National Screening Unit

National Cervical Screening Programme

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About the authors

The authors are based at UNSW (formerly in the Cancer Research Division at Cancer Council NSW, Sydney, Australia). They are part of a research group (led by A/Prof Karen Canfell) which has as its core research focus the epidemiology of cervical cancer, cervical screening and human papillomavirus (HPV) vaccination. This research group has established an extensive track record both in research publication and in successful completion of commissioned projects related to national cervical screening programs in New Zealand, Australia and England. Expert advisors to the group's research work include Professor Dame Valerie Beral (Director, Cancer Epidemiology Unit, University of Oxford) and Professor Bruce Armstrong (Professor of Public Health, University of Sydney). The group has extensive experience in the analysis of descriptive data from cervical cancer screening programmes. The team also has a range of related skills in the analysis of linked datasets, systematic review and meta-analysis, biostatistics, health economics, and advanced statistical modelling techniques.

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1. Executive Summary

Purpose

This report provides data on performance indicators of the National Cervical Screening Programme (NCSP) for the period 1 July – 31 December 2013.

Key points on performance/trends

Indicator 1 — Coverage

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

- Among an estimated 1,150,916 eligible women aged 25-69 years at the end of the monitoring period, 879,799 (76.4%) had a screening test in the previous three years.
- The coverage target was not met nationally (80% of women aged 25-69 years screened in the previous three years).
- The coverage target was met for the five-year age groups between 40-59 years, but were not met for other age groups.
- The coverage target was met by four of 20 DHBs.
- The coverage target was met for European/ Other women (81.9% screened within the previous three years), but was not met for Māori, Pacific, or Asian women (62.6%, 68.6%, 64.8% respectively screened within the previous three years).
- Five-year coverage among women aged 25-69 years exceeds 80% in all DHBs, and in women in all five-year age groups between 25-69 years.
- Three-year coverage among women aged 25-69 years (76.4%) is slightly higher than that reported in the previous monitoring report (76.1%). It has increased in Māori and Asian women, and remained the same in Pacific women, but decreased in European/ Other women.
- Three-year coverage has decreased in younger age groups (those between 25-39 years), and also marginally decreased in women aged 20-24 years and 40-49 years, but has increased in age groups between 50-69 years.
- Three-year coverage increased in seven of 20 DHBs.
- Five-year coverage among women aged 25-69 years (90.4%) slightly lower than that in the previous monitoring report (91.1%).

Screens in women aged less than 20 years

Target: None

- In the three years to 31 December 2013, there were 10,177 women who had a cervical sample taken when they were aged less than 20 years. This is less than in the previous reporting period (10,936 women).
- This represents 1.0% of all women (of any age) who were

screened in the three-year period (compared to 1.1% in previous reporting period).
- Most of these women (86.2%) were aged 18-19 years at the time of their cervical sample.

Indicator 2

First screening events

Target: None

- There were 22,190 women who had their first screening event recorded on the NCSP Register during the current reporting period – a small increase compared to the previous reporting period.
- First screening events generally occur among young women (median age 25 years).
- Asian women appear to have their first screening event at a later age (median age of Asian women with a first screening event 31 years) and women with a first screening event make up a higher proportion of all women screened for Asian women, compared to women in other ethnic groups.

Indicator 3

Withdrawal rates

Target: Zero between ages 20-69 years

- There were 53 women aged between 20-69 years who withdrew from the NCSP Register during this six-month period. This is broadly similar to the number of women in this age range who withdrew during the previous reporting period (41 women).

Indicator 4

Early re-screening

Target: Currently reporting on the percentage of women in routine screening (previous smear negative and recommended to return at the routine interval) who returned for a smear within 30 months (2.5 years) of their index smear. Target level for this value is not yet defined.

- Among a cohort of women with a recommendation to return at the routine interval of three years, 18.5% had at least one cytology sample within 30 months of their index cytology sample.
- Early re-screening varies widely between DHBs, from 9.5% in Mid Central to 26.7% in Waitemata.
- Early re-screening occurs in all ethnic groups, but is most common among Asian women (19.9%), and least common among Pacific women (12.8%).
- Early re-screening occurs in all age groups, but is most common in women aged 20-24 years at the end of the period (24.9%) and least common in women aged 65-69 years at the

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end of the period (13.5%).

- Early re-screening has decreased since the previous report, from 19.4% to 18.5%

Indicator 5 — Laboratory Indicators

Note that some targets have been updated since the previous monitoring report, consistent with the revisions in the 2013 NCSP Standard.

Indicator 5.1 — Cytology reporting

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

Unsatisfactory cytology

Target: 0.1 - 3% for LBC *(updated since previous report)*

- Percent LBC samples unsatisfactory target was met by all seven laboratories, and was met nationally (1.2%).
- The rate of unsatisfactory LBC samples is unchanged since the previous report.

Negative cytology

Target: No more than 96% of satisfactory cytology samples

- Percent of samples negative target met nationally and by all seven laboratories.
- Nationally, the percent of samples which are negative (92.2%) is similar to that reported in the previous period (91.9%).

Abnormal cytology

Target: No more than 10% of satisfactory cytology samples

- Percent of samples abnormal target was met nationally and by four of seven laboratories.
- Nationally, the percent of samples which are abnormal (7.8%) is similar to that reported in the previous period (8.1%).

HSIL cytology

Target: No less than 0.5% of satisfactory cytology samples *(updated since previous report)*

- Percent of samples HSIL target was met nationally and by all seven laboratories.
- Percent of samples HSIL (0.9%) is slightly lower than in the previous report.

- In women aged 20-24 years, the percent of samples which are HSIL has dropped for the second consecutive monitoring period, following a previous longer period of increase.

Indicator 5.2 Cytology positive predictive value

HSIL + SC

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

- All seven laboratories met the target range for HSIL+SC of at least 65% and no more than 85%.
- Nationally, the positive predictive value of HSIL+SC was slightly higher for this monitoring period (82.0%) than in the previous report (81.5%).

Other cytological abnormalities

Target: None

- Nationally, the positive predictive value of ASC-H has decreased compared to the previous report (44.9%% in this report, 46.6% in the previous report).
- Nationally, the positive predictive value of the combination of ASC-H+HSIL+SC has increased compared to the previous report (67.8% in the previous report; 68.9% in the current report).
- Nationally, the proportion of glandular cytological abnormalities identified as histological high grade has decreased since the previous report, from 53.6% to 47.8% (however this measure is generally based on a comparatively small number of samples; 228 with histology in the current report).

Indicator 5.3 Accuracy of negative cytology reports

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

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

- Nationally, 2.8% of slides originally reported as negative, benign/reactive or unsatisfactory were consistent with HSIL+ on review.
- All laboratories met the target.

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

- Nationally, 4.8% of slides originally reported as negative,

benign/reactive or unsatisfactory were consistent with ASC-H+/AG4+ on review.
- All laboratories met the target of less than 20% and six out of seven laboratories achieved rates of less than 15%.

Indicator 5.4 Histology reporting

Target: None

- 14,472 histology samples were taken during the current reporting period. 436 (3.0%) of these were insufficient for diagnosis.
- Results for most severe histology from 12,256 women are presented
- 51.8% of women had histology samples which were negative/ benign
- 21.3% of women had CIN2/3 or HSIL histology results.
- 51 (0.42%) women had ISCC histology results, 32 (0.26%) women had invasive adenocarcinoma histology results, and three (<0.05%) had adenosquamous carcinoma histology results.

Indicator 5.5 Turnaround times

Cytology

Target: 90% within seven working days; 98% within 15 working days *(15-day target updated since previous report from 100% to 98%)*

- The seven-working-days target for cytology was met nationally (95.0% samples were reported within seven working-days), and was met by five of seven laboratories.
- The 15-working-days target was met nationally (99.0% samples were reported within 15 working-days), and was also met by six of the seven laboratories.
- The overall proportion of cytology samples reported within seven working-days has increased since the previous report (from 90.4% to 95.0%), and the number of labs meeting the target has increased from four to five.
- The overall proportion of cytology samples reported within 15-working-days (99.0%) is slightly higher than in the previous reporting period (98.4%).

Histology

Target: 90% within 10 working days; 98% within 15 working days *(90% target updated since previous report, from within five days to within ten days)*

- Nationally, the proportion of histology samples reported

within ten working-days was above the target (92.8%), but was below the target for reporting within 15 working-days (96.7%).
- Targets were met by 11 of 17 laboratories (ten-day target) and ten of 17 laboratories (15-day target).
- Thirteen of the 17 laboratories had reported on at least 95% of samples within 15 days.
- The overall proportion of histology samples reported within 15 days (96.9%) is very similar to that in the previous report (96.7%). The number of laboratories meeting the targets has increased since the previous report.

Low grade cytology with associated HPV triage testing

Target: 98% within 15 working days *(updated since previous report from 100% to 98% within 15 working days)*

- There were 3,261 cytology samples with associated HPV triage testing in the current reporting period.
- Turnaround time was above the target: 98.9% were reported on within 15 working days.
- Five laboratories met the target.
- The proportion reported within 15 days is lower for this subgroup of cytology (98.9%) than for cytology overall (99.3%), particularly at Canterbury Health Laboratories and LabPLUS (although the latter performed only a small number of such cytology with accompanying HPV triage tests).

Notes

- Some targets have updated since the previous monitoring report, consistent with the updated standard.
- 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).
- 82.3% of women had a histology report within 90 days of their high grade cytology report; 88.4% of women had a histology report within 180 days.
- Two DHBs (Canterbury, Tairawhiti) met the target for histological follow-up within 90 days; no DHB met the target

for histological follow-up within 180 days.

- Nationally, the proportion of women with histological follow-up within 90 days has increased since the previous reporting period (from 79.6% to 82.3%), as has the proportion with follow-up within 180 days (from 86.9% to 88.4%).
- Compared to the previous reporting period, the proportion of women with follow-up histology within 90 days increased for Māori, Asian, and European/ Other women, but decreased for Pacific women (from 67.5% to 66.7%).
- The proportion of women with follow-up histology within 180 days increased compared to the previous reporting period for Māori, Asian, and European/ Other women. Among Pacific women the proportion with follow-up histology within 180 days decreased compared to the previous reporting period (from 81.7% to 78.9%).
- The proportion of women with histological follow-up at 90 or 180 days (or both) increased for women in all age groups other than woman aged 45-49 years and 50-54 years.

Any follow-up tests

Target: None

- Nationally, 280 (11.2%) women have no follow-up test report (colposcopy, subsequent cytology, histology, HPV test) within 90 days of their cytology report, and 167 (6.7%) women have no follow-up test report within 180 days.
- Nationally, the proportion of women with no record of a follow-up test report has decreased since the previous reporting period at 90 days (from 12.1% to 11.2%) but has increased at 180 days (from 6.0% to 6.7%).
- Compared to the previous reporting period, the proportion of women with no follow-up test at 180 days has decreased for Māori women (from 9.9% to 8.8%), but increased for Pacific, Asian and European/ Other women (from 7.9% to 16.3%, from 6.1% to 6.3% and from 4.9% to 5.6% respectively).

Indicator 7	Colposcopy
Indicator 7.1	Timeliness of colpscopic assessment – high grade cytology

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

- There were 2,490 women with high grade cytology results who were not already under specialist management.
- This comprised 84 women with high grade results indicating a

suspicion of invasive disease and 2,406 women with other high grade results.

- Among the 84 women with high grade cytology results indicating a suspicion of invasive disease, 40 had an accepted referral and 70.0% of the women referred were seen within 10 working days of their referral being accepted; 77.5% seen within 20 working days of their referral being accepted. This is higher than in the previous report at 20 working days (73.7%). The proportion seen within 10 working days was not reported in the previous report, as the previous target related to five working days.
- Among the 2,406 women with other high grade cytology results, 60.3% were seen within 20 working days of their referral being accepted. This is also higher than the proportion seen within 20 working days in the previous reporting period (46.1%).
- The median time between a high grade cytology report and a colposcopy visit was 13 days for women with cytology suspicious of invasive disease, and 31 days for women with other high grade cytology results.
- A colposcopy visit is recorded for 69 (82.1%) of women with high grade results indicating a suspicion of invasive disease and 2,282 (94.8%) of the women with other high grade cytology results by to 31 December 2013 (follow-up time of at least six and up to 12 months).
- Nationally, the median time between the high grade cytology report and first colposcopy visit has decreased from 13.5 days to 13 days for women with high grade cytology indicating suspicion of invasive disease, and from 36 days to 31 days for women with high grade cytology (no suspicion of invasive disease).

Indicator 7.2 <u>Timeliness of colpscopic assessment – low grade cytology</u>

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

- At present, this indicator reports on aspects of follow-up, but not specifically on timeliness in relation to the standard, as the date of the first scheduled colposcopic appointment is not yet available in the NCSP Register.
- There were 4,687 women with persistent low grade cytology or low grade cytology and a positive hrHPV test collected in the period 1 July – 31 December 2012.
- Subsequent accepted referrals are recorded for 3,988 (85.1%) of these women, and subsequent colposcopy (with or without

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a referral) for 3,877 (82.7%) of these women.

- Among women with a referral recorded, the median time between the cytology report date and the date the referral was accepted was seven days (interquartile range (IQR): 3 - 18 days).
- Among women with both a referral and a colposcopy visit recorded, the median time between an accepted referral and the first attendance for colposcopy was 153 days (IQR: 72 – 205 days).

Indicator 7.3 <u>Adequacy of reporting colposcopy</u>

Target: 100% of medical notes will accurately record colposcopic findings including visibility of the squamo-columnar junction, colposcopic appearance (presence or absence of a visible lesion), colposcopic opinion regarding the nature of the abnormality, and the type of and timeframe for recommended follow-up.

- Based on 15,082 colposcopy visits recorded on the NCSP Register, no DHB nor the aggregate of colposcopy visits to private practice met the target of 100% completion of all recommended fields.
- The degree of visibility of the squamocolumnar junction was documented for 96.0% of colposcopies.
- Colposcopic appearance was documented for all colposcopies.
- Colposcopic opinion regarding abnormality grade was documented for 91.7% of colposcopies where appearance was abnormal or inconclusive.
- The type of recommended follow-up was recorded for 98.1% of colposcopy visits, and the recommended timeframe for this follow-up was recorded for 97.4% of colposcopy visits.
- All of these items were completed for 89.8% of colposcopy visits.
- Colposcopic appearance was reported as abnormal in 53.5% of colposcopies, and inconclusive in 4.8% of colposcopies.
- Completion of most recommended fields has decreased since the previous monitoring report (except for the presence or absence of a lesion, which was documented in all cases in both time periods).
- Overall completion (89.8%) is also lower since the previous reporting period (91.8%).
- The number of colposcopies recorded on the NCSP Register has decreased by 1.5%. It is possible that this may represent differences in reporting of colposcopies rather than a true decrease in the number of colposcopies performed.
- The number of DHBs reporting colposcopy data electronically to the NCSP Register has increased from one (Southern) to five (Hawke's Bay, Mid Central, Southern, Taranaki, Whanganui).

Indicator 7.4 Timeliness and appropriateness of treatment

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

- 59.5% of 2,718 women with HSIL histology (CIN2/3) during the period 1 January - 30 June 2013 have a record of treatment within eight weeks of their histology report.
- The proportion of women with histologically confirmed CIN2/3 treated within eight weeks of their histology result being reported has increased since the previous reporting period (from 30.5% to 59.5%).
- Target was met by three DHBs.

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

- There were 123 women with LSIL histology (CIN1, CIN not otherwise specified) who received treatment within 26 weeks of their LSIL histology report, and did not additionally have high grade histology in the six months preceding treatment.

Indicator 7.5 Timeliness of discharge following treatment

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

- Based on NCSP Register records, 1,521 women were treated for high grade lesions in the period July to December 2012.
- 71.5% of women treated have a record of both colposcopy and cytology within the nine months after their treatment visit. 72.4% have a record of at least a colposcopy visit (with or without cytology) in the same time period.
- Two DHBs met the target for follow-up within nine months post-treatment.

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

- There were 1,197 women who met the criteria for appropriate discharge within 12 months of their treatment (74.8% of women treated). Of these women, 1,042 (87.1%) were discharged to their smear taker within 12 months.
- Eight DHBs met the target of discharging 90% or more women who were eligible for discharge within 12 months.

Indicator 8 HPV testing

Indicator 8.1 HPV triage of low grade cytology

Target: None set.

- Nationally, 96.5% of women aged 30 years or more with an eligible ASC-US cytology result, and 96.2% of women aged 30 years or more with an eligible LSIL cytology result are recorded as having a subsequent HPV triage test.
- Among women aged 30 years or more with valid HPV triage test results, 26.4% of women with ASC-US results and 60.0% of women with LSIL results were positive for high risk HPV.
- Positivity for high risk HPV varied by laboratory (from 17.4% to 43.6% for ASC-US, and from 48.9% to 70.6% for LSIL)
- Positivity for high risk HPV generally decreased with increasing age.
- Small numbers of HPV triage tests occur in women aged under 30 years (in 1.0% of women with an ASC-US result, and 0.8% of women with an LSIL result; 28 women in total)
- The proportion of women who were eligible for HPV triage of low grade cytology who subsequently received a triage test is higher than that in the previous reporting period for women with ASC-US results (96.5%, compared to 95.3% in the previous report) and similar to that in the previous reporting period for women with LSIL results (96.2%, compared to 96.1%).
- The proportion of women whose HPV tests were positive was somewhat higher in the current reporting period for ASC-US (26.4%, compared to 23.1% in the previous period), and similar for LSIL (60.0%, compared to 59.0% in the previous period).

Indicator 8.2 HPV test volumes

Target: None set.

- Nationally, 20,111 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 (87.7% of all HPV test samples)
- HPV test volumes were lowest at LabPLUS (827 samples; 4.1% of all HPV test samples) and highest at Southern Community Labs (7,137 samples; 35.5% of all HPV test samples).
- HPV samples were predominantly from European/ Other women (16,003 samples; 79.6% of all HPV test samples).
- Nationally, 15.5% HPV tests are taken for HPV triage of low grade cytology in women aged 30 years or more, 11.2% were

taken for follow-up of women treated for confirmed high grade squamous abnormalities in the previous four years, 38.5% were taken to manage women with high grade squamous cytology or histology more than three years ago (historical testing), and 5.4% were taken at colposcopy (potentially to assist in resolving discordant results).

- Among the remaining 29.4% of HPV tests, it appears that a large proportion were for follow-up of historical high grade abnormalities which are not recorded on the NCSP Register (this may have occurred, for example, because the abnormalities pre-date either the Register or the woman's enrolment on the Register or because the abnormalities occurred overseas) (43.5% of the remaining tests; 12.8% of all HPV tests). A smaller proportion appear to have been related to follow-up of an abnormality outside guidelines recommendations (for example low grade abnormalities in cases where the guidelines recommend referral to colposcopy rather than triage, or women with non-squamous abnormalities).
- HPV tests in women aged less than 25 years were most commonly for post-treatment management or taken at colposcopy for other reasons (potentially to resolve discordant results). HPV tests in women aged 25 years or more were most commonly for historical testing.
- The proportion of HPV tests which are invalid is very small (0.1%).
- Overall HPV test volumes are somewhat higher than those in the previous report (increased by 4.9%). The increase appears to have predominantly occurred in tests taken for follow-up of women treated for confirmed high grade squamous abnormalities in the previous four years, but also in tests for which the purpose was unclear.

2. Background

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

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

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

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

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

The development of these reports is ongoing. In particular, indicators relating to colposcopy and HPV tests are being progressively included but some indicators are in development and will be reported on in future. Work is also underway to improve accuracy and completeness of ethnicity data on the Register.

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

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

Further information about the NCSP Advisory Group and the monitoring and performance of the NCSP is available on http://www.nsu.govt.nz/health-professionals/1072.aspx and on request from the NCSP:
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3. Methods

Data used

The analyses in this report are based on data extracted from the NCSP Register in March 2014.

Age

Unless otherwise specified, age is defined as the woman's age at the end of the reporting period, i.e. 31 December 2013.

Hysterectomy-adjusted population

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

The hysterectomy-adjustment used in this report uses estimates of the hysterectomy prevalence (both total and partial) in the New Zealand population, modelled by Alistair Gray [1], and are the adjustors recommended by the Health and Disability Intelligence Unit within the Ministry of Health. Hysterectomy incidence was estimated by fitting models to observed data on hysterectomies obtained from public and private hospital discharge data and estimates of the usually resident female population from Statitics New Zealand. The resulting estimates of hysterectomy incidence and survival in single-year age groups by calendar year were then used to estimate the prevalence of hysterectomy by five-year age group (among women aged 20-69 years) and calendar year (1988 to 2014). The 2013 estimates were employed in this monitoring report. A known limitation of these estimates of hysterectomy prevalence is that they do not take into account deaths or women who leave New Zealand after they have a hysterectomy (which would tend to result in an overestimate of hysterectomy prevalence), nor women who migrate to New Zealand who have previously had a hysterectomy (which would tend to underestimate hysterectomy prevalence). These limitations may be mitigated by the fact they are working in opposite directions, and that some women who emigrate from New Zealand do return later in their lives. Further information about the hysterectomy prevalence methodology can be found in the document '*Methodology for estimating hysterectomy prevalence in women 20-69*' (14 September 2011) by A. Gray. [1]

The hysterectomy prevalence data were applied to New Zealand population estimates from Statistics New Zealand so that estimates of the number of women in the New Zealand population (by age and ethnicity) who had not had a hysterectomy prior to 31 December 2013 were obtained. Hysterectomy prevalence figures for the whole population (the denominator) were not available by DHB or ethnicity, so age-specific hysterectomy adjustments were applied equally across each DHB and ethnic group. These adjusted

population estimates were then used as the denominator in the hysterectomy-adjusted calculations.

The estimates used for the New Zealand female population were the female 2006 Census population, projected to 31 December 2013.

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 were not available were included in the "European/Other ethnic groups" category. The data download used for the current analysis (NCSP Register data as at March 2014) contained ethnicity codes for approximately 98.4% of women on the NCSP Register.

Ethnicity data in New Zealand is collected during encounters with the health system, such as registering with primary care, during an admission to hospital, or during surveys. The Ministry of Health has undertaken a number of activities to improve the quality of ethnicity data, including the development in 2004 of protocols for the collection and recording of ethnicity data. Coding of ethnicity on the NCSP Register follows the classification used by the Ministry of Health.[3, 4] The NCSP is continuing with work to improve the accuracy of ethnicity recording on the register.

Calculating NCSP coverage

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

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

years, but coverage was calculated for women aged 25 - 64 years, to ensure only women eligible throughout the period were included. Similarly in Australia, women are eligible to start screening from 18 years, but coverage is measured among women aged 20-69 years. The difference between the starting ages (two years) is the same as the recommended screening interval in Australia.

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

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

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

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

4. Biannual NCSP Monitoring Indicators

Indicator 1 – Coverage

Definition	The proportion of all 25-69 year old women who have had a screening event (cytology sample, HPV sample or histology sample) taken in the three years prior to the end of the reporting period. This definition restricts the measure of coverage to the five-year age groups who were eligible for the entire duration of the three-year period, ie women aged 25-69 years at the end of the monitoring period. Screening coverage in women aged 20-69 years is also presented, for comparability with previous reports. The denominator (eligible population) for this indicator is adjusted for the estimated proportion of women who have had a hysterectomy. Women who have withdrawn from or are not enrolled on the NCSP Register are excluded from the counts of women screened. Screening of women aged less than 20 years at the time of their cervical sample is also reported by DHB.
Target	80% of eligible women (aged 25-69 years at the end of the period) within three years by 31 December 2014. This target applies nationally, but is also a target for each ethnicity group (80% for Māori, 80% for Asian, 80% for Pacific, 80% for European/other).
Current Situation	As at 31 December 2013, 879,799 (76.4%) women aged 25-69 at the end of the current reporting period had at least one cervical sample taken during the previous three years. This does not yet meet the updated target of 80%. There were 1,040,816 (90.4%) women aged 25-69 at the end of the current reporting period who had at least one cervical sample taken during the previous five years. Three-yearly coverage in women aged 25-69 years varied by DHB from 69.5% (Counties Manukau) to 86.6% (Taranaki). Four of the 20 DHBs achieved the 80% target in women aged 25-69 years at the end of the period (Figure 1, Table 35). The target coverage of 80% of women screened at least once within three years was achieved in four out of the nine five-year age groups between 25 and 69 years. Among women aged 25-69 years at the end of the period, the target was achieved for each of the specific five-year age groups between 40-59 years, but was not achieved for the five-year age groups between 25 and 39 years, or 60 and 69 years. Among women aged 25-69 years at the end of the period, coverage was lowest in women aged 25-29 years (66.2%), and was highest in women aged 45-49 and 50-54 years (both were 81.4%) (Figure 2, Table 34). Coverage was also low 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, and so the target is not applied to this age group.

Three-yearly coverage also varied by ethnicity. Coverage targets of 80% were not met for Māori, Pacific, or Asian women. Coverage in these groups for women aged 25-69 years was 62.6%, 68.6%, and 64.8% respectively. The coverage target was achieved in European/Other women coverage (81.9% within three years) (Figure 4, Table 36). Coverage for each of Māori, Pacific, or Asian women was also explored at the DHB level. Coverage in Māori women ranged from 48.1% (South Canterbury) to 80.8% (Wairarapa)(Figure 4). The target level of 80% of Māori women screened within the previous three years was achieved in one DHB (Wairarapa). Coverage in Pacific women ranged from 53.9% (Northland) to 100% (West Coast)(Figure 5). The target level of 80% of Pacific women screened within the previous three years was achieved in seven DHBs (Auckland, Hawke's Bay, South Canterbury, Southern, Wairarapa, West Coast and Whanganui). Coverage in Asian women ranged from 56.0% (Canterbury) to 100% (West Coast) (Figure 6). The target level of 80% of Asian women screened within the previous three years was achieved in ten DHBs (Bay of Plenty, Hawke's Bay, Hutt Valley, Lakes, Nelson Marlborough, Northland, South Canterbury, Tairawhiti, Wairarapa and West Coast).

When compared to the findings for three-year coverage, five-year coverage had similar patterns of variation by age, DHB, and ethnicity to three-year coverage. In women aged 25-69 years at the end of the monitoring period, five-year coverage varied from 83.9% in Counties Manukau to 99.3% in Taranaki (Figure 8,Table 38); by age from 81.5% in women aged 25-29 years to 95.4% in women aged 45-49 years (Figure 9, Table 37); and from 76.4% (Asian) to 95.9% (European/Other) (Figure 10, Table 39).

Screens in women aged less than 20 years

A total of 10,177 women had a cervical sample taken in the three years to 31 December 2013 and were aged less than 20 years at the time of their cervical sample. This excludes two samples entered into the NCSP Register, where the apparent ages of the women were one and four years (likely representing data entry errors). 1.0% of women who were screened at any age, were aged less than 20 years at the time their cervical sample was taken (Table 41).

The number of women aged less than 20 years at the time they were screened varied by DHB from 84 (Tairawhiti) to 1,604 (Canterbury), however some differences in counts are to be expected due to differences in population size and age structure between DHBs. In order to take differences in population size between DHBs into account, the number of women who were screened in the previous three years and aged 15-19 years at the time of their cervical sample in each DHB was divided by the estimated population of females aged 15-19 years in that DHB. Note that as the events occurred over a three year period, and the population estimate is

for a single year, this proportion 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 4.8% (Tairawhiti) to 11.1% (Canterbury). Some smaller DHBs screen a relatively low number of women when they are younger than 20 years, but because the population is small this equates to screening women aged less than 20 years old at a comparatively high rate (for example South Canterbury, Wairarapa and West Coast). Details of screens of women aged less than 20 years by DHB are presented in Figure 11, and Table 40 to Table 42.

Further exploratory analysis determined that in most DHBs, 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 (86.2% overall; range across DHBs 73.2%- 95.3%). This may represent opportunistic screening of women aged 18-19 years. This proportion varied from 73.2% in South Canterbury to 95.3% in Whanganui. Where this proportion is higher, it indicates that a larger proportion of screening in women aged less than 20 years may be attributable to opportunistic screening of women aged 18-19 years; as this proportion decreases, it indicates that more of the screening in women aged under 20 years is occurring in women aged under 18 years, and less may be attributed to opportunistic screening of women aged 18-19 years.

Trends

Coverage

Overall coverage in New Zealand among women aged 25-69 years is slightly lower in the current period (76.4% within the last three years, and 90.4% within the last five years) compared to the previous reporting period (76.8% within the last three years, and 91.1% within the last five years).

Coverage within DHBs has been relatively stable, compared to the previous monitoring period, with the change in coverage generally being around one percentage point or less. Longer term trends by DHB are shown in Figure 12 and Table 44.

Trends by age are similar to those seen in the previous monitoring report. The coverage target of 80% of women within the past three years continued to be met for women in the five-year age groups between 40-59 years, but not for women outside this age range. Coverage has decreased in just over half age groups (those betwenn 20-49 years), although the decrease is generally small (maximum 2.0% in women aged 25-29 years; less than one percentage point in most age groups). Coverage has increased slightly in women aged 50-69 years. Longer term trends by age are shown in Figure 13 and Table 45.

Coverage by ethnicity is broadly similar to that observed in the previous

report (within one percentage point). There were small increases in Māori and Asian women and a small decrease in European/ Other women, consistent with broad patterns in recent reports (ie small increases in Māori women, increases in Asian women and small decreases in European/Other women). Longer term trends by ethnicity are shown in Figure 14 and Table 46.

Screens in women aged less than 20 years

The number of women screened who are aged under 20 years has decreased from 10,936 in the previous reporting period to 10,177 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 1.1% to 1.0%). The number of women screened who are aged less than 20 years at the time has decreased in almost all DHBs.

The proportion of these women who were aged 18-19 years has increased somewhat since the previous reporting period (from 85.5% to 86.2%), and an increase has occurred in many DHBs (13 of 21). As in previous reports, it would appear that in New Zealand overall, screens in very young women are reducing, and where these still occur they increasingly reflect opportunistic screening of 18-19 year olds.

Comments

As discussed in Methods (Hysterectomy-adjusted population, page 14), the hysterectomy prevalence used to make the adjustment includes all women with a hysterectomy, some of whom may still require cervical screening. These women will have been removed from the denominator, but may still appear in the numerator. As a result of these limitations, coverage must be interpreted with some caution. We explored the impact of the hysterectomy-adjustment on the results by calculating coverage as a proportion of the total New Zealand female population (ie regardless of whether they have had a hysterectomy or not). Results for this analysis appear in Table 43.

Another limitation is that the overall population estimates used (in conjunction with the hysterectomy adjustors) are population projections for the end of 2013 but still based on 2006 Census population. This was an unavoidable limitation, because the 2011 Census was not held as planned, due to the Christchurch earthquake in February 2011, and detailed population estimates based on the 2013 Census (by ethnicity and DHB) were not yet available at the time of this analysis. However this limitation also means that some caution is required in interpreting coverage.

In the current report, the number of Pacific women and Asian women screened in the previous three years in West Coast exceeds the hysterectomy-adjusted population (but not the estimated ethnicity-specific female population) in this DHB. This may be because the hysterectomy adjustors used have been estimated for New Zealand as a whole, and are not ethnicity-specific or DHB-specific. In practice hysterectomy prevalence

may vary by ethnicity or by DHB. Alternatively, this may be because women with a hysterectomy remained in the numerator, as described above. However, this latter possibility has existed over several reports, whereas the number of women screened has exceeded hysterectomy-adjusted population only since Report 38; this coincided with the hysterectomy adjustors no longer being ethnicity-specific. Another factor could be that the underlying DHB and ethnicity population estimates are projections based on the 2006 Census, as previously discussed.

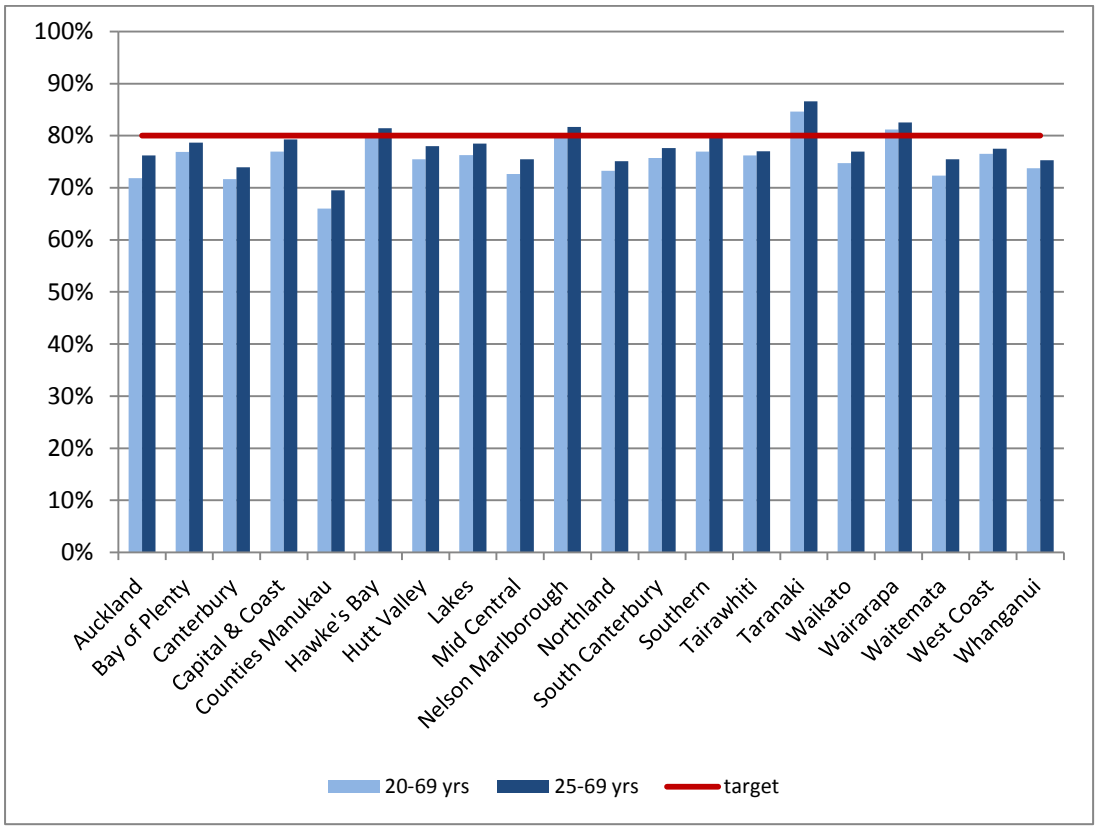
Counts of women screened used to estimate coverage (numerator) exclude women who are not enrolled on the NCSP Register, whereas the hysterectomy-adjusted population estimates (denominator) represent all women in New Zealand without a hysterectomy, regardless of whether they are enrolled on the NCSP Register.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

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

Misclassification of women's ethnicity (leading to under- and over-counting of different ethnicity groups) may be contributing in part to the differences in coverage achieved in different ethnicity groups. Our previous explorations of misclassification via ethnicity adjustors (from *Wright 2008*)[5] indicates that this is a factor, but is unlikely to explain all of the difference in observed coverage rates by ethnicity. Estimates in this report have no longer been adjusted for undercounting, since the most recent available adjustors relate to 2008, and the periods considered for coverage are wider – ranging from mid-2010 to mid-2013 (three-year coverage), and mid-2008 to mid-2013 (five-year coverage).

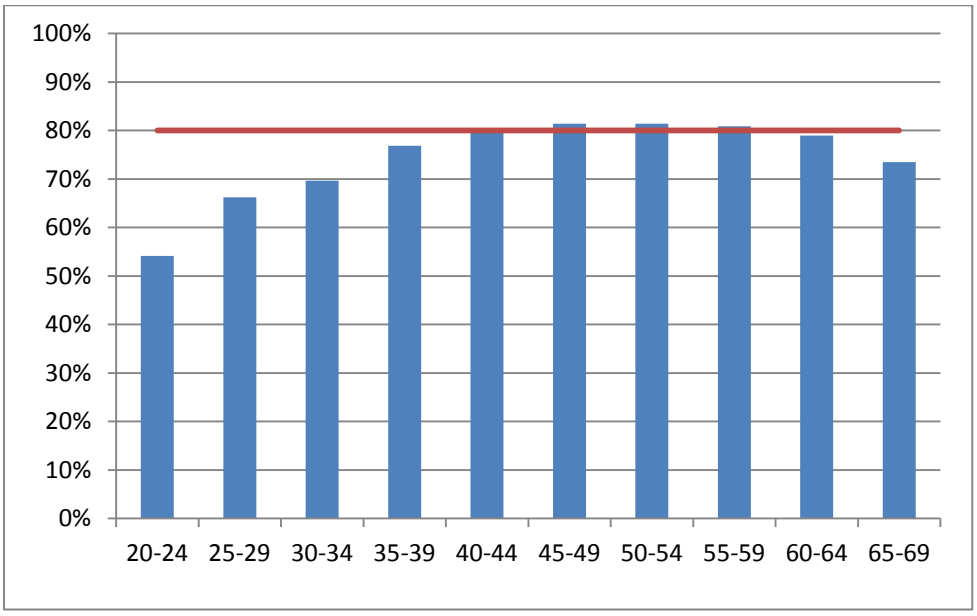
Coverage in women aged 20-24 years is likely to remain lower than for other ages and coverage in this age group should be interpreted with caution, as many women will have had a shorter period in which they were eligible for screening.

Figure 1 - Three-year coverage by DHB (women screened in the three years prior to 31 December 2013, as a proportion of hysterectomy-adjusted female population)



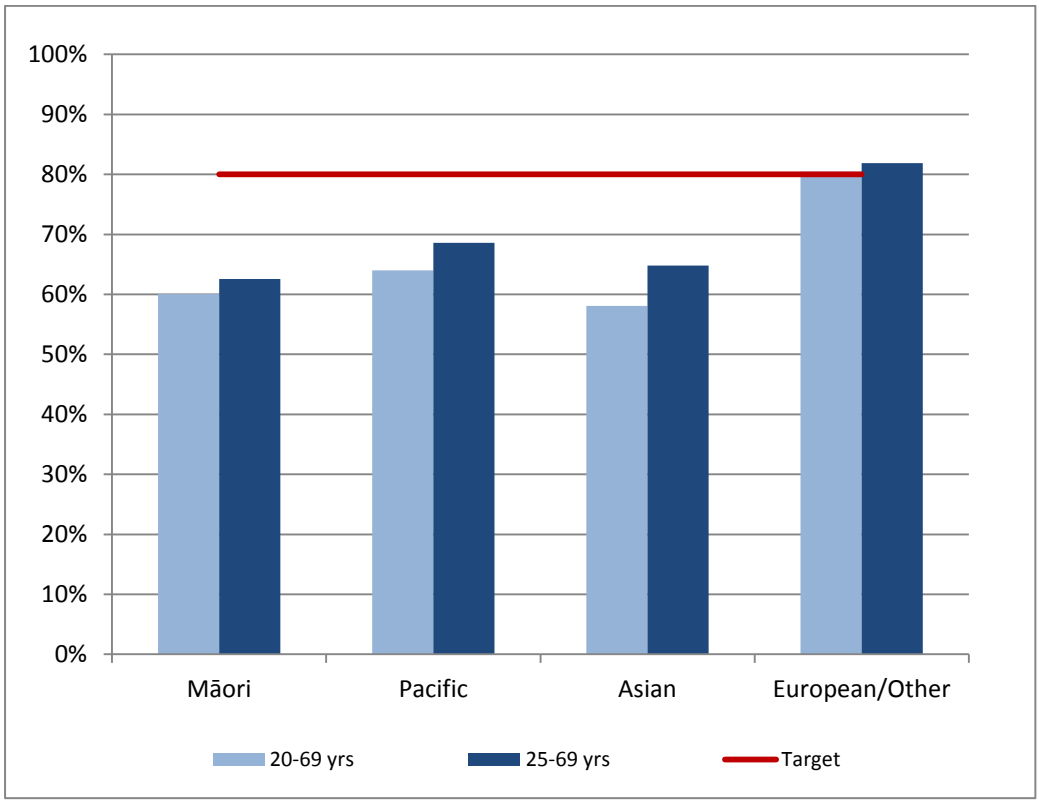
Note: Coverage calculated using population projection for 31 December 2013 based on 2006 Census data.
Target 80%, hysterectomy adjusted. See also Table 35

Figure 2 - Three-year coverage by five-year age group (women 20-69 years screened in the three years prior to 31 December 2013, as a proportion of hysterectomy-adjusted female population)



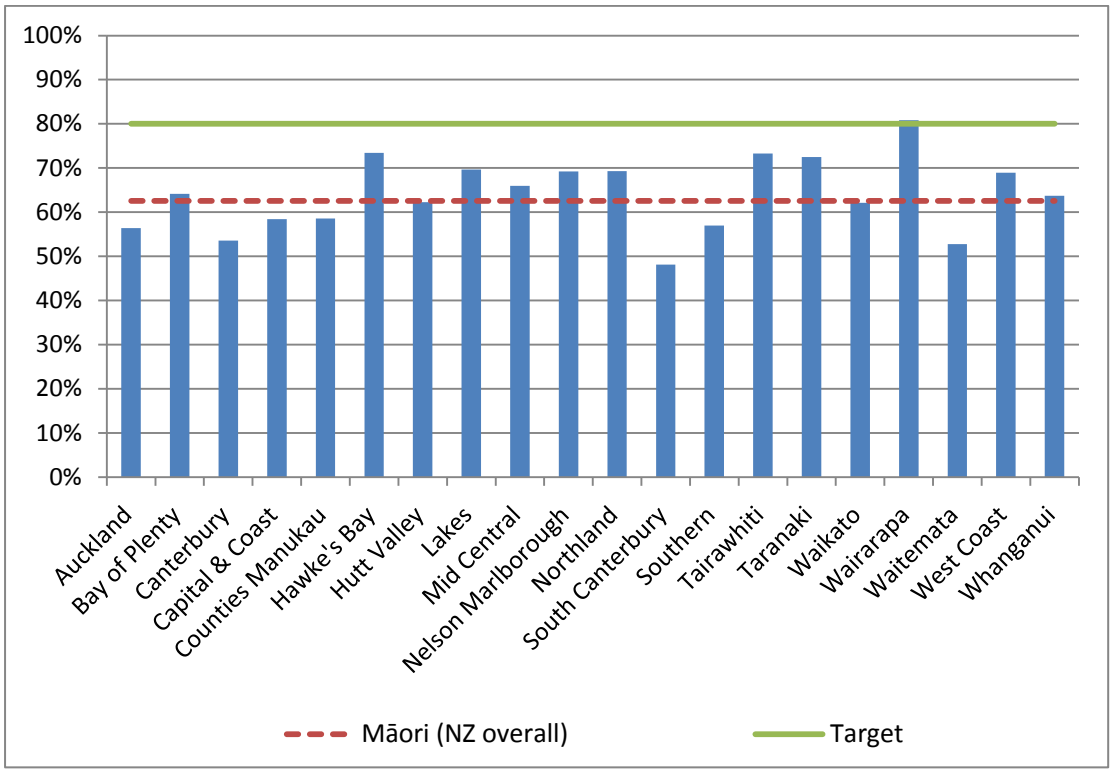
Note: Coverage calculated using population projection for 31 December 2013 based on 2006 Census data.
Target (red line); 80%, hysterectomy adjusted. See also Table 34

Figure 3 - Three-year coverage (women screened in the three years prior to 31 December 2013, as a proportion of hysterectomy-adjusted female population), by ethnicity



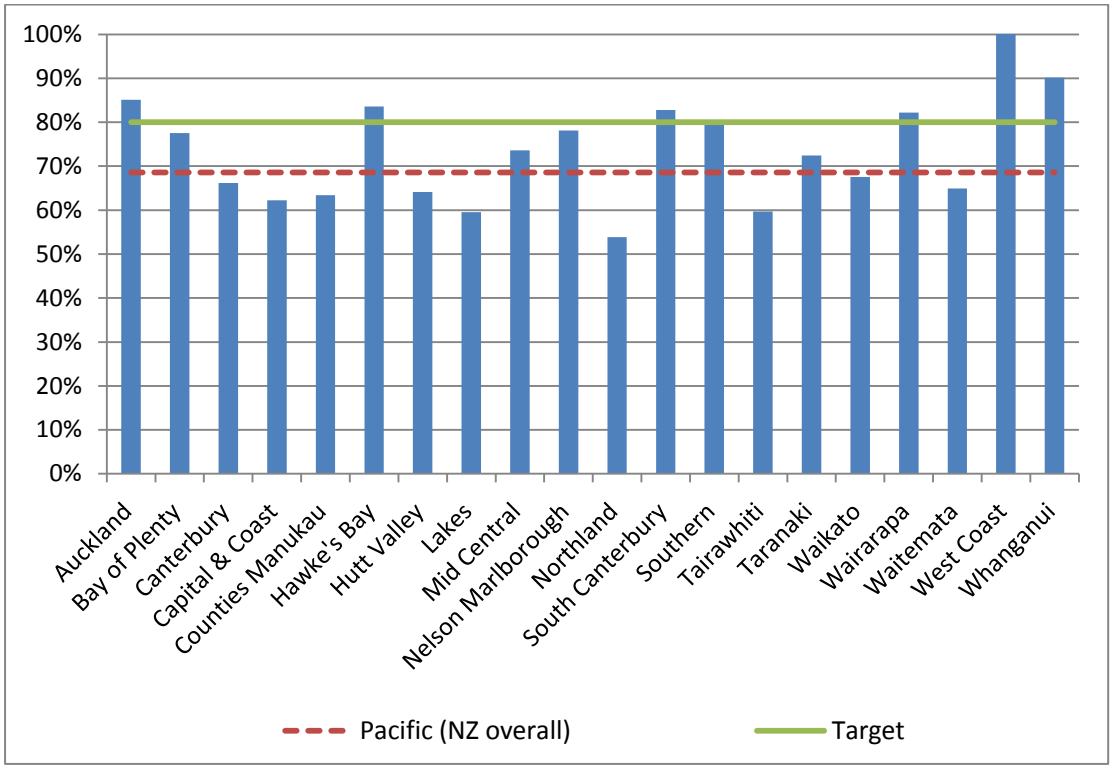
Note: Coverage calculated using population projection for 31 December 2013 based on 2006 Census data.
Target (red line); 80%, hysterectomy adjusted. See also Table 36

Figure 4 - Three-year coverage in Māori women (women 25-69 years screened in the three years prior to 31 December 2013, as a proportion of hysterectomy-adjusted female population), by DHB



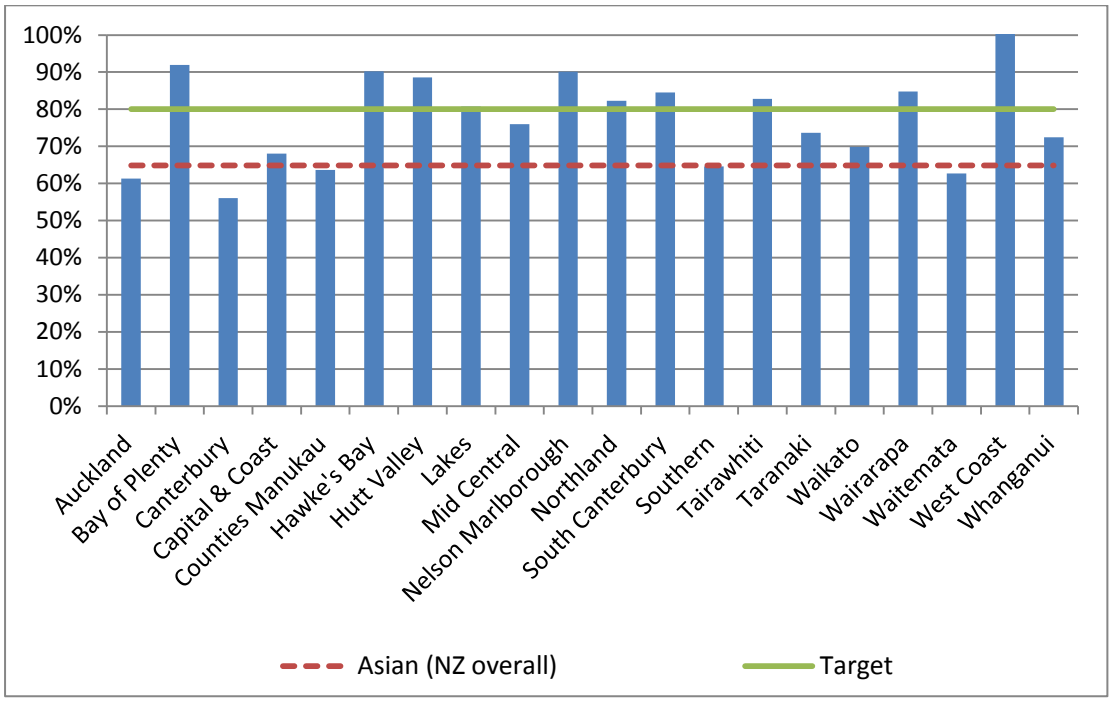
Note: Coverage calculated using population projection for 31 December 2013 based on 2006 Census data. Target 80%, hysterectomy adjusted.

Figure 5 - Three-year coverage in Pacific women (women 25-69 years screened in the three years prior to 31 December 2013, as a proportion of hysterectomy-adjusted female population), by DHB



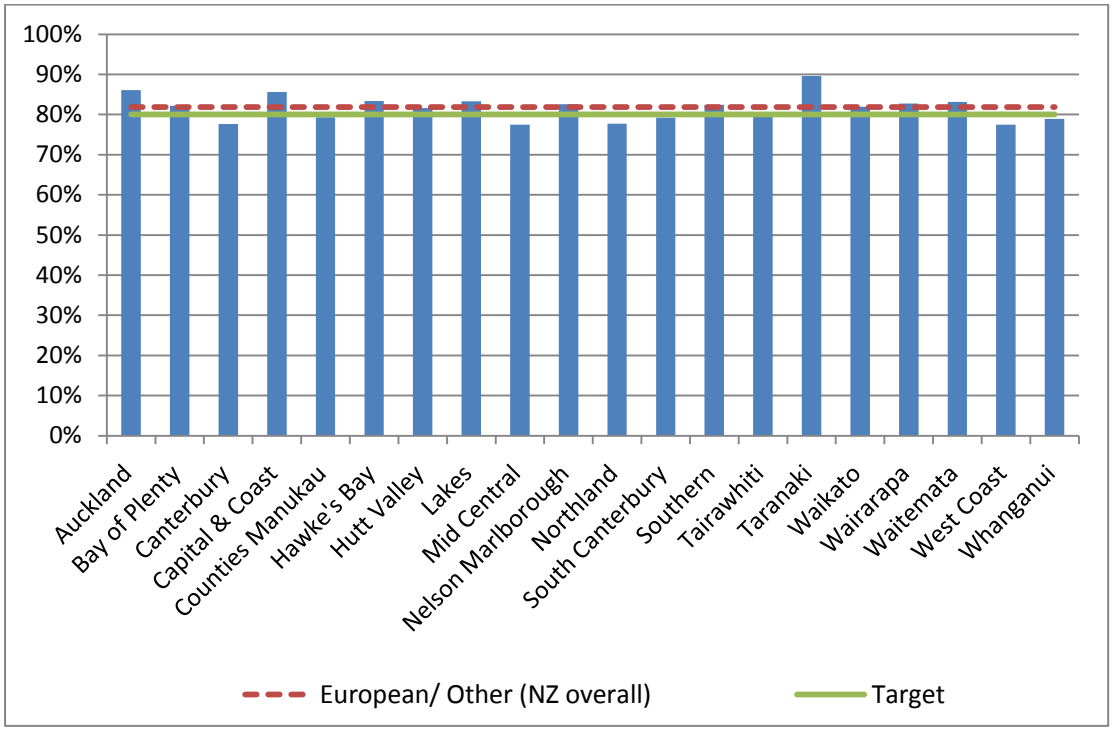
Note: Coverage calculated using population projection for 31 December 2013 based on 2006 Census data. Target 80%, hysterectomy adjusted.

Figure 6 - Three-year coverage in Asian women (women 25-69 years screened in the three years prior to 31 December 2013, as a proportion of hysterectomy-adjusted female population), by DHB



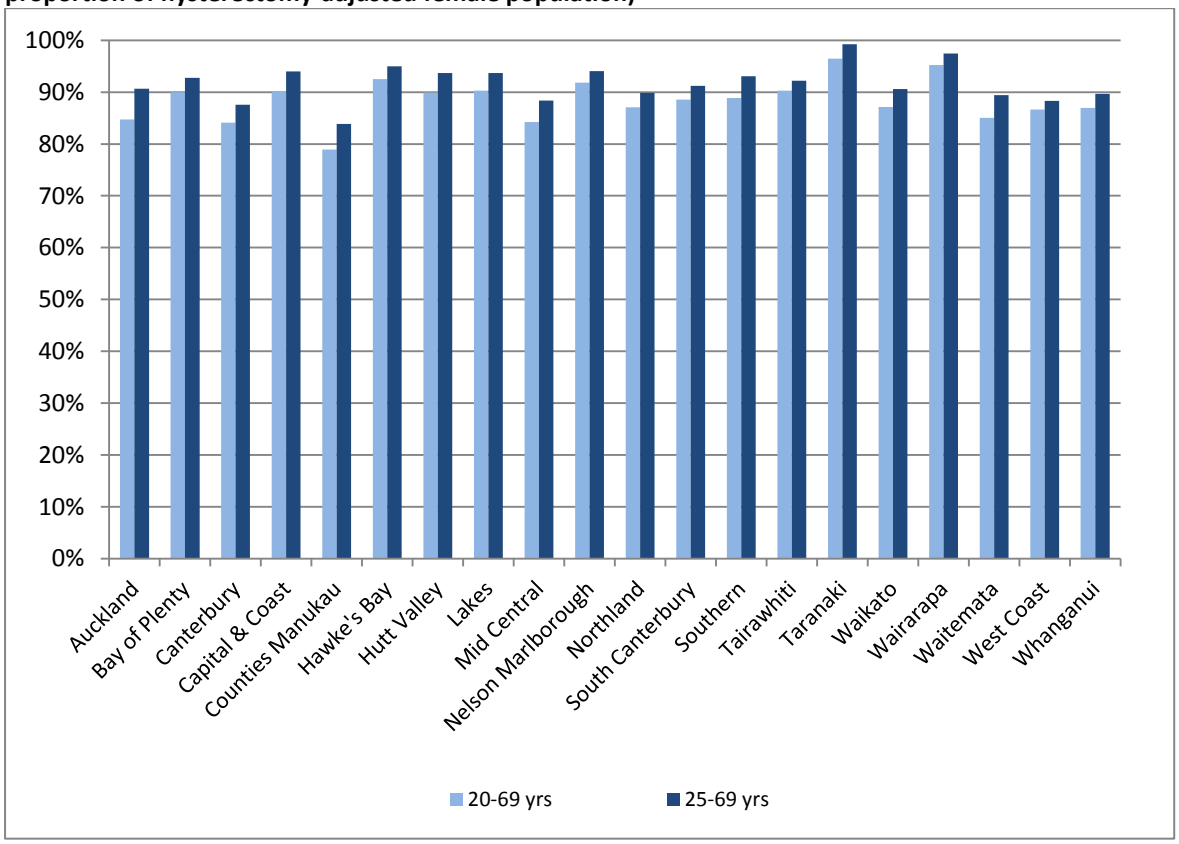
Note: Coverage calculated using population projection for 31 December 2013 based on 2006 Census data. Target 80%, hysterectomy adjusted.

Figure 7 - Three-year coverage in European/ Other women (women 25-69 years screened in the three years prior to 31 December 2013, as a proportion of hysterectomy-adjusted female population), by DHB



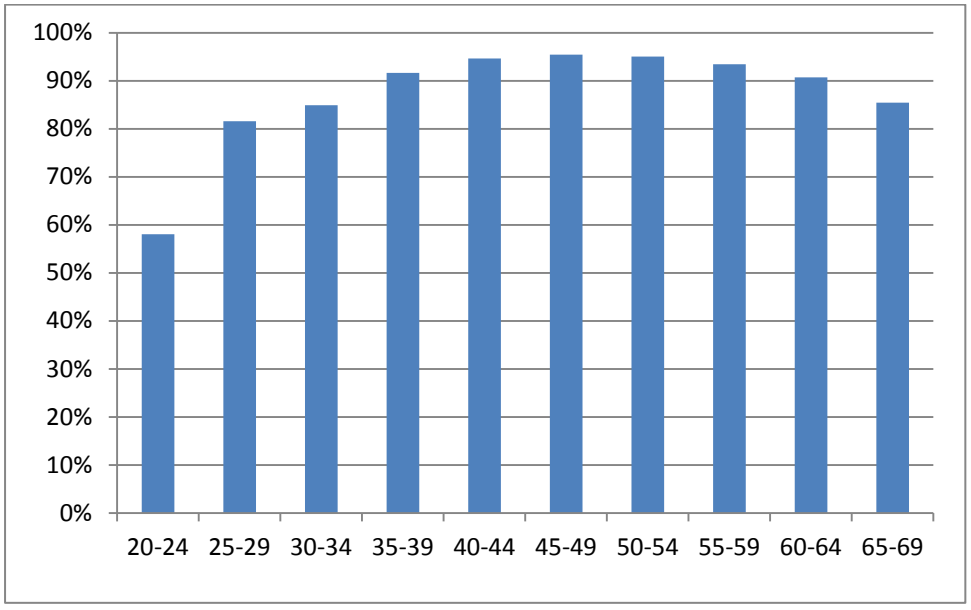
Note: Coverage calculated using population projection for 31 December 2013 based on 2006 Census data. Target 80%, hysterectomy adjusted.

Figure 8 - Five-year coverage by DHB (women screened in the five years prior to 31 December 2013, as proportion of hysterectomy-adjusted female population)



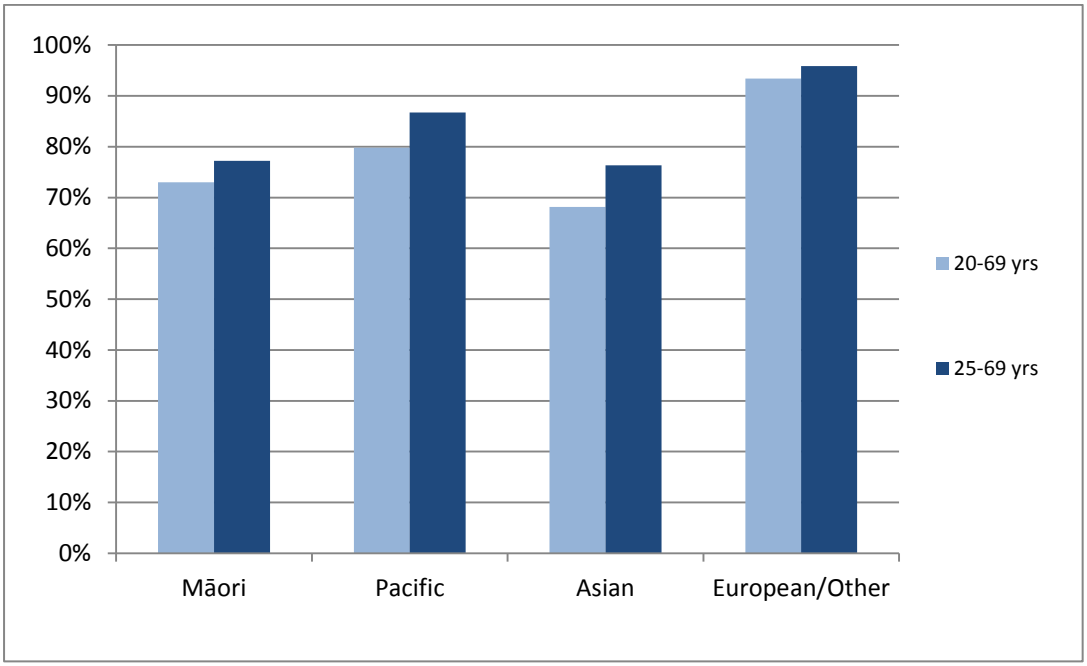
Note: Coverage calculated using population projection for 31 December 2013 based on 2006 Census data.
See also Table 38

Figure 9 - Five-year coverage by five-year age-group (women screened in the five years prior to 31 December 2013, as proportion of hysterectomy-adjusted female population)



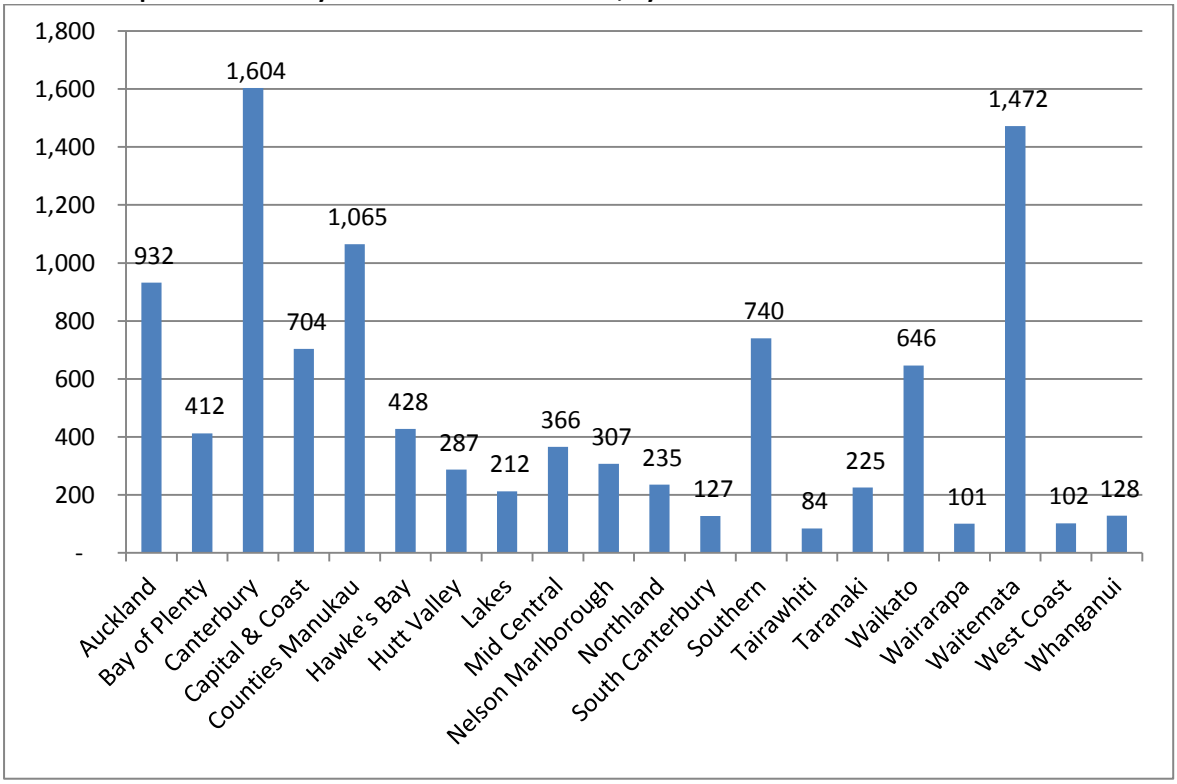
Note: Coverage calculated using population projection for 31 December 2013 based on 2006 Census data.
See also Table 37

Figure 10 - Five-year coverage by ethnicity (women screened in the five years prior to 31 December 2013, as a proportion of hysterectomy-adjusted female population)



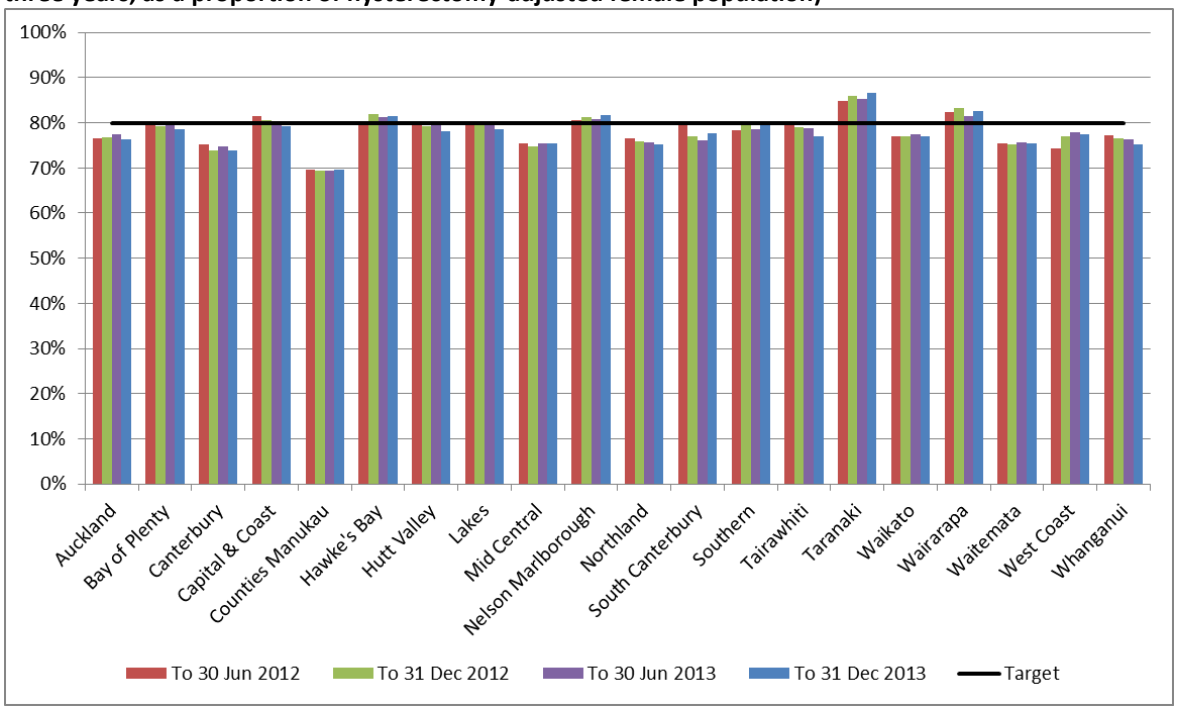
Note: Coverage calculated using population projection for 31 December 2013 based on 2006 Census data.
See also Table 39

Figure 11 - Number of women screened who were aged less than 20 years at the time of their cervical sample in the three years to 31 December 2013, by DHB



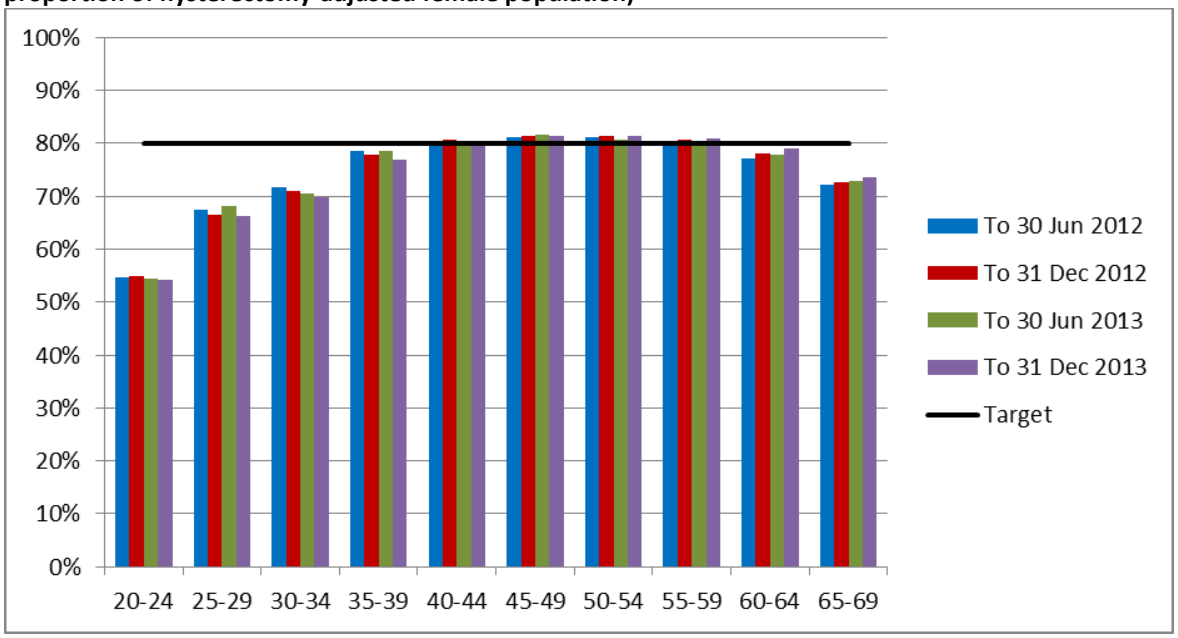
Excludes two women whose DHB was unknown and three women whose recorded age was less than ten years at the time of their cervical sample (likely data mis-entry). See also Table 40

Figure 12 – Trends in three-year coverage by DHB (women aged 25-69 years screened in the previous three years, as a proportion of hysterectomy-adjusted female population)



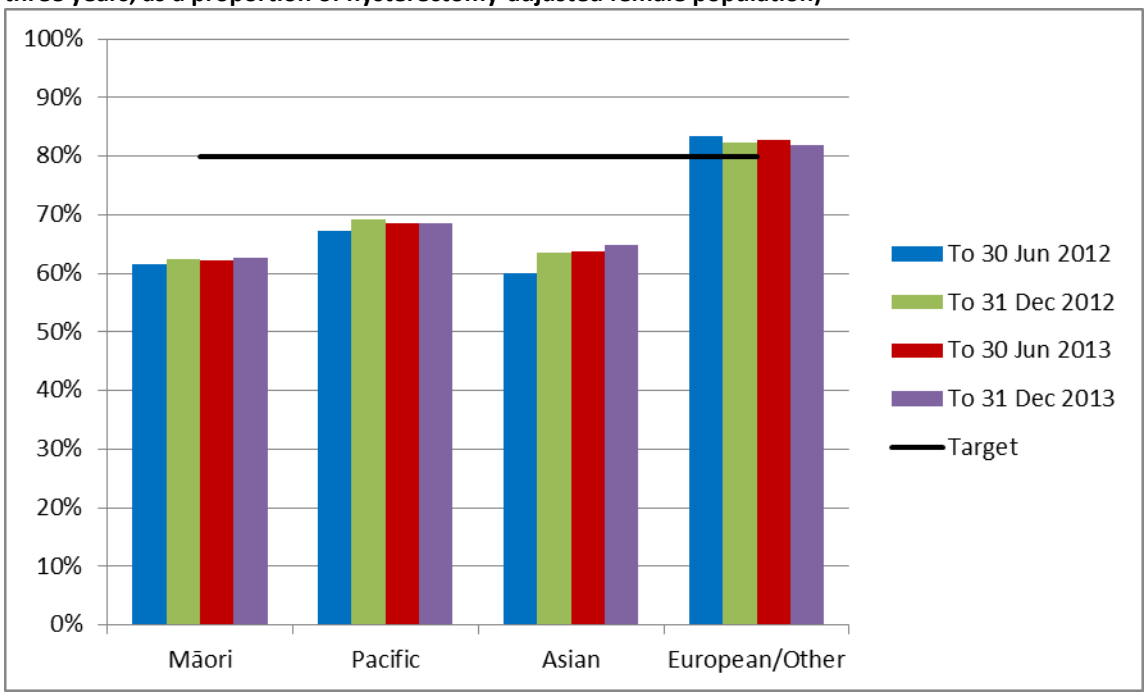
Coverage calculated using population projection at the end date shown, based on 2006 Census data. Target 80%. See also Table 44

Figure 13 - Trends in three-year coverage by age (women screened in the previous three years, as a proportion of hysterectomy-adjusted female population)



Coverage calculated using population projection at the end date shown, based on 2006 Census data. Target 80%. See also Table 45

Figure 14 - Trends in three-year coverage by ethnicity (women aged 25-69 years screened in the previous three years, as a proportion of hysterectomy-adjusted female population)



Coverage calculated using population projection at the end date shown, based on 2006 Census data. Target 80%. See also Table 46.

Indicator 2 – First screening events

Definition

Women with no cervical (cytology, histology, or HPV) samples taken prior to the current monitoring period, who have had a cervical sample taken during the monitoring period (first event).

A woman's age is defined as her age at the end of the current reporting period (i.e. 31 December 2013).

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

Target

There are no targets for first screening events

Current Situation

There were 22,190 women aged 20-69 years at the end of the period who had their first screening event in the period 1 July – 31 December 2013. This constituted 10.4% of the 213,362 women aged 20-69 years with a cervical sample taken in the period (screening event), and 1.7% of the eligible population. The median age (at the end of the reporting period) of women with a first event recorded was 25 years.

The age group with the highest number of first screening events was women aged 20-24 years. 11,081 women aged 20-24 had their first screening event recorded on the register during this reporting period, accounting for 49.9% of all women aged 20-69 years with first screening events (Figure 15, Table 47). 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 (42.1%) (Figure 16), and the highest proportion of eligible women at that age with a first screening event recorded in the current reporting period (6.9%) (Figure 17).

The DHBs with the highest number of women aged 20-69 years with first screening events were Auckland (3,434) and Waitemata (3,009). The DHBs where women with first screening events, as a proportion of all women with screening events, were the highest were Auckland (13.6%), Counties Manukau (12.3%) and Capital Coast (12.2%). The DHBs where this proportion was lowest were South Canterbury (6.2%) and West Coast (6.7%) (Figure 18, Table 48).

The ethnic group with the highest number of women with first screening events was European/Other (13,142) (Table 49). The group with the highest proportion of their eligible population being screened for the first time was Asian women (3.0%), and the group with the lowest proportion was Māori women (1.3%) (Table 49). The proportion of all women screened who were being screened for the first time was highest for Asian women (21.9%) (Table 49, Figure 19). This proportion is likely to be related to the median age of women with a first screening event, which in Asian women is comparatively high (31 years, compared with 21 years for Māori women,

26 years for Pacific women, and 22 years for European/Other women) (Table 50).

Trends

The number of women with a first screening event recorded on the NCSP Register has decreased slightly, from 21,293 women in the previous period, to 22,190 in the current period. Across the overall eligible population aged 20-69 years, the proportion of women with screening events that are their first screening event being recorded on the NCSP Register (10.4%) is unchanged since the previous period.

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

Trends over the two years ending 31 December 2013 are shown in Figure 20 (by age), Figure 70 (by DHB), and Figure 21 (by ethnicity).

Comments

Note that this indicator can only measure the number of women with their first screening event in New Zealand, recorded on the register since its introduction (1990). It does not capture screening events which occurred outside New Zealand, or among women who are not enrolled on the NCSP Register. Therefore, some "first" events may in practice represent the first screening event since the women migrated to New Zealand, or the first since she was enolled on the NCSP Register, rather than the first screening event in her life.

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 in turn could be due to higher coverage, higher abnormality rates [as abnormalities require women to return more frequently], or higher early re-screening). For example, the DHB with the highest coverage, Taranaki, does not have a particularly high proportion of women with first events. If coverage remains high, then this proportion will inevitably decrease, as fewer women are available to be screened for the first time. Conversely, a relatively high number of women with first screens as a proportion of all women screened could be due to either a higher number of women with first events (due to increasing uptake of screening), 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 15 - Number of first screening events by five-year age group

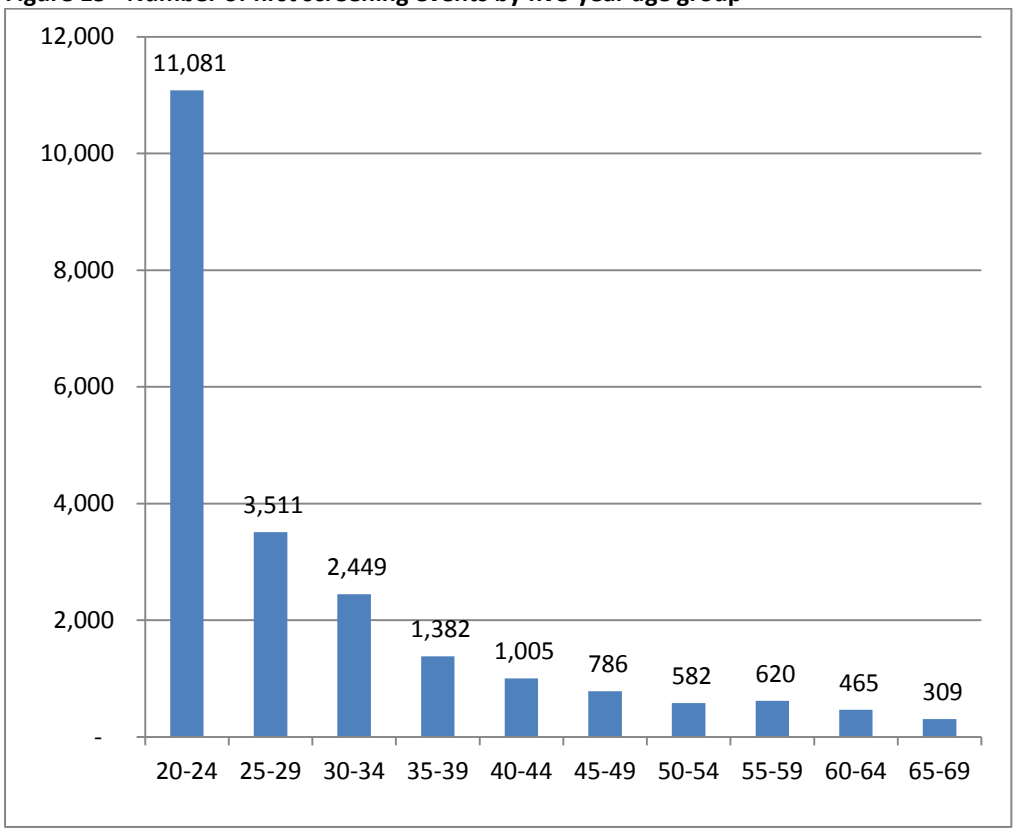


Figure 16 – Women with first screening events as a proportion of all women screened during the reporting period, by five-year age group (women aged 20-69 years at 31 December 2013)

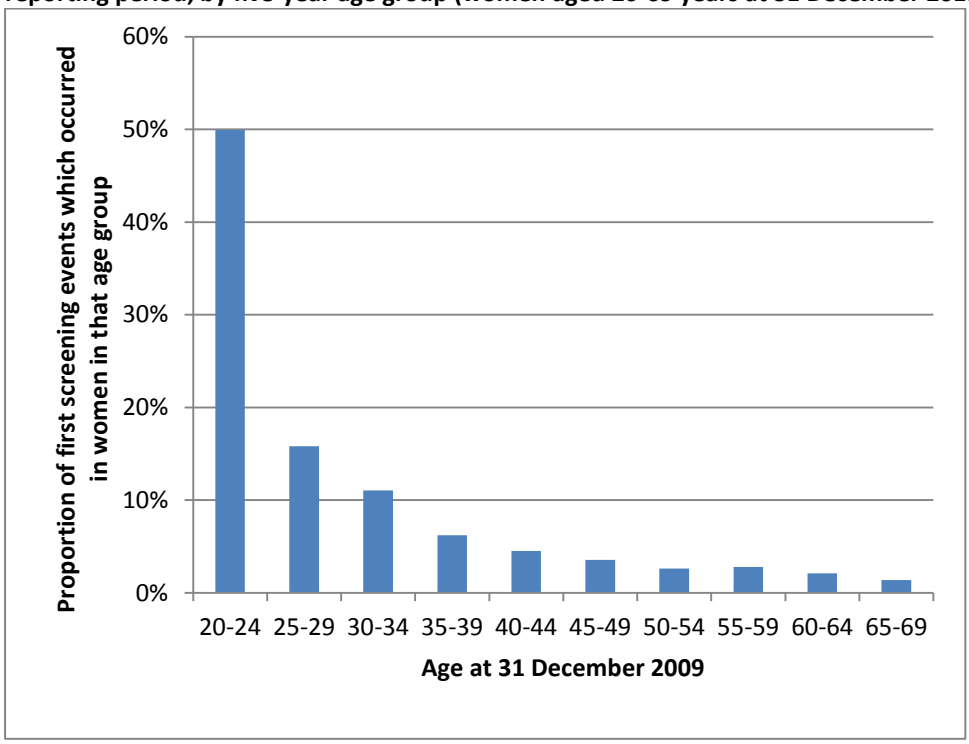
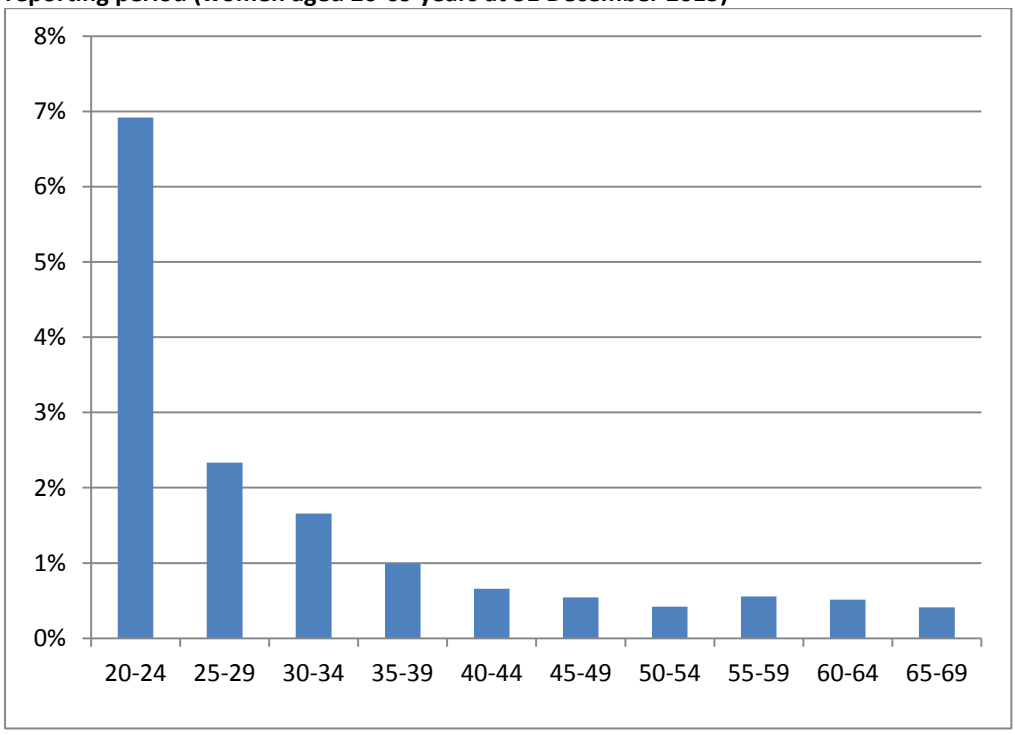


Figure 17 - Proportion of population* in that age group with their first screening event during the reporting period (women aged 20-69 years at 31 December 2013)



**Hysterectomy adjusted, 2006 Census data projected to 31 December 2013*

Figure 18 - Women with first screening events as a proportion of all women screened during the reporting period, by DHB (women aged 20-69 years at 31 December 2013)

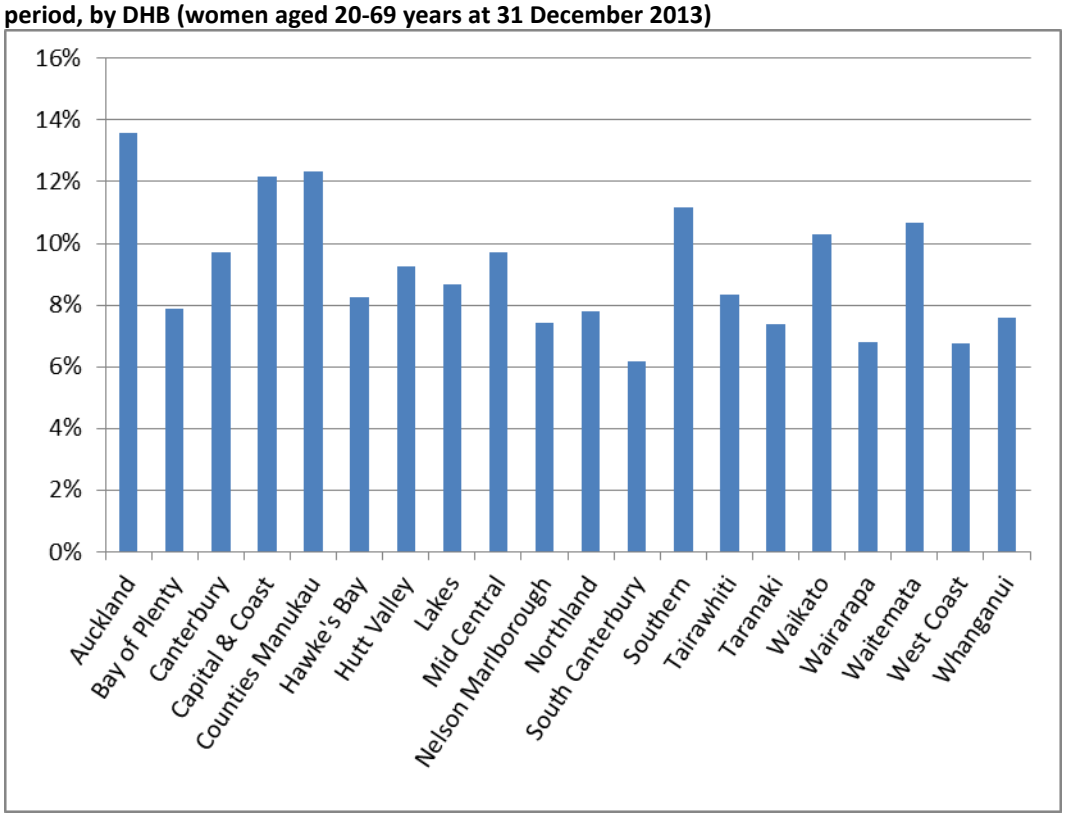


Figure 19 - Women with first screening events as a proportion of all women screened during the reporting period, by ethnicity

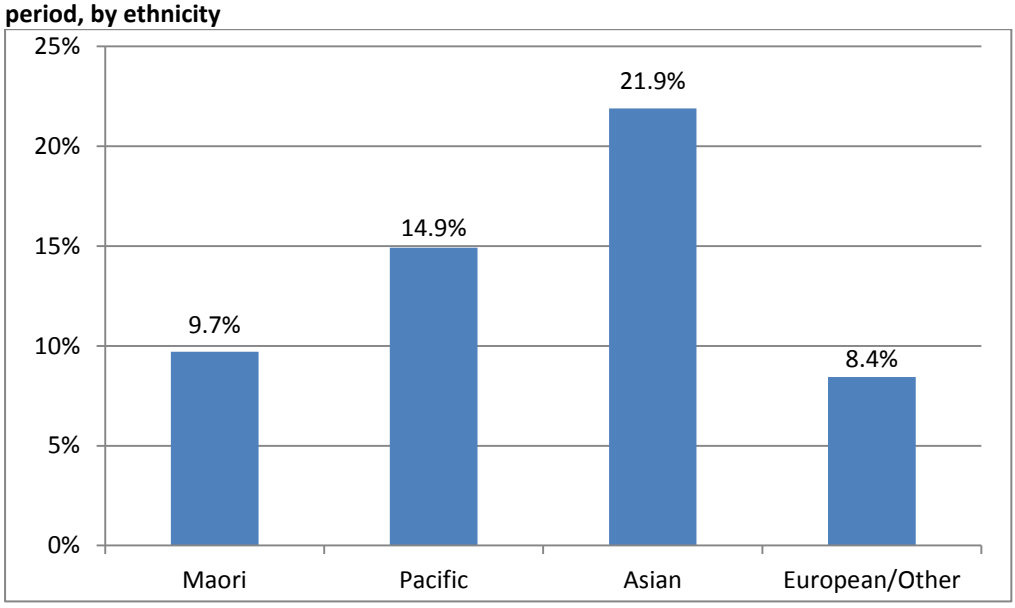


Figure 20 – Trends in the number of women with a first screening event, by age

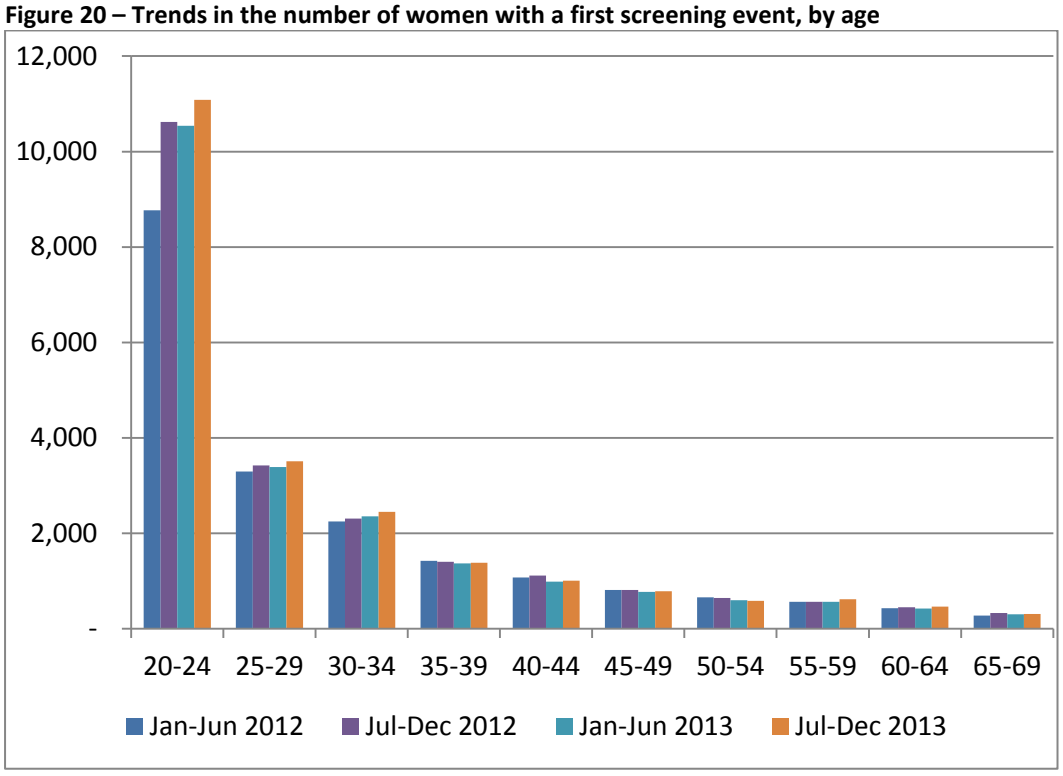
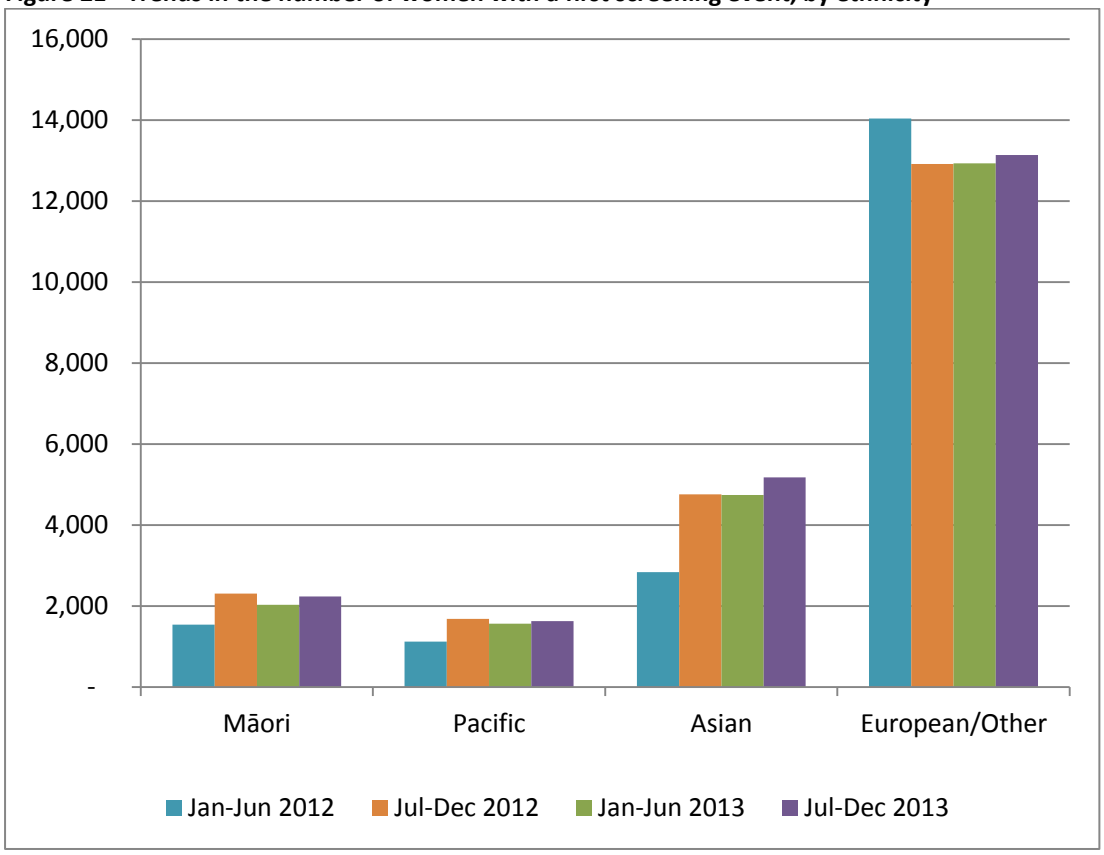


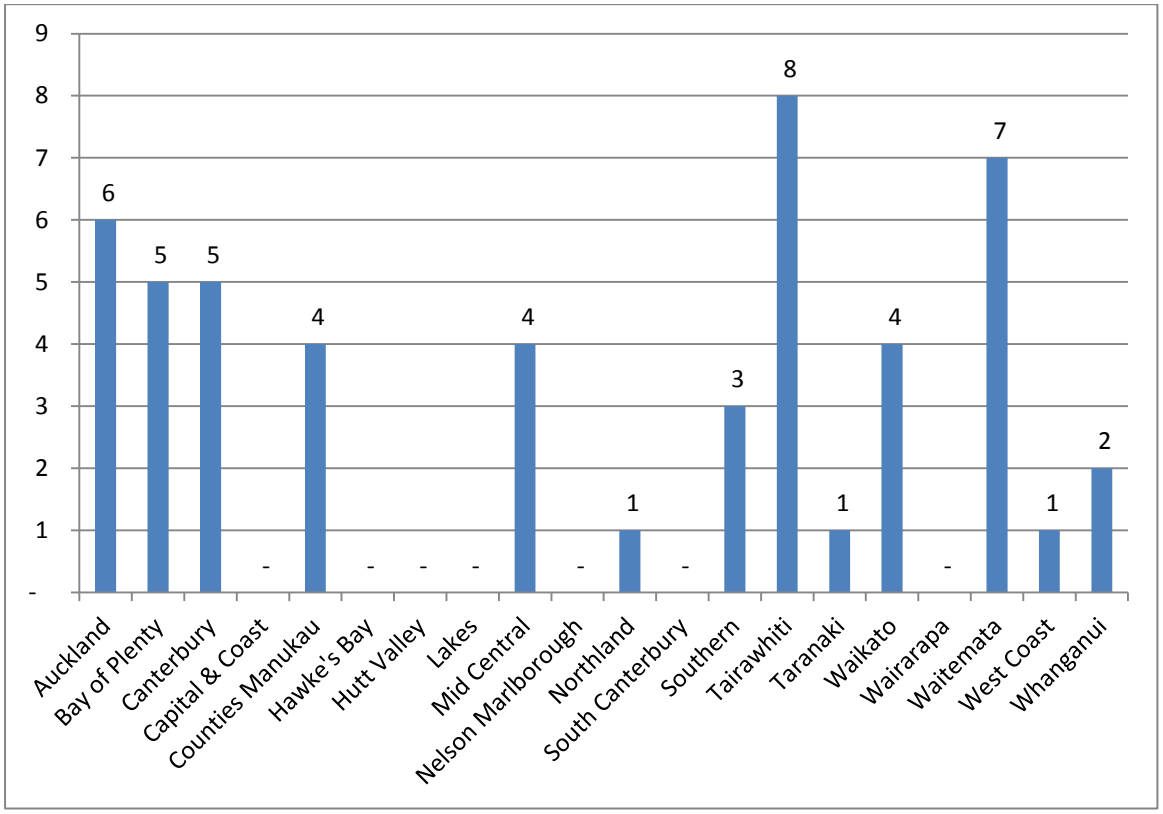
Figure 21 - Trends in the number of women with a first screening event, by ethnicity



Indicator 3 – Withdrawal rates

Definition	The number of women, by age-group, DHB, and ethnicity not currently enrolled in the NCSP Register and whose enrolment ended during the reporting period (withdrawals). Withdrawals relate to active withdrawals, where women specifically elect to be removed from the NCSP Register. The proportion of women who were enrolled on the NCSP Register at 30 June 2013, 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, 1,479,068 women aged 20-69 years were enrolled on the NCSP Register. During the current reporting period, 53 of these women (0.004%) withdrew from the NCSP Register. In all DHBs, the number and proportion of women who withdrew was extremely small (maximum eight women (0.05%) in Tairawhiti). No women withdrew in Capital & Coast, Hawke's Bay, Hutt Valley, Lakes, Nelson Marlborough, South Canterbury or Wairarapa (Figure 22). The age group with the largest number and proportion of women withdrawing were women aged 65-69 years (nine women; 0.009% of those enrolled at the start of the reporting period) (Figure 23, Table 1). The number and propoprtion of women withdrawing was extremely small for all ethnic groups. In total eight Maori women (0.005%), four Pacific women (0.005%), three Asian women (0.002%) and 38 European/ Other women (0.004%) withdrew in the current monitoring period (Figure 24, Table 2).
Trends	The number of women who withdrew in the current reporting period (53 women) is somewhat higher than in the previous reporting period (41 women). The overall number of withdrawals remains extremely small.
Comments	The proportion of women choosing to actively withdraw from the NCSP Register is extremely small. Withdrawals relate to active withdrawals, where women specifically elect to be removed from the NCSP Register. It does not include, for example, women who have moved overseas, or who have died during the period, and who therefore are not having tests recorded on the NCSP Register.

Figure 22 - Number of women (aged 20-69 years) who withdrew from the NCSP Register by DHB, 1 July – 31 December 2013



Excludes two women who withdrew whose DHB was not recorded

Figure 23 - Number of women who withdrew from the NCSP Register by age, 1 July – 31 December 2013

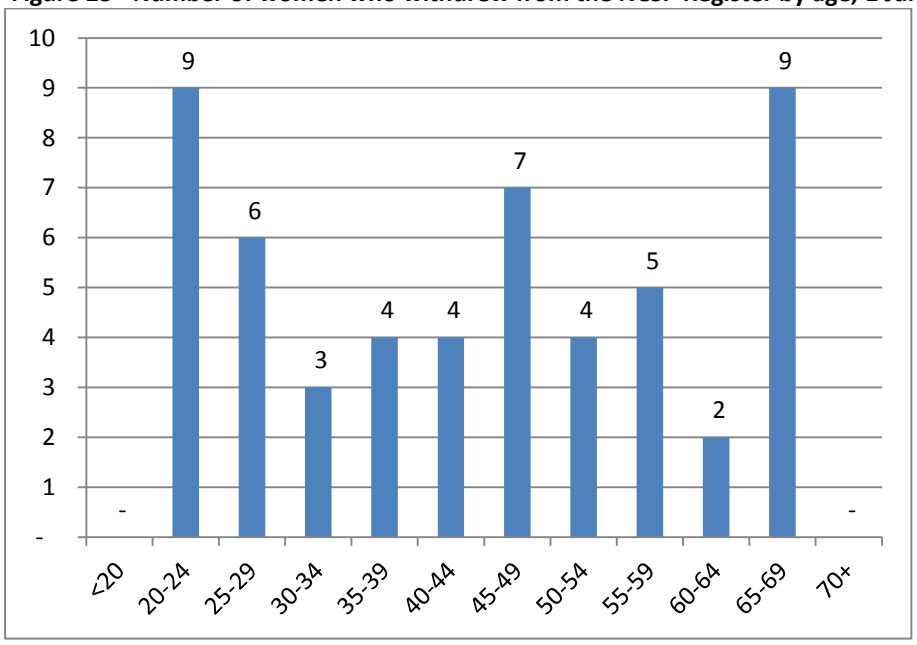


Figure 24 - Number of women (aged 20-69 years) who withdrew from the NCSP Register by ethnicity, 1 July – 31 December 2013

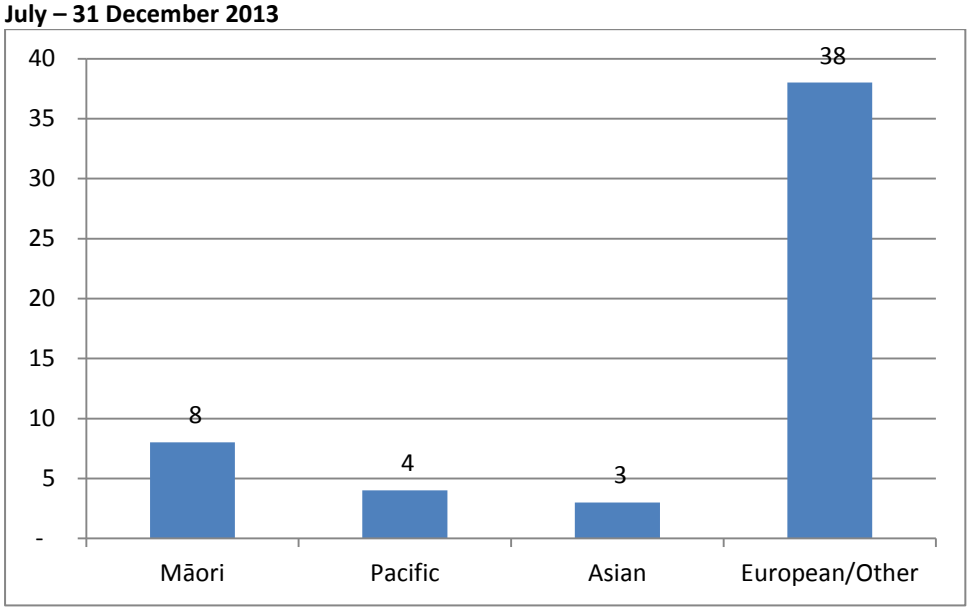


Table 1 - Number of women who withdrew from the NCSP Register 1 July – 31 December 2013 by age, and proportion of women who were enrolled at the start of the reporting period who withdrew

Age group	Women enrolled at start of period	Women who withdrew during period	
		N	% *
<20	1,757	-	0
20-24	82,724	9	0.011
25-29	135,597	6	0.004
30-34	159,095	3	0.002
35-39	171,964	4	0.002
40-44	197,244	4	0.002
45-49	187,579	7	0.004
50-54	181,258	4	0.002
55-59	148,152	5	0.003
60-64	119,781	2	0.002
65-69	95,674	9	0.009
70+	190,946	-	0.000
Total	**1,671,771**	**53**	**0.003**
Total (20-69)	**1,479,068**	**53**	**0.004**

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

Table 2 - Number of women (aged 20-69 years) who withdrew from the NCSP Register 1 July – 31 December 2013 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	174,863	8	0.005
Pacific	86,919	4	0.005
Asian	147,902	3	0.002
European/Other	1,069,384	38	0.004
Total	**1,479,068**	**53**	**0.004**

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

Indicator 4 – Early re-screening

Definition	The proportion of women who returned for a smear within 30 months (2.5 years) of their index smear is calculated for a cohort of women. The cohort comprises women with an index smear taken between 1 February 2011 – 31 March 2011 (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 2011 (NZ Modified Bethesda code R1). Using this method of calculating the measure allows follow-up to be considered over 30 months for every individual woman. This measure excludes women being followed according to *Guidelines for Cervical Screening in New Zealand*, for example, those with a recent report of an abnormality. It also excludes from the count of women screened early those whose "early" smear recommended urgent referral regardless of cytological findings, in view of the abnormal clinical history provided (NZ Modified Bethesda code R14). In some cases, early re-screening may be the result of women being re-screened early in response to clinical symptoms, and this is appropriate. For the purposes of analysis by age group, a woman's age is defined as her age at the end of the current reporting period (ie 31 December 2013).
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 used prior to Report 30, because all women are followed over the same length of time (30 months). A more detailed discussion of the reasons for this, and the rationale for the cohort-based method, can be found in Monitoring Report 30.
Current Situation	There were 41,537 women who had a smear taken in February or March 2011, 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, 7,698 (18.5%) 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 (26.7%) and Auckland (25.6%), and was least common in Mid Central (9.5%) (Figure 25, Table 52). 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 (24.9%), and older women (aged 65-69 years) were the least likely to be re-screened early (13.5%) (Figure 26, Table 51). Rates of early re-screening are very similar

	across the six year age groups from 30 to 59 years. Among the ethnic groups considered, Asian women were the most likely to be re-screened early (19.9%). Early re-screening was least common among Pacific women (12.8%) (Figure 27, Table 53).
Trends	The level of early re-screening (18.5%) is lower than in the previous monitoring report (19.4%). DHBs with the lowest and highest levels of early re-screening are largely unchanged since the previous report. Rates of early re-screening have decreased in almost all DHBs. Increases were seen in Canterbury, Waikato and Whanganui, however most of these DHBs (with the exception of Canterbury) have comparatively low levels of early re-screening. Longer terms trends by DHB are shown in Figure 28. Early re-screening has reduced among almost all age groups, although there was a small increase among women aged 25-29 years. Longer terms trends by age are shown in Figure 29. Early re-screening has decreased in all ethnic groups apart from Asian women, where there was a small increase.
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 25 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by DHB

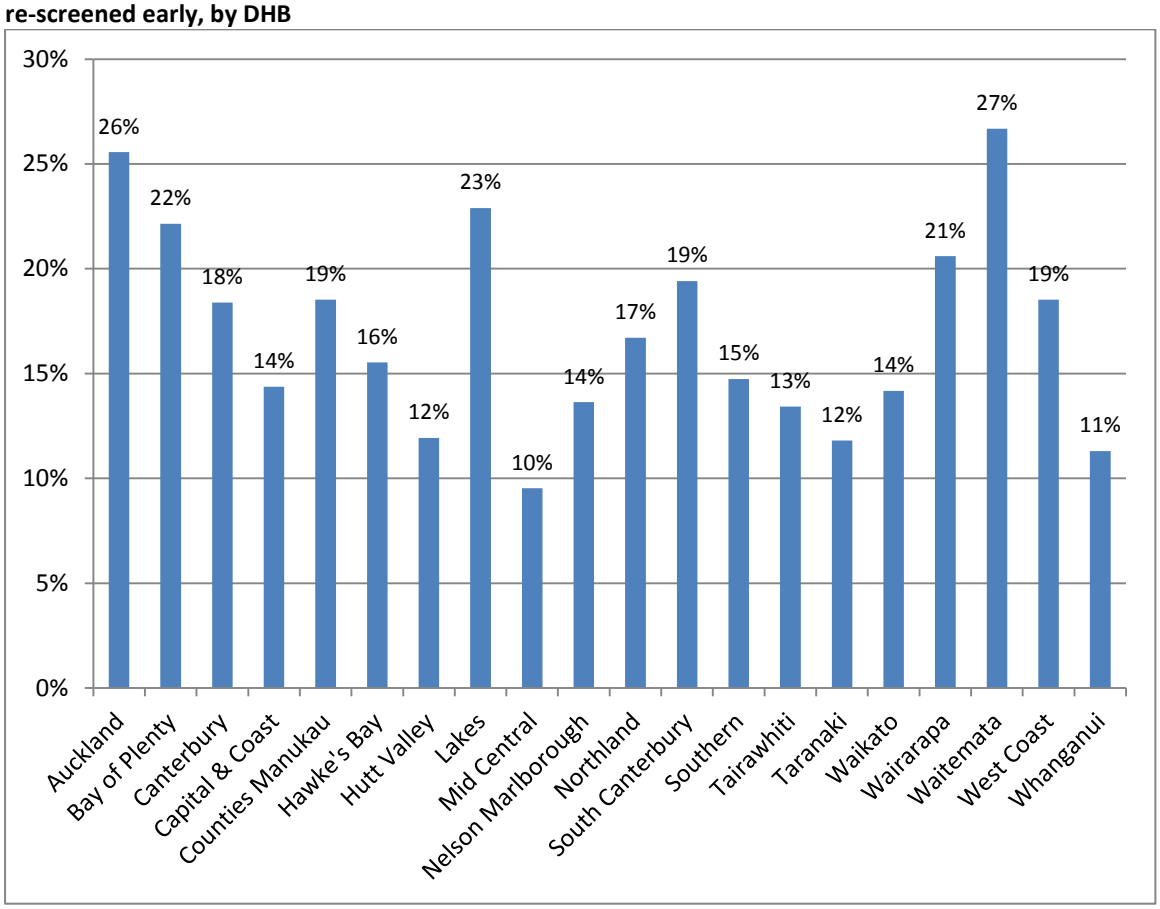


Figure 26 - Proportion of women recommended to return a the routine interval (three years) who were re-screened early, by five-year age group

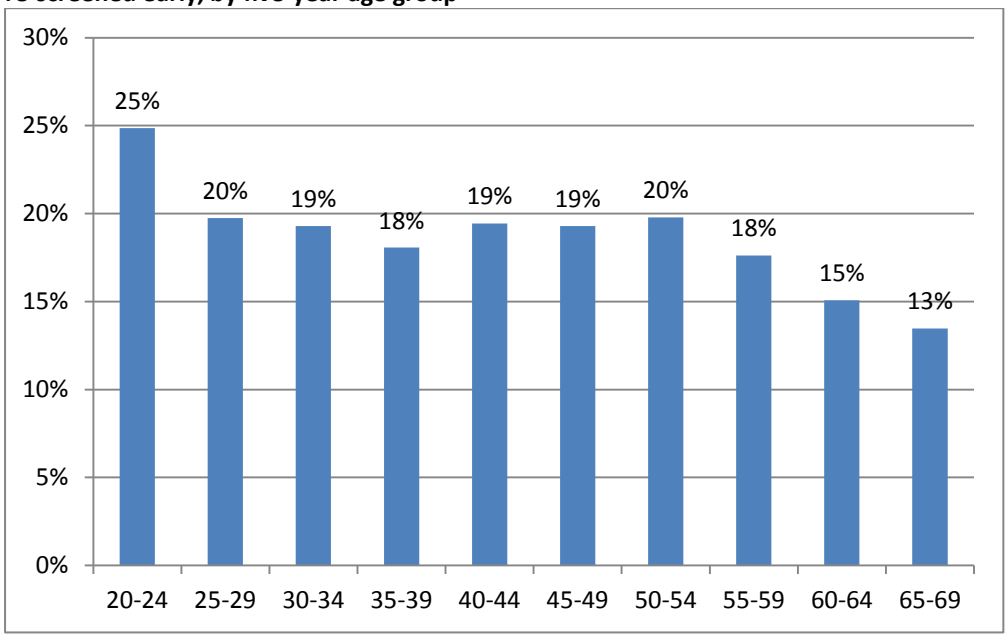


Figure 27 - Proportion of women recommended to return a the routine interval (three years) who were re-screened early, by ethnicity

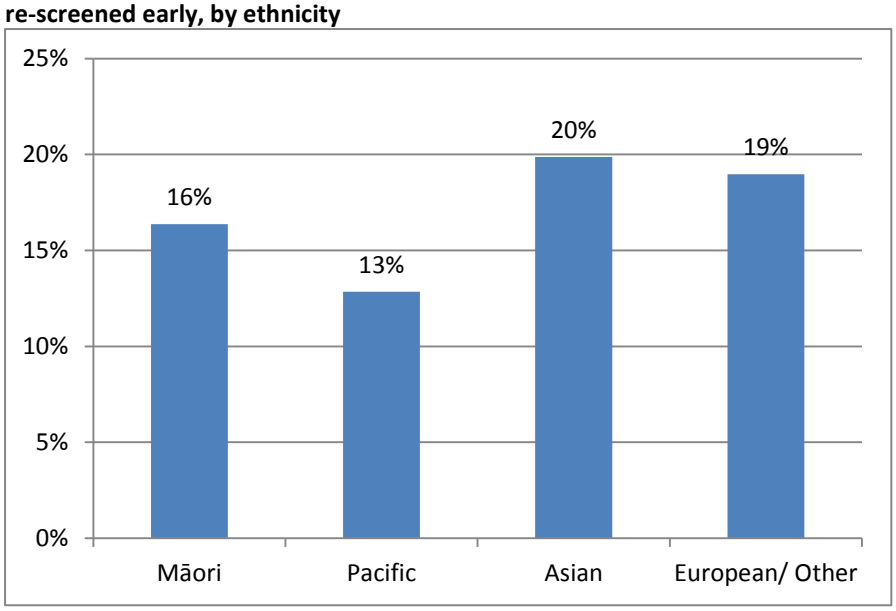


Figure 28 – Trends in the proportion of women recommended to return at the routine interval (three years) who were re-screened early, by DHB

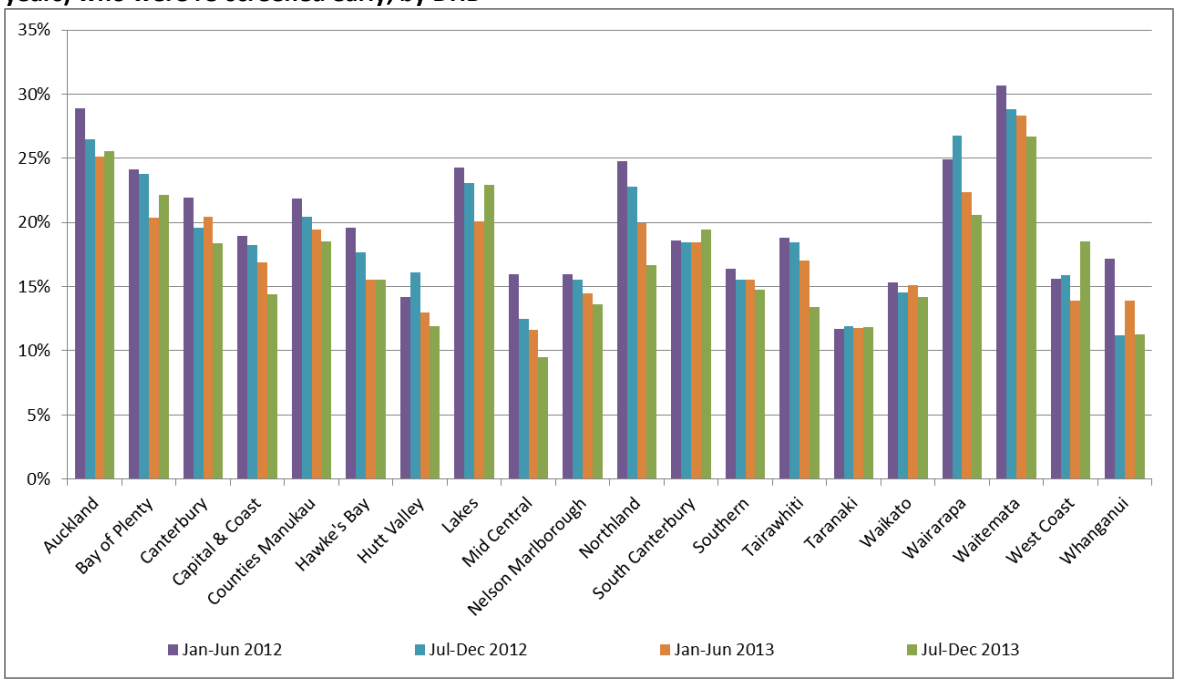
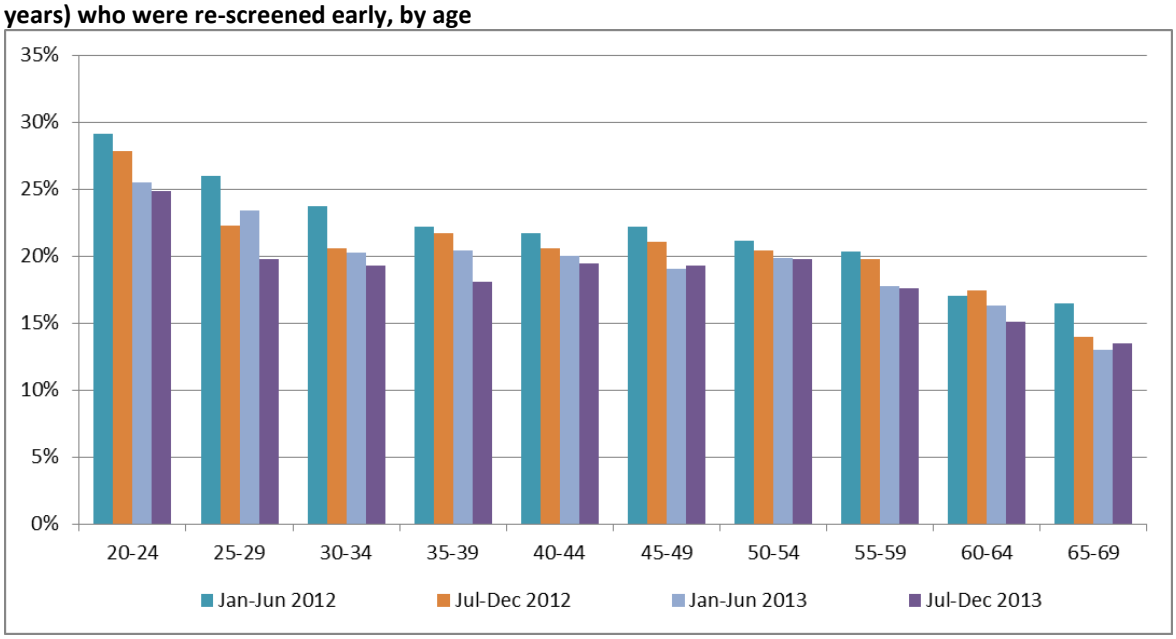


Figure 29 - Trends in the proportion of women recommended to return at the routine interval (three years) who were re-screened early, by age



Indicator 5 – Laboratory indicators

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

Note that some targets within this Indicator have been updated since the previous monitoring report, consistent with the revisions in the 2013 NCSP Standard.

Indicator 5.1 – Laboratory cytology reporting

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

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

Definition	Bethesda codes used are provided in Appendix B. The Bethesda reporting system (TBS), introduced in New Zealand on 1 July 2005, is a New Zealand modification of the Bethesda 2001 cytology reporting system. The NCSP Register collects cytology results of samples taken from the cervix and vagina. Total samples include all cytology samples (satisfactory and unsatisfactory) taken during the reporting period, including conventional, LBC, and combined samples. Reporting rates for negative cytology, total abnormal cytology, and other reporting categories are as a percentage of all satisfactory cytology samples.
Target	0.1 - 3% of LBC samples reported as unsatisfactory No more than 96% of satisfactory samples reported as negative No more than 10% of satisfactory samples reported as abnormal No less than 0.5% of satisfactory samples reported as HSIL (Bethesda HS1 or HS2)
Current Situation	Seven laboratories reported on cytology taken during the current reporting period, the same number as in the previous reporting period. A total of 216,097 cytology samples were taken, over 99.9% of which were liquid-based cytology (LBC), 0.01% were conventional cytology, and less than 0.001% were a combination of the two (Table 3). In all laboratories, virtually all samples are LBC. Aotea Pathology Ltd, Diagnostic Medlab Ltd, Medlab Central Ltd and Pathlab processed only LBC samples during this reporting period. In the remaining labs, the number of samples where conventional cytology was used (exclusively, or in conjunction with LBC) was one in most labs (Canterbury Health Laboratories, LabPLUS, Pathlab) but ranged up to 23

(Southern Community Labs) (Table 3).

Unsatisfactory cytology

2,663 cytology samples (1.2%) were unsatisfactory. These are reported on in more detail in Table 4 and Table 6. The remaining satisfactory samples are reported on in more detail in Table 5, and Table 7 to Table 10.

Nationally, the unsatisfactory rate for LBC was 1.2%. All of the seven laboratories had unsatisfactory rates within the target range for LBC (Figure 30, Table 6).

Unsatisfactory rates for conventional cytology have not been analysed further, due to the very small number of conventional cytology samples processed (24 samples received nationally, 23 of these at Southern Community Laboratories).

Negative cytology reports

92.2% of satisfactory cytology results were negative, consistent with the target of no more than 96% (Table 8). The proportion of samples which were negative varied by laboratory from 68.5 % (LabPLUS) to 95.7 % (Southern Community Labs). All seven laboratories met the target of no more than 96%.

Abnormal cytology reports

The proportion of satisfactory samples which were abnormal (7.8%) also fell within the recommended range of no more than 10% (Figure 32, Table 5). This varied widely by laboratory however, from 4.3% (Southern Community Labs) to 31.5% (LabPLUS). Three laboratories exceeded the target (Canterbury Health Laboratories 10.5%, LabPLUS 33.5% and Medlab Central Ltd 11.1%).

Abnormal cytology results were most common in younger women (Table 9, Table 10).

HSIL cytology reports

Overall, 0.9 % of satisfactory cytology samples were HSIL, consistent with the target of at least 0.5% of samples (Figure 33, Table 8). Rates varied by laboratory from 0.5% (Pathlab) to 3.0 % (LabPLUS). All seven laboratories met the HSIL target (Figure 33, Table 8).

Among women aged 20-69 years, rates of HSIL or worse were most common in women aged 25-29 years (Table 9, Table 10).

Trends

Unsatisfactory cytology

The unsatisfactory rate in LBC samples (1.2%) has remained unchanged since the previous reporting period, and has remained within the target range.

The number of laboratories meeting the target for unsatisfactory LBC samples (all seven laboratories) has increased (from three) since the previous reporting period, however this is predominantly because the target range for unsatisfactory LBC samples has changed from 1 – 5% in the previous report, to 0.1 – 3% in the current report.

Negative vs abnormal cytology reports

The proportion of satisfactory cytology samples which are negative for intraepithelial lesion or malignancy (92.2%) is broadly similar to that in the previous reporting period (91.9%), and correspondingly the proportion of cytology samples reported as abnormalities (7.8%) is also similar to the previous reporting period (8.1%). As in the previous reporting period, all laboratories met the target for negative cytology. The number of laboratories with abnormal cytology rates above the target range has increased from two to three.

HSIL cytology reports

The proportion of satisfactory cytology samples reported as HSIL (0.9%) is slightly lower than in the previous monitoring report (1.0%). The number of laboratories meeting the target has remained the same (seven), though the target range has been updated to no less than 0.5% in the current report, consistent with the updated NCSP Standard.

Longer term trends in the proportion of satisfactory cytology samples reported as HSIL are shown in Figure 34 and Figure 35 (trends by age) and Figure 36 (trends by laboratory). Figure 34 and Figure 36 show trends over the last four monitoring report periods (two years), consistent with other trends presented in this report. Figure 35 shows longer term trends (2008-2013) in rates of HSIL cytology in women aged under 30 years, compared to the overall HSIL reporting rate in women of all ages. The younger age groups in this figure would be the first to be potentially affected by HPV vaccination (the oldest birth cohorts eligible for vaccination through the publicly funded program would be aged up to 23 years at the time of the current reporting period). HSIL reporting rates in women aged 20-24 years had been increasing prior to 2013, however a fall has been observed in the previous two monitoring periods. This is consistent with the expected impact of HPV vaccination, however it is not possible to ascertain from the NCSP Register data whether this can be directly attributable to vaccination, as vaccination status is not available on the NCSP Register. HSIL rates in women aged less than 20 years are quite variable; this is likely to be because far fewer women of this age group attend for screening, since routine screening is not recommended for women aged less than 20 years.

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

from colposcopy clinics compared to other laboratories) is an underlying factor.

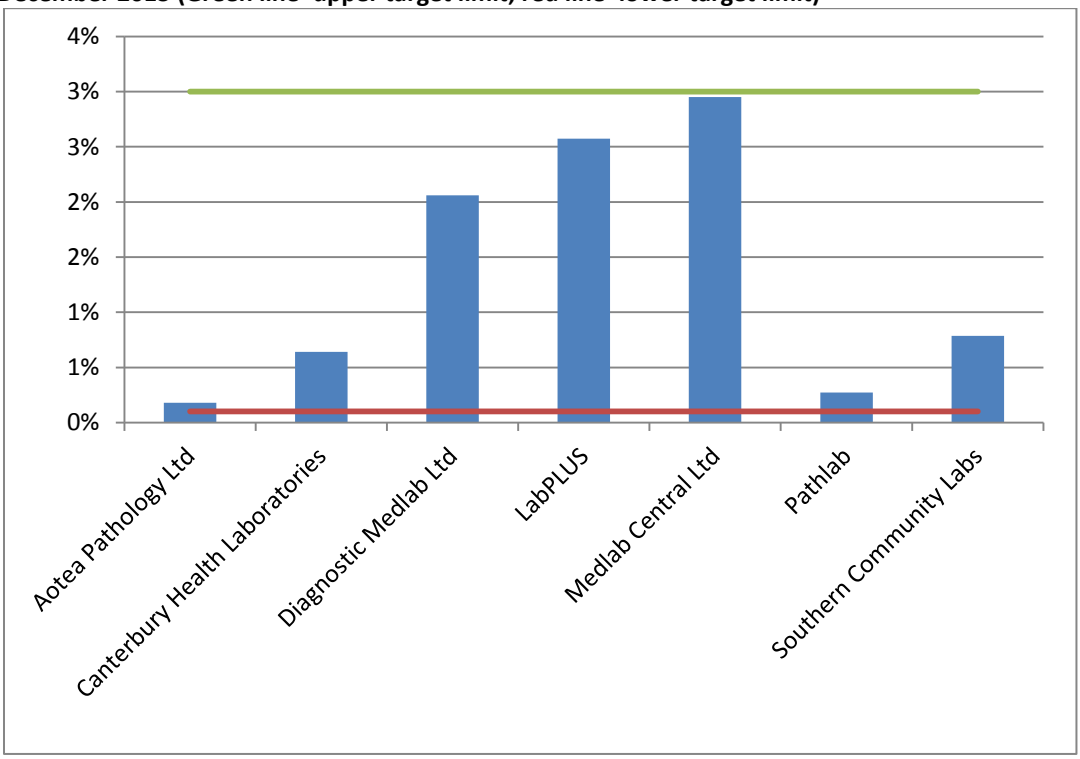
Workloads for laboratories may be regional or nationwide, and as a result, it is not always straightforward to determine the catchment population for a laboratory. Rates of negative and abnormal results for individual laboratories therefore need to be interpreted with some care, to allow for this difference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

The targets for unsatisfactory LBC have been reviewed and adjusted since the previous monitoring report. The target range has been updated to 0.1 to 3% (previously 1-5%). The target range for the proportion of satisfactory samples reported as HSIL has also been updated to no less than 0.5% (from no less than 0.6%).

The national Human Papillomavirus (HPV) Immunisation Programme was introduced in New Zealand in September 2008, and involves routine vaccination of girls 12-13 years and catch-up for women aged up to 19 years. International and New Zealand data indicate that many high grade squamous cytology reports are associated with HPV types which are potentially preventable by vaccination,[7-10] and that this is particularly true for younger women.[7, 11-13] It is anticipated that data will also soon be available from New Zealand to further quantify the potential impact of the Human Papillomavirus Immunisation Programme in New Zealand. As vaccinated cohorts enter the screening programme, it is anticipated that the proportion of satisfactory cytology samples reported as HSIL will gradually reduce, and that this will occur in younger age groups first (the oldest birth cohorts eligible for vaccination through the publicly funded program would be aged up to 23 years at the time of the current reporting period). Therefore, trends in the proportion of satisfactory cytology samples reported as HSIL by age are included in these monitoring reports, in order to monitor the impact of HPV vaccination over time. The results in the current report suggest there has been a recent decline in HSIL rates in women aged 20-24 years, consistent with an effect of HPV vaccination, however it will be important to monitor whether this decline is sustained. At the current time, it is not possible to present HSIL rates separately for vaccinated and unvaccinated women, because information relating to whether or not individual women have been vaccinated is not available on the NCSP Register. These data therefore need to be interpreted with some care, as they include results in all women, both vaccinated and unvaccinated.

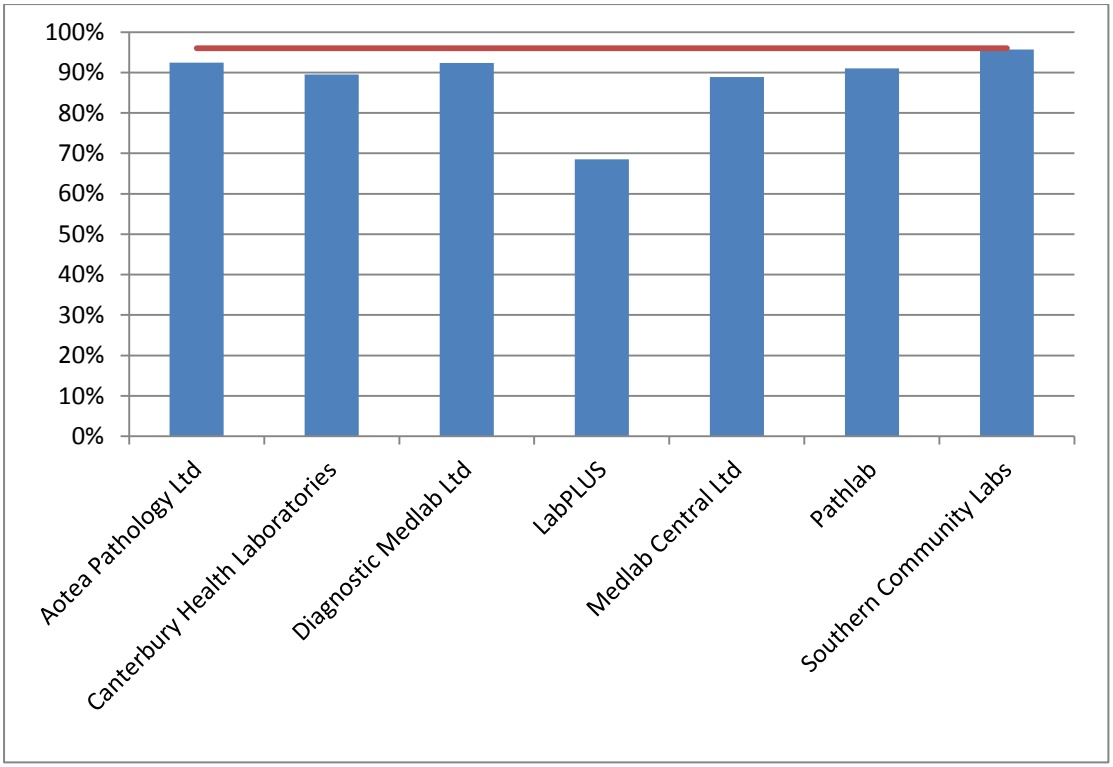
It is possible that data entry errors may be the cause of the remaining cytology tests which still appear to have involved conventional cytology only. The number of these tests is very small (24 tests; 0.01% of all samples taken during this period; virtually all at Southern Community Labs).

Figure 30 - Proportion of total LBC samples reported as unsatisfactory by laboratory, 1 July – 31 December 2013 (Green line=upper target limit; red line=lower target limit)



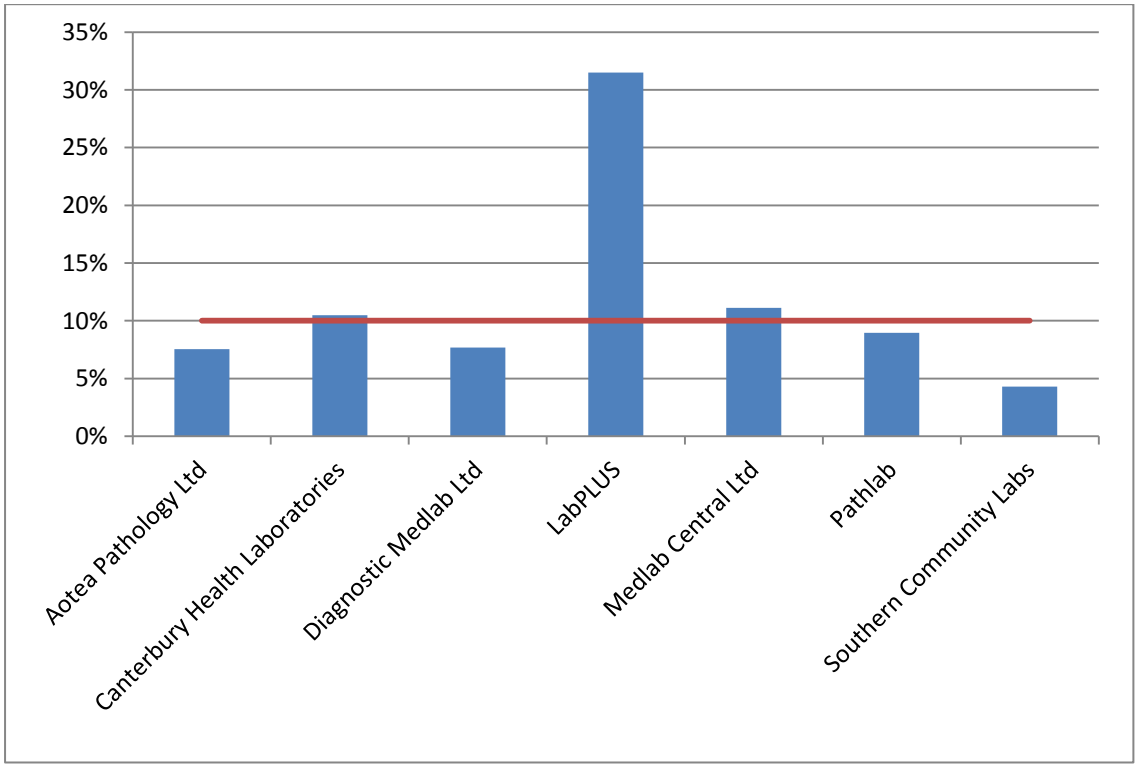
Target for LBC: 0.1-3%

Figure 31 - Proportion of total satisfactory samples reported as negative by laboratory, 1 July – 31 December 2013



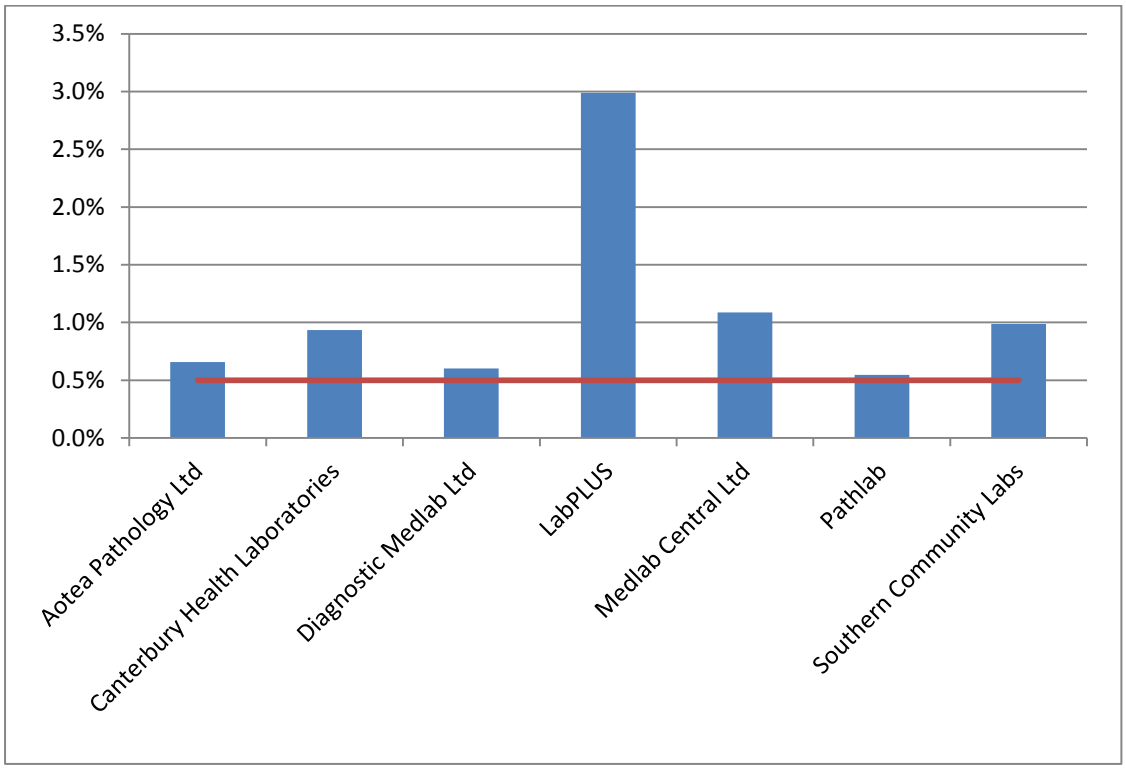
Note: Line shows negative target of no more than 96%

Figure 32 - Proportion of total satisfactory samples reported as abnormalities by laboratory, 1 July – 31 December 2013



Note: Line shows abnormal target no more than 10%

Figure 33 - Proportion of total satisfactory samples reported as HSIL by laboratory, 1 July – 31 December 2013



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

Table 3 - Laboratory cytology reporting by type of cytology sample (1 July – 31 December 2013)

Organisation	All samples	By cytology specimen type					
		LBC		Conventional		Combined	
	N	N	%	N	%	N	%
Aotea Pathology Ltd	21,670	21,670	100.00	0	-	0	-
Canterbury Health Laboratories	11,855	11,854	99.99	0	-	1	0.01
Diagnostic Medlab Ltd	54,927	54,927	100.00	0	-	0	-
LabPLUS	8,039	8,038	99.99	0	-	1	0.01
Medlab Central Ltd	17,557	17,557	100.00	0	-	0	-
Pathlab	21,661	21,660	100.00	1	<0.005	0	-
Southern Community Labs	80,388	80,365	99.97	23	0.03	0	-
Total	**216,097**	**16,071**	**99.99**	**24**	**0.011**	**2**	**0.0009**

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 4 - Satisfactory and unsatisfactory cytology reporting by laboratory (1 July – 31 December 2013)

Laboratory	All Samples	Satisfactory		Unsatisfactory	
	N	N	%	N	%
Aotea Pathology Ltd	21,670	21,631	99.8	39	0.2
Canterbury Health Laboratories	11,855	11,779	99.4	76	0.6
Diagnostic Medlab Ltd	54,927	53,796	97.9	1,131	2.1
LabPLUS	8,039	7,832	97.4	207	2.6
Medlab Central	17,557	17,039	97.0	518	3.0
Pathlab	21,661	21,602	99.7	59	0.3
Southern Community Labs	80,388	79,755	99.2	633	0.8
Total	**216,097**	**213,434**	**98.8**	**2,663**	**1.2**

See also Table 6

Table 5 - Laboratory cytology reporting by general result (1 July – 31 December 2013) – percentage of satisfactory samples

Laboratory	Negative		Abnormal	
	N	%	N	%
Aotea Pathology Ltd	19,997	92.4	1,634	7.6
Canterbury Health Laboratories	10,544	89.5	1,235	10.5
Diagnostic Medlab Ltd	49,667	92.3	4,129	7.7
LabPLUS	5,366	68.5	2,466	31.5
Medlab Central Ltd	15,146	88.9	1,893	11.1
Pathlab	19,667	91.0	1,935	9.0
Southern Community Labs	76,328	95.7	3,427	4.3
Total	**196,715**	**92.2**	**16,719**	**7.8**

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

Table 6 - Laboratory reporting of unsatisfactory results by type of cytology sample (1 July – 31 December 2013)

Laboratory	Conventional			LBC			Combined			TOTAL		
	Unsat	Total	%	Unsat	Total	%	Unsat	Total	%	Unsat	Total	%
Aotea Pathology Ltd	-	-	-	39	21,670	0.2	-	-	-	39	21,670	0.2
Canterbury Health Laboratories	-	-	-	76	11,854	0.6	-	1	0.0	76	11,855	0.6
Diagnostic Medlab Ltd	-	-	-	1,131	54,927	2.1	-	-	-	1,131	54,927	2.1
LabPLUS	-	-	-	207	8,038	2.6	-	1	0.0	207	8,039	2.6
Medlab Central Ltd	-	-	-	518	17,557	3.0	-	-	-	518	17,557	3.0
Pathlab	-	1	0.0	59	21,660	0.3	-	-	-	59	21,661	0.3
Southern Community Labs	-	23	0.0	633	80,365	0.8	-	-	-	633	80,388	0.8
Total	**-**	**24**	**0.0**	**2,663**	**216,071**	**1.2**	**-**	**2**	**0.0**	**2,663**	**216,097**	**1.2**

Target unsatisfactory: 0.1-3% LBC. Unsatisfactory rates for conventional and combined cytology samples were not calculated for individual laboratories due to the small number of samples.

Table 7 - Laboratory cytology reporting by cytological category (1 July – 31 December 2013) – counts

Laboratory	Result									Total
	Negative	ASC-US	LSIL	ASC-H	HSIL	SC	AGC/ AIS	Adeno-carcinoma	Malignant Neoplasm	
Aotea Pathology Ltd	19,997	665	684	127	142	1	13	2	-	21,631
Canterbury Health Laboratories	10,544	384	616	110	110	4	10	1	-	11,779
Diagnostic Medlab Ltd	49,667	1,387	2,080	277	324	5	49	6	1	53,796
LabPLUS	5,366	765	998	429	234	2	31	4	3	7,832
Medlab Central Ltd	15,146	737	816	124	185	6	22	3	-	17,039
Pathlab	19,667	613	1,002	158	118	2	32	8	2	21,602
Southern Community Labs	76,328	527	1,932	130	787	4	33	14	-	79,755
Total	**196,715**	**5,078**	**8,128**	**1,355**	**1,900**	**24**	**190**	**38**	**6**	**213,434**

Table 8 - Laboratory cytology reporting by cytological category (1 July – 31 December 2013) - 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	92.4	3.1	3.2	0.6	0.7	<0.005	0.06	0.01	-
Canterbury Health Laboratories	89.5	3.3	5.2	0.9	0.9	0.03	0.08	0.01	-
Diagnostic Medlab Ltd	92.3	2.6	3.9	0.5	0.6	0.01	0.09	0.01	<0.005
LabPLUS	68.5	9.8	12.7	5.5	3.0	0.03	0.40	0.05	0.04
Medlab Central Ltd	88.9	4.3	4.8	0.7	1.1	0.04	0.13	0.02	-
Pathlab	91.0	2.8	4.6	0.7	0.5	0.01	0.15	0.04	0.01
Southern Community Labs	95.7	0.7	2.4	0.2	1.0	0.01	0.04	0.02	-
Total	**92.2**	**2.4**	**3.8**	**0.6**	**0.9**	**0.01**	**0.09**	**0.02**	**<0.005**

Target: HSIL ≥ 0.5% reported as HSIL

Table 9 - Laboratory reporting of cytological category by five-year age group (1 July – 31 December 2013) – counts

Age Group	Cytology Result									Total
	Negative	ASC-US	LSIL	ASC-H	HSIL	SC	AGC/AIS	Adeno-carcinoma	Malignant Neoplasm	
<20	1,116	57	214	15	20	-	-	-	-	1,422
20-24	22,510	1,116	2,693	342	470	-	11	-	-	27,142
25-29	19,799	751	1,412	278	478	1	19	-	-	22,738
30-34	20,695	595	890	183	309	1	17	1	1	22,692
35-39	20,978	509	646	137	194	2	22	-	-	22,488
40-44	24,296	479	622	120	172	2	14	-	-	25,705
45-49	22,684	485	571	79	104	4	20	-	1	23,948
50-54	21,838	423	407	71	50	2	29	4	1	22,825
55-59	17,370	307	309	49	41	3	13	8	1	18,101
60-64	13,672	187	200	41	25	3	11	7	2	14,148
65-69	9,919	136	114	29	28	2	18	8	-	10,254
70+	1,834	32	49	11	9	4	16	10	-	1,965
Total	**196,711**	**5,077**	**8,127**	**1,355**	**1,900**	**24**	**190**	**38**	**6**	**213,428**

Note: Excludes six cytology tests (four negative,one ASC-US, one LSIL) for which the age of the woman could not be determined, as date of birth information was missing in the NCSP Register.

Table 10 - Laboratory reporting of cytological category by five-year age group (1 July – 31 December 2013) - 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	78.5	4.0	15.0	1.1	1.4	-	-	-	-
20-24	82.9	4.1	9.9	1.3	1.7	-	0.04	-	-
25-29	87.1	3.3	6.2	1.2	2.1	<0.005	0.08	-	-
30-34	91.2	2.6	3.9	0.8	1.4	<0.005	0.07	<0.005	<0.005
35-39	93.3	2.3	2.9	0.6	0.9	0.01	0.10	-	-
40-44	94.5	1.9	2.4	0.5	0.7	0.01	0.05	-	-
45-49	94.7	2.0	2.4	0.3	0.4	0.02	0.08	-	<0.005
50-54	95.7	1.9	1.8	0.3	0.2	0.01	0.13	0.02	<0.005
55-59	96.0	1.7	1.7	0.3	0.2	0.02	0.07	0.04	0.01
60-64	96.6	1.3	1.4	0.3	0.2	0.02	0.08	0.05	0.01
65-69	96.7	1.3	1.1	0.3	0.3	0.02	0.18	0.08	-
70+	93.3	1.6	2.5	0.6	0.5	0.20	0.81	0.51	-
Total	**92.2**	**2.4**	**3.8**	**0.6**	**0.9**	**0.01**	**0.09**	**0.02**	**<0.005**

Note: Excludes six cytology tests (four negative,one ASC-US, one LSIL) for which the age of the woman could not be determined, as date of birth information was missing in the NCSP Register.

Figure 34 – Trends in the proportion of total satisfactory samples reported as HSIL (last four reporting periods), by age

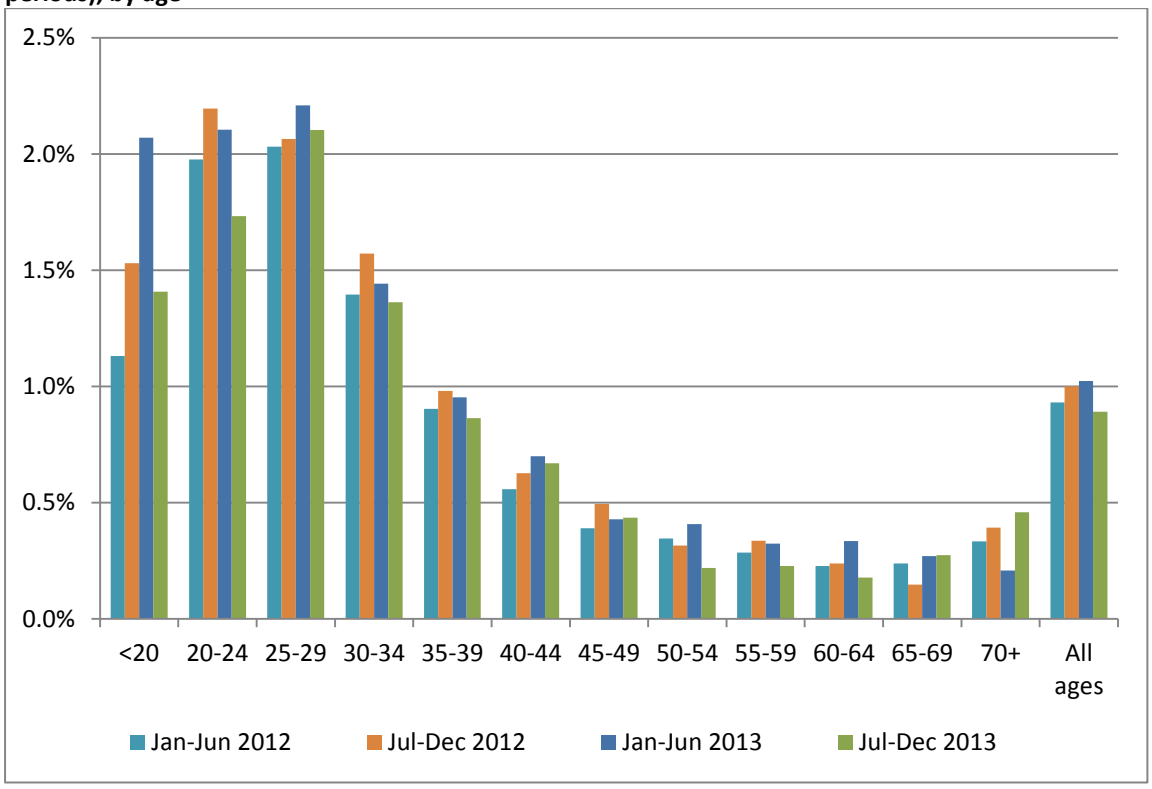
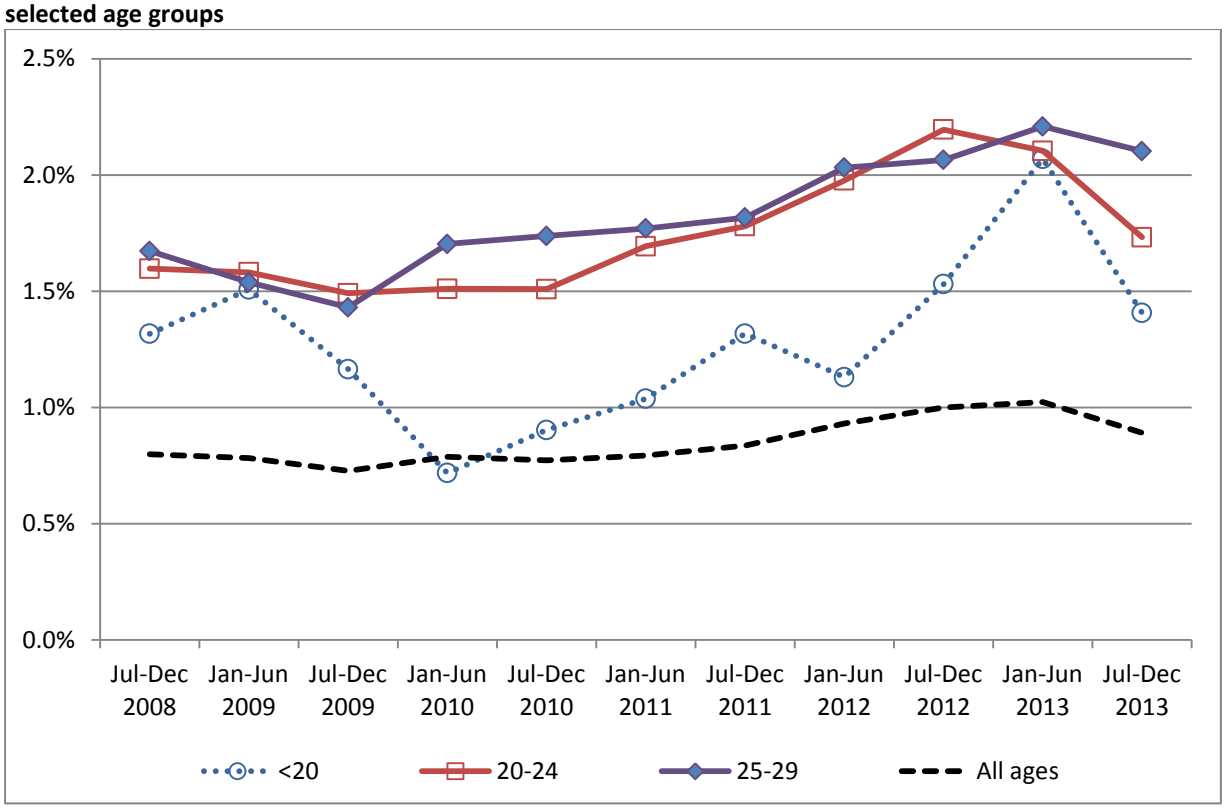
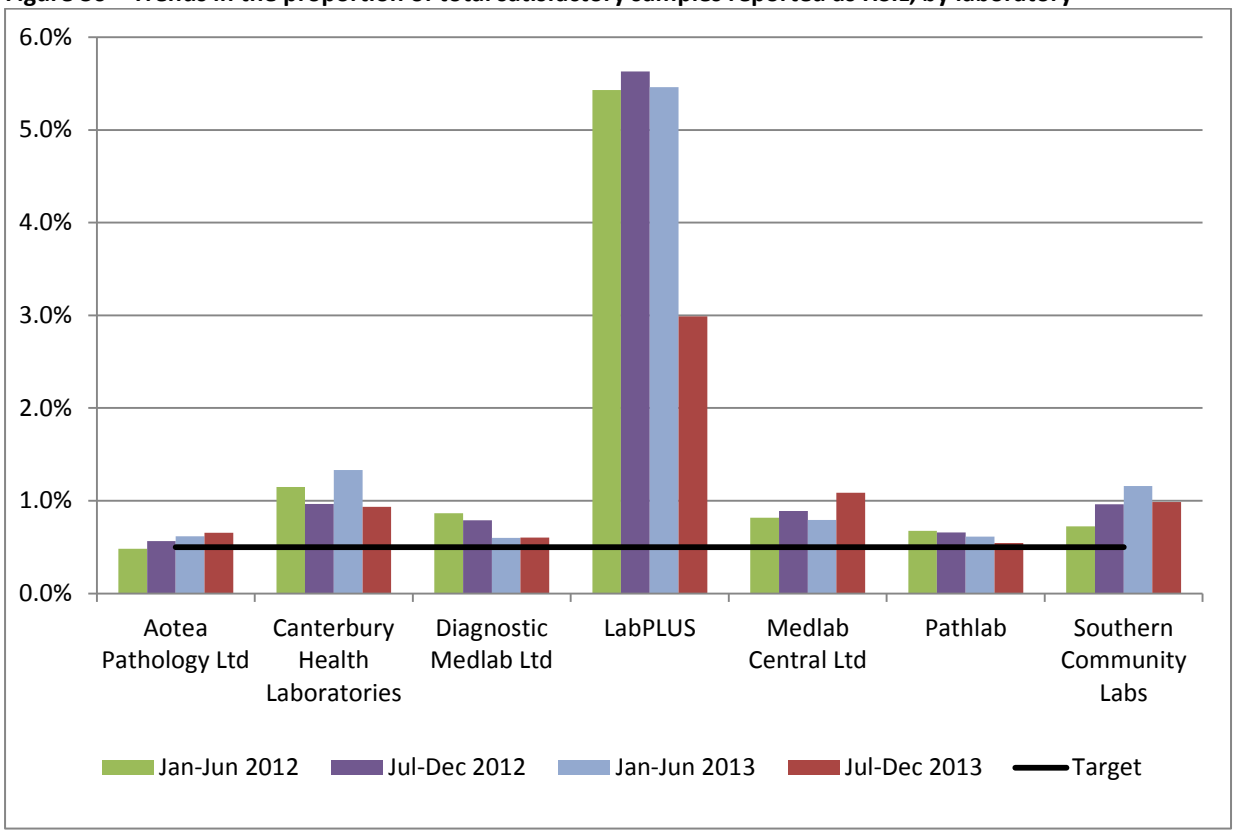


Figure 35 – Longer term trends in the proportion of total satisfactory samples reported as HSIL (2008 - 2013), selected age groups



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

Figure 36 – Trends in the proportion of total satisfactory samples reported as HSIL, by laboratory



Indicator 5.2 – Accuracy of cytology predicting HSIL

Definition	The accuracy of cytology predicting HSIL (positive predictive value – PPV) is defined as the probability of a high grade histological report (CIN2/3) or higher given an HSIL/invasive squamous carcinoma cytology report. Refer to Appendix D for detailed definitions of histological confirmation.
Target	Not less than 65% and not greater than 85%.
Current Situation	All satisfactory cytology samples collected in the six months prior to the current reporting period (ie collected from 1 January - 30 June 2013 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*** 1,927 women with HSIL or SC cytology reports were identified. 126 of these women (6.5%) had no histology taken in the period from five days prior to six months after the cytology sample was taken. Among the remaining 1,801 for whom there was histology, 1,477 (82.0%) had their HSIL/SC cytology confirmed by histology (Figure 37, Table 54). This proportion varied by laboratory, from 78.5% (Pathlab) to 84.6% (Canterbury Health Laboratories). All laboratories achieved the minimum target of at least 65% of cytological HSIL +SC being confirmed by histology. None of the eight laboratories exceeded 85% of HSIL+SC being histologically confirmed (Figure 37, Table 54). ***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*** 1,210 women with a cytology report of ASC-H were identified. 220 (18.2%) had no histology taken in the period from five days prior to six months after the cytology sample. Among the remaining 990 women, 445 (44.9%) were histologically confirmed as high grade. This proportion varied by laboratory, from 33.0% (Diagnostic Medlab Ltd) to 62.1% (Canterbury Health Laboratories)

(Figure 38, Table 55).

ASC-H+HSIL+SC

A total of 3,137 women had a cytology report of ASC-H, HSIL or SC. 346 (11.0%) had no histology taken in the period from five days prior to six months after the cytology sample. Among the remaining 2,791 women, 1,922 (68.9%) were histologically confirmed as high grade. This proportion varied by laboratory, from 59.7% (Diagnostic Medlab Ltd) to 78.1% (Southern Community Labs). The combined positive predictive value across the 3,137 women with ASC-H, HSIL, and SC and histology available is shown in Figure 38 and Table 56.

Glandular abnormalities

318 women with a glandular abnormality (AG1-AG5, AIS, AC1-AC4) were identified. 90 women (28.3%) had no histology taken in the period from five days prior to six months after the cytology sample. Among the remaining 228 women, 109 (47.8%) were identified as having high grade histology. This was not analysed further, as the number of samples reported on by many laboratories was too small to be meaningful.

Trends

HSIL+SC

Positive predictive value for HSIL and SC cytology has increased since the previous monitoring report (81.5% in the previous period; 82.0% 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 two to zero. The proportion of cytology reports with histology available following HSIL or SC results is slightly higher (92.0% in the previous report; 93.5% in the current report).

ASC-H

Positive predictive value for ASC-H cytology has decreased, from 46.6% to 44.9%, however there is no target for this measure. The proportion of cytology reports with histology available has increased slightly for ASC-H (from 80.6% to 81.8%).

ASC-H+HSIL+SC

The positive predictive value for the combined group ASC-H, HSIL and SC has increased from what it was in the previous report (67.8%) to what it is in the current report (68.9%), however there are no targets for the positive predictive value of the combined group of ASC-H, HSIL and SC.

Glandular abnormalities

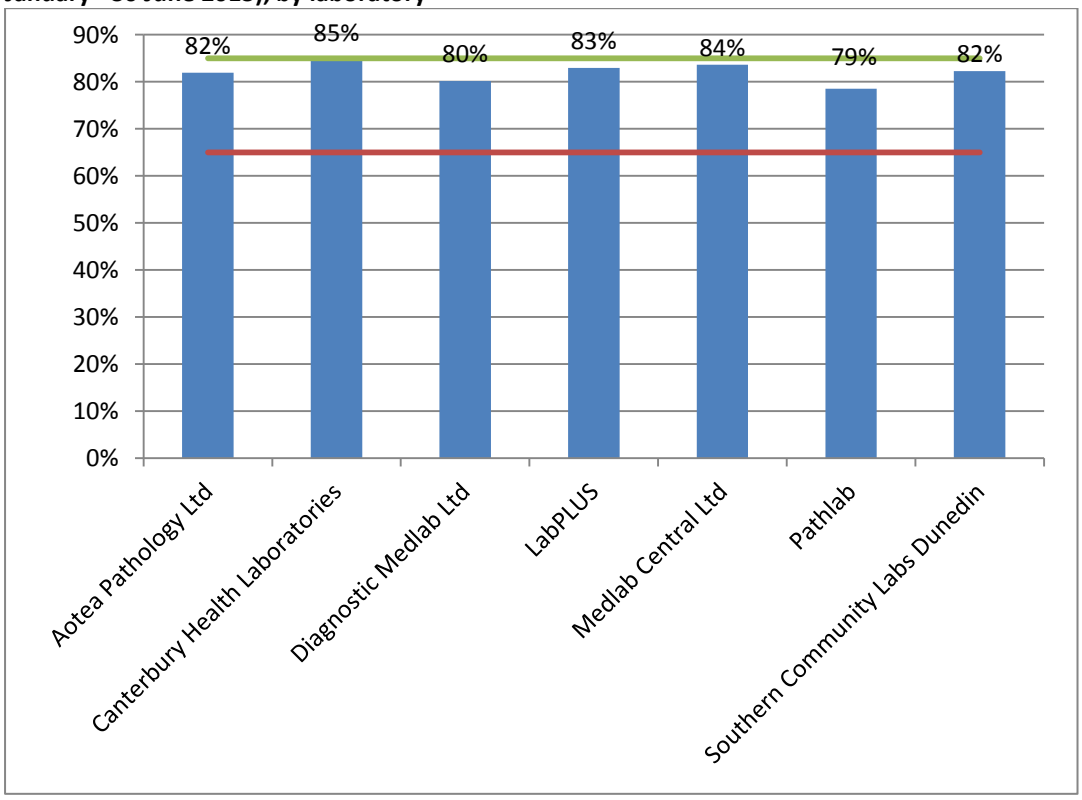
The positive predictive value of glandular abnormalities decreased (from 53.6% in the previous report to 47.8% in the current report). Compared to both ASC-H cytology, and the combined group of HSIL and SC cytology, there are far fewer glandular abnormalities, and an even smaller number with histology available. The proportion of glandular abnormalities with histology available (71.7%) is lower than that in the previous reporting period (77.6%), and remains less than that for ASC-H (81.8%) and HSIL+SC (93.5%). Due to the small number of samples involved, glandular abnormalities were not analysed in further detail.

Comments

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

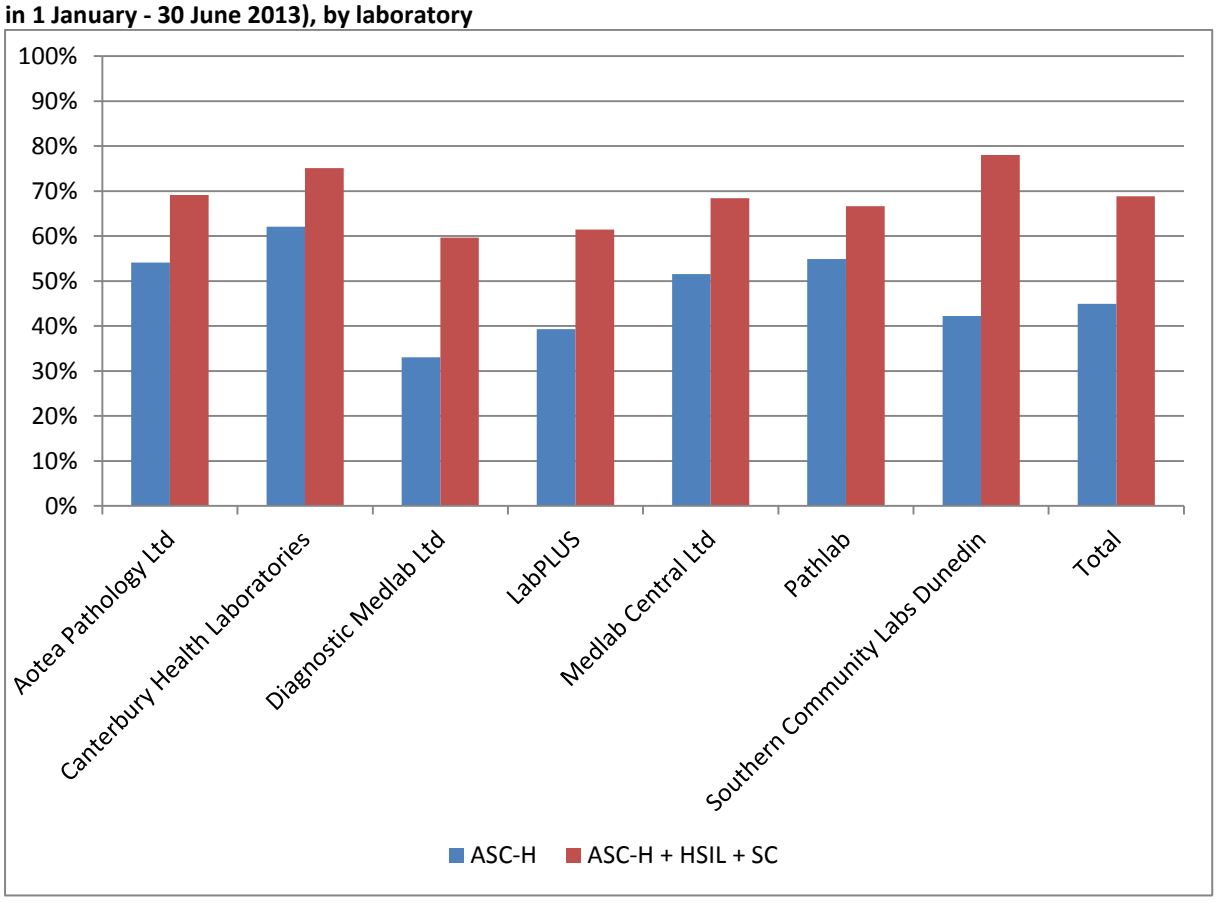
The calculations also do not discriminate between cytology taken as a screening or diagnostic test. This may be a contributing factor for some laboratories with a PPV which is higher than the upper end of the target range, particularly where the colposcopically-directed cytology and corresponding histology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

Figure 37 - Positive predictive value for CIN2+ in women with HSIL or SC cytology reports (cytology in 1 January - 30 June 2013), by laboratory



Target: 65% - 85%

Figure 38 - Positive predictive value for CIN2+ in women with other high grade cytology results (cytology in 1 January - 30 June 2013), by laboratory



Indicator 5.3 – Accuracy of negative cytology reports

Definition

This indicator is under development and currently has two parts to its definition.

1. For women with a histological diagnosis of CIN2, CIN3, invasive SCC, AIS or invasive endocervical adenocarcinoma, the proportion of cytology slides originally reported within the preceding 42 months as negative, benign/reactive or unsatisfactory which on review are consistent with high grade or worse category (Standard 522).

2. The ability of a laboratory to correctly identify a negative sample.

All cases with a high-grade/invasive diagnosis on histology (CIN2, CIN3, invasive SCC, AIS or invasive endocervical adenocarcinoma) must have a review of any cytology slides that have been reported as negative, benign/reactive or unsatisfactory in the previous 42 months. Any abnormality identified as high grade or worse on review of a previously reported negative or unsatisfactory cytology slide must be documented by the laboratory. Cumulative data must be forwarded to the National Screening Unit to help ensure the accuracy of submitted negative cytology reports.

Target

No more than 10% identified as HS1, HS2, SC, AIS or AC1-5 (HSIL+) on review.

Aim for less than 15%, but not more than 20% identified as ASC-H, HS1, HS2, SC, AG4-5, AIS or AC1-5 (ASC-H +) on review.

Current Situation

Data required for this measure was not available directly from the NCSP Register for the current reporting period, but was provided by the National Screening Unit.

Data were provided for women with a histological diagnosis of high-grade/invasive disease in the period 1 January – 31 December 2013, for whom the previous cervical smear, within the 42 months prior, was negative. Nationally, 2.5% of these previous smears were consistent with HSIL+ on review, and 5.7% were consistent with ASC-H+/ AG4+ on review (Figure 39).

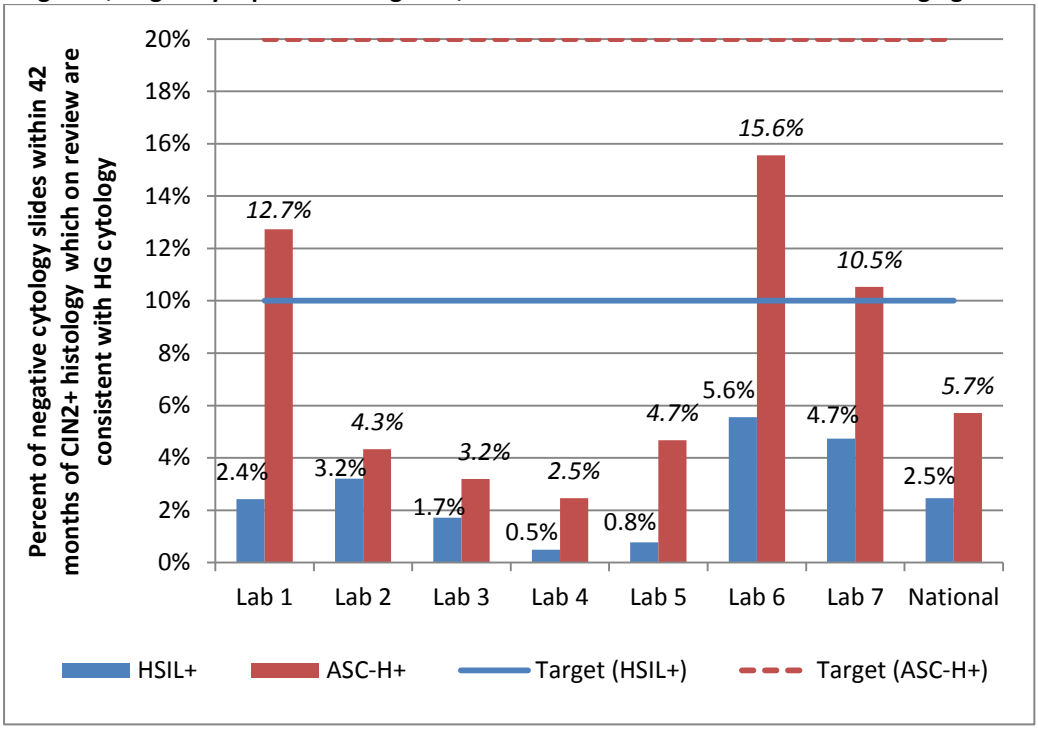
These results varied by laboratory, from 0.5% to 5.6% for HSIL+ and from 2.5% to 15.6% for ASC-H + (Figure 39). No laboratory exceeded the targets. One laboratory (Lab 6) had a slightly higher proportion of cytology slides identified as ASC-H+/ AG4+ on review than the aim of less than 15%, however this is still below the target value of 20%.

Trends

Trends are not reported here, as this is the first time results for this indicator have been reported in recent reports.

Comments	Laboratories are not identified within the Monitoring Report for this indicator.

Figure 39 - Proportion of cytology slides within the 42 months preceding a high grade/ invasive histological diagnosis, originally reported as negative, which on review are consistent with a high grade abnormality.



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

Indicator 5.4 – Histology Reporting

Definition	The NCSP Register collects histology results of samples taken from the cervix and vagina. Histology samples include diagnostic biopsies, treatment biopsies, cervical polyps and the cervical tissue of total hysterectomy specimens. All histology samples taken during this period were retrieved. Where a histology sample had more than one SNOMED code, or a woman had more than one histology result, the most serious (highest) ranked code was used (see Appendix C). Two versions of SNOMED are used by laboratories (1986 and 1993) depending on the laboratory software. The NCSP Register accepts both versions and for statistical purposes maps the 1986 codes to the 1993 codes. The Ministry of Health holds the NZ licence for SNOMED CT and the NCSP is in the early stages of investigating its use. A woman's age is defined as her age at the end of the reporting period.
Target	None
Current Situation	14,472 histology samples were taken during the current reporting period. Of these samples, 436 (3.0%) were insufficient for diagnosis. The remaining 14,036 samples were taken from 12,256 women. Results for these women are reported on in detail in Table 11 to Table 14, based on the most serious histological diagnosis for each woman within the six-month period. The 436 samples which were insufficient for diagnosis were taken from 429 women, 54 (12.6%) of whom have a record of a subsequent histology test. The majority of women (51.8%) of women with histology tests had negative or benign histology results as their most serious diagnosis within the six-month period (Table 11, Table 12). There were 2,605 (21.3%) women who had high grade squamous (CIN2/3) histology results; 51 (0.42%) women who had invasive squamous cell carcinoma (ISCC) histology results; nine (0.07%) women with microinvasive SCC histology results; 32 (0.26%) women wit invasive adenocarcinoma histology results; three (less than 0.05%) women with adenosquamous carcinoma histology results; and 81 (0.66%) women with adenocarcinoma in situ histology results. The age group with the largest number of women with histology samples was women aged 25-29 years (1,782 women, Table 13). The age group with the lowest rate of women with results which were negative or HPV only was women aged 20-24 years (35.6%, Table 14).
Trends	The proportion of women with negative or benign histology as their most serious diagnosis within the six-month period (51.8%) is slightly higher than

	that reported for the previous period (50.6%). The proportion of women with high grade squamous histology is slightly lower in the current period (21.3%) than in the previous period (21.9%). The proportions were very similar to those in the previous period for women with ISCC (0.42% this period and last period), invasive adenocarcinoma (0.26% this period and 0.31% last period), and adenosquamous carcinoma (less than 0.05% in this period and last period), but higher for adenocarcinoma in situ (0.66% this period and 0.30% last period).
Comments	Histology samples include diagnostic biopsies, treatment biopsies, cervical polyps and the cervical tissue of total hysterectomy specimens. Histology samples may also include samples from non-cervical sites, where there is also a cervical component in the sample, for example endometrial samples. Also, pathologists are not always able to determine the site of origin particularly in small biopsies. These are likely to be contributing to the higher number of women with adenocarcinoma histology on the NCSP Register compared to the Cancer Registry.

Table 11 - Histology results reporting by SNOMED category

SNOMED category	Women with that diagnosis N	%
Negative/normal	3,417	27.9
Inflamation	834	6.8
Microglandular hyperplasia	10	0.08
Squamous metaplasia	435	3.5
Atypia	113	0.9
HPV	971	7.9
Condyloma acuminatum	4	<0.05
Dysplasia/CIN NOS	64	0.52
CIN 1 (LSIL) or VAIN 1	1,929	15.7
CIN 2 (HSIL) or VAIN 2	946	7.7
CIN 3 (HSIL) or VAIN 3	1,445	11.8
HSIL not otherwise specified	214	1.7
Polyp	1,191	9.7
Other*	464	3.8
Microinvasive squamous cell carcinoma	9	0.1
Invasive squamous cell carcinoma	51	0.42
Benign glandular atypia	3	<0.05
Glandular dysplasia	-	-
Adenocarcinoma in situ	81	0.66
Invasive adenocarcinoma†	32	0.26
Adenosquamous carcinoma	3	<0.05
Metastatic tumour	20	0.16
Undifferentiated carcinoma	-	-
Sarcoma	-	-
Carcinosarcoma	1	<0.05
Choriocarcinoma	-	-
Miscellaneous primary tumour	1	<0.05
Small cell carcinoma	-	-
Malignant tumour, small cell type	-	-
Melanoma	3	<0.05
Other primary epithelial malignancy	15	0.12
Total	**12,256**	**99.9**

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

** Other morphologic abnormality, not dysplastic or malignant. † Includes six adenocarcinoma, endocervical type (SNOMED code M83843) and 26 adenocarcinoma, not endocervical type (M81403).*

Table 12 - Histology results reporting by diagnostic group

Histology diagnosis category	Women with that histology result	
	N	%
Negative/benign (non neoplastic)	6,354	51.8
HPV	975	8.0
CIN1	2,106	17.2
CIN2	946	7.7
CIN3	1,445	11.8
HSIL not otherwise specified	214	1.7
Microinvasive	9	0.07
Invasive squamous cell carcinoma	51	0.42
Glandular dysplasia	-	-
Adenocarcinoma in situ	81	0.66
Invasive adenocarcinoma†	32	0.26
Adenosquamous carcinoma	3	<0.05
Other cancer	40	0.33
Total	**12,256**	**100.0**

HSIL not otherwise specified = high grade squamous intraepithelial lesion, not otherwise specified/ CIN 2/3 (SNOMED code M67017; see Appendix C). † Includes six adenocarcinoma, endocervical type (SNOMED code M83843) and 26 adenocarcinoma, not endocervical type (M81403).

Table 13 - 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)	18	462	467	490	621	943	1,081	894	550	329	249	250	6,354
HPV	4	170	184	169	116	84	101	62	42	20	17	6	975
CIN1	14	518	424	306	211	219	157	124	74	31	27	1	2,106
CIN2	9	265	224	151	97	79	58	35	10	9	3	6	946
CIN3	3	293	378	271	178	142	72	46	25	13	13	11	1,445
HSIL not otherwise specified	-	60	65	30	28	14	8	2	4	2	1	-	214
Microinvasive	-	1	1	-	2	2	1	-	2	-	-	-	9
Invasive squamous cell carcinoma	-	-	7	8	5	5	6	1	6	2	3	8	51
Glandular dysplasia	-	-	-	-	-	-	-	-	-	-	-	-	-
Adenocarcinoma in situ	-	8	28	10	10	10	3	8	-	2	-	2	81
Invasive adenocarcinoma†	-	-	3	4	4	1	1	3	3	2	3	8	32
Adenosquamous carcinoma	-	-	-	-	-	1	-	-	1	-	-	1	3
Other cancer	-	-	1	1	-	1	1	4	5	7	4	16	40
Total	**48**	**1,777**	**1,782**	**1,440**	**1,272**	**1,501**	**1,489**	**1,179**	**722**	**417**	**320**	**309**	**12,256**

HSIL not otherwise specified = high grade squamous intraepithelial lesion, not otherwise specified/ CIN 2/3 (SNOMED code M67017; see Appendix C). † Includes six adenocarcinoma, endocervical type (SNOMED code M83843) and 26 adenocarcinoma, not endocervical type (M81403)

Table 14 - 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)	37.5	26.0	26.2	34.0	48.8	62.8	72.6	75.8	76.2	78.9	77.8	80.9
HPV	8.3	9.6	10.3	11.7	9.1	5.6	6.8	5.3	5.8	4.8	5.3	1.9
CIN1	29.2	29.2	23.8	21.3	16.6	14.6	10.5	10.5	10.2	7.4	8.4	0.3
CIN2	18.8	14.9	12.6	10.5	7.6	5.3	3.9	3.0	1.4	2.2	0.9	1.9
CIN3	6.3	16.5	21.2	18.8	14.0	9.5	4.8	3.9	3.5	3.1	4.1	3.6
HSIL not otherwise specified	-	3.4	3.6	2.1	2.2	0.9	0.54	0.17	0.55	0.48	0.31	-
Microinvasive	-	0.06	0.06	-	0.16	0.13	0.07	-	0.28	-	-	-
Invasive squamous cell carcinoma	-	-	0.39	0.56	0.39	0.33	0.40	0.08	0.83	0.48	0.9	2.6
Glandular dysplasia	-	-	-	-	-	-	-	-	-	-	-	-
Adenocarcinoma in situ	-	0.45	1.57	0.69	0.79	0.67	0.20	0.68	-	0.48	-	0.65
Invasive adenocarcinoma†	-	-	0.17	0.28	0.31	0.07	0.07	0.25	0.42	0.48	0.9	2.6
Adenosquamous carcinoma	-	-	-	-	-	0.07	-	-	0.14	-	-	0.3
Other cancer	-	-	0.06	0.07	-	0.07	0.07	0.34	0.69	1.68	1.3	5.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

HSIL not otherwise specified = high grade squamous intraepithelial lesion, not otherwise specified/ CIN 2/3 (SNOMED code M67017; see Appendix C). † Includes six adenocarcinoma, endocervical type (SNOMED code M83843) and 26 adenocarcinoma, not endocervical type (M81403)

Indicator 5.5 - Laboratory turnaround times

Definition	Turnaround time is defined as the number of working days from the date a sample is received by a laboratory, and the date which it is reported to the smear-taker or colposcopist. For the purposes of this measure, samples received and reported on the same day are defined as having a turnaround time of one day.
Target	***Cytology*** Laboratories are required to report 90% of final gynaecological cytology results to smear-takers within seven working days of receipt of the sample and 98% within 15 working days (Standard 513[14]). ***Histology*** Laboratories are required to report 90% of final histology results to referring colposcopists within ten working days of receipt of the sample and 98% of final histology results within 15 working days of receiving the sample (Standard 516[14]). ***Cytology with associated hrHPV testing*** Laboratories are required to report 98% of final cytology test results and hrHPV tests within 15 working days of receiving the sample (Standard 513[14]). Here, the turnaround time is measured specifically for cytology where hrHPV 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. Turnaraound time is measured for this group of cytology with accompanying hrHPV tests, because these hrHPV tests are initiated by the laboratory (and not, for example, affected by a later request from the smeartaker or colposcopist). These samples form a subset of those considered in the overall measure of turnaround time for cytology. Note that since reporting of cytology with adjunctive hrHPV testing requires that both test results be reported together (hrHPV test results must not be issued independently when adjunct to a cytology request), the turnaround time of the hrHPV test should not exceed that of the accompanying cytology.
Current Situation	***Cytology*** Seven laboratories received 216,485 cytology samples during the current reporting period. Overall, 95.0% of cytology samples were reported on within seven working days, which meets (surpasses) the target. Nationally, 99.3% were reported on within 15 working days, which meets (surpasses) the target (Table 57). Five of the seven laboratories met the target for 90% of cytology samples to be reported to smear-takers in seven working days or less (Aotea Pathology Ltd, Diagnostic Medlab Ltd, Medlab Central Ltd, Pathlab, Southern

Community Labs Dunedin). The proportion of samples reported on within seven working days ranged from 82.9% (Canterbury Health Laboratories) to 98.6% (Diagnostic Medlab Ltd) days (Figure 40, Table 57).

Six of the seven laboratories met the target of 98% of samples reported within 15 working days (Figure 41, Table 57). The remaining laboratory had reported on 97.8% of cytology samples within 15 days.

Histology

Sixteen laboratories received 14,492 histology samples in the current reporting period. Overall 92.8% of samples were reported on within ten working days, which meets (surpasses) the target. Nationally 96.9% were reported on in 15 working days or less, which below the target (Table 58).

Eleven of the sixteen laboratories met the target of 90% of final histology results to referring colposcopists within ten working days of receipt of the sample (Aotea Pathology Ltd, Canterbury Health Laboratories, Diagnostic Medlab Ltd, Medlab Central Ltd, Nelson Hospital Laboratory, North Shore Hospital Laboratory, Northland Pathology Laboratory, Pathlab, Southern Community Labs Dunedin, Taranaki Medlab, Waikato Hospital Laboratory) (Figure 42, Table 58). Nine of the sixteen laboratories met the target of 98% of final histology results within 15 working days of receiving the sample (Aotea Pathology Ltd, Canterbury Health Laboratories, Diagnostic Medlab Ltd, Nelson Hospital Laboratory, North Shore Hospital Laboratory, Northland Pathology Laboratory, Southern Community Labs Dunedin, Taranaki Medlab, Waikato Hospital Laboratory) (Figure 43, Table 58).

Low grade cytology with associated HPV triage testing

Seven laboratories received 3,261 cytology samples during the current reporting period which were associated with HPV testing for the purpose of triage of low grade abnormalities. Overall, 98.9% of these cytology samples were reported on within 15 working days, which meets the target. The proportion of cytology samples with HPV triage tests reported on within 15 working days ranged from 86.7% (LabPLUS) to 99.8% (Diagnostic Medlab Ltd, Pathlab) (Figure 44, Table 59). The target of 98% of tests reported within 15 working days was met by five laboratories (Aotea Pathology Ltd, Diagnostic Medlab Ltd, Medlab Central Ltd, Pathlab, Southern Community Labs Dunedin). Nationally, the proportion of cytology reported within 15 working days is slightly lower for cytology associated with low grade triage HPV testing (98.9%), compared to cytology overall (99.3%). However, the proportion of cytology tests reported within 15 working days is similar regardless of whether there is an associated HPV triage test at Diagnostic Medlab Ltd, Medlab Central Ltd, Pathlab and Southern Community Labs Dunedin. The proportion of cytology tests reported within 15 working days is somewhat lower for those cytology tests with an associated HPV triage test at Canterbury Health Laboratories and LabPLUS, but in the latter case this is based on a small number of cytology tests with associated HPV triage testing (Figure 44).

Trends

Cytology

The overall proportion of samples reported on within seven working days increased in this period, from 90.4% in the previous monitoring period to 95.0% in the current period. The number of laboratories meeting the cytology turnaround time target of 90% for seven working days has increased from four to five laboratories. The proportion of samples reported on within 15 working days was slightly higher in the current reporting period (99.3%, compared to 99.0% in the previous reporting period). The number of laboratories meeting the target increased from two to six, however the target has changed from 100% to 98% reported within 15 working days.

Histology

Previous reports have assessed the proportion of samples reported within five working days, however the target has now been updated to 90% within ten working days; therefore trends were not examined for the proportion reported within ten working days. The proportion reported on within 15 working days is slightly higher (96.9%, compared to 96.7% in the previous report). The number of laboratories meeting the 15-working day target (ten) is also higher than in the previous reporting period (seven).

Cytology with associated HPV triage testing

Turnaround time for cytology with an HPV triage test has improved since the previous report – from 97.5% to 98.9% within 15 working days. The proportion of samples reported within 15 working days has increased at all laboratories. The number of laboratories meeting the target has increased from two to five, however the target has changed from 100% to 98% reported within 15 working days.

Comments

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

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

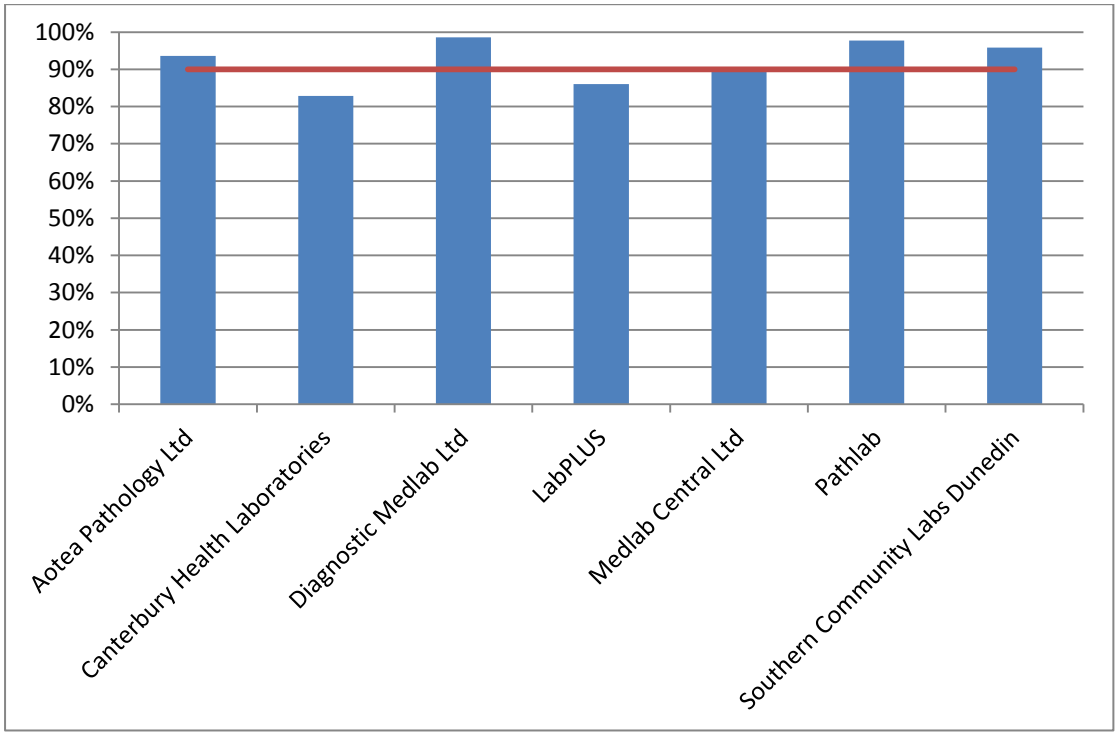
When errors are detected in the NCSP Register, the report date in the NCSP Register is updated to reflect the date on which the report was re-transmitted after the error was resolved. The occurrence of these errors can therefore distort (and lengthen) turnaround time, as in these cases the report date recorded in the NCSP Register does not reflect the date on which results

were first communicated to the smear-taker or colposcopist. The extent of this cannot be directly determined from the NCSP Register, however audit results (which invariably find better turnaround time performance) suggest that it is a factor which should be considered in interpretation of these results.

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

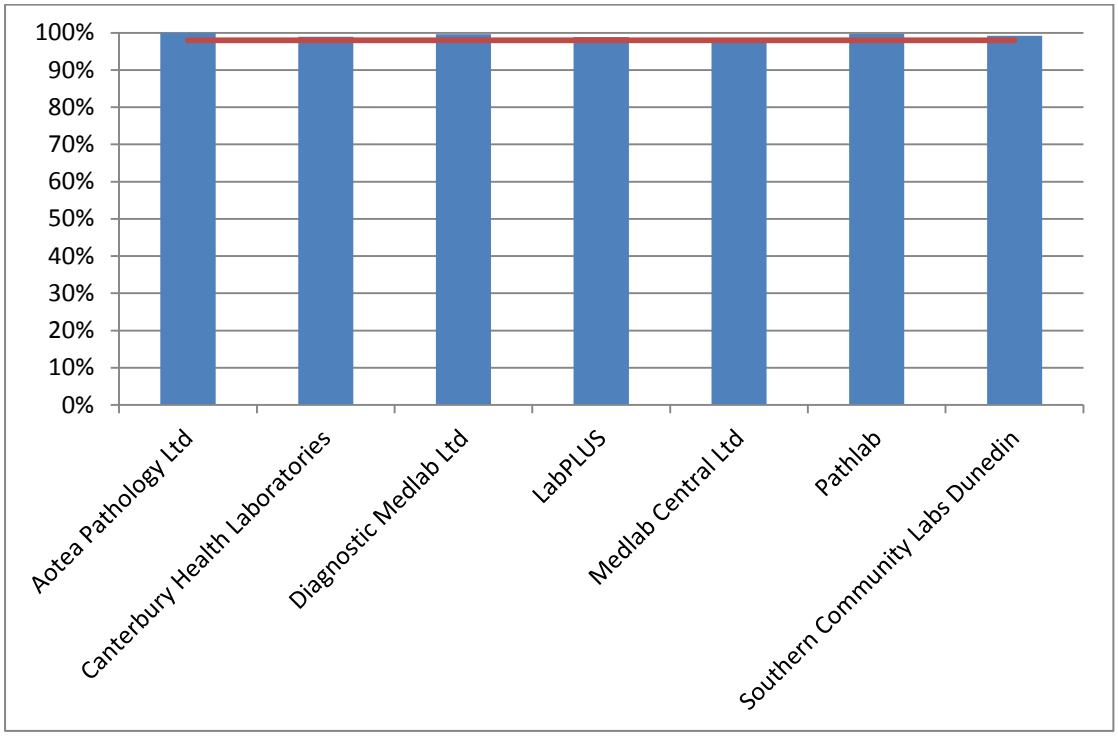
The calculations currently include public holidays as working days if they fall on a weekday.

Figure 40 - Proportion of cytology samples reported within seven working days by laboratory, 1 July – 31 December 2013



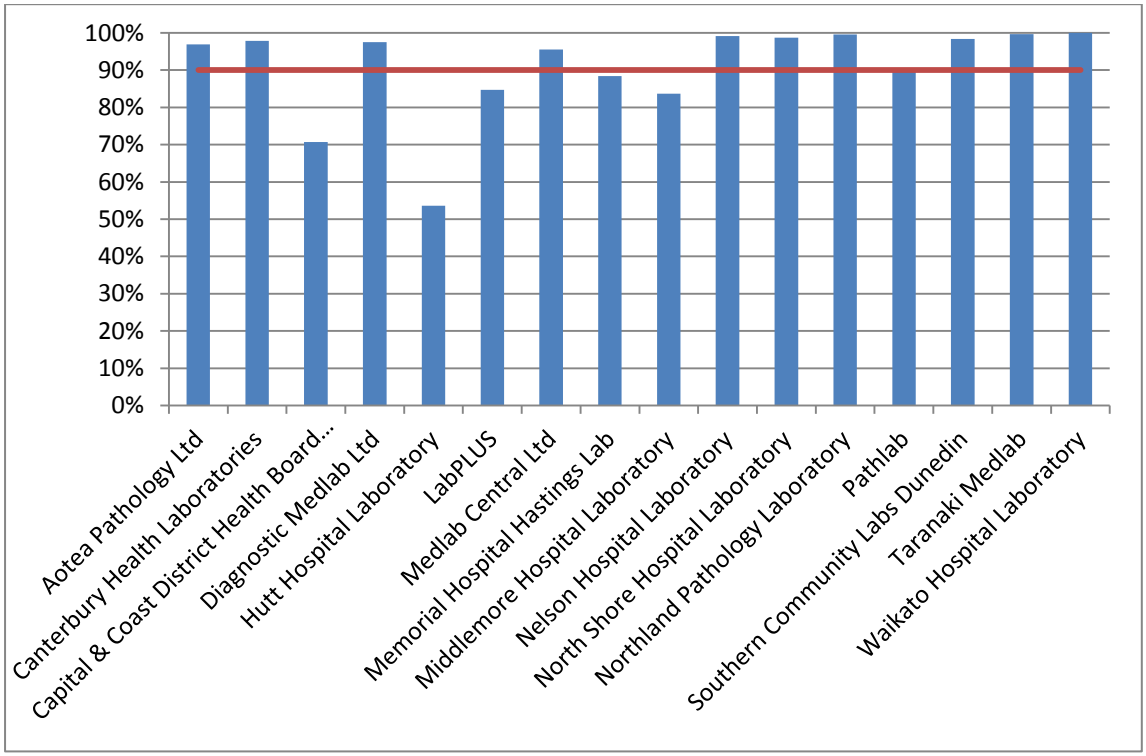
Target: 90 % within seven working days (red line)

Figure 41 - Proportion of cytology samples reported within 15 working days by laboratory, 1 July – 31 December 2013



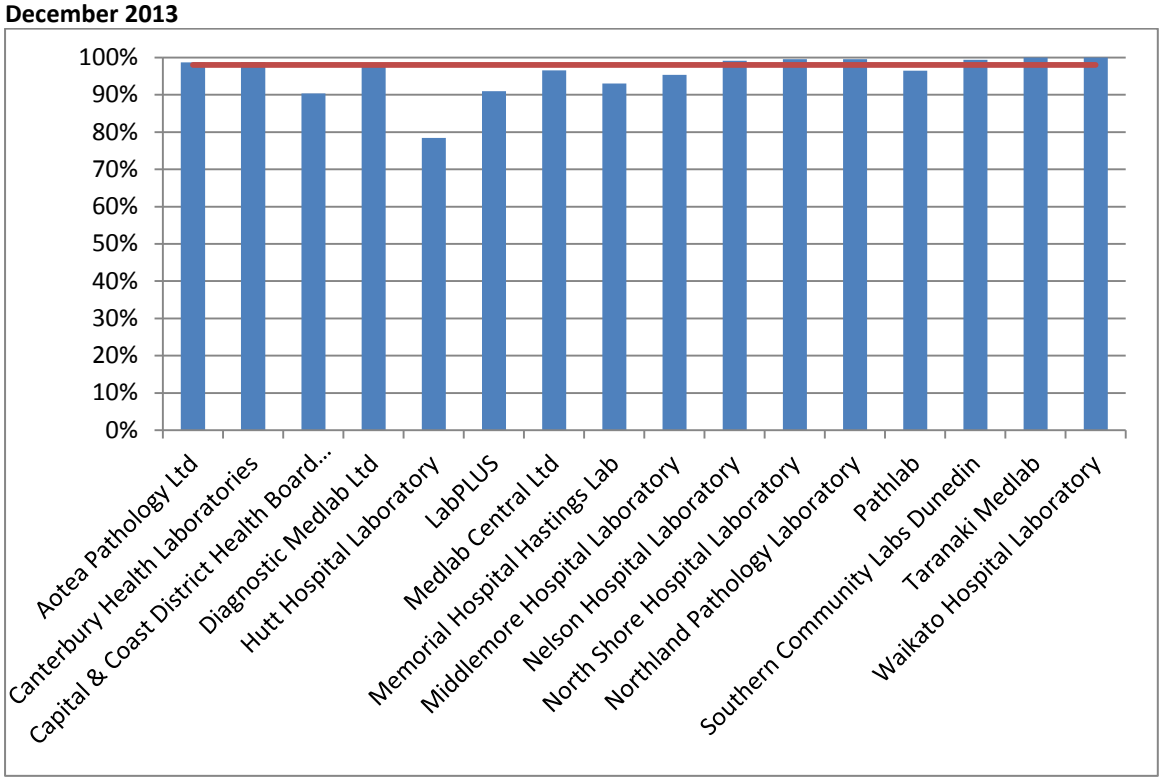
Target: 98% within 15 working days (red line)

Figure 42 - Proportion of histology samples reported within ten working days by laboratory, 1 July – 31 December 2013



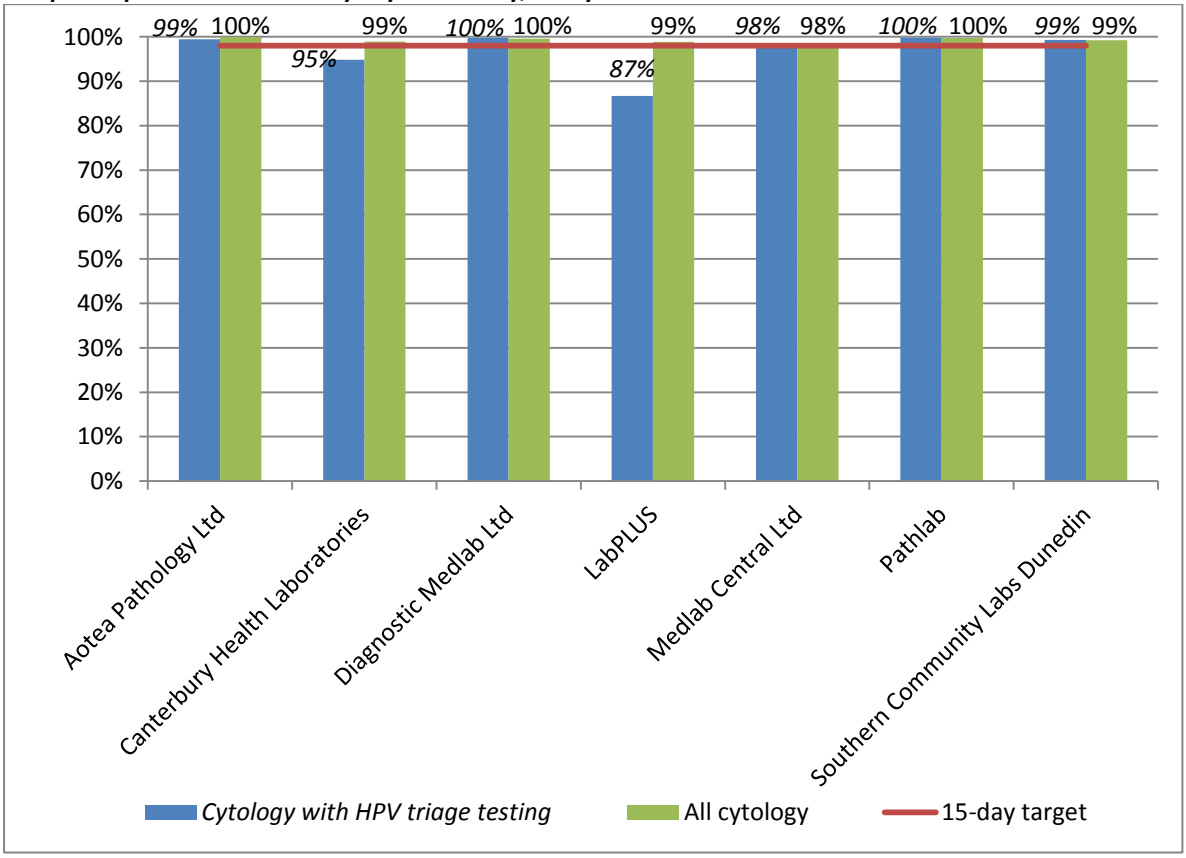
Target: 90% within ten working days (red line)

Figure 43 - Proportion of histology samples reported within 15 working days by laboratory, 1 July – 31 December 2013



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

Figure 44 - Proportion of cytology samples with associated HPV triage testing and of all cytology samples reported within 15 days by laboratory, 1 July – 31 December 2013



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

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

Definition

The proportion of women who have had a cervical sample showing a high grade cytology result for whom a histological report has been received by the NCSP Register. This proportion is a measure of the completeness of follow up of women with high grade cytology.

Each woman with a high grade cytology result, relating to a cytology sample taken in the six months preceding the current reporting period (ie sample taken from 1 January - 30 June 2013), is followed for any histology samples taken on or after the date of the cytology sample. The period of time between the cytology and histology reports relating to these samples is calculated. The proportion of women with a histology report up to and including 90 days after their cytology report is calculated. Histology reports which occur prior to the cytology report are included, as long as the histology sample was not taken before the cytology sample, to allow for differences in turnaround times between cytology and histology.

Analyses were also performed which calculated the proportion of women with a high grade cytology result who have a histology report within 180 days of their cytology report.

For the purposes of this indicator, the following Bethesda 2001 New Zealand modified (2005) interpretation codes are included as high grade cytology: ASH, HS1, HS2, SC, AG1-AG5, AIS, AC1-AC5.

High grade cytology reports which indicated that women were already under specialist management (TBS2001 NZ modified 2005 recommendation code R13) are excluded. After these are excluded, follow-up of women who have more than one high grade cytology sample is based on the first cytology sample collected in the period.

Note that some women may be assessed at colposcopy but have no biopsy taken. The colposcopy visit data for this group of women (Indicator 7.1) will supplement this indicator. An exploratory analysis was also performed here which calculated the proportion of women with high grade cytology who had no follow-up test of any kind (including colposcopy, histology sample, HPV sample, or subsequent cytology sample) within 180 days.

Note that the Programme also attempts to facilitate the follow up of all women with absent histology so that they may receive appropriate care where possible.

A woman's age is defined as her age at the end of the current reporting period (ie 31 December 2013).

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 3,940 high grade cytology results relating to samples collected in the period 1 January - 30 June 2013; 1,295 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 2,645 cytology results, which related to 2,490 women. Histological follow-up for these 2,490 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, 2,050 women (82.3%) had a histology report within 90 days of their cytology report, and 2,200 (88.4%) had a histology report within 180 days. This is below the target of 90% within 90 days. The proportion of women with a histology report varied by DHB from 63.0% (Whanganui) to 90.6% (Canterbury) within 90 days of their cytology report, and from 70.4% (Whanganui) to 94.7% (Canterbury) within 180 days of their cytology report (Figure 45, Table 15). Two DHBs met the target for the proportion of women with histology within 90 days (Canterbury, Tairawhiti); and no DHB met the target for 180 days. The proportion of women with a histology report also varies by age, from 45.5% (ages 70+ years) to 87.8% (ages 35-39 years) within 90 days, and from to 56.8% (ages 70+ years) to 93.8% (ages 40-44 years) within 180 days (Table 16). The targets were not met in any age group. There was some variation in the proportion of women with histological follow-up by ethnicity, however the targets were not met for any group of women nationally. At 90 days, the proportion of women with histological follow-up ranged from 66.7% (Pacific women) to 83.6% (European/Other women). By 180 days, however, the difference had narrowed, and histology reports were available for 78.9% of Pacific women and 89.2% of European/Other women (Table 17, Table 18). Further breakdown by DHB and ethnicity is shown in Table 17 and Table 18, and breakdown by DHB and age is shown in Table 60 and Table 61. Among women with an urgent referral, due to a suspicion of invasive disease (either clinical suspicion or based on NZ modified Bethesda 2001 codes HS2, SC, AC1-5, R10 or R14), a histology report was available within 90 days for 67.9% of women and within 180 days for 77.4% of women (Table 19). Among women where there was no suspicion of invasive disease (NZ modified Bethesda 2001 codes ASH, HS1, AG1-5, AIS), 82.8% had a histology report

available within 90 days and 88.7% within 180 days (Table 19).

Women with no follow-up tests

When follow-up tests of any kind (colposcopy, histology, HPV test, or subsequent cytology test) were considered, there were 280 women (11.2%) who had no record of any subsequent follow-up within 90 days and 167 women (6.7%) who had no record of any subsequent follow-up within 180 days on the NCSP Register (Table 20).

This varied by DHB from 5.0% (Tairawhiti) to 20.5% (Waikato) at 90 days and from 2.5% (Capital and Coast) to 11.1% (Nelson Marlborough) at 180 days (Figure 46, Table 20). It also varied by ethnicity, from 9.2% (Asian women) to 24.4% (Pacific women) at 90 days and from 5.6% (European/ Other women) to 16.3% (Pacific women) at 180 days (Figure 47).

Among women with an urgent referral, due to a suspicion of invasive disease, a follow-up test of some kind was available within 90 days for 79.8% of women and within 180 days for 84.5% of women (Table 19). At 180 days, there remained 13 women (15.5%) for whom no follow-up tests were recorded. Among women where there was no suspicion of invasive disease (NZ modified Bethesda 2001 codes ASH, HS1, AG1-5, AIS), 89.1% had a follow-up test report available within 90 days and 93.6% within 180 days (Table 19). At 180 days, there remained 154 women (6.4%) for whom no follow-up tests were recorded.

Trends

Histological follow-up

The proportion of women with a histology report within 90 days has increased since the previous reporting period (from 79.6% to 82.3% in the current period). The proportion of women with a histology report within 180 days has also increased, from 86.9% in the previous period to 88.4% in the current period.

The proportion of women with histological follow-up has increased overall, however, the trend still varies for individual DHBs. In a number of DHBs the proportion of women with histological follow-up has increased at 90 days and at 180 days (Canterbury, Capital and Coast, Counties Manukau, Lakes, Northland, South Canterbury, Taranaki, Waikato, Wairarapa, Waitemata). However in some DHBs, the proportion of women with histological follow-up decreased noticeably at 90 days and at 180 days (Bay of Plenty, Hutt Valley, Whanganui). Changes in other DHBs were smaller.

The proportion of women with follow-up histology has increased overall in the current monitoring period for Māori, Asian and European/ Other women but decreased for Pacific women (at both 90 days and 180 days). The proportions of women with follow-up histology are quite variable within individual DHBs, as the number of women with high grade cytology generally becomes comparatively small when broken down by both DHB and ethnicity (except for European/ Other women, and Māori women in some 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. There was an overall increase in the proportion of women with follow-up histology in most age groups. Follow-up at both 90 days and 180 days has increased among women aged 20-24, 25-29, 35-39, 60-64 and 65-69 years. Follow-up at both 90 days and 180 days has decreased among women aged 45-49 and 50-54 years.

Women with no follow-up tests

The proportion of women with no record of a follow-up test has decreased since the previous period at 90 days, from 12.1% to 11.2%, but has increased somewhat at 180 days, from 6.0% to 6.7%.

Trends by DHB were complex, but reductions in the proportion of women with no follow-up test recorded at 180 days were observed in 11 of the 20 DHBs, and were greatest in Canterbury and Northland. Increases were observed in some other DHBs, and were largest in Hutt Valley, Nelson Marlborough and Whanganui.

In the current monitoring period, the proportions of women for whom there was no follow-up test record has decreased for Māori women at both 90 days and 180 days, and has increased for Pacific women at both 90 days and 180 days. In Māori women the proportion of women with no follow-up tests recorded has decreased from to 19.0% to 14.8% at 90 days and from 9.9% to 8.8% at 180 days. For Pacific women the proportion has increased from 19.0% to 24.4% at 90 days, and from 7.9% to 16.3% at 180 days. For Asian women, the proportion has decreased from 10.9% to 9.2% at 90 days, and increased slightly from 6.1% to 6.3% at 180 days. For European/ Other women the proportion has decreased from 10.1% to 9.6% at 90 days, but increased from 4.9% to 5.4% at 180 days.

Comments

The proportion of women with a follow-up test of any kind provides useful additional information. While 17.7% of women with high grade cytology reports had no record of a histology report within 90 days, the proportion without a record of a follow-up test of any kind was much lower (11.2%). The same was also true at 180 days, where 11.6% of women with high grade cytology reports had no record of a histology report within 180 days, but the proportion without a record of a follow-up test of any kind was much lower (6.7%). Consistent with previous monitoring reports, many of the women with no follow-up histology recorded do have a record of some follow-up test. This provides reassurance that many women without histology have not been lost to follow-up.

The measure of whether or not there has been a follow-up test of any sort considers cytology, colposcopy, histology and HPV tests. Therefore changes in women with a follow-up of any kind of test may also reflect changes in the completeness of reporting on the NCSP Register for some tests. In particular, it may reflect changes in reporting of colposcopy visits on the Register over

time (whereas it is expected that the completeness of lab-based tests is not likely to have changed).

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

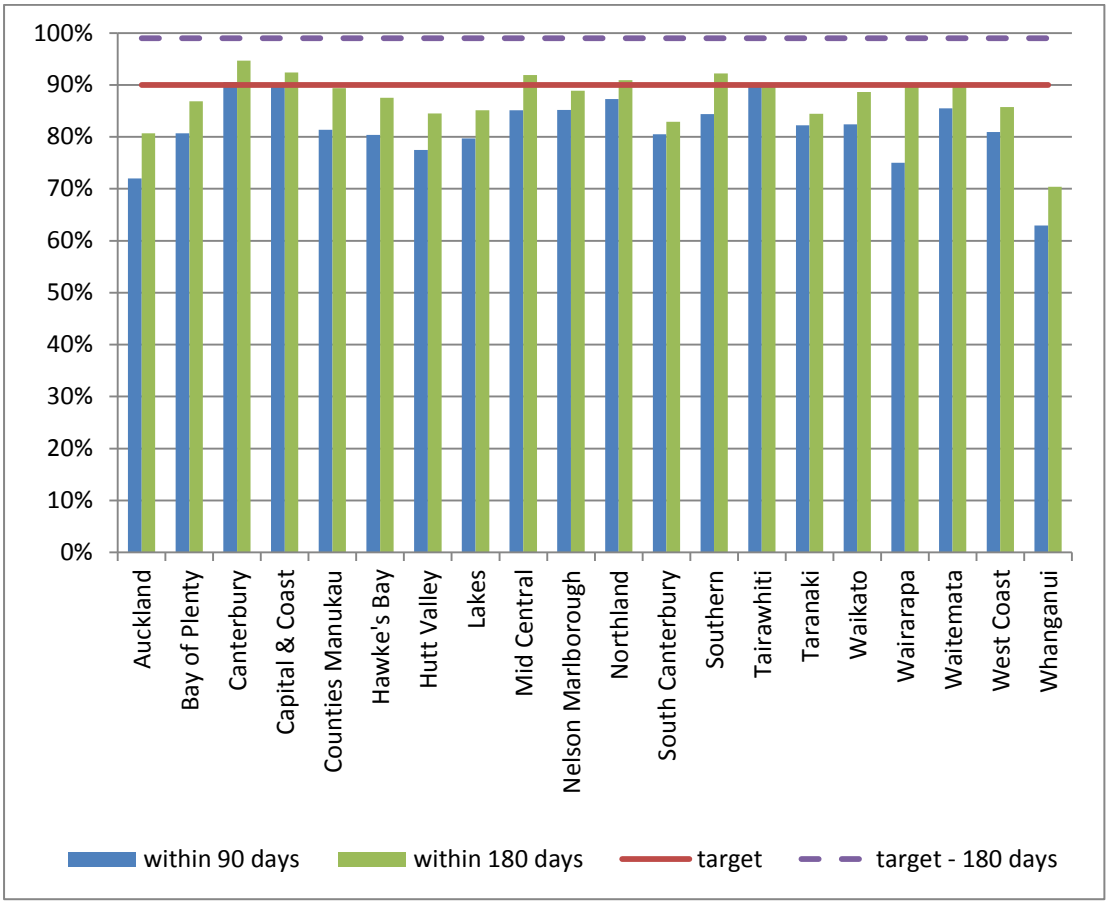
Note that while all *cytology results* which indicated that a woman was under specialist management were excluded from the measure of follow-up, not all *women* who had these cytology results were. If all cytology results for a woman indicated that she was under specialist management, she was excluded.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

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

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

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

Figure 45 - Proportion of women with a histology report within 90 days, and within 180 days of their high grade cytology report, by DHB



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

Table 15 – Women with a histology report within 90 and 180 days of a high grade cytology report, by DHB

DHB	High-grade cytology	Follow-up histology within 90 days		Follow-up histology within 180 days	
	N	N	%	N	%
Auckland	311	224	72.0	251	80.7
Bay of Plenty	114	92	80.7	99	86.8
Canterbury	244	221	90.6	231	94.7
Capital & Coast	118	106	89.8	109	92.4
Counties Manukau	236	192	81.4	211	89.4
Hawke's Bay	112	90	80.4	98	87.5
Hutt Valley	71	55	77.5	60	84.5
Lakes	74	59	79.7	63	85.1
Mid Central	74	63	85.1	68	91.9
Nelson Marlborough	81	69	85.2	72	88.9
Northland	55	48	87.3	50	90.9
South Canterbury	41	33	80.5	34	82.9
Southern	218	184	84.4	201	92.2
Tairawhiti	20	18	90.0	18	90.0
Taranaki	90	74	82.2	76	84.4
Waikato	273	225	82.4	242	88.6
Wairarapa	20	15	75.0	18	90.0
Waitemata	290	248	85.5	262	90.3
West Coast	21	17	81.0	18	85.7
Whanganui	27	17	63.0	19	70.4
Total	**2,490**	**2,050**	**82.3**	**2,200**	**88.4**

Table 16 - Women with a histology report within 90 and 180 days of a high grade cytology report, by age

Age (years)	High grade cytology	Follow-Up histology Within 90 days		Follow-up histology Within 180 days	
	N	N	%	N	%
<20	13	8	61.5	11	84.6
20-24	531	463	87.2	488	91.9
25-29	566	475	83.9	501	88.5
30-34	374	322	86.1	340	90.9
35-39	246	216	87.8	226	91.9
40-44	193	166	86.0	181	93.8
45-49	144	114	79.2	123	85.4
50-54	156	113	72.4	127	81.4
55-59	91	66	72.5	73	80.2
60-64	75	47	62.7	56	74.7
65-69	53	36	67.9	45	84.9
70+	44	20	45.5	25	56.8
Total	**2,486**	**2,046**	**82.3**	**2,196**	**88.3**

Note: date of birth information not available for four women.

Table 17 - Women with a histology report within 90 days of a high grade cytology report, by DHB and ethnicity

	Māori		Pacific		Asian		European/Other	
DHB	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Auckland	15	62.5	16	50.0	34	72.3	159	76.4
Bay of Plenty	24	85.7	3	100.0	6	100.0	59	76.6
Canterbury	23	92.0	5	83.3	5	83.3	188	90.8
Capital & Coast	9	81.8	3	100.0	6	75.0	88	91.7
Counties Manukau	36	76.6	28	70.0	27	84.4	101	86.3
Hawke's Bay	23	74.2	3	100.0	2	66.7	62	82.7
Hutt Valley	8	61.5	2	40.0	2	100.0	43	84.3
Lakes	24	80.0	-	-	2	100.0	33	78.6
Mid Central	13	81.3	1	100.0	1	100.0	48	85.7
Nelson Marlborough	12	80.0	-	-	1	100.0	56	86.2
Northland	14	93.3	2	100.0	2	100.0	30	83.3
South Canterbury	2	100.0	-	-	0	0.0	31	81.6
Southern	11	84.6	5	100.0	6	85.7	162	83.9
Tairawhiti	12	92.3	1	100.0	-	-	5	83.3
Taranaki	16	80.0	-	-	1	100.0	57	82.6
Waikato	53	84.1	5	71.4	13	92.9	154	81.5
Wairarapa	4	100.0	-	-	-	-	11	68.8
Waitemata	23	92.0	6	46.2	36	90.0	183	86.3
West Coast	-	-	1	100.0	1	100.0	15	78.9
Whanganui	2	40.0	1	100.0	-	-	14	66.7
Total	**324**	**81.0**	**82**	**66.7**	**145**	**83.3**	**1,499**	**83.6**

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

Table 18 - Women with a histology report within 180 days of a high grade cytology report, by DHB and ethnicity

	Māori		Pacific		Asian		European/Other	
DHB	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Auckland	19	79.2	22	68.8	37	78.7	173	83.2
Bay of Plenty	26	92.9	3	100.0	6	100.0	64	83.1
Canterbury	23	92.0	5	83.3	6	100.0	197	95.2
Capital & Coast	9	81.8	3	100.0	6	75.0	91	94.8
Counties Manukau	43	91.5	31	77.5	29	90.6	108	92.3
Hawke's Bay	25	80.6	3	100.0	2	66.7	68	90.7
Hutt Valley	9	69.2	4	80.0	2	100.0	45	88.2
Lakes	26	86.7	-	-	2	100.0	35	83.3
Mid Central	15	93.8	1	100.0	1	100.0	51	91.1
Nelson Marlborough	13	86.7	-	-	1	100.0	58	89.2
Northland	14	93.3	2	100.0	2	100.0	32	88.9
South Canterbury	2	100.0	-	-	0	0.0	32	84.2
Southern	12	92.3	5	100.0	7	100.0	177	91.7
Tairawhiti	12	92.3	1	100.0	-	-	5	83.3
Taranaki	16	80.0	-	-	1	100.0	59	85.5
Waikato	56	88.9	7	100.0	13	92.9	166	87.8
Wairarapa	4	100.0	-	-	-	-	14	87.5
Waitemata	23	92.0	8	61.5	38	95.0	193	91.0
West Coast	-	-	1	100.0	1	100.0	16	84.2
Whanganui	3	60.0	1	100.0	-	-	15	71.4
Total	**350**	**87.5**	**97**	**78.9**	**154**	**88.5**	**1,599**	**89.2**

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

Table 19- Women with high grade cytology who have follow-up within 90 and 180 days recorded on the NCSP Register, by urgency of referral and type of follow-up

	Urgent referral (HS2, SC, AC1-5)		No suspicion of invasion (ASH, HS1, AG1-5, AIS)	
	N	**%**	**N**	**%**
Follow-up within 90 days				
- histology	57	67.9	1,993	82.8
- any follow-up	67	79.8	2,143	89.1
- *no follow-up*	*17*	*20.2*	*263*	*10.9*
Follow-up within 180 days				
- histology	65	77.4	2,135	88.7
- any follow-up	71	84.5	2,252	93.6
- *no follow-up*	*13*	*15.5*	*154*	*6.4*

Figure 46 – Proportion of women without any follow-up test within 90 days and within 180 days of a high grade cytology report, by DHB

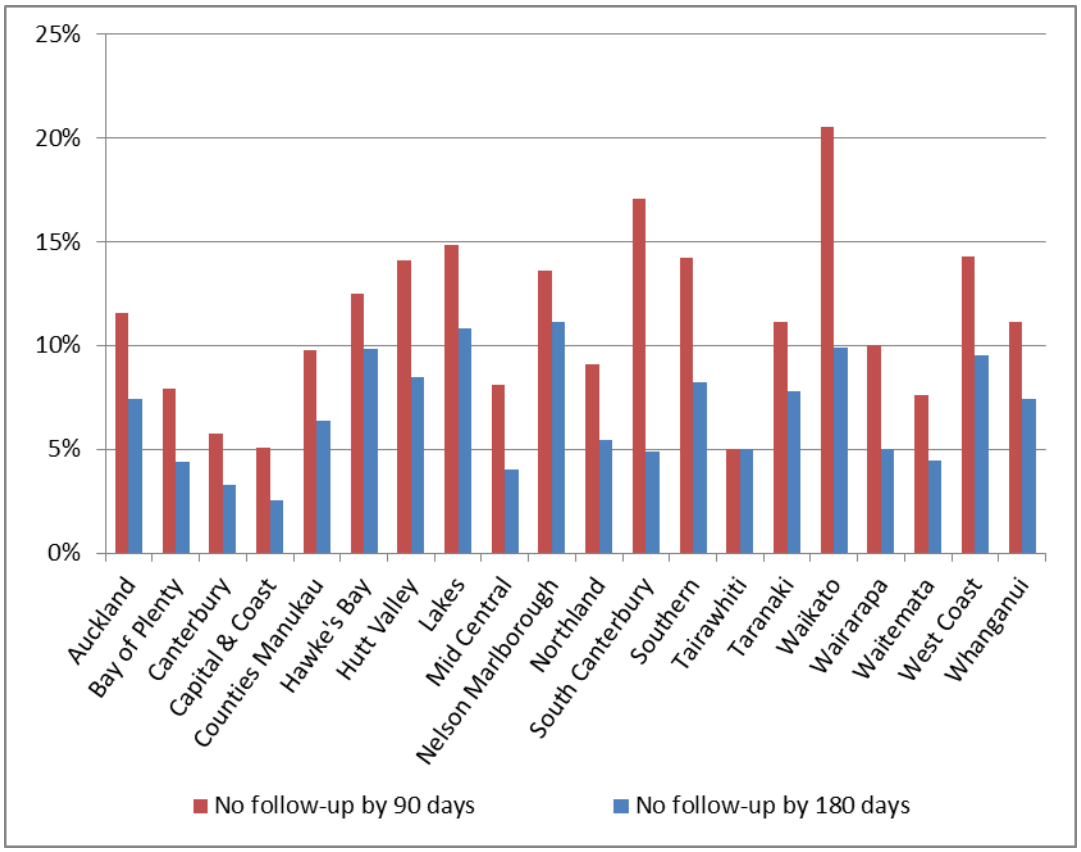


Figure 47 - Proportion of women without any follow-up test within 90 days and within 180 days of a high grade cytology report, by ethnicity

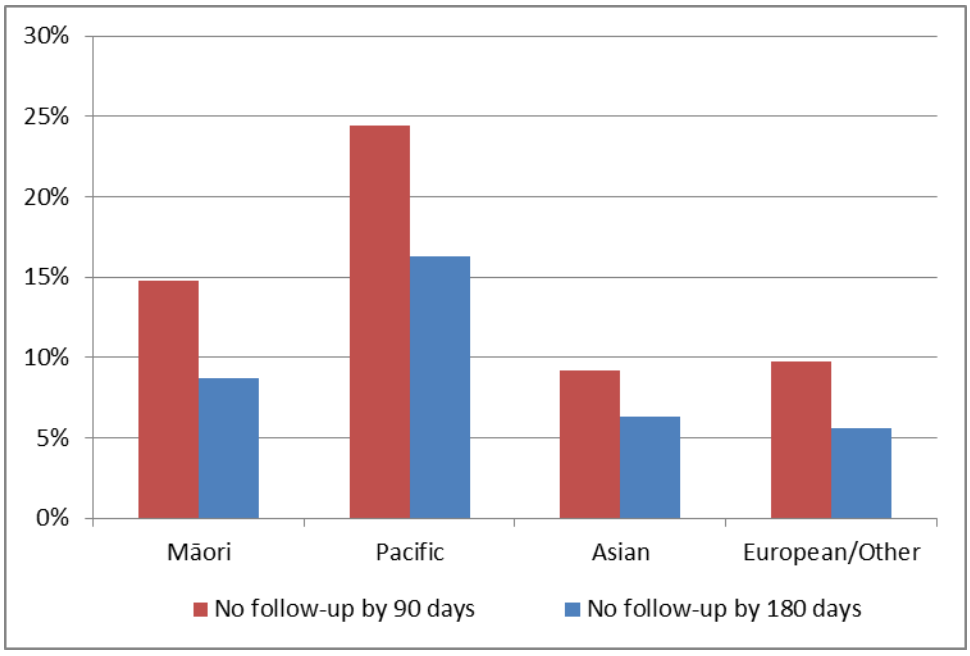


Table 20 - Women without any follow-up test within 180 days of a high grade cytology report, by DHB

DHB	High-grade cytology N	Without a follow-up test by 90 days N	%	Without a follow-up test by 180 days N	%
Auckland	311	36	11.6	23	7.4
Bay of Plenty	114	9	7.9	5	4.4
Canterbury	244	14	5.7	8	3.3
Capital & Coast	118	6	5.1	3	2.5
Counties Manukau	236	23	9.7	15	6.4
Hawke's Bay	112	14	12.5	11	9.8
Hutt Valley	71	10	14.1	6	8.5
Lakes	74	11	14.9	8	10.8
Mid Central	74	6	8.1	3	4.1
Nelson Marlborough	81	11	13.6	9	11.1
Northland	55	5	9.1	3	5.5
South Canterbury	41	7	17.1	2	4.9
Southern	218	31	14.2	18	8.3
Tairawhiti	20	1	5.0	1	5.0
Taranaki	90	10	11.1	7	7.8
Waikato	273	56	20.5	27	9.9
Wairarapa	20	2	10.0	1	5.0
Waitemata	290	22	7.6	13	4.5
West Coast	21	3	14.3	2	9.5
Whanganui	27	3	11.1	2	7.4
Unspecified	-	-		-	
Total	**2,490**	**280**	**11.2**	**167**	**6.7**

Table 21 - Women without any follow-up test within 180 days of a high grade cytology report, by ethnicity

Ethnicity	High grade cytology N	Without follow-up by 90 days N	%	Without follow-up by 180 days N	%
Māori	400	59	14.8	35	8.8
Pacific	123	30	24.4	20	16.3
Asian	174	16	9.2	11	6.3
European/Other	1,793	175	9.8	101	5.6
Total	**2,490**	**280**	**11.2**	**167**	**6.7**

Indicator 7 – Colposcopy indicators

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

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

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

7.3. Adequacy of documenting colposcopy assessment (Standard 603)

7.4. Timeliness of treatment (Standard 605)

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

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

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

Some of these indicators (7.6, 7.7) are still in development. It is envisioned that they will be included in future monitoring reports.

Colposcopy data has been recorded on the NCSP Register for a relatively short time, compared to cytology and histology data. It is possible that there is incomplete reporting of colposcopy data to the NCSP Register, and therefore results for these indicators may need to be interpreted with some caution. However it was felt that colposcopy indicators were an important quality measure of the NCSP, and reporting on them should not be unduly delayed. This was also a recommendation of the 2011 Parliamentary Review into the NCSP.[15] It is anticipated that completeness of colposcopy data on the NCSP Register will continue to improve over time.

Indicator 7.1 – Timeliness of colposcopic assessment – high grade cytology

Definition

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

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

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

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

Results are reported by ethnicity and DHB. For women who attended colposcopy, DHB is assigned on the basis of the DHB of the colposcopy facility where she attended for colposcopy. The date on which the referral to that DHB was accepted is used to calculate timeliness. If there are multiple referrals for the same woman to that DHB, the date of the first accepted referral following the cytology sample is used. Women who attended colposcopy but had no relevant referral to that DHB recorded on the NCSP Register were excluded from the calculations of timeliness (since the time between the acceptance of the referral and the colposcopy visit could not be calculated). However these women were reported on separately.

For women who did not attend colposcopy prior to the end of the current monitoring period, DHB is assigned based on the DHB of the facility which accepted the referral for that woman (where the referral was accepted no later than four weeks prior to the end of the current monitoring period). If there were multiple referrals for the same woman which occurred after the cytology sample, the most recently accepted referral within the timeframe was used.

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

Since cytology samples were collected in the six months prior to the current reporting period, this allows a follow-up period of at least six months for all women (and up to 12 months for some women) where a woman can attend colposcopy and be assigned to a DHB, or alternately have a referral accepted by a DHB.

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

High grade cytology tests indicating that a woman was already under specialist management (TBS=R13) were excluded from this measure.

Target

95% or more of women who have evidence of clinical suspicion of invasive carcinoma, or a suspicion of invasive disease (TBS codes HS2, SC, AC1-AC5), receive colposcopy or a gynaecological assessment within 10 working days of receipt of referral.

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

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

acknowledging that this is not directly comparable to the target.

Current Situation

In the period 1 January - 30 June 2013, there were 2,490 women with high grade cytology results who were not already under specialist management. 84 women had results indicating suspicion of invasive disease, and the remaining 2,406 had other high grade cytology results.

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

Timeliness – high grade cytology indicating suspicion of invasive disease

Accepted referrals were found for 40 (47.6%) of the 84 women who had high grade cytology indicating suspicion of invasive disease. Of these 40 women with a referral, 28 (70.0%) have a record of a colposcopy visit on the NCSP Register within ten working days of their referral, and 31 (77.5%) have a visit within 20 working days (Table 22). Among the women with both a referral and a colposcopy visit recorded on the NCSP Register, the median period between the date the referral was accepted and the first colposcopy visit date was 7 days (Table 23).

In total, 69 women (82.1%) of the 84 women with high grade cytology indicating suspicion of invasive disease relating to a sample collected in 1 January - 30 June 2013 have a record of a colposcopy visit prior to 31 December 2013 (representing a follow-up period of at least six and up to 12 months after their high grade cytology). Time between the cytology report and first colposcopy visit was also measured for these 69 women. However for six of these women, the date that the cytology result was originally reported to the smear taker was no longer available from the NCSP Register. Among the remaining 63 women, the median period between the cytology report date and colposcopy visit date was 13 days overall; 22 days among Māori women, 47.5 days among Pacific women, 10 days among Asian women, and 12 days among European/Other women (Table 24). This was not analysed further by DHB, due to the small numbers of women within each DHB with these results.

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

Accepted referrals were found for 1,897 women (78.8%) of the 2,406 women. Among the women with accepted referrals, 1,143 (60.3%) were seen within 20 working days of their referral (Table 25, Table 26). This varied by DHB from 23.2% (Waikato) to 95.8% (Whanganui) (Table 25). There was also some variation by ethnicity, from 45.6% (Pacific women) to 65.0% (European/Other women) (Table 26). Among the women with both a referral and a colposcopy visit recorded on the NCSP Register, the median time between the date the referral was accepted and the first colposcopy visit date was 25 days. This was further analysed by DHB. The median waiting time between the date the referral was accepted and the first

	colposcopy visit varied widely by DHB, ranging from 11 days (Northland) to 37.5 days (Waikato)(Table 27). There was less variation by ethnicity, with the median waiting times ranging from 23 days (European/ Other women) to 28 days (Māori and Pacific women) (Table 28). In total, 2,282 (94.8%) of the 2,406 women with high grade cytology (but no suspicion of invasive disease) relating to a sample collected in the period 1 January - 30 June 2013 have a record of a colposcopy visit prior to 31 December 2013 (representing a follow-up period of at least six and up to 12 months after their high grade cytology). Time between the cytology report and first colposcopy visit was also measured for these 2,282 women. In 257 of the women with high grade cytology (no suspicion of invasive disease), the date that the cytology result was originally reported to the smear taker was no longer available from the NCSP Register. Among the remaining 2,025 women for whom colposcopy records were found, the median period between the cytology report date and colposcopy visit date was 31 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 18 days (Northland) to 43 days (Waikato) (Table 29). There was less variation by ethnicity, with the median waiting times ranging from 29 days (European/ Other women) to 36 days (Pacific women) (Table 30).
Trends	Nationally, the proportion of women with high grade cytology indicating suspicion of invasive disease seen within the target timeframe has increased, from 36.8% within five working days to 70.0% within ten working days (note that the target timeframe has also changed). The percentage of women with high grade cytology indicating suspicion of invasive disease seen within 20 working days has also increased, from 73.7% to 77.5%. The proportion of women with high grade cytology (but no suspicion of invasive disease) seen within 20 working days has increased, from 46.1% in the previous report to 60.3% in the current report. The proportion of all women with high grade results for whom an accepted referral was available on the NCSP Register is somewhat lower in the current report than it was in the previous report (86.5% in Report 39; 77.8% in Report 40). Nationally, the median time between the cytology report date and first colposcopy visit has decreased slightly for high grade cytology indicating suspicion of invasive disease, from 13.5 days in Report 39 to 13 days in the current report. The median time between the cytology report date and first colposcopy visit is also somewhat shorter for high grade cytology (no suspicion of invasive disease) in the current report (31 days) compared to the previous report (36 days).
Comments	Since this indicator relies on colposcopy data in the NCSP Register, there is the possibility that incomplete reporting of referrals and colposcopy visits as at the time of the data extract from the NCSP Register (March 2014 for the current report) has led to an underestimate of the number of women with referrals and/or follow-up colposcopy visits in a given time period. In order

to help address this, in the current report, histology data are also used to help ascertain if a colposcopy visit occurred. Women with a histology sample collected after their cytology sample are assumed to have attended a colposcopy clinic for follow-up, even if a colposcopy visit is not explicitly recorded on the NCSP Register.

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

Additional information about follow-up tests performed in women with high grade cytology is included in Indicator 6. The same 2,490 women (84 with suspicion of invasive disease, 2,406 other high grade cytology) are included in both this measure and Indicator 6. In Indicator 6, it was found that 2,200 (88.4%) women had histology within 180 days, and 2,323 (93.3%) had a follow-up test of some sort within 180 days. Note that there may be some differences in results by DHB, however, since in Indicator 6 the DHB assigned to a woman is her own DHB (or, where this information is not available on the NCSP Register, the DHB of her responsible health facility), based on geographic location. In this indicator, women are assigned to a DHB based on either the DHB where they attended colposcopy, or the most recent DHB to which they have been referred (for women without colposcopy visits), or to the geographic DHB of the health facility where the high grade cytology sample was collected (for women with no referral and no colposcopy visit). Additionally, only public colposcopy clinics are assigned a DHB; private colposcopy clinics are separated out and reported on as a group in this indicator.

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

In previous reports this indicator could not provide information which would allow the timeliness of colposcopic assessment among women with high grade cytology results to the targets. This was due to the comparatively small number of matching accepted referrals recorded on the NCSP Register; the date the referral is accepted is required in order to have a starting date from which to calculate the period of time between referral and colposcopy attendance. Where it was previously not possible to obtain reliable data on referrals for the current monitoring period, the time between the cytology report date and the first colposcopy visit was calculated, however this is not directly comparable to the targets. This additional estimate of waiting time has been maintained in the current report, in order to provide a comparable

measure for the purposes of investigating trends. For a small number of women this could not be calculated however, as they had cytology results which suggested that the dates in the test record had been updated. This was suggested by a colposcopy visit which occurred after the cytology sample was collected, but before the cytology report date recorded on the NCSP Register (the time between the date the cytology sample was collected and the cytology report date on the NCSP Register was also longer than usual).

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

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

Ethnicity	HG women (suspicion of invasion)	Urgent referrals received	Women seen within :			
			10 working days		20 working days	
	N	N	N	%	N	%
Māori	15	9	4	44.4	6	66.7
Pacific	10	3	1	33.3	1	33.3
Asian	8	6	6	100.0	6	100.0
European/Other	51	22	17	77.3	18	81.8
Total	**84**	**40**	**28**	**70.0**	**34**	**77.5**

Table 23 – Time between referral (suspicion of invasive disease) and colposcopy visit date among women with an accepted referral recorded, by ethnicity

Ethnicity	HG women	Referrals received	Women seen at colposcopy*	Median time between referral and colposcopy † (days)
	N	N	N	
Māori	15	9	8	16
Pacific	10	3	2	n.r.
Asian	8	6	6	8.5
European/Other	51	22	20	4.5
Total	**84**	**40**	**36**	**7**

** Attendence by women with an accepted referral on or after the date their referral was accepted, but only where DHB which accepted referral matches the DHB where the colposcopy visit occurred, up to 31 December 2013 † Days between referral and colposcopy date. n.r = not reported due to extremely small numbers of women for whom colposcopy is recorded.*

Table 24 – Time between high grade cytology report (suspicion of invasive disease) and colposcopy visit date, by ethnicity

Ethnicity	HG women	Women seen at colposcopy*	Median time between cytology report and colposcopy visit †
	N	N	(days)
Māori	15	13	22
Pacific	10	7	47.5
Asian	8	7	10
European/Other	51	42	12
Total	**84**	**69**	**13**

** Attendence at any colposcopy clinic on or after the date the high grade cytology sample was collected, including where no referral is recorded, up to 31 December 2013 † Days between cytology report date and colposcopy date. Excludes 6 woman where waiting time between cytology report and colposcopy could not be calculated because the date the cytology result was originally reported to the smear taker was no longer available from the NCSP Register*

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

DHB	HG women	Referrals received	Women seen within 20 working days	
	N	N	N	%
Public clinics overall	*2,013*	*1,662*	*1008*	*60.6*
Auckland	208	182	56	30.8
Bay of Plenty	92	84	45	53.6
Canterbury	200	188	159	84.6
Capital & Coast	98	96	61	63.5
Counties Manukau	192	176	109	61.9
Hawke's Bay	92	55	38	69.1
Hutt Valley	57	53	33	62.3
Lakes	70	55	36	65.5
Mid Central	68	66	40	60.6
Nelson Marlborough	71	56	31	55.4
Northland	48	43	40	93.0
South Canterbury	30	14	11	78.6
Southern	199	131	75	57.3
Tairawhiti	15	15	11	73.3
Taranaki	79	56	50	89.3
Waikato	225	142	33	23.2
Wairarapa	18	15	13	86.7
Waitemata	207	194	131	67.5
West Coast	19	17	13	76.5
Whanganui	25	24	23	95.8
Private Practice	*393*	*235*	*135*	*57.4*
Total	**2,406**	**1,897**	**1,143**	**60.3**

Table 26 – Women with a high grade cytology report (no suspicion of invasive disease), accepted referral and colposcopy visit, by ethnicity

Ethnicity	HG women	Referrals received	Women seen within 20 working days	
	N	N	N	%
Māori	385	316	156	49.4
Pacific	113	103	47	45.6
Asian	166	139	70	50.4
European/Other	1,742	1,339	870	65.0
Total	**2,406**	**1,897**	**1,143**	**60.3**

Table 27 - Time between referral (no suspicion of invasive disease) and colposcopy visit date among women with an accepted referral recorded, by DHB

DHB	HG women	Referrals received	Women seen at colposcopy*	Median time between referral and colposcopy† (days)
	N		N	
Auckland	208	182	179	34
Bay of Plenty	92	84	84	27.5
Canterbury	200	188	188	18
Capital & Coast	98	96	96	21
Counties Manukau	192	176	174	27
Hawke's Bay	92	55	55	26
Hutt Valley	57	53	52	24
Lakes	70	55	55	23
Mid Central	68	66	66	21.5
Nelson Marlborough	71	56	56	27
Northland	48	43	43	11
South Canterbury	30	14	12	21.5
Southern	199	131	128	27
Tairawhiti	15	15	15	22
Taranaki	79	56	54	22
Waikato	225	142	138	37.5
Wairarapa	18	15	15	18
Waitemata	207	194	192	24
West Coast	19	17	17	21
Whanganui	25	24	23	16
Private Practice	*393*	*235*	*183*	*16*
Total	**2,406**	**1,897**	**1,825**	**25**

** Attendence at a colposcopy clinic, but only where DHB which accepted referral matches the DHB where the colposcopy visit occurred, up to 31 December 2013 † Days between referral accepted date and colposcopy date.*

Table 28 – Time between referral (no suspicion of invasive disease) and colposcopy visit date, by ethnicity

Ethnicity	HG women N	Referrals received N	Women seen at colposcopy* N	Median time between referral and colposcopy † (days)
Māori	385	316	301	28
Pacific	113	103	90	28
Asian	166	139	132	27
European/Other	1,742	1,339	1,302	23
Total	**2,406**	**1,897**	**1,825**	**25**

** Attendence at a colposcopy clinic after the referral was accepted, but only where DHB which accepted the referral matches the DHB where the colposcopy visit occurred, up to 31 December 2013 † Days between acceptance of referral and colposcopy date.*

Table 29 - Time between high grade cytology report (no suspicion of invasive disease) and colposcopy visit date, by DHB

DHB	HG women N	Women seen at colposcopy* N	Median time between cytology report and colposcopy † (days)
Auckland	208	198	41
Bay of Plenty	92	89	35
Canterbury	200	194	24
Capital & Coast	98	97	34
Counties Manukau	192	186	32
Hawke's Bay	92	91	34.5
Hutt Valley	57	53	34
Lakes	70	66	30
Mid Central	68	67	28.5
Nelson Marlborough	71	68	34
Northland	48	46	18
South Canterbury	30	28	28
Southern	199	194	36
Tairawhiti	15	15	32.5
Taranaki	79	73	28.5
Waikato	225	216	43
Wairarapa	18	17	21
Waitemata	207	202	29
West Coast	19	18	27
Whanganui	25	23	25
Private Practice	*393*	*341*	*19*
Total	**2,406**	**2,282**	**31**

** Attendence at any colposcopy clinic, including where no referral is recorded, up to 31 December 2013 † Days between cytology report date and colposcopy date. Excludes 257 women where waiting time between cytology report and colposcopy could not be calculated because the date the cytology result was originally reported to the smear taker was no longer available from the NCSP Register.*

Table 30 – Time between high grade cytology report (no suspicion of invasive disease) and colposcopy visit date, by ethnicity

Ethnicity	HG women N	Women seen at colposcopy* N	Median time between cytology report and colposcopy visit (days) †
Māori	385	365	35
Pacific	113	97	36
Asian	166	157	34
European/Other	1,742	1,663	29
Total	**2,406**	**2,282**	**31**

** Attendence at any colposcopy clinic, including where no referral is recorded, up to 31 December 2013 † Days between cytology report date and colposcopy date. Excludes 257 women where waiting time between cytology report and colposcopy could not be calculated because the date the cytology result was originally reported to the smear taker was no longer available from the NCSP Register*

Indicator 7.2 – Timeliness of colposcopic assessment – low grade cytology

Definition

This indicator measures performance against Standard 602. It is still under development.

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

Women were included in this measure if they had a cytology sample collected in the period 1 January - 30 June 2013 where the result was low grade (ASC-US or LSIL), and either a positive hrHPV test (within four weeks of the cytology result) or a previous low grade cytology result (within the previous five years) .

Referrals and colposcopy visits for these women were retrieved from the NCSP Register. Referrals were retrieved where the date on which the referral was accepted occurred after the date the cytology sample was collected. Colposcopy visits recorded on the NCSP Register were retrieved if they occurred after the cytology test and no later than the end of the current monitoring period (31 December 2013).

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. If there were multiple referrals for the same woman to that DHB recorded, the date of the first accepted referral following the cytology sample was used.

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

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

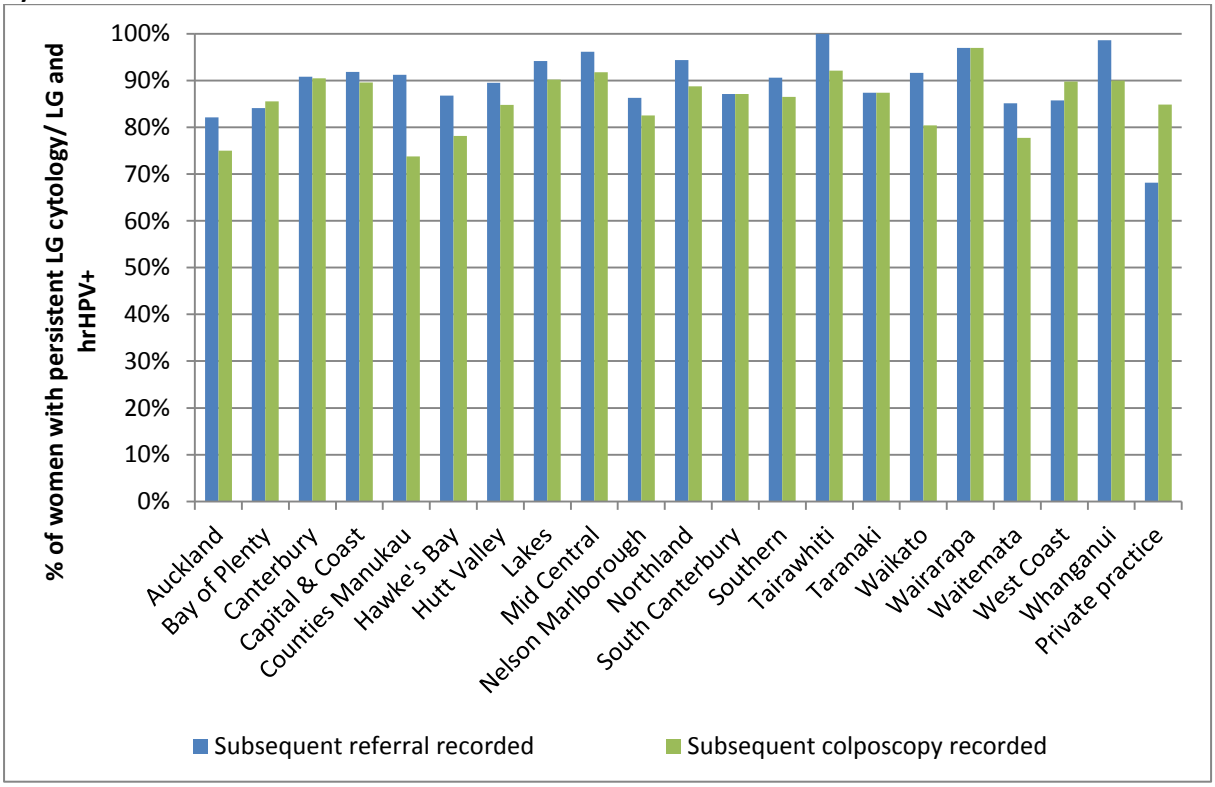
Since cytology samples were collected in the six months ending 12 months prior to the end of current reporting period, this allows a follow-up period of at least 12 months for all women (and up to 18 months for some women) where a woman can attend colposcopy and be assigned to a DHB, or alternately have a referral accepted by a DHB.

At present, this indicator reports on aspects of follow-up, but not specifically on timeliness in relation to the standard, as the date of the first scheduled colposcopic appointment (to which the standard relates) is not yet available in the NCSP Register. In the interim, it reports on the number and percentage of women for whom a subsequent referral and/ or a colposcopy visit are recorded, and describes the time between cytology report, referral and colposcopy visit. The time between two events is characterised in this report by the median time, and the interquartile range (IQR). These can be interpreted as follows: among women for whom colposcopy is recorded, half are seen by the median time; 25% are seen within the time described by the

	lower end of the IQR and 75% within the time described by the upper end of the IQR.
Target	95% of women who have persistent low-grade abnormalities or a low-grade abnormality and positive HPV test, must receive a date for a colposcopy appointment within a period that does not exceed 26 weeks of the colposcopy unit accepting the referral from the smear taker.
Current situation	At present, this indicator reports on aspects of follow-up, but not specifically on timeliness in relation to the standard, as the date of the first scheduled colposcopic appointment (to which the target relates) is not yet available in the NCSP Register. There were 4,687 women with persistent low grade cytology or low grade cytology and a positive hrHPV test collected in the period 1 July – 31 December 2012. Subsequent accepted referrals are recorded for 3,988 (85.1%) of these women by the end of the current monitoring period. Considering all women (regardless of whether or not a referral is recorded), subsequent colposcopy is recorded for 3,877 (82.7%) women by the end of the current monitoring period. Among women with a referral, the median time between the cytology report date and the date the referral was accepted was seven days (interquartile range (IQR): 3 - 18 days). Among women with both a referral and a colposcopy visit recorded (3,500 women; 74.7% of all women with persistent low grade cytology or low grade cytology and a positive hrHPV test), the median time between an accepted referral and the first attendance for colposcopy was 153 days (IQR: 72 – 205 days). The proportion of women for whom a subsequent referral and/or colposcopy visit are recorded are shown by DHB in Figure 48, and by ethnicity in Figure 49. The proportion of women for whom an accepted referral was recorded on the NCSP Register ranged from 82.1% (Auckland) to 100% (ie all women; Tairawhiti)(Figure 48). The proportion of women with a subsequent colposcopy visit recorded on the NCSP Register (regardless of whether or not a referral is recorded) ranged from 73.8% (Counties Manukau) to 97.0% (Wairarapa)(Figure 48). Among women with a referral recorded, the median time between the cytology result and a referral being accepted by a colposcopy clinic was less than two weeks in all 20 DHBs, and ranged from two days (Wairarapa) to 9.5 days (Hutt Valley)(Table 64). Among women with both a referral and a colposcopy visit recorded, the median time between the referral being accepted and the woman attending for colposcopy ranged from 81 days (Tairawhiti) to 231.5 days (Counties Manukau)(Figure 50, Table 64). The proportion of women for whom an accepted referral was recorded on the NCSP Register ranged from 83.0% for European/Other women to 93.3% for Māori women (Figure 49). The proportion of women with a subsequent colposcopy visit recorded on the NCSP Register (regardless of whether or not a referral is recorded) ranged from 73.5% (Pacific women) to 83.6% (Māori women)(Figure 49). Among women with a referral recorded, the median time between the cytology result and a referral being accepted by a

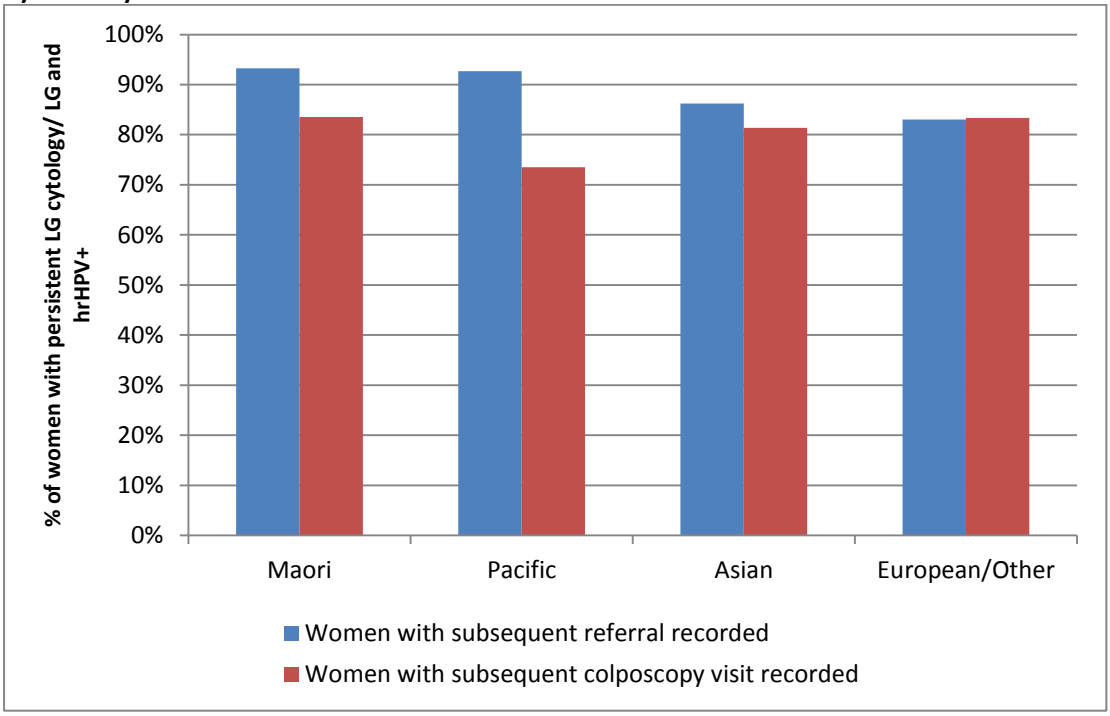
	colposcopy clinic was around one week (7-8 days) for all groups (Table 65). Among women with both a referral and a colposcopy visit recorded, the median time between the referral being accepted and the woman attending for colposcopy ranged from 146 days (European/ Other) to 193 days (Pacific)(Figure 51, Table 65).
Trends	This is the first time this indicator has been reported on in recent reports, and so trends are not reported.
Comments	This is the first time this indicator has been included in recent monitoring reports. It is still under development, and the results are not directly comparable to the target, as the date of the first colposcopy appointment scheduled is not yet available on the NCSP Register. In the interim, this indicator is a descriptive measure of how many women have a referral and/ or a colposcopy visit recorded on the NCSP Register, and of the time taken between cytology report, referral and first colposcopy visit. Referrals recorded are included if they occurred after the date the cytology sample was collected, and prior to the time of the data extract from the NCSP Register (March 2014). Thus the follow-up period for individual women varies from approximately nine to 15 months. However, it is possible that referrals are incompletely recorded on the NCSP Register, as some women have a record of a colposcopy visit, but no record of an accepted referral. Colposcopy visits recorded are included if they occurred after the date the cytology sample was collected, and prior to the end of the current monitoring period. It is possible that there is incomplete reporting of colposcopy data to the NCSP Register, and therefore results for this indicator may need to be interpreted with some caution.

Figure 48 - Follow-up recorded* for women with persistent LG cytology/ LG cytology and positive hrHPV test, by DHB



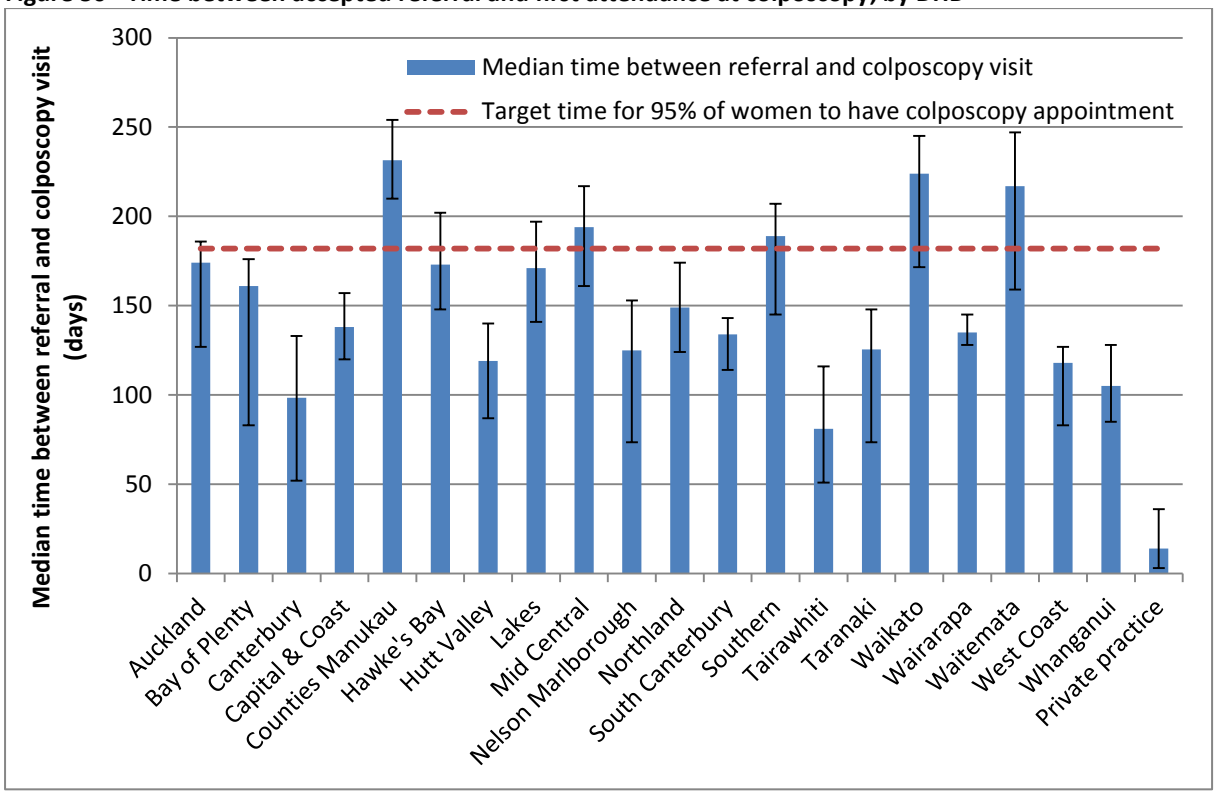
* Follow-up recorded on NCSP Register, at the time of data download. Women with colposcopy includes any women with a colposcopy visit recorded on the NCSP Register, regardless of whether or not there is also an accepted referral recorded.

Figure 49 - Follow-up recorded* for women with persistent LG cytology/ LG cytology and positive hrHPV test, by ethnicity



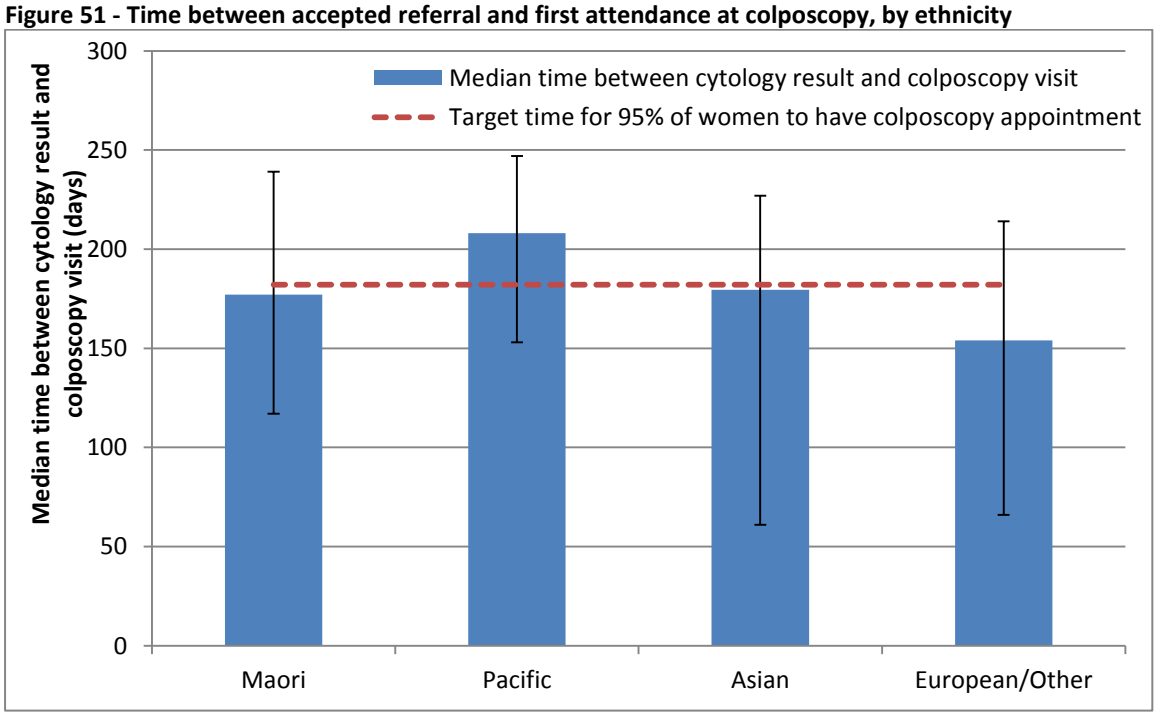
* Follow-up recorded on NCSP Register, at the time of data download. Women with colposcopy includes any women with a colposcopy visit recorded on the NCSP Register, regardless of whether or not there is also an accepted referral recorded.

Figure 50 - Time between accepted referral and first attendance at colposcopy, by DHB



Bars represent the interquartile range for time between accepted referral and first attendance at colposcopy, among women who have both an accepted referral and a colposcopy visit recorded. Dotted line represents the target time for the first colposcopy appointment ie 26 weeks (182 days; target 95% women to have colposcopy appointment within 26 weeks of referral).

Figure 51 - Time between accepted referral and first attendance at colposcopy, by ethnicity



Bars represent the interquartile range for time between accepted referral and first attendance at colposcopy, among women who have both an accepted referral and a colposcopy visit recorded. Dotted line represents the target time for the first colposcopy appointment ie 26 weeks (182 days; target 95% women to have colposcopy appointment within 26 weeks of referral.

Indicator 7.3 – Adequacy of documenting colposcopy assessment

Definition

This indicator measures performance against Standard 603.

It includes the proportion of colposcopies which occurred within the monitoring period with complete reporting of

- visibility of the squamo-columnar junction
- presence or absence of a visible lesion
- colposcopic opinion regarding the nature of the abnormality
- recommended management and follow-up
- timeframe recommended for follow-up
- all of the above items completed

Results are reported by DHB, based on the DHB of the facility where colposcopy was performed.

Target

100% of medical notes will accurately record colposcopic findings including:

i) visibility of the squamo-columnar junction

ii) colposcopic appearance, including presence or absence of a visible lesion

iii) visibility of the limits of lesion

iv) colposcopic opinion (predicted abnormalities) regarding the nature of the abnormality and the requirement for treatment

v) site and type of biopsy taken

vi) whether the biopsy taken was satisfactory for histological examination

vii) histology of biopsy taken

viii) actions taken during visit

ix) recommended management and follow-up

x) timeframe recommended for follow-up.

Items i), ii), ix), x) the first of the items in iv) can be assessed using data in the NCSP Register, and are reported on below. Other items and the 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. These will be assessed when the required information is recorded on the NCSP Register.

When calculating the completeness of recording of the colposcopic opinion regarding the nature of the abnormality, this was restricted to those colposcopy visits where the presence of a lesion was either noted (colposcopic appearance recorded as abnormal), or could not be ruled out

(colposcopic appearance recorded as inconclusive).

When calculating the overall completeness of all items, colposcopic opinion regarding the nature of the abnormality was only required where colposcopic appearance was recorded as either abnormal or inconclusive.

Current Situation

There were 15,082 colposcopy visits within the current monitoring period recorded on the NCSP Register. Documentation relating to these visits was analysed (Table 66).

Nationally, the visibility of the squamocolumnar junction (ie whether or not the squamocolumnar junction was visible) was documented for 96.0% of visits; colposcopic appearance was documented for 100.0% of visits; an opinion regarding the lesion grade was documented for 91.7% of visits where the presence of a lesion could not be ruled out; the type of follow-up was documented for 98.1% of visits; and the timeframe for follow-up was documented for 97.4% of visits. All of these items (where relevant) were documented for 89.8% of visits. The colposcopic appearance was reported to be abnormal in 53.5% of colpscopies, and inconclusive in 4.8% of colposcopies (Table 67).

Documentation varied by DHB, as shown in Figure 52 and Table 66. Documentation of visibility of the squamocolumnar junction, varied from 86.7% (Mid Central) to 100.0% (Tairawhiti). In all DHBs, all colposcopy reports documented the colposcopic appearance. Recording of the opinion regarding the abnormality grade (which was only assessed here if colposcopic appearance was recorded as abnormal or inconclusive), ranged from 78.8% (Whanganui) to 100.0% (Wairarapa). Recording of the recommended type of follow-up ranged from 89.5% (Mid Central) to 100% (Hutt Valley, Northland, South Canterbury, Tairawhiti, Wairarapa, Waitemata and West Coast) and recording of the recommended timeframe for follow-up ranged from 89.4% (Mid Central) to 100% (Hutt Valley, Tairawhiti and West Coast). Overall completion rates ranged from 75.5% (Mid Central) to 96.6% (Hutt Valley and Wairarapa) (Figure 53, Table 67). Abnormal colposcopic appearance ranged from 41.3% of colposcopies (Waitemata) to 74.3% of colposcopies (Hutt Valley). Inconclusive colposcopic appearance ranged from 0.0% of colposcopies (Wairarapa) to 14.6% of colposcopies (Whanganui) (Table 67).

Colposcopies performed in private practice accounted for 11.5% of all colposcopies recorded on the NCSP Register in New Zealand in the current monitoring period. The percentage of colposcopies where items were completed was similar in private practice and public clinics for visibility of the squamocolumnar junction (96.6% private practice; 95.9% public clinics) and colposcopic appearance (100% in both private and public). Recording of the opinion regarding the abnormality grade (only assessed if colposcopic appearance was recorded as abnormal or inconclusive) was somewhat lower in private practice (90.2%) compared to public clinics overall (91.9%). Recording of the type of recommended follow-up was similar in private practice (97.4%) and public clinics (97.8%), but the recording of the recommended timeframe was lower in private practice (94.7% private

practice; 97.8% public clinics). Overall completion was also lower in private practice (86.1%) compared to public clinics overall (90.3%) (Table 66). Abnormal colposcopic appearance was reported somewhat less often in private practice (52.5%) compared to in public clinics (53.6%), while inconclusive colposcopic appearance was reported somewhat more often in private practice (5.7%) than in public clinics (4.7%) (Table 67).

Trends

Documentation for comparable colposcopy visit items has decreased somewhat compared to that in the previous reporting period, where there had also been a drop. In this report, visibility of the squamocolumnar junction was documented for 96.0% of visits, compared to 97.2% in the previous report. The colposcopic appearance was documented for all visits in both this and the previous report. An opinion regarding the lesion grade was documented for 91.7% of visits where the presence of a lesion could not be ruled out in the current report, compared to 92.8% in the previous report. Recording of recommended follow-up type was documented for 98.1% of visits, compared to 97.8% in the previous report, and the recommended timeframe for follow-up was recorded for 97.4% visits, compared to 96.8% in the previous report. All items (where relevant) were documented for 89.8% of visits in the current report, compared to 90.5% in the previous report. Longer term trends in the completion of all required fields are shown in Figure 53. Note, however, that two additional items which must be included in order for all items to have been reported on (recommended type and timeframe for follow-up) were added from Report 38 (1 July 2012), and so this measure is not directly comparable with that in reports prior to Report 38.

This broad trend was mirrored across most DHBs, although documentation completion did increase in some cases. Recording of the visibility of the squamocolumnar junction increased in Bay of Plenty, Hutt Valley, Lakes, Tairawhiti, Waikato, and West Coast. Recording of an opinion regarding the lesion grade (where relevant) increased in Bay of Plenty, Hutt Valley, Nelson Marlborough, South Canterbury, Tairawhiti, Wairarapa and West Coast. Completion of all items increased in Bay of Plenty, Counties Manuakau, Hutt Valley, Nelson Marlborough, Southern, Taranaki and West Coast.

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

The number of colposcopies recorded on the NCSP Register decreased slightly in the current reporting period (by 1.5%) but larger changes were seen in some DHBs, for example larger decreases in West Coast (32%) and Auckland (16%), and larger increases in Mid Central (49%), Whanganui (30%) and Waikato (23%). It is possible that these may changes may represent more or less complete reporting of colposcopies rather than a true change in the number of colposcopies performed, but it is not possible to ascertain this directly from the data. In particular, the increases at Mid Central and Whanganui (and smaller increases at Hawke's Bay and Taranaki) may represent more complete reporting, as these DHBs moved to electronic reporting of colposcopies in the current reporting period, meaning that colposcopy visit data is received more quickly by the NCSP Register. Trends in

	the number of colposcopies recorded on the NCSP Register are shown in Figure 54.
Comments	This measure is only able to assess adequacy of documentation where colposcopy visits have been entered onto the NCSP Register. Therefore, it cannot provide an absolute estimate of adequacy if these data are incomplete on the NCSP Register. The data used in this analysis was extracted from the NCSP Register in March 2014. In the current reporting period, Hawke's Bay, Mid Central, Taranaki and Whanganui DHBs commenced reporting colposcopy data electronically to the NCSP Register. From the date of the DHB's starting electronic reporting to the NCSP Register colposcopy visit data is transmitted to the NCSP Register sooner after the visit than previously and than may occur in other DHBs. This may have been responsible for the increase in the number of colposcopies in these DHBs in the current reporting period. All DHBs are moving to electronic reporting by June 2015, and this will be refelected in future monitoring reports. Some items in the draft standard are not included in the colposcopy visit form or on the NCSP Register, in particular the visibility of the limits of the lesion, the biopsy site, and an explicit colposcopic opinion regarding the need for treatment (although a recommended follow-up timeframe is recorded, and whether follow-up is recommended with a colposcopist, oncology services, or smear taker). It is also not possible to determine the reason for the visit from the colposcopy visit form, for example if this is an first visit or a follow-up visit; or whether it was prompted by a high grade cytology result, a low grade cytology result which is either persistent or accompanied by a positive high risk HPV test result, a request for referral regardless of cytology results, or another reason. An updated colposcopy standard was published in July 2013 (available at http://www.nsu.govt.nz/health-professionals/1060.aspx). When data required to report on the updated standard is available on the NCSP Register, it will be included in these monitoring reports.

Figure 52 – Completion of colposcopic assessment fields within the current monitoring period, by DHB

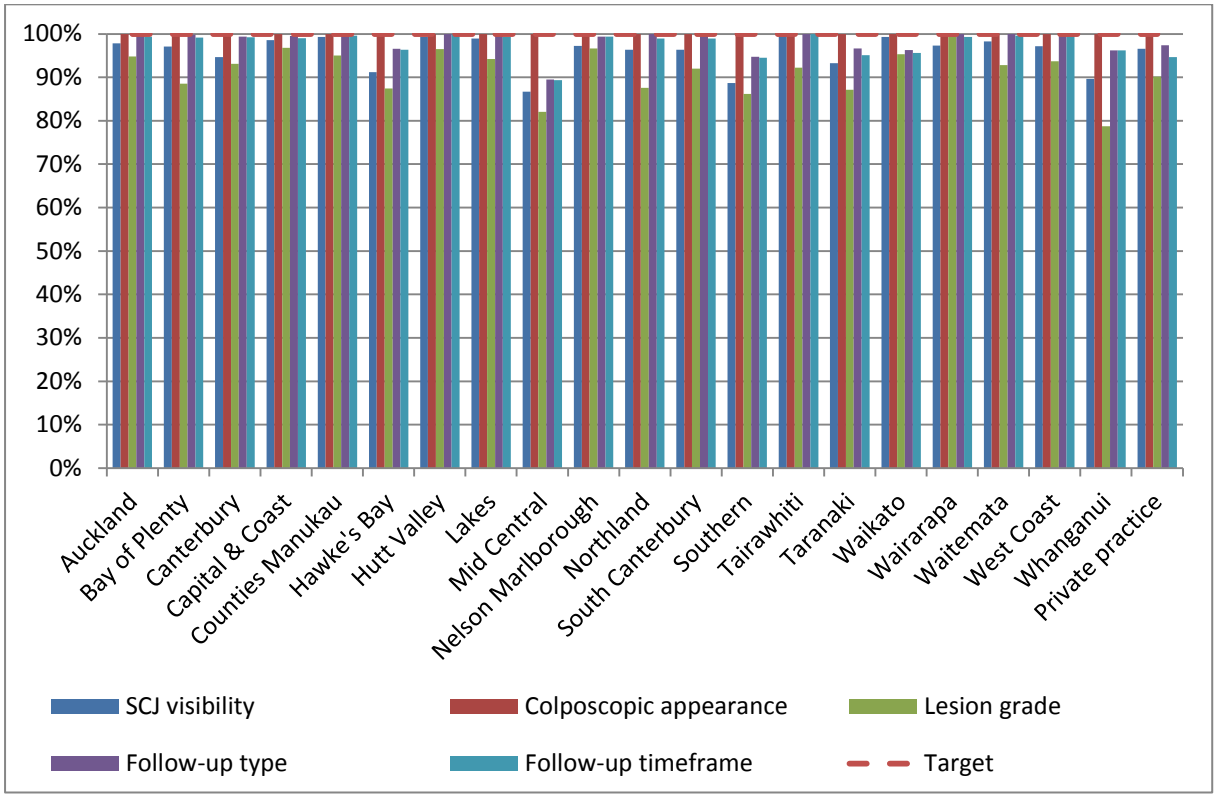
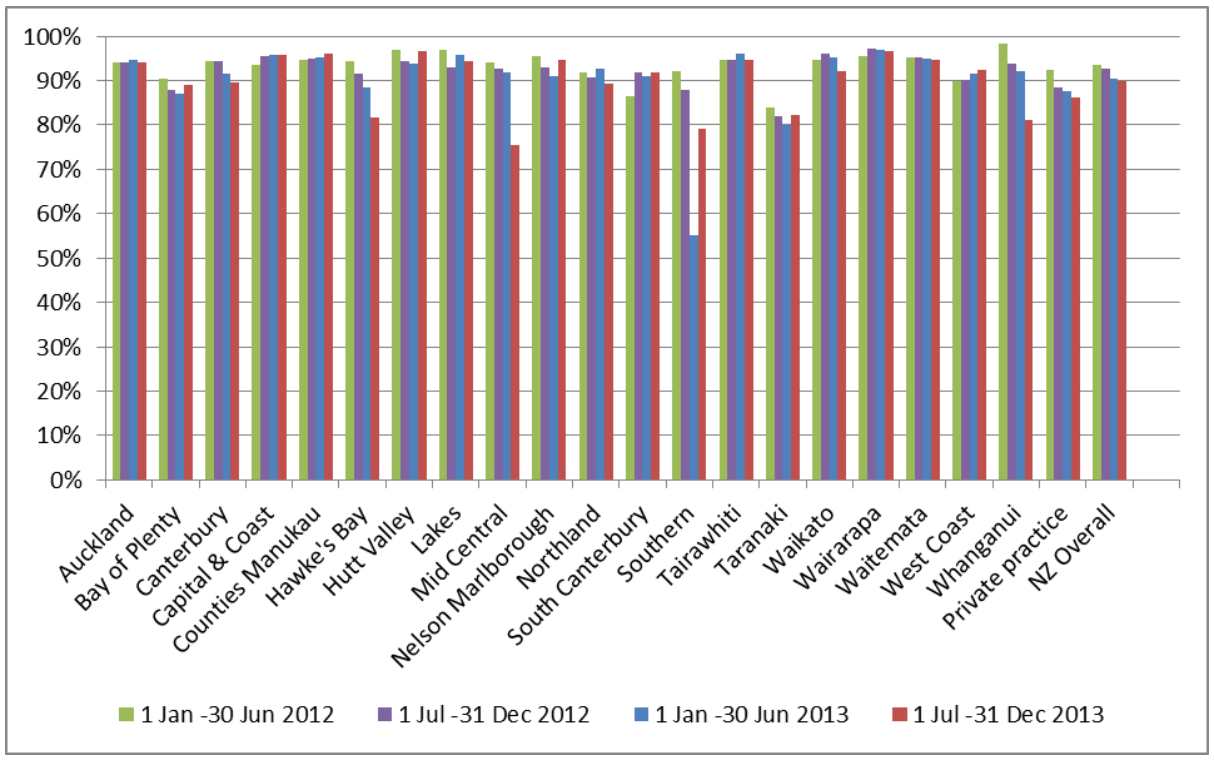
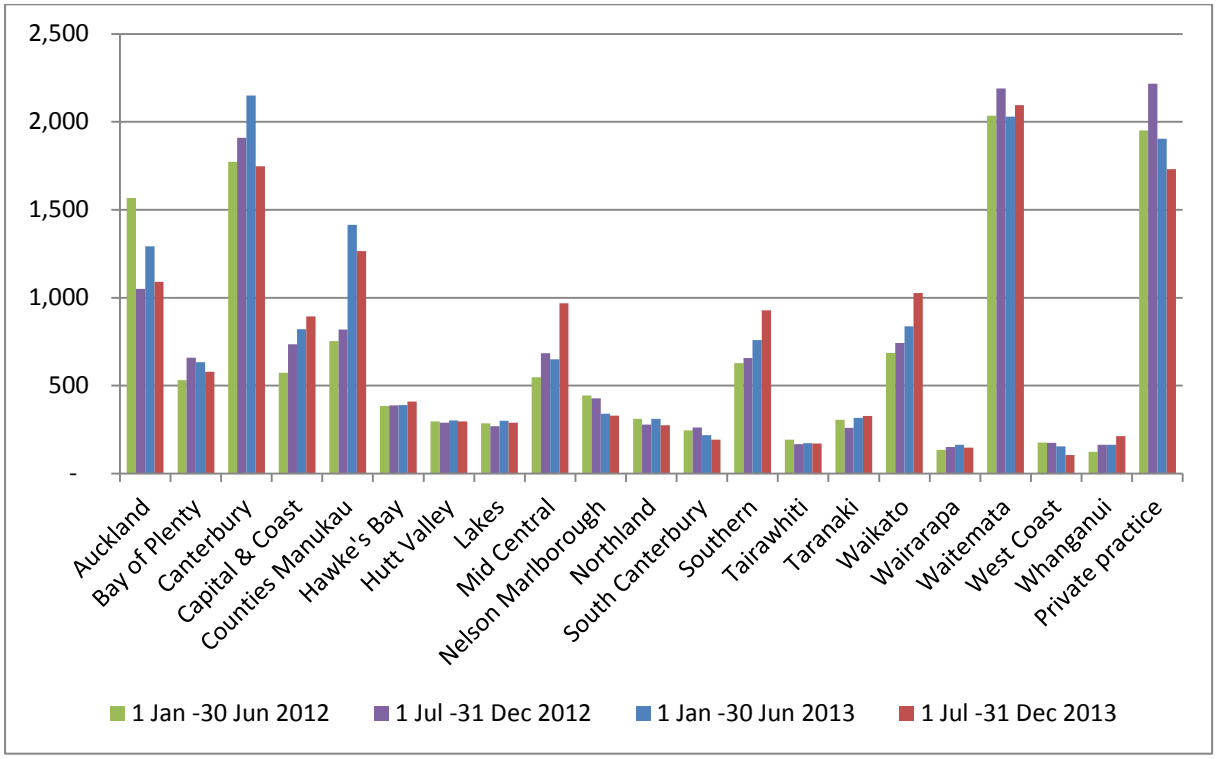


Figure 53 – Trends in the completion of all required colposcopic assessment fields, by DHB



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

Figure 54 – Trends in the number of colposcopies recorded on the NCSP Register, by DHB



Indicator 7.4 – Timeliness and appropriateness of treatment

Definition	This indicator measures performance against Standard 605. It reports on the proportion of women with histological high grade squamous intraepithelial lesions (HSIL) who are treated within 8 weeks of histological confirmation. Histological HSIL is defined as CIN2, CIN3, CIN2/3 or HSIL not otherwise specified (SNOMED codes M67017, M74007, M74008,M80102, M80702). Histological LSIL is not routinely treated, as treatment is not recommended for women with low grade abnormalities in the 2013 Colposcopy Standards (consistent with 2008 NCSP *Guidelines for Cervical Screening in New Zealand*). The 2013 Colposcopy Standard recommends that the number of women who are treated with low-grade lesions (less than CIN2 on histology) be minimised. Therefore treatment of LSIL is included in this report for descriptive purposes and to examine the appropriateness (not timeliness) of treatment. This report describes the number and proportion of women with histological low grade squamous intraepithelial lesions (LSIL) who are treated. To ensure consistency in the follow-up time examined for each woman and in order to allow timely reporting, treatments are included if they occur within 26 weeks of histological confirmation. Histological LSIL is defined as CIN1 or CIN not otherwise specified (SNOMED codes M67015, M67016, M74000, M74006). Women are included in this indicator if they have a histology sample where the result is HSIL or LSIL (as previously defined, above), and the sample was collected in the six-month period immediately prior to the current reporting period (ie in the period 1 January - 30 June 2013). HSIL results must have been reported at least 8 weeks prior to the end of the current reporting period, and LSIL results must have been reported at least 26 weeks prior to the end of the current reporting period, in order to allow sufficient follow-up time for this indicator. Treatment was defined as a colposcopy visit where there was a record of electrosurgical excision, laser ablation or excision, cold knife cone biopsy, or total hysterectomy. Colposcopy visits involving punch biopsies only are not included. DHB is assigned based on the clinic where the histology sample was collected.
Target	90% or more of women with HSIL are treated within 8 weeks of histological confirmation of CIN2/3 There is no explicit target relating to low grade lesions, but Colposcopy Standard 605 states that treatment is not recommended for women with low grade abnormalities, and recommends that the number of women who are treated for low grade lesions (less than CIN2 on histology) be minimised.
Current Situation	There were 2,718 women with a histological diagnosis of CIN2/3 (associated with histology samples collected in the previous six months, and reported at least eight weeks prior to 31 December 2013). Of these women, 1,618 women (59.5%) were treated within eight weeks of HSIL being histologically confirmed. The proportion of women treated within eight weeks varied widely by DHB, from 34.3% (Bay of

Plenty) to 90.9% (Tairawhiti). Three DHBs met the target of 90% of women treated within eight weeks of histological confirmation of HSIL (Lakes, South Canterbury, Tairawhiti) (Figure 55, Table 31).

There were 2,139 women with a histological diagnosis of LSIL (associated with histology samples collected in the previous six months, and reported at least 26 weeks prior to 31 December 2013). Treatment for histological LSIL is not routinely recommended in the 2013 Colposcopy Standards or the 2008 NCSP *Guidelines for Cervical Screening in New Zealand*[16], and so timeliness of treatment is not examined or compared to a target for LSIL. However for descriptive purposes and to examine appropriateness of treatment, follow-up records were retrieved for the 2,139 women with histological LSIL. Of these women, 123 women (5.8%) were subsequently treated (within 26 weeks of LSIL being histologically confirmed) and had no additional record of high grade histology in the six months preceding their treatment. The proportion of women subsequently treated varied widely by DHB, from no women (South Canterbury, Tairawhiti, Waikato, Wairarapa) to 20.0% (Northland) (Table 31).

Trends

Nationally, the proportion of women with histological HSIL who are treated within eight weeks of histological confirmation has increased, from 30.5% in the previous reporting period, to 59.5% in the current reporting period.

Timeliness of treatment improved in all DHBs.

The proportion of women with histological LSIL who were subsequently treated (within 26 weeks of LSIL being histologically confirmed) is lower in the current report (5.8%) and the previous report (8.5%).

Comments

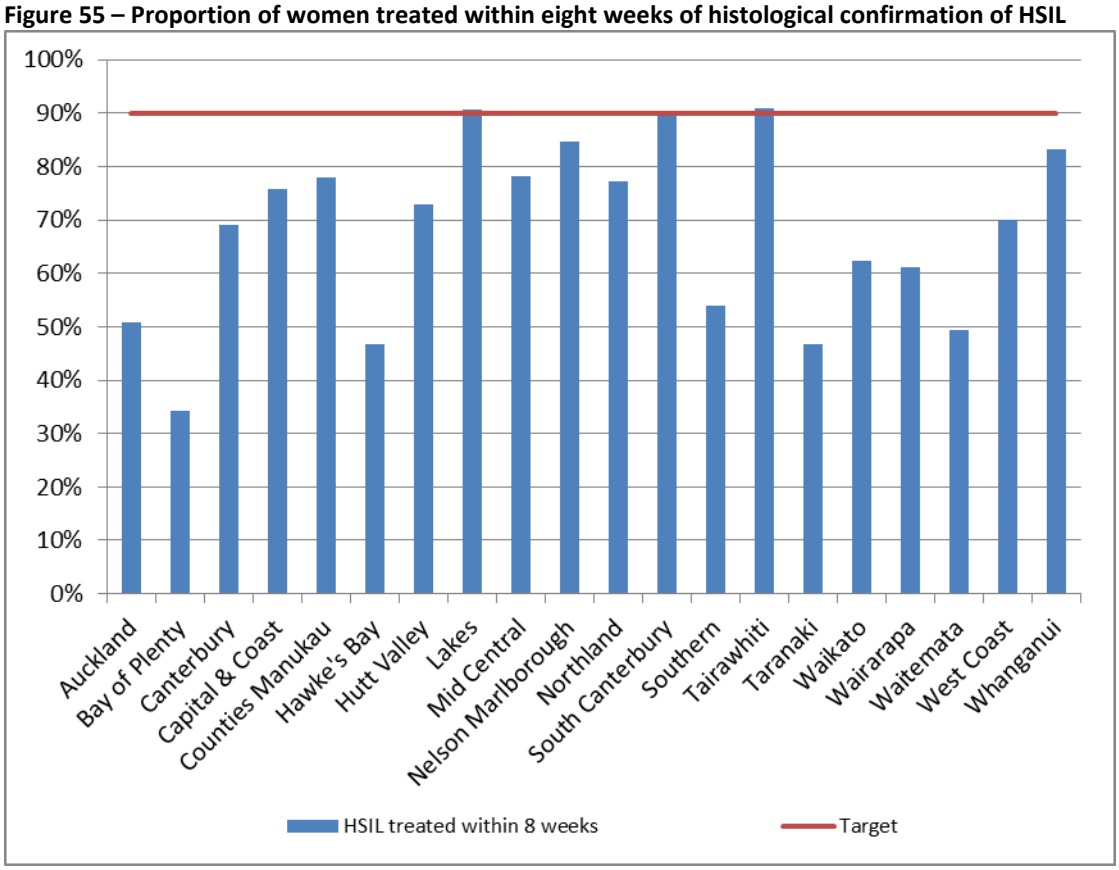
Whether or not treatment has occurred is determined for this indicator via colposcopy data in the NCSP Register. Colposcopy visit details are recorded on colposcopy visit forms, and records of these forms are uploaded onto the NCSP Register, however, it is possible that colposcopy data on the NCSP Register may be incomplete. If so, there may be cases where treatment occurred, but this has not been recorded on the NCSP Register (data used in this analysis was extracted from the NCSP Register in March 2014). Therefore the results for this indicator may underestimate timeliness of treatment in cases where colposcopy data are incomplete. Similarly, trends may also reflect changes in the completeness of colposcopy data recording treatment within a DHB rather than necessarily true increases or decreases in the proportion of women treated. An exploratory analysis suggested that colposcopy data are incomplete for treatments, as a colposcopy visit recording treatment was found for just under half of the histology samples originating from treatment biospies in 2013 (57.9% in January – June 2013; 54.1% July – December 2013). This incomplete recording of treatment potentially affects the results for treatments for both HSIL and LSIL.

DHB is assigned based on the clinic where the original sample confirming HSIL (or LSIL) histology was collected. In some cases, treatment may have occurred in a different clinic to that where the original histology sample was collected. Facilities not explicitly defined as DHB (public) clinics are aggregated together as private practice. It is possible that women whose original HSIL (or LSIL) histology

sample was collected outside a DHB clinic may in practice have been treated at a DHB clinic (or conversely a woman whose histology sample was collected at a DHB clinic may have been treated outside a DHB clinic). Note, however, that timeliness is assessed here by including any treatment visits, regardless of where they occurred.

The updated National Cervical Screening Programme Policies and Standards: Section 6 – Providing a Colposcopy Service requires that in future, colposcopy clinics will provide information about the "decision to treat date". At present, the "decision to treat date" is not available on the NCSP Register. When this "decision to treat date" information is available, it will also be used to calculate timeliness of treatment.

Figure 55 – Proportion of women treated within eight weeks of histological confirmation of HSIL



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

Table 31 – Timeliness and appropriateness of treatment, by DHB

DHB	Women with CIN2/3	Treated within 8 weeks*		Women with histological LSIL†	Women subsequently treated†‡	
	N	N	%	N	N	%
Public clinics (overall)	*2,344*	*1,495*	*63.8*	*1,591*	*101*	*6.3*
Auckland	232	118	50.9	162	15	9.3
Bay of Plenty	99	34	34.3	113	3	2.7
Canterbury	432	298	69.0	412	20	4.9
Capital & Coast	128	97	75.8	104	10	9.6
Counties Manukau	194	151	77.8	233	17	7.3
Hawke's Bay	90	42	46.7	24	1	4.2
Hutt Valley	81	59	72.8	50	4	8.0
Lakes	64	58	90.6	44	1	2.3
Mid Central	106	83	78.3	57	2	3.5
Nelson Marlborough	39	33	84.6	19	1	5.3
Northland	66	51	77.3	5	1	20.0
South Canterbury	21	19	90.5	10	-	-
Southern	169	91	53.8	51	1	2.0
Tairawhiti	33	30	90.9	19	-	-
Taranaki	62	29	46.8	53	2	3.8
Waikato	175	109	62.3	48	-	-
Wairarapa	18	11	61.1	16	-	-
Waitemata	275	136	49.5	127	20	15.7
West Coast	30	21	70.0	25	2	8.0
Whanganui	30	25	83.3	19	1	5.3
Private Practice	*374*	*123*	*32.9*	*548*	*22*	*4.0*
Total	**2,718**	**1,618**	**59.5**	**2,139**	**123**	**5.8**

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

Indicator 7.5 – Timely discharging of women after treatment

Definition

This indicator measures performance against Standard 608.

It describes the proportion of women treated for a high grade lesion who:

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

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

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

Based on advice from the NCSP Advisory Group, women were defined as eligible for discharge if they had a colposcopy visit and cytology test following their treatment, and their cytology result was negative.

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

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

Target	90% or more of women treated for CIN2-3 should have a colposcopy and smear within nine months post treatment 90% or more of women treated for CIN2-3 should be discharged back to the smear taker as appropriate.
Current Situation	There were 1,734 women treated for high grade lesions in the six-month period from 1 July to 31 December 2012. These women were followed up for twelve months from the date of their treatment visit. ***Follow-up post treatment*** There were 1,256 women (72.4%) with a follow-up colposcopy, and 1,240 women (71.5%) with both a follow-up colposcopy and a cytology sample in the nine month period after their treatment visit. Figure 56 shows the percentage of treated women with a record of follow-up colposcopy, and both follow-up colposcopy and a cytology sample, in the period up to nine months post-treatment by DHB. Generally, the number of women with both cytology and colposcopy was very similar to the number of women with at least colposcopy (Table 68). The number of women with colposcopy only and no record of a cytology sample in the timeframe was at most six (Waikato). The percentage of women treated for high grade lesions with a record of colposcopy and cytology within the nine-month period post treatment (71.5%) is below the target value of 90%. Two DHBs met the target of at least 90% of women receiving cytology and colposcopy within nine months post-treatment (Northland and Whanganui) (Figure 56, Table 68). The percentage of treated women with a record of both follow-up colposcopy and a cytology sample in the period up to nine months post-treatment varied by DHB from 20.0% (Tairawhiti) to 93.8% (Whanganui) (Figure 56, Table 68). ***Women discharged appropriately*** In total, 1,197 women (74.8% of those treated) were eligible to be discharged by 12 months after their treatment visit, and 1,042 of these women (87.1%) were discharged within 12 months of treatment (Table 68). Figure 57 shows how these percentages vary by DHB. The percentage of women eligible for discharge who were discharged within 12 months of treatment ranged from 43.3% (Tairawhiti) to 96.9% (Whanganui) (Table 68). In some cases, the number of women eligible for discharge was small, and so these results should be interpreted with caution (ten or fewer women in South Canterbury and Wairarapa). Eight DHBs met the target of discharging 90% of women where appropriate within 12 months (Auckland, Capital & Coast, Nelson Marlborough, Northland, Taranaki, Waikato, Wairarapa and West Coast). In total, 1,218 women were discharged within 12 months of being treated for a high grade lesion (70.2% of all women treated).

Trends

The proportion of women with follow-up has increased overall (from 66.0% to 72.4% for colposcopy, and from 65.0% to 71.5% for both cytology and colposcopy). The number of DHBs meeting the target of 90% has increased, from none to two.

The proportion of women discharged appropriately to their smear taker by 12 months has also increased overall (from 80.2% to 87.1%). The number of DHBs meeting the target of 90% has also increased (from five to eight).

Note that in many DHBs, the numbers of women treated is small, and so results are based on a small number of women (20 women or less recorded as treated on the NCSP Register for South Canterbury and Wairarapa).

The definitions used for follow-up changed in Report 38, in order to reflect the updated colposcopy standard, and so are not all comparable to follow-up in reports prior to Report 38.

Comments

Since this indicator relies on colposcopy data in the NCSP Register, there is the possibility that incomplete reporting of colposcopy visits has led to an underestimate of the number of women with follow-up colposcopy visits and the number discharged in a given time period. The data used in this analysis was extracted from the NCSP Register in March 2014.

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 neither the 2008 NCSP *Guidelines for Cervical Screening in New Zealand* nor the 2013 Colposcopy Standards themselves provide explicit guidance for when discharge back to the smear taker is appropriate.

In some circumstances, women may be treated within one DHB, but referred to another DHB for follow-up. This information is not always recorded in the NCSP Register however, and for clarity in this report, women remain assigned to the DHB where their treatment was performed. However, this measure does take into account all follow-up visits which women attend, regardless of the DHB in which they may occur.

Exploratory analyses were performed, as the number of treatments recorded in some DHBs appeared lower than expected. As described in Report 38, an exploratory analysis was performed by attempting to match histology samples labelled as coming from treatment biospies in the period 1 January to 30 June 2012 with a corresponding colposcopy visit, in order to ascertain whether there was a record of treatment on the colposcopy form. This exploratory analysis was repeated for the current and previous monitoring period. In the period 1 January - 30 June 2013 there were 2,208 histology samples recorded on the NCSP Register as originating from treatment biopsies, however a corresponding colposcopy visit was recorded for only 1,278 (58%) of these, and treatment was recorded in the colposcopy visit in 1,222 cases (55%). In the period 1 July – 31 December 2013 there were 2,303 histology samples recorded on the NCSP Register as originating from treatment biopsies, however a corresponding colposcopy visit was recorded for only 1,246 (54%) of these, and treatment was

recorded in the colposcopy visit in 1,163 cases (50%). This analysis was exploratory, and so does not correspond exactly to the definition used here for treatments (for example because it was not restricted to histology samples which were high grade), however this suggests that colposcopy data are incomplete, and that treatments are currently under-reported to the NCSP Register.

Figure 56 – Percentage of women treated with colposcopy, and both colposcopy and cytology, within nine months post-treatment

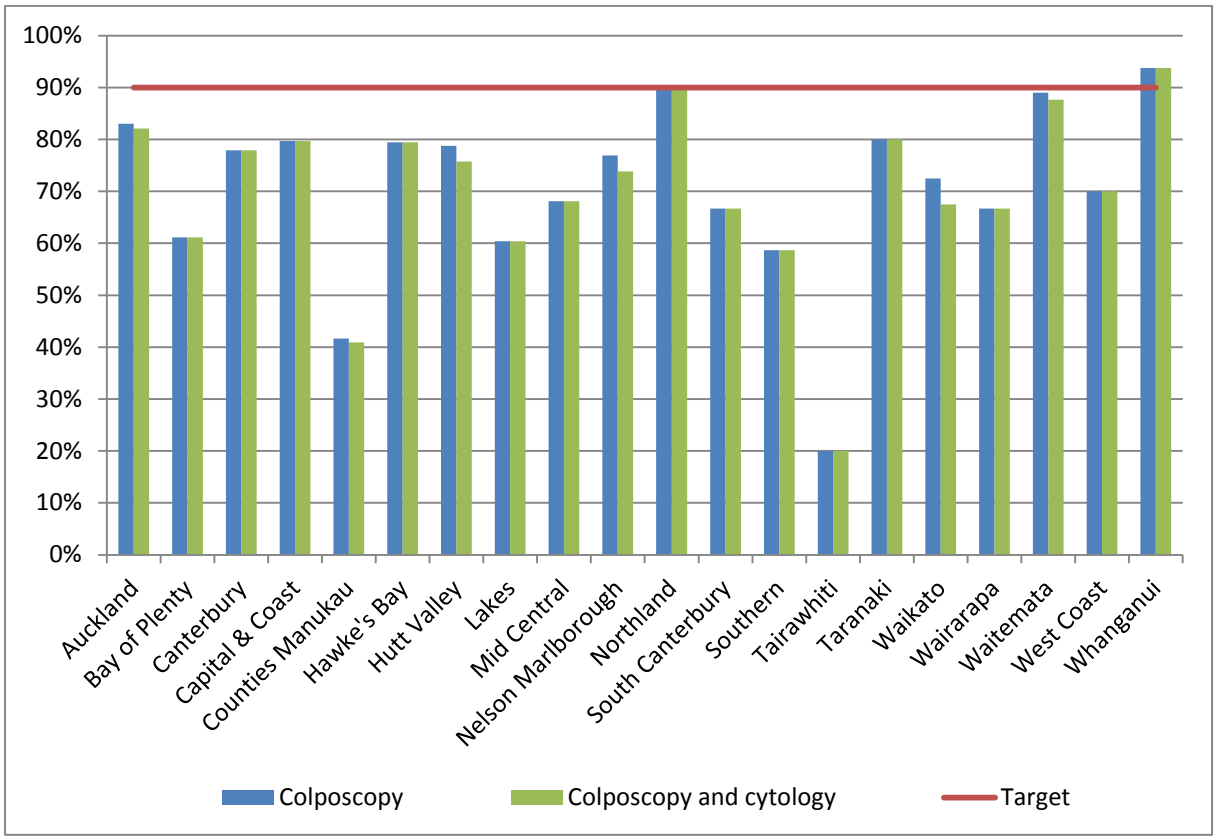
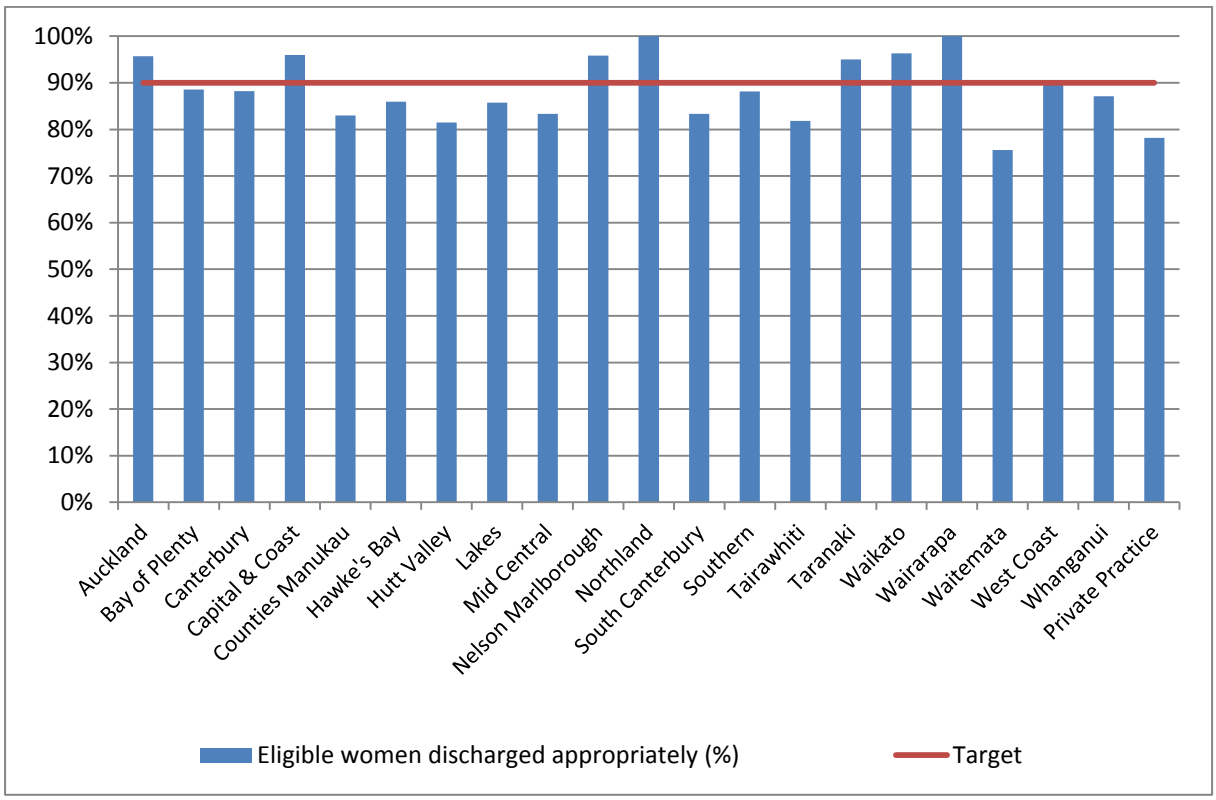


Figure 57 – Percentage of women discharged appropriately within 12 months of treatment



Indicator 8 – HPV tests

These 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 CIN2/3
- Management of women with a high grade squamous cytology result in the past followed by negative cytology
- Resolution of discordant cytology, colposcopy and histology

Indicator 8.1 – Triage of low grade cytology

Definition	For women with an ASC-US or LSIL (low grade) cytology result relating to a cervical sample taken in the monitoring period, and with no recent abnormal cytology (ie abnormal cytology results relating to specimens taken in the preceding five years), the following are reported on: • The number and proportion of women with a subsequent HPV triage test (by age group, and cytology laboratory) • Women with positive HPV triage result, as a proportion of women with a valid HPV test (by age group, and cytology laboratory) Where a woman has two different low grade cytology results, relating to a sample or samples collected on the same date, she is grouped in accordance with the most serious result (ie LSIL). A subsequent HPV triage test is defined as an HPV test where the sample was collected at the same time or within the five weeks after the cytology sample, and where there is a result available (including invalid results). Women whose ASC-US or LSIL cytology test is associated with a recommendation code of R14 (refer regardless of cytology result) are excluded, as they may be attending for cytology due to symptoms. Women who are aged less than 30 years are excluded from this indicator if they have ever had either a high grade squamous cytology result (ASC-H, HSIL) or a high grade squamous histology result (CIN2/3), as they may be having an HPV test in order to follow-up a previous high grade squamous abnormality (cytology or histology, ie historical testing). If a laboratory which performed the cytology refers the HPV test to a different laboratory, measures are based on the laboratory which performed the cytology test. Measures reported by age are based on the age of the women on the date that the cytology sample was collected.
Target	Targets have not yet been set.
Current Situation	There were 1,052 women aged less than 30 years and 1,826 women aged 30 years or more with an ASC-US cytology result relating to a sample collected in the current monitoring period, and who had no abnormal cytology results relating to samples taken in the previous five years. The corresponding figures for LSIL are 2,399 women aged less than 30 years and 1,616 women aged 30 years or more. NCSP Guidelines (2008) recommend that women aged 30 years or more who have not had an abnormal cytology report in the previous five years are offered an HPV triage test following ASC-US or LSIL cytology. Among these eligible women, 95.9% of women aged 30 years or more with an ASC-US cytology result, and 95.7% of women aged 30 years or more with an LSIL

cytology result are recorded as having a subsequent HPV triage test (Table 70, Table 71). These proportions ranged 82.1% (LabPLUS) to 99.8% (Diagnostic Medlab Ltd) for ASC-US cytology results and from 82.4% (LabPLUS) to 100% (Canterbury Health Laboratories) for LSIL cytology results (Figure 58, Table 70, Table 71).

HPV triage is not included in the recommendations for women aged less than 30 years, and accordingly the proportions of women aged less than 30 years with a subsequent HPV test are substantially lower. Subsequent HPV tests are recorded in the NCSP Register for 0.9% of women aged less than 30 years with ASC-US results, and 0.6% of women aged less than 30 years with LSIL results. These proportions ranged from no women (Canterbury Health Laboratories, Diagnostic Medlab Ltd, LabPLUS, Pathlab) to 2.1% (Medlab Central) for women with ASC-US results, and from no women (Canterbury Health Laboratories, LabPLUS) to 1.6% (Southern Community Labs) for women with LSIL results (Figure 59, Table 71).

Among women aged 30 years or more with valid HPV triage test results, the proportion who were positive for high risk HPV was 26.2% for women with ASC-US results, and 60.1% for women with LSIL results. These proportions varied by laboratory from 17.4% (LabPLUS) to 42.7% (Southern Community Labs) for women with ASC-US cytology (Figure 60), and from 48.9% (Medlab Central) to 70.6% (Aotea Pathology Ltd) for women with LSIL cytology (Figure 61; excludes LabPLUS due to very small number of samples).

The proportion of women whose HPV triage test was positive also varied by age. HPV positivity generally decreased with increasing age, although in the current reporting period HPV positivity rates for ASC-US cytology were similar across the age groups between 40 and 59 years (Figure 62, Table 32).

Trends

The proportion of women aged 30 years or more with low grade cytology (and no recent abnormal cytology in the preceding five years) who received a subsequent HPV test is the same as in the previous report for women with ASC-US results (95.9% in both the previous period and the current period), and very similar for women with LSIL results (96.1% in the previous period compared to 95.7% in the current period). The proportion of women aged less than 30 years with a subsequent HPV test is slightly lower than that observed in the previous monitoring period for ASCUS (0.9%, compared to 1.2% in the previous report) and also for LSIL (0.6% in the current and 0.8% in the previous report).

The proportion of women aged 30 years or more who test positive for a high risk HPV type has increased somewhat for ASC-US (23.1% in the previous report; 26.2% in the current report), and also for LSIL (59.0% in the previous report; 60.1% in the current report).

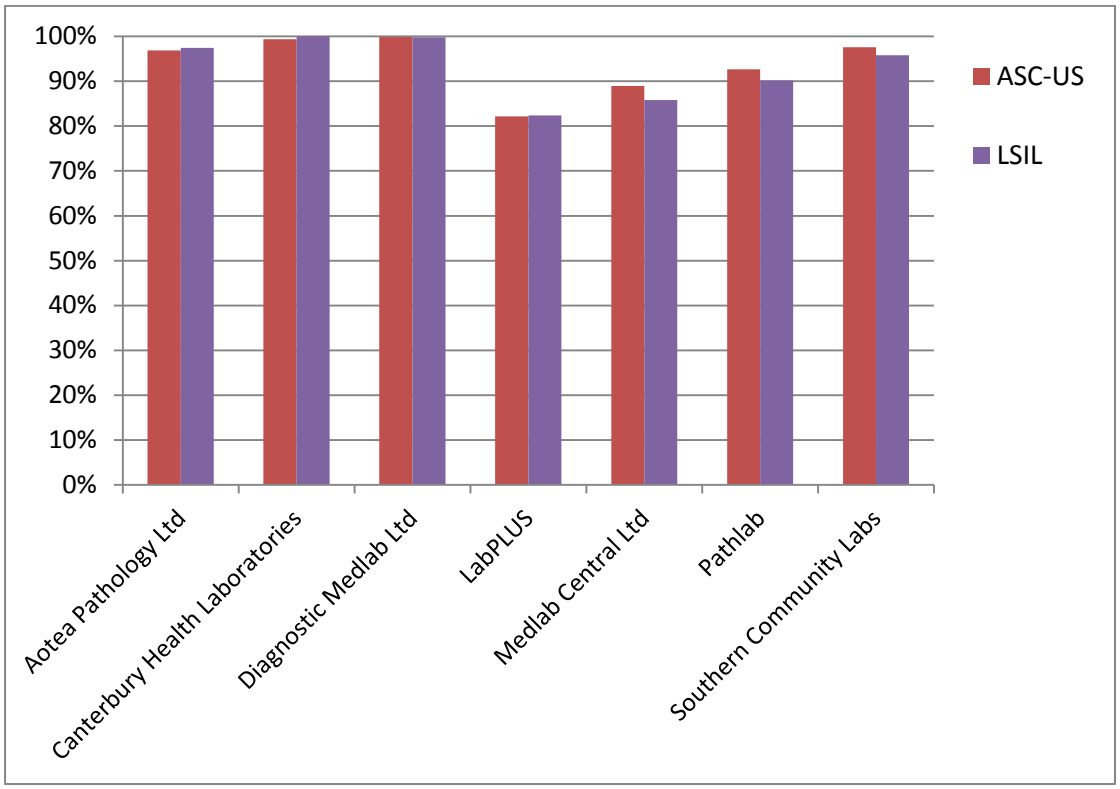
Comments

In the current report, the definition of a triage test was refined slightly, so that HPV tests were only included as triage tests if they occurred within five weeks of the low grade cytology (based on the dates that the cytology and HPV samples were collected). HPV tests were explicitly excluded as triage

tests if there was a colposcopy visit on the same day that the sample was collected for HPV testing. This may contribute to slightly lower rates of women with a triage test in the current report, compared to the previous report, but was done to exclude HPV tests where the purpose was likely not for triage of low grade cytology results.

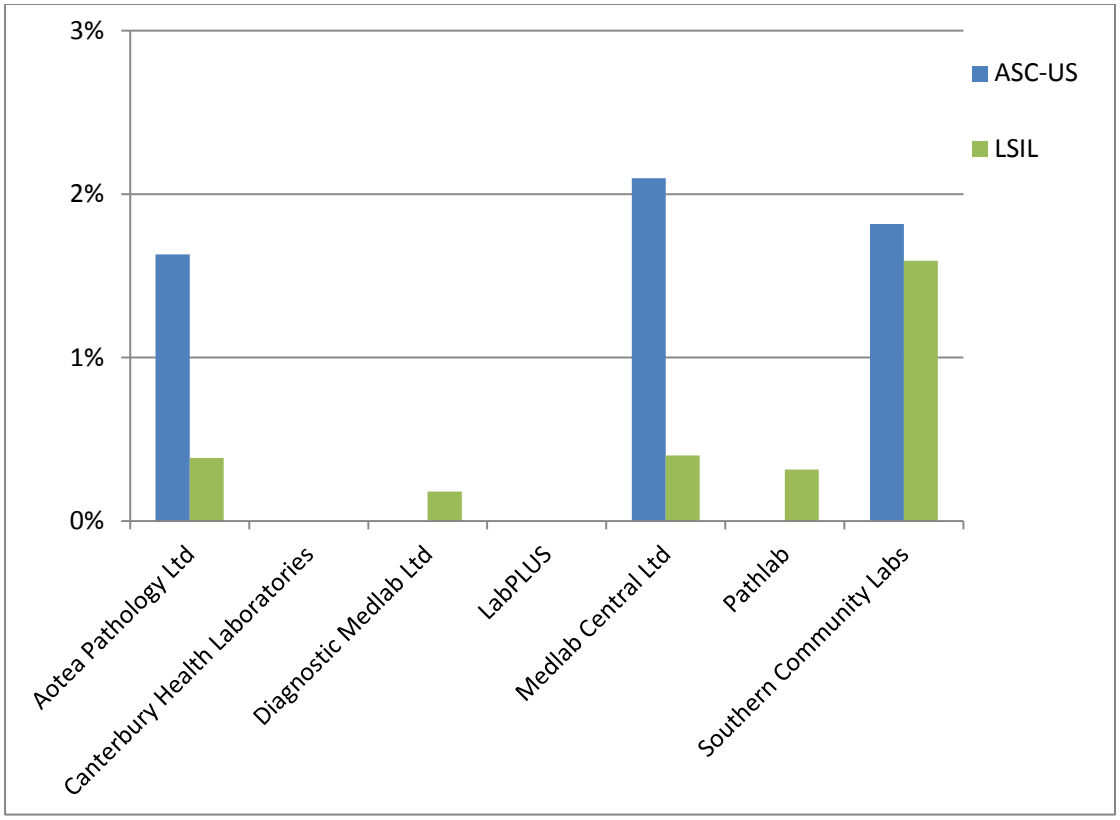
A small number of women aged less than 30 years with low grade results, no recent abnormalities (in the previous five years) and no record of any previous high grade squamous abnormality (cytological or histological) have a record of a subsequent HPV test (24 women; 0.7%). This is somewhat lower than in the previous report (32 women; 0.9%). It is uncertain whether these HPV tests were performed for the purpose of triage, or for other reasons. In this report, we excluded women aged less than 30 years from this indicator if they had ever had a previous high grade squamous abnormality (either ASC-H/ HSIL cytology, or CIN2/3 histology). This was done in order to avoid potential inadvertent inclusion in this group women being tested for HPV in concordance with the guidelines as part of "historical testing". This could occur as a result of a previous high grade squamous abnormality (either ASC-H/ HSIL cytology, or CIN2/3 histology) currently managed by annual cytology, which occurred more than five years earlier (since abnormalities within the previous five years are already taken into account). It is also possible that some women were aged 29 years at the time of their cytology sample, but 30 years at the time of the cytology result, although previous exploration has suggested that the extent of this is likely to be small.[17, 18] Another possible explanation is that these women are being followed up for a previous high grade result but this is not recorded on the NCSP Register (for example because this occurred overseas). The HPV test may also have been ordered by a specialist. However note that inadvertent inclusion of HPV tests ordered by a specialist to resolve discordant results (or for historical testing) should be minimised since women were excluded from this indicator if they had any recent abnormalities (past five years, any abnormality grade); if they had ever had a high grade squamous abnormality (but no glandular abnormality) recorded on the NCSP Register; if the sample for HPV testing was collected on the same day as a recorded colposcopy visit for that woman; or if the sample for HPV testing was collected more than five weeks after the cytology sample.

Figure 58 – Proportion of women (aged 30 years or more) with low grade cytology who have a subsequent HPV test, by laboratory and cytology result



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

Figure 59 – Proportion of women (aged less than 30 years) with low grade cytology who have a subsequent HPV test, by laboratory and cytology result



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

Figure 60 - Proportion of HPV triage tests which are positive following ASC-US cytology (women aged 30 years or more), by cytology laboratory

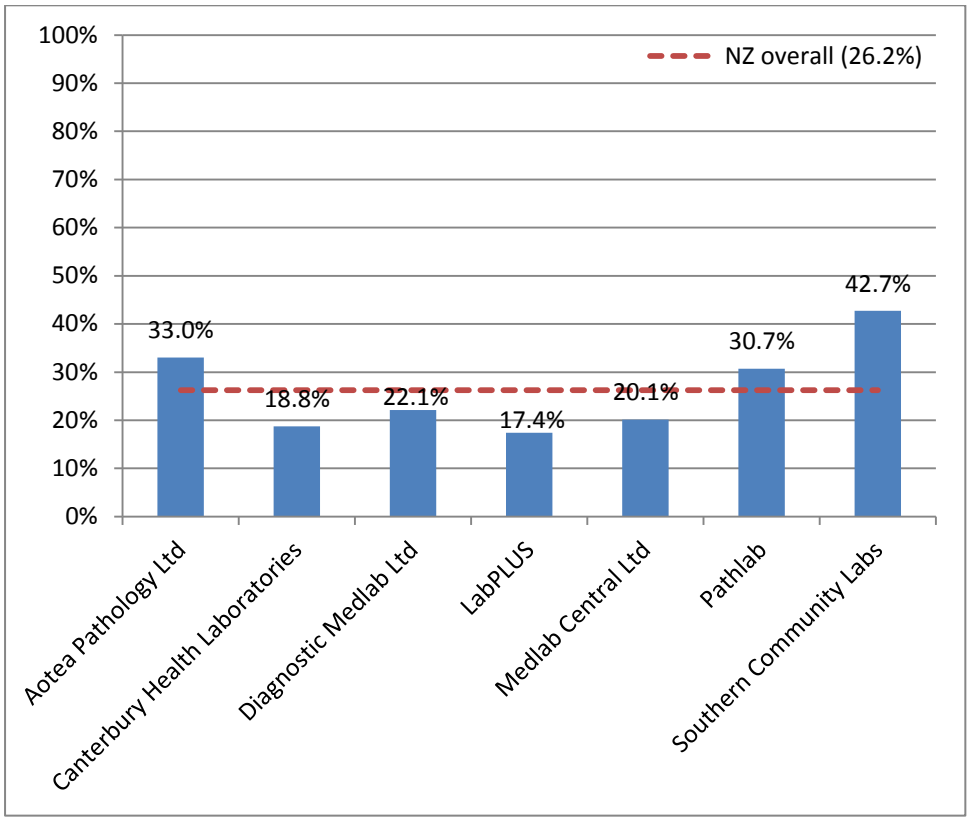
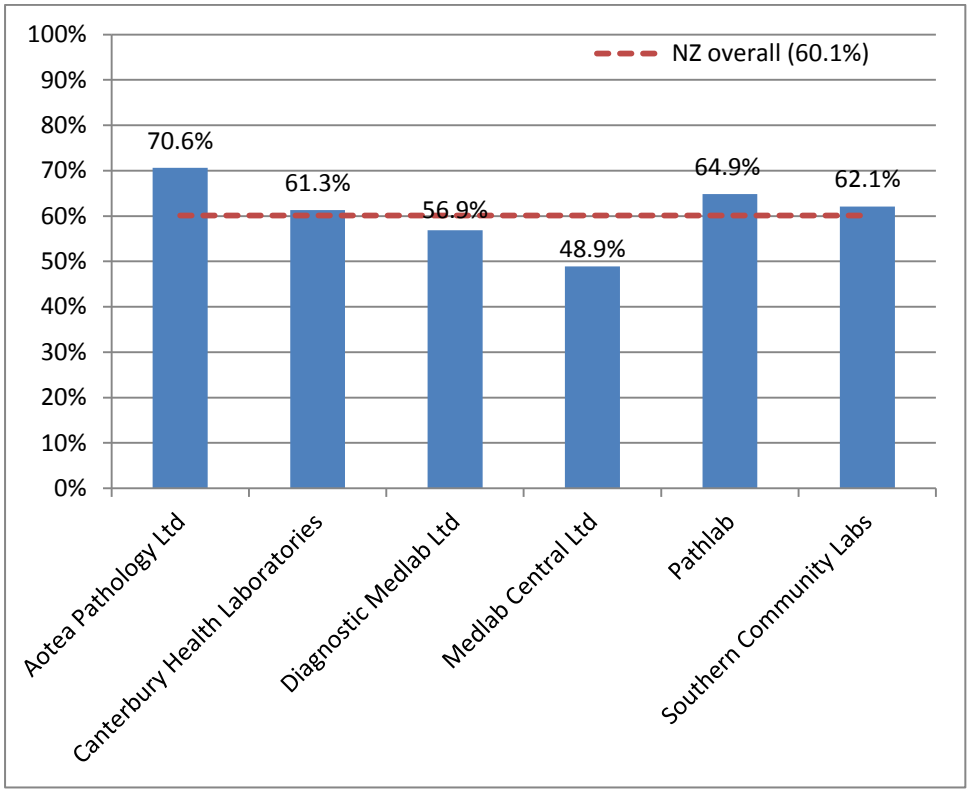
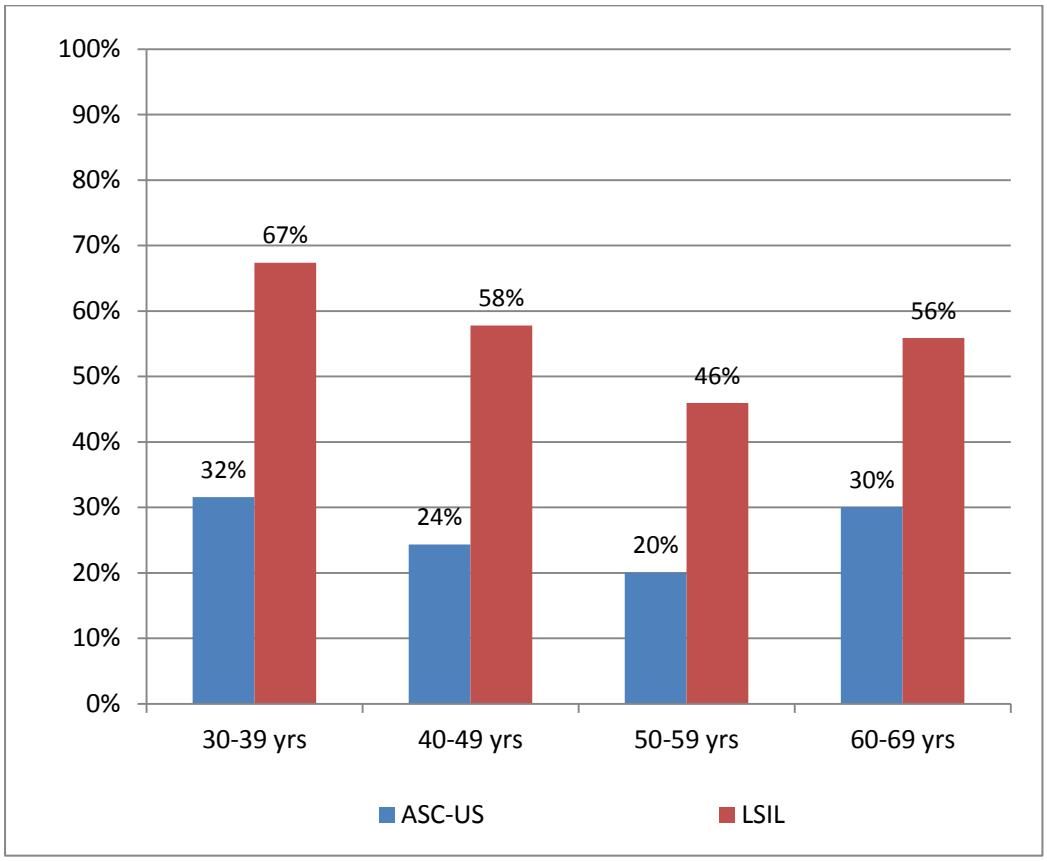


Figure 61 - Proportion of HPV triage tests which are positive following LSIL cytology (women aged 30 years or more), by cytology laboratory



Excludes LabPLUS due to very small number of tests (N=14)

Figure 62 – 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 32 - HPV triage test results following ASC-US cytology, by age and cytology laboratory

Laboratory	Women with valid HPV test results		Women with positive HPV test results (number and % within each age group)											
	< 30yrs*	30+ yrs	< 30yrs*		30-39 yrs		40-49 yrs		50-59 yrs		60-69 yrs		70+ yrs	
	N	N	N	%	N	%	N	%	N	%	N	%	N	%
Aotea Pathology Ltd	3	215	3	100.0	37	39.4	17	26.6	10	25.6	7	38.9	0	0.0
Canterbury Health Laboratories	0	160	0	0.0	15	25.9	8	14.5	6	15.8	1	11.1	0	0.0
Diagnostic Medlab Ltd	0	624	0	0.0	58	29.0	38	17.8	26	18.4	16	25.0	0	0.0
LabPLUS	0	23	0	0.0	3	30.0	1	16.7	0	0.0	0	0.0	0	0.0
Medlab Central Ltd	3	298	2	66.7	21	21.0	17	18.1	14	18.4	8	29.6	0	0.0
Pathlab	0	228	0	0.0	27	39.1	27	38.0	10	15.9	6	24.0	0	0.0
Southern Community Labs	3	199	3	100.0	30	40.5	29	48.3	15	35.7	11	57.9	0	0.0
TOTAL	**9**	**1,747**	**8**	**88.9**	**191**	**31.6**	**137**	**24.3**	**81**	**20.0**	**49**	**30.1**	**0**	**0.0**

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

Table 33 - HPV triage test results following LSIL cytology, by age and cytology laboratory

Laboratory	Women with valid HPV test results		Women with positive HPV test results (number and % within each age group)											
	<30 yrs*	30+yrs	<30 yrs*		30-39yrs		40-49yrs		50-59yrs		60-69yrs		70+yrs	
	N	N	N	%	N	%	N	%	N	%	N	%	N	%
Aotea Pathology Ltd	1	153	0	0.0	54	79.4	40	66.7	8	57.1	6	60.0	0	0.0
Canterbury Health Laboratories	0	75	-	-	20	64.5	18	60.0	5	50.0	3	75.0	0	0.0
Diagnostic Medlab Ltd	1	575	1	100.0	177	63.7	96	51.3	47	51.1	7	41.2	0	0.0
LabPLUS	0	14	-	-	5	100.0	3	42.9	0	0.0	0	0.0	0	0.0
Medlab Central Ltd	1	139	1	100.0	33	54.1	27	52.9	4	18.2	4	80.0	0	0.0
Pathlab	1	202	1	100.0	58	68.2	42	66.7	24	54.5	7	70.0	0	0.0
Southern Community Labs	11	388	8	72.7	126	72.4	79	60.8	25	39.7	11	52.4	0	0.0
TOTAL	**15**	**1546**	**11**	**73.3**	**473**	**67.4**	**305**	**57.8**	**113**	**45.9**	**38**	**55.9**	**0**	**0.0**

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

Indicator 8.2 – HPV test volumes

Definition

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

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

Purpose is defined as one of the following categories:

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

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

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

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

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

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

As this indicator is still being developed, tests in the 'Other' category were explored further. The number of tests that fell into the 'Other' category was found to be relatively high in this report, but this analysis is nonetheless indicative of the appropriate purposes. It is also useful to report the extent of hrHPV tests for other purposes and the need to eliminate hrHPV tests for other purposes. For this reason the purpose of hrHPV tests are disclosed in this report, but the indicator remains under development.

Rates of invalid HPV tests are also reported on.

Measures reported by age are based on the age of the women at the end of the current monitoring period.

Target

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

Current Situation

Overall volumes

There were 20,111 samples received by laboratories for HPV testing within the current reporting period. These are reported on further in Table 72 to Table 77.

Virtually all (99.0%) samples for HPV testing were from women aged 20-69 years. The large majority of women (87.7%) were aged 30 years or more (Figure 63, Table 76).

The number of samples received by laboratories for HPV testing ranged from 827 (LabPLUS; 4.1% of all HPV tests) to 7,137 (Southern Community Labs; 35.5% of all HPV tests) (Figure 64, Table 72).

Figure 65 and Table 72 also show for each laboratory the ratio of the number of HPV tests received, divided by the number of cytology tests reported on (expressed as a percentage). This measure provides some correction for the variation in workloads between different laboratories. It is likely, for example, that laboratories which process a larger volume of cytology tests would also undertake a larger volume of HPV tests. The ratio of HPV tests to cytology tests reported was on average 9.4% across New Zealand – that is, on average 9.4% of cytology tests are associated with an HPV test. This ratio varied by laboratory from 7.0% (Diagnostic Medlab Ltd; ie fewer HPV tests processed in relation to cytology tests processed than national average) to 17.0% (Canterbury Health Laboratories; ie more HPV tests processed in relation to cytology tests processed than national average).

The proportion of tests or more whose HPV test results were invalid was 0.1% (Table 73). The proportion was small for all HPV test technologies (Table 74).

The distribution of HPV tests by ethnicity is shown in Table 75.

Purpose of HPV tests

These HPV tests were further analysed in order to ascertain the purpose for which they were performed. Nationally, it was estimated that 3,126 (15.5%) were for triage of low grade cytology in women aged 30 years or more; 2,247 (11.2%) were for post-treatment management for women treated in the past four years; 7,744 (38.5%) was for follow-up management of women with high grade squamous cytology or histology more than three years previously (historical testing); and 1,090 (5.4%) were on samples collected at a colposcopy visit which did not fit into a previous category (possibly for resolution of discordant results). There were 5,904 (29.4%) HPV tests did not fit into any of the previously described categories (Figure 66).

Further breakdowns of HPV tests by purpose are presented by age (Figure 67) and laboratory (Figure 68).

There were variations in HPV test purpose by age (Figure 67, Table 76). HPV triage (by the definition used here, and consistent with NCSP Guidelines) only occurred in women aged 30 years or more. In women aged less than 30 years, a comparatively larger proportion were taken for post-treatment follow-up management or taken at colposcopy for another reason. Follow up of women with historical high grade squamous abnormalities (more than

three years ago) was the most common reason that HPV tests were performed among women aged 25 years or more. The proportion of tests which did not fit into the prescribed categories, and were therefore classified as 'Other', broadly decreased with age up to age 30 years, then increased with increasing age from age 30 years.

HPV test purpose also varied by laboratory (Figure 68, Table 77). Among tests for which the purpose could be determined, the most common categories were historical testing (at Aotea Pathology Ltd, Canterbury Health Laboratories, Diagnostic Medlab Ltd, Medlab Central, Pathlab, Southern Community Laboratories) and post-treatment management (LabPLUS). In all labs, however, tests for which the purpose was unclear were quite common, varying from 21.5% at Pathlab to 40.9% at LabPLUS. The proportion of tests performed for HPV triage ranged from 4.7% (LabPLUS) to 29.6% (Diagnostic Medlab Ltd). The proportion of tests performed for post-treatment management varied from 6.9% (Pathlab) to 26.5% (LabPLUS), while the proportion performed to follow up women with historical high grade squamous abnormalities varied from 12.2% (LabPLUS) to 46.6% (Aotea Pathology Ltd). The proportion of tests where the sample was collected at colposcopy but not for one of the previous purposes ranged from 0.2% (Aotea Pathology Ltd) to 15.7% (LabPLUS).

Follow up of women with historical high grade squamous abnormalities (more than three years ago) was the most common reason that HPV tests were performed among Māori women and European/ Other women. HPV triage was the most common reason among Pacific and Asian women (Table 75).

Tests in the "Other" category were further explored. A proportion of the 'Other' tests (2.6%) were potentially tests performed for post-treatment management, because the same woman had CIN2/3 histology recorded on the NCSP Register, however there was no explicit record of treatment available on the NCSP Register, potentially due to incomplete colposcopy data on the NCSP Register. Another 4.5% occurred after treatment, but did not meet the criteria for post-treatment management because they occurred within 6 months of treatment (1.3%), or after treatment of either a non-squamous high grade (1.0%) or a non-high grade (2.1%). A further 17.7% of the "Other" HPV tests occurred after a previous abnormality but one which did not meet the criteria for historical testing either because it was non-squamous (8.5%), not high grade (0.2%), or the high grade squamous cytology was less than three years ago (6.9%). A larger proportion (43.5%) of the "Other" tests occurred in women who did not have any specific high grade abnormality recorded on the NCSP Register, but did have a record on the NCSP Register suggesting that they had a previous high grade abnormality (although the Register does not record whether it was a squamous abnormality or not; a "synopsis" record). These synopsis records predominantly indicated prior high grade cytology (33.4%), but some suggested prior high grade histology (10.1%). Smaller proportions of HPV tests were associated with a low grade abnormality, including either a current low grade cytology result which did not meet the criteria for triage because the woman had another recent abnormality and triage was not required (2.0%), or a synopsis record suggesting a previous low grade cytology not

explicitly recorded on the NCSP Register (4.0%). After this exploration, there remained 1,647 tests (27.9% of "Other" tests; 8.2% of all HPV tests in the monitoring period) where purpose still could not be determined. Trends in the possible explanations for tests within the "Other" category are shown in Figure 71.

HPV tests at colposcopy

HPV tests taken at colposcopy were further explored, based on the DHB of the colposcopy clinic where the sample was taken, and whether or not it was a public or a private clinic. Nationally, more of the HPV tests which were taken at colposcopy came from public facilities (748 tests; 87.3%) than from private facilities (109 tests; 12.7%), however this was consistent with the greater number of colposcopies performed in public clinics (Table 78). As the number of HPV tests collected at a colposcopy clinic is potentially reflective of the number of colposcopies performed there, a rate of HPV tests at colposcopy which takes this variation into account was derived, in order to provide more information. The rate of HPV tests at colposcopy was calculated by dividing the number of HPV tests collected at colposcopy by the total number of colposcopies within that DHB/ sector, expressed as a percentage. This rate can be broadly interpreted as the percentage of colposcopies (within a given DHB or sector) where an HPV test sample is collected. Across New Zealand, HPV test samples were collected in approximately 5.7% of colposcopies. In DHBs where HPV tests were collected at colposcopy, this value ranged from 0.2% (Hawke's Bay) to 45.0% (Lakes), and was 5.6% overall across all public DHB clinics (Figure 69, Table 78). In private practice, this rate was 6.3%. No HPV tests were taken at colposcopy in Capital and Coast, Hutt Valley, Tairawhiti, Taranaki, or West Coast.

Trends

More samples were received at laboratories for HPV testing in the current reporting period (20,111) than in the previous monitoring report (19,176; increase of 4.9%). The increase predominantly occurred in tests performed for post-treatment management and "Other" HPV tests (which also appear to be predominantly related to a previous high grade abnormality, albeit one which is not explicitly recorded on the NCSP Register or to a lesser extent use of HPV testing following non-squamous abnormalities). Tests performed for historical high grade abnormalities decreased, which is expected, as these women are progressively returned to routine screening where appropriate.

Variations in the purpose of the HPV test by age, ethnicity and laboratory, and broadly similar to that in previoius reports.

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

Comments

HPV volumes by laboratory will vary for a number of reasons, one of which being the general volume of work in that laboratory. In order to provide some correction for the variation in workloads between different laboratories, we calculated the ratio of HPV tests received to cytology tests reported on (Figure 65, Table 72). Other reasons for variations the rate of

HPV testing by laboratory (which are not taken into account in this ratio) may include differences in the population they serve, because HPV testing is performed in specific subgroups of women. For example HPV triage testing is performed in women with low grade (ASC-US/LSIL) cytology results (but without recent abnormalities), therefore laboratories reporting higher rates of low grade abnormalities may also have higher rates of triage testing. Conversely, laboratories reporting on a larger proportion of cytology from colposcopy clinics may be less likely to perform HPV triage testing, because women attending colposcopy have generally had a recent abnormality. These issues may for example partly explain differences in the ratios in Canterbury Health Laboratories (where rates of low grade cytology results are comparatively higher) and LabPLUS (where a larger proportion of cytology comes from colposcopy clinics). To understand in more detail the reasons for the differences, an explicit exploration of the purpose for which the HPV test was performed has been examined here.

Exploration is ongoing into the potential reason for tests in the 'Other' category, as is the refinement of specifications for the analysis of purpose. Some possible explanations include follow-up of women previously treated for high grade squamous abnormalities where these abnormalities occurred outside New Zealand, prior to the woman being enrolled on the NCSP Register, or prior to the inception of the NCSP Register. The latter may potentially explain why the proportion of 'Other' tests is higher in older women than in younger women. Synopses held on the NCSP Register of previous (self-reported) high grade abnormalities have been used in this report to explore this possibility further (although these synopses do not distinguish between squamous abnormalities and glandular abnormalities; HPV testing is currently only recommended for the management of women with previous squamous abnormalities). The proportion associated with a synopsis reflecting a previous high grade abnormality (cytological or histogical) reported here (53.1%) is somewhat lower than that in the previous report (56.2%). This is consistent with a reduction in the proportion of tests performed for historical testing, and so may potentially reflect some women with high grade abnormalities more than three years ago being returned to routine screening.

Figure 63 - Volume of HPV test samples received by laboratories during the monitoring period, by age

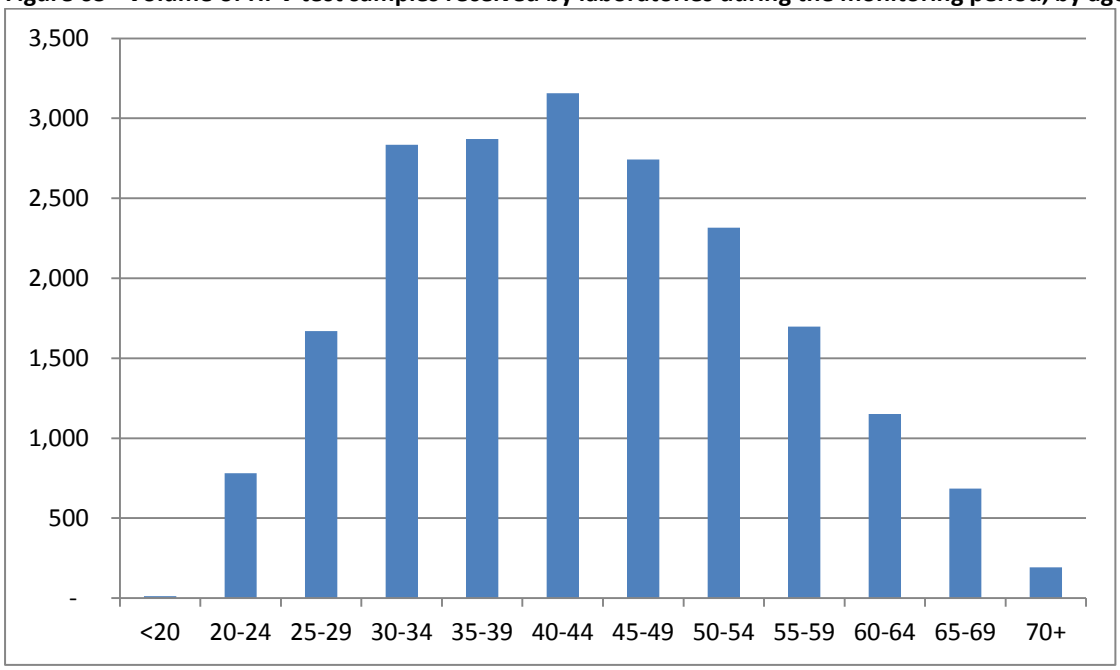


Figure 64 - Volume of HPV test samples received by laboratories during the monitoring period, by laboratory

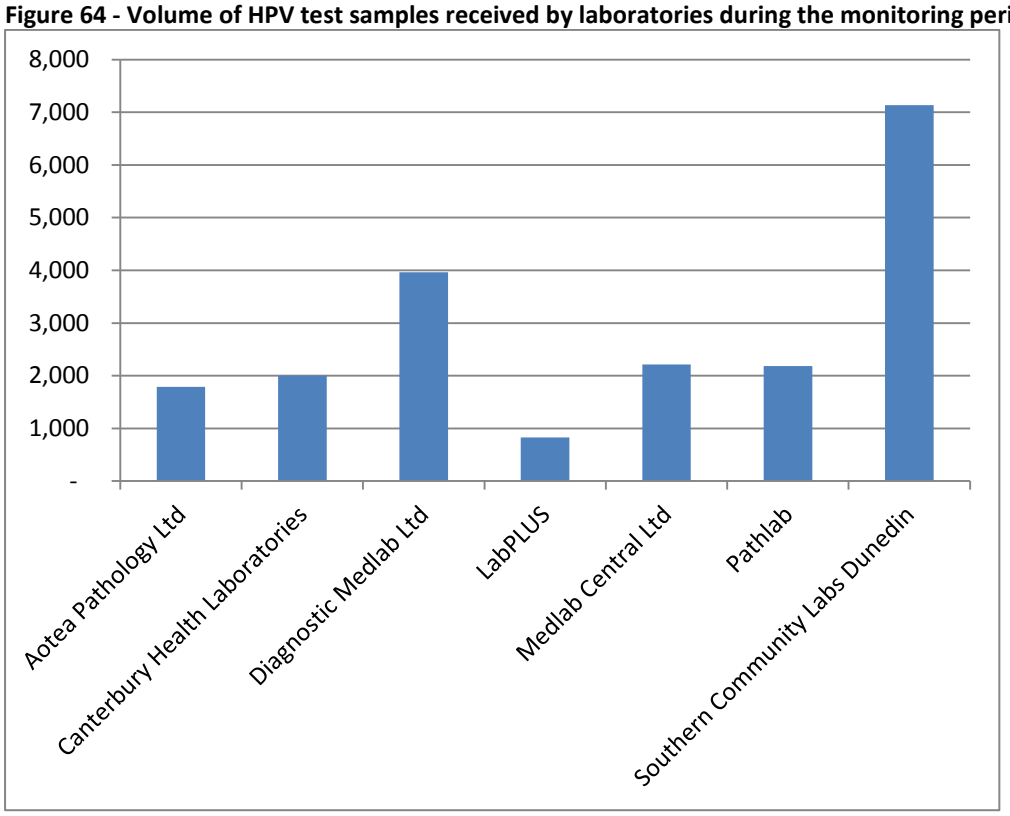
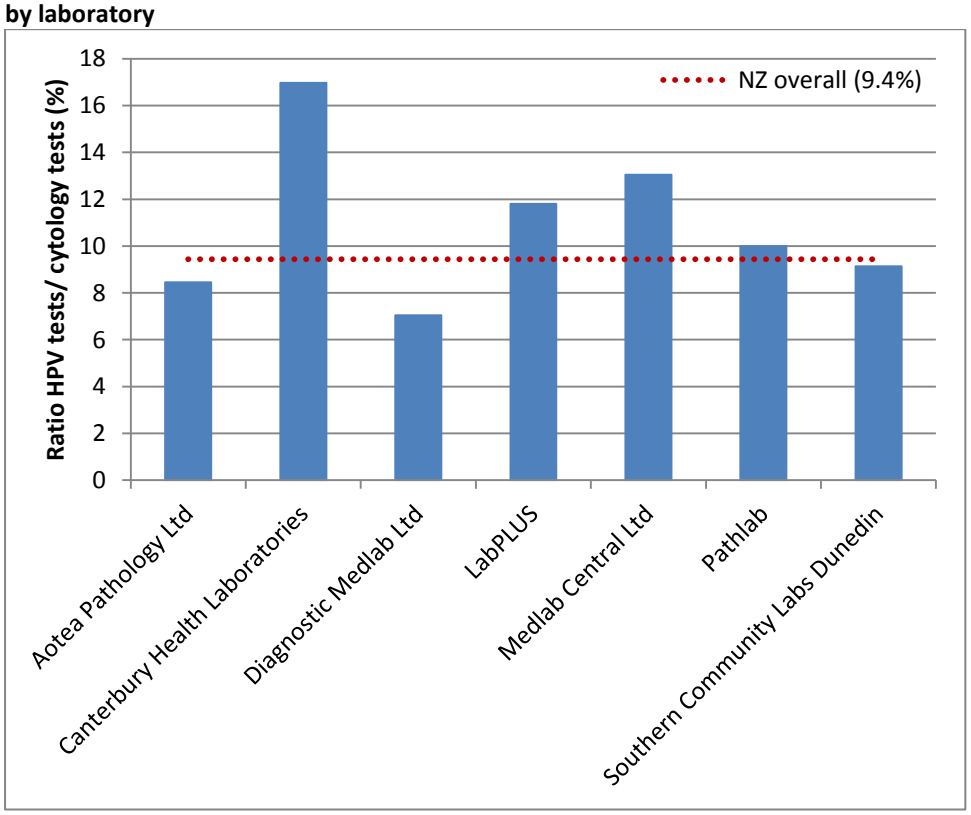


Figure 65 –HPV test samples as a percentage of cytology test samples received during the monitoring period, by laboratory



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

Figure 66 - Volume of HPV test samples received during the monitoring period, by purpose

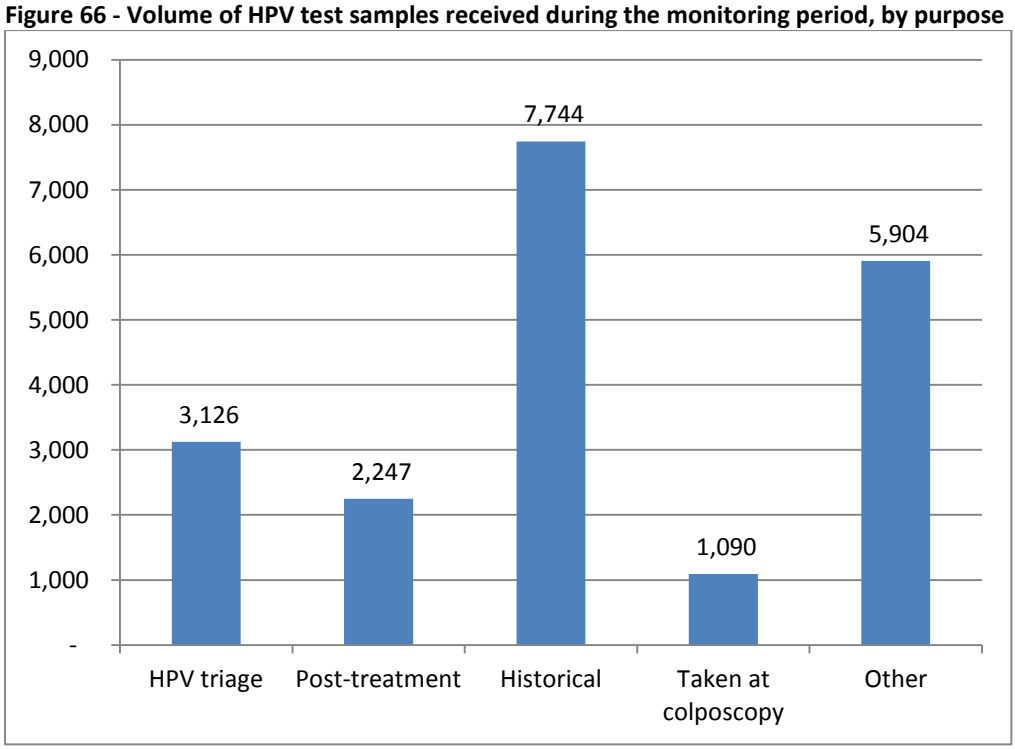


Figure 67- HPV test samples received during the monitoring period, by purpose and age

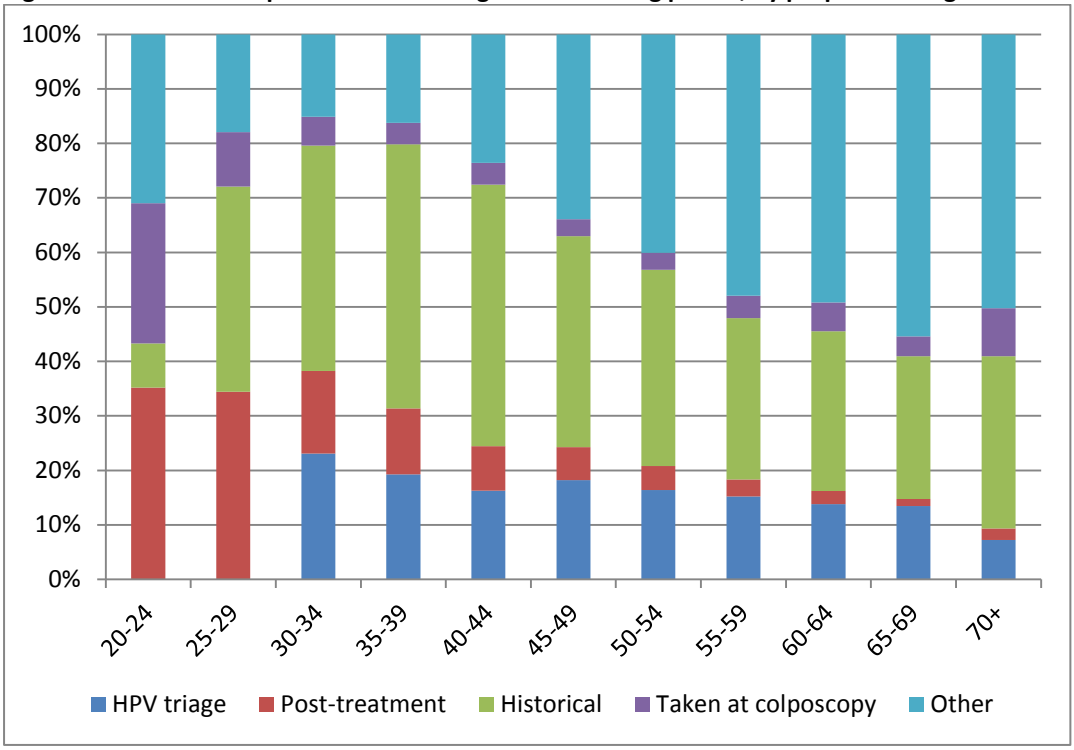


Figure 68- HPV test samples received during the monitoring period, by purpose and laboratory

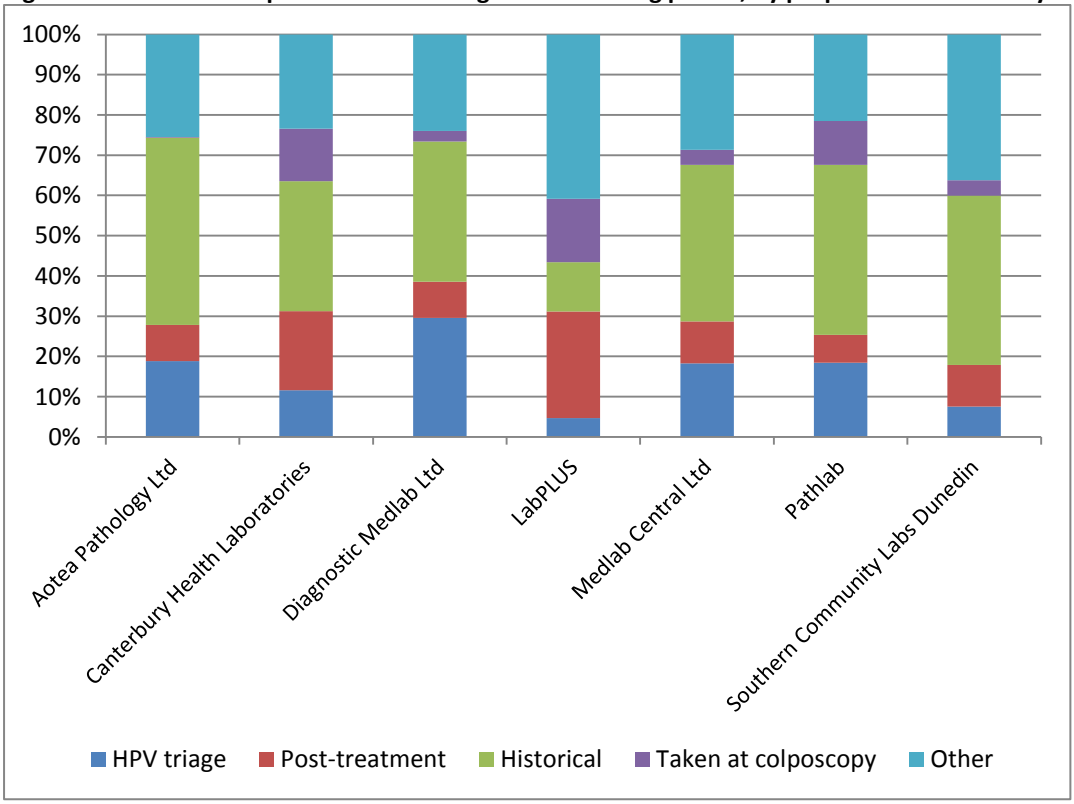
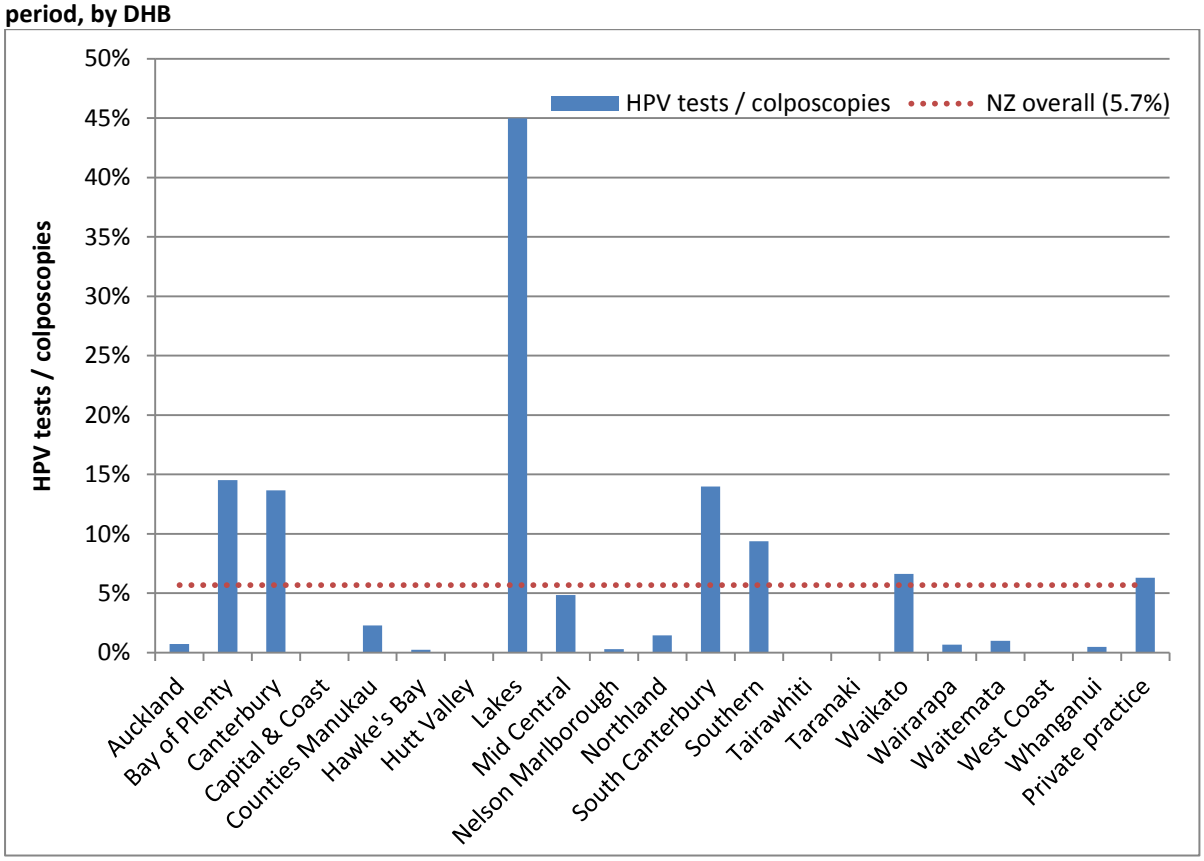


Figure 69- HPV test samples collected at colposcopy, in relation to total colposcopies performed in the period, by DHB



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

Appendix A – Additional data

Indicator 1 - Coverage

Table 34 - Coverage by age (women 20-69 years screened in the three years prior to 31 December 2013, hysterectomy adjusted)

Age (years)	Hysterectomy-adjusted population	Women screened in the last 3 years	
		N	%
20-24	160,220	86,745	54.1
25-29	150,573	99,713	66.2
30-34	147,793	102,982	69.7
35-39	139,405	107,176	76.9
40-44	153,120	122,841	80.2
45-49	144,369	117,509	81.4
50-54	138,154	112,439	81.4
55-59	111,638	90,264	80.9
60-64	90,712	71,643	79.0
65-69	75,151	55,232	73.5
20-69	**1,311,136**	**966,544**	**73.7**

Table 35 - Coverage by DHB (women 25-69 years screened in the three years prior to 31 December 2013, hysterectomy adjusted)

DHB	Hysterectomy adjusted population	Women screened in the the last 3 years	
		N	%
Auckland	133,680	101,910	76.2
Bay of Plenty	54,372	42,768	78.7
Canterbury	132,874	98,219	73.9
Capital & Coast	82,231	65,188	79.3
Counties Manukau	129,590	90,073	69.5
Hawke's Bay	38,617	31,439	81.4
Hutt Valley	36,629	28,574	78.0
Lakes	25,929	20,355	78.5
Mid Central	41,262	31,127	75.4
Nelson Marlborough	36,265	29,627	81.7
Northland	39,546	29,703	75.1
South Canterbury	13,641	10,585	77.6
Southern	76,446	60,967	79.8
Tairawhiti	11,455	8,822	77.0
Taranaki	26,979	23,355	86.6
Waikato	91,231	70,213	77.0
Wairarapa	9,832	8,113	82.5
Waitemata	147,023	110,997	75.5
West Coast	8,238	6,382	77.5
Whanganui	15,076	11,349	75.3
Total	***1,150,916***	***879,766***	***76.4***

Excludes 33 women for whom DHB could not be determined

Table 36 - Coverage by ethnicity (women 25-69 years screened in the three years prior to 31 December 2013, hysterectomy adjusted)

Ethnicity	Hysterectomy adjusted population (ages 25-69 years)	Women screened in the last 3 years (ages 25-69 years)	
		N	%
Māori	147,637	92,367	62.6
Pacific	65,015	44,595	68.6
Asian	148,728	96,396	64.8
European/Other	789,536	646,441	81.9
Total	**1,150,916**	**879,799**	**76.4**

Table 37 - Coverage by age (women 20-69 years screened in the five years prior to 31 December 2013, hysterectomy adjusted)

Age (years)	Hysterectomy-adjusted population	Number of women screened in last 5 years	% screened in the last 5 years
20-24	160,220	92,975	58.0
25-29	150,573	122,779	81.5
30-34	147,793	125,519	84.9
35-39	139,405	127,766	91.7
40-44	153,120	144,877	94.6
45-49	144,369	137,774	95.4
50-54	138,154	131,309	95.0
55-59	111,638	104,307	93.4
60-64	90,712	82,267	90.7
65-69	75,151	64,218	85.5
20-69	**1,311,136**	**1,133,791**	**86.5**

Table 38 - Coverage by DHB (women aged 25-69 years screened in the five years prior to 31 December 2013, hysterectomy adjusted)

DHB	Hysterectomy adjusted population	Women screened in the last 5 years	
	N	N	%
Auckland	133,680	121,226	90.7
Bay of Plenty	54,372	50,421	92.7
Canterbury	132,874	116,385	87.6
Capital & Coast	82,231	77,288	94.0
Counties Manukau	129,590	108,668	83.9
Hawke's Bay	38,617	36,673	95.0
Hutt Valley	36,629	34,311	93.7
Lakes	25,929	24,290	93.7
Mid Central	41,262	36,463	88.4
Nelson Marlborough	36,265	34,113	94.1
Northland	39,546	35,535	89.9
South Canterbury	13,641	12,445	91.2
Southern	76,446	71,134	93.1
Tairawhiti	11,455	10,562	92.2
Taranaki	26,979	26,779	99.3
Waikato	91,231	82,663	90.6
Wairarapa	9,832	9,582	97.5
Waitemata	147,023	131,440	89.4
West Coast	8,238	7,273	88.3
Whanganui	15,076	13,523	89.7
Total	**1,150,916**	**1,040,774**	**90.4**

Excludes 42 women for whom DHB could not be determined

Table 39 - Coverage by ethnicity – women aged 25-69 years screened in the five years prior to 31 December 2013, hysterectomy adjusted

Ethnicity	Hysterectomy adjusted population	Women screened in the last 5 years	
	N	N	%
Māori	147,637	114,012	77.2
Pacific	65,015	56,397	86.7
Asian	148,728	113,566	76.4
European/Other	789,536	756,841	95.9
TOTAL	**1,150,916**	**1,040,816**	**90.4**

Table 40 - Women under 20 years of age, and aged 15-19 years, screened in the three years prior to 31 December 2013, by DHB.

DHB	Number of women screened in last 3 years		% of population aged 15-19 years screened
	aged 10 - 19 years	aged 15-19 years	
Auckland	932	928	6.4
Bay of Plenty	412	410	6.1
Canterbury	1,604	1,600	9.1
Capital & Coast	704	702	7.4
Counties Manukau	1,065	1,061	5.3
Hawke's Bay	428	428	8.4
Hutt Valley	287	286	5.8
Lakes	212	212	6.1
Mid Central	366	365	5.8
Nelson Marlborough	307	307	8.1
Northland	235	235	4.8
South Canterbury	127	127	8.0
Southern	740	739	6.9
Tairawhiti	84	84	5.3
Taranaki	225	224	6.7
Waikato	646	644	5.0
Wairarapa	101	101	9.1
Waitemata	1,472	1,471	7.4
West Coast	102	102	11.1
Whanganui	128	128	6.4
Total	**10,177**	**10,154**	**6.7**

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

Table 41 – Women screened under 20 years of age, as a proportion of all women screened in the three years to 31 December 2013, 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	932	113,379	0.8
Bay of Plenty	412	48,029	0.9
Canterbury	1,604	111,545	1.4
Capital & Coast	704	74,404	0.9
Counties Manukau	1,065	100,416	1.1
Hawke's Bay	428	35,237	1.2
Hutt Valley	287	31,977	0.9
Lakes	212	22,747	0.9
Mid Central	366	35,764	1.0
Nelson Marlborough	307	32,817	0.9
Northland	235	33,086	0.7
South Canterbury	127	11,820	1.1
Southern	740	70,217	1.1
Tairawhiti	84	10,015	0.8
Taranaki	225	26,143	0.9
Waikato	646	79,993	0.8
Wairarapa	101	9,128	1.1
Waitemata	1,472	123,713	1.2
West Coast	102	7,172	1.4
Whanganui	128	12,814	1.0
Total	**10,177**	**990,416**	**1.0**

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

Table 42 – Women screened under 20 years of age, and women aged 18-19 years when they were screened, in the three years to 31 December 2013, by DHB

DHB	Number of women screened in last 3 years aged 10-19 years	aged 18-19 years	% aged 18-19 years
Auckland	932	797	85.5
Bay of Plenty	412	356	86.4
Canterbury	1,604	1,344	83.8
Capital & Coast	704	659	93.6
Counties Manukau	1,065	914	85.8
Hawke's Bay	428	360	84.1
Hutt Valley	287	248	86.4
Lakes	212	184	86.8
Mid Central	366	337	92.1
Nelson Marlborough	307	268	87.3
Northland	235	197	83.8
South Canterbury	127	93	73.2
Southern	740	659	89.1
Tairawhiti	84	72	85.7
Taranaki	225	198	88.0
Waikato	646	582	90.1
Wairarapa	101	81	80.2
Waitemata	1,472	1,207	82.0
West Coast	102	93	91.2
Whanganui	128	122	95.3
Total	**10,177**	**8,771**	**86.2**

Table 43 - Women (25-69 years) screened in the three years to 31 December 2013, as a percentage of the i) hysterectomy-adjustment NZ female population and ii) total NZ female population, by DHB

DHB	Women screened in the last 3 years	
	(hysterectomy-adjusted)	(no hysterectomy adjustment)
Auckland	76.2	68.7
Bay of Plenty	78.7	68.4
Canterbury	73.9	64.8
Capital & Coast	79.3	70.8
Counties Manukau	69.5	61.7
Hawke's Bay	81.4	70.8
Hutt Valley	78.0	68.7
Lakes	78.5	68.7
Mid Central	75.4	65.9
Nelson Marlborough	81.7	70.6
Northland	75.1	64.8
South Canterbury	77.6	66.7
Southern	79.8	69.9
Tairawhiti	77.0	67.5
Taranaki	86.6	75.4
Waikato	77.0	67.4
Wairarapa	82.5	70.8
Waitemata	75.5	66.7
West Coast	77.5	67.2
Whanganui	75.3	65.2

Table 44 - Trends in three-year coverage by DHB (women screened in the previous three years, as a percentage of the hysterectomy-adjusted female population)

DHB	To 30 Jun 2012	To 31 Dec 2012	To 30 Jun 2013	To 31 Dec 2013
Auckland	76.5%	76.8%	77.5%	76.2%
Bay of Plenty	79.6%	79.3%	80.2%	78.7%
Canterbury	75.2%	73.9%	74.8%	73.9%
Capital & Coast	81.4%	80.6%	80.1%	79.3%
Counties Manukau	69.6%	69.4%	69.3%	69.5%
Hawke's Bay	80.4%	82.0%	81.3%	81.4%
Hutt Valley	80.0%	79.3%	79.5%	78.0%
Lakes	79.8%	79.7%	79.9%	78.5%
Mid Central	75.5%	74.8%	75.4%	75.4%
Nelson Marlborough	80.7%	81.3%	80.8%	81.7%
Northland	76.4%	75.9%	75.7%	75.1%
South Canterbury	75.5%	77.1%	76.1%	77.6%
Southern	78.4%	79.5%	78.5%	79.8%
Tairawhiti	79.3%	79.0%	78.9%	77.0%
Taranaki	84.8%	85.9%	85.2%	86.6%
Waikato	77.1%	77.1%	77.4%	77.0%
Wairarapa	82.4%	83.2%	81.5%	82.5%
Waitemata	75.5%	75.2%	75.5%	75.5%
West Coast	74.3%	76.9%	78.0%	77.5%
Whanganui	77.3%	76.5%	76.4%	75.3%
Total	**76.8%**	**76.7%**	**76.8%**	**76.4%**

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

Table 45 - Trends in three-year coverage by age (women screened in the previous three years, as a percentage of the hysterectomy-adjusted female population)

Age	To 30 Jun 2012	To 31 Dec 2012	To 30 Jun 2013	To 31 Dec 2013
20-24	54.7%	54.9%	54.5%	54.1%
25-29	67.5%	66.5%	68.2%	66.2%
30-34	71.7%	71.1%	70.4%	69.7%
35-39	78.6%	77.9%	78.5%	76.9%
40-44	80.5%	80.7%	80.4%	80.2%
45-49	81.1%	81.4%	81.6%	81.4%
50-54	81.1%	81.3%	80.7%	81.4%
55-59	80.1%	80.5%	80.2%	80.9%
60-64	77.2%	78.0%	77.9%	79.0%
65-69	72.2%	72.5%	72.9%	73.5%

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

Table 46 - Trends in three-year coverage by ethnicity (women screened in the previous three years, as a percentage of the hysterectomy-adjusted female population)

Ethnicity	To 30 Jun 2012	To 31 Dec 2012	To 30 Jun 2013	To 31 Dec 2013
Māori	61.6%	62.4%	62.2%	62.6%
Pacific	67.3%	69.1%	68.6%	68.6%
Asian	60.1%	63.5%	63.8%	64.8%
European/ Other	83.5%	82.3%	82.7%	81.9%
Total	**76.8%**	**76.7%**	**76.8%**	**76.4%**

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

Indicator 2 – First screening events

Table 47 - Age distribution of first screening events for period 1 July – 31 December 2013

Age	Women with first events	% of first events (ages 20-69 yrs) which occurred in that age group
20-24	11,081	49.9
25-29	3,511	15.8
30-34	2,449	11.0
35-39	1,382	6.2
40-44	1,005	4.5
45-49	786	3.5
50-54	582	2.6
55-59	620	2.8
60-64	465	2.1
65-69	309	1.4
20-69 yrs	**22,190**	

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

Table 48 - Women (ages 20-69 years) with first screening events as a proportion of i) total number of women with screening events, and ii) eligible women, by DHB, for period 1 July – 31 December 2013

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	3,434	25,262	13.6	154,850	2.2
Bay of Plenty	782	9,952	7.9	60,508	1.3
Canterbury	2,371	24,384	9.7	151,571	1.6
Capital & Coast	1,855	15,246	12.2	95,082	2.0
Counties Manukau	2,770	22,478	12.3	149,177	1.9
Hawke's Bay	611	7,395	8.3	43,007	1.4
Hutt Valley	593	6,401	9.3	41,417	1.4
Lakes	403	4,644	8.7	29,149	1.4
Mid Central	768	7,912	9.7	47,978	1.6
Nelson Marlborough	500	6,737	7.4	39,765	1.3
Northland	528	6,777	7.8	43,715	1.2
South Canterbury	160	2,585	6.2	15,084	1.1
Southern	1,675	15,015	11.2	88,855	1.9
Tairawhiti	162	1,943	8.3	12,834	1.3
Taranaki	408	5,544	7.4	30,082	1.4
Waikato	1,718	16,669	10.3	104,633	1.6
Wairarapa	133	1,952	6.8	10,867	1.2
Waitemata	3,009	28,215	10.7	166,531	1.8
West Coast	103	1,529	6.7	9,095	1.1
Whanganui	206	2,720	7.6	16,937	1.2
Total	**22,189**	**213,360**	**10.4**	**1,311,136**	**1.7**

Note: Proportions shown are women with first screening event within a DHB, divided by i) all women with a screening event within that DHB (first or subsequent events) and ii) the hysterectomy-adjusted 2006 census

population projected to 31 December 2013 for that DHB, as a percent. Total women screened excludes those for whom DHB could not be ascertained.

Table 49 - Women (ages 20-69 years) with first screening events as a proportion of i) total number of women with screening events, and ii) eligible women, by ethnicity, for period 1 July – 31 December 2013

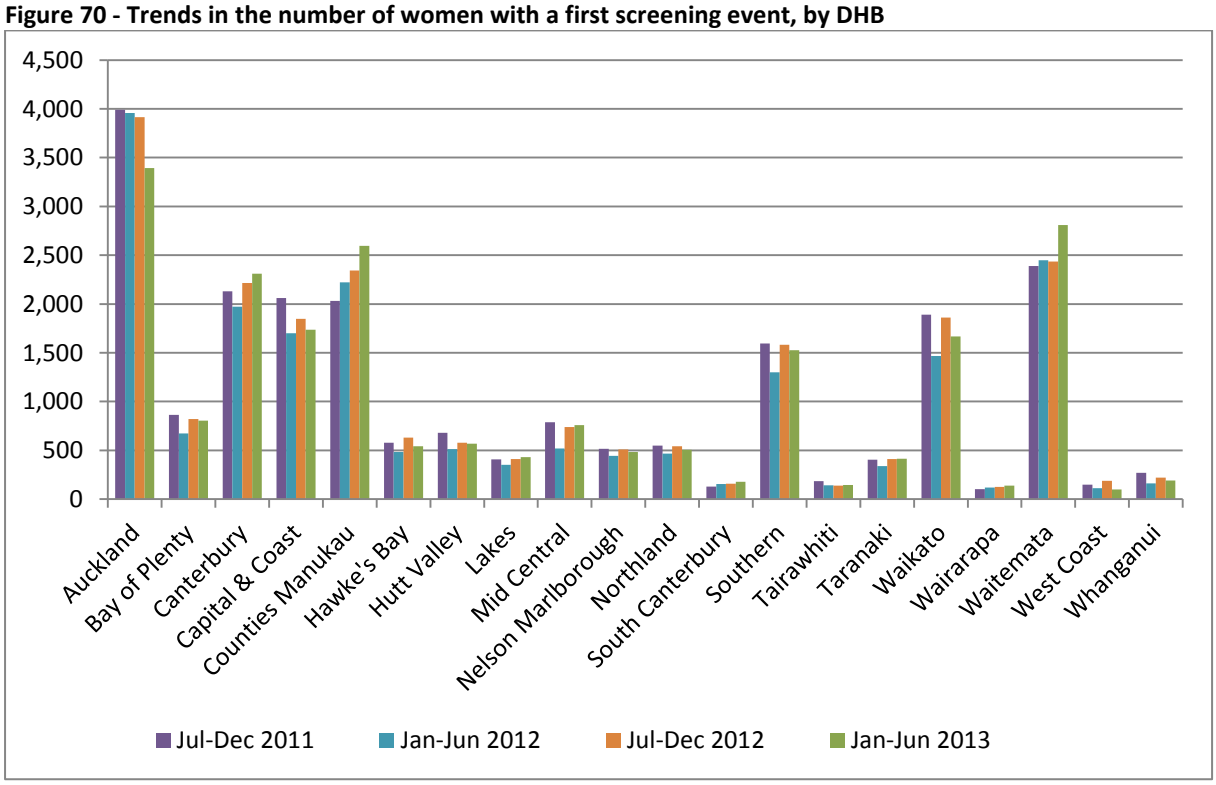
Ethnicity	Women with first events	As a proportion of women with a screening event[i]		As a proportion of eligible population[ii]	
		N	%	N	%
Maori	2,242	23,093	9.7	177,735	1.3
Pacific	1,628	10,914	14.9	78,228	2.1
Asian	5,178	23,644	21.9	174,165	3.0
European/Other	13,142	155,711	8.4	881,008	1.5
Total	**22,190**	**213,362**	**10.4**	**1,311,136**	**1.7**

Note: Proportions shown are women with first screening event within a DHB, divided by i) all women with a screening event within that DHB (first or subsequent events) and ii) the hysterectomy-adjusted 2006 census population projected to 31 December 2013 for that DHB, as a percent

Table 50 – Median age of women with a first screening event, by ethnicity

Ethnic Group	Median Age (years)
Maori	21
Pacific	26
Asian	31
European/Other	22

Figure 70 - Trends in the number of women with a first screening event, by DHB



Indicator 4 – Early re-screening

Table 51 - Early re-screening by five-year age group, 1 July – 31 December 2013

Age	Women recommended to return in 3 yrs	Women with >= 1 subsequent test N	%
20-24	1,231	306	24.9
25-29	3,830	756	19.7
30-34	4,153	801	19.3
35-39	4,711	851	18.1
40-44	5,794	1,126	19.4
45-49	5,650	1,090	19.3
50-54	5,508	1,090	19.8
55-59	4,471	788	17.6
60-64	3,495	527	15.1
65-69	2,694	363	13.5
All ages	**41,537**	**7,698**	**18.5**

Table 52 - Early re-screening by DHB, 1 July – 31 December 2013

DHB	Women recommended to return in 3 yrs	Women with >= 1 subsequent test N	%
Auckland	4,758	1,216	25.6
Bay of Plenty	2,186	484	22.1
Canterbury	3,557	654	18.4
Capital & Coast	3,584	515	14.4
Counties Manukau	4,053	751	18.5
Hawke's Bay	1,494	232	15.5
Hutt Valley	1,542	184	11.9
Lakes	1,035	237	22.9
Mid Central	1,532	146	9.5
Nelson Marlborough	1,291	176	13.6
Northland	1,383	231	16.7
South Canterbury	546	106	19.4
Southern	2,830	417	14.7
Tairawhiti	432	58	13.4
Taranaki	1,118	132	11.8
Waikato	3,456	490	14.2
Wairarapa	432	89	20.6
Waitemata	5,514	1,471	26.7
West Coast	270	50	18.5
Whanganui	522	59	11.3
Total	**41,535**	**7,698**	**18.5**

Table 53 - Early re-screening by ethnicity, 1 July – 31 December 2013

Ethnicity	Women recommended to return in 3 yrs	Women with >= 1 subsequent test	
		N	%
Māori	4,046	662	16.4
Pacific	1,806	232	12.8
Asian	4,055	806	19.9
European/ Other	31,630	5,998	19.0
Total	**41,537**	**7,698**	**18.5**

Indicator 5 – Laboratory indicators

Indicator 5.2 – Accuracy of cytology predicting HSIL

Table 54 - 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	116	92.1	95	81.9	10	7.9	126
Canterbury Health Laboratories	130	97.0	110	84.6	4	3.0	134
Diagnostic Medlab Ltd	292	94.2	234	80.1	18	5.8	310
LabPLUS	270	94.4	224	83.0	16	5.6	286
Medlab Central Ltd	110	87.3	92	83.6	16	12.7	126
Pathlab	121	93.8	95	78.5	8	6.2	129
Southern Community Labs Dunedin	762	93.4	627	82.3	54	6.6	816
Total	**1,801**	**93.5**	**1,477**	**82.0**	**126**	**6.5**	**1,927**

Target: 65% - 85%

Table 55 - 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	98	85.2	53	54.1	17	14.8	115
Canterbury Health Laboratories	95	90.5	59	62.1	10	9.5	105
Diagnostic Medlab Ltd	224	81.5	74	33.0	51	18.5	275
LabPLUS	262	76.2	103	39.3	82	23.8	344
Medlab Central Ltd	99	82.5	51	51.5	21	17.5	120
Pathlab	122	85.3	67	54.9	21	14.7	143
Southern Community Labs Dunedin	90	83.3	38	42.2	18	16.7	108
Total	**990**	**81.8**	**445**	**44.9**	**220**	**18.2**	**1,210**

Table 56 - 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	214	88.8	148	69.2	27	11.2	241
Canterbury Health Laboratories	225	94.1	169	75.1	14	5.9	239
Diagnostic Medlab Ltd	516	88.2	308	59.7	69	11.8	585
LabPLUS	532	84.4	327	61.5	98	15.6	630
Medlab Central Ltd	209	85.0	143	68.4	37	15.0	246
Pathlab	243	89.3	162	66.7	29	10.7	272
Southern Community Labs Dunedin	852	92.2	665	78.1	72	7.8	924
Total	**2,791**	**89.0**	**1,922**	**68.9**	**346**	**11.0**	**3,137**

Indicator 5.5 – Laboratory turnaround time

Table 57 - Timeliness of cytology reporting by laboratory, 1 July – 31 December 2013

Laboratory	Laboratory turnaround time - cytology								
	Within 7 days		8-15 days		Total within 15 days		More than 15 days		Total
	N	%	N	%	N	%	N	%	N
Aotea Pathology Ltd	20,291	93.6	1,376	6.3	21,667	100.0	7	<0.05	21,674
Canterbury Health Laboratories	9,830	82.9	1,908	16.1	11,738	98.9	125	1.1	11,863
Diagnostic Medlab Ltd	54,215	98.6	545	1.0	54,760	99.6	236	0.4	54,996
LabPLUS	6,973	86.0	1,042	12.8	8,015	98.8	94	1.2	8,109
Medlab Central Ltd	15,922	90.1	1,362	7.7	17,284	97.8	383	2.2	17,667
Pathlab	21,184	97.8	424	2.0	21,608	99.7	62	0.3	21,670
Southern Community Labs Dunedin	77,163	95.8	2,712	3.4	79,875	99.2	631	0.8	80,506
Total	**205,578**	**95.0**	**9,369**	**4.3**	**214,947**	**99.3**	**1,538**	**0.7**	**216,485**

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

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

Table 58 - Timeliness of histology reporting by laboratory, 1 July – 31 December 2013

Laboratory	Laboratory turnaround time - histology								
	Within 10 days		11-15 days		Total within 15 days		More than 15 days		Total
	N	%	N	%	N	%	N	%	N
Aotea Pathology Ltd	373	96.9	7	1.8	380	98.7	5	1.3	385
Canterbury Health Laboratories	1,522	97.8	15	1.0	1,537	98.8	19	1.2	1,556
Capital & Coast District Health Board Pathology	531	70.7	148	19.7	679	90.4	72	9.6	751
Diagnostic Medlab Ltd	1,585	97.5	15	0.9	1,600	98.5	25	1.5	1,625
Hutt Hospital Laboratory	179	53.6	83	24.9	262	78.4	72	21.6	334
LabPLUS	826	84.7	61	6.3	887	91.0	88	9.0	975
Medlab Central Ltd	1,210	95.6	13	1.0	1,223	96.6	43	3.4	1,266
Memorial Hospital Hastings Lab	76	88.4	4	4.7	80	93.0	6	7.0	86
Middlemore Hospital Laboratory	1,013	83.6	142	11.7	1,155	95.4	56	4.6	1,211
Nelson Hospital Laboratory	121	99.2	-	0.0	121	99.2	1	0.8	122
North Shore Hospital Laboratory	1,422	98.8	12	0.8	1,434	99.6	6	0.4	1,440
Northland Pathology Laboratory	245	99.6	-	0.0	245	99.6	1	0.4	246
Pathlab	1,013	90.5	67	6.0	1,080	96.5	39	3.5	1,119
Southern Community Labs Dunedin	2,977	98.4	32	1.1	3,009	99.4	17	0.6	3,026
Taranaki Medlab	324	99.7	1	0.3	325	100.0	-	0.0	325
Waikato Hospital Laboratory	25	100.0	-	0.0	25	100.0	-	0.0	25
Total	**13,442**	**92.8**	**600**	**4.1**	**14,042**	**96.9**	**450**	**3.1**	**14,492**

Target: 90% within ten working days and 98% within 15 working days of receipt of the sample

Note: total histology samples reported on for this Indicator is different from that reported in Indicator 5.4. Indicator 5.5 includes all histology samples received by laboratories *within the reporting period, while 5.4 includes all histology samples* taken *within the reporting period*

Table 59 – Timeliness of reporting for cytology with associated HPV testing by laboratory, 1 July – 31 December 2013

	Laboratory turnaround time – cytology with HPV triage testing				
	Within 15 days		More than 15 days		Total
Laboratory	**N**	**%**	**N**	**%**	**N**
Aotea Pathology Ltd	356	99.4	2	0.6	358
Canterbury Health Laboratories	220	94.8	12	5.2	232
Diagnostic Medlab Ltd	1,170	99.8	2	0.2	1,172
LabPLUS	39	86.7	6	13.3	45
Medlab Central Ltd	444	98.0	9	2.0	453
Pathlab	434	99.8	1	0.2	435
Southern Community Labs Dunedin	562	99.3	4	0.7	566
Total	**3,225**	**98.9**	**36**	**1.1**	**3,261**

Target: 98% within 15 working days.

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

Table 60 - Women with a histology report within 90 days of a high grade cytology report, by DHB and age

	<20		20-24		25-29		30-34		35-39		40-44		45-49		50-54		55-59		60-64		65-69		70+		Total
DHB	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	
Auckland	0	0.0	39	83.0	44	68.8	44	75.9	31	83.8	12	57.1	17	73.9	14	56.0	8	57.1	6	75.0	6	75.0	3	75.0	224
Bay of Plenty	-	-	19	95.0	15	93.8	13	81.3	15	93.8	12	100.0	4	57.1	8	66.7	2	66.7	3	50.0	0	0.0	1	25.0	92
Canterbury	2	100.0	51	91.1	47	94.0	40	97.6	23	100.0	16	88.9	15	100.0	12	80.0	6	54.5	8	80.0	1	100.0	0	0.0	221
Capital & Coast	-	-	21	87.5	27	87.1	17	89.5	15	100.0	8	100.0	4	80.0	8	100.0	5	100.0	0	0.0	0	0.0	1	100.0	106
Counties Manukau	0	0.0	46	83.6	36	80.0	34	82.9	13	100.0	19	79.2	11	84.6	10	71.4	12	92.3	6	75.0	2	50.0	3	60.0	192
Hawke's Bay	2	100.0	19	82.6	21	80.8	16	84.2	10	83.3	7	87.5	2	66.7	6	85.7	1	50.0	1	100.0	5	62.5	0	0.0	90
Hutt Valley	-	-	16	88.9	14	70.0	8	88.9	9	75.0	1	100.0	2	66.7	3	100.0	-	-	0	0.0	2	100.0	0	0.0	55
Lakes	-	-	9	100.0	17	73.9	7	77.8	8	88.9	1	50.0	6	85.7	6	100.0	1	100.0	3	50.0	-	-	1	50.0	59
Mid Central	-	-	24	80.0	17	89.5	2	66.7	4	100.0	4	100.0	2	100.0	2	100.0	2	100.0	1	50.0	4	100.0	1	50.0	63
Nelson Marlborough	1	100.0	14	87.5	13	86.7	6	75.0	5	83.3	6	85.7	6	100.0	8	100.0	5	100.0	0	0.0	2	66.7	2	50.0	68
Northland	-	-	10	100.0	11	91.7	10	100.0	2	66.7	7	100.0	1	33.3	2	100.0	4	66.7	1	50.0	-	-	-	-	48
South Canterbury	-	-	6	100.0	8	88.9	4	80.0	3	100.0	5	100.0	1	50.0	1	100.0	1	50.0	0	0.0	3	100.0	1	25.0	33
Southern	-	-	52	89.7	49	90.7	28	93.3	15	78.9	13	81.3	7	100.0	6	54.5	4	100.0	6	85.7	1	16.7	0	0.0	181
Tairawhiti	-	-	5	100.0	4	100.0	1	50.0	5	100.0	-	-	-	-	-	-	2	66.7	-	-	-	-	1	100.0	18
Taranaki	-	-	14	87.5	23	79.3	11	84.6	7	77.8	6	100.0	1	100.0	4	66.7	2	66.7	4	80.0	2	100.0	-	-	74
Waikato	1	100.0	44	83.0	64	88.9	34	87.2	19	70.4	25	92.6	20	80.0	8	50.0	3	75.0	2	100.0	3	100.0	2	50.0	225
Wairarapa	0	0.0	9	90.0	2	66.7	1	50.0	2	100.0	1	100.0	-	-	-	-	-	-	0	0.0	-	-	-	-	15
Waitemata	2	100.0	55	90.2	56	86.2	41	91.1	26	100.0	21	87.5	11	68.8	14	77.8	7	58.3	6	54.5	5	100.0	4	80.0	248
West Coast	0	0.0	6	100.0	2	50.0	2	100.0	1	100.0	2	100.0	3	75.0	-	-	1	100.0	-	-	-	-	-	-	17
Whanganui	-	-	4	50.0	5	100.0	3	100.0	3	75.0	-	-	1	50.0	1	50.0	-	-	0	0.0	0	0.0	-	-	17
Total	**8**	**61.5**	**463**	**87.2**	**475**	**83.9**	**322**	**86.1**	**216**	**87.8**	**166**	**86.0**	**114**	**79.2**	**113**	**72.4**	**66**	**72.5**	**47**	**62.7**	**36**	**67.9**	**20**	**45.5**	**2,046**

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

Table 61 - Women with a histology report within 180 days of a high grade cytology report, by DHB and age

	<20		20-24		25-29		30-34		35-39		40-44		45-49		50-54		55-59		60-64		65-69		70+		Total
DHB	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	
Auckland	1	50.0	42	89.4	50	78.1	49	84.5	32	86.5	15	71.4	18	78.3	17	68.0	11	78.6	6	75.0	7	87.5	3	75.0	251
Bay of Plenty	-	-	20	100.0	15	93.8	13	81.3	16	100.0	12	100.0	5	71.4	9	75.0	3	100.0	4	66.7	1	50.0	1	25.0	99
Canterbury	2	100.0	54	96.4	47	94.0	40	97.6	23	100.0	18	100.0	15	100.0	12	80.0	8	72.7	9	90.0	1	100.0	2	100.0	231
Capital & Coast	-	-	22	91.7	28	90.3	17	89.5	15	100.0	8	100.0	4	80.0	8	100.0	5	100.0	0	0.0	1	100.0	1	100.0	109
Counties Manukau	1	100.0	50	90.9	39	86.7	38	92.7	13	100.0	22	91.7	12	92.3	11	78.6	12	92.3	7	87.5	2	50.0	4	80.0	211
Hawke's Bay	2	100.0	21	91.3	24	92.3	16	84.2	10	83.3	7	87.5	2	66.7	6	85.7	1	50.0	1	100.0	7	87.5	1	100.0	98
Hutt Valley	-	-	17	94.4	16	80.0	9	100.0	10	83.3	1	100.0	2	66.7	3	100.0	-	-	0	0.0	2	100.0	0	0.0	60
Lakes	-	-	9	100.0	18	78.3	9	100.0	8	88.9	2	100.0	6	85.7	6	100.0	1	100.0	3	50.0	-	-	1	50.0	63
Mid Central	-	-	27	90.0	17	89.5	3	100.0	4	100.0	4	100.0	2	100.0	2	100.0	2	100.0	2	100.0	4	100.0	1	50.0	68
Nelson Marlborough	1	100.0	14	87.5	13	86.7	6	75.0	6	100.0	7	100.0	6	100.0	8	100.0	5	100.0	1	100.0	2	66.7	2	50.0	71
Northland	-	-	10	100.0	11	91.7	10	100.0	2	66.7	7	100.0	2	66.7	2	100.0	5	83.3	1	50.0	-	-	-	-	50
South Canterbury	-	-	6	100.0	8	88.9	4	80.0	3	100.0	5	100.0	1	50.0	1	100.0	1	50.0	1	100.0	3	100.0	1	25.0	34
Southern	-	-	54	93.1	52	96.3	29	96.7	17	89.5	15	93.8	7	100.0	9	81.8	4	100.0	6	85.7	5	83.3	0	0.0	198
Tairawhiti	-	-	5	100.0	4	100.0	1	50.0	5	100.0	-	-	-	-	-	-	2	66.7	-	-	-	-	1	100.0	18
Taranaki	-	-	14	87.5	24	82.8	12	92.3	7	77.8	6	100.0	1	100.0	4	66.7	2	66.7	4	80.0	2	100.0	-	-	76
Waikato	1	100.0	46	86.8	67	93.1	36	92.3	23	85.2	26	96.3	21	84.0	11	68.8	3	75.0	2	100.0	3	100.0	3	75.0	242
Wairarapa	1	100.0	9	90.0	2	66.7	2	100.0	2	100.0	1	100.0	-	-	-	-	-	-	1	100.0	-	-	-	-	18
Waitemata	2	100.0	57	93.4	59	90.8	41	91.1	26	100.0	23	95.8	14	87.5	17	94.4	7	58.3	7	63.6	5	100.0	4	80.0	262
West Coast	0	0.0	6	100.0	2	50.0	2	100.0	1	100.0	2	100.0	4	100.0	-	-	1	100.0	-	-	-	-	-	-	18
Whanganui	-	-	5	62.5	5	100.0	3	100.0	3	75.0	-	-	1	50.0	1	50.0	-	-	1	50.0	0	0.0	-	-	19
Total	**11**	**84.6**	**488**	**91.9**	**501**	**88.5**	**340**	**90.9**	**226**	**91.9**	**181**	**93.8**	**123**	**85.4**	**127**	**81.4**	**73**	**80.2**	**56**	**74.7**	**45**	**84.9**	**25**	**56.8**	**2,196**

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

Indicator 7 – Colposcopy indicators

Indicator 7.1 – Timeliness of colposcopic assessment – high grade cytology

Table 62 - Women with high grade cytology (including cytological suspicion of invasive disease), by DHB

DHB	HG women (suspicion of invasive disease*) N	HG women (no suspicion of invasive disease) N
Auckland	9	208
Bay of Plenty	5	92
Canterbury	8	200
Capital & Coast	4	98
Counties Manukau	7	192
Hawke's Bay	2	92
Hutt Valley	3	57
Lakes	0	70
Mid Central	1	68
Nelson Marlborough	2	71
Northland	4	48
South Canterbury	7	30
Southern	3	199
Tairawhiti	0	15
Taranaki	0	79
Waikato	8	225
Wairarapa	0	18
Waitemata	11	207
West Coast	0	19
Whanganui	0	25
Private practice	*10*	*393*
Total	**84**	**2,406**

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

Table 63 - Women with cytological suspicion of invasive disease, by cytology result subcategory

Cytology result sub-category	Total women N	Women with accepted referral N
HS2	28	21
SC	11	4
AC1-5	36	7
R10, R14	9	8
Total	**84**	**40**

Indicator 7.2 – Timeliness of colposcopic assessment – low grade cytology

Table 64 - Follow-up* of women with persistent low grade cytology/ low grade cytology and positive hrHPV test, by DHB

DHB	Women with persistent LG/ LG & hrHPV positive N	Women with subsequent referral recorded N	Median time between cytology result and referral (days)	Women with subsequent colposcopy visit recorded N	Median time between referral and colposcopy visit (days)	Median time between cytology result and colposcopy visit (days)
Auckland	587	482	9	440	174	182
Bay of Plenty	283	238	5	242	161	165.5
Canterbury	304	276	7	275	98.5	116
Capital & Coast	221	203	8	198	138	154
Counties Manukau	465	424	5	343	231.5	243
Hawke's Bay	151	131	9	118	173	187.5
Hutt Valley	105	94	9.5	89	119	134
Lakes	102	96	7	92	171	180
Mid Central	182	175	9	167	194	203
Nelson Marlborough	80	69	7	66	125	130.5
Northland	89	84	6	79	149	165
South Canterbury	31	27	7	27	134	141
Southern	192	174	7	166	189	197
Tairawhiti	38	38	7.5	35	81	88
Taranaki	87	76	6	76	125.5	147
Waikato	321	294	5	258	224	235
Wairarapa	33	32	2	32	135	138
Waitemata	471	401	5	366	217	227
West Coast	49	42	6	44	118	123
Whanganui	70	69	5	63	105	112
Private practice	*826*	*563*	*10*	*701*	*14*	*34*
Total	**4,687**	**3,988**	**7**	**3,877**	**153**	**162**

* Follow-up recorded on NCSP Register, at the time of data download. Women with colposcopy includes any women with a colposcopy visit recorded on the NCSP Register, regardless of whether or not there is also an accepted referral recorded. Median times relate to women with both events recorded on the NCSP Register.

Table 65 - Follow-up* of women with persistent low grade cytology/ low grade cytology and positive hrHPV test, by ethnicity

DHB	Women with persistent LG/ LG & hrHPV positive N	Women with subsequent referral recorded N	Median time between cytology result and referral (days)	Women with subsequent colposcopy visit recorded N	Median time between referral and colposcopy visit (days)	Median time between cytology result and colposcopy visit (days)
Māori	608	567	7	508	165	177.0
Pacific	219	203	7	161	193	208
Asian	435	375	8	354	167	179.5
European/Other	3,425	2,843	7	2,854	146	154
Total	**4,687**	**3,988**	**7**	**3,877**	**153**	**162**

* Follow-up recorded on NCSP Register, at the time of data download. Women with colposcopy includes any women with a colposcopy visit recorded on the NCSP Register, regardless of whether or not there is also an accepted referral recorded. Median times relate to women with both events recorded on the NCSP Register.

Indicator 7.3 – Adequacy of documenting colposcopic assessment

Table 66 - Completion of colposcopic assessment fields, by DHB

DHB	Total colposcopies N	% of colposcopies performed where items are completed					
		SCJ visibility	Colposcopic appearance	Opinion re abnormality grade	Follow-up type	Follow-up timeframe	All items complete
Public clinics overall	*13,351*	*95.9*	*100.0*	*91.9*	*98.2*	*97.8*	*90.3*
Auckland	1,090	97.8	100.0	94.8	99.9	99.4	94.0
Bay of Plenty	578	97.1	100.0	88.6	99.8	99.1	89.1
Canterbury	1,748	94.7	100.0	93.1	99.4	99.2	89.6
Capital & Coast	894	98.5	100.0	96.8	99.6	99.0	95.9
Counties Manukau	1,265	99.3	100.0	95.0	99.8	99.6	96.2
Hawke's Bay	410	91.2	100.0	87.5	96.6	96.3	81.7
Hutt Valley	296	99.3	100.0	96.5	100.0	100.0	96.6
Lakes	289	99.0	100.0	94.2	99.7	99.3	94.5
Mid Central	969	86.7	100.0	82.1	89.5	89.4	75.5
Nelson Marlborough	330	97.3	100.0	96.6	99.4	99.4	94.5
Northland	274	96.4	100.0	87.6	100.0	98.9	89.4
South Canterbury	193	96.4	100.0	92.0	100.0	99.0	91.7
Southern	929	88.7	100.0	86.2	94.7	94.5	79.0
Tairawhiti	171	100.0	100.0	92.2	100.0	100.0	94.7
Taranaki	327	93.3	100.0	87.1	96.6	95.1	82.3
Waikato	1,027	99.3	100.0	95.3	96.3	95.6	92.2
Wairarapa	148	97.3	100.0	100.0	100.0	99.3	96.6
Waitemata	2,095	98.3	100.0	92.8	100.0	99.6	94.8
West Coast	106	97.2	100.0	93.7	100.0	100.0	92.5
Whanganui	212	89.6	100.0	78.8	96.2	96.2	81.1
Private practice	*1,731*	*96.6*	*100.0*	*90.2*	*97.4*	*94.7*	*86.1*
Total	**15,082**	**96.0**	**100.0**	**91.7**	**98.1**	**97.4**	**89.8**

Table 67 – Summary of colposcopic appearance findings, by DHB

DHB	Total colposcopies	SCJ visibility*	Colposcopic appearance (as % of colposcopies where items are completed)	
	N	N	Abnormal	Inconclusive
Public clinics overall	*13,351*	*12,800*	*53.6*	*4.7*
Auckland	1,090	1,066	58.3	3.2
Bay of Plenty	578	561	56.2	7.3
Canterbury	1,748	1,655	61.7	4.6
Capital & Coast	894	881	50.4	1.7
Counties Manukau	1,265	1,256	51.1	2.7
Hawke's Bay	410	374	54.4	7.8
Hutt Valley	296	294	74.3	2.7
Lakes	289	286	67.8	4.2
Mid Central	969	840	44.4	9.7
Nelson Marlborough	330	321	60.9	2.1
Northland	274	264	48.9	6.9
South Canterbury	193	186	47.7	4.1
Southern	929	824	49.0	7.9
Tairawhiti	171	171	62.6	5.3
Taranaki	327	305	51.7	7.6
Waikato	1,027	1,020	63.3	3.1
Wairarapa	148	144	62.8	0.0
Waitemata	2,095	2,059	41.3	3.2
West Coast	106	103	69.8	4.7
Whanganui	212	190	54.2	14.6
Private practice	*1,731*	*1,672*	*52.5*	*5.7*
Total	**15,082**	**14,472**	**53.5**	**4.8**

* Field has been completed

Indicator 7.5 – Timely discharge of women after treatment

Table 68 – Follow-up of treated women with colposcopy and cytology in the period up to nine months post-treatment, and discharge of eligible women

	Total treatments	Colposcopy & cytology within 9 months post-treatment		Eligible for discharge		Women discharged appropriately	
DHB	N	N	%	N	% of women treated	N	% of eligible
Auckland	106	87	82.1	70	72.6	67	95.7
Bay of Plenty	72	44	61.1	35	72.2	31	88.6
Canterbury	312	243	77.9	238	79.2	210	88.2
Capital & Coast	69	55	79.7	50	76.8	48	96.0
Counties Manukau	132	54	40.9	53	48.5	44	83.0
Hawke's Bay	68	54	79.4	57	85.3	49	86.0
Hutt Valley	33	25	75.8	27	87.9	22	81.5
Lakes	53	32	60.4	35	71.7	30	85.7
Mid Central	69	47	68.1	48	69.6	40	83.3
Nelson Marlborough	65	48	73.8	48	80.0	46	95.8
Northland	42	38	90.5	29	69.0	29	100.0
South Canterbury	9	6	66.7	6	77.8	5	83.3
Southern	104	61	58.7	76	80.8	67	88.2
Tairawhiti	30	6	20.0	11	43.3	9	81.8
Taranaki	25	20	80.0	20	88.0	19	95.0
Waikato	120	81	67.5	82	70.8	79	96.3
Wairarapa	15	10	66.7	9	66.7	9	100.0
Waitemata	218	191	87.6	164	78.0	124	75.6
West Coast	30	21	70.0	21	73.3	19	90.5
Whanganui	32	30	93.8	31	96.9	27	87.1
Private Practice	*130*	*87*	*66.9*	*87*	*81.5*	*68*	*78.2*
Total	**1,734**	**1,240**	**71.5**	**1,197**	**74.8**	**1,042**	**87.1**

Table 69 – Follow-up of treated women in the period up to nine months post-treatment

DHB	Total treatments	Colposcopy within 9 months post-treatment		Colposcopy & cytology within 9 months post-treatment	
	N	N	%	N	%
Auckland	106	88	83.0	87	82.1
Bay of Plenty	72	44	61.1	44	61.1
Canterbury	312	243	77.9	243	77.9
Capital & Coast	69	55	79.7	55	79.7
Counties Manukau	132	55	41.7	54	40.9
Hawke's Bay	68	54	79.4	54	79.4
Hutt Valley	33	26	78.8	25	75.8
Lakes	53	32	60.4	32	60.4
Mid Central	69	47	68.1	47	68.1
Nelson Marlborough	65	50	76.9	48	73.8
Northland	42	38	90.5	38	90.5
South Canterbury	9	6	66.7	6	66.7
Southern	104	61	58.7	61	58.7
Tairawhiti	30	6	20.0	6	20.0
Taranaki	25	20	80.0	20	80.0
Waikato	120	87	72.5	81	67.5
Wairarapa	15	10	66.7	10	66.7
Waitemata	218	194	89.0	191	87.6
West Coast	30	21	70.0	21	70.0
Whanganui	32	30	93.8	30	93.8
Private practice	*130*	*89*	*68.5*	*87*	*66.9*
Total	**1,734**	**1,256**	**72.4**	**1,240**	**71.5**

Indicator 8 – HPV tests

Indicator 8.1 – Triage of low grade cytology

Table 70 – 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	184	225	3	1.6	218	96.9
Canterbury Health Laboratories	71	161	0	0.0	160	99.4
Diagnostic Medlab Ltd	232	627	0	0.0	626	99.8
LabPLUS	131	28	0	0.0	23	82.1
Medlab Central Ltd	143	335	3	2.1	298	89.0
Pathlab	126	246	0	0.0	228	92.7
Southern Community Labs	165	204	3	1.8	199	97.5
Total	**1,052**	**1,826**	**9**	**0.9**	**1,752**	**95.9**

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

Table 71 – 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	260	157	1	0.4	153	97.5
Canterbury Health Laboratories	158	75	0	0.0	75	100.0
Diagnostic Medlab Ltd	556	576	1	0.2	575	99.8
LabPLUS	167	17	0	0.0	14	82.4
Medlab Central Ltd	249	162	1	0.4	139	85.8
Pathlab	318	224	1	0.3	202	90.2
Southern Community Labs	691	405	11	1.6	388	95.8
Total	**2,399**	**1,616**	**15**	**0.6**	**1,546**	**95.7**

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

Indicator 8.2 – HPV test volumes

Table 72 – Volume of HPV test samples received during the monitoring period, by laboratory

Laboratory	HPV tests received		Ratio HPV tests: smears reported (%)
	N	% of national total	
Aotea Pathology Ltd	1,787	8.9	8.5
Canterbury Health Laboratories	2,004	10.0	17.0
Diagnostic Medlab Ltd	3,961	19.7	7.0
LabPLUS	827	4.1	11.8
Medlab Central Ltd	2,211	11.0	13.0
Pathlab	2,184	10.9	10.0
Southern Community Labs Dunedin	7,137	35.5	9.1
Total	**20,111**	**100.0**	**9.4**

Table 73 – Invalid HPV tests, by laboratory

Laboratory	Total	Valid		Invalid	
	N	N	%	N	%
Aotea Pathology Ltd	1,787	1,779	99.6	8	0.4
Canterbury Health Laboratories	2,004	2,002	99.9	2	0.1
Diagnostic Medlab Ltd	3,961	3,955	99.8	6	0.2
LabPLUS	827	827	100.0	-	0.0
Medlab Central Ltd	2,211	2,211	100.0	-	0.0
Pathlab	2,184	2,178	99.7	6	0.3
Southern Community Labs Dunedin	7,137	7,131	99.9	6	0.1
Total	**20,111**	**20,083**	**99.9**	**28**	**0.1**

Table 74 – Validity of HPV triage tests, by test technology

Test technology	Total HPV tests		Valid		Invalid	
	N	%	N	%	N	%
Abbott RealTime	9,141	*45.5*	9,133	99.9	8	0.1
Roche COBAS 4800*	10,970	*54.5*	10,950	99.8	20	0.2
Total	**20,111**	***100.0***	**20,083**	**99.9**	**28**	**0.1**

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

Table 75 - Volume of HPV test samples received during the monitoring period, by purpose and ethnicity

	HPV triage		Post-treatment		Historical		Taken at colposcopy		Other		Total	
Age	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Māori	330	13.6	302	12.5	1,034	42.7	131	5.4	627	25.9	2,424	330
Pacific	205	37.6	46	8.4	154	28.3	21	3.9	119	21.8	545	205
Asian	382	33.5	175	15.4	275	24.1	88	7.7	219	19.2	1,139	382
European/Other	2,209	13.8	1,724	10.8	6,281	39.2	850	5.3	4,939	30.9	16,003	2,209
Total	**3,126**	**15.5**	**2,247**	**11.2**	**7,744**	**38.5**	**1,090**	**5.4**	**5,904**	**29.4**	**20,111**	**3,126**

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

	HPV triage		Post-treatment		Historical		Taken at colposcopy		Other		Total
Age	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**
<20	-	0.0	1	7.7	-	-	4	30.8	8	61.5	13
20-24	-	0.0	275	35.2	63	8.1	201	25.7	242	31.0	781
25-29	-	0.0	575	34.4	629	37.7	166	9.9	300	18.0	1,670
30-34	654	23.1	431	15.2	1,172	41.3	149	5.3	429	15.1	2,835
35-39	554	19.3	346	12.1	1,391	48.5	113	3.9	466	16.2	2,870
40-44	514	16.3	258	8.2	1,515	48.0	125	4.0	745	23.6	3,157
45-49	500	18.2	166	6.1	1,060	38.7	86	3.1	930	33.9	2,742
50-54	380	16.4	102	4.4	834	36.0	73	3.2	928	40.1	2,317
55-59	259	15.3	52	3.1	503	29.6	70	4.1	814	47.9	1,698
60-64	159	13.8	28	2.4	337	29.3	61	5.3	566	49.2	1,151
65-69	92	13.5	9	1.3	179	26.2	25	3.7	379	55.4	684
70+	14	7.3	4	2.1	61	31.6	17	8.8	97	50.3	193
Total	**3,126**	**15.5**	**2,247**	**11.2**	**7,744**	**38.5**	**1,090**	**5.4**	**5,904**	**29.4**	**20,111**

Table 77 - Volume of HPV test samples received during the monitoring period, by purpose and laboratory

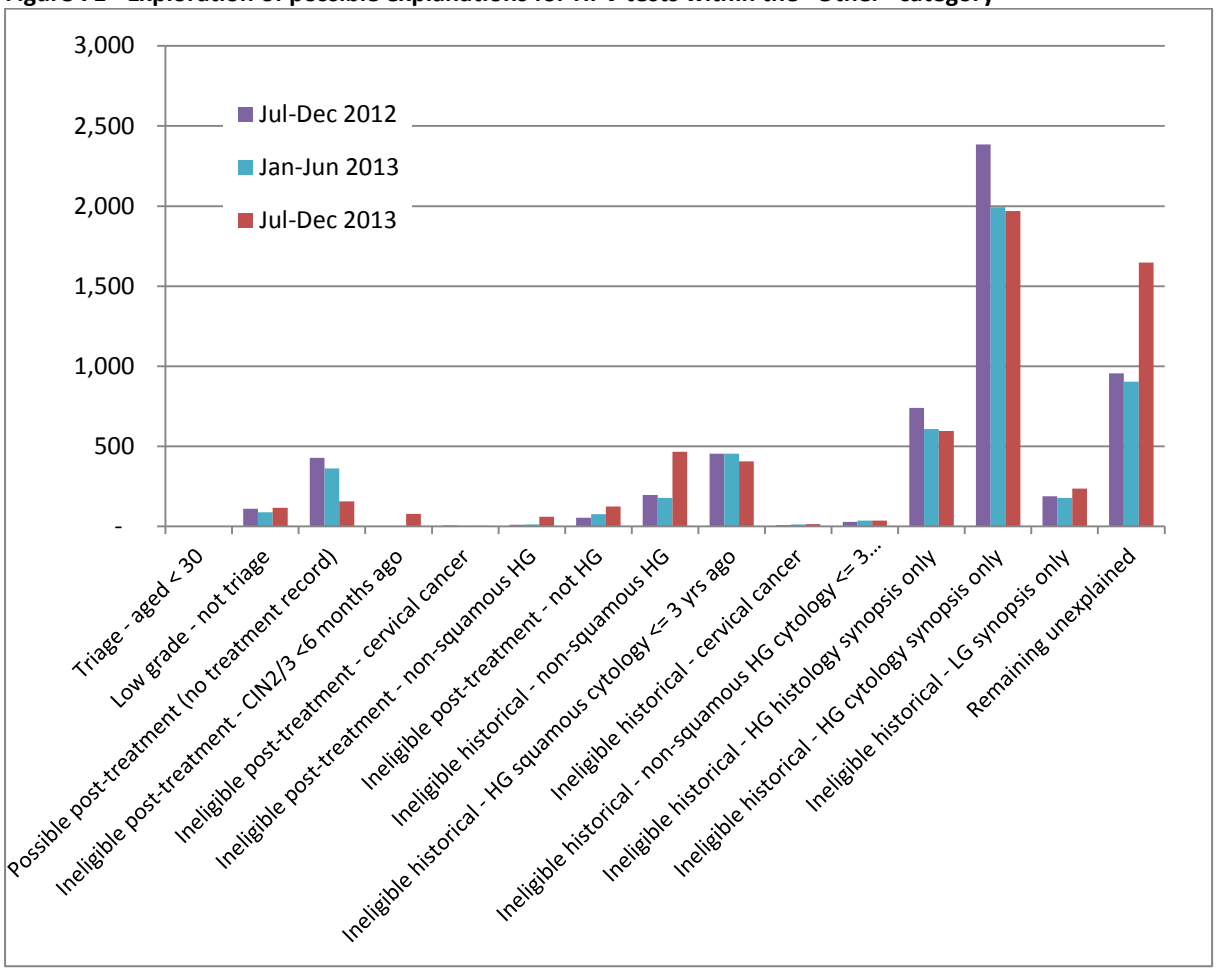
	HPV triage		Post-treatment		Historical		Taken at colposcopy		Other		Total
Laboratory	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	
Aotea Pathology Ltd	337	18.9	160	9.0	832	46.6	3	0.2	455	25.5	1,787
Canterbury Health Laboratories	232	11.6	394	19.7	648	32.3	261	13.0	469	23.4	2,004
Diagnostic Medlab Ltd	1,171	29.6	356	9.0	1,379	34.8	105	2.7	950	24.0	3,961
LabPLUS	39	4.7	219	26.5	101	12.2	130	15.7	338	40.9	827
Medlab Central Ltd	405	18.3	229	10.4	860	38.9	83	3.8	634	28.7	2,211
Pathlab	402	18.4	151	6.9	923	42.3	238	10.9	470	21.5	2,184
Southern Community Labs Dunedin	540	7.6	738	10.3	3,001	42.0	270	3.8	2,588	36.3	7,137
Total	**3,126**	**15.5**	**2,247**	**11.2**	**7,744**	**38.5**	**1,090**	**5.4**	**5,904**	**29.4**	**20,111**

Table 78 - 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	*748*	*13,351*	*5.6*
Auckland	8	1,090	0.7
Bay of Plenty	84	578	14.5
Canterbury	239	1,748	13.7
Capital & Coast	-	894	-
Counties Manukau	29	1,265	2.3
Hawke's Bay	1	410	0.2
Hutt Valley	-	296	-
Lakes	130	289	45.0
Mid Central	47	969	4.9
Nelson Marlborough	1	330	0.3
Northland	4	274	1.5
South Canterbury	27	193	14.0
Southern	87	929	9.4
Tairawhiti	-	171	-
Taranaki	-	327	-
Waikato	68	1,027	6.6
Wairarapa	1	148	0.7
Waitemata	21	2,095	1.0
West Coast	-	106	-
Whanganui	1	212	0.5
Private practice	*109*	*1,731*	*6.3*
Total	**857**	**15,082**	**5.7**

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 visit record exists, consistent with how colposcopies within the DHB/ sector are counted.

Figure 71 - Exploration of possible explanations for HPV tests within the "Other" category



HG = high grade; LG = low grade; synopsis = a note on the NCSP Register recording that an abnormality has been reported, but no explicit detailed record of the abnormality is available on the NCSP Register. These records can arise for example in women who report that they had an abnormality detected overseas, prior to being enrolled on the NCSP Register, or prior to the inception of the NCSP Register.

Appendix B – Bethesda 2001 New Zealand Modified

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

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

Appendix C – SNOMED categories for histological samples

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

Appendix D – Indicator Definitions Targets and Reporting Details

Positive predictive value calculations

Table 79 – Definition used for positive predictive value calculations

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

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

Appendix E – DHB assignment for colposcopy clinics

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

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

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

* Assignment of facilities to a DHB was provided by the NCSP

Appendix F – Glossary

Term	Definition
AGC	Atypical glandular cells
AIS	Adenocarcinoma in situ. High-grade changes to the glandular (endocervical) cells of the cervix
ASC-H	Atypical squamous cells of undetermined significance, cannot exclude high grade
ASC-US	Atypical squamous cells of undetermined significance
ASR	Age standardised rate
CI	Confidence interval
CIN	Cervical intra-epithelial neoplasia; CINI: low grade; CIN2 or 3: high grade
CIS	Carcinoma in situ. An older classification of CIN3. Abnormal cells that are confined to the surface epithelium of the cervix.
CPS	Conventional Pap (Papanicolaou) Smear
DHB	District Health Board
European/ Other	European women and women from non-Māori and non-Pacific ethnic groups (including women with no ethnicity recorded)
HPV	Human papillomavirus
hrHPV	High risk (oncogenic) human papillomavirus
HSIL	High grade squamous intra-epithelial lesion
IQR	Interquartile range
ISC	Invasive squamous carcinoma
LBC	Liquid based cytology
LSIL	Low grade squamous intra-epithelial lesion
NCSP	National Cervical Screening Programme
NILM	Negative for intraepithelial lesion or malignancy (a negative cytology report)
NSU	National Screening Unit of the Ministry of Health
NPV	Negative predictive value. The proportion of the screened population with negative test results who do not have the disease being tested for.
OR	Odds ratio
PCR	Polymerase chain reaction. A technique in molecular genetics used in many types of HPV testing
PPV	Positive predictive value. The proportion of the screened population with positive test results who have the disease being tested for.
RR	Relative risk
SC	Squamous cell carcinoma (TBS 2001)
SCC	Squamous cell carcinoma
SNOMED	Systematised Nomenclature of Medicine. A systematically organised collection of medical terminology including histopathological diagnoses.
TBS 2001 (New Zealand Modified)	The Bethesda System 2001 NZ Modified. A management system based on categorising the cytological interpretation of cellular abnormality as negative, low-grade or high-grade.
TZ	Transformation zone. The region of the cervix where the glandular precursor cells change to squamous cells

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