for LBC below the lower target of 1% (four) is the same as in the previous reporting period.

Negative vs abnormal cytology reports

The proportion of satisfactory cytology samples which are negative for intraepithelial lesion or malignancy (92.3%) is somewhat higher to that in the previous reporting period (91.8%), and correspondingly the proportion of cytology samples reported as abnormalities (7.7%) is lower rhan that in the previous reporting period (8.2%). As in the previous reporting period, all laboratories met the target for negative cytology. The number meeting the target for abnormal samples has increased from five to six since the previous reporting period, and conversely the number of laboratories with abnormal cytology rates above the target range has decreased from three to two.

HSIL cytology reports

The proportion of cytology samples reported as HSIL has remained the same as in the previous monitoring report (0.8%). The number of laboratories meeting the target of at least 0.6% has increased from four to five, as the rate of HSIL samples has increased at two labs (Canterbury Health Laboratories and Southern Community Labs) but decreased at one (Diagnostic Medlab Ltd).

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 and lower proportion of community work compared to other laboratories) is a factor underlying the observed higher rate for this laboratory.

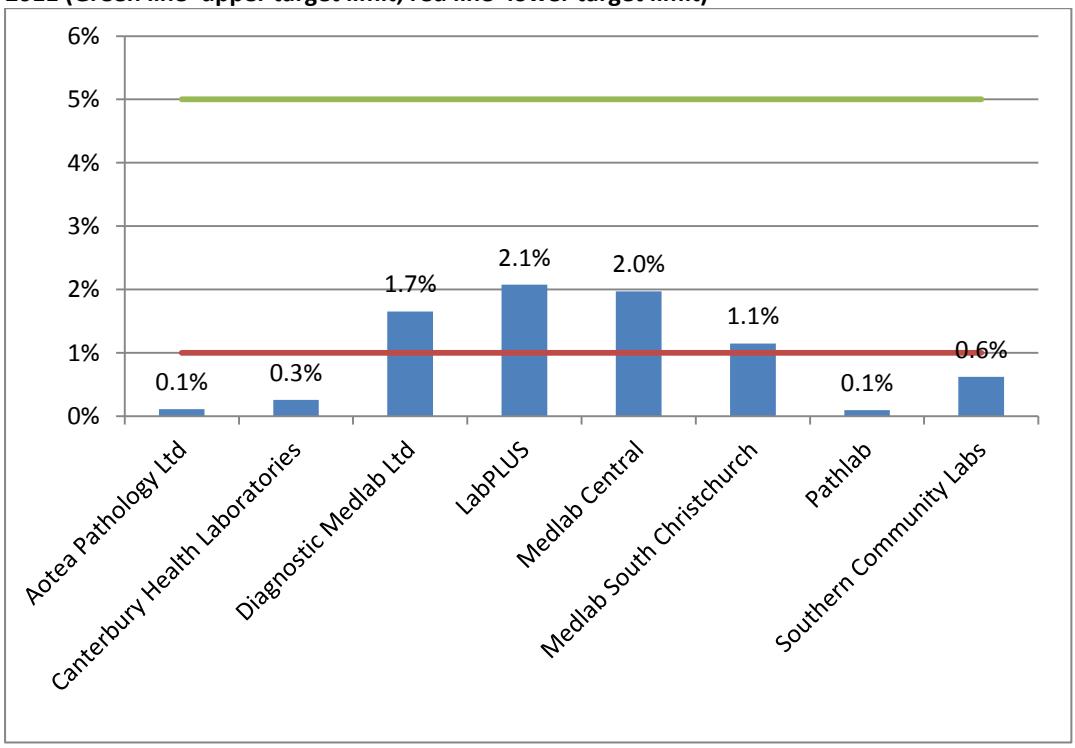
The targets for unsatisfactory cytology applies to both types of LBC (ThinPrep and SurePath). It is uncertain if this is applicable, as the techniques used to produce slides from the liquid samples differ between test technologies - ThinPrep is a filtration-based method, whereas SurePath is a centrifugation-based 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.[4] Use of different LBC test technologies by different laboratories may be a factor in the variation in rates of unsatisfactory cytology (it is believed 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.

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 small (54 tests; 0.03% of all samples taken during this period).

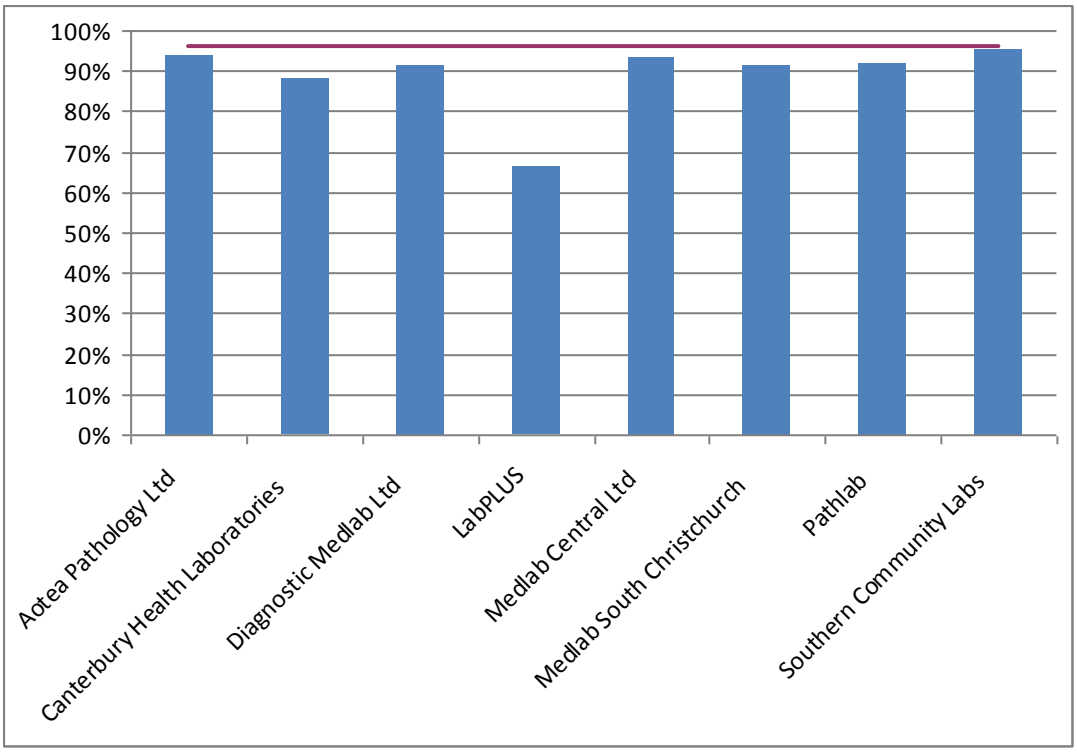
[4] Krahn, M., McLachlin M., *et al*. 2008. *Liquid-based techniques for cervical cancer screening: systematic review and cost-effectiveness analysis*. Technology report number 103. Ottowa: Canadian Agency for Drugs and Technologies in Health.

Figure 19 - Proportion of total LBC samples reported as unsatisfactory by laboratory, 1 January to 30 June 2011 (Green line=upper target limit; red line=lower target limit)



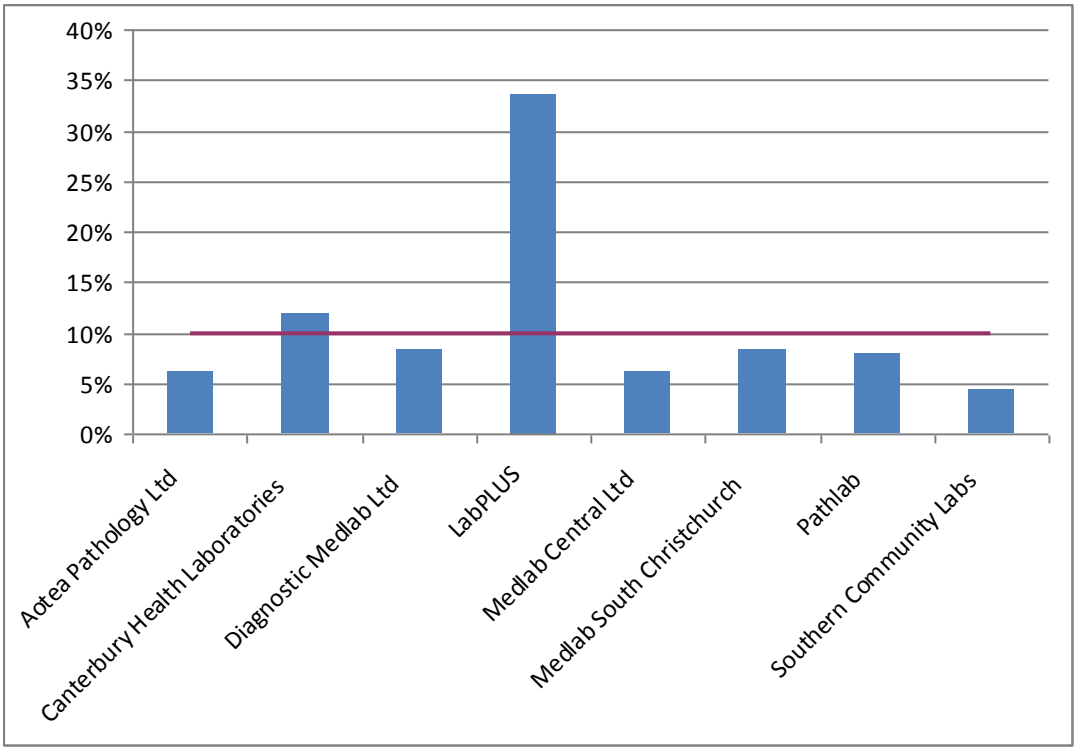
Target for LBC: 1-5%

Figure 20 - Proportion of total satisfactory samples reported as negative by laboratory, 1 January to 30 June 2011



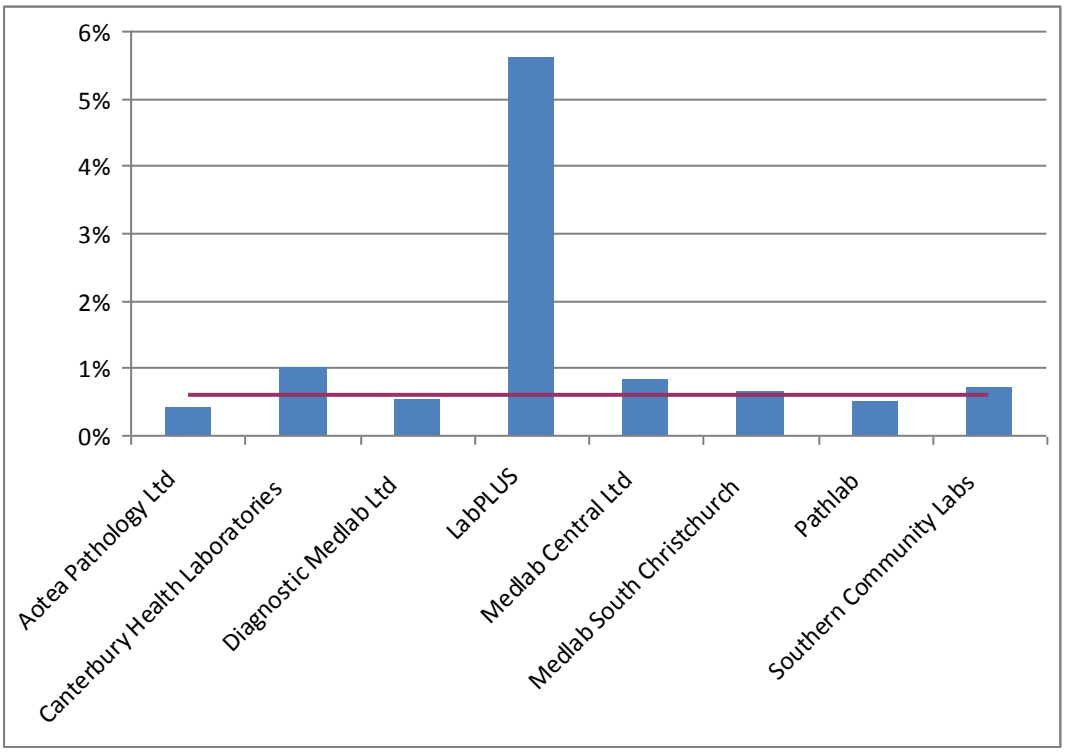
Note: Line shows negative target of no more than 96%

Figure 21 - Proportion of total satisfactory samples reported as abnormalities by laboratory, 1 January to 30 June 2011



Note: Line shows abnormal target no more than 10%

Figure 22 - Proportion of samples reported as HSIL for each laboratory, 1 January to 30 Junne 2011 (red line=target)



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

Table 6 - Laboratory cytology reporting by type of cytology sample (1 January to 30 June 2011)

Organisation	All samples	By cytology specimen type					
		LBC		Conventional		Combined	
	N	N	%	N	%	N	%
Aotea Pathology Ltd	22,051	22,042	100.0	7	0.03	2	0.01
Canterbury Health Laboratories	10,053	10,042	99.9	5	0.05	6	0.06
Diagnostic Medlab Ltd	60,445	60,445	100.0	0	0.00	0	0.00
LabPLUS	6,984	6,981	100.0	3	0.04	0	0.00
Medlab Central	18,383	18,382	100.0	1	0.01	0	0.00
Medlab South Christchurch	10,880	10,875	100.0	5	0.05	0	0.00
Pathlab	21,356	21,356	100.0	0	0.00	0	0.00
Southern Community Labs	64,794	64,680	99.8	33	0.05	81	0.13
TOTAL	**214,946**	**214,803**	**99.9**	**54**	**0.03**	**89**	**0.04**

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

Table 7 - Satisfactory and unsatisfactory cytology reporting by laboratory (1 January to 30 June 2011)

Laboratory	All Samples	Satisfactory		Unsatisfactory	
	N	N	%	N	%
Aotea Pathology Ltd	22,051	22,026	99.9	25	0.1
Canterbury Health Laboratories	10,053	10,026	99.7	27	0.3
Diagnostic Medlab Ltd	60,445	59,445	98.3	1,000	1.7
LabPLUS	6,984	6,838	97.9	146	2.1
Medlab Central	18,383	18,020	98.0	363	2.0
Medlab South Christchurch	10,880	10,755	98.9	125	1.1
Pathlab	21,356	21,336	99.9	20	0.1
Southern Community Labs	64,794	64,383	99.4	411	0.6
Total	**214,946**	**212,829**	**99.0**	**2,117**	**1.0**

See also Table 9

Table 8 - Laboratory cytology reporting by general result (1 January to 30 June 2011) – percentage of satisfactory samples

Laboratory	Negative		Abnormal	
	N	%	N	%
Aotea Pathology Ltd	20,665	93.8	1,361	6.2
Canterbury Health Laboratories	8,825	88.0	1,201	12.0
Diagnostic Medlab Ltd	54,444	91.6	5,001	8.4
LabPLUS	4,538	66.4	2,300	33.6
Medlab Central	16,904	93.8	1,116	6.2
Medlab South Christchurch	9,853	91.6	902	8.4
Pathlab	19,643	92.1	1,693	7.9
Southern Community Labs	61,558	95.6	2,825	4.4
Total	**196,430**	**92.3**	**16,399**	**7.7**

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

Table 9 - Laboratory reporting of unsatisfactory results by type of cytology sample (1 January to 30 June 2011)

Laboratory	Conventional			LBC			Combined			TOTAL		
	Unsat	Total	%	Unsat	Total	%	Unsat	Total	%	Unsat	Total	%
Aotea Pathology Ltd	-			25	22,042	0.1	-			25	22,051	0.1
Canterbury Health Laboratories	1			26	10,042	0.3	-			27	10,053	0.3
Diagnotstic Medlab Ltd	-			1,000	60,445	1.7	-			1,000	60,445	1.7
LabPLUS	1			145	6,981	2.1	-			146	6,984	2.1
Medlab Central	1			362	18,382	2.0	-			363	18,383	2.0
Medlab South Christchurch	-			125	10,875	1.1	-			125	10,880	1.1
Pathlab	-			20	21,356	0.1	-			20	21,356	0.1
Southern Community Labs	5			402	64,680	0.6	4			411	64,794	0.6
Total	**8**	**54**	**14.8**	**2,105**	**214,803**	**1.0**	**4**	**89**	**4.5**	**2,117**	**214,946**	**1.0**

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

Table 10 - Laboratory cytology reporting by cytological category (1 January to 30 June 2011) – counts

Laboratory	Result									Total
	Negative	ASC-US	LSIL	ASC-H	HSIL	SC	AGC/ AIS	Adeno-carcinoma	Malignant Neoplasm	
Aotea Pathology Ltd	20,665	509	645	99	92	1	13	1	1	**22,026**
Canterbury Health Laboratories	8,825	375	593	123	102	3	2	3	-	**10,026**
Diagnostic Medlab Ltd	54,444	1,785	2,577	281	315	3	34	6	-	**59,445**
LabPLUS	4,538	723	804	353	384	2	31	2	1	**6,838**
Medlab Central	16,904	280	589	86	152	2	6	1	-	**18,020**
Medlab South Christchurch	9,853	317	409	95	70	2	7	2	-	**10,755**
Pathlab	19,643	500	942	116	107	-	23	5	-	**21,336**
Southern Community Labs	61,558	510	1,692	105	464	5	34	15	-	**64,383**
Total	**196,430**	**4,999**	**8,251**	**1,258**	**1,686**	**18**	**150**	**35**	**2**	**212,829**

Table 11 - Laboratory cytology reporting by cytological category (1 January to 30 June 2011) - 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	2.9	0.4	0.4	<0.005	0.06	<0.005	<0.005
Canterbury Health Laboratories	88.0	3.7	5.9	1.2	1.0	0.03	0.02	0.03	-
Diagnostic Medlab Ltd	91.6	3.0	4.3	0.5	0.5	0.01	0.06	0.01	-
LabPLUS	66.4	10.6	11.8	5.2	5.6	0.03	0.45	0.03	0.01
Medlab Central	93.8	1.6	3.3	0.5	0.8	0.01	0.03	0.01	-
Medlab South Christchurch	91.6	2.9	3.8	0.9	0.7	0.02	0.07	0.02	-
Pathlab	92.1	2.3	4.4	0.5	0.5	-	0.11	0.02	-
Southern Community Labs	95.6	0.8	2.6	0.2	0.7	0.01	0.05	0.02	-
Total	**92.3**	**2.3**	**3.9**	**0.6**	**0.8**	**0.01**	**0.07**	**0.02**	**<0.005**

Note: Target: HSIL ≥ 0.6% reported as HSIL

Table 12 - Laboratory reporting of cytological category by five-year age group (1 January to 30 June 2011) – counts

Age Group	Cytology Result									Total
	Negative	ASC-US	LSIL	ASC-H	HSIL	SC	AGC/AIS	Adeno-carcinoma	Malignant Neoplasm	
<20	1,822	116	321	31	24	-	-	-	-	2,314
20-24	21,739	1,152	2,863	367	450	-	9	-	-	26,580
25-29	19,666	689	1,450	222	397	-	12	-	-	22,436
30-34	21,013	558	952	158	276	-	10	-	-	22,967
35-39	24,310	522	721	133	197	2	15	1	-	25,901
40-44	24,919	541	634	104	133	-	15	2	-	26,348
45-49	23,944	514	452	73	63	1	11	-	-	25,058
50-54	20,343	406	375	59	50	-	15	3	-	21,251
55-59	15,812	219	196	43	44	5	24	6	1	16,350
60-64	12,791	150	168	34	28	1	13	4	-	13,189
65-69	8,109	100	91	22	16	-	12	7	-	8,357
70+	1,962	32	28	12	8	9	14	12	1	2,078
Total	**196,430**	**4,999**	**8,251**	**1,258**	**1,686**	**18**	**150**	**35**	**2**	**212,829**

Table 13 - Laboratory reporting of cytological category by five-year age group (1 January to 30 June 2011) - percentage of all satisfactory samples in women that age group

Age Group	Percentage of Age Group Total								
	Negative	ASC-US	LSIL	ASC-H	HSIL	SC	AGC/AIS	Adeno-carcinoma	Malignant Neoplasm
<20	78.7	5.0	13.9	1.3	1.0	-	-	-	-
20-24	81.8	4.3	10.8	1.4	1.7	-	0.03	-	-
25-29	87.7	3.1	6.5	1.0	1.8	-	0.05	-	-
30-34	91.5	2.4	4.1	0.7	1.2	-	0.04	-	-
35-39	93.9	2.0	2.8	0.5	0.8	0.01	0.06	<0.005	-
40-44	94.6	2.1	2.4	0.4	0.5	-	0.06	0.01	-
45-49	95.6	2.1	1.8	0.3	0.3	<0.005	0.04	-	-
50-54	95.7	1.9	1.8	0.3	0.2	-	0.07	0.01	-
55-59	96.7	1.3	1.2	0.3	0.3	0.03	0.15	0.04	0.01
60-64	97.0	1.1	1.3	0.3	0.2	0.01	0.10	0.03	-
65-69	97.0	1.2	1.1	0.3	0.2	-	0.14	0.08	-
70+	94.4	1.5	1.3	0.6	0.4	0.43	0.67	0.58	0.05
Total	**92.3**	**2.3**	**3.9**	**0.6**	**0.8**	**0.01**	**0.07**	**0.02**	**<0.005**

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 2010 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*** 1,519 women with HSIL or SC cytology reports were identified. 136 of these women (9.0%) had no histology taken in the period from five days prior to six months after the cytology sample was taken. Among the remaining 1,383 for whom there was histology, 1,135 (82.1%) had their HSIL/SC cytology confirmed by histology (Figure 23, Table 44). All laboratories achieved the minimum target of at least 65% of cytological HSIL +SC being confirmed by histology. One laboratory exceeded 85% of HSIL+SC being histologically confirmed – Canterbury Health Laboratories (86.7%), (Figure 23, Table 44). ***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*** 1,166 women with a cytology report of ASC-H were identified. 271 (23.2%) had no histology taken in the period from five days prior to six months after the cytology sample. Among the remaining 895 women, 457 (51.1%) were histologically confirmed as high grade. This proportion varied by laboratory, from 43.4% (Diagnostic Medlab Ltd) to 67.5% (Canterbury Health

Laboratories) (Figure 24, Table 45).

ASC-H+HSIL+SC

A total of 2,699 women had a cytology report of ASC-H, HSIL or SC. 407 (15.1%) had no histology taken in the period from five days prior to six months after the cytology sample. Among the remaining 2,292 women, 1,605 (70.0%) were histologically confirmed as high grade. This proportion varied by laboratory, from 63.0% (Medlab South Christchurch) to 79.0% (Southern Community Labs Dunedin). The combined positive predictive value across the 2,292 women with ASC-H, HSIL, and SC and histology available is shown in Figure 24 and Table 46.

Glandular abnormalities

206 women with a glandular abnormality (AG1-AG5, AIS, AC1-AC4) were identified. 66 women (32.0%) had no histology taken in the period from five days prior to six months after the cytology sample. Among the remaining 140 women, 80 (57.1%) 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 increased since the previous monitoring report (80.9% in the previous period; 82.1% in the current period). As in the previous monitoring period, all laboratories had at least 65% of their HSIL + SC cytology results confirmed by histology. The number of laboratories with PPVs above the upper target of 85% has decreased from three to one. The proportion of cytology reports with histology available has increased for HSIL + SC (88.3% in the previous report; 91.0% in the current report).

ASC-H

Positive predictive value for ASC-H cytology has decreased slightly, from 51.3% to 51.1%, however there is no target for this measure. The proportion of cytology reports with histology available has increased for ASC-H (from 74.3% to 76.8%).

ASC-H+HSIL+SC

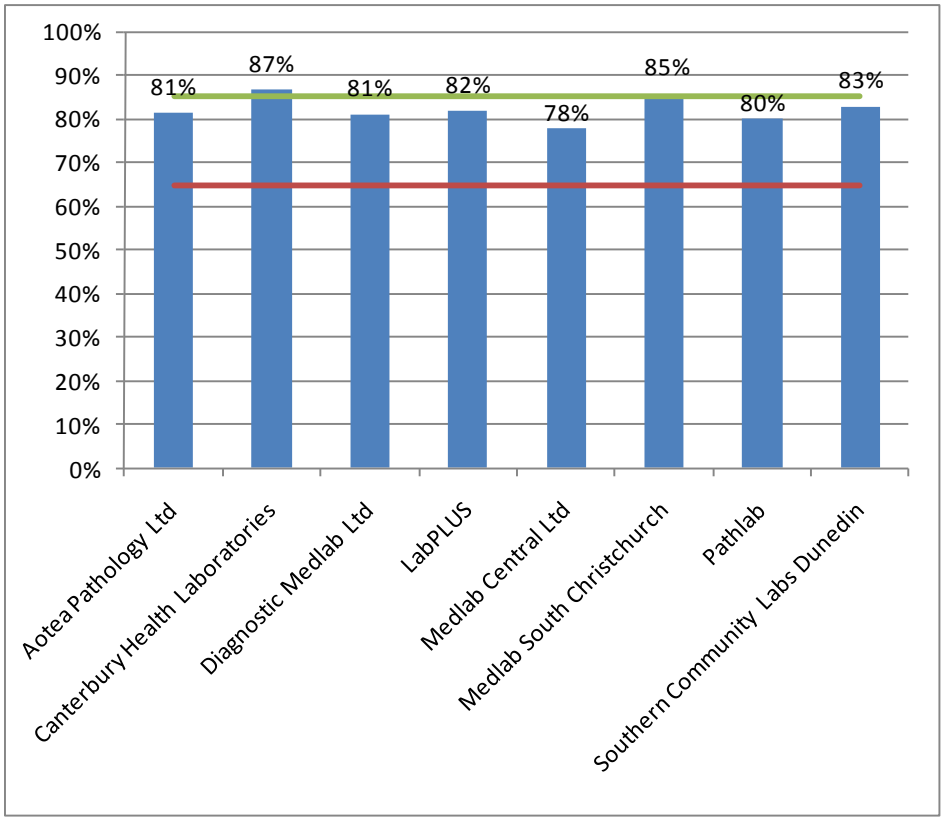
The positive predictive value for the combined group ASC-H, HSIL and SC was very similar in the previous report (69.8%) to what it is in the current report (70.0%), however there are no targets for the positive predictive value of the combined group of ASC-H, HSIL and SC.

Glandular abnormalities

The positive predictive value of glandular abnormalities increased (from 51.6% in the previous report to 57.1% in the current report). Compared to

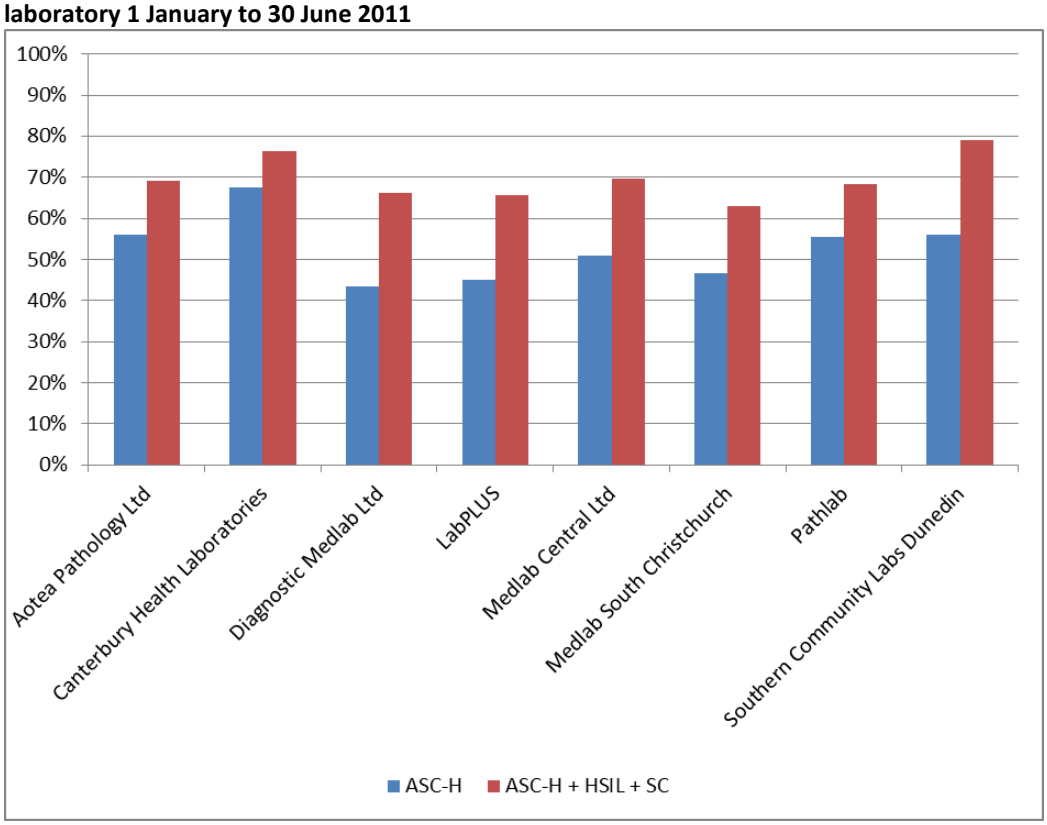
	both ASC-H cytology, and the combined group of HSIL and SC cytology, there are far fewer glandular abnormalities, and an even smaller number with histology available. The proportion of glandular abnormalities with histology available (68.0%) is greater to that in the previous reporting period (65.7%), but remains less than that for ASC-H (76.8%) and HSIL+SC (91.0%). 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 complete 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 PPV (and other reporting categories) in a screening setting.

Figure 23 - Positive predictive value for CIN2+ in women with HSIL or SC cytology reports by laboratory, 1 January to 30 June 2011



Target: 65% - 85%

Figure 24 - Positive predictive value for CIN2+ in women with other high grade cytology results, by laboratory 1 January to 30 June 2011



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	12,664 histology samples were taken during the current reporting period. 365 (2.9%) of these were insufficient for diagnosis. The remaining 12,299 samples were taken from 10,803 women. Results for these women are reported on in detail in Table 14 - Table 17. The 365 samples which were insufficient for diagnosis were taken from 359 women, 54 (15%) of whom have a record of a subsequent histology test. 51.3% of women with histology tests had negative or benign histology results (Table 14, Table 15). 22.5% of women had high grade (CIN2/3) histology results. 52 (0.5%) women had histology results which were invasive squamous cell carcinoma (ISCC), three (<0.05%) which were microinvasive SCC, 31 (0.3%) which were invasive adenocarcinoma, three (<0.05%) which were adenosquamous carcinoma and 30 (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 (1,698 women, Table 16). This was also the age group with the lowest rate of women with results which were negative or HPV only (34.3%, Table 17).
Trends	The proportion of women with negative or benign histology (51.3%) is somewhat higher than that reported for the previous period (June - December 2010; 49.3%). The proportion of women with HSIL histology is somewhat lower in the current period (22.5%) than in the previous period (23.1%) The proportions were 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; 0.4% last period), adenosquamous carcinoma (<0.05% in both periods), and adenocarcinoma in situ (0.3% this period; 0.3% last period).
Comments	Histology samples include diagnostic biopsies, treatment biopsies, cervical polyps and the cervical tissue of total hysterectomy specimens. Histology samples may also include samples from non-cervical sites, where there is also a cervical component in the sample, for example endometrial samples. This is likely to be contributing to the higher number of women with adenocarcinoma histology on the NCSP Register compared to the Cancer Registry, and therefore this reporting category should be interpreted with caution.

Table 14 - Histology results reporting by SNOMED category

SNOMED category	Women with that diagnosis	
	N	%
Negative/normal	2,658	24.6
Inflammation	797	7.4
Microglandular hyperplasia	9	0.08
Squamous metaplasia	494	4.6
Atypia	82	0.8
HPV	923	8.5
Condyloma acuminatum	5	<0.05
Dysplasia/CIN NOS	58	0.5
CIN 1 (LSIL) or VAIN 1	1,607	14.9
CIN 2 (HSIL) or VAIN 2	612	5.7
CIN 3 (HSIL) or VAIN 3	1,006	9.3
HSIL not otherwise specified	843	7.5
Polyp	1,032	9.6
Other	552	5.1
Microinvasive squamous cell carcinoma	3	<0.05
Invasive squamous cell carcinoma	52	0.5
Benign glandular atypia	1	<0.05
Glandular dysplasia	1	<0.05
Adenocarcinoma in situ	30	0.3
Invasive adenocarcinoma	31	0.3
Adenosquamous carcinoma	3	<0.05
Metastatic tumour	16	0.1
Undifferentiated carcinoma	2	<0.05
Sarcoma	3	<0.05
Carcinosarcoma	-	-
Choriocarcinoma	-	-
Miscellaneous primary tumour	1	<0.05
Small cell carcinoma	1	<0.05
Malignant tumour, small cell type	-	-
Melanoma	1	<0.05
Other primary epithelial malignancy	13	0.1
Total	**10,803**	**100.0**

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

Table 15 - Histology results reporting by diagnostic group

Histology diagnosis category	Women with that histology result	
	N	%
Negative/benign (non neoplastic)	5,543	51.3
HPV	928	8.6
CIN1	1,747	16.2
CIN2	612	5.7
CIN3	1,006	9.3
HSIL not otherwise specified	810	7.5
Microinvasive	3	<0.05
Invasive squamous cell carcinoma	52	0.5
Glandular dysplasia	1	<0.5
Adenocarcinoma in situ	30	0.3
Invasive adenocarcinoma	31	0.3
Adenosquamous carcinoma	3	<0.05
Other cancer	37	0.3
Total	**10,803**	**100.0**

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

Table 16 - Histology results by age – counts

Histology Category	Age group												
	<20	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+	Total
Negative/benign (non neoplastic)	16	385	394	466	607	893	943	700	423	272	214	230	5,543
HPV	7	197	156	134	114	99	99	58	33	18	10	3	928
CIN1	21	430	308	259	215	207	138	87	37	33	11	1	1,747
CIN2	12	183	125	102	78	58	22	16	8	3	2	3	612
CIN3	5	265	236	189	120	85	41	26	21	11	3	4	1,006
HSIL	3	230	197	140	89	68	41	17	7	8	8	2	810
Microinvasive	-	-	-	1	1	-	1	-	-	-	-	-	3
Invasive SCC	-	1	3	10	5	1	11	3	1	2	5	10	52
Glandular dysplasia	-	-	-	-	1	-	-	-	-	-	-	-	1
Adenocarcinoma in situ	-	4	4	7	3	1	1	2	5	-	-	3	30
Invasive adenocarcinoma	-	2	2	1	1	3	3	2	2	4	5	6	31
Adenosquamous carcinoma	-	-	-	1	-	1	-	-	-	-	-	1	3
Other cancer	-	1	1	-	1	-	3	2	2	9	2	16	37
Total	**64**	**1,698**	**1,426**	**1,310**	**1,235**	**1,416**	**1,303**	**913**	**539**	**360**	**260**	**279**	**10,803**

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

Table 17 - Histology results by age – percentages

Histology Category	Age group											
	<20	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+
Negative/benign (non neoplastic)	25.0	22.7	27.6	35.6	49.1	63.1	72.4	76.7	78.5	75.6	82.3	82.4
HPV	10.9	11.6	10.9	10.2	9.2	7.0	7.6	6.4	6.1	5.0	3.8	1.1
CIN1	32.8	25.3	21.6	19.8	17.4	14.6	10.6	9.5	6.9	9.2	4.2	0.4
CIN2	18.8	10.8	8.8	7.8	6.3	4.1	1.7	1.8	1.5	0.8	0.8	1.1
CIN3	7.8	15.6	16.5	14.4	9.7	6.0	3.1	2.8	3.9	3.1	1.2	1.4
HSIL	4.7	13.5	13.8	10.7	7.2	4.8	3.1	1.9	1.3	2.2	3.1	0.7
Microinvasive	-	-	-	0.1	0.1	-	0.1	-	-	-	-	-
Invasive SCC	-	0.1	0.2	0.8	0.4	0.1	0.8	0.3	0.2	0.6	1.9	3.6
Glandular dyslasia	-	-	-	-	0.1	-	-	-	-	-	-	-
Adenocarcinoma in situ	-	0.2	0.3	0.5	0.2	0.1	0.1	0.2	0.9	-	-	1.1
Invasive adenocarcinoma	-	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.4	1.1	1.9	2.2
Adenosquamous carcinoma	-	-	-	0.1	-	0.1	-	-	-	-	-	0.4
Other cancer	-	0.1	0.1	-	0.1	-	0.2	0.2	0.4	2.5	0.8	5.7
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[5]).

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[5]).

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 214,144 cytology samples during the current reporting period. Overall, 93.8% of cytology samples were reported on within seven working days, which is above the target. Nationally, 98.0% were reported on within 15 working days, which is below the target (Table 47).

Six 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 Central, Medlab South Christchurch, Pathlab and Southern Community Labs Dunedin). The proportion of samples reported on within seven working days ranged from 77.0% (Canterbury Health Laboritories) to 100.0% (Medlab South Christchurch).

One laboratory met the target of 100% of samples reported within 15

[5] NCSP Operational Policy and Quality Standards, Section 5

working days (Medlab South Christchurch) (Figure 25, Figure 26, Table 47). Of the remaining seven laboratories, three had reported on at least 99% of cytology samples within 15 days (Aotea Pathology Ltd, Pathlab and Southern Community Labs Dunedin), and another two laboratories had reported on more than 95% within 15 working days.

Histology

17 laboratories received 12,648 histology samples in the current reporting period. Overall 76.9% of samples were reported on within five working days, and 94.6% were reported on in 15 working days or less. These values are below the targets (Table 48).

Five laboratories met the target of 90% of final histology results to the requesting clinician within five working days of receipt of the sample (Medlab South Christchurch, Memorial Hospital Hastings Lab, Northland Pathology Laboratory, Southern Community Labs Dunedin and Taranaki Medlab) (Figure 27, Table 48). Seven laboratories met the target of 99% of final histology results within 15 working days of receiving the sample, and nine of the remaining ten had reported on at least 95% of samples within 15 days (Figure 28, Table 48).

Cytology with associated HPV triage testing

Eight laboratories received 3,122 cytology samples during the current reporting period which were associated with HPV testing for the purpose of triage of low grade abnormalities. Overall, 96.6% 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 66.7% (LabPLUS) to 100.0% (Medlab South Christchurch) (Figure 29, Table 49). The target of 100% of tests reported within 15 working days was met by one laboratory (Medlab South Christchurch). Nationally, the proportion of cytology reported within 15 days is somewhat lower for cytology associated with low grade triage HPV testing (96.6%), compared to cytology overall (98.0%). This is not true for all laboratories, however. The proportion of cytology tests reported within 15 days is very similar regardless of whether there is an associated HPV triage test at Aotea Pathology Limited, Diagnostic Medlab Ltd, Medlab South Christchurch, and Pathlab. The proportion of cytology tests reported within 15 days is much lower for those cytology tests with an associated HPV triage test at Canterbury Health Laboratories (and also at LabPLUS, but based on a small number of cytology tests with associated HPV triage testing) (Figure 29).

Trends

Cytology

The overall proportion of samples reported on within seven working days increased substantially in this period, from 78.6% in the previous monitoring period to 93.8% in the current period. The number of laboratories meeting the cytology turnaround time target of 90% for seven working days has increased in the current monitoring period to six of the eight laboratories, compared to two in the previous period. The proportion of samples reported

on within 15 working days was higher in the current reporting period (98.0%, compared to 96.5% in the previous reporting period), but 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 the same as 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 (76.9% during this period compared to 80.9% in the previous report), and the proportion reported on within 15 working days is also lower (94.6%, compared to 96.1% in the previous report). The number of laboratories meeting the five-working-days target is the same as the previous reporting period (five), as is the number meeting the 15-day target (seven).

Cytology with associated HPV triage testing

In previous monitoring reports which included this measure (Reports 33 and 34), the calculations for turnaround time for cytology with an HPV triage test had an error which examined turnaround time within 15 days (rather than 15 working days, as here). Therefore the result for the current period is not directly comparable with that in Report 34. However, as expected the percentage of tests reported within 15 working days in the current monitoring period (96.6%) is higher than the percentage reported in 15 days in Report 34 (87.0%).

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 *received by laboratories* within the reporting period, rather than cytology where the sample *was collected* during the reporting period which was the criteria for Indicator 5.1. Similarly, the total number of histology samples reported on in this Indicator is different from that reported in Indicator 5.4, as the inclusion criteria for the current indicator was all histology *received by laboratories* within the reporting period, rather than histology where the sample *was collected* during the reporting period which was the criteria for Indicator 5.4.

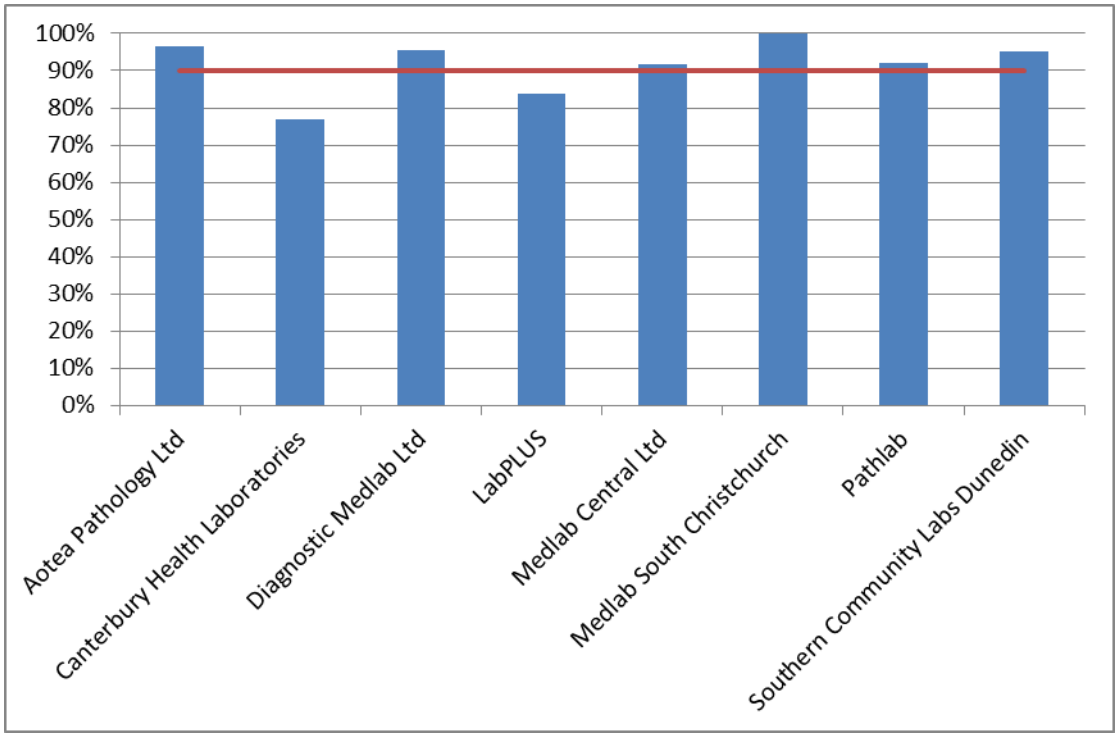
The definition used by individual laboratories for turnaround time differs. For example depending on the the definition used by the laboratory, a turnaround time of one day can mean the results are reported within 24 hours, on the same day the sample is received, or on the day after the sample is received.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

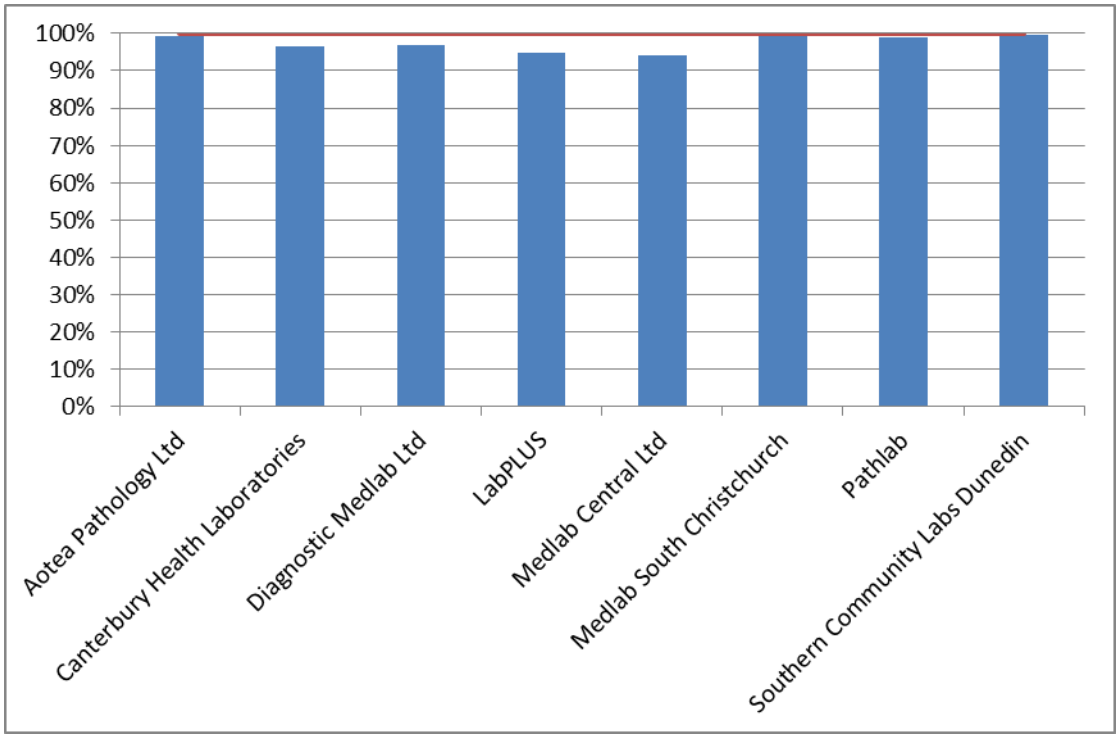
The calculations currently include public holidays which fall on a weekday as working days.

Figure 25 - Proportion of cytology samples reported within seven working days by laboratory, 1 January to 30 June 2011



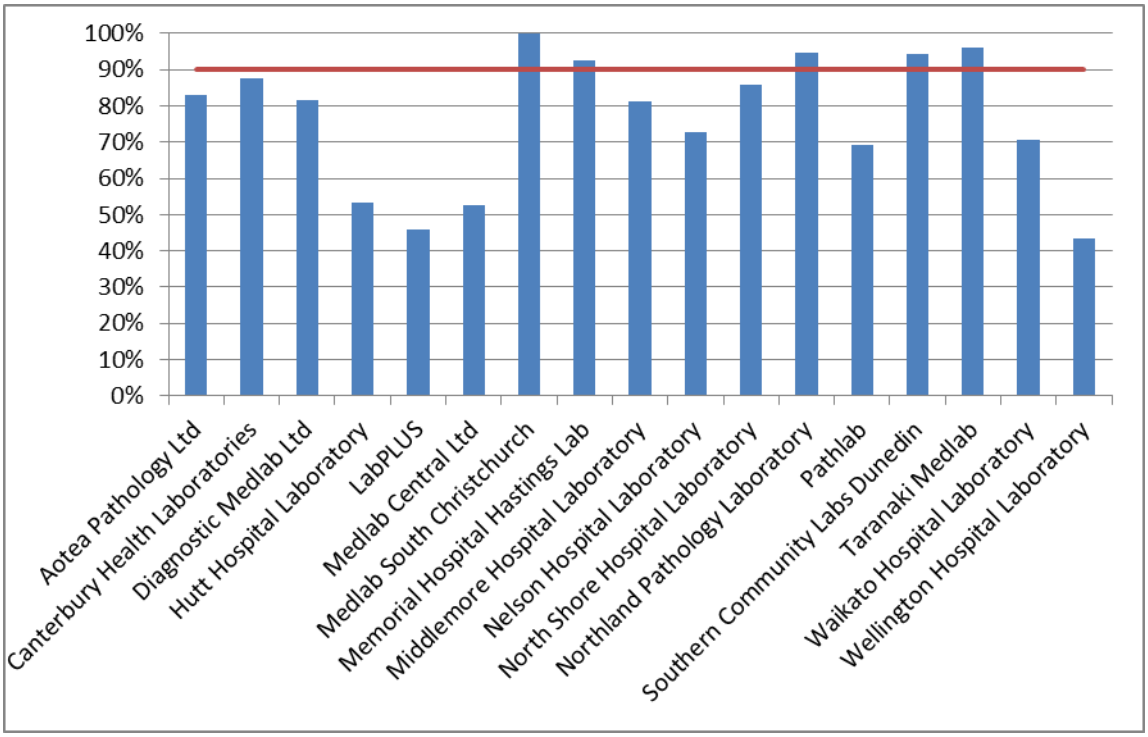
Target: 90 % within seven working days (red line)

Figure 26 - Proportion of cytology samples reported within 15 working days by laboratory, 1 January to 30 June 2011



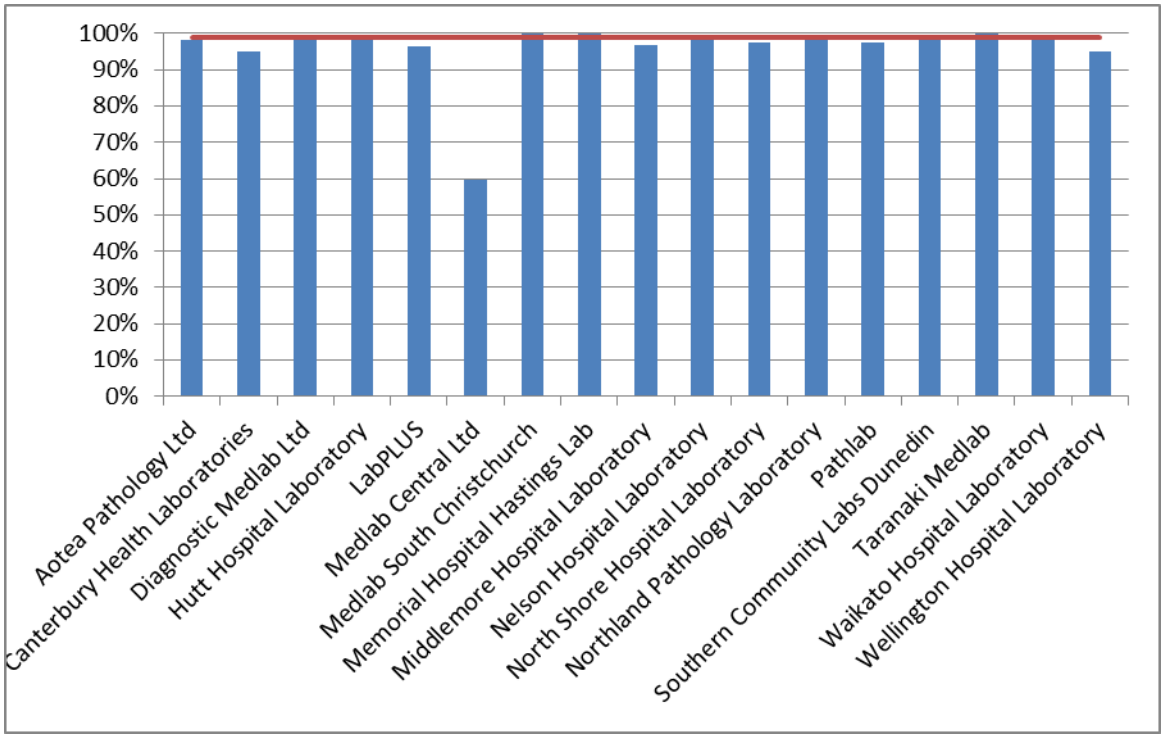
Target: 100% within 15 working days (red line)

Figure 27 - Proportion of histology samples reported within five working days by laboratory, 1 January to 30 June 2011



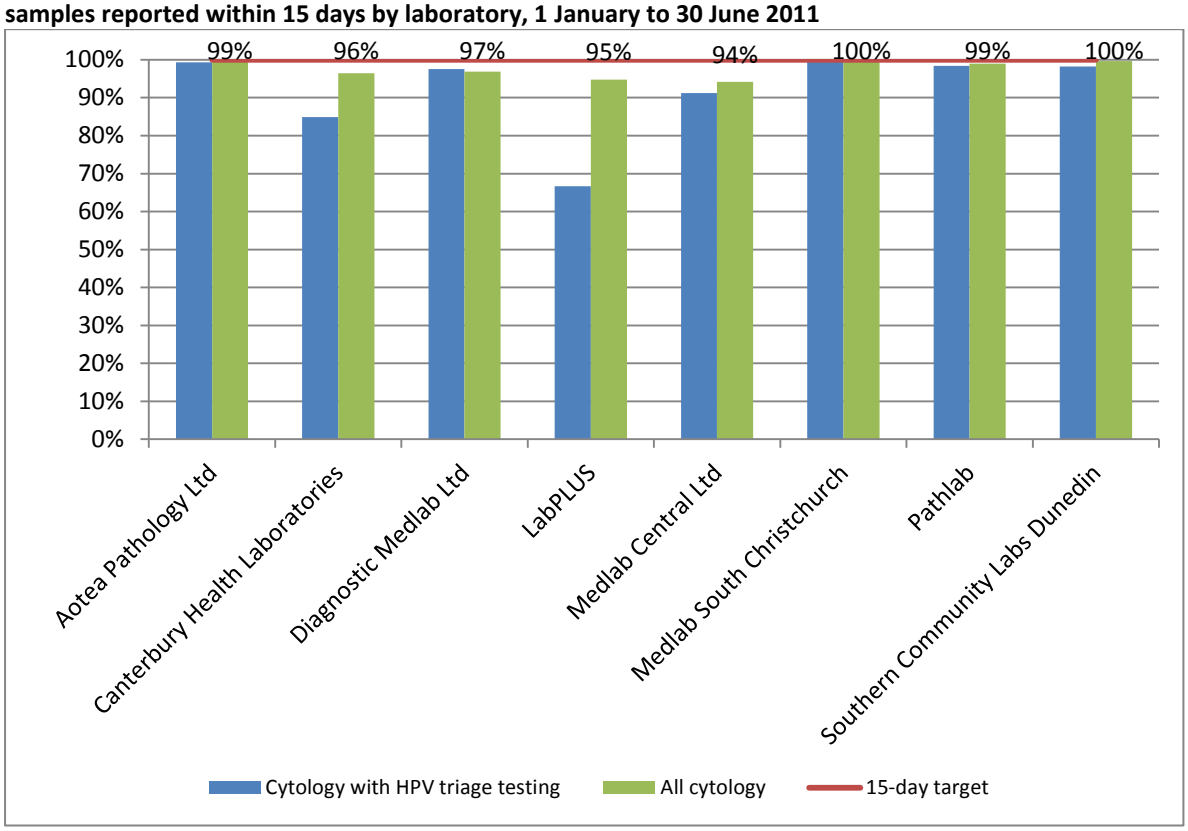
Target: 90% withing five working days (red line)

Figure 28 - Proportion of histology samples reported within 15 working days by laboratory, 1 January to 30 June 2011



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

Figure 29 - Proportion of cytology samples with associated HPV triage testing and of all cytology samples reported within 15 days by laboratory, 1 January to 30 June 2011



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

Definition

The proportion of women (20-69 years) 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 2010), 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.

In this report, additional 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 2011).

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 3,327 high grade cytology results relating to samples collected in the period 1 July to 31 December 2010; 3,239 of these were in women aged 20-69 years at the end of the reporting period. 1,036 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 2,203 cytology results, which related to 2,121 women aged 20-69 years at the end of the reporting period. Histological follow-up for these 2,121 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, 1,566 women (73.8%) aged 20-69 years at the end of the period had a histology report within 90 days of their cytology report, and 1,765 (83.2%) had a histology report within 180 days (Table 50). This is below the target of 90% within 90 days. The proportion of women with a histology report within 90 days of their cytology report varied by DHB from 21.4% (Mid Central) to 86.7% (West Coast). At 180 days 39.1% (Wairarapa) to 93.2% Hutt Valley) (Figure 30, Table 50). No DHB met the target for the proportion of women with histology within 90 days; or the target for 180 days. The proportion of women with a histology report also varies by age, from 57.5% (ages 55-59 years) to 79.6% (ages 35-39 years) within 90 days, and from to 68.3% (ages 60-64 years) to 89.0% (ages 30-34 years) within 180 days (Table 51). 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 65.7% (Pacific women) to 75.7% (European/Other women)(Table 18). By 180 days, however, the difference had narrowed slightly, and histology reports were available for 76.8% of Pacific women and 84.7% of European women/women from other ethnic groups (Table 19). Further breakdown by DHB and ethnicity is shown in Table 18 and Table 19, and breakdown by DHB and age is shown in Table 20 and Table 21. ***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 124 women (5.8%) who had no record of any subsequent follow-up within 180 days on the NCSP Register (Table 52).

This varied by DHB at 180 days from 0.0% (ie no women, Taranaki) to 10.0% (Northland) (Figure 31, Table 52). It also varied by ethnicity, from 5.0% (European/Other ethnic groups) to 8.5% (Asian) at 180 days (Figure 32, Table 53).

Trends

Histological follow-up

The proportion of women with a histology report within 90 days is lower than that in the previous reporting period (78.4% in the previous reporting period; 73.8% in the current period). The proportion of women with a histology report within 180 days has also decreased, from 87.5% within 180 days in the previous period to 83.2% in the current period.

While the proportion of women with histological follow-up has decreased overall, the trend varies for individual DHBs. In a number of DHBs the proportion of women with histological follow-up has increased at 90 days (Counties Manukau, Hawkes Bay, Nelson Marlborough, Otago, South Canterbury, Tairawhiti, Taranaki, Waikato, Waitemata) and at 180 days (Capital and Coast, Counties Manukau, Lakes, Nelson Marlborough, Northland, Otago, Southland, Tairawhiti, Taranaki, Waikato). However in some DHBs, the proportion of women with histological follow-up decreased noticeably at both 90 days and 180 days (Mid Central, Wairarapa, West Coast, Whanganui). In Mid Central this also follows a noticeable decrease in the last monitoring report at both 90 days and 180 days. Changes in other DHBs were smaller.

The proportion of women with follow-up histology has decreased overall in the current monitoring period for European/ Other women (at both 90 days and 180 days). Among other ethnic groups the changes were smaller, and for Māori and Pacific women inconsistent at 90 days and 180 days. These proportions 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 50 years or more, than in women younger than 50 years. The overall reduction in the proportion of women with follow-up histology is reflected in a number of age groups. Follow-up at both 90 days and 180 days has decreased among women aged 25-29 years, 35-39 years, 40-44 years and 50-54 years. Follow-up at 90 days (but not at 180 days) has decreased among women aged 20-24 years and 45-49 years, suggesting that the balance of follow-up in the two time periods in these women has moved towards the latter (91-180 days) period.

Women with no follow-up tests

The proportion of women with no record of a follow-up test has decreased since the previous period, from 7.0% to 5.8% at 180 days. Nationally, this is the lowest percentage of women with no follow-up test reported (since this measure was first reported, in Report 30 covering the period July-December 2008).

Trends by DHB were complex, but reductions in the proportion of women with no follow-up test recorded were observed in 14 of the 21 DHBs, and were greatest in Bay of Plenty, Counties Manukau, Southland, Taranaki and Wairarapa. In a number of DHBs, this proportion is the lowest or equal lowest observed since reporting began on this measure (Auckland, Hawke's Bay, Mid Central, South Canterbury).

There were increases in some DHBs, although in some cases these followed an decrease in the previous period, and so may not be part of a trend (for example in Hutt Valley and West Coast). In some DHBs, however, this proportion has increased more than once so may reflect an increasing trend (for example in Northland, Otago, Whanganui and possibly Lakes).

In the current monitoring period, there were lower proportions of women for whom there was no follow-up test record among all ethnic groups. In Māori women the proportion of women with no follow-up tests recorded at 180 days decreased from 11.3% to 7.9%. For Pacific women the decrease was from 12.7% to 8.1% at 180 days. For Asian women, the decrease was from 10.5% to 8.5% at 180 days. For European/ Other women the decrease was from 5.3% to 5.0% at 180 days.

Comments

The proportion of women with a follow-up test of any kind provides useful additional information. While 16.8% 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 (5.8%). Consistent with previous monitoring reports, over half of the women with no follow-up histology recorded do have a record of some follow-up test. This provides reassurance that the majority of 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 an increase in women with a follow-up of any kind of test may also reflect more complete reporting on the NCSP Register for some tests. In particular, it may reflect more complete reporting of colposcopy visits on the Register over time, and in particular since the most recent reporting period (whereas it is expected that the completeness of the data relating to 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

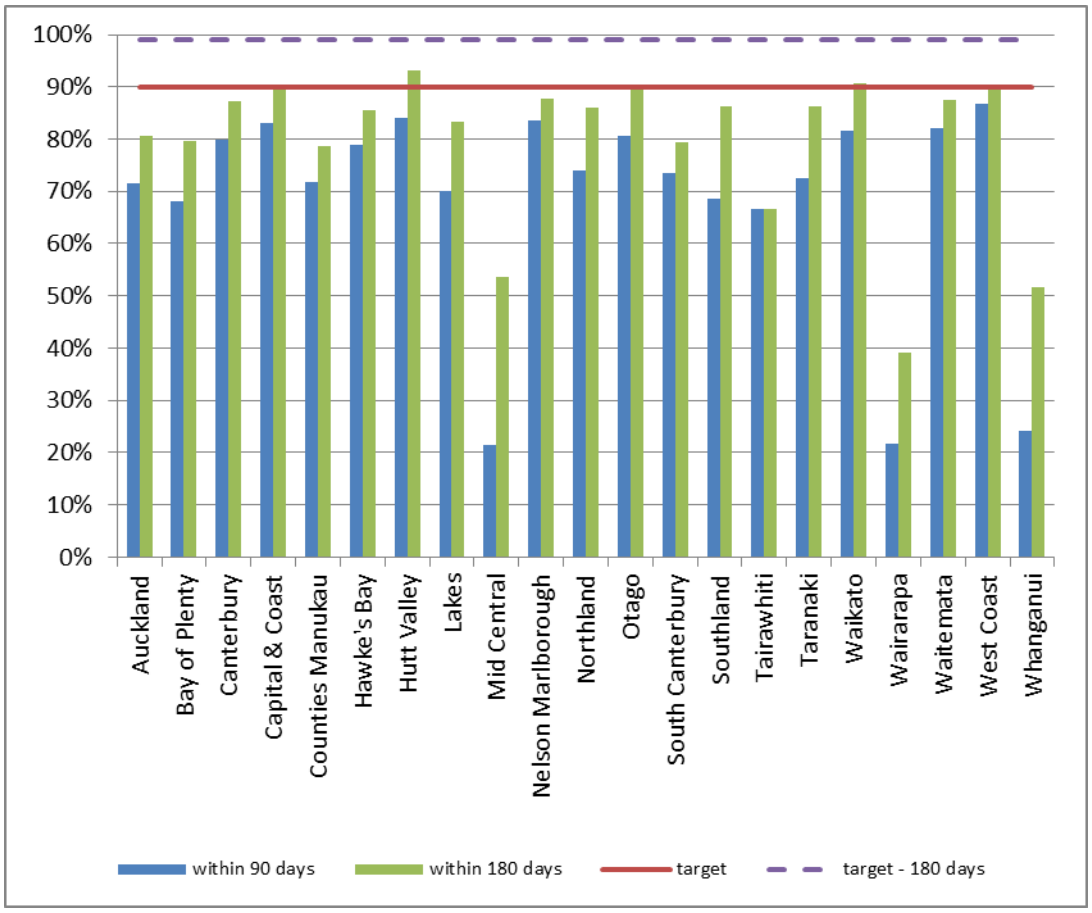
women who had these cytology results were. If all cytology results for a woman indicated that she was under specialist management, she was excluded. However, any woman with at least one high grade cytology result which did *not* indicate that she was under specialist management was included in the group 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 included 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

Risk is also related to the degree of abnormality including microinvasive/invasive carcinoma. Women who do not/ 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 30 - Proportion of women (ages 20-69 years) with a histology report within 90 days, and within 180 days of their high grade cytology report, by DHB



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

Table 18 - Women (ages 20-69 years) 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	11	61.1	11	47.8	22	66.7	138	76.7
Bay of Plenty	16	66.7	1	100.0	2	100.0	41	67.2
Canterbury	12	70.6	3	100.0	12	100.0	173	79.4
Capital & Coast	9	64.3	7	100.0	2	66.7	61	85.9
Counties Manukau	30	71.4	25	64.1	18	69.2	74	75.5
Hawke's Bay	25	86.2	0	0.0	1	100.0	45	76.3
Hutt Valley	8	66.7	1	100.0	3	100.0	25	89.3
Lakes	15	68.2	3	100.0	1	25.0	23	74.2
Mid Central	6	24.0	-	-	1	33.3	11	19.6
Nelson Marlborough	6	75.0	2	100.0	2	100.0	71	83.5
Northland	14	77.8	-	-	4	100.0	19	67.9
Otago	4	100.0	0	0.0	1	100.0	66	80.5
South Canterbury	2	100.0	-	-	-	-	23	71.9
Southland	6	60.0	-	-	1	50.0	28	71.8
Tairawhiti	2	100.0	1	100.0	-	-	7	58.3
Taranaki	9	88.9	-	-	1	100.0	28	68.3
Waikato	44	77.2	1	50.0	2	66.7	118	84.3
Wairarapa	0	0.0	0	0.0	-	-	5	26.3
Waitemata	22	75.9	9	69.2	21	75.0	179	84.8
West Coast	1	100.0	1	100.0	-	-	24	85.7
Whanganui	2	22.2	-	-	0	0.0	5	26.3
Total	**243**	**68.5**	**65**	**65.7**	**94**	**72.9**	**1,164**	**75.7**

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

Table 19 - Women (ages 20-69 years) 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	14	77.8	14	60.9	24	72.7	153	85.0
Bay of Plenty	19	79.2	1	100.0	2	100.0	48	78.7
Canterbury	14	82.4	3	100.0	12	100.0	189	86.7
Capital & Coast	10	71.4	7	100.0	3	100.0	66	93.0
Counties Manukau	32	76.2	29	74.4	20	76.9	80	81.6
Hawke's Bay	26	89.7	0	0.0	1	100.0	50	84.7
Hutt Valley	10	83.3	1	100.0	3	100.0	27	96.4
Lakes	19	86.4	3	100.0	3	75.0	25	80.6
Mid Central	14	56.0	-	-	1	33.3	30	53.6
Nelson Marlborough	7	87.5	2	100.0	2	100.0	74	87.1
Northland	16	88.9	-	-	4	100.0	23	82.1
Otago	4	100.0	1	100.0	1	100.0	73	89.0
South Canterbury	2	100.0	-	-	-	-	25	78.1
Southland	7	70.0	-	-	2	100.0	35	89.7
Tairawhiti	2	100.0	1	100.0	-	-	7	58.3
Taranaki	8	88.9	-	-	1	100.0	35	85.4
Waikato	51	89.5	2	100.0	2	66.7	128	91.4
Wairarapa	0	0.0	0	0.0	-	-	9	47.4
Waitemata	24	82.8	11	84.6	23	82.1	188	89.1
West Coast	1	100.0	1	100.0	-	-	58	89.3
Whanganui	3	33.3	-	-	0	0.0	1.2	63.2
Total	**283**	**79.7**	**76**	**76.8**	**104**	**80.6**	**1,302**	**84.7**

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

Table 20 - Women (ages 20-69 years) with a histology report within 90 days of a high grade cytology report, by DHB and age

	20-24		25-29		30-34		35-39		40-44		45-49		50-54		55-59		60-64		65-69		Total
DHB	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	
Auckland	35	76.1	41	78.8	27	73.0	31	86.1	17	65.4	11	64.7	9	56.3	4	30.8	4	50.0	3	100.0	182
Bay of Plenty	13	86.7	18	72.0	10	71.4	6	60.0	7	70.0	1	100.0	3	50.0	1	50.0	1	20.0	-	-	60
Canterbury	60	83.3	37	84.1	29	80.6	24	88.9	18	81.8	14	82.4	7	63.6	6	60.0	5	62.5	0	0.0	200
Capital & Coast	16	80.0	22	95.7	16	72.7	7	77.8	3	75.0	4	66.7	2	100.0	4	100.0	4	100.0	1	100.0	79
Counties Manukau	33	64.7	25	59.5	24	75.0	16	76.2	16	80.0	14	93.3	10	83.3	6	85.7	1	33.3	2	100.0	147
Hawke's Bay	17	89.5	11	68.8	5	55.6	15	100.0	12	92.3	7	87.5	2	66.7	0	0.0	2	50.0	0	0.0	71
Hutt Valley	9	90.0	6	66.7	8	88.9	1	50.0	5	100.0	2	100.0	2	66.7	1	100.0	-	-	3	100.0	37
Lakes	8	66.7	14	73.7	9	75.0	4	66.7	3	100.0	1	50.0	1	50.0	2	50.0	-	-	-	-	42
Mid Central	3	13.0	4	17.4	4	28.6	4	44.4	2	28.6	1	20.0	0	0.0	0	0.0	-	-	0	0.0	18
Nelson Marlborough	18	66.7	17	81.0	12	100.0	11	100.0	4	100.0	11	100.0	4	80.0	3	75.0	1	50.0	-	-	81
Northland	5	62.5	7	70.0	9	100.0	2	40.0	3	100.0	5	100.0	2	100.0	2	33.3	2	100.0	-	-	37
Otago	22	73.3	13	76.5	8	100.0	4	50.0	12	92.3	4	100.0	5	100.0	1	100.0	1	100.0	1	100.0	71
South Canterbury	10	90.9	6	75.0	2	66.7	2	100.0	2	66.7	1	100.0	0	0.0	0	0.0	1	50.0	1	100.0	25
Southland	11	73.3	10	71.4	6	85.7	2	100.0	2	50.0	0	0.0	2	100.0	0	0.0	2	50.0	0	0.0	35
Tairawhiti	4	66.7	2	50.0	1	100.0	1	100.0	1	50.0	-	-	-	-	1	100.0	-	-	-	-	10
Taranaki	10	83.3	10	76.9	6	66.7	5	100.0	2	50.0	2	66.7	1	50.0	1	100.0	0	0.0	-	-	37
Waikato	39	79.6	30	85.7	29	90.6	20	83.3	14	87.5	7	87.5	9	69.2	5	71.4	8	82.7	4	54.7	165
Wairarapa	2	28.6	0	0.0	1	25.0	0	0.0	-	-	1	33.3	0	0.0	1	100.0	-	-	-	-	5
Waitemata	46	78.0	54	84.4	42	97.7	26	76.5	24	82.8	18	90.0	11	73.3	7	70.0	3	60.0	0	0.0	231
West Coast	6	75.0	6	75.0	2	100.0	5	100.0	3	100.0	-	-	2	100.0	-	-	1	100.0	1	100.0	26
Whanganui	1	14.3	0	0.0	2	66.7	1	50.0	1	20.0	0	0.0	-	-	1	33.3	1	100.0	-	-	7
Total	**368**	**72.6**	**333**	**72.5**	**252**	**79.2**	**187**	**79.6**	**151**	**77.0**	**104**	**79.4**	**72**	**68.6**	**46**	**57.5**	**37**	**58.7**	**16**	**59.3**	**1,566**

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

Table 21 - Women (ages 20-69 years) with a histology report within 180 days of a high grade cytology report, by DHB and age

	20-24		25-29		30-34		35-39		40-44		45-49		50-54		55-59		60-64		65-69		Total
DHB	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	
Auckland	40	87.0	44	84.6	30	81.1	33	91.7	19	73.1	14	82.4	10	62.5	8	61.5	4	50.0	3	100.0	205
Bay of Plenty	15	100.0	22	88.0	12	85.7	7	70.0	7	70.0	1	100.0	3	50.0	1	50.0	2	40.0	-	-	70
Canterbury	66	91.7	38	86.4	34	94.4	25	92.6	18	81.8	16	94.1	8	72.7	6	60.0	6	75.0	1	83.3	218
Capital & Coast	18	90.0	23	100.0	18	81.8	8	88.9	4	100.0	4	66.7	2	100.0	4	100.0	4	100.0	1	100.0	86
Counties Manukau	36	70.6	29	69.0	26	81.3	16	76.2	18	90.0	15	100.0	11	91.7	7	100.0	1	33.3	2	100.0	161
Hawke's Bay	18	94.7	13	81.3	7	77.8	15	100.0	12	92.3	7	87.5	3	100.0	0	0.0	2	50.0	0	0.0	77
Hutt Valley	10	100.0	8	88.9	8	88.9	1	50.0	5	100.0	2	100.0	3	100.0	1	100.0	-	-	3	100.0	41
Lakes	9	75.0	17	89.5	11	91.7	5	83.3	3	100.0	1	50.0	1	50.0	3	75.0	-	-	-	-	50
Mid Central	8	34.8	9	39.1	12	85.7	7	77.8	5	71.4	3	60.0	0	0.0	1	100.0	-	-	0	0.0	45
Nelson Marlborough	20	74.1	19	90.5	12	100.0	11	100.0	4	100.0	11	100.0	4	80.0	3	75.0	1	50.0	-	-	85
Northland	5	62.5	9	90.0	9	100.0	3	60.0	3	100.0	5	100.0	2	100.0	5	83.3	2	100.0	-	-	43
Otago	29	96.7	14	82.4	8	100.0	4	50.0	12	92.3	4	100.0	5	100.0	1	100.0	1	100.0	1	100.0	79
South Canterbury	10	90.9	7	87.5	2	66.7	2	100.0	2	66.7	1	100.0	0	0.0	1	100.0	1	50.0	1	100.0	27
Southland	14	93.3	12	85.7	6	85.7	2	100.0	3	75.0	0	0.0	2	100.0	1	100.0	4	100.0	0	0.0	44
Tairawhiti	4	66.7	2	50.0	1	100.0	1	100.0	1	50.0	-	-	-	-	1	100.0	-	-	-	-	10
Taranaki	12	100.0	12	92.3	7	77.8	5	100.0	3	75.0	2	66.7	1	50.0	1	100.0	1	50.0	-	-	44
Waikato	46	93.9	31	88.6	31	96.9	23	95.8	14	87.5	7	87.5	9	69.2	7	100.0	9	81.8	6	85.7	183
Wairarapa	2	28.6	1	16.7	3	75.0	0	0.0	-	-	2	66.7	0	0.0	1	100.0	-	-	-	-	9
Waitemata	52	88.1	55	85.9	42	97.7	30	88.2	25	86.2	19	95.0	13	86.7	7	70.0	3	60.0	0	0.0	246
West Coast	6	75.0	7	87.5	2	100.0	5	100.0	3	100.0	-	-	2	100.0	-	-	1	100.0	1	100.0	27
Whanganui	3	42.9	4	66.7	2	66.7	2	100.0	2	40.0	0	0.0	-	-	1	33.3	1	100.0	-	-	15
Total	**423**	**83.4**	**376**	**81.9**	**283**	**89.0**	**205**	**87.2**	**163**	**83.2**	**114**	**87.0**	**79**	**75.2**	**60**	**75.0**	**43**	**68.3**	**19**	**70.4**	**1,765**

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

Figure 31 – Proportion of women (ages 20-69 years) without any follow-up test within 180 days of a high grade cytology report, by DHB

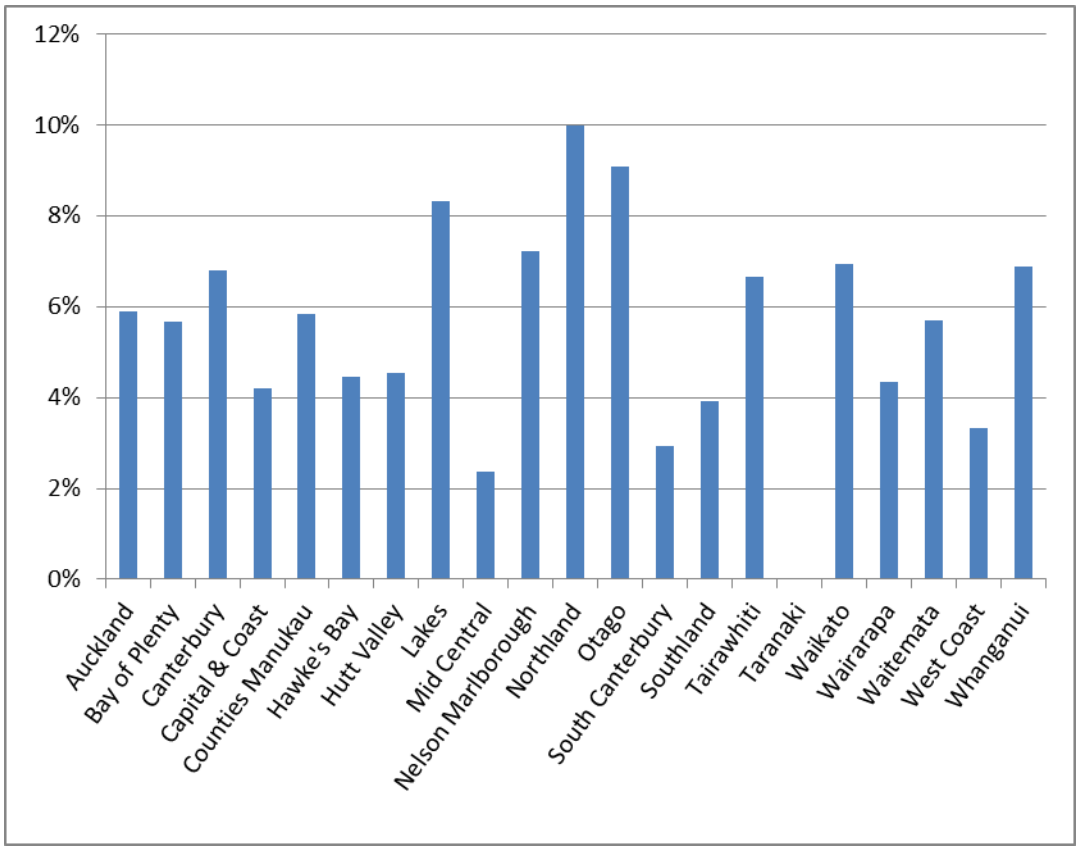
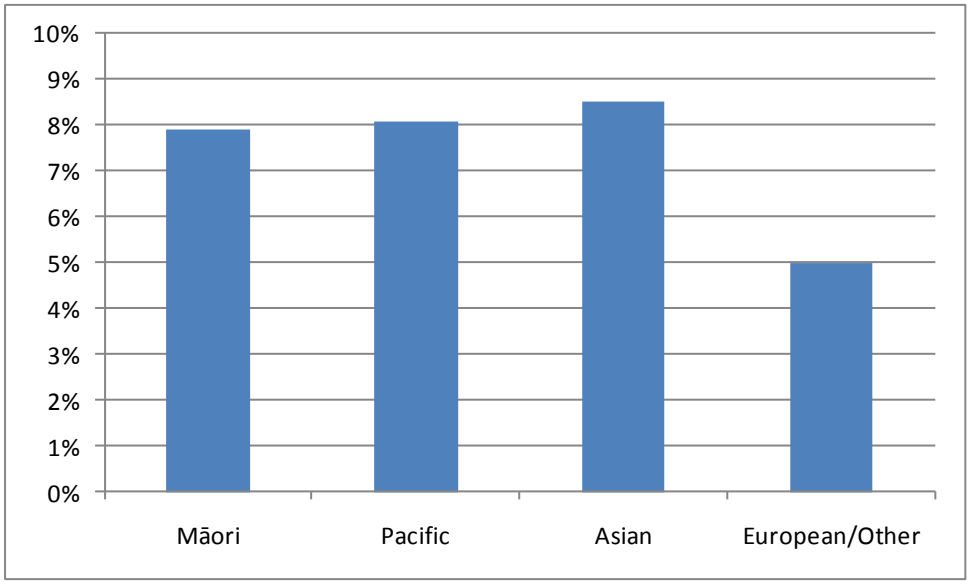


Figure 32 - Proportion of women (ages 20-69 years) without any follow-up test within 180 days of a high grade cytology report, by ethnicity



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, 7.4, 7.6, 7.7) are still in development. It is envisioned that they will be included in future moniroing reports.

The data used for the Colpsocopy and HL7 chapters was extracted from the NCSP Register on 14 September 2012 and therefore differs to that used for the remainder of this report.
This decision was made because of comments made about the colposcopy data used in drafting this report when the National Screening Unit (NSU) consulted DHB colposcopists about the indicators in July 2012. An exception is the data used for Indicator 7.3 (Adequacy of documenting colposcopy assessment), due to irregularities noted in the recording of colposcopy data in the September 2012 download. Indicator 7.3 used data downloaded from the NCSP Register on 5 March 2012 to assess adequacy of documenting colposcopy (although the total number of colposcopies performed came from the September 2012 data).

These comments led the NSU to consult DHB colposcopy services on the draft colposcopy chapters of Monitoring Reports 35 and 36 on 6 August 2012. DHBs were invited to verify the aggregate data in the chapters of the draft reports or provide data to correct and update the chapters by early September.

On 14 September 2012 the NCSP Register extracted all colposcopy referral, visit and 'did not attend' data for 2011 (the period covered by Monitoring Reports 35 and 36) to compare with data received from DHBs. From then to late October 2012, the NSU offered to provide DHBs with their colposcopy data on the Register to help them identify what data was missing.
It was soon identified that the aggregate data in the chapters of first draft Monitoring Reports 35 and 36 inadvertently included private colposcopy data where reporting on the performance of a DHB's colposcopy services. Separating private colposcopy data resulted in 16 DHB colposcopy services having referrals, colposcopies and treatment data within 10% of the data extracted from the NCSP Register.

This led the NSU to advise the University of NSW to use the data extracted for Monitoring Report 37 to recalculate the colposcopy chapter of Reports 35 and 36 (with the exception noted earlier of Indicator 7.3).

The other five DHB colposcopy services were asked to match their data against that which the NSU gave them from the Register and to supply that to the Register. However, this report does not reflect their efforts to update the Register.

Given these factors the NSU recommends caution in interpreting the colposcopy indicators in this report.

Indicator 7.1 – Timeliness of colposcopic assessment – high grade cytology

Definition

This indicator measures performance against Standard 602.

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.

This indicator is still under development.

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 earliest high grade cytology sample 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); and for women with other high grade cytology results (TBS codes ASH, HS1, AG1-5, AIS), since the targets differ for these two groups.

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

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

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 are multiple referrals for the same woman which occurred after the cytology specimen, the most recently accepted referral within the timeframe was used.

Since cytology samples were collected in the previous six months, this allows a period of at least six months (and up to 12 months) follow-up 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.
Current Situation	In the period 1 July – 31 December 2010, there were 2,171 women with high grade cytology results who were not already under specialist management. 70 women had results indicating suspicion of invasive disease, and the remaining 2,101 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. The current report also describes the number of women with a colposcopy recorded on the NCSP Register by the end of the monitoring period (a period of six to twelve months after the high grade cytology sample was collected). Referral data which was derived from data extracted in September 2012 by the Ministry of Health, and finalised in consultation with DHBs, are included in Table 54 and Table 55. ***Timeliness – high grade cytology indicating suspicion of invasive disease*** In total, 33 (47%) of the 70 women with high grade cytology indicating suspicion of invasive disease relating to a sample collected in July-December 2010 have a record of a colposcopy visit by 30 June 2011 (representing a follow-up period of at least six and up to 12 months after their high grade cytology). Among these women, the median period between the cytology report date and colposcopy visit date was 11 days overall (Table 22). This was not analysed further by DHB, due to the small numbers of women within each DHBs with these results. ***Timeliness – high grade cytology (no suspicion of invasive disease)*** In 15 of the 2,101 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 2,086 women, colposcopy records were found for 1,786 (86%) women. Among these 1,786 women, the median period between the cytology report date and colposcopy visit date was 35 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 21 days (Wairarapa) to 75 days (Tairawhiti)(Table 23). There was less variation by ethnicity, with the median waiting times ranging from 34 days (European/ Other women) to 43 days (Pacific women) (Table 24). In total, 1,801 (86%) of the 2,101 women with high grade cytology (but no suspicion of invasive disease) relating to a sample collected in July-December 2010 have a record of a colposcopy visit prior to 30 June 2011 (representing a follow-up period of at least six and up to 12 months after their high grade cytology).
Trends	This indicator has not been included in recent monitoring reports, therefore trend analysis could not be performed.
Comments	This is the first time this indicator has been reported on in recent monitoring reports, since colposcopy visit data has been available on the NCSP Register, and the indicator is still under development. Since this indicator relies on colposcopy data in the NCSP Register, there is the possibility that incomplete reporting of colposcopy visits has led to an underestimate of the number of women with follow-up colposcopy visits. This indicator could not provide information on the timeliness of colposcopic assessment with respect to the targets and definition, due to problems with referral data. For timeliness to be measured, 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 number of working days between referral and colposcopy attendence. It has not been possible to obtain reliable data on referrals for the current monitoring period. Referral data was missing for a substantial proportion of women, including those where a colposcopy visit was recorded. In lieu of this, the time between the cytology report date and the first colposcopy visit was calculated, however this period of time is not directly comparable to the targets (because the target relates to the time between the referral and the colposcopy visit). A small number of women had cytology results which suggested that the dates in the cytology test record on 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). The current report also describes the number of women with a colposcopy recorded on the Register by the end of the monitoring period (a period of six to twelve months after the high grade cytology sample was collected). Additional information about follow-up tests performed in women with high grade cytology is included in Indicator 6. A similar group of women are included in both this measure and Indicator 6 (Indicator 6 includes only women aged 20-69 years, whereas this indicator includes women of any age). In Indicator 6, it was found that 83.2% of women had histology within

180 days, and 94.2% had a follow-up test of some sort. Here, colposcopy records indicate that 83.8% women had attended colposcopy prior to 30 June 2011, a period of at least 181 days and up to one year after their high grade cytology sample. This suggests that colposcopy data may be incomplete, as there was virtually no difference in the proportion of women with histology within 180 days (83.2%) and the proportion who had colposcopy in a period of at least 181 days after their high grade cytology sample (83.8%). 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). 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). While in this report Indicator 6 is restricted to women aged 20-69 years, this will not be the case in future reports, and the two groups will be exactly the same.

Table 22 – 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	10	6	15
Pacific	6	2	12.5
Asian	5	4	6.5
European/Other	49	21	11
Total	**70**	**33**	**11**

** Up to 30 June 2011 † Days between cytology report date and colposcopy date, among women who attended by the end of the monitoring period.*

Table 23 - Waiting time between high grade cytology report (no suspicion of invasive disease) and colposcopy visit date, by DHB

DHB	HG women	Women seen at colposcopy*	Median waiting time†
	N	N	(days)
Auckland	169	138	40.0
Bay of Plenty	76	67	45.0
Canterbury	229	206	32.0
Capital & Coast	64	60	33.0
Counties Manukau	180	163	40.0
Hawke's Bay	81	71	43.0
Hutt Valley	38	34	34.0
Lakes	54	48	40.5
Mid Central	77	69	30.0
Nelson Marlborough	76	67	51.0
Northland	45	43	25.0
Otago	84	73	56.0
South Canterbury	29	28	41.0
Southland	43	40	39.5
Tairawhiti	15	5	75.0
Taranaki	46	41	29.0
Waikato	145	122	38.5
Wairarapa	22	20	21.0
Waitemata	214	190	32.0
West Coast	30	26	33.0
Whanganui	26	22	28.5
Private practice	*358*	*253*	*23.0*
Total	**2,101**	**1,786**	**35**

** Up to 30 June 2011. Excludes 15 women whose original cytology report date was no longer available on the NCSP Register. † Days between cytology report date and colposcopy date, among women who attended by the end of the monitoring period.*

Table 24 – Waiting time between high grade cytology report (no suspicion of invasive disease) and colposcopy visit date, by ethnicity

Ethnicity	HG women	Women seen at colposcopy*	Median waiting time†
	N	N	(days)
Māori	360	309	39
Pacific	99	82	43
Asian	131	108	34.5
European/Other	1,511	1,287	34
Total	**2,101**	**1,786**	**35**

** Up to 30 June 2011 † Days between cytology report date and colposcopy date.*

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	Total numbers of colposcopies were re-extracted from the NCSP Register in September 2012 by the Ministry of Health, as part of a process of

consulatation and verification with DHB colposcopy clinics. In this report the number of colposcopies recorded as occurring within each DHB uses results of this analysis by the Ministry of Health. Based on that analysis, there were 13,314 colposcopy visits within the current monitoring period recorded on the NCSP Register (as of September 2012). Completion of required fields in the colposcopy report form was assessed based on an analysis of the 12,476 colposcopy visits which were recorded on the NCSP Register as of 5 March 2012.

Nationally, the visibility of the squamocolumnar junction was documented for 97.9% of visits; the presence or absence of a lesion was documented for all visits; an opinion regarding the lesion grade was documented for 93.2% of visits where the presence of a lesion could not be ruled out; and all of these items (where relevant) were documented for 94.2% of visits (Table 56). The colposcopic appearance was reported to be abnormal in 53.0% of colpscopies, and inconclusive in 4.2% of colposcopies (Table 57).

Documentation varied by DHB, as shown in Figure 33 and Table 56. For visibility of the squamocolumnar junction, it varied from 95.7% (Taranaki) to 100.0% (Whanganui). The presence or absence of a lesion was documented in all colposcopiy reports in every DHB. Recording of an opinion regarding the abnormality grade (which was only assessed here if colposcopic appearance was recorded as abnormal or inconclusive), ranged from 78.5% (Taranaki) to 100.0% (Whanganui). Overall completion rates ranged from 87.2% (Taranaki) to 100.0% (Whanganui) (Table 56). Abnormal colposcopic appearance ranged from 37% of colposcopies (Taranaki) to 69% of colposcopies (Hutt Valley). Reports of inconclusive colposcopic appearance ranged from none (Whanganui) to 10.3% of colposcopies (Taranaki)(Table 57).

Trends

This indicator has not been included in recent monitoring reports, therefore trend analysis could not be performed.

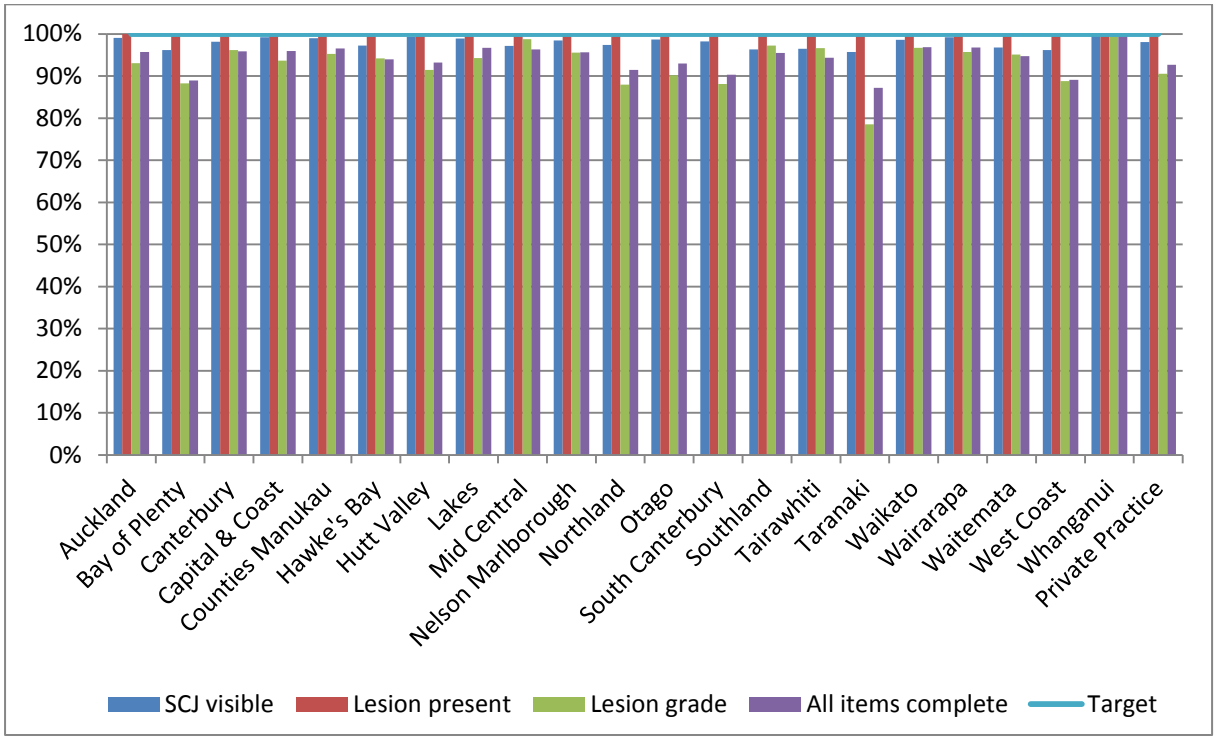
Comments

The total numbers of colposcopies recorded as occurring within each DHB and information about the colposcopic appearance within DHB clinics uses results of an analysis by the Ministry of Health, performed as part of a process of consulatation and verification with DHB colposcopy clinics. Data for that analysis was extracted in September 2012. However due to issues relating to the loss of the NCSP Register data warehouse around this time, it was not possible to re-analyse this updated data to assess completion of colposcopy report fields required by the standard. Assessment of colposcopy report form completion was based on data extracted from the NCSP Register on 5 March 2012. Results for this period should therefore be interpreted with caution.

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.

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 33 – Completion of colposcopic assessment fields, by DHB



Indicator 7.4 – Timeliness of treatment

Definition	This indicator measures performance against Standard 605. It is still under development.
Target	90% or more of women with HSIL are treated within 8 weeks of histological confirmation of CIN2+

Indicator 7.5 – Timely discharging of women after treatment

Definition

This indicator measures performance against Standard 608.

It reports on the proportion of women treated 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 following treatment within 6 months
- are discharged appropriately within 12 months of 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.

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

Records for each woman who was treated for CIN2/3 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 in the period from at least six months and up to 12 months after the treatment visit 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.

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 in 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 1,802 women treated for CIN2/3 in the six-month period from 1 January-30 June 2010. Treatment records for 1,146 of these women found on the NCSP Register. These women were followed up for twelve months from the date of their treatment visit in this analysis. ***Follow-up post treatment*** Tthere were 649 women (56.6% of the 1,146 for whom treatment records were found) with a follow-up colposcopy, and 614 women (53.6%) 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 (Table 58, Table 59). 218 women (19.0%) had already been discharged prior to six months after their treatment visit. Figure 34 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 59). The number of women with colposcopy only and no record of a cytology sample in the timeframe varied from zero (Auckland, Canterbury, Counties Manukau, Hutt Valley, Lakes, Nelson Marlborough, South Canterbury, Southland, Tairawhiti, Taranaki, Waikato, Wairarapa, Waitemata, Whanganui) to nine (Bay of Plenty). The percentage of women treated for CIN 2/3 with a record of colposcopy and cytology within the period at least six but no more than 12 months post-treatment (53.6%) is below the target value of 90%. One DHB (South Canterbury) 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 34, Table 58, Table 59). ***Women discharged appropriately*** In total, 519 women (45.3% of those with treatment records) were eligible to be discharged by 12 months after their treatment visit, and 407 of these women (78.4%) were discharged within 12 months of treatment (Table 58). Figure 35 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 Auckland, Lakes, South Canterbury, Tairawhiti and Taranaki; no women were eligible in Nelson Marlborough). Eleven DHBs

	met the target of discharging 90%of women where appropriate within 12 months (Auckland, Bay of Plenty, Capital & Coast, Hawke's Bay, Hutt Valley, Lakes, Northland, South Canterbury, Waikato, West Coast and Whanganui). 218 (19.0%) of women treated for CIN2/3 were discharged less than six months after their treatment visit.
Trends	This indicator has not been included in recent monitoring reports, therefore trend analysis could not be performed.
Comments	This is the first time this indicator has been reported on in recent monitoring reports, since colposcopy visit data has been available on the NCSP Register. Since it relies on colposcopy data in the NCSP Register, there is the possibility that incomplete reporting of colposcopy visits or treatment visits has led to an underestimate of the number of women with treatments, follow-up colposcopy visits and the number discharged in a given time period. 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 any follow-up visits which women attend, regardless of the DHB in which they may occur. Discrepancies were identified in the number of women treated in this time period. Data from the NCSP Register that the Ministry of Health consulted DHB Colposcopy services on indicate that 1,802 women were treated in the six-month period from 1 January-30 June 2010. This data was for all colposcopy visits recorded on the NCSP Register as at October 2012. However, this indicator is about treatment of CIN2/3 and treatment records on the NCSP Register found that only 1,146 of these women were treated for CIN2/3. Therefore, these results should be interpreted with caution.

Figure 34 – Percentage of women treated with colposcopy, and both colposcopy and cytology, in the period from six to 12 months after treatment

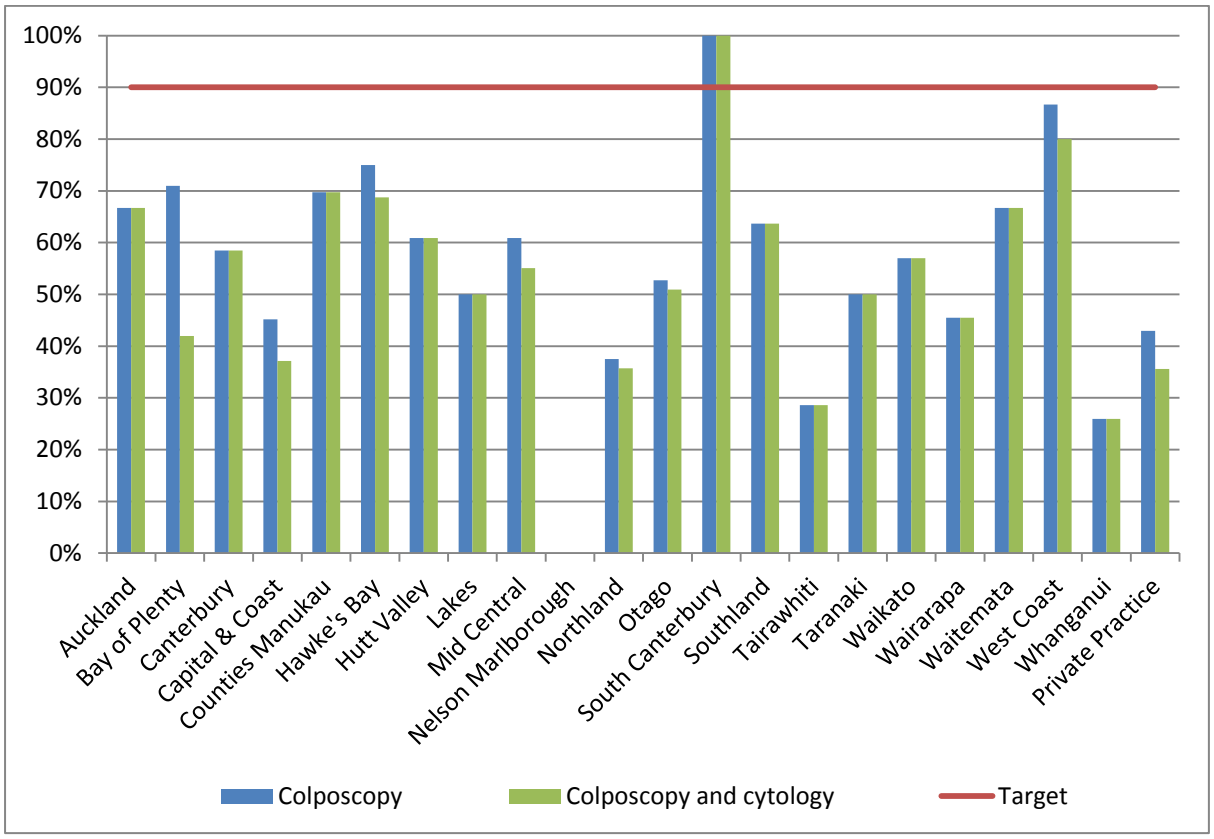
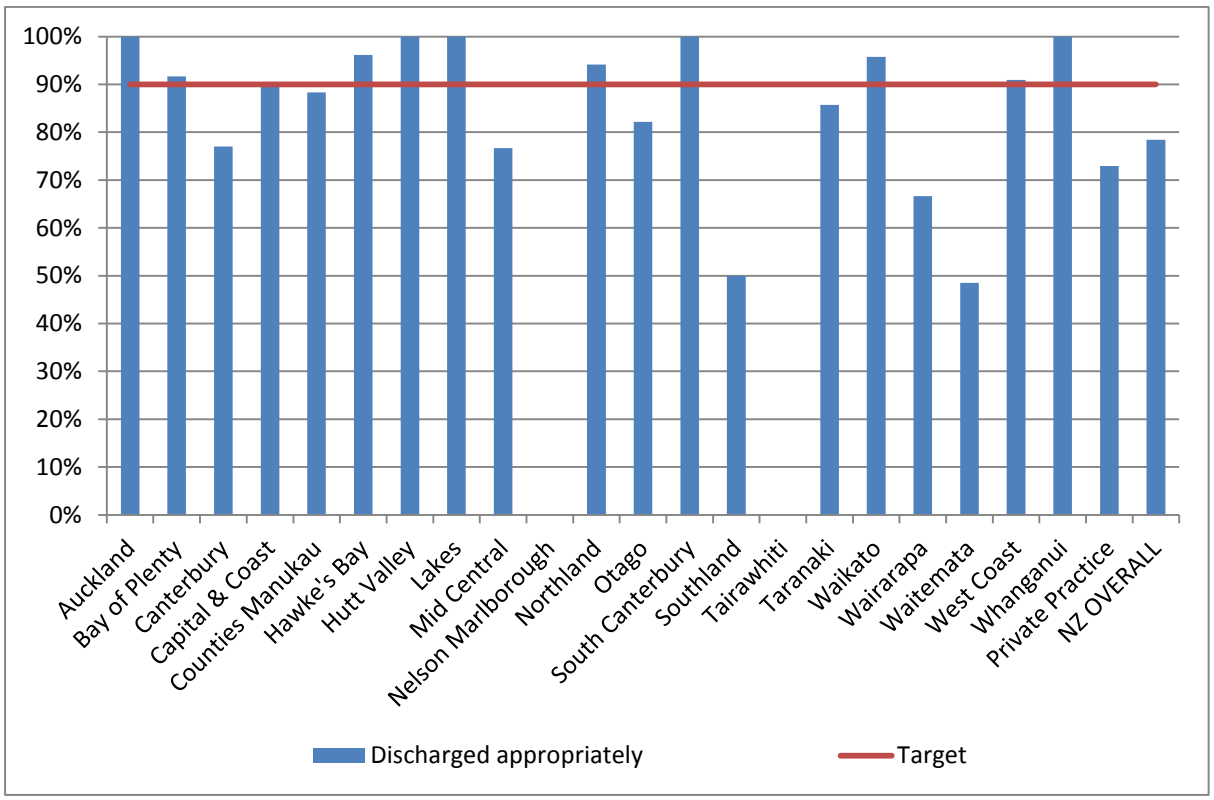


Figure 35 – Percentage of women discharged appropriately within 12 months of treatment



No women were eligible for discharge in Nelson Marlborough. 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

Note that the data used for HPV test volumes (Indicator 8.2) was extracted in September 2012 and so is not directly comparable with Indicators 1-6 or Indicator 8.1.

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.

The following measures are also reported on:

- Invalid HPV tests, as a proportion of all HPV triage tests, by HPV test technology
- Number of days between the collection dates recorded for the cytology sample and the HPV test sample, by laboratory

In some cases, the laboratory performing the cytology differs from that performing the HPV triage 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 triage 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

There were 1,133 women aged less than 30 years and 1,695 women aged 30

Situation	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 2,671 women aged less than 30 years and 1,636 women aged 30 years or more. Among these women, 94.2% of women aged 30 years or more with an ASC-US cytology result, and 92.1% of women aged 30 years or more with an LSIL cytology result are recorded as having a subsequent HPV triage test (Table 60, Table 61). These proportions ranged 26.2% (LabPLUS) to 99.6% (Diagnostic Medlab Ltd) for ASC-US cytology results and from 38.9% (LabPLUS) to 100.0% (Diagnostic Medlab Ltd) for LSIL cytology results (Figure 36, 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 HPV triage are substantially lower. Subsequent HPV triage tests are recorded in the NCSP Register for 0.9% of women aged less than 30 years with ASC-US results, and 1.0% of women aged less than 30 years with LSIL results. These proportions ranged from 0% (LabPLUS, Medlab Central, Medlab South Christchurch) to 6.0% (Canterbury Health Laboratories) for women with ASC-US results, and from 0% (Canterbury Health Laboratories , LabPLUS) to 2.4% (Southern Community Labs) for women with LSIL results (Figure 37, Table 60, Table 61). The proportion of women aged 30 years or more whose HPV test results were invalid was very small (Figure 38, Table 62, Table 63). It was less than 2% in all laboratories (maximum: 1.6% for LSIL at Aotea Pathology Ltd; Table 63). The proportion was also very small for all HPV test technologies. It was zero for Abbott RealTome, and very small for Roche Amplicor (0.1%) and Roche cobas (0.3%)(Table 64). No HPV triage tests relating to the current monitoring period were performed using Amplicor PCR, Digene HC2 or Roche Linear Array (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 29% for women with ASC-US results, and 60% for women with LSIL results. These proportions varied by laboratory from 11% (Canterbury Health Laboratories) to 54% (Southern Community Labs) for women with ASC-US cytology (Figure 39), and from 50% (Medlab South Christchurch) to 75% (Aotea Pathology Ltd) for women with LSIL cytology (Figure 40, Table 25, Table 26). The proportion of women whose HPV triage test was positive also varied by age. HPV positivity generally decreased with increasing age (Figure 41, Table 25, Table 26). HPV positivity among women aged 50 years or more with ASCUS cytology appears higher than in some younger women, although these results are based on smaller numbers of women (Table 25).
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 triage test has increased since the previous report, from 91.7% to 94.2% for women with ASC-US results, and from 88.0% to 92.1% for women with LSIL

results. The proportion of women aged less than 30 years with a triage test is similar for ASCUS, but has increased somewhat for LSIL (from 0.5% to 1.0%).

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 somewhat higher than that reported in the previous monitoring report. Among women with ASC-US results there was an increase from 27% in the previous report to 29% in the current report, and for LSIL an increase from 57% in the previous report to 60% in the current report.

Comments

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 (but not in previous monitoring reports), 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, most laboratories used only one HPV test type during this period - either Abbott RealTime (Canterbury Health Laboratories, Southern Community Labs) or cobas (Aotea, LabPLUS, Medlab Central Ltd, Medlab South Christchurch and Pathlab). The exception was Diagnostic Medlab Ltd, which used Roche Amplicor until May 2011, and then switched to using cobas. Based on information from this laboratory, we estimated the number of Roche Amplicor and cobas tests based on assumption that samples received at the laboratory up until May 15th were assumed to have been performed using Roche Amplicor, and tests received from May 16th onwards were assumed to be performed using cobas. Since the tests considered here are HPV triage tests, they would not have been performed on the date the (LBC) sample was received at the laboratory, since these tests are prompted by a low grade cytology result (however as results for Indicator 5.5 demonstrate, in the overwhelming majority of cases at Diagnostic Medlab Ltd, these cytology results would have been available within seven working days). These estimates are further complicated by the fact that Medlab South Christchurch sent samples requiring HPV testing to Diagnostic Medlab during this period, as a result of the Christchurch earthquake in February 2011 (samples were affected between February 22nd and August 2011). As a result, some HPV tests recorded as being performed at Medlab South Christchurch were also recoded as Roche Amplicor (specifically, those received between February 22nd and May 15th). Note however that this aspect of HPV testing at Medlab South Christchurch does not affect other results, since all measures other than test validity are assigned based on the laboratory performing the cytology. In summary, therefore, these estimates are only approximate, but the impact on the results is expected to be small. During the next reporting period, this recoding can be more straightforward, since all laboratories used only one HPV test technology during the latter half of 2011 (including in practice those tests recorded as occurring at Medlab South Christchurch, since both this lab and Diagnostic Medlab Ltd were using cobas throughout the latter half of 2011).

Figure 36 – Proportion of women (aged 30 years or more) with low grade cytology who have a subsequent HPV triage test, by laboratory and cytology result

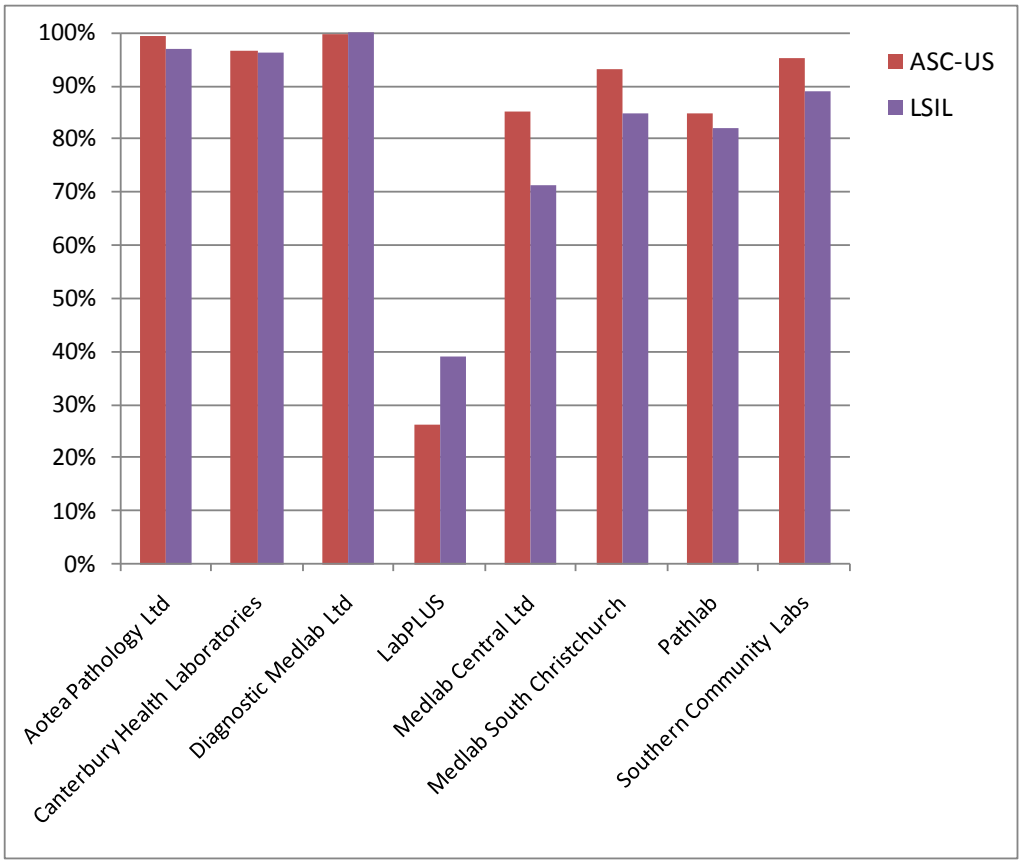


Figure 37 – Proportion of women (aged less than 30 years) with low grade cytology who have a subsequent HPV triage test, by laboratory and cytology result

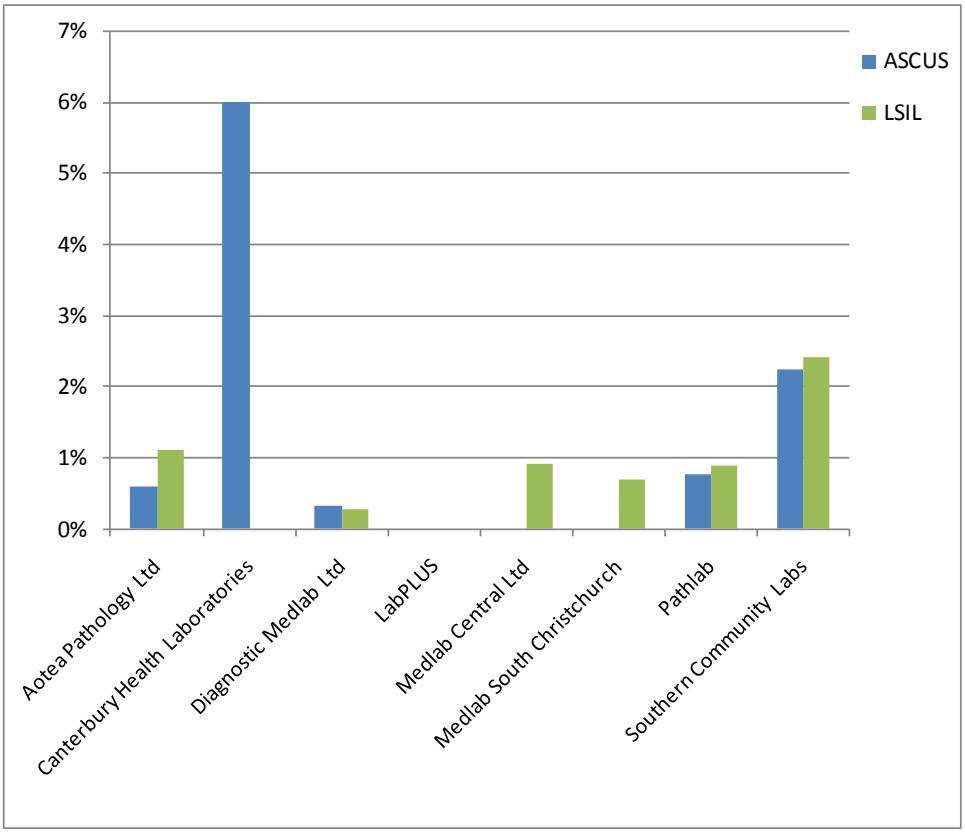


Figure 38 - Proportion of women (aged 30 years or more) with low grade cytology whose subsequent HPV triage test result is invalid, by laboratory and cytology result

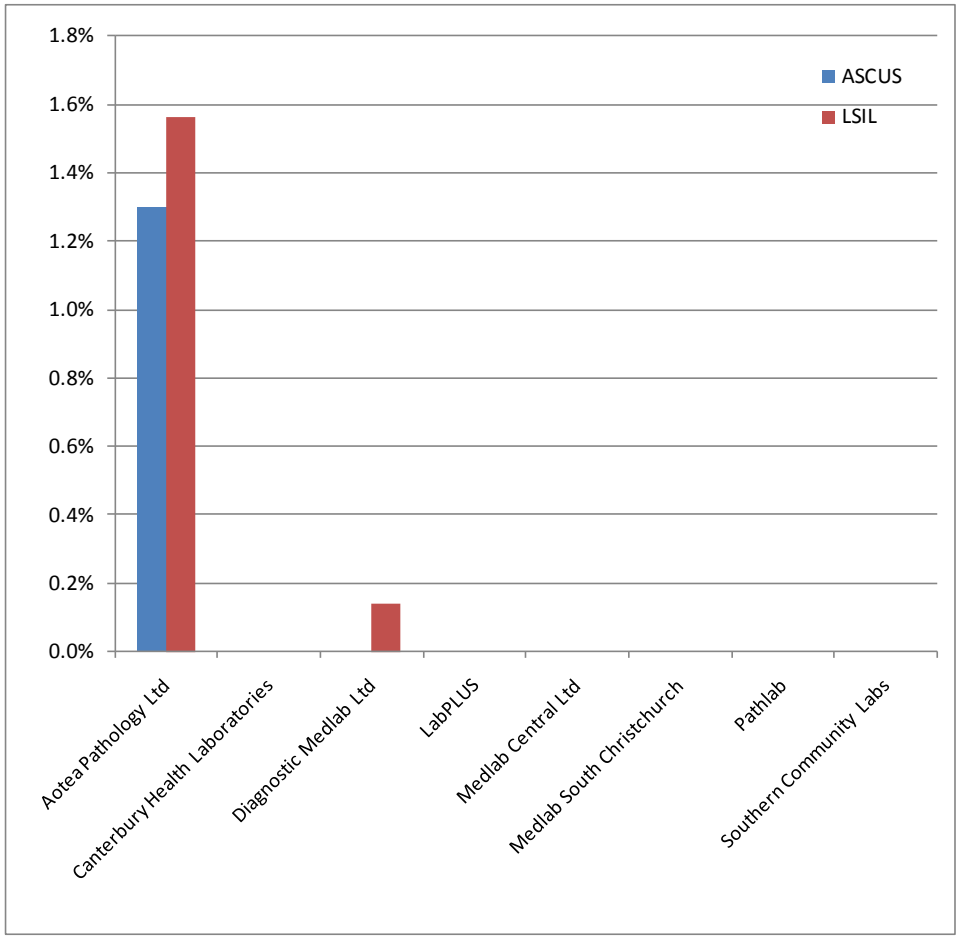


Figure 39 - Proportion of HPV triage tests which are positive following ASC-US cytology (women aged 30 years or more) , by cytology laboratory

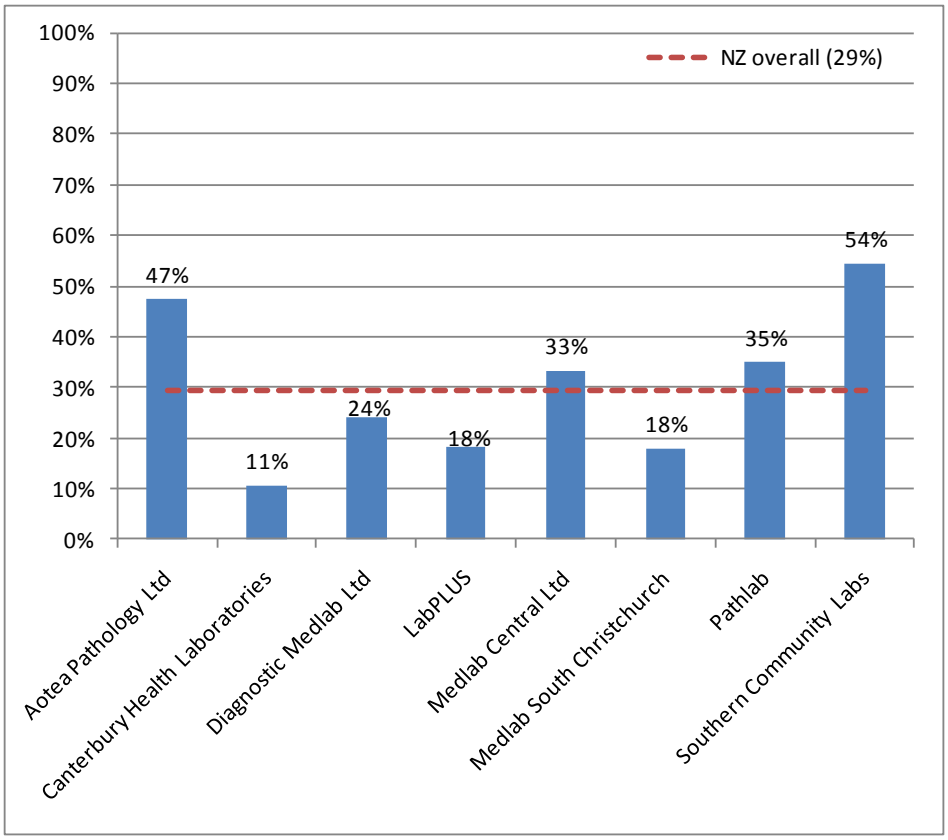


Figure 40 - Proportion of HPV triage tests which are positive following LSIL cytology (women aged 30 years or more) , by cytology laboratory

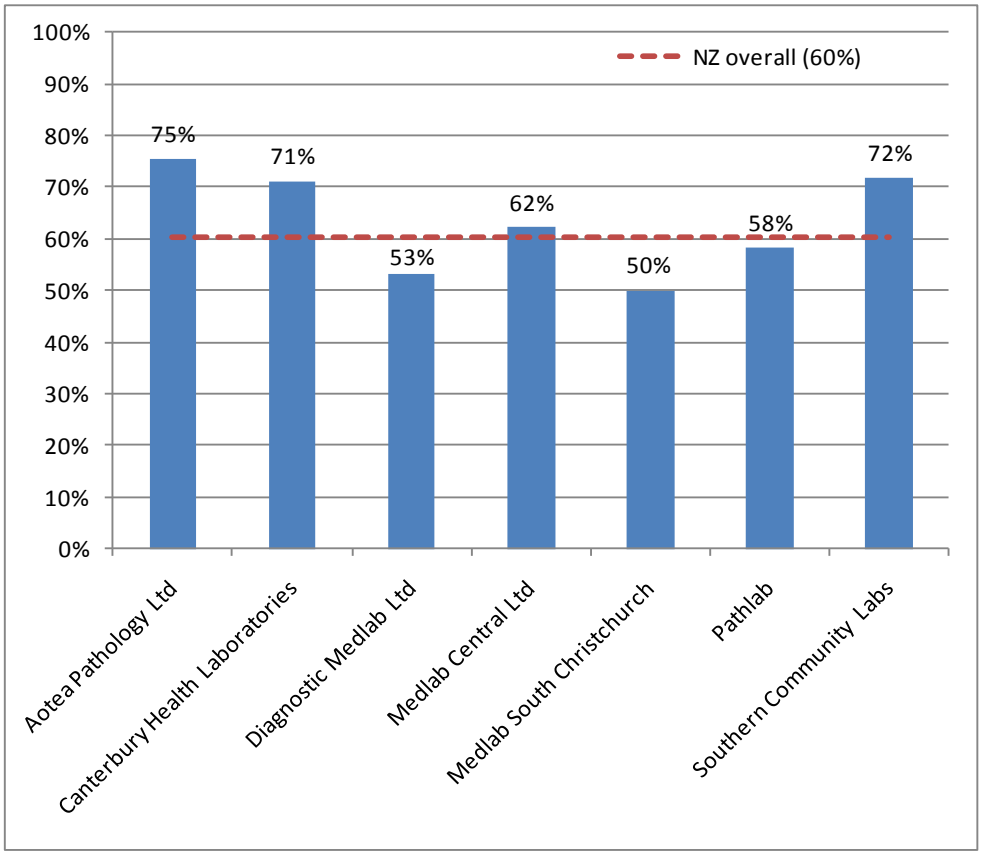
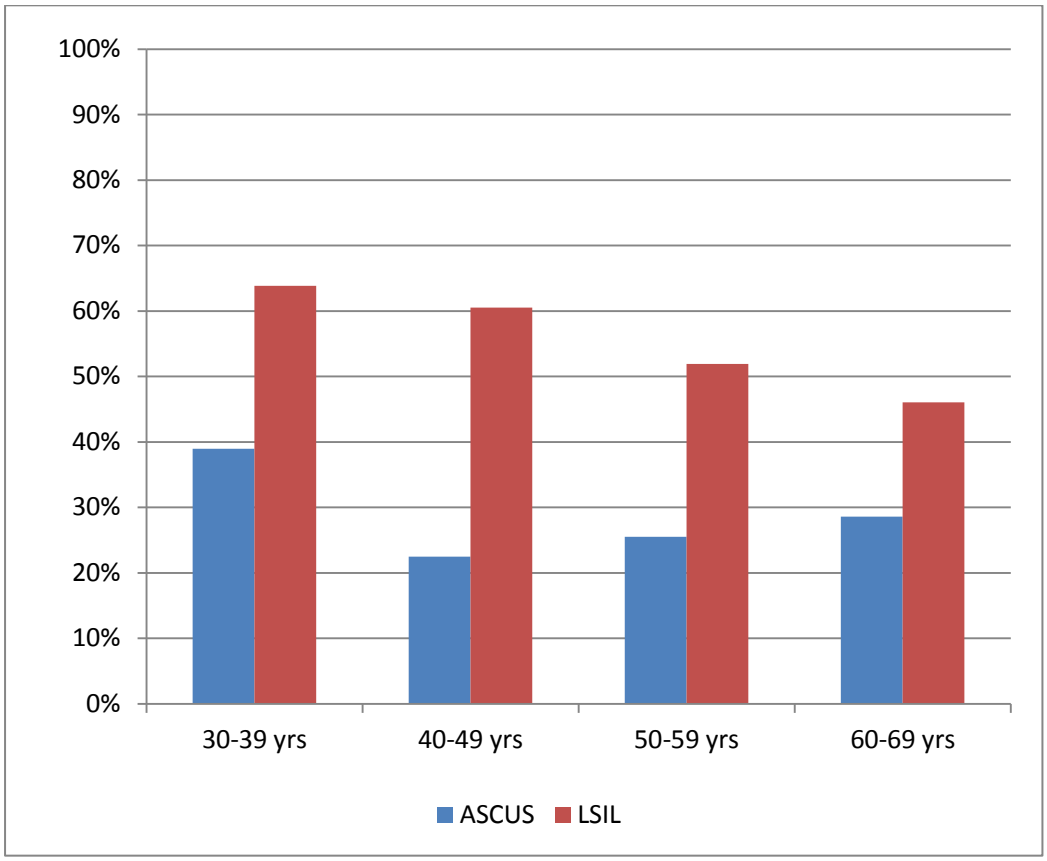


Figure 41 – Proportion of women with an HPV triage test who are HPV positive, by age and cytology result



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 25 - 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	1	152	1	100.0	40	62.5	17	32.7	12	52.2	3	23.1	0	0.0
Canterbury Health Laboratories	3	149	2	66.7	6	12.8	6	10.0	3	8.8	1	12.5	0	0.0
Diagnostic Medlab Ltd	1	775	1	100.0	88	32.8	49	17.3	28	19.2	19	27.5	3	37.5
LabPLUS	0	11	0	0.0	0	0.0	1	33.3	1	33.3	0	0.0	0	0.0
Medlab Central	0	87	0	0.0	13	46.4	7	21.9	7	38.9	2	22.2	0	0.0
Medlab South Christchurch	0	95	0	0.0	4	14.3	6	16.7	5	25.0	2	20.0	0	0.0
Pathlab	1	163	1	100.0	24	44.4	16	29.1	10	24.4	7	53.8	0	0.0
Southern Community Labs	4	162	2	50.0	39	69.6	27	51.9	18	40.9	4	40.0	0	0.0
Total	**10**	**1,594**	**7**	**70.0**	**214**	**39.0**	**129**	**22.5**	**84**	**25.5**	**38**	**28.6**	**3**	**33.3**

Table 26 - 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	126	3	100.0	55	79.7	26	76.5	11	68.8	3	42.9	0	0.0
Canterbury Health Laboratories	0	80	-	-	30	75.0	20	71.4	4	66.7	2	50.0	1	50.0
Diagnostic Medlab Ltd	2	711	2	100.0	197	55.5	125	54.3	42	45.2	13	39.4	0	0.0
LabPLUS	0	7	-	-	3	100.0	0	0.0	1	50.0	0	0.0	0	0.0
Medlab Central	2	74	1	50.0	20	58.8	15	65.2	10	71.4	1	33.3	0	0.0
Medlab South Christchurch	1	72	1	100.0	19	61.3	13	44.8	4	40.0	0	0.0	0	0.0
Pathlab	3	151	3	100.0	45	66.2	25	64.1	9	30.0	9	64.3	0	0.0
Southern Community Labs	16	283	11	68.8	110	73.3	58	70.7	28	71.8	7	58.3	0	0.0
Total	**27**	**1,504**	**21**	**77.8**	**479**	**63.9**	**282**	**60.5**	**109**	**51.9**	**35**	**46.1**	**1**	**50.0**

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)*

ii) Post-treatment *(women treated for CIN2/3 in the period 6 months to 4 years prior to the HPV sample date)*

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

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

HPV tests corresponding to samples taken at a colposcopy visit were further analysed to determine their breakdown by public vs private colposcopy facility. This is reported by DHB, based on the DHB of the colposcopy facility.

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

Target

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

Current Situation

Overall volumes

There were 18,010 samples received by laboratories for HPV testing within the current reporting period. These are reported on further in Table 65 to Table 69.

Virtually all (99.2%) samples for HPV testing were from women aged 20-69 years. The large majority of women (90.8%) were aged 30 years or more

(Figure 42, Table 66).

The majority of HPV test samples (82.7%) were performed on cervical samples from European/Other women, and the number of HPV tests performed was smallest among Pacific women (401, or 2.2% of all HPV tests) (Table 65).

The number of samples received by laboratories for HPV testing ranged from 616 (LabPLUS; 3.4% of all HPV tests) to 5,389 (Southern Community Labs; 29.9% of all HPV tests) (Figure 43, Table 68).

Purpose of HPV tests

These samples were further analysed in order to evaluate the purpose for which they were performed. Nationally, it was estimated that 3,261 (18.1%) were for triage of low grade cytology in women aged 30 years or more; 1,023 (5.7%) were for post-treatment management for women treated in the past four years; 7,705 (42.8%) was for follow-up management of women with high grade cytology more than three years previously (historical); and 625 (3.5%) were on samples collected at a colposcopy visit which did not fit into a previous category (possibly for resolution of discordant results) (Figure 45). The remaining 5,396 (30.0%) HPV tests did not fit into any of the previously described categories. Further exploration of these tests was conducted, and these tests are discussed further in the *Comments* section.

Further breakdowns of HPV tests by purpose are presented by age (Table 66), ethnicity (Table 67), and laboratory (Table 68).

There were some variations in HPV test purpose by age (Table 66). Historical tests were the most common type of HPV test in most age groups. HPV triage (by the definition used here) 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 increased with increasing age.

There was also some variation in test purpose by ethnicity (Table 67). The proportion of tests performed for HPV triage was much greater in Pacific and Asian women (47.6% and 44.5% respectively, compared to 17.7% in Māori women and 15.9% in European/ Other women). Conversely, the proportion of tests which were for historical testing was much lower among Pacific women (21.4%) and Asian women (25.5%), compared to Māori women (47.2%) and European/ Other women (43.7%).

HPV test purpose also varied somewhat by laboratory (Figure 46, Table 68). Historical tests were the most common category in most laboratories, except for Diagnostic Medlab Ltd (where HPV triage tests were the most common), and LabPLUS (where a higher proportion of HPV tests were classified as 'Other', and among the remainder, post-treatment management was the most common purpose).

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 (Table 69). Nationally, more of the HPV tests which were taken at colposcopy came from public facilities (372) than from private facilities (123), however this was consistent with the greater number of colposcopies performed in public clinics (Table 69). The number of HPV tests collected at a colposcopy clinic is potentially reflective of the number of colposcopies performed there. Therefore, 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 4.0% of colposcopies. This value ranged from 0.3% (Northland) to 23.9% (Lakes), and was 3.6% across all public DHB clinics (Figure 47, Table 69). In private practice, this rate was 5.9%. No HPV tests were taken at colposcopy in Capital & Coast, Hutt Valley, Northland, Tairawhiti, Taranaki, Wairarapa or West Coast.

Trends

More samples were received at laboratories for HPV testing in the current reporting period (18,010) than in the previous monitoring report (14,411) – an increase of approximately 25%.

The proportion of samples for HPV testing which related to woman aged less than 30 years is similar in the current reporting period (9.2%) to what it was in the previous period (9.1%).

The purpose for performing the HPV test has not been included in previous monitoring reports, therefore trend analysis could not be performed on this aspect of HPV test volumes.

Comments

There remained a substantial number (5,396; 30% of all tests) of HPV tests which did not fit into any of the pre-defined purpose categories. These were explored further to determine if in some cases they were similar to, but not fully compliant with, recommended uses. In some cases (335), the tests were used after a recent CIN2/3 histology result, for which there was no record of treatment. These tests may in practice have been performed for post-treatment management, but the colposcopy reports documenting the treatment are not included on the NCSP Register. Some tests appear to have been used to follow-up a previous abnormality, which was either not a squamous abnormality (135 tests), high grade cytology which was too recent to fit the criteria for historical testing (391 tests), or an abnormality which was both recent and not squamous (24 tests). A small number (8 tests) were preceded by a histology or cytology test indicating cervical cancer, rather than high grade. There were also 256 tests which were performed within six

months of a low grade cytology result, but which did not meet the criteria for HPV triage as the woman had an abnormality recorded within the previous five years (in which case the guidelines recommend direct referral to colposcopy, not HPV triage). However, this left 4,247 tests for which there was still no clear purpose. As a result, and as part of developing this indicator, a detailed audit was performed on a sample of approximately 200 HPV tests which originally fell into this category in Report 36. Full screening histories for the women in whom the tests were performed were examined. A large proportion (86%) which had remained unexplained (either by use consistent with the guidelines, or a use as above which was similar to, but not fully compliant with, recommended uses) had a synopsis on the NCSP Register which suggested an abnormality had been previously detected in some cases (although there was no specific record of either high grade squamous histology or cytology recorded on the NCSP Register). These cases may reflect a previous high grade lesion prior to the inception of the NCSP Register (consistent with a higher proportion of 'Other' tests in older women), or which occurred while a woman was either not enrolled on the Register or not residing in New Zealand. Although the results from the subset of 'Other' tests audited here (which were processed in a different time period, and by a single laboratory) may not be directly applicable to all 'Other' tests in this report, if a similar pattern had occurred within all 'Other' tests in the current report, high grade synopses may have accounted for around 67% of 'Other' tests.

The relationship between HPV tests collected at a colposcopy clinic and whether or not the clinic was a public or private facility is potentially reflective of the proportion of all colposcopies which occur at public versus private facilities. A rate which takes this variation into account was derived, in order to provide more information.

Figure 42 – Volume of HPV test samples received by laboratories during the monitoring period, by age

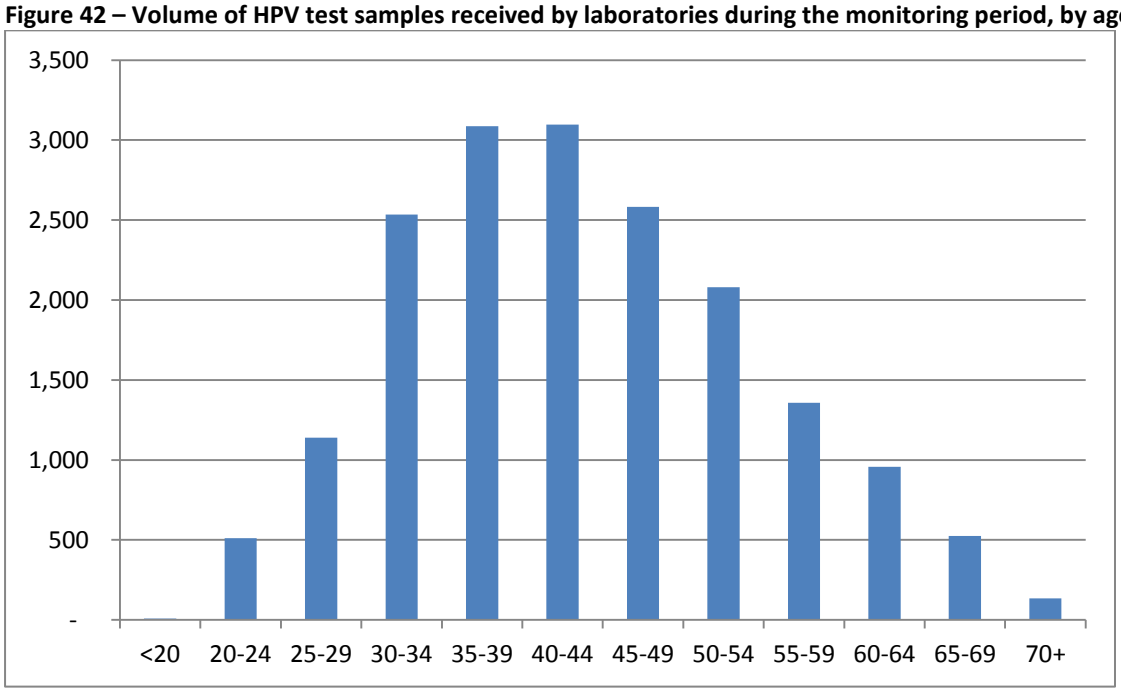


Figure 43 – Volume of HPV test samples received by laboratories during the monitoring period, by laboratory

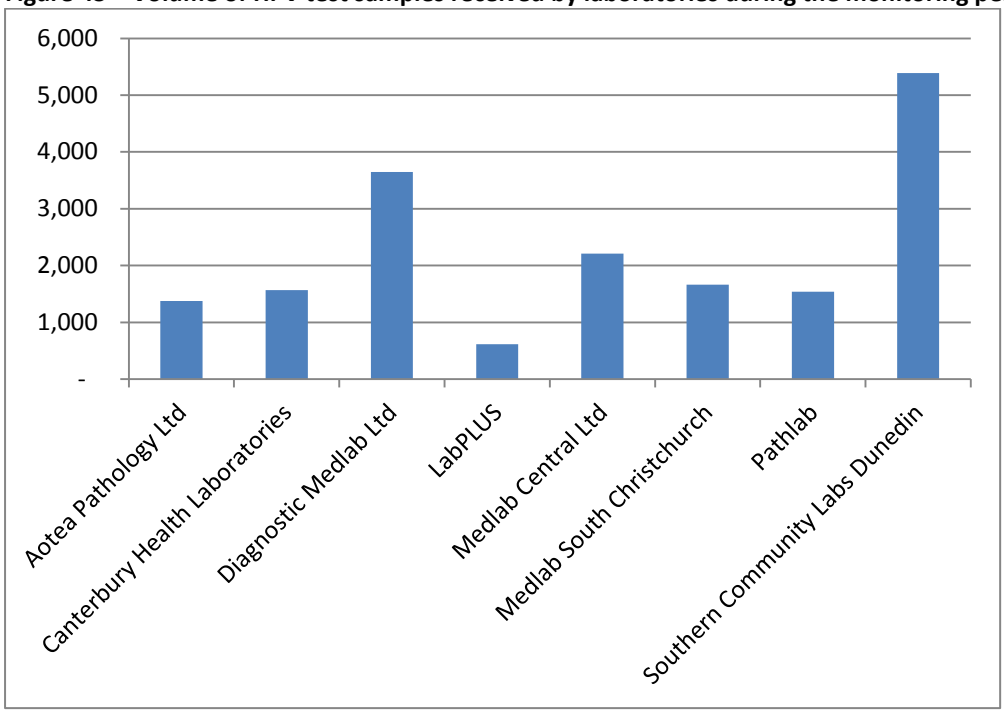


Figure 44 –HPV test samples as a percentage of cytology test samples received during the monitoring period, by laboratory

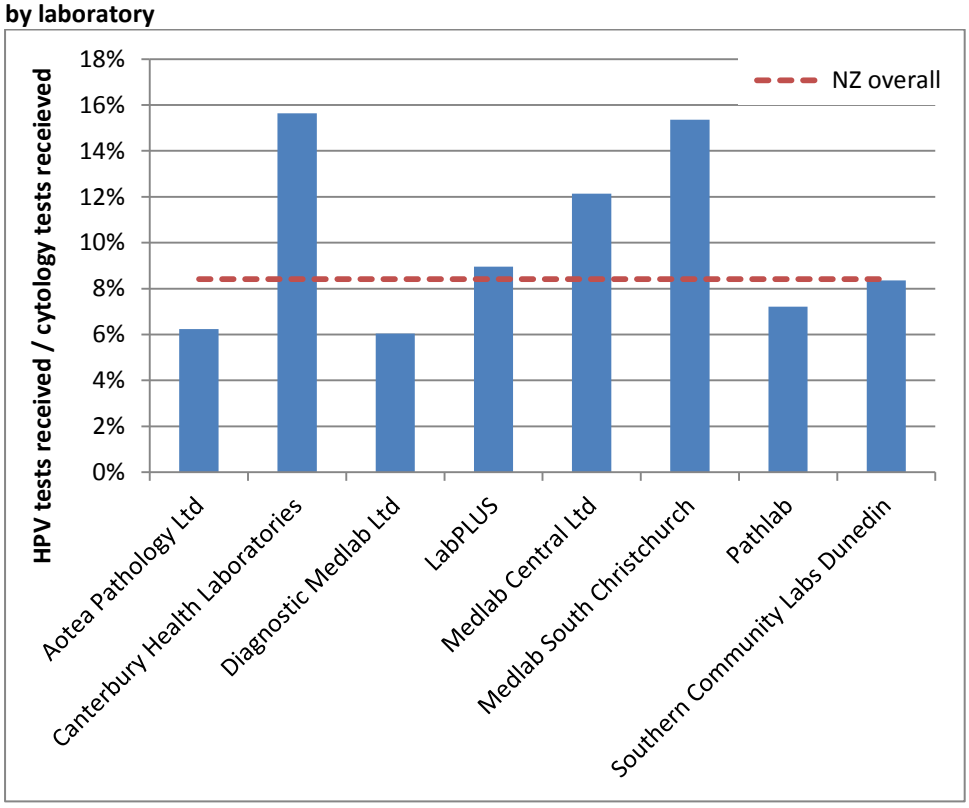


Figure 45 - Volume of HPV test samples received during the monitoring period, by purpose

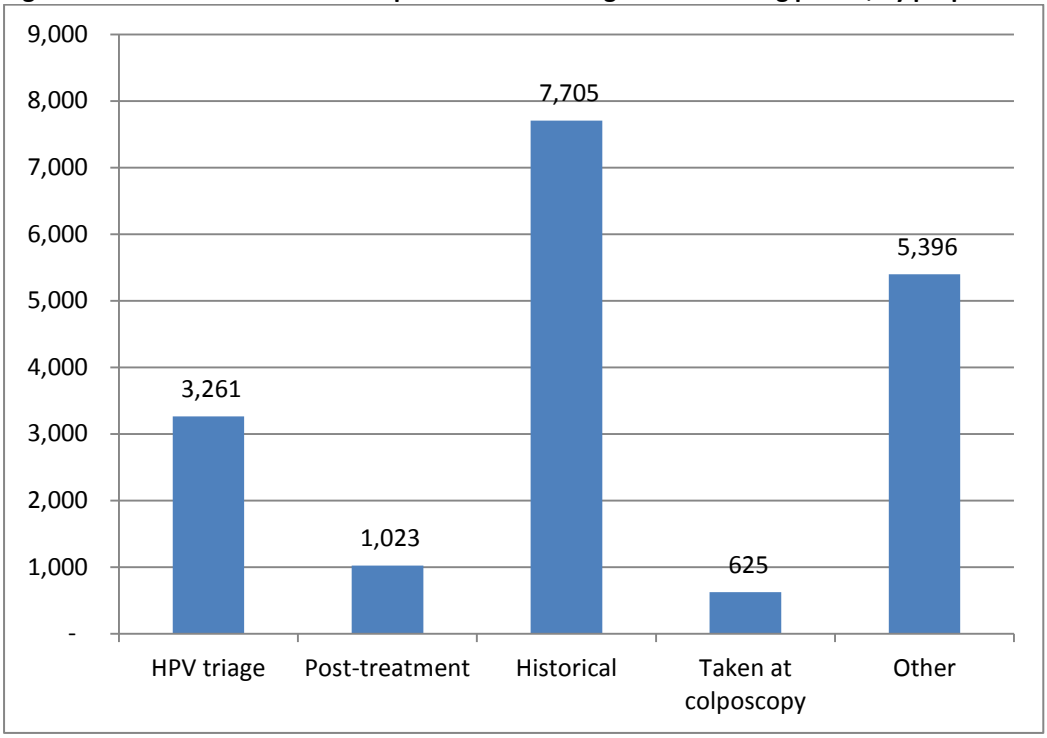
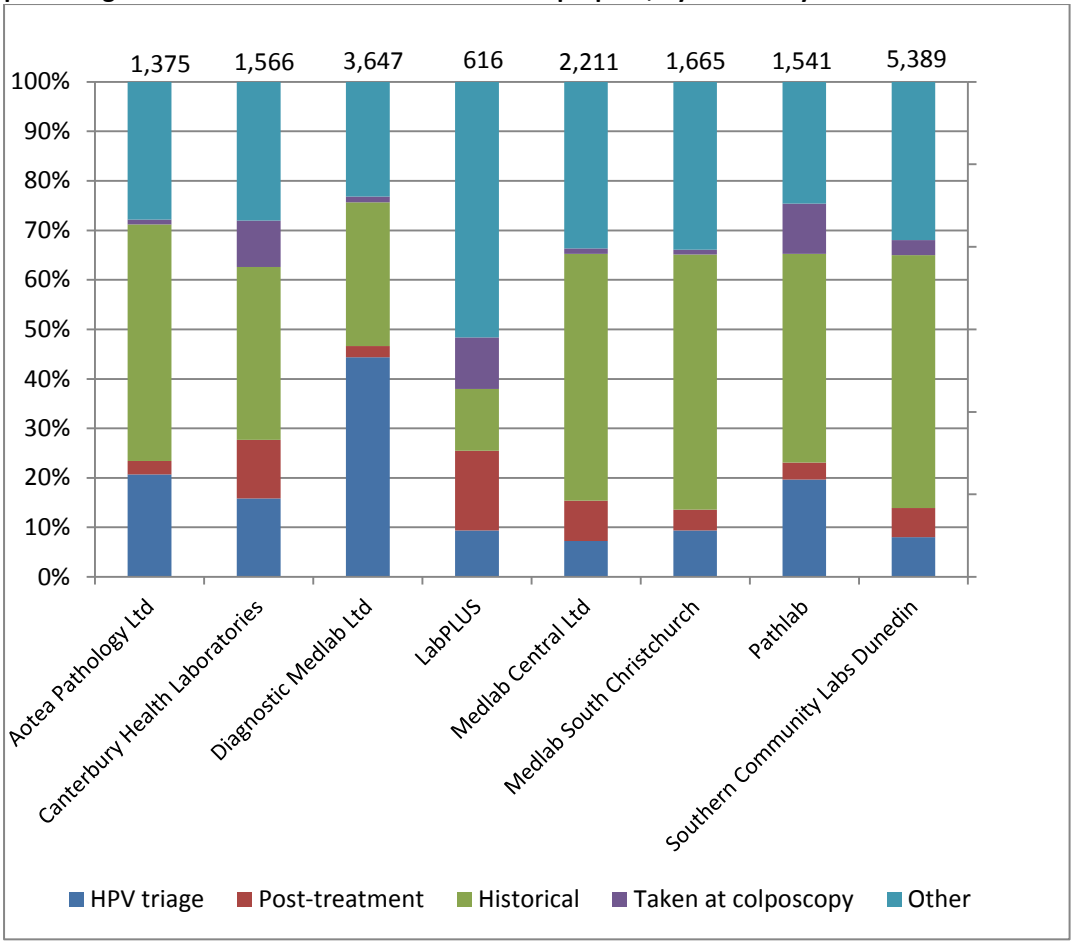
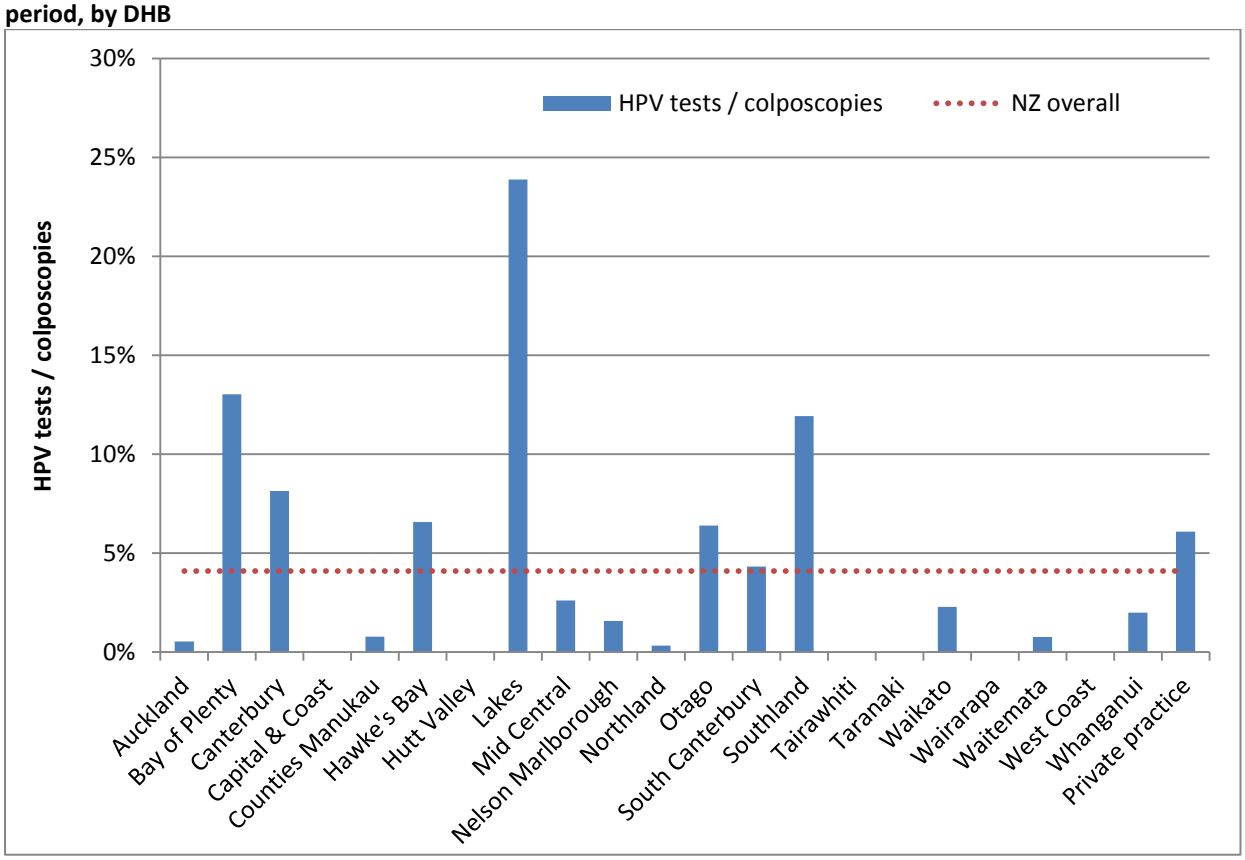


Figure 46 – Volume of HPV test samples received by laboratories during the monitoring period, and percentage estimated as attributable to each test purpose, by laboratory



Numbers above the bars correspond to the total number of HPV tests received in the monitoring period by that laboratory.

Figure 47- 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 27 - Coverage by age (women 20-69 years screened in the three years prior to 30 June 2011, hysterectomy adjusted)

Age (years)	Hysterectomy-adjusted population	Women screened in the last 3 years	
		N	%
20-24	157,311	85,136	54.1
25-29	148,619	97,081	65.3
30-34	142,208	101,239	71.2
35-39	150,847	115,048	76.3
40-44	155,755	122,675	78.8
45-49	147,679	118,379	80.2
50-54	127,673	103,103	80.8
55-59	103,164	81,193	78.7
60-64	92,042	67,238	73.1
65-69	71,322	45,331	63.6
Total	**1,296,621**	**936,423**	**72.2**

Target: 75%

Table 28 - Coverage by DHB (women 25-69 years screened in the three years prior to 30 June 2011, hysterectomy adjusted)

DHB	Hysterectomy-adjusted population	Women screened in the last 3 years	
		N	%
Auckland	131,125	95,929	73.2
Bay of Plenty	53,362	41,154	77.1
Canterbury	131,212	96,755	73.7
Capital & Coast	80,835	64,116	79.3
Counties Manukau	127,553	85,820	67.3
Hawke's Bay	38,718	30,288	78.2
Hutt Valley	37,090	28,511	76.9
Lakes	26,184	20,174	77.0
Mid Central	41,149	30,636	74.5
Nelson Marlborough	35,892	28,220	78.6
Northland	39,459	29,659	75.2
Otago	46,840	36,695	78.3
South Canterbury	13,698	10,150	74.1
Southland	29,057	21,924	75.5
Tairawhiti	11,573	8,653	74.8
Taranaki	26,980	22,365	82.9
Waikato	90,869	68,172	75.0
Wairarapa	9,919	8,054	81.2
Waitemata	144,196	106,645	74.0
West Coast	8,322	5,703	68.5
Whanganui	15,278	11,425	74.8
Total	**1,139,310**	**851,048**	**74.7**

Target: 75% Excludes 239 women for whom DHB could not be determined

Table 29 - Coverage by ethnicity (women 25-69 years screened in the three years prior to 30 June 2011, hysterectomy adjusted)

Ethnicity	Hysterectomy adjusted population (ages 25-69 years)	Women screened in the last 3 years (ages 25-69 years)	
		N	%
Māori	148,673	84,429	56.8
Pacific	66,533	39,953	60.0
Asian	143,943	77,122	53.6
European/Other	780,160	649,783	83.3
Total	**1,139,310**	**851,287**	**74.7**

Table 30 - Coverage by ethnicity (women 25-69 years screened in the three years prior to 30 June 2011, hysterectomy adjusted) – counts weighted using ethnicity adjustors to correct for undercounting in NCSP Register

Ethnicity	Hysterectomy adjusted population (ages 25-69 years)	Women screened in the last 3 years (ages 25-69 years; adjusted for ethnicity misclassification)	
		N	%
Māori	148,673	100,490	67.6
Pacific	66,533	44,292	66.6
Asian	143,943	100,691	70.0
European/Other	780,160	604,177	77.4

Table 31 - Coverage by ethnicity (women 20-69 years screened in the three years prior to 30 June 2011, hysterectomy adjusted) – counts weighted using ethnicity adjustors to correct for undercounting in NCSP Register

Ethnicity	Hysterectomy adjusted population (ages 20-69 years)	Women screened in the last 3 years (ages 20-69 years; adjusted for ethnicity misclassification)	
		N	%
Māori	178,823	117,829	65.9
Pacific	79,363	49,484	62.4
Asian	168,634	105,277	62.4
European/ Other	869,800	658,752	75.7

Table 32 - Coverage by age (women 20-69 years screened in the five years prior to 30 June 2011, hysterectomy adjusted)

Age (years)	Hysterectomy-adjusted population	Number of women screened in last 5 years	% screened in the last 5 years
20-24	157,311	92,008	58.5
25-29	148,619	118,786	79.9
30-34	142,208	121,832	85.7
35-39	150,847	136,352	90.4
40-44	155,755	143,777	92.3
45-49	147,679	138,505	93.8
50-54	127,673	120,142	94.1
55-59	103,164	93,797	90.9
60-64	92,042	77,229	83.9
65-69	71,322	52,903	74.2
Total	**1,296,621**	**1,095,331**	**84.5**

Table 33 - Coverage by DHB (women aged 25-69 years screened in the five years prior to 30 June 2011, hysterectomy adjusted)

DHB	Hysterectomy adjusted population	Women screened in the last 5 years	
		N	%
Auckland	131,125	113,950	86.9
Bay of Plenty	53,362	48,530	90.9
Canterbury	131,212	115,194	87.8
Capital & Coast	80,835	74,847	92.6
Counties Manukau	127,553	102,724	80.5
Hawke's Bay	38,718	35,340	91.3
Hutt Valley	37,090	33,966	91.6
Lakes	26,184	23,675	90.4
Mid Central	41,149	35,658	86.7
Nelson Marlborough	35,892	33,020	92.0
Northland	39,459	34,761	88.1
Otago	46,840	42,713	91.2
South Canterbury	13,698	12,246	89.4
Southland	29,057	25,931	89.2
Tairawhiti	11,573	10,178	87.9
Taranaki	26,980	25,850	95.8
Waikato	90,869	80,034	88.1
Wairarapa	9,919	9,159	92.3
Waitemata	144,196	124,972	86.7
West Coast	8,322	6,832	82.1
Whanganui	15,278	13,395	87.7
Total	**1,139,310**	**1,002,975**	**88.0**

Excludes 348 women for whom DHB could not be determined

Table 34 - Coverage by ethnicity – women aged 25-69 years screened in the five years prior to 30 June 2011, hysterectomy adjusted

Ethnicity	Hysterectomy adjusted population	Women screened in the last 5 years	
		N	%
Māori	148,673	103,543	69.6
Pacific	66,533	49,100	73.8
Asian	143,943	90,510	62.9
European/Other	780,160	760,170	97.4
Total	**1,139,310**	**1,003,323**	**88.1**

Table 35 - Women under 20 years of age, and aged 15-19 years, screened in the three years prior to 30 June 2011, by DHB.

DHB	Number of women screened in last 3 years		Number of women screened at age 15-19 years as % of population aged 15-19 years
	aged 10 - 19 years	aged 15-19 years	
Auckland	1,551	1,541	10.3
Bay of Plenty	531	529	7.5
Canterbury	2,376	2,364	13.2
Capital & Coast	836	834	8.5
Counties Manukau	1,827	1,816	9.1
Hawke's Bay	560	558	10.5
Hutt Valley	478	476	9.2
Lakes	285	285	7.9
Mid Central	423	421	6.4
Nelson Marlborough	377	377	9.3
Northland	370	365	7.0
Otago	729	725	9.1
South Canterbury	222	220	13.0
Southland	350	350	10.7
Tairawhiti	174	173	10.1
Taranaki	326	325	8.9
Waikato	888	886	6.6
Wairarapa	152	151	12.5
Waitemata	2,105	2,095	10.6
West Coast	99	99	9.4
Whanganui	131	130	5.9
Unspecified	2	2	
Total	***14,792***	***14,722***	***9.5***

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

Table 36 – Women screened under 20 years of age, as a proportion of all women screened in the three years to 30 June 2011, 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	1,551	106,993	1.4
Bay of Plenty	531	46,448	1.1
Canterbury	2,376	110,330	2.2
Capital & Coast	836	73,140	1.1
Counties Manukau	1,827	96,313	1.9
Hawke's Bay	560	34,359	1.6
Hutt Valley	478	32,136	1.5
Lakes	285	22,609	1.3
Mid Central	423	35,386	1.2
Nelson Marlborough	377	31,272	1.2
Northland	370	33,184	1.1
Otago	729	43,232	1.7
South Canterbury	222	11,402	1.9
Southland	350	24,812	1.4
Tairawhiti	174	9,888	1.8
Taranaki	326	25,246	1.3
Waikato	888	77,827	1.1
Wairarapa	152	9,061	1.7
Waitemata	2,105	119,102	1.8
West Coast	99	6,362	1.6
Whanganui	131	12,900	1.0
Unspecified	2		
Total	**14,792**	**962,002**	**1.5**

Excludes two females who were recorded as aged zero and seven years at the time of their cervical samples

Table 37 – Women screened under 20 years of age, and women aged 18-19 years when they were screened, in the three years to 30 June 2011, by DHB

DHB	Number of women screened in last 3 years aged 10-19 years	aged 18-19 years	% aged 18-19 years
Auckland	1,551	1,245	80.3
Bay of Plenty	531	435	81.9
Canterbury	2,376	1,904	80.1
Capital & Coast	836	746	89.2
Counties Manukau	1,827	1,413	77.3
Hawke's Bay	560	465	83.0
Hutt Valley	478	394	82.4
Lakes	285	231	81.1
Mid Central	423	388	91.7
Nelson Marlborough	377	314	83.3
Northland	370	300	81.1
Otago	729	595	81.6
South Canterbury	222	159	71.6
Southland	350	287	82.0
Tairawhiti	174	134	77.0
Taranaki	326	266	81.6
Waikato	888	775	87.3
Wairarapa	152	112	73.7
Waitemata	2,105	1,621	77.0
West Coast	99	73	73.7
Whanganui	131	106	80.9
Unspecified	2	2	100.0
Total	**14,792**	**11,965**	**80.9**

Table 38 - Women aged 25-69 years screened in the three years to 30 June 2011, as a proportion of i) the hysterectomy-adjustment NZ female population and ii) the total NZ female population, by DHB

DHB	Women screened in the the last 3 years (hysterectomy-adjusted)	(no hysterectomy adjustment)
Auckland	73.2	67.5
Bay of Plenty	77.1	67.8
Canterbury	73.7	65.1
Capital & Coast	79.3	71.9
Counties Manukau	67.3	61.8
Hawke's Bay	78.2	68.8
Hutt Valley	76.9	68.9
Lakes	77.0	68.7
Mid Central	74.5	65.7
Nelson Marlborough	78.6	68.1
Northland	75.2	65.9
Otago	78.3	68.6
South Canterbury	74.1	63.8
Southland	75.5	66.8
Tairawhiti	74.8	67.2
Taranaki	82.9	72.7
Waikato	75.0	66.6
Wairarapa	81.2	70.1
Waitemata	74.0	66.5
West Coast	68.5	59.6
Whanganui	74.8	65.5

Indicator 2 – First screening events

Table 39 - Age distribution of first screening events for period 1 January to 30 June 2011

Age	Women with first events	% of first events (ages 20-69 yrs) which occurred in that age group
20-24	10,217	49.0
25-29	3,118	15.0
30-34	2,103	10.1
35-39	1,452	7.0
40-44	1,173	5.6
45-49	902	4.3
50-54	615	3.0
55-59	537	2.6
60-64	442	2.1
65-69	276	1.3
20-69 yrs	**20,835**	

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

Indicator 3 – Withdrawals

Table 40 - Withdrawal rates by DHB for the period 1 January to 30 June 2011

DHB	Enrolled at start	Women withdrawn	
		N	%
Auckland	168,186	4	0.002
Bay of Plenty	66,751	6	0.009
Canterbury	160,283	4	0.002
Capital & Coast	106,328	1	0.001
Counties Manukau	145,213	4	0.003
Hawke's Bay	48,555	1	0.002
Hutt Valley	48,506	-	0.000
Lakes	33,749	2	0.006
Mid Central	50,187	1	0.002
Nelson Marlborough	43,393	2	0.005
Northland	46,960	-	0.000
Otago	60,197	2	0.003
South Canterbury	16,238	-	0.000
Southland	35,872	2	0.006
Tairawhiti	14,208	3	0.021
Taranaki	34,151	2	0.006
Waikato	110,355	4	0.004
Wairarapa	11,912	-	0.000
Waitemata	169,346	5	0.003
West Coast	9,366	-	0.000
Whanganui	18,805	-	0.000
Unspecified	*2,144*	*1*	*0.047*
Total	**1,400,705**	**44**	**0.003**

Indicator 4 – Early re-screening

Table 41 - Early re-screening by five-year age group, 1 January to 30 June 2011 (cohort method)

Age	Women recommended to return in 3 yrs	Women with >= 1 subsequent test	
		N	%
20-24	1,176	362	30.8
25-29	3,531	885	25.1
30-34	4,011	968	24.1
35-39	4,972	1,247	25.1
40-44	5,777	1,416	24.5
45-49	5,866	1,354	23.1
50-54	5,188	1,281	24.7
55-59	4,254	1,013	23.8
60-64	3,547	706	19.9
65-69	2,308	412	17.9
Total	**40,630**	**9,644**	**23.7**

Table 42 - Early re-screening by DHB, 1 January to 30 June 2011 (cohort method)

DHB	Women recommended to return in 3 yrs	Women with >= 1 subsequent test	
		N	%
Auckland	4,457	1,406	31.5
Bay of Plenty	1,908	497	26.0
Canterbury	4,741	1,074	22.7
Capital & Coast	3,135	688	21.9
Counties Manukau	3,984	934	23.4
Hawke's Bay	1,467	301	20.5
Hutt Valley	1,344	215	16.0
Lakes	976	313	32.1
Mid Central	1,303	204	15.7
Nelson Marlborough	1,312	275	21.0
Northland	1,382	346	25.0
Otago	1,832	310	16.9
South Canterbury	452	105	23.2
Southland	1,061	158	14.9
Tairawhiti	484	85	17.6
Taranaki	1,073	161	15.0
Waikato	3,281	511	15.6
Wairarapa	421	108	25.7
Waitemata	5,281	1,838	34.8
West Coast	233	48	20.6
Whanganui	481	62	12.9
Unspecified	*22*	*5*	*22.7*
Total	**40,630**	**9,644**	**23.7**

Table 43 - Early re-screening by ethnicity, 1 January to 30 June 2011 (cohort method)

Ethnicity	Women recommended to return in 3 yrs	Women with >= 1 subsequent test	
		N	%
Māori	3,663	816	22.3
Pacific	1,681	305	18.1
Asian	3,447	976	28.3
European/Other	31,839	7,547	23.7
Total	**40,630**	**9,644**	**23.7**

Indicator 5 – Laboratory indicators

Indicator 5.2 – Accuracy of cytology predicting HSIL

Table 44 - 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	70	92.1	57	81.4	6	7.9	76
Canterbury Health Laboratories	98	93.3	85	86.7	7	6.7	105
Diagnostic Medlab Ltd	254	89.4	206	81.1	30	10.6	284
LabPLUS	248	93.2	203	81.9	18	6.8	266
Medlab Central	126	86.3	98	77.8	20	13.7	146
Medlab South Christchurch	99	96.1	84	84.8	4	3.9	103
Pathlab	101	89.4	81	80.2	12	10.6	113
Southern Community Labs Dunedin	387	90.8	321	82.9	39	9.2	426
Total	**1,383**	**91.0**	**1,135**	**82.1**	**136**	**9.0**	**1,519**

Target: 65% - 85%

Table 45 - 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	66	82.5	37	56.1	14	17.5	80
Canterbury Health Laboratories	117	80.1	79	67.5	29	19.9	146
Diagnostic Medlab Ltd	166	75.8	72	43.4	53	24.2	219
LabPLUS	193	76.3	87	45.1	60	23.7	253
Medlab Central	55	64.7	28	50.9	30	35.3	85
Medlab South Christchurch	131	75.3	61	46.6	43	24.7	174
Pathlab	92	81.4	51	55.4	21	18.6	113
Southern Community Labs Dunedin	75	78.1	42	56.0	21	21.9	96
Total	**895**	**76.8**	**457**	**51.1**	**271**	**23.2**	**1,166**

Table 46 - 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	136	87.2	94	69.1	20	12.8	156
Canterbury Health Laboratories	215	85.7	164	76.3	36	14.3	251
Diagnostic Medlab Ltd	420	83.5	278	66.2	83	16.5	503
LabPLUS	441	85.0	290	65.8	78	15.0	519
Medlab Central	181	78.4	126	69.6	50	21.6	231
Medlab South Christchurch	230	83.0	145	63.0	47	17.0	277
Pathlab	193	85.4	132	68.4	33	14.6	226
Southern Community Labs Dunedin	476	88.8	376	79.0	60	11.2	536
Total	**2,292**	**84.9**	**1,605**	**70.0**	**407**	**15.1**	**2,699**

Indicator 5.5 – Laboratory turnaround time

Table 47 - Timeliness of cytology reporting by laboratory, 1 January to 30 June 2011

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	21,320	96.7	591	2.7	21,911	99.4	140	0.6	22,051
Canterbury Health Laboratories	7,708	77.0	1,953	19.5	9,661	96.5	353	3.5	10,014
Diagnostic Medlab Ltd	57,562	95.5	856	1.4	58,418	96.9	1,879	3.1	60,297
LabPLUS	5,767	83.8	755	11.0	6,522	94.8	358	5.2	6,880
Medlab Central	16,726	91.8	430	2.4	17,156	94.2	1,055	5.8	18,211
Medlab South Christchurch	10,846	100.0	-	0.0	10,846	100.0	-	0.0	10,846
Pathlab	19,634	91.9	1,502	7.0	21,136	99.0	219	1.0	21,355
Southern Community Labs Dunedin	61,343	95.1	2,900	4.5	64,243	99.6	247	0.4	64,490
Total	**200,906**	**93.8**	**8,987**	**4.2**	**209,839**	**98.0**	**4,251**	**2.0**	**214,144**

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* collected *during the period.*

Table 48 - Timeliness of histology reporting by laboratory, 1 January to 30 June 2011

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	291	82.9	54	15.4	345	98.3	6	1.7	**351**
Canterbury Health Laboratories	1,236	87.4	107	7.6	1,343	95.0	71	5.0	**1,414**
Diagnostic Medlab Ltd	1,260	81.7	272	17.6	1,532	99.4	10	0.6	**1,542**
Hutt Hospital Laboratory	155	53.4	132	45.5	287	99.0	3	1.0	**290**
LabPLUS	318	45.8	353	50.8	671	96.5	24	3.5	**695**
Medlab Central	563	52.6	75	7.0	638	59.6	432	40.4	**1,070**
Medlab South Christchurch	88	100.0	-	0.0	88	100.0	-	0.0	**88**
Memorial Hospital Hastings Lab	74	92.5	6	7.5	80	100.0	-	0.0	**80**
Middlemore Hospital Laboratory	813	81.1	157	15.7	970	96.8	32	3.2	**1,002**
Nelson Hospital Laboratory	392	72.6	141	26.1	533	98.7	7	1.3	**540**
North Shore Hospital Laboratory	1,091	85.7	150	11.8	1,241	97.5	32	2.5	**1,273**
Northland Pathology Laboratory	242	94.5	12	4.7	254	99.2	2	0.8	**256**
Pathlab	713	69.0	293	28.4	1,006	97.4	27	2.6	**1,033**
Southern Community Labs Dunedin	1,855	94.4	103	5.2	1,958	99.6	8	0.4	**1,966**
Taranaki Medlab	242	96.0	10	4.0	252.	100.0	-	0.0	**252**
Waikato Hospital Laboratory	121	70.8	48	28.1	169	98.8	2	1.2	**171**
Wellington Hospital Laboratory	271	43.4	323	51.7	594	95.0	31	5.0	**625**
Total	**9,725**	**76.9**	**2,236**	**17.7**	**11,961**	**94.6**	**687**	**5.4**	**12,648**

Target: 90% within five working days and 99% within 15 working days

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* collected *within the reporting period*

Table 49 – Timeliness of reporting for cytology with associated HPV triage testing by laboratory, 1 January to 30 June 2011

	Laboratory turnaround time – cytology with HPV triage testing				
	Within 15 days		More than 15 days		Total
Laboratory	**N**	**%**	**N**	**%**	**N**
Aotea Pathology Ltd	284	99.3	2	0.7	286
Canterbury Health Laboratories	197	84.9	35	15.1	232
Diagnostic Medlab Ltd	1,439	97.6	36	2.4	1,475
LabPLUS	12	66.7	6	33.3	18
Medlab Central Ltd	146	91.3	14	8.8	160
Medlab South Christchurch	173	100.0	-	0.0	173
Pathlab	313	98.4	5	1.6	318
Southern Community Labs Dunedin	452	98.3	8	1.7	460
Total	**3,016**	**96.6**	**106**	**3.4**	**3,122**

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

Table 50 – Women (ages 20-69 years) 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	254	182	71.7	205	80.7
Bay of Plenty	88	60	68.2	70	79.5
Canterbury	250	200	80.0	218	87.2
Capital & Coast	95	79	83.2	86	90.5
Counties Manukau	205	147	71.7	161	78.5
Hawke's Bay	90	71	78.9	77	85.6
Hutt Valley	44	37	84.1	41	93.2
Lakes	60	42	70.0	50	83.3
Mid Central	84	18	21.4	45	53.6
Nelson Marlborough	97	81	83.5	85	87.6
Northland	50	37	74.0	43	86.0
Otago	88	71	80.7	79	89.8
South Canterbury	34	25	73.5	27	79.4
Southland	51	35	68.6	44	86.3
Tairawhiti	15	10	66.7	10	66.7
Taranaki	51	37	72.5	44	86.3
Waikato	202	165	81.7	183	90.6
Wairarapa	23	5	21.7	9	39.1
Waitemata	281	231	82.2	246	87.5
West Coast	30	26	86.7	27	90.0
Whanganui	29	7	24.1	15	51.7
Total	**2,121**	**1,566**	**73.8**	**1,765**	**83.2**

Table 51 - Women (ages 20-69 years) 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	%
20-24	507	368	72.6	423	83.4
25-29	459	333	72.5	376	81.9
30-34	318	252	79.2	283	89.0
35-39	235	187	79.6	205	87.2
40-44	196	151	77.0	163	83.2
45-49	131	104	79.4	114	87.0
50-54	105	72	68.6	79	75.2
55-59	80	46	57.5	60	75.0
60-64	63	37	58.7	43	68.3
65-69	27	16	59.3	19	70.4
Total	**2,121**	**1,566**	**73.8**	**1,765**	**83.2**

Table 52 - Women (ages 20-69 years) without any follow-up test within 180 days of a high grade cytology report, by DHB

DHB	High-grade cytology	Without a follow-up test by 180 days	
	N	N	%
Auckland	254	15	5.9
Bay of Plenty	88	5	5.7
Canterbury	250	17	6.8
Capital & Coast	95	4	4.2
Counties Manukau	205	12	5.9
Hawke's Bay	90	4	4.4
Hutt Valley	44	2	4.5
Lakes	60	5	8.3
Mid Central	84	2	2.4
Nelson Marlborough	97	7	7.2
Northland	50	5	10.0
Otago	88	5	9.1
South Canterbury	34	1	2.9
Southland	51	2	3.9
Tairawhiti	15	1	6.7
Taranaki	51	-	0.0
Waikato	202	14	6.9
Wairarapa	23	1	4.3
Waitemata	281	16	5.7
West Coast	30	1	3.3
Whanganui	29	2	6.9
Total	**2,121**	**124**	**5.8**

Table 53 - Women (ages 20-69 years) without any follow-up test within 180 days of a high grade cytology report, by ethnicity

Ethnicity	High-grade cytology	Without a follow-up test by 180 days	
	N	N	%
Māori	355	28	7.9
Pacific	99	8	8.1
Asian	129	11	8.5
European/Other	1,538	77	5.0
Total	**2,121**	**124**	**5.8**

Indicator 7 – Colposcopy indicators

Indicator 7.1 – Timeliness of colposcopic assessment – high grade cytology

Table 54 - Proportion of women referred with cytological suspicion of invasive disease, by DHB

Sector	Urgent referrals received N
DHBs (public clinics)	30
Private practice	12
Total	**42**

Referral data was derived from data extracted in September 2012 by the Ministry of Health, and was finalised in consultation with DHBs, due to concerns about colposcopy referral data recorded in the NCSP Register. Referrals for public DHB clinics have been summarised, as results for individual DHBs are very small.

Table 55 - Proportion of women referred with high grade cytology (no suspicion of invasive disease, by DHB

DHB	Referrals received N
Auckland	176
Bay of Plenty	103
Canterbury	190
Capital & Coast	80
Counties Manukau	147
Hawke's Bay	36
Hutt Valley	44
Lakes	33
Mid Central	52
Nelson Marlborough	86
Northland	44
Otago	56
South Canterbury	23
Southland	32
Tairawhiti	8
Taranaki	84
Waikato	124
Wairarapa	7
Waitemata	201
West Coast	18
Whanganui	22
Private practice	*236*
Total	**1,802**

Referral data was derived from data extracted in September 2012 by the Ministry of Health, and was finalised in consultation with DHBs, due to concerns about colposcopy referral data recorded in the NCSP Register.

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	915	99.0	100.0	93.0	95.7
Bay of Plenty	570	96.1	100.0	88.2	88.9
Canterbury	2,154	98.1	100.0	96.2	95.9
Capital & Coast	479	99.2	100.0	93.6	95.9
Counties Manukau	893	99.0	100.0	95.3	96.5
Hawke's Bay	384	97.3	100.0	94.2	94.0
Hutt Valley	278	99.3	100.0	91.4	93.2
Lakes	165	98.9	100.0	94.2	96.7
Mid Central	765	97.1	100.0	98.7	96.3
Nelson Marlborough	376	98.4	100.0	95.5	95.6
Northland	554	97.4	100.0	87.9	91.4
Otago	452	98.7	100.0	90.1	92.9
South Canterbury	279	98.2	100.0	88.1	90.3
Southland	187	96.3	100.0	97.3	95.5
Tairawhiti	141	96.5	100.0	96.6	94.3
Taranaki	349	95.7	100.0	78.5	87.2
Waikato	350	98.6	100.0	96.7	96.9
Wairarapa	124	99.2	100.0	95.7	96.8
Waitemata	1,726	96.8	100.0	95.1	94.7
West Coast	311	96.2	100.0	88.8	89.1
Whanganui	186	100.0	100.0	100.0	100.0
Private practice	1,676	98.1	100.0	90.5	92.7
Total	**13,314**	**97.9**	**100.0**	**93.2**	**94.2**

Number of colposcopies in this table uses data extracted in September 2012 by the Ministry of Health, that was used to consult the DHBs on colposcopy in October and November 2012. Percentage of colposcopy reports with completion of assessment fields derived from an analysis of 12,476 colposcopiy reports held on the NCSP Register as at March 2012. Results should therefore be interpreted with caution

Table 57 – Summary of colposcopic appearance findings, by DHB

DHB	Total colposcopies N*	Colposcopic appearance (% of colposcopies)		
		SCJ visible*	Abnormal*	Inconclusive*
Auckland	915	93	44	3.4
Bay of Plenty	570	90	56	7.2
Canterbury	2,154	93	40	1.6
Capital & Coast	479	95	55	2.9
Counties Manukau	893	94	52	2.6
Hawke's Bay	384	95	54	3.1
Hutt Valley	278	90	69	6.5
Lakes	165	93	56	3.6
Mid Central	765	99	60	0.8
Nelson Marlborough	376	94	61	2.4
Northland	554	96	46	6.1
Otago	452	92	54	5.0
South Canterbury	279	96	59	8.2
Southland	187	94	58	2.1
Tairawhiti	141	93	61	2.1
Taranaki	349	90	37	10.3
Waikato	350	97	58	2.0
Wairarapa	124	99	56	2.4
Waitemata	1,726	85	46	2.4
West Coast	311	88	60	9.6
Whanganui	186	98	49	0.0
Private practice	*1,676*	-	*51*	*5.4*
Total	**13,314**	**90**	**53**	**4.2**

** As a percentage of colposcopies where this data was provided.*
This table uses data extracted in September 2012 by the Ministry of Health, that was used to consult the DHBs on colposcopy in October and November 2012. Results for private practice based on data for 2,068 colposcopies extracted from the NCSP Register in March 2012.

Indicator 7.5 – Timely discharge of women after treatment

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

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	118	2	66.7	1	33.3	1	100.0
Bay of Plenty	33	13	41.9	12	38.7	11	91.7
Canterbury	209	121	58.5	100	48.3	77	77.0
Capital & Coast	91	23	37.1	20	32.3	18	90.0
Counties Manukau	150	76	69.7	60	55.0	53	88.3
Hawke's Bay	66	33	68.8	26	54.2	25	96.2
Hutt Valley	49	14	60.9	12	52.2	12	100.0
Lakes	32	1	50.0	1	50.0	1	100.0
Mid Central	96	38	55.1	30	43.5	23	76.7
Nelson Marlborough	124	0	0.0	0	n/a	-	n/a
Northland	92	20	35.7	17	30.4	16	94.1
Otago	62	28	50.9	28	50.9	23	82.1
South Canterbury	35	1	100.0	1	100.0	1	100.0
Southland	35	21	63.6	18	54.5	9	50.0
Tairawhiti	25	4	28.6	4	28.6	-	0.0
Taranaki	49	9	50.0	7	38.9	6	85.7
Waikato	78	53	57.0	47	50.5	45	95.7
Wairarapa	19	5	45.5	3	27.3	2	66.7
Waitemata	225	80	66.7	66	55.0	32	48.5
West Coast	61	12	80.0	11	73.3	10	90.9
Whanganui	34	7	25.9	7	25.9	7	100.0
Private Practice	*119*	*53*	*35.6*	*48*	*32.2*	*35*	*72.9*
NZ OVERALL	**1,802**	**614**	**53.6**	**519**	**45.3**	**407**	**78.4**

Total treatments in this table uses data extracted in September 2012 by the Ministry of Health, that was used to consult the DHBs on colposcopy in Oct-Nov 2012. Other results are based on data for 1,146 treatments extracted from the NCSP Register in September 2012. As a result, this table must be treated with caution.

Table 59 – Follow-up of treated women with colposcopy and cytology 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	118	1	33.3	2	66.7	2	66.7
Bay of Plenty	33	8	25.8	22	71.0	13	41.9
Canterbury	209	35	16.9	121	58.5	121	58.5
Capital & Coast	91	13	21.0	28	45.2	23	37.1
Counties Manukau	150	5	4.6	76	69.7	76	69.7
Hawke's Bay	66	4	8.3	36	75.0	33	68.8
Hutt Valley	49	6	26.1	14	60.9	14	60.9
Lakes	32	1	50.0	1	50.0	1	50.0
Mid Central	96	15	21.7	42	60.9	38	55.1
Nelson Marlborough	124	-	0.0	0	0.0	0	0.0
Northland	92	29	51.8	21	37.5	20	35.7
Otago	62	18	32.7	29	52.7	28	50.9
South Canterbury	35	-	0.0	1	100.0	1	100.0
Southland	35	1	3.0	21	63.6	21	63.6
Tairawhiti	25	-	0.0	4	28.6	4	28.6
Taranaki	49	9	50.0	9	50.0	9	50.0
Waikato	78	8	8.6	53	57.0	53	57.0
Wairarapa	19	4	36.4	5	45.5	5	45.5
Waitemata	225	13	10.8	80	66.7	80	66.7
West Coast	61	-	0.0	13	86.7	12	80.0
Whanganui	34	12	44.4	7	25.9	7	25.9
Private practice	*119*	*36*	*24.2*	*64*	*43.0*	*53*	*35.6*
Total	**1,802**	**218**	**19.0**	**649**	**56.6**	**614**	**53.6**

Total treatments in this table uses data extracted in September 2012 by the Ministry of Health, that was used to consult the DHBs on colposcopy in Oct-Nov 2012. Other results are based on data for 1,146 treatments extracted from the NCSP Register in September 2012. As a result, this table must be treated with caution.

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	167	155	1	0.6	154	99.4
Canterbury Health Laboratories	50	154	3	6.0	149	96.8
Diagnostic Medlab Ltd	302	778	1	0.3	775	99.6
LabPLUS	166	42	0	0.0	11	26.2
Medlab Central	70	102	0	0.0	87	85.3
Medlab South Christchurch	71	102	0	0.0	95	93.1
Pathlab	128	192	1	0.8	163	84.9
Southern Community Labs Dunedin	179	170	4	2.2	162	95.3
Total	**1,133**	**1,695**	**10**	**0.9**	**1,596**	**94.2**

** 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	272	132	3	1.1	128	97.0
Canterbury Health Laboratories	116	83	0	0.0	80	96.4
Diagnostic Medlab Ltd	712	712	2	0.3	712	100.0
LabPLUS	212	18	0	0.0	7	38.9
Medlab Central	220	104	2	0.9	74	71.2
Medlab South Christchurch	143	85	1	0.7	72	84.7
Pathlab	336	184	3	0.9	151	82.1
Southern Community Labs Dunedin	660	318	16	2.4	283	89.0
Total	**2,671**	**1,636**	**27**	**1.0**	**1,507**	**92.1**

** 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	1	154	0	0	2	1.3
Canterbury Health Laboratories	3	149	0	0	0	0.0
Diagnostic Medlab Ltd	1	783	0	0	0	0.0
LabPLUS	0	11	0	0	0	0.0
Medlab Central	0	87	0	0	0	0.0
Medlab South Christchurch	0	87	0	0	0	0.0
Pathlab	1	161	0	0	0	0.0
Southern Community Labs Dunedin	4	164	0	0	0	0.0
Total	**10**	**1,596**	**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 61*

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	128	0	0	2	1.6
Canterbury Health Laboratories	1	81	0	0	0	0.0
Diagnostic Medlab Ltd	1	715	0	0	1	0.1
LabPLUS	0	7	0	0	0	0.0
Medlab Central	1	74	0	0	0	0.0
Medlab South Christchurch	1	68	0	0	0	0.0
Pathlab	3	149	0	0	0	0.0
Southern Community Labs Dunedin	17	285	0	0	0	0.0
Total	**27**	**1,507**	**0**	**0**	**3**	**0.2**

** 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	704	-	0	704	100
Amplicor PCR	-	-	0.0	-	0.0
Digene HC2	-	-	0.0	-	0.0
Roche Amplicor	1,245	1	0.1	1,244	99.9
Roche cobas	1,191	4	0.3	1,187	99.7
Roche Linear Array	-	-	0.0	-	0.0
Other	-	-	0.0	-	0.0
Total	**3,140**	**5**	**0.2**	**3,135**	**99.8**

Indicator 8.2 – HPV test volumes

Table 65 - Volume of HPV test samples received by laboratories during the monitoring period, by ethnicity

	HPV tests received	
Laboratory	**N**	**% of national total**
Māori	1,909	10.6
Pacific	401	2.2
Asian	807	4.5
European/Other	14,893	82.7
Total	**18,010**	**100.0**

Table 66 - Purpose for which HPV tests were performed, by age group

	HPV triage		Post-treatment		Historical		Taken at colposcopy		Other		Total
Age	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	
<20	-	0.0	-	0.0	1	12.5	3	37.5	4	50.0	8
20-24	-	0.0	122	23.9	117	22.9	93	18.2	178	34.9	510
25-29	-	0.0	259	22.7	557	48.9	88	7.7	235	20.6	1,139
30-34	707	27.9	174	6.9	1,167	46.1	92	3.6	394	15.5	2,534
35-39	632	20.5	149	4.8	1,706	55.3	80	2.6	520	16.8	3,087
40-44	605	19.5	127	4.1	1,503	48.5	71	2.3	790	25.5	3,096
45-49	498	19.3	69	2.7	1,068	41.3	63	2.4	885	34.3	2,583
50-54	385	18.5	59	2.8	702	33.8	57	2.7	876	42.1	2,079
55-59	192	14.1	22	1.6	415	30.6	34	2.5	694	51.1	1,357
60-64	131	13.7	27	2.8	272	28.4	25	2.6	503	52.5	958
65-69	95	18.1	12	2.3	135	25.7	16	3.0	267	50.9	525
70+	16	11.9	3	2.2	62	46.3	3	2.2	50	37.3	134
Total	**3,261**	**18.1**	**1,023**	**5.7**	**7,705**	**42.8**	**625**	**3.5**	**5,396**	**30.0**	**18,010**

Table 67 - Purpose for which HPV tests were performed, by ethnicity

	HPV triage		Post-treatment		Historical		Taken at colposcopy		Other		Total
Ethnicity	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	
Māori	337	17.7	146	7.6	901	47.2	80	4.2	445	23.3	1,909
Pacific	191	47.6	19	4.7	86	21.4	9	2.2	96	23.9	401
Asian	359	44.5	37	4.6	206	25.5	27	3.3	178	22.1	807
European/Other	2,374	15.9	821	5.5	6,512	43.7	509	3.4	4,677	31.4	14,893
Total	**3,261**	**18.1**	**1,023**	**5.7**	**7,705**	**42.8**	**625**	**3.5**	**5,396**	**30.0**	**18,010**

Table 68 - Purpose for which HPV tests were performed, by laboratory

	HPV triage		Post-treatment		Historical		Taken at colposcopy		Other		Total
Laboratory	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	
Aotea Pathology Ltd	285	20.7	37	2.7	657	47.8	13	0.9	383	27.9	1,375
Canterbury Health Laboratories	248	15.8	186	11.9	546	34.9	147	9.4	439	28.0	1,566
Diagnostic Medlab Ltd	1,619	44.4	81	2.2	1,059	29.0	43	1.2	845	23.2	3,647
LabPLUS	58	9.4	99	16.1	77	12.5	64	10.4	318	51.6	616
Medlab Central Ltd	160	7.2	180	8.1	1,103	49.9	24	1.1	744	33.6	2,211
Medlab South Christchurch	156	9.4	70	4.2	858	51.5	16	1.0	565	33.9	1,665
Pathlab	303	19.7	53	3.4	650	42.2	156	10.1	379	24.6	1,541
Southern Community Labs	432	8.0	317	5.9	2,755	51.1	162	3.0	1,723	32.0	5,389
Total	**3,261**	**18.1**	**1,023**	**5.7**	**7,705**	**42.8**	**625**	**3.5**	**5,396**	**30.0**	**18,010**

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	*372*	*10,408*	*3.6*
Auckland	5	931	0.5
Bay of Plenty	74	568	13.0
Canterbury	108	1,400	7.7
Capital & Coast	-	489	-
Counties Manukau	7	893	0.8
Hawke's Bay	24	365	6.6
Hutt Valley	-	278	-
Lakes	43	180	23.9
Mid Central	19	766	2.5
Nelson Marlborough	4	318	1.3
Northland	1	304	0.3
Otago	27	453	6.0
South Canterbury	12	278	4.3
Southland	26	243	10.7
Tairawhiti	-	141	-
Taranaki	-	352	-
Waikato	8	351	2.3
Wairarapa	-	124	-
Waitemata	12	1,718	0.7
West Coast	-	156	-
Whanganui	2	100	2.0
Private practice	123	2,068	5.9
Total	**495**	**12,476**	**4.0**

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 at the usual screening interval
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	Further assessment is recommended *(no longer used)*
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".

Table 71 - DHB assignment for colposcopy clinics

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

DHB	Colposcopy clinics included*
Otago	General Gynae Department – Dunedin Hospital Dunedin Public Hospital 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
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, non-Pacific and non-Asian 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