National Screening Unit

National Cervical Screening Programme

Monitoring Report Number 32

1 July – 31 December 2009

Technical report No. 32

Prepared November 2010
Revised December 2010
Finalised March 2011
By Megan Smith[1], Robert Walker[1], Mark Clements[2], and Karen Canfell[1,3]

[1] Cancer Epidemiology Unit, Cancer Council NSW, Sydney NSW Australia
[2] National Centre for Epidemiology and Population Health, Australian National University, Canberra ACT Australia
[3] School of Public Health, University of Sydney, Sydney NSW Australia

Acknowledgements

This report was prepared by the Cancer Council of New South Wales in collaboration with the National Screening Unit, Ministry of Health, in particular Dr Hazel Lewis, Clinical Advisor and Dr Harold Neal, Principal Technical Specialist.

We would like to acknowledge the contribution from Jane Peng and Bobby Almendral for data extraction and analyses that assisted with the verification of the calculation of the indicators, Brendon Jones and Brendon Watson for NCSP Register data extraction, Anna Maxwell for editorial support, Kimberley McGregor for assistance with report editing and proofing, and Michelle Hooper for administrative support. Members of the NCSP Advisory Group also contributed significantly through their comments on the draft report.

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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 2009 to 31 December 2009.

Key points on performance/trends

Indicator 1 — Coverage

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

- Coverage target was met nationally (79.7% of women aged 25-69 years screened in the previous three years).
- Coverage target was met for specific five-year age groups between 25-29 years and 35-64 years.
- Coverage target was met by 20 of 21 DHBs.
- Coverage targets were not met for Māori, Pacific, or Asian women.
- Five-year coverage among women aged 25-69 years exceeds 80% in all DHBs, and in women in all age groups between 25-69 years.
- Coverage in women aged 20-24 years is likely to remain lower than for other ages because age is defined at the end of the monitoring period. Coverage in this age group should be interpreted with caution, as many women will have had a shorter period in which they were eligible for screening.
- Coverage has increased nationally since the previous report, and particularly in Pacific and Asian women (from 62.2% to 64.7% in Pacific women, and from 64.3% to 67.8% in Asian women, compared to coverage in the three years to 30 June 2009), however disparities remain between ethnic groups.

Screens in women aged less than 20 years

Target: None

- In the three years to 31 December 2009, 19,058 women had a cervical sample taken when they were aged less than 20 years. This is fewer than in the previous reporting period (20,563 women).
- This represents 2.0% of all women (of any age) who were screened in the three-year period (compared to 2.2% in previous reporting period).
- Most of these women were aged 18-19 years (76%).

Indicator 2 — First screening events

Target: None

- There were 23,182 women who had their first screening event during the current reporting period – slightly fewer than in the previous reporting period.

- First screening events generally occur among young women (median age 26 years).
- Asian and Pacific women appear to have their first screening event at a later age (median ages of women with a first screening event 32 years and 28 years, respectively) than Māori women and European women/women from other ethnic groups (median ages of women with a first screening event 22 years and 25 years, respectively).

Indicator 3 — Withdrawal rates

Target: Zero between ages 20-69 years

- 47 women aged between 20-69 years withdrew from the Register during this six-month period (0.003% of those enrolled at 1 June 2009). This is lower the number that withdrew during the previous reporting period.

Indicator 4 — Early re-screening

Target: Not yet defined

- Approximately 27% of a cohort of women with a recommendation to return at the routine interval had at least one cytology sample within 30 months of their index cytology sample.
- Early re-screening occurs in all ethnic groups, but is most common among Asian women (34%), and least common among Māori and Pacific women (both 25%).
- Early re-screening has decreased since the previous report.

Indicator 5.1 — Cytology reporting

The proportion of cytology samples which are LBC has increased dramatically since the previous reporting period, from 44.7% to 89.6%.

Unsatisfactory cytology

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

- Percent conventional cytology samples unsatisfactory target met nationally, and by all nine laboratories.
- Percent LBC samples unsatisfactory target met nationally, and by three of nine laboratories.
- Nationally, the rate of unsatisfactory samples has remained the same for LBC, and decreased for conventional cytology (from 3.5% to 2.4%) since the previous report.

Negative cytology

Target: No more than 96% of cytology samples

- Percent of samples negative target met nationally and by all laboratories.

- Nationally, the percent of samples which are negative is unchanged since the previous report.

Abnormal cytology

Target: No more than 10% of cytology samples

- Percent of samples abnormal target met nationally and by seven of nine laboratories.
- Nationally, the percent of samples which are abnormal is unchanged since the previous report.

HSIL cytology

Target: No less than 0.6% of cytology samples

- Percent of samples HSIL target met nationally and by six of nine laboratories.

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 laboratories met the minimum target for HSIL+SC of 65%.
- Five of nine laboratories met the maximum target for HSIL+SC of 85%.
- Nationally, the positive predictive value of HSIL+SC has increased slightly since the previous report, from 82.2% to 83.6%.

Other cytological abnormalities

Target: None

- Nationally, the positive predictive value of ASC-H has increased since the previous report, from 47.1% to 51.0%.
- Nationally, the positive predictive value of the combination of ASC-H+HSIL+SC has increased since the previous report, from 66.3% to 70.2%.
- Nationally, the positive predictive value of glandular abnormalities has increased since the previous report, from 39.7% to 45.1% (however based on a comparatively small number of samples).

Indicator 5.3 Accuracy of negative cytology reports

Not assessed

Indicator 5.4 Histology reporting

Target: None

- 12,284 histology samples were taken during the current reporting period; 267 (2.2%) were unsatisfactory.
- Results for most severe histology from 10,652 women are presented.
- 55% of women had histology samples which were benign
- 20.8% of women had HSIL histology results.
- 51 (0.5%) women had ISCC histology results, 43 (0.4%) women had invasive adenocarcinoma histology results, and three (0.03%) had adenosquamous carcinoma histology results.

Indicator 5.5 Turnaround times

Cytology

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

- Nationally, 92.1% of cytology samples were turned around in 7 working days and 99.4% in 15 working days.
- The 7 working-days target for cytology was met by five of nine laboratories and the 15 working-days target by two of nine laboratories.
- Performance against the seven working-days target has improved since the previous report.
- Eight of nine laboratories had reported on at least 95% of samples within 15 days.

Histology

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

- Turnaround times for histology were slightly below the target nationally (86.6% within five working days, 98.9% within 15 working days), but were met by 10 of 20 laboratories (five day target) and 15 of 20 laboratories (15 day target).
- All 21 laboratories had reported on at least 95% of samples within 15 days.
- Turnaround time for histology has improved slightly since the previous reporting period.

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

Histological follow-up

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

- Targets were not met nationally (for either 90 days or 180 days).
- 78.6% of women had a histology report within 90 days of their high

	grade cytology report; 86.0% have one within 180 days. • Two DHBs met the target for histological follow-up within 90 days; one DHB met the target for 180 days. • Nationally, the proportion of women with histological follow-up has increased slightly since the previous reporting period. *Any follow-up tests* **Target:** None • Nationally, 6.2% of women have no follow-up test report (colposcopy, subsequent cytology, histology) within 180 days of their cytology report. By 360 days, only 3.9% of women have no follow-up test report. • Nationally, the proportion of women with no record of a follow-up test report has decreased since the previous reporting period. There has also been a decrease in the proportion of Māori and Pacific women with no follow-up test since the previous reporting period.
Indicator 7	<u>Colposcopy indicators</u> Not assessed (indicators are in development).

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. The Health (National Cervical Screening Programme) Amendment Act, which came into effect in 2004, underpins the NCSP's operations to ensure the co-ordination of a high quality screening programme for all women in New Zealand.

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

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

Technical information on the indicators is available in a separate report (Technical Specification for Monitoring Reports) available on the website, www.cervicalscreening.govt.nz

From Report 30 onwards, monitoring has been undertaken with technical assistance of the Cancer Council of New South Wales (CCNSW). This has coincided with use of a new reporting format, incorporating more explicit definitions and utilising data from the newly developed NCSP Register, so earlier reports are not fully comparable with Report 30 onwards.

The development of these reports is ongoing. In particular, colposcopy indicators are not calculated for this report due to the incompleteness of colposcopy data on the NCSP Register relating to this time period. These indicators will be reported on when the data has improved. Work is also underway to improve accuracy and completeness of ethnicity data on the Register and to update denominator population data. Other indicators, such as the accuracy of negative cytology reports, are in development and will be reported on in future.

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

NCSP biannual monitoring reports are reviewed by a multidisciplinary advisory and monitoring group, representing NCSP providers and consumers. The Group may make recommendations to the NSU for follow-up actions (refer www.nsu.govt.nz/health-professionals/1072.asp).

Further information about the NCSP Advisory Group and the monitoring and performance of the NCSP is available on www.nsu.govt.nz and on request from the NCSP Programme Leader:
Email: Mihikore_Andrews@moh.govt.nz
Phone: (09) 580 9025 Fax: 09 580 9001

3. Methods

Age

Unless otherwise specified, age is defined as the woman's age at the end of the reporting period, i.e. 31 December 2009.

Hysterectomy-adjusted population

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

The hysterectomy-adjustment used in this report uses estimates of the hysterectomy prevalence (both total and partial) in the New Zealand population, modelled by the Public Health Intelligence unit of the Ministry of Health. The hysterectomy prevalence was estimated by extracting information about procedures from hospital discharge data. Central estimates of survival and hysterectomy incidence in five-year age groups and five-year periods by ethnicity were then used to determine the prevalence of hysterectomy in all age groups, ethnicities and years. The 2006 data was taken from these estimates. Further information about the hysterectomy prevalence methodology can be found in the document *Setting Outcome Targets for the National Cervical Screening Programme. A Report for the National Screening Unit. November 2003* by S. Paul, M. Tobias, and C. Wright.

The hysterectomy prevalence data were applied to New Zealand population estimates from Statistics New Zealand so that estimates of the number of women in the New Zealand population (by age and ethnicity) who had not had a hysterectomy prior to 1 January 2007 were obtained. Hysterectomy prevalence figures for the whole population (the denominator) were not available by DHB, so age- and ethnicity-specific hysterectomy adjustments were applied equally across each DHB. These adjusted population estimates were then used as the denominator in the hysterectomy-adjusted calculations.

The total population estimates used were the 2001 Census population, projected to 2006. This method was used, rather than directly using the 2006 Census population, firstly to allow comparison with previous reports, and secondly because at the time the analysis was performed, estimates were not available from the 2006 census for Asian women by DHB (rather, Asian women were grouped with European women/ women from other ethnic groups within each DHB).

While both the hysterectomy prevalence estimates and the underlying population estimates were the best estimates available at the time of the analysis, both are becoming outdated. Both relate to 2006, while this report covers a period up until the end of 2009. The population estimate is also compromised by being a projection, rather than being directly based on the 2006 Census. In light of these limitations, measures which rely on the

hysterectomy-adjusted population, particularly coverage, need to be interpreted with caution. It is also possible that the extent to which the estimated hysterectomy-adjusted population differs from the true population may vary by ethnicity and/ or by DHB. This may occur, for example if an ethnic group is growing faster than was projected, and in comparison to other ethnic groups; or if the age-specific prevalence of hysterectomy has changed more in some DHBs than in others.

Ethnicity analysis

The analysis by ethnicity considered four groups – Māori, Pacific, Asian, or European/ Other, based on their priority two ethnicity codes recorded on the NCSP Register. Women for whom ethnicity information was not available were included in the "European/ Other" category. The data download used for the current analysis (NCSP Register data as at July 2010) contained ethnicity codes for approximately 93% of women on the NCSP Register.

Ethnicity data in New Zealand is collected during encounters with the health system, such as registering with primary care, during an admission to hospital or during surveys. The Ministry of Health has undertaken a number of activities to improve the quality of ethnicity data, including the development in 2004 of protocols for the collection and recording of ethnicity data. Coding of ethnicity on the NCSP Register follows the classification used by the Ministry of Health[1] [2]. The NCSP is continuing with work to improve the accuracy of ethnicity recording on the register.

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

The second Health & Disability Intelligence Unit report (Wright 2008)[3] calculated ethnicity adjustors for NCSP Register data in the period 1998-2007, based on the data from NHI and BDM. The effect of the ethnicity adjustors is to increase the number of women included in each measure who are Māori, Pacific, or Asian to compensate for undercounting, and thus to reduce it for European/Other. In this monitoring report, ethnicity adjustors for 2006 from Wright 2008 are applied to counts derived from the NSCP Register to explore the potential impact of under-counting on ethnicity-specific indicators, such as coverage. Adjustors are also not used in any of the laboratory measures, which are not presented by ethnicity. For all

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

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

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

measures presented by ethnicity, unadjusted estimates are provided as the main results, consistent with previous monitoring reports; adjusted estimates are provided for illustrative purposes. Adjustors are not directly applicable to the full time period covered by this report however, so adjusted measures should be interpreted with caution.

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 36 months 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 reported, for comparability with previous reports. The 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 are excluded. Screening of women aged less than 20 years at the time of their cervical sample is also reported by DHB.
Target	75% of eligible women within three years
Current Situation	838,578 (79.7%) women aged 25-69 at the end of the current reporting period had at least one cervical sample taken during the previous three years. This is above the target of 75%. 976,631 (92.8%) women aged 25-69 at the end of the current reporting period had at least one cervical sample taken during the previous five years. Three-yearly coverage in women aged 25-69 years varied by DHB from 73.9% (Whanganui) to 87.4% (Taranaki). 20 of the 21 DHBs achieved the 75% target in women aged 25-69 years at the end of the period (Figure 1, Table 23). The target coverage of 75% of women screened at least once in 36 months was achieved for women aged 25-29 years and for each of the specific five-year age groups between 35-64 years, but not for women aged 20-24 years, 30-34 years, or 65-69 years. Coverage was lowest in women aged 20-24 years (59.7%), however many women in this age group were not eligible for screening for the entire three-year period. Coverage was highest in women aged 50-54 years (88.9%) (Figure 2, Table 22). Three-yearly coverage also varied by ethnicity. Coverage targets of 75% were not met for Māori, Pacific, or Asian women. Coverage in these groups for women aged 25-69 years was 57.8%, 64.7%, and 67.8% respectively. Among European/Other ethnic groups, coverage achieved was 86.6% (Figure 3, Table 24). Undercounting of some ethnic groups on the NCSP Register may account for some of this discrepancy. We explored the impact on the results of

applying ethnicity adjustors estimated by Wright (2008), to re-weight the counts of women screened based on the level of under- and over-counting for different ethnic groups. As expected, the adjustment narrows the gap between the groups, such that it ranges from 68.6% (Māori) to 78.6% (European/ Other) among women aged 20-69 years, and from 68.9% (Māori) to 89.2% (Asian) among women aged 25-69 years. Adjusted estimates are shown in Table 25 and Table 26.

When compared to the findings for three-year coverage, five-year coverage had similar patterns of variation by age, DHB, and ethnicity to three-year coverage. Five-year coverage varied by age from 64.8% in women aged 20-24 years to 100% in women aged 45-49, 50-54 and 60-64 years (Figure 5, Table 27). Among women aged 25-69 years at the end of the period, it ranged from 86.5% in Whanganui to 100.0% in Taranaki (Figure 4,Table 28), and from 69.9% (Māori) to 100.0% (European/Other ethnic groups) (Figure 6, Table 29).

Screens in women aged less than 20 years

A total of 19,058 women who were aged less than 20 years at the time of their cervical sample had a cervical sample taken in the three years to 30 June 2009. 2.0% of women who were screened at any age were aged less than 20 years at the time their cervical sample was taken (Table 31).

The number of women aged less than 20 years at the time they were screened varied by DHB from 125 (West Coast) to 3,074 (Canterbury), however some differences in counts are to be expected due to differences in population size and age structure between DHBs. In order to take differences in population size between DHBs into account, the number of women who were screened in the previous three years and aged 15-19 years at the time of their cervical sample in each DHB was divided by the estimated population of females aged 15-19 years in that DHB. Note that as the events occurred over a three year period, and the population estimate is for a single year, this cannot be interpreted directly as the proportion of 15-19 year old females in each DHB who have been screened in the last three years. However, this does allow the variation in DHB populations to be partly accounted for, and thus can give an indication of where screening among women aged less than 20 years is most common. Estimates for this proportion ranged from 6.3% (Whanganui) to 16.8% (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 <20 year olds at a relatively high rate (for example South Canterbury). Details of screens of women aged less than 20 years by DHB are presented in Figure 7, Table 31 and Table 20.

Further exploratory analysis determined that approximately three quarters of the women who were aged less than 20 years at the time of their cervical sample were aged 18-19 years (76% overall; range across DHBs 64%-87%). This may represent opportunistic screening of women aged 18-19 years.

Trends

Coverage

Overall coverage rates in New Zealand among women aged 25-69 years at the end of the monitoring period have increased slightly from 78.6% in the three years to 30 June 2009 to 79.7% in the three years to 31 December 2009.

Coverage among women aged 25-69 years has increased in all ethnic groups since the previous report. The increase is slight for Māori women (from 56.5% to 56.9%) and for European /Other ethnic groups (from 86.0% to 86.6%), but more substantial for Pacific women (from 62.2% to 64.7%) and Asian women (from 64.3% to 67.8%).

Trends over the three most recent reporting periods are shown in Appendix F (Figure 33, Figure 34, and Figure 35).

Screens in women aged less than 20 years

The number of women screened who are aged under 20 years has decreased from 20,563 in the previous reporting period to 19,058 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 2.2% to 2.0%). The proportion of these women who were aged 18-19 years has increased slightly since the previous reporting period (from 75% to 76%). The number of women screened who are aged less than 20 years has decreased in all DHBs.

The trend over the three most recent reporting periods is shown in Appendix F (Figure 36).

Comments

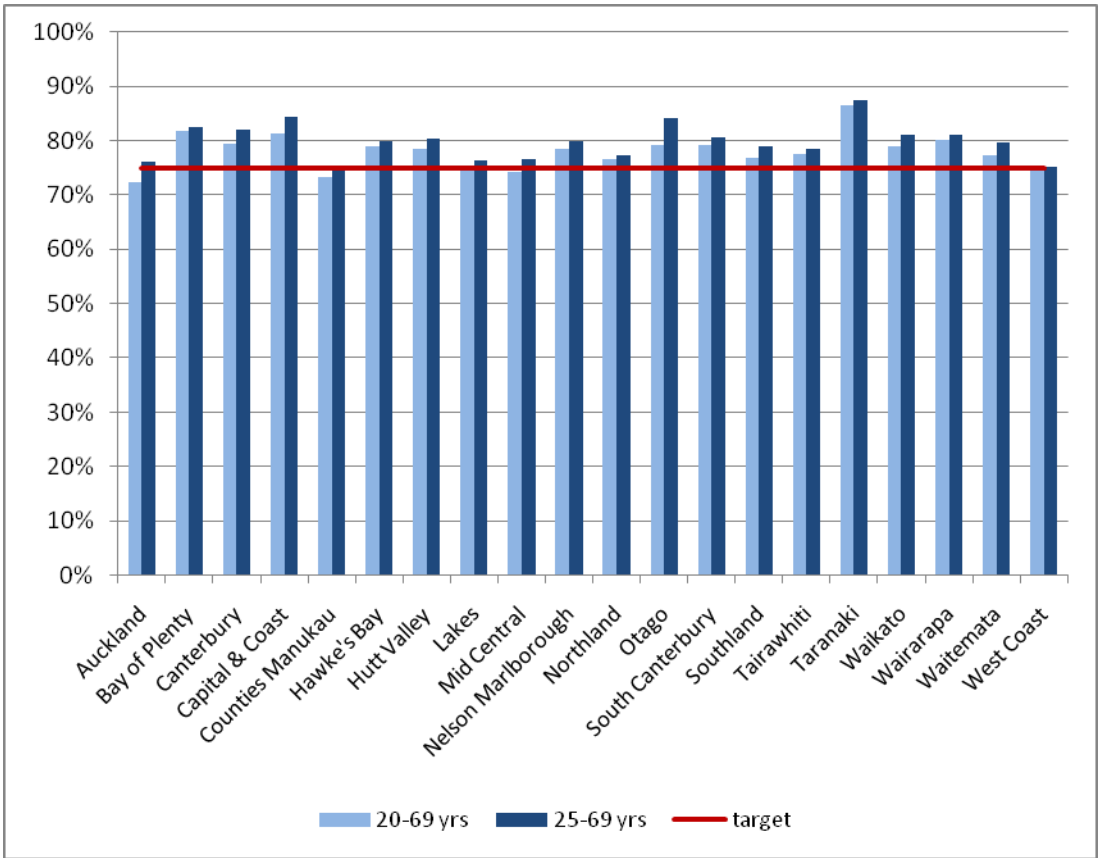
Calculated coverage in women aged 45-54 and 60-64 years in the previous five years exceeds 100%. This is likely to be because the denominator estimate is not perfect. As discussed in Methods (*Hysterectomy-adjusted population*, page 7), the hysterectomy prevalence used to make the adjustment includes 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. Also, the unadjusted population is based on the 2001 census data, projected to 2006, whereas the time period for screening considered here is January 2005 – December 2009. As a result of these limitations, coverage in all age groups must be interpreted with some caution.

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 exploration (in Monitoring Report 30) of misclassification via ethnicity adjustors indicates that this is a factor, but is unlikely to explain all of the difference in observed coverage rates by ethnicity. Estimates which have adjusted for undercounting should be interpreted with caution however, since adjustors relate to 2006, and the periods considered for coverage are wider – ranging from 2005-2009 (three-year coverage), and 2005-2009 (five-year coverage). Like the primary

(unadjusted) estimates, they also rely on the accuracy of the hysterectomy-adjusted population estimate.

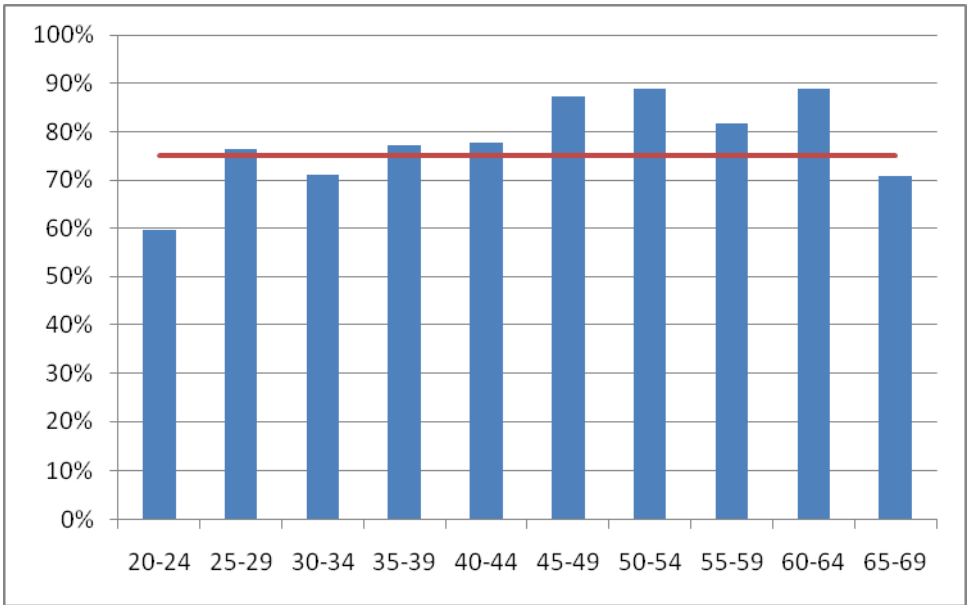
Coverage in women aged 20-24 years is likely to remain lower than for other ages and coverage in this age group should be interpreted with caution, as many women will have had a shorter period in which they were eligible for screening.

Figure 1 - Three-year coverage by DHB (women screened in the three years prior to 31 December 2009, as a proportion of hysterectomy-adjusted 2006 female population)



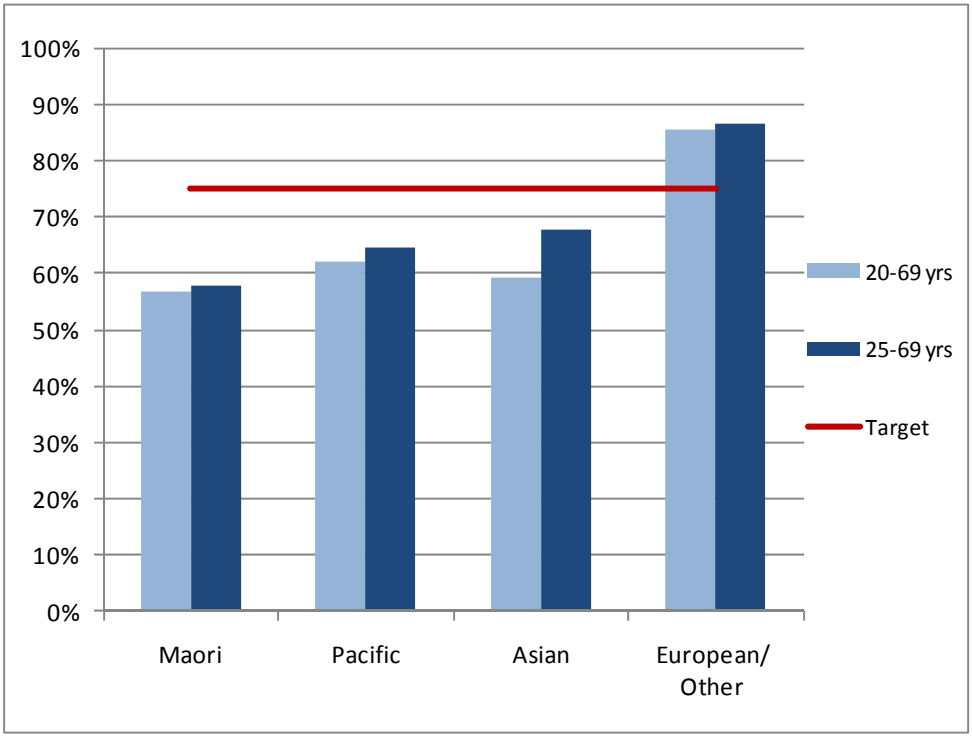
Note: Coverage calculated using population projection for 2006 based on 2001 Census data. Target 75%, hysterectomy adjusted.

Figure 2 - Three-year coverage by five-year age group (women 20-69 years screened in the three years prior to 31 December 2009, as a proportion of hysterectomy-adjusted 2006 female population)



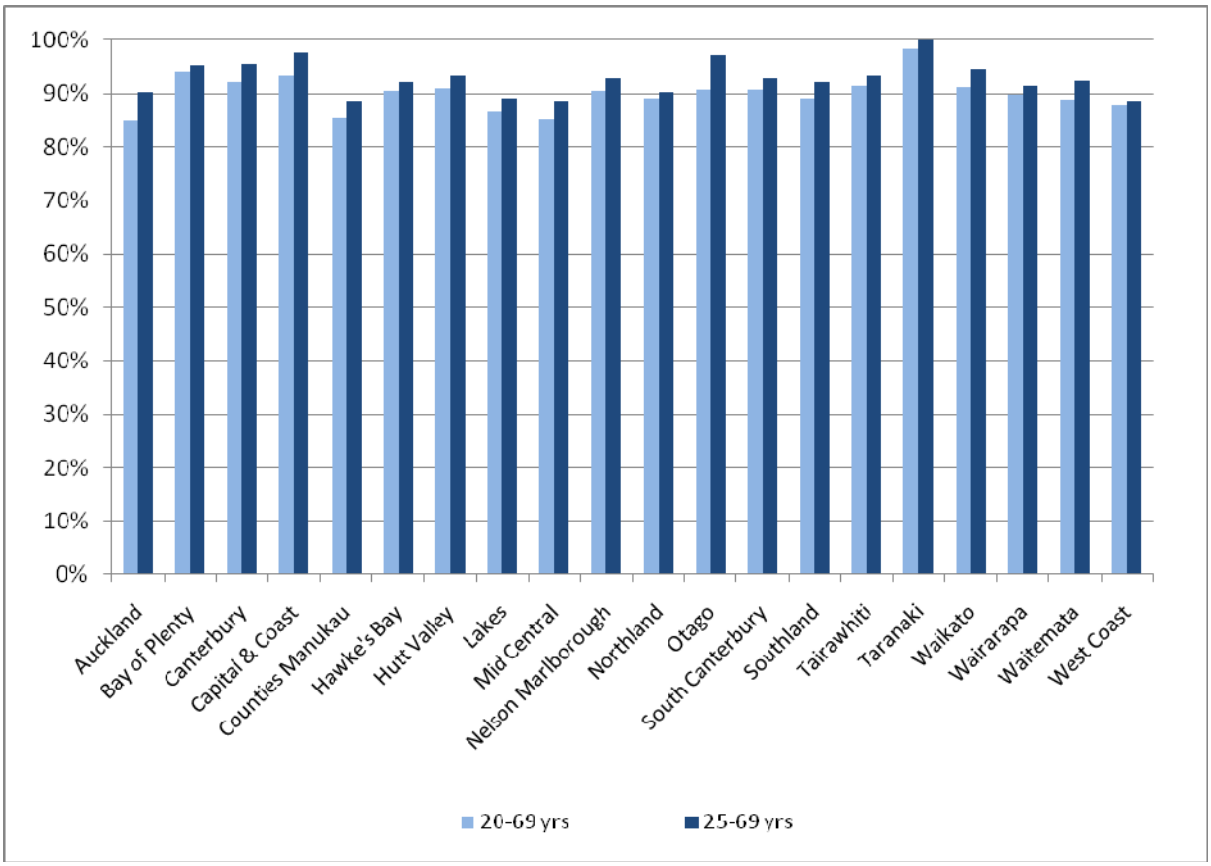
Note: Coverage calculated using population projection for 2006 (Target- red line)
Target 75%, hysterectomy adjusted.

Figure 3 - Three-year coverage by ethnicity (women screened in the three years prior to 31 December 2009, as a proportion of hysterectomy-adjusted 2006 female population)



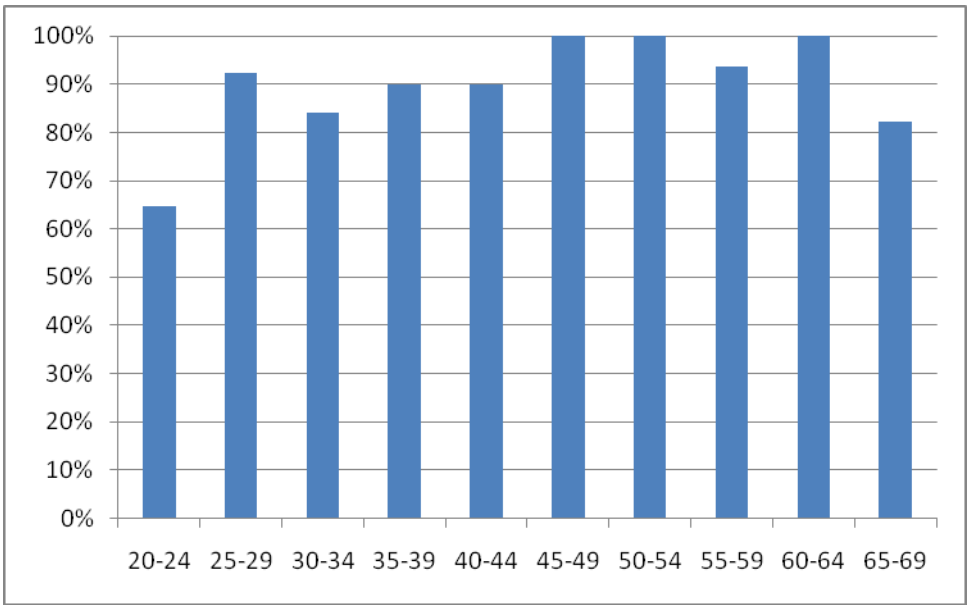
Note: Coverage calculated using population projection for 2006 based on 2001 Census data.
Target 75%, hysterectomy adjusted.

Figure 4 - Five-year coverage by DHB (women screened in the five years prior to 31 December 2009, as proportion of hysterectomy-adjusted 2006 female population)



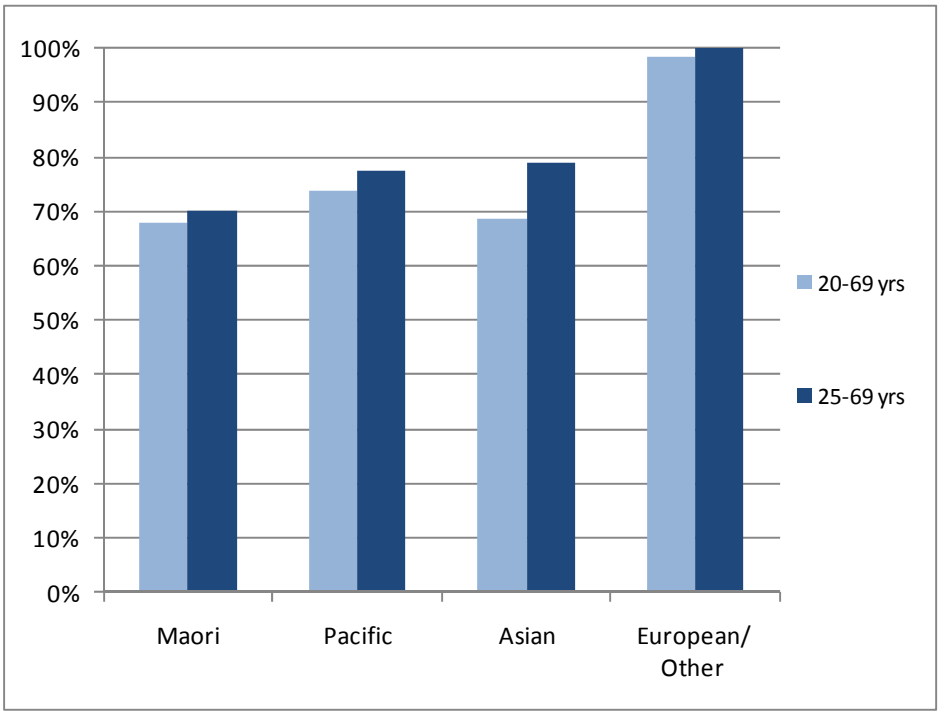
Note: Coverage calculated using population projection for 2006 based on 2001 Census data.

Figure 5 - Five-year coverage by five-year age-group (women screened in the five years prior to 31 December 2009, as proportion of hysterectomy-adjusted 2006 female population)



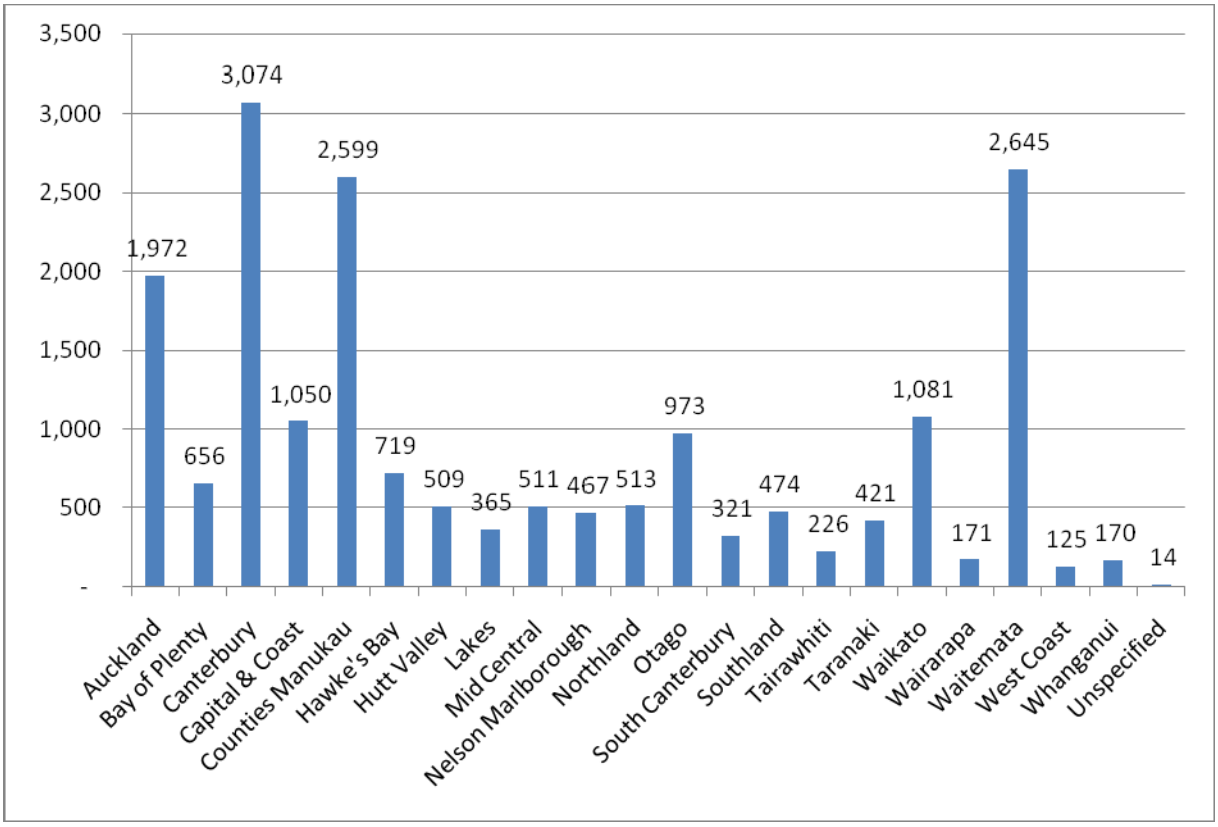
Note: Coverage calculated using population projection for 2006 based on 2001 Census data.

Figure 6 - Five-year coverage by ethnicity (women screened in the five years prior to 31 December 2009, as a proportion of hysterectomy-adjusted 2006 female population)



Note: Coverage calculated using population projection for 2006 based on 2001 Census data.

Figure 7 - Number of women screened who were aged less than 20 years at the time of their cervical sample in the three years to 31 December 2009, by DHB



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 2009).

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 20-29 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

23,182 women aged 20-69 years at the end of the period had their first screening event in the period 1 July – 31 December 2009. This constituted 10.9% of the 213,454 women aged 20-69 years with a cervical sample taken in the period (screening event), and 1.9% of the eligible population. The median age (at the end of the reporting period) of women with a first event recorded was 26 years.

The age group with the highest number of first screening events was women aged 20-24 years. 10,053 women aged 20-24 had their first screening event recorded on the register during this reporting period, accounting for 43.4% of all women aged 20-69 years with first screening events (Figure 8, Table 32). From this age group, first screening events decreased with increasing age. Women aged 20-24 years also had the highest proportion of women screened in their age group who were being screened for the first time (39.9%) (
Figure 9), and the highest proportion of eligible women at that age with a first screening event recorded in the current reporting period (7.2%) (Figure 10).

The DHBs with the highest number of women aged 20-69 years with first screening events were Auckland (3,369) and Waitemata (3,185). The DHBs where women with first screening events, as a proportion of all women with screening events, was the highest were Auckland (14.2%), Counties Manukau (13.3%), and Capital Coast (13.2%). The DHB where this proportion was lowest was South Canterbury (6.0%) (Figure 11, Table 1).

The ethnic group with the highest number of women with first screening events was European/Other ethnic groups (13,913) (Table 2). This mainly reflects their larger population size, however, as the group with the highest proportion of their eligible population being screened for the first time was Asian women (3.9%), compared to 1.7% for European/Other ethnic groups (Table 2). The proportion of women screened who were being screened for the first time was also highest for Asian women (25.4%) (Table 2, Figure 12). This proportion is likely to be related to the median age of women with a first screening event, as groups where it is

	comparatively high (25.4% for Asian women, 18.7% for Pacific women) also have an older median age of women with a first screening event (32 years for Asian women, 28 years for Pacific women) (Table 3).
Trends	The number of women with a first screening event recorded on the NCSP Register has decreased slightly, from 24,040 women in the previous period, to 23,182 in the current period. The proportion of the eligible population that this represents (1.9%) is very similar to what it was in the previous reporting period (2.0%). The proportion of women with screening events who are women with their first screening event being recorded on the NCSP Register (10.9%) is very similar to the previous period (11.1%). Patterns by age, DHB, and ethnicity are very similar to those seen in the previous report. As was the case in the previous report, the median age of a first screening event was older for Asian and Pacific women than for Māori women and women in other ethnic groups, and women with first screening events constituted a larger proportion of the women screened for Asian and Pacific women.
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 taken outside New Zealand. Some differences in counts and proportion of women with first screens among screened women between DHBs are to be expected due to differences in population size and age structure. Proportions have been provided to partially account for this, however they should be interpreted with caution. For example, a relatively low number of women with first screens as a proportion of all women screened could be due to either a lower number of women with first events, or a higher number of women with screening events (which could be due to high coverage, or higher abnormality rates, as the latter require women to return more frequently). For example the DHB with the highest coverage, Taranaki, does not have a particularly high proportion of women with first events. If coverage is remains high, then this proportion will inevitably decrease, as fewer women are available to be screened for the first time. Conversely, a relatively high number of women with first screens as a proportion of all women screened could be due to either a higher number of women with first events (due to increasing coverage), or a lower number of women with screening events (for example due to less frequent screening among women who have been screened at least once since the inception of the register).

Figure 8 - Number of first screening events by five-year age group

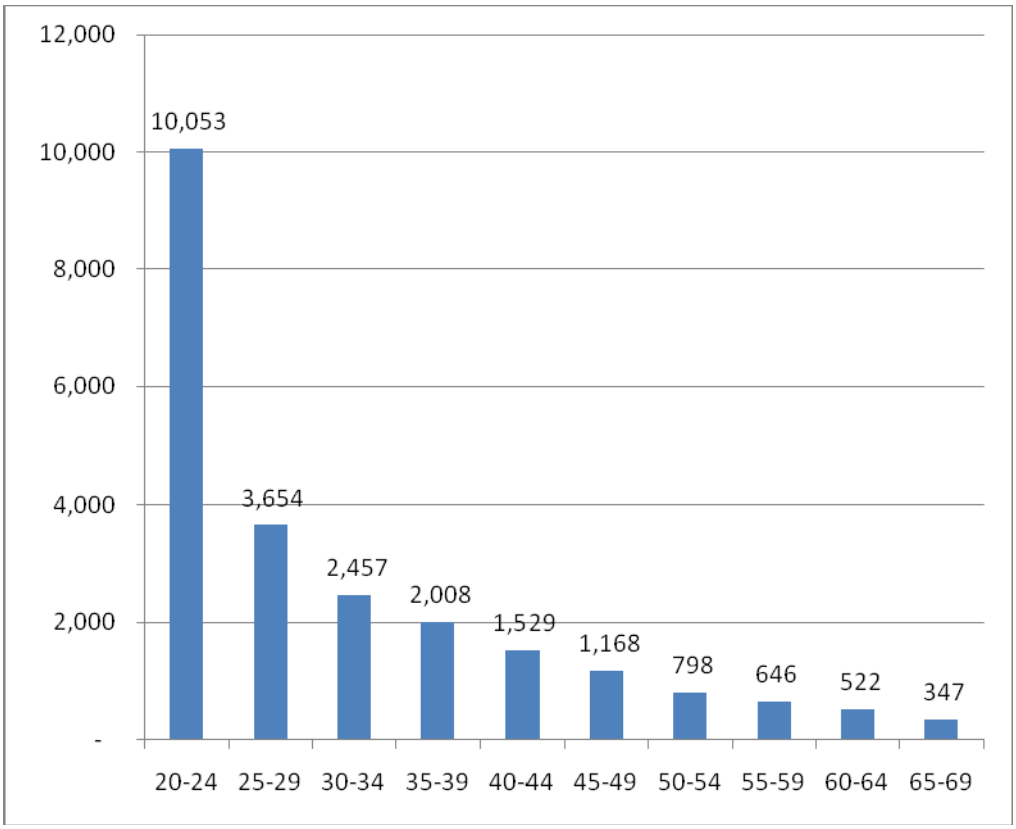


Figure 9 – Women with first screening events as a proportion of all women screened during the reporting period, by five-year age group (women aged 20-69 years at 31 Dec 2009)

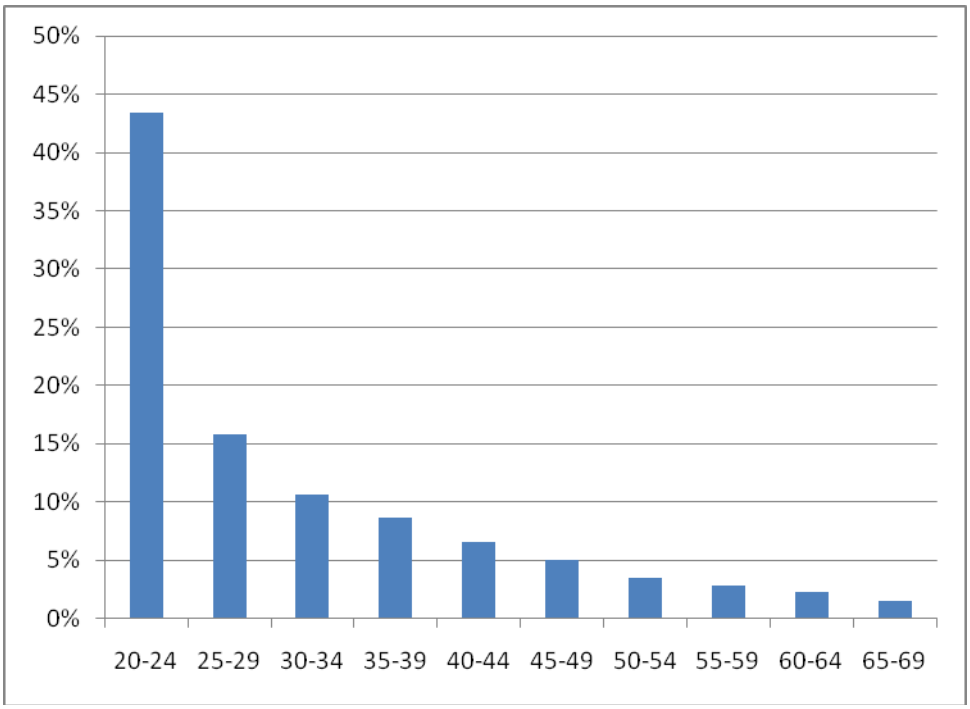
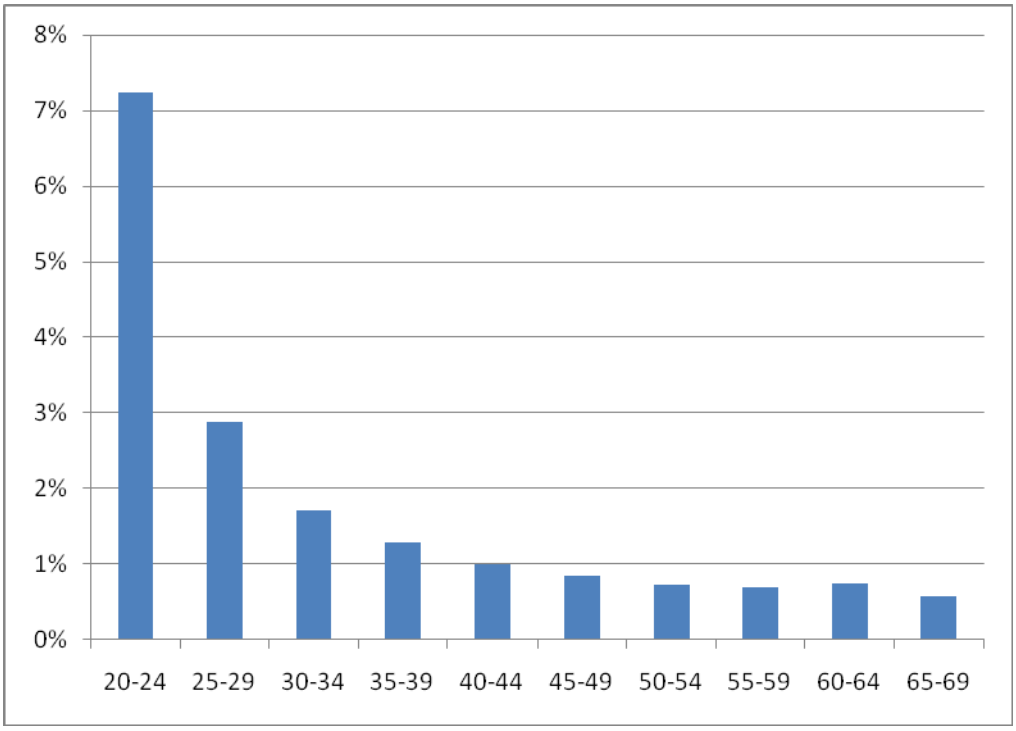


Figure 10 - Proportion of population* in that age group with their first screening event during the reporting period (women aged 20-69 years at 31 Dec 2009)



**Hysterectomy adjusted, 2006*

Figure 11 - Women with first screening events as a proportion of all women screened during the reporting period, by DHB (women aged 20-69 years at 31 Dec 2009)

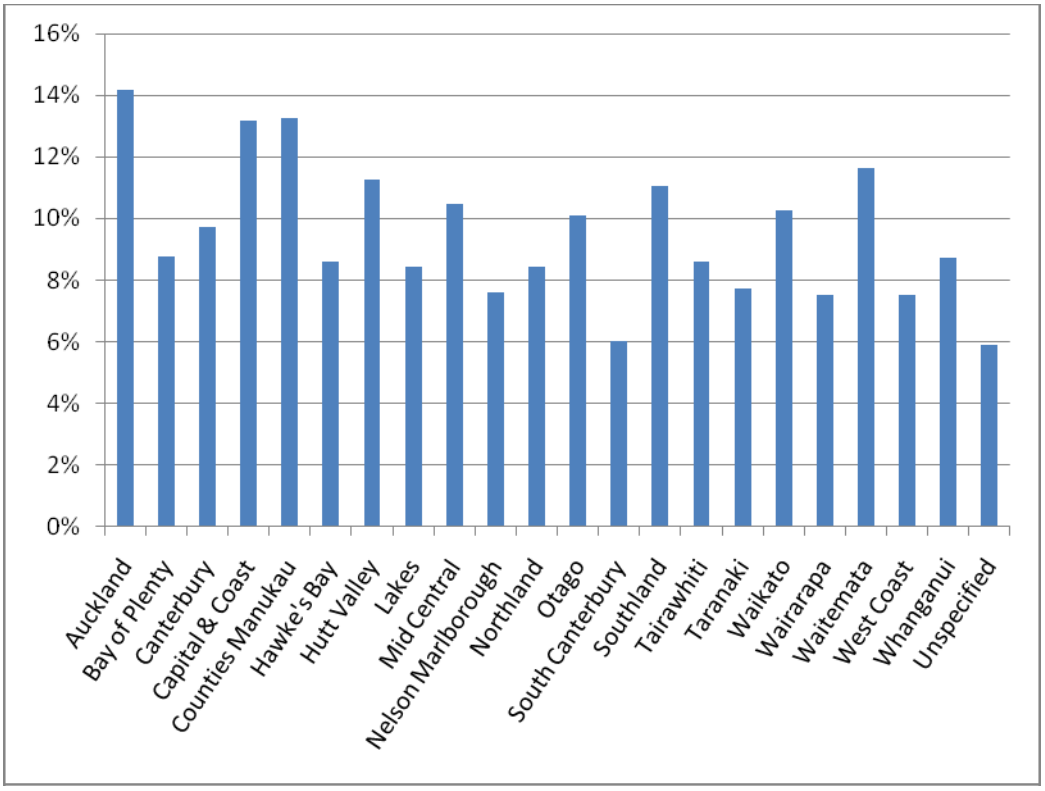


Figure 12 - Women with first screening events as a proportion of all women screened during the reporting period, by ethnicity

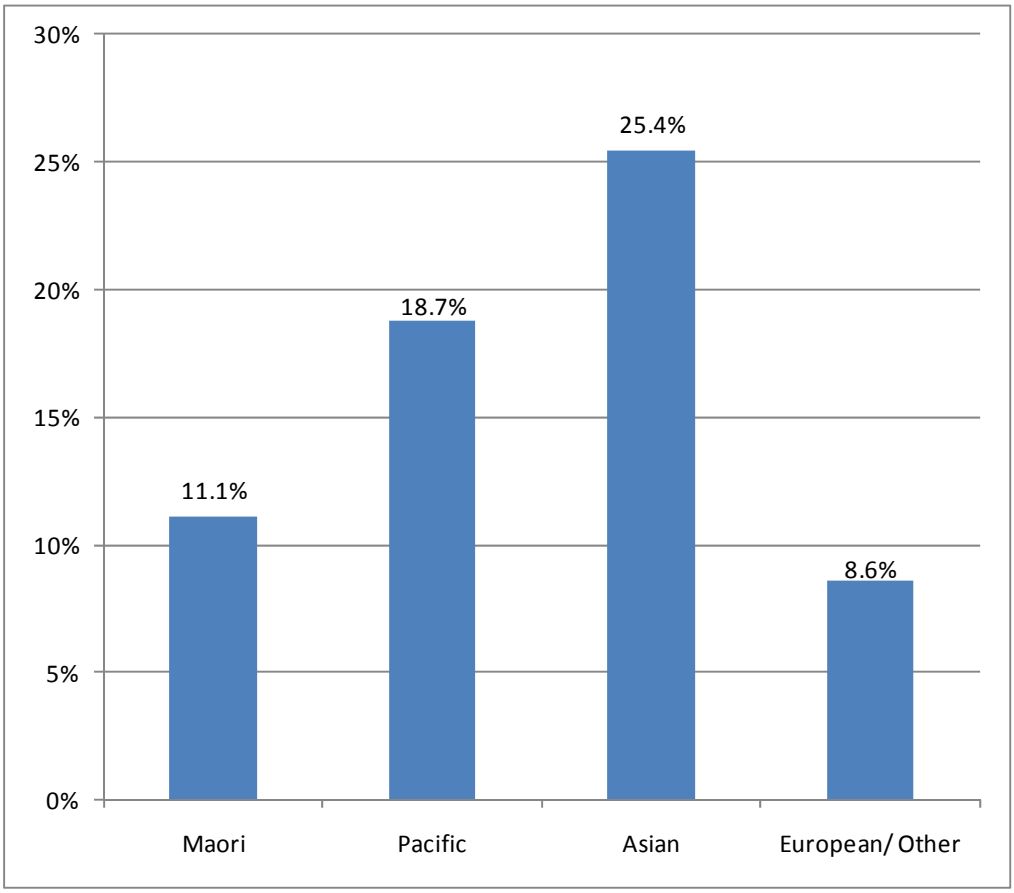


Table 1 - Women (ages 20-69 years) with first screening events as a proportion of i) total number of women with screening events, and ii) eligible women, by DHB, for period 1 July to 31 December 2009

DHB	Women with first events (20-69 yrs)	As a proportion of women with a screening event[i]		As a proportion of eligible population[ii]	
		N (20-69 yrs)	%	N	%
Auckland	3,369	23,779	14.2	139,690	2.4
Bay of Plenty	903	10,323	8.7	54,335	1.7
Canterbury	2,390	24,614	9.7	136,342	1.8
Capital & Coast	2,104	15,988	13.2	86,142	2.4
Counties Manukau	2,854	21,501	13.3	126,416	2.3
Hawke's Bay	632	7,361	8.6	41,024	1.5
Hutt Valley	750	6,671	11.2	39,406	1.9
Lakes	431	5,112	8.4	28,822	1.5
Mid Central	872	8,312	10.5	45,257	1.9
Nelson Marlborough	521	6,866	7.6	38,268	1.4
Northland	602	7,137	8.4	40,572	1.5
Otago	974	9,639	10.1	52,175	1.9
South Canterbury	153	2,540	6.0	14,366	1.1
Southland	583	5,280	11.0	30,987	1.9
Tairawhiti	178	2,067	8.6	12,037	1.5
Taranaki	414	5,355	7.7	28,295	1.5
Waikato	1,734	16,870	10.3	94,294	1.8
Wairarapa	160	2,129	7.5	10,529	1.5
Waitemata	3,185	27,407	11.6	146,592	2.2
West Coast	103	1,373	7.5	8,263	1.2
Whanganui	263	3,011	8.7	16,953	1.6
Unspecified	*7*	*119*	*5.9*	-	-
Total	**23,182**	**213,454**	**10.9**	**1,190,853**	**1.9**

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 for that DHB, as a percent

Table 2 - Women (ages 20-69 years) with first screening events as a proportion of i) total number of women with screening events, and ii) eligible women, by ethnicity, for period 1 July to 31 December 2009

DHB	Women with first events (20-69 yrs)	As a proportion of women with a screening event[i]		As a proportion of eligible population[ii]	
		N	%	N	%
Māori	2,445	21,991	11.1	163,913	1.5
Pacific	1,827	9,747	18.7	68,598	2.7
Asian	4,997	19,642	25.4	129,626	3.9
European/Other	13,913	162,074	8.6	828,716	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 for that DHB, as a percent

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

Ethnic Group	Median Age (years)
Māori	22
Pacific	28
Asian	32
European/Other	25

Indicator 3 – Withdrawal rates

Definition

The number of women, by age-group and DHB, 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 2009, whose enrolment ended within the reporting period.

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, 1,346,054 women aged 20-69 years, and 1,485,657 women in total were enrolled on the NCSP Register. 48 women withdrew from the NCSP Register during the reporting period, 47 of whom were aged 20-69 years at the end of the monitoring period (0.003% of women who were enrolled at the commencement of the period) (Table 4).

The DHBs with the largest number of withdrawals were Auckland (eight women), Canterbury (six women) and Capital & Coast (six women) (Figure 13, Table 34). In all DHBs the proportion of those enrolled at the beginning of the period who withdrew was extremely small (<0.02%). No women withdrew in Hutt Valley, Lakes, Mid Central, Wairarapa or West Coast during this period (Table 34).

The age groups with the largest proportion of women withdrawing among those who were enrolled at the beginning of the period were women who were aged 60-64 years at the end of the period (0.008%) and women aged 65-69 years at the end of the period (0.007%). Among women aged 70 years or more at the end of the reporting period (outside the screening target age range), 0.001% withdrew during the reporting period (Table 2, Figure 14).

No Pacific women withdrew during the current reporting period, and the proportion of Māori, Asian, and other ethnic group women withdrawing was extremely small (Māori 0.001%, Asian 0.003%, European/Other 0.004%) (Table 5, Figure 15).

Trends

The number of women who withdrew in the current reporting period (47 aged 20-69 years, 48 any age) is less than the number who withdrew in the previous reporting period (56 aged 20-69 years; 59 any age).

Trends over the three most recent reporting periods are shown in Appendix F, Figure 37, Figure 38, Figure 39, and Figure 40).

Comments The proportion of women choosing to actively withdraw from the NCSP Register is extremely small.

Withdrawals relate to active withdrawals, where women specifically elect to be removed from the NCSP Register. It does not include, for example, women who have moved overseas, or who have died during the period, and who therefore are not having tests recorded on the NCSP Register.

Figure 13 - Number of women (aged 20-69 years) who withdrew from the NCSP Register by DHB, 1 July 2009 - 31 December 2009

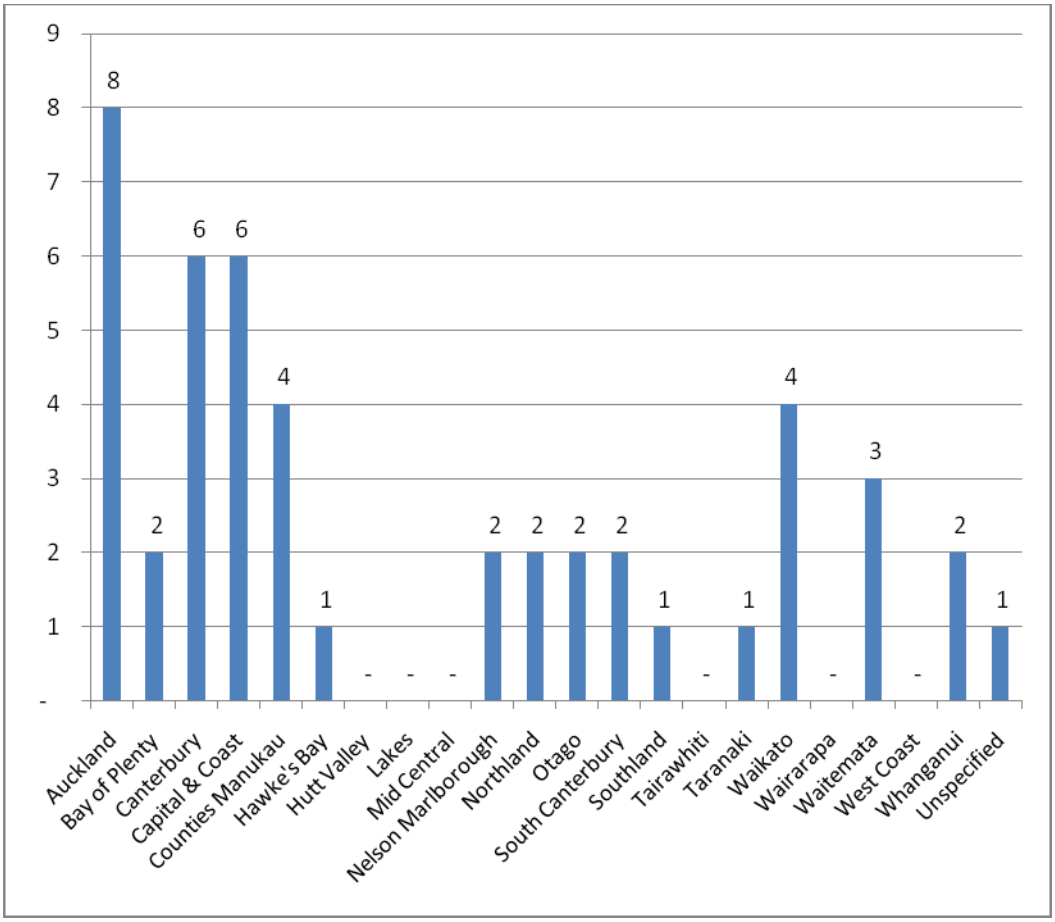


Figure 14 - Number of women (aged 20-69 years) who withdrew from the NCSP Register by age, 1 July 2009 - 31 December 2009

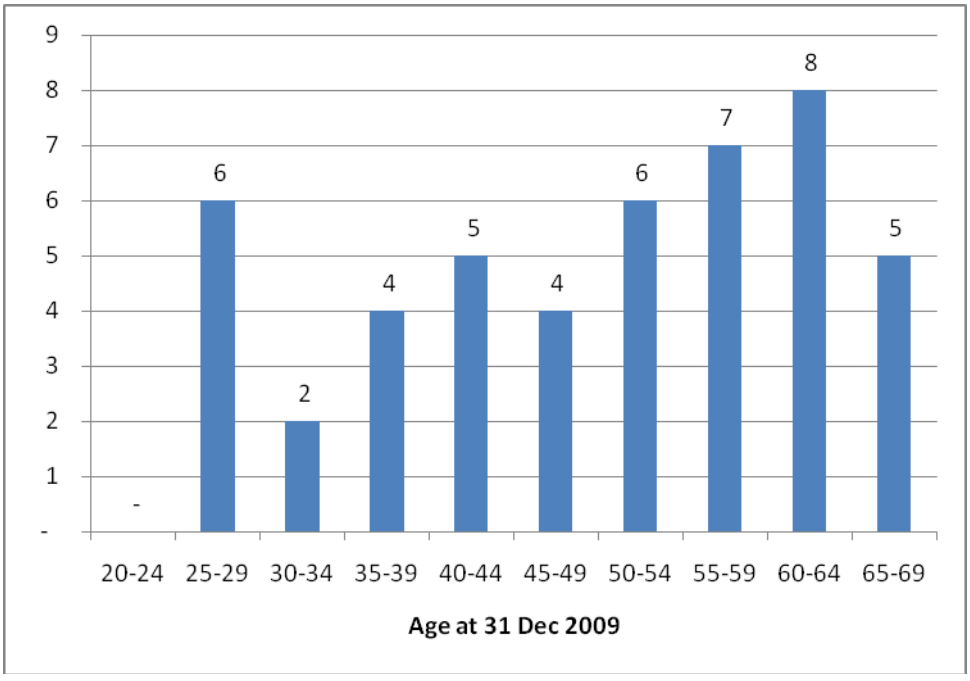


Figure 15 - Number of women (aged 20-69 years) who withdrew from the NCSP Register by ethnicity, 1 July 2009 - 31 December 2009

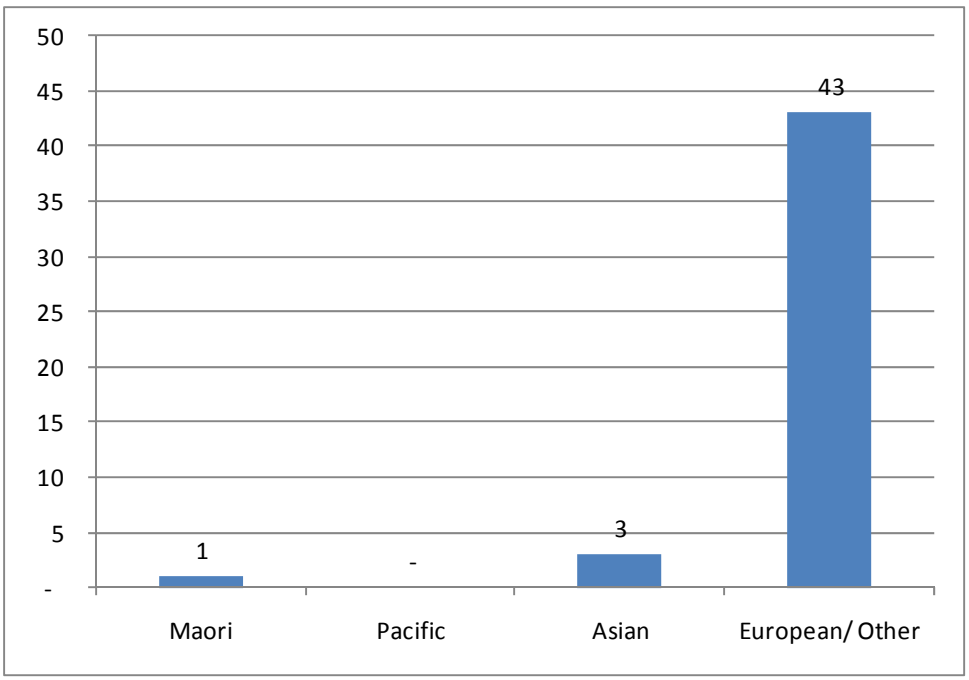


Table 4 - Number of women who withdrew from the NCSP Register 1 July 2009 - 31 December 2009 by age, and proportion of women who were enrolled at the start of the reporting period who withdrew

Age group	Women enrolled at start of period	Women who withdrew during period	
		N	% *
<20	5,282	-	0
20-24	81,262	-	0.000
25-29	130,598	6	0.005
30-34	152,483	2	0.001
35-39	183,223	4	0.002
40-44	180,731	5	0.003
45-49	178,801	4	0.002
50-54	149,419	6	0.004
55-59	120,763	7	0.006
60-64	99,210	8	0.008
65-69	69,564	5	0.007
70+	134,321	1	0.001
Total (all ages)	**1,485,657**	**48**	**0.003**
Total (ages 20-69)	**1,346,054**	**47**	**0.003**

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

Table 5 - Number of women (aged 20-69 years) who withdrew from the NCSP Register 1 July 2009 - 31 December 2009 by ethnicity, and proportion of women who were enrolled at the start of the reporting period who withdrew

Age group	Women enrolled at start of period	Women who withdrew during period	
		N	% *
Māori	150,389	1	0.001
Pacific	69,479	-	0.000
Asian	103,575	3	0.003
European/Other	1,022,611	43	0.004
Total	**1,346,054**	**47**	**0.003**

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

Indicator 4 – Early re-screening

Definition

The proportion of these 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 2007 – 31 March 2007 (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 2007 (NZ Modified Bethesda code R1). Using this method of calculating the measure allows the 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 (TBS 2001 NZ Modified 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 2009).

Target

A target has not yet been set for this cohort-based calculation method. This method of calculation will result in a higher value than the old interval-based method, because all women are followed over the same length of time (30 months). A more detailed discussion of the reasons for this, and the rationale for the cohort-based method, can be found in Monitoring Report 30.

Current Situation

40,051 women had a smear taken in February or March 2007, 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, 10,959 (27.4%) had at least one subsequent smear in the following 30 months.

There was wide variation in early re-screening by DHB. Early re-screening was most common in Waitemata (39.8%) and Lakes (38.3%), and was least common in Taranaki (12.6%) (Figure 16, Table 36).

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 (32.4%), and older women (aged 65-69 years) were the least likely to be re-screened early (20.4%) (Figure 17, Table 35).

Among the ethnic groups considered, Asian women were the most likely to be

re-screened early (34.0%). Early re-screening was least common among Māori women (25.5%) and Pacific women (25.1%) (Figure 18, Table 37).

Trends

The level of early re-screening is slightly lower than in the previous monitoring report, when it was 28.8%.

DHBs with the lowest and highest levels of early re-screening are largely unchanged since the previous report. Early re-screening has reduced in most DHBs, including among DHBs where early re-screening was most common in the previous report (Auckland, Bay of Plenty, Counties Manukau, Wairarapa, Waitemata), although the level of re-screening has increased slightly in Lakes. Generally, the DHBs with an increase (Lakes, Tairawhiti) have a smaller cohort and the increase is not significant. The trend over the three most recent reporting periods is shown in Figure 41 (Appendix F).

Compared to the previous report, early re-screening has either reduced or is largely unchanged in all age groups. Early re-screening has decreased in all ethnic groups. The trends for early re-screening by age and ethnicity over the three most recent reporting periods are shown in Figure 42 and Figure 43 (Appendix F).

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. Previous reports have 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.

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 Bethesda System 2001 NZ modified recommendation code for urgent referral regardless of cytological findings (R14) to try and exclude some of these cases, but this probably does not exclude all screens performed in response to clinical symptoms.

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

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

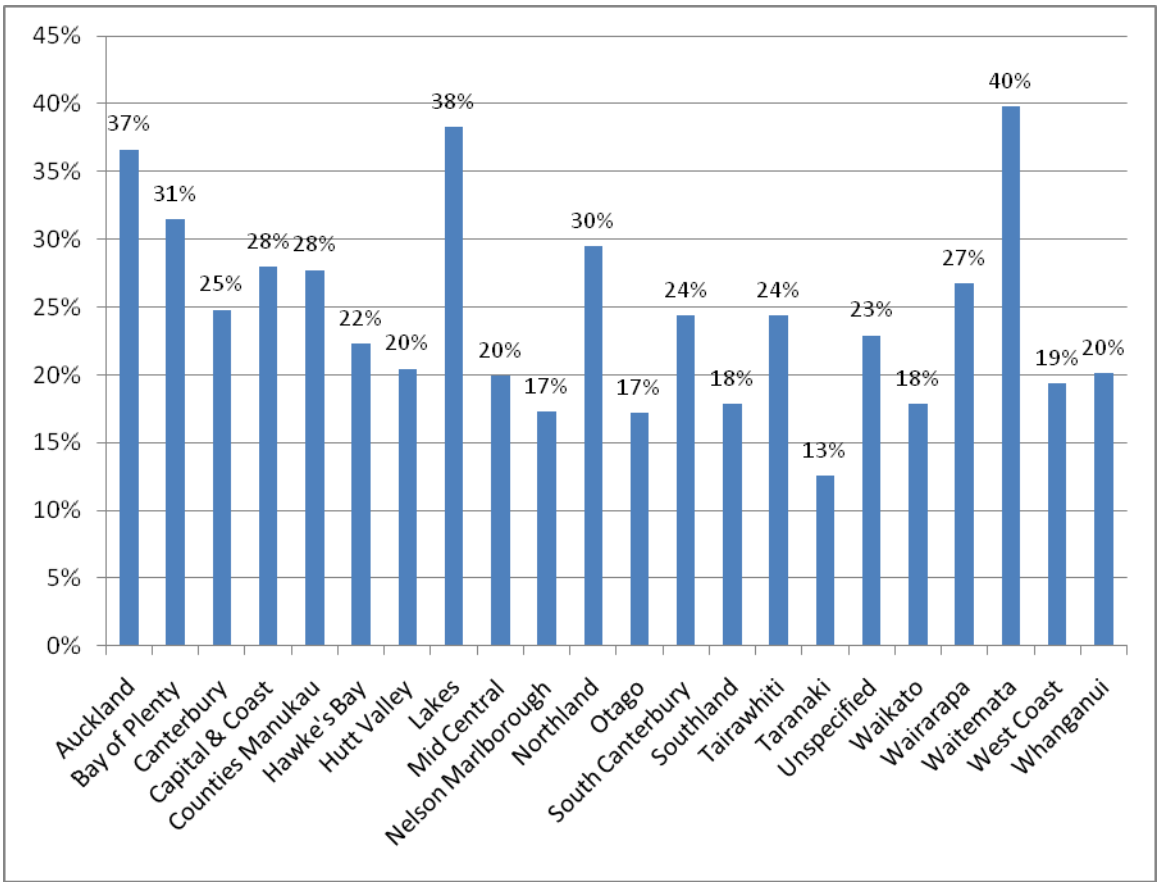


Figure 17 - Proportion of women recommended to return a the routine interval (three years) who were re-screened early, by five-year age group

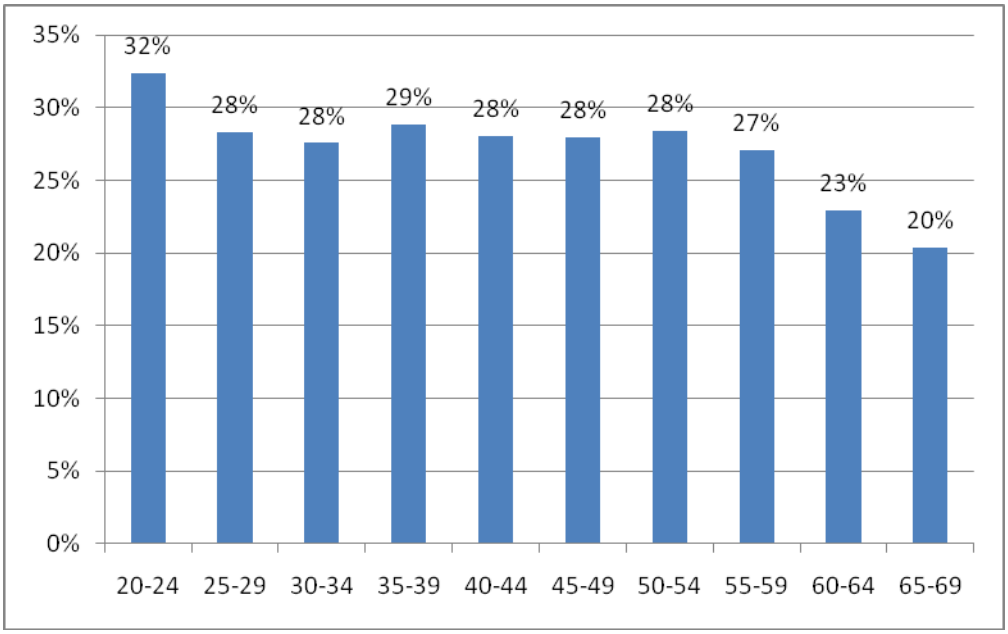
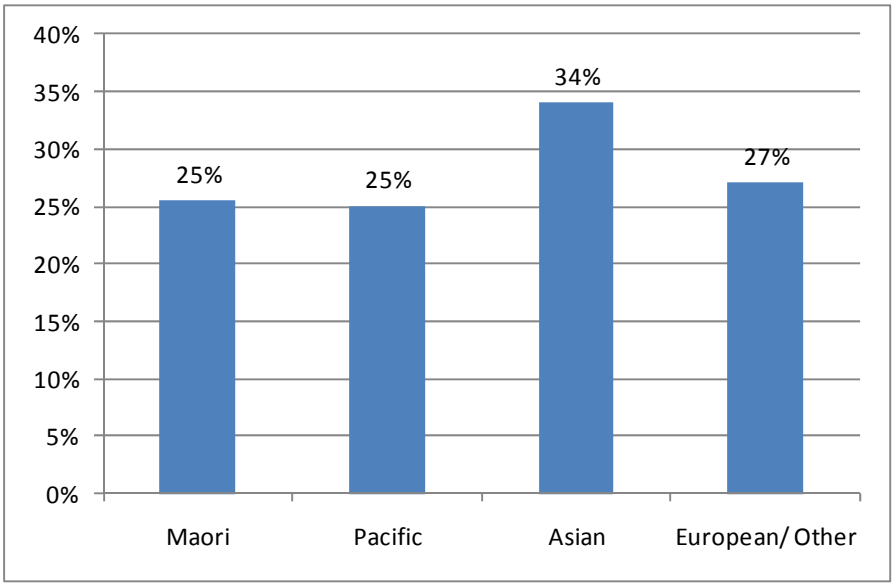


Figure 18 - Proportion of women recommended to return a the routine interval (three years) who were re-screened early, by ethnicity



Indicator 5 – Laboratory indicators

The indicators include cytology, histology reports (encompassing cytology and histology reporting rates, positive predictive value of cytology predicting HSIL), laboratory turnaround times, the accuracy of negative cytology reports (future development), and unsatisfactory samples. In future, reports will include volumes of HrHPV tests according to NCSP guidelines.

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 and LBC samples. Reporting rates for negative cytology, total abnormal cytology, and other reporting categories are as a percentage of all satisfactory cytology samples.
Target	1-5% of LBC and 1-8% of conventional cytology samples reported as unsatisfactory No more than 96% of satisfactory samples reported as negative No more than 10% of satisfactory samples reported as abnormal No less than 0.6% of satisfactory samples reported as HSIL (Bethesda HS1 or HS2)
Current Situation	Nine laboratories reported on cytology taken during this reporting period. A total of 218,350 cytology samples were taken, 89.6% of which were liquid-based

cytology (LBC), 10.1% were conventional cytology, and 0.3% were a combination of the two (Table 6). The kind of cytology processed (conventional vs. LBC) varies by laboratory. The proportion of cytology samples which were LBC varied from 46.9% (Auckland LabPLUS) to 99.9% (Aotea Pathology Ltd), but it is generally very high. In five of the nine laboratories, more than 90% of the samples processed were LBC, and in all laboratories apart from Auckland LabPLUS, LBC constitutes the majority of samples processed. All laboratories had a very small proportion of samples which were combined samples (maximum 1.5% at Auckland LabPLUS) (Table 6).

Unsatisfactory cytology

5,114 cytology samples (2.3%) were unsatisfactory. These are reported on in more detail in Table 7 and Table 9. The remaining satisfactory samples are reported on in more detail in Table 8, and Table 10 to Table 13.

Nationally, unsatisfactory rates for LBC (2.3%) and conventional cytology (2.4%) were very similar, however this was not the case for individual laboratories (Table 9). In most laboratories (six out of nine), LBC samples were associated with lower unsatisfactory rates. The three laboratories where this was not the case (Auckland LabPLUS, Diagnostic Medlab Ltd, Medlab Central Ltd) had very substantial increases in the proportion of the cytology samples they processed which were LBC. The increase was from 14.6% to 46.9% at Auckland LabPLUS, from 40.4% to 99.7% at Diagnostic Medlab Ltd, and from 4.1% to 61.9% at Medlab Central Ltd.

Seven of the nine laboratories had unsatisfactory rates within the target range for conventional cytology. The two laboratories where the unsatisfactory rate for conventional cytology exceeded 8% (9.4% at Canterbury Health Laboratories, and 8.5% at Pathlab) processed only a very small number of conventional cytology samples (138 at Canterbury Health Laboratories, or 1.1% of all samples processed; 59 at Pathlab, or 0.3% of all samples processed). Therefore the number of unsatisfactory conventional cytology samples was less than 20 in each case. Three of the nine laboratories were within the target range for LBC (Auckland LabPLUS, Medlab Central Ltd and Medlab South Christchurch). One laboratory had an unsatisfactory rate slightly higher than the 5% target for LBC (Diagnostic Medlab Ltd 5.1%), while five laboratories had rates below the 1% lower target (Aotea Pathology Ltd 0.2%, Canterbury Health Laboratories 0.2%, Pathlab 0.2%, Southern Community Labs Christchurch 0.1%, and Southern Community Labs Dunedin 0.6%) (Figure 19 and Figure 20).

Negative cytology reports

92.2% of cytology results were negative, consistent with the target of no more than 96% (Table 8). The proportion of samples which were negative varied by laboratory from 81.3% (Auckland LabPLUS) to 94.6% (Southern Community Labs Christchurch), but all laboratories met the target of no more than 96% (Figure 21).

Abnormal cytology reports

The proportion of samples which were abnormal (7.8%) also fell within the recommended range of no more than 10% (Figure 22, Table 8). This varied widely by laboratory however, from 5.4% (Southern Community Labs Christchurch) to 18.7% (Auckland LabPLUS). Two laboratories exceeded the target, although in one case very slightly (Auckland LabPLUS 18.7%, Canterbury Health Laboratories 10.2%).

Abnormal cytology results were most common in younger women.

HSIL cytology reports

Overall, 0.7% of cytology samples were HSIL, consistent with the target of at least 0.6% of samples (Figure 23 , Table 11). Rates varied by laboratory from 0.4% (Aotea Pathology Ltd and Diagnostic Medlab Ltd) to 2.6% (Auckland LabPLUS). Three laboratories had rates of HSIL below target levels (Aotea Pathology Ltd 0.4%, Diagnostic Medlab Ltd 0.4%, Southern Community Labs – Christchurch 0.5%) (Figure 23).

Rates of HSIL or worse were most common in women aged 70+ years (Table 12, Table 13).

Trends

Unsatisfactory cytology

The unsatisfactory rate in conventional cytology samples has decreased from 3.5% in the previous reporting, to 2.4% in the current reporting period. The unsatisfactory rate in LBC samples has remained at 2.3% in the current reporting period.

The number of laboratories meeting the target for unsatisfactory LBC samples (three of nine laboratories) is the same as in the previous reporting period. During the previous period, two laboratories had unsatisfactory rates higher than the upper target, whereas in the current period there is only one, and the rate is only slightly higher than the target. The number below the lower target has increased from four to five laboratories.

Trends over the three most recent reporting periods are shown in Figure 44 and Figure 45 (Appendix F).

Negative vs abnormal cytology reports

Overall abnormalities have remained the same as in the previous reporting period (7.8%), and correspondingly the proportion of cytology samples reported as negative for dysplasia or malignancy is also the same (92.2%). The number of laboratories meeting targets for negative and abnormal samples has remained consistent since the previous reporting period. Trends over the three most recent reporting periods are shown in Figure 46 and Figure 47 (Appendix F).

HSIL cytology reports

The proportion of cytology samples reported as HSIL has decreased slightly from 0.8% to 0.7%. One additional laboratory has met the target for HSIL rates, as the rate of HSIL samples has risen slightly at Medlab South Christchurch from just below to just on the lower target. The trend over the three most recent reporting periods is shown in Figure 48 (Appendix F).

Comments

As a result of funding and guideline changes, the proportion of cytology samples which are LBC has increased dramatically since the previous reporting period, from 44.7% to 89.6%. The trend over the three most recent reporting periods is shown in Figure 49 (Appendix F). The increase has been very dramatic at all laboratories , except for Canterbury Health Laboratories, as the proportion of samples they processed which were LBC has been very high for some time. This change may be a factor in fact there was a higher unsatisfactory rate for LBC than for conventional cytology at some laboratories, however in virtually all cases laboratories reduced their unsatisfactory rate for LBC samples (Auckland LabPLUS's rate increased slightly from 4.1% to 4.5%). Only one laboratory (Diagnostic Medlab Ltd) exceeded the 5% target for unsatisfactory LBC samples, and this was by a very small amount (5.1%, compared to 5.3% in the previous reporting period).

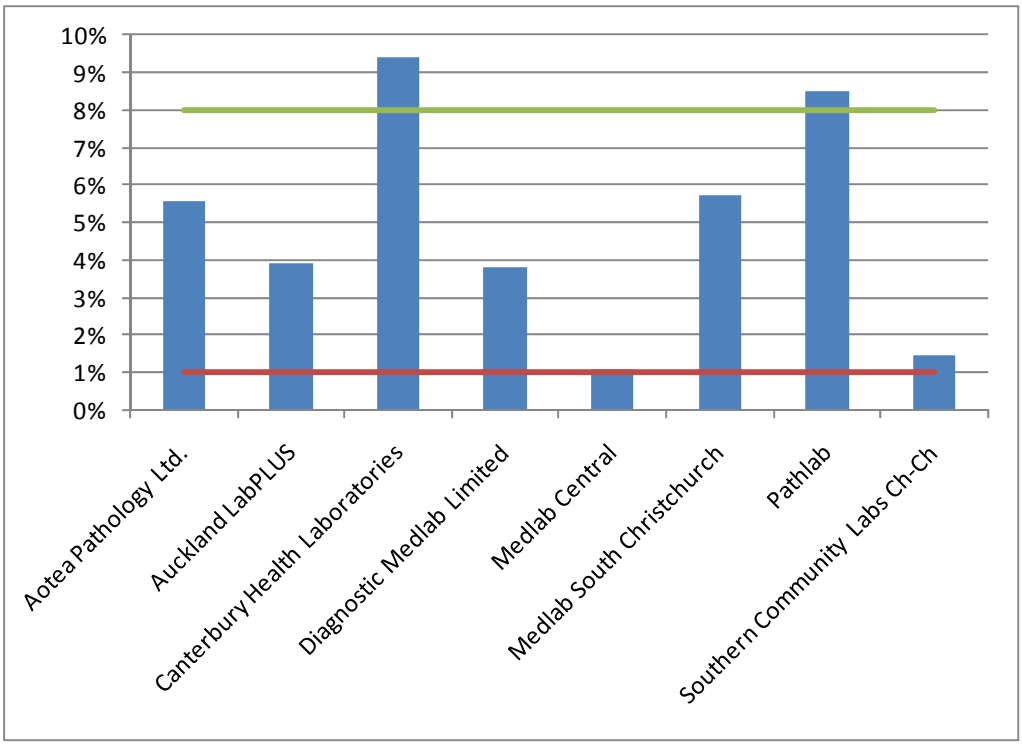
High rates of abnormal samples from Auckland LabPLUS are consistent with previous reports, although the rates have decreased since the previous reporting period. It is possible that the case-mix of this laboratory (ie a higher proportion of samples received from colposcopy clinics compared to other laboratories) is one of the factors underlying the observed higher rate for this laboratory.

At present, there are targets for unsatisfactory cytology common to both types of LBC (ThinPrep and SurePath). It is uncertain if this is applicable, as the techniques used to produce slides from the liquid samples differ between test technologies - ThinPrep is a filtration-based method, whereas SurePath is a centrifugation-based method. There is limited evidence on the appropriate lower level for unsatisfactory cytology using SurePath, however results from a pooled analysis suggest that unsatisfactory rates may differ between the technologies[4]. Use of different LBC test technologies by different laboratories may be a factor in the variation in rates of unsatisfactory cytology. The target for unsatisfactory LBC samples will be reviewed as more evidence becomes available.

Southern Community Labs Christchurch ceased reporting on cytology in July 2010.

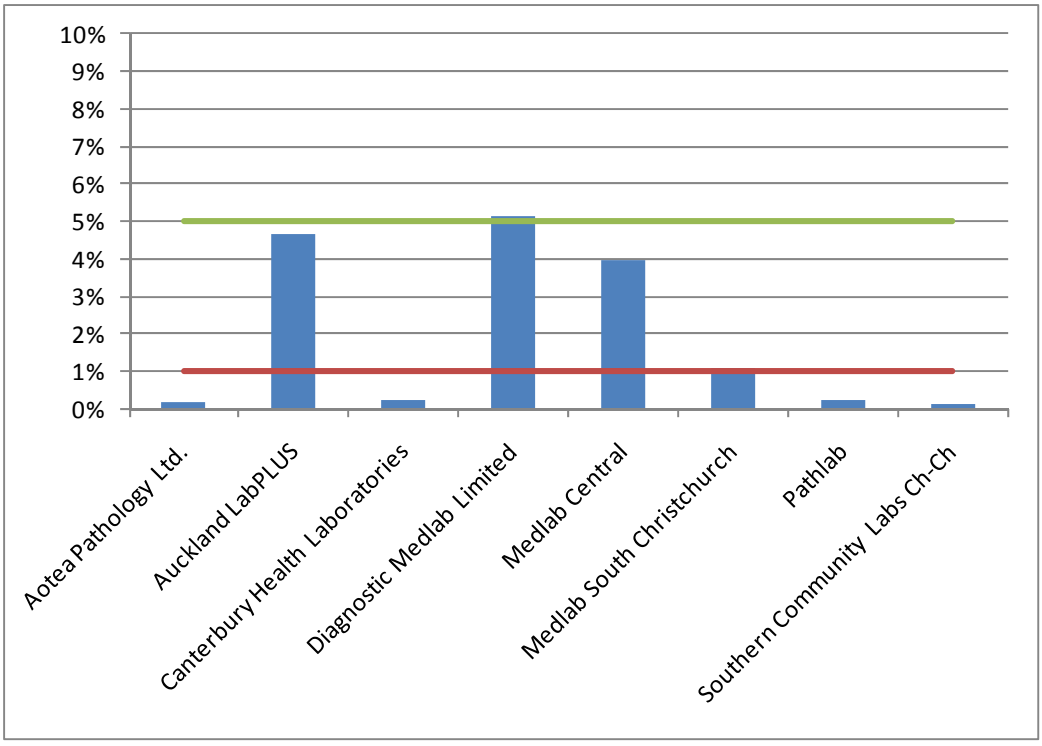
[4] Krahn, M., McLachlin M., *et al*. 2008. *Liquid-based techniques for cervical cancer screening: systematic review and cost-effectiveness analysis*. Technology report number 103. Ottawa: Canadian Agency for Drugs and Technologies in Health.

Figure 19 - Proportion of total conventional cytology samples reported as unsatisfactory by laboratory, 1 July - 31 December 2009 (Green line=upper target limit; red line=lower target limit)



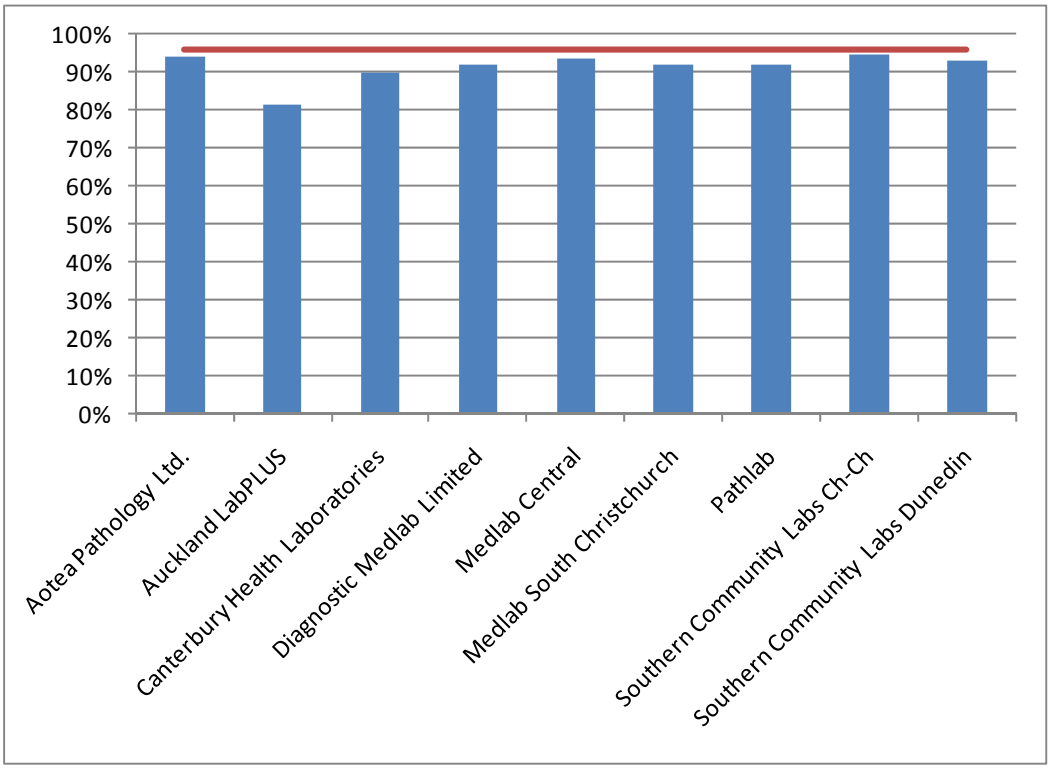
Target for conventional cytology: 1-8%

Figure 20 - Proportion of total LBC samples reported as unsatisfactory by laboratory, 1 July - 31 December 2009 (Green line=upper target limit; red line=lower target limit)



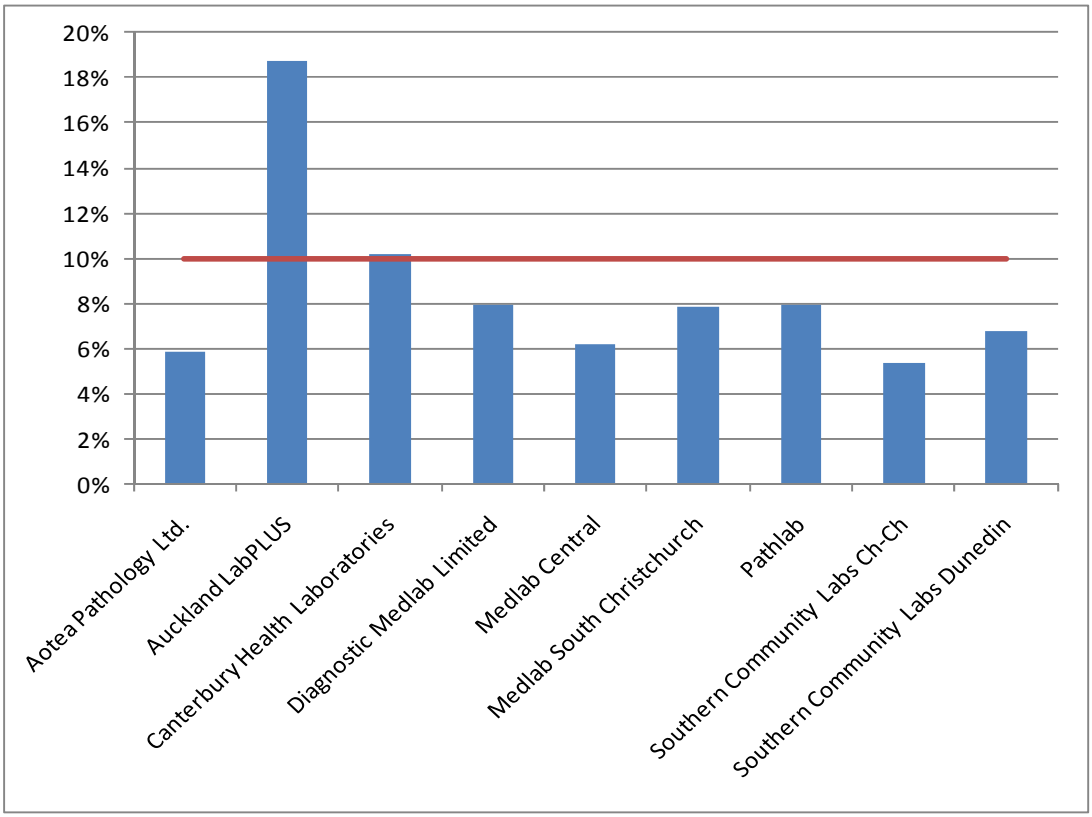
Target for LBC: 1-5%

Figure 21 - Proportion of total satisfactory samples reported as negative by laboratory, 1 July - 31 December 2009 (red line=target)



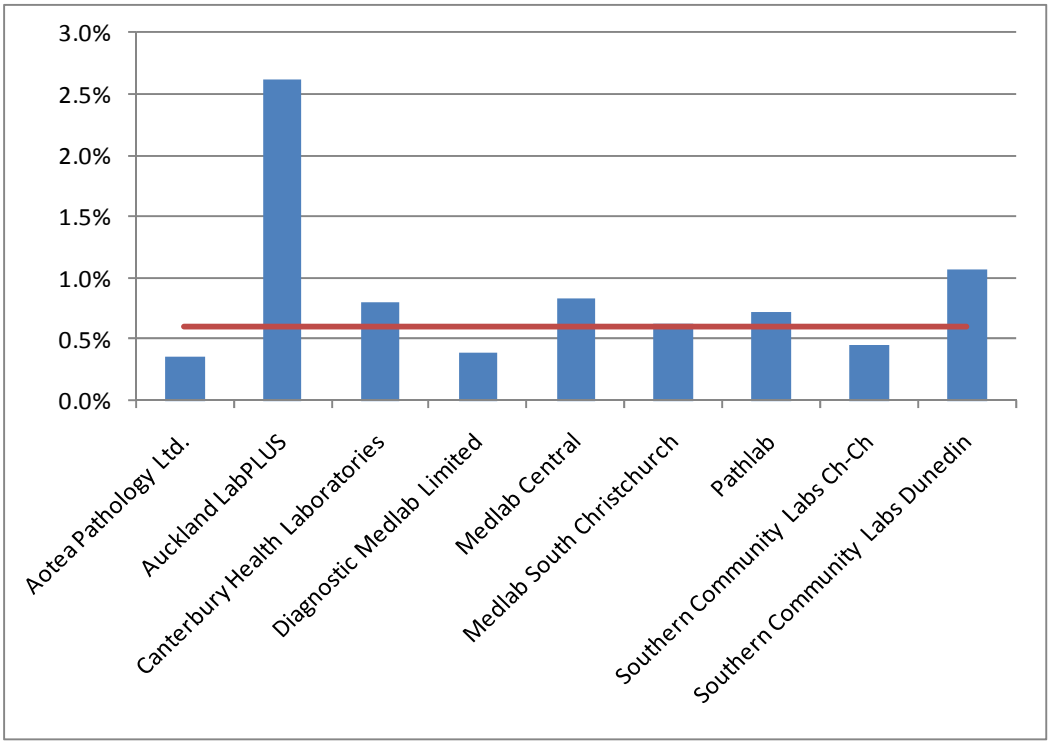
Note: Line shows negative target ≥ 96%

Figure 22 - Proportion of total satisfactory samples reported as abnormalities by laboratory, 1 July - 31 December 2009 (red line=target)



Note: Line shows abnormal target ≤ 10%

Figure 23 - Proportion of samples reported as HSIL for each laboratory, 1 July - 31 December 2009 (red line=target)



Note: Line shows HSIL target ≥ 0.6%

Table 6 - Laboratory cytology reporting by type of cytology sample (1 July - 31 December 2009)

Organisation	All samples	By cytology sample type					
		LBC		Conventional		Combined	
	N	N	%	N	%	N	%
Aotea Pathology Ltd	22,761	22,743	99.9	18	0.1	-	0.0
Auckland LabPLUS	9,227	4,324	46.9	4,762	51.6	141	1.5
Canterbury Health Laboratories	12,332	12,174	98.7	138	1.1	20	0.2
Diagnostic Medlab Limited	66,690	66,513	99.7	157	0.2	20	0.03
Medlab Central Ltd	18,484	11,450	61.9	6,970	37.7	64	0.3
Medlab South Christchurch	15,498	14,608	94.3	854	5.5	36	0.2
Pathlab	20,306	20,242	99.7	59	0.3	5	0.02
Southern Community Labs Ch-Ch	10,146	7,633	75.2	2,477	24.4	36	0.4
Southern Community Labs Dunedin	42,906	36,017	83.9	6,661	15.5	228	0.5
TOTAL	**218,350**	**195,704**	**89.6**	**22,096**	**10.1**	**550**	**0.3**

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

Table 7 - Satisfactory and unsatisfactory cytology reporting by laboratory (1 July - 31 December 2009)

Laboratory	All Samples N	Satisfactory N	Satisfactory %	Unsatisfactory N	Unsatisfactory %
Aotea Pathology Ltd	22,761	22,715	99.8	46	0.2
Auckland LabPLUS	9,227	8,835	95.8	392	4.2
Canterbury Health Laboratories	12,332	12,291	99.7	41	0.3
Diagnostic Medlab Limited	66,690	63,265	94.9	3,425	5.1
Medlab Central Ltd	18,484	17,954	97.1	530	2.9
Medlab South Christchurch	15,498	15,290	98.7	208	1.3
Pathlab	20,306	20,253	99.7	53	0.3
Southern Community Labs Ch-Ch	10,146	10,101	99.6	45	0.4
Southern Community Labs Dunedin	42,906	42,532	99.1	374	0.9
Total	**218,350**	**213,236**	**97.7**	**5,114**	**2.3**

See also Table 9

Table 8 - Laboratory cytology reporting by general result (1 July - 31 December 2009)

Laboratory	Negative N	Negative %	Abnormal N	Abnormal %
Aotea Pathology Ltd	21,376	94.1	1,339	5.9
Auckland LabPLUS	7,180	81.3	1,655	18.7
Canterbury Health Laboratories	11,042	89.8	1,249	10.2
Diagnostic Medlab Limited	58,221	92.0	5,044	8.0
Medlab Central Ltd	16,835	93.8	1,119	6.2
Medlab South Christchurch	14,091	92.2	1,199	7.8
Pathlab	18,650	92.1	1,603	7.9
Southern Community Labs Ch-Ch	9,556	94.6	545	5.4
Southern Community Labs Dunedin	39,642	93.2	2,890	6.8
Total	**196,593**	**92.2**	**16,643**	**7.8**

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

Table 9 - Laboratory reporting of unsatisfactory results by type of cytology sample (1 July - 31 December 2009)

	Conventional			LBC			Combined			TOTAL		
Laboratory	**Unsat**	**Total**	**%**	**Unsat**	**Total**	**%**	**Unsat**	**Total**	**%**	**Unsat**	**Total**	**%**
Aotea Pathology Ltd	1	18	5.6	45	22,743	0.2	-	-	-	46	22,761	0.2
Auckland LabPLUS	187	4,762	3.9	201	4,324	4.6	4	141	2.8	392	9,227	4.2
Canterbury Health Laboratories	13	138	9.4	28	12,174	0.2	-	20	0.0	41	12,332	0.3
Diagnostic Medlab Limited	6	157	3.8	3,419	66,513	5.1	-	20	0.0	3,425	66,690	5.1
Medlab Central Ltd	77	6,970	1.1	452	11,450	3.9	1	64	1.6	530	18,484	2.9
Medlab South Christchurch	49	854	5.7	158	14,608	1.1	1	36	2.8	208	15,498	1.3
Pathlab	5	59	8.5	48	20,242	0.2	-	5	0.0	53	20,306	0.3
Southern Community Labs Ch-Ch	36	2,477	1.5	9	7,633	0.1	-	36	0.0	45	10,146	0.4
Southern Community Labs Dunedin	146	6,661	2.2	225	36,017	0.6	3	228	1.3	374	42,906	0.9
Total	**520**	**22,096**	**2.4**	**4,585**	**195,704**	**2.3**	**9**	**550**	**1.6**	**5,114**	**218,350**	**2.3**

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

Table 10 - Laboratory cytology reporting by cytological category (1 July - 31 December 2009) – counts

Laboratory	Result									Total
	Negative	ASC-US	LSIL	ASC-H	HSIL	SC	AGC/AIS	Adeno-carcinoma	Malignant Neoplasm	
Aotea Pathology Ltd	21,376	485	665	85	82	5	14	3	-	**22,715**
Auckland LabPLUS	7,180	588	533	253	231	4	36	8	2	**8,835**
Canterbury Health Laboratories	11,042	405	596	129	99	1	12	7	-	**12,291**
Diagnostic Medlab Ltd	58,221	1,724	2,760	256	247	6	31	20	-	**63,265**
Medlab Central Ltd	16,835	309	529	119	148	2	12	-	-	**17,954**
Medlab South Christchurch	14,091	481	483	127	96	2	8	2	-	**15,290**
Pathlab	18,650	475	837	104	146	3	37	1	-	**20,253**
Southern Community Labs Ch-Ch	9,556	215	227	45	46	-	12	-	-	**10,101**
Southern Community Labs Dunedin	39,642	723	1,571	109	454	1	17	15	-	**42,532**
Total	**196,593**	**5,405**	**8,201**	**1,227**	**1,549**	**24**	**179**	**56**	**2**	**213,236**

Table 11 - Laboratory cytology reporting by cytological category (1 July - 31 December 2009) - percentage of all satisfactory samples

	Percentage of Laboratory's Result								
Laboratory	**Negative**	**ASC-US**	**LSIL**	**ASC-H**	**HSIL**	**SC**	**AGC/AIS**	**Adeno-carcinoma**	**Malignant Neoplasm**
Aotea Pathology Ltd	94.1	2.1	2.9	0.4	0.4	0.02	0.06	0.01	-
Auckland LabPLUS	81.3	6.7	6.0	2.9	2.6	0.05	0.41	0.09	0.02
Canterbury Health Laboratories	89.8	3.3	4.8	1.0	0.8	0.01	0.10	0.06	-
Diagnostic Medlab Limited	92.0	2.7	4.4	0.4	0.4	0.01	0.05	0.03	-
Medlab Central Ltd	93.8	1.7	2.9	0.7	0.8	0.01	0.07	-	-
Medlab South Christchurch	92.2	3.1	3.2	0.8	0.6	0.01	0.05	0.01	-
Pathlab	92.1	2.3	4.1	0.5	0.7	0.01	0.18	< 0.01	-
Southern Community Labs Ch-Ch	94.6	2.1	2.2	0.4	0.5	-	0.12	-	-
Southern Community Labs Dunedin	93.2	1.7	3.7	0.3	1.1	< 0.01	0.04	0.04	-
Total	**92.2**	**2.5**	**3.8**	**0.6**	**0.7**	**0.01**	**0.08**	**0.03**	**< 0.01**

Note: Target: HSIL ≥ 0.6% reported as HSIL

Table 12 - Laboratory reporting of cytological category by five-year age group (1 July - 31 December 2009) – counts

	Cytology Result									
Age Group	Negative	ASC-US	LSIL	ASC-H	HSIL	SC	AGC/AIS	Adeno-carcinoma	Malignant Neoplasm	Total
<20	2,080	177	416	43	32	-	1	-	-	**2,749**
20-24	20,588	1,204	2,920	326	379	-	8	-	-	**25,425**
25-29	19,183	692	1,402	221	312	-	8	-	-	**21,818**
30-34	20,835	599	844	176	289	1	18	-	-	**22,762**
35-39	25,196	607	750	147	197	1	18	1	-	**26,917**
40-44	25,018	631	580	103	128	3	25	2	-	**26,490**
45-49	24,849	601	518	71	91	3	21	6	-	**26,160**
50-54	20,170	365	328	49	47	3	28	4	1	**20,995**
55-59	15,899	261	203	36	29	3	16	6	1	**16,454**
60-64	12,620	145	130	29	18	3	11	17	-	**12,973**
65-69	8,109	89	78	16	14	2	9	10	-	**8,327**
70+	2,046	34	32	10	13	5	16	10	-	**2,166**
Total	**196,593**	**5,405**	**8,201**	**1,227**	**1,549**	**24**	**179**	**56**	**2**	**213,236**

Table 13 - Laboratory reporting of cytological category by five-year age group (1 July - 31 December 2009) - percentage of all satisfactory samples in women that age group

	Percentage of Age Group Total								
Age Group	**Negative**	**ASC-US**	**LSIL**	**ASC-H**	**HSIL**	**SC**	**AGC/AIS**	**Adeno-carcinoma**	**Malignant Neoplasm**
<20	75.7	6.4	15.1	1.6	1.2	-	0.04	-	-
20-24	81.0	4.7	11.5	1.3	1.5	-	0.03	-	-
25-29	87.9	3.2	6.4	1.0	1.4	-	0.04	-	-
30-34	91.5	2.6	3.7	0.8	1.3	<0.01	0.08	-	-
35-39	93.6	2.3	2.8	0.5	0.7	<0.01	0.07	< 0.01	-
40-44	94.4	2.4	2.2	0.4	0.5	0.01	0.09	0.01	-
45-49	95.0	2.3	2.0	0.3	0.3	0.01	0.08	0.02	-
50-54	96.1	1.7	1.6	0.2	0.2	0.01	0.13	0.02	<0.01
55-59	96.6	1.6	1.2	0.2	0.2	0.02	0.10	0.04	0.01
60-64	97.3	1.1	1.0	0.2	0.1	0.02	0.08	0.13	-
65-69	97.4	1.1	0.9	0.2	0.2	0.02	0.11	0.12	-
70+	94.5	1.6	1.5	0.5	0.6	0.23	0.74	0.46	-
Total	**92.2**	**2.5**	**3.8**	**0.6**	**0.7**	**0.01**	**0.08**	**0.03**	**<0.01**

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.

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 from 1 January 2009 – 30 June 2009 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 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 report. Where there were multiple histology reports for a woman in the period, the most serious abnormality category was used.

HSIL+SC

1,539 women with HSIL or SC cytology reports were identified. 136 of these women (8.8%) had no histology taken in the period from five days prior to six months after the cytology sample was taken. Among the remaining 1,403 for whom there was histology, 1,173 (83.6%) had their HSIL/SC cytology confirmed by histology (refer to Appendix C for definition of histological confirmation) (Figure 24, Table 38).

All laboratories achieved the minimum target of at least 65% of cytological HSIL +SC being confirmed by histology. Four laboratories exceeded 85% of HSIL+SC being histologically confirmed, although in two cases very slightly. They were Auckland LabPLUS (91.1%), Canterbury Health Laboratories (85.7%), Medlab South Christchurch (91.7%) and Southern Community Labs - Dunedin (85.6%) (Figure 24, Table 38).

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

1,254 women with a cytology report of ASC-H were identified. 268 (21.4%) had no histology taken in the period from five days prior to six months after the cytology sample. Among the remaining 986 women, 503 (51.0%) were histologically confirmed as high grade. This proportion varied by laboratory,

from 40.5% (Pathlab) to 64.4% (Canterbury Health Laboratories) (Figure 25, Table 39).

ASC-H+HSIL+SC

Therefore, a total of 2,793 women had a cytology report of ASC-H, HSIL or SC. 404 (14.5%) had no histology taken in the period from five days prior to six months after the cytology sample. Among the remaining 2,389 women, 1,676 (70.2%) were histologically confirmed as high grade. This proportion varied by laboratory, from 59.1% (Aotea Pathology Ltd) to 81.9% (Southern Community Labs – Dunedin). The combined positive predictive value across the 2,471 women with ASC-H, HSIL, and SC and histology available is shown in Figure 25 and Table 40.

Glandular abnormalities

223 women with a glandular abnormality (AG1-AG5, AIS, AC1-AC4) were identified. 61 women (27.4%) had no histology taken in the period from five days prior to six months after the cytology sample. Among the remaining 162 women, 73 (45.1%) had their high grade histologically confirmed. The proportion confirmed by histology varied by laboratory, ranging from 30.0% (Aotea Pathology Ltd and Medlab Central Ltd) to 80.0% (Southern Community Labs - Christchurch) (Figure 25, Table 41). The wide variation may be due to the small number of samples reported on by many laboratories, and in particular the three laboratories with the lowest and highest rates of histologically confirmed glandular abnormalities. Most laboratories had very few cases of glandular abnormalities, and fewer with histology available – four laboratories had less than 20 cases in the period and 10 or fewer with histology available (Aotea Pathology Ltd, Medlab Central Ltd, Medlab South Christchurch, Southern Community Labs Christchurch), and one other laboratory had less than 30 cases, and less than 20 with histology available (Canterbury Health Laboratories).

Trends

HSIL+SC

Positive predictive value for HSIL and SC cytology has increased slightly since the previous monitoring report, from 82.2% to 83.6%. Most laboratories have PPVs which are broadly consistent with their results across the previous three monitoring periods, however PPVs at both Medlab South Christchurch and Southern Community Labs – Dunedin have continued to increase compared to the previous reports. The trend over the three most recent reporting periods is shown in Figure 50 (Appendix F).

ASC-H

Positive predictive value for ASC-H cytology has increased, from 47.1% to 51.0%, however there is no target for this measure. The proportion of cytology reports in each of these groups with histology available has increased for HSIL or SC (89.9% in the previous report; 91.2% in the current report), and increased slightly for ASC-H (from 78.1% to 78.6%). The trend over the three most recent reporting periods is shown in Figure 51 (Appendix F).

ASC-H+HSIL+SC

The positive predictive value for the combined group ASC-H, HSIL and SC increased between the previous report (66.3%) and the current report (70.2%), however there are no targets for the positive predictive value of the combined group of ASC-H, HSIL and SC. The trend over the three most recent reporting periods is shown in Figure 52 (Appendix F).

Glandular abnormalities

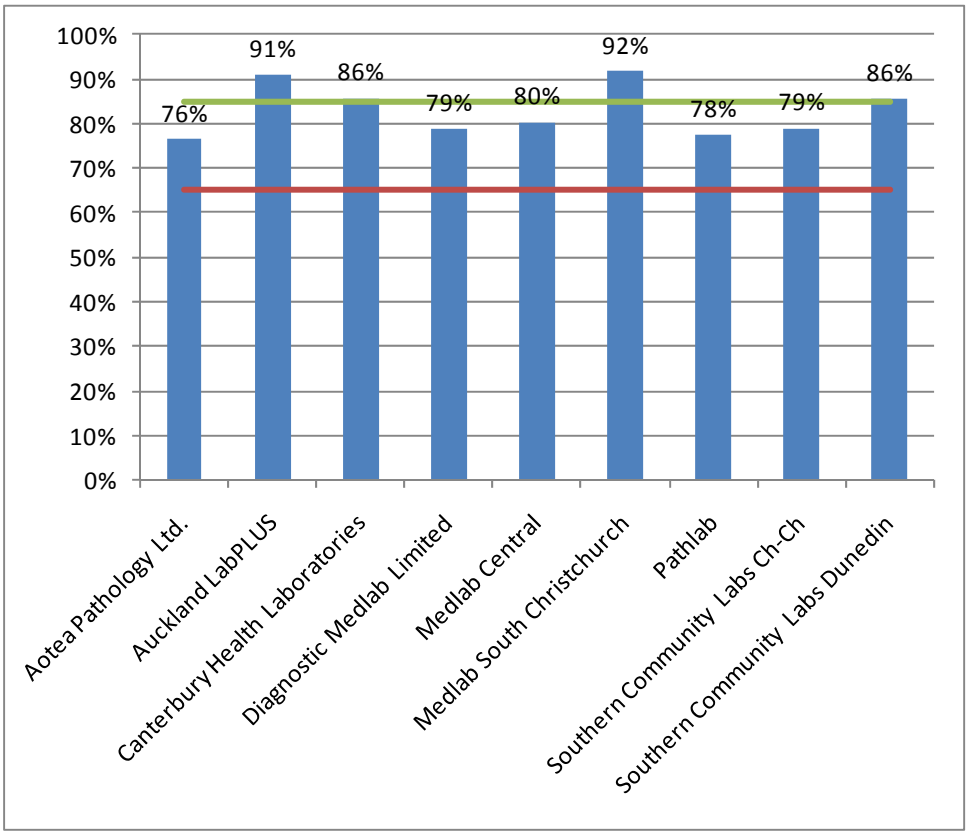
The positive predictive value of glandular abnormalities also increased (from 39.7% in the previous report to 45.1% in the current report). However, compared to both ASC-H cytology, and the combined group of HSIL and SC cytology, there are far fewer glandular abnormalities, and an even smaller number with histology available. The proportion of glandular abnormalities with histology available has increased (from 67% to 73%), but is less than that for ASC-H (79%) and HSIL+SC (91%). The trend over the three most recent reporting periods is shown in Figure 53 (Appendix F).

Comments

This estimate does not taken 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.

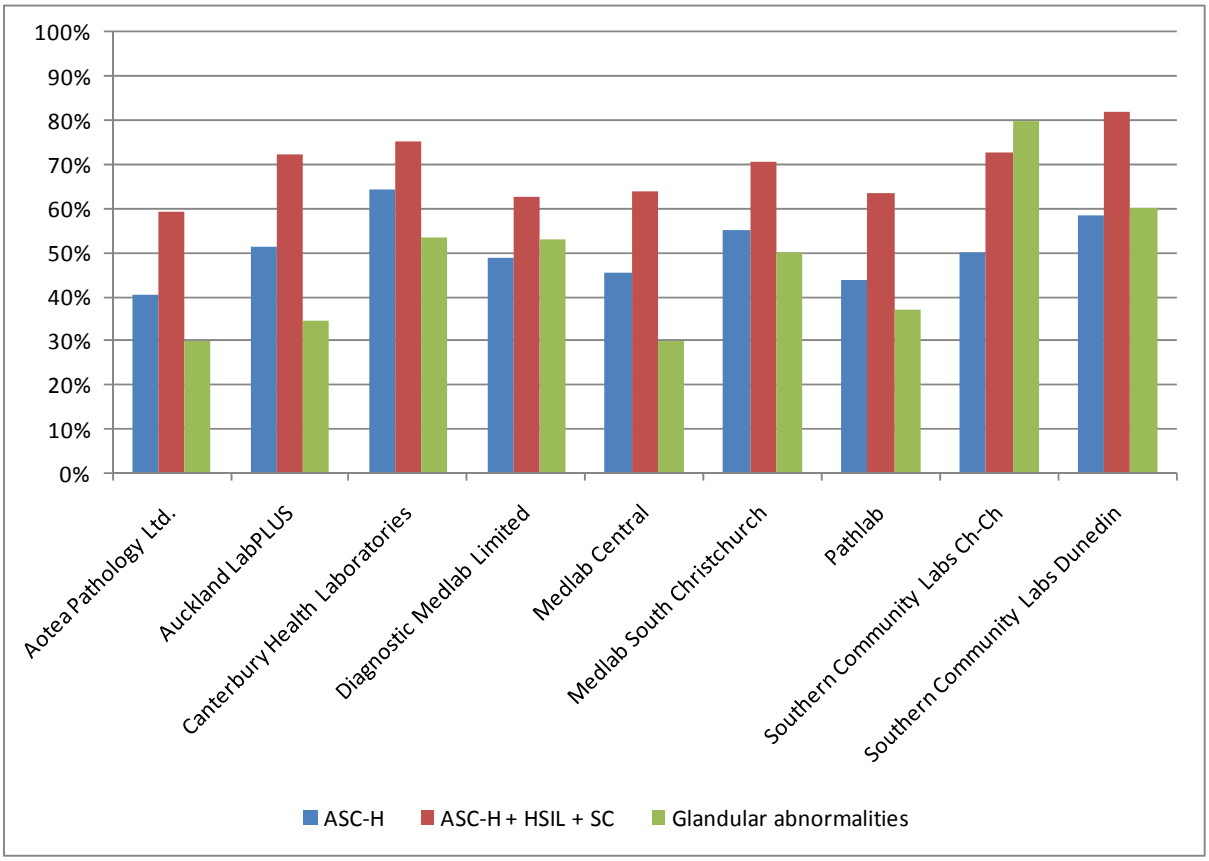
The calculations also do not discriminate between cytology taken as a screening or diagnostic test. This may be a contributing factor for some laboratories with a PPV which is higher than the upper end of the target range, particularly where the colposcopically-directed cytology and corresponding histology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

Figure 24 - Positive predictive value for CIN2+ in women with HSIL or SC cytology reports by laboratory, 1 July to 31 December 2009



Target: 65% - 85%

Figure 25 - Positive predictive value for CIN2+ in women with other high grade cytology results by laboratory, 1 July to 31 December 2009



Target: None

Indicator 5.3 – Accuracy of negative cytology reports

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

Indicator 5.4 – Histology Reporting

Definition	The NCSP Register collects histology results of samples taken from the cervix and vagina. Histology samples include diagnostic biopsies, treatment biopsies, cervical polyps and the cervical tissue of total hysterectomy specimens. All histology samples taken during this period were retrieved. Where a histology sample had more than one SNOMED code, or a woman had more than one histology result, the most serious (highest) ranked code was used (see Appendix C). Two versions of SNOMED are used by laboratories (1986 and 1993) depending on the laboratory software. The NCSP Register accepts both versions and for statistical purposes maps the 1986 codes to the 1993 codes. The Ministry of Health holds the NZ licence for SNOMED CT and the NCSP is in the early stages of investigating its use. A woman's age is defined as her age at the end of the reporting period.
Target	None
Current Situation	12,284 histology samples were taken during the current reporting period. 267 (2.2%) of these were unsatisfactory. The remaining 12,017 samples were taken from 10,652 women. Results for these women are reported on in detail in Table 14 - Table 17. 55% of women with histology tests had negative or benign histology results (Table 14, Table 15). 20.8% of women had HSIL histology results. 51 (0.5%) women had histology results which were invasive squamous cell carcinoma (ISCC), three (<0.1%) which were microinvasive SCC, 43 (0.4%) which were invasive adenocarcinoma, three (<0.05%) which were adenosquamous carcinoma and 27 (0.3%) which were adenocarcinoma in situ. The age group with the largest number of women with histology samples was women aged 20-24 years (1,585 women, Table 16). This was also the age group with the lowest rate of women with results which were negative or HPV only (36.0%, Table 17).
Trends	The proportion of women with negative or benign histology (55%) is very similar to that reported for the previous period (January-June 2009; 54%). The proportions were also similar to those in the previous period for women with HSIL (20.8% this period; 20.7% last period), ISCC (0.5% this period; 0.4% last period), invasive adenocarcinoma (0.4% in both periods), adenosquamous carcinoma (<0.05% in both periods), and adenocarcinoma in situ (0.3% in both periods).

Comments	Histology samples include diagnostic biopsies, treatment biopsies, cervical polyps and the cervical tissue of total hysterectomy specimens. Further work is underway to investigate the potential role of miscoding in the relatively high reported number of adenocarcinomas.

Table 14 - Histology results reporting by SNOMED category

SNOMED category	Women with that diagnosis	
	N	%
Negative/normal	2,880	27.0
Inflamation	739	6.9
Microglandular hyperplasia	8	0.1
Squamous metaplasia	497	4.7
Atypia	77	0.7
HPV	894	8.4
Condyloma acuminatum	9	0.1
Dysplasia/CIN NOS	76	0.7
CIN 1 (LSIL) or VAIN 1	1,335	12.5
CIN 2 (HSIL) or VAIN 2	542	5.1
CIN 3 (HSIL) or VAIN 3	831	7.8
HSIL NOS	842	7.9
Polyp	1,127	10.6
Other	640	6.0
Microinvasive squamous cell carcinoma	3	<0.05
Invasive squamous cell carcinoma	51	0.5
Benign glandular atypia	2	<0.05
Glandular dysplasia	1	<0.05
Adenocarcinoma in situ	27	0.3
Invasive adenocarcenoma	43	0.4
Adenosquamous carcinoma	3	<0.05
Metastatic tumour	5	< 0.05
Undifferentiated carcinoma	3	<0.05
Sarcoma	3	<0.05
Carcinosarcoma	4	<0.05
Other primary epithelial malignancy	9	0.1
Miscellaneous primary tumour	1	< 0.05
Total	**10,652**	**100.0**

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

Table 15 - Histology results reporting by diagnostic group

Histology diagnosis category	Women with that histology result	
	N	%
Negative/benign (non neoplastic)	5,893	55.3
HPV	903	8.5
CIN1	1,488	14.0
CIN2	542	5.1
CIN3	831	7.8
HSIL NOS	842	7.9
Microinvasive	3	<0.05
Invasive squamous cell carcinoma	51	0.5
Glandular dysplasia	1	<0.05
Adenocarcinoma in situ	27	0.3
Invasive adenocarcinoma	43	0.4
Adenosquamous carcinoma	3	<0.05
Other cancer	25	0.2
Total	**10,652**	**100.0**

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

Table 16 - Histology results by age – counts

Histology Category	Age group												
	<20	**20-24**	**25-29**	**30-34**	**35-39**	**40-44**	**45-49**	**50-54**	**55-59**	**60-64**	**65-69**	**70+**	**Total**
Negative/benign (non neoplastic)	30	369	397	461	625	924	1,099	801	446	292	213	236	**5,893**
HPV	18	201	160	124	119	107	69	43	37	13	7	5	**903**
CIN1	28	389	312	201	172	152	111	62	23	21	12	5	**1,488**
CIN2	11	192	111	71	55	38	34	13	9	2	4	2	**542**
CIN3	17	193	180	158	115	59	50	25	14	12	4	4	**831**
HSIL	16	239	203	145	97	65	37	15	10	9	4	2	**842**
Microinvasive	-	-	-	-	1	-	-	1	1	-	-	-	**3**
Invasive SCC	-	-	2	5	2	5	8	5	5	5	4	10	**51**
Glandular dysplasia	-	-	-	-	1	-	-	-	-	-	-	-	**1**
Adenocarcinoma in situ	-	2	4	6	5	1	5	1	-	1	1	1	**27**
Invasive adenocarcinoma	-	-	-	1	-	5	9	5	7	6	4	6	**43**
Adenosquamous carcinoma	-	-	-	-	2	1	-	-	-	-	-	-	**3**
Other cancer	-	-	-	1	-	2	1	6	2	-	1	12	**25**
Total	**120**	**1,585**	**1,369**	**1,173**	**1,194**	**1,359**	**1,423**	**977**	**554**	**361**	**254**	**283**	**10,652**

Table 17 - Histology results by age – percentages

Histology Category	Age group											
	<20	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+
Negative/benign (non neoplastic)	25.0	23.3	29.0	39.3	52.4	68.0	77.2	82.0	80.5	80.9	83.9	83.4
HPV	15.0	12.7	11.7	10.6	10.0	7.9	4.9	4.4	6.7	3.6	2.8	1.8
CIN1	23.3	24.5	22.8	17.1	14.4	11.2	7.8	6.4	4.2	5.8	4.7	1.8
CIN2	9.2	12.1	8.1	6.1	4.6	2.8	2.4	1.3	1.6	0.6	1.6	0.7
CIN3	14.2	12.2	13.2	13.5	9.6	4.3	3.5	2.6	2.5	3.3	1.6	1.4
HSIL	13.3	15.1	14.8	12.4	8.1	4.8	2.6	1.5	1.8	2.5	1.6	0.7
Microinvasive	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.2	0.0	0.0	0.0
Invasive SCC	0.0	0.0	0.2	0.4	0.2	0.4	0.6	0.5	0.9	1.4	1.6	3.5
Glandular dysplasia	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adenocarcinoma in situ	0.0	0.1	0.3	0.5	0.4	0.1	0.4	0.1	0.0	0.3	0.4	0.4
Invasive adenocarcinoma	0.0	0.0	0.0	0.1	0.0	0.4	0.6	0.5	1.3	1.7	1.6	2.1
Adenosquamous carcinoma	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Other cancer	0.0	0.0	0.0	0.1	0.0	0.2	0.1	0.6	0.4	0.0	0.4	4.2
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**

Indicator 5.5 - Laboratory turnaround times

Definition

Turnaround time is defined as the number of working days from the date a sample is received by a laboratory, and the date which it is reported to the smear taker or colposcopist. For the purposes of this measure, samples received and reported on the same day are defined as having a turnaround time of one day.

Target

Cytology

Laboratories are required to report 90% of final gynaecological cytology results to smear takers within seven working days of receipt of the sample and 100% within 15 working days (also standard 513[5]).

Histology

Laboratories are required to report 90% of final histology results to referring colposcopists within five working days of receipt of the sample and 99% of final histology results within 15 working days of receiving the sample (also standard 516[3]).

Current Situation

Cytology

Nine laboratories received 218,509 cytology samples during the current reporting period. Overall, 92.1% of cytology samples were reported on within seven working days, which is within the target. Nationally, 99.4% were reported on within 15 working days, which is slightly below the target (Table 42).

Five laboratories met the target for 90% of cytology samples to be reported to smear takers in seven days or less (Aotea Pathology Ltd, Diagnostic Medlab Ltd, Medlab South Christchurch, Pathlab, Southern Community Laboratories - Christchurch), the proportion of samples reported on within seven working days ranged from 74.4% (Auckland LabPLUS) to 100.0% (Medlab South Christchurch).

Two laboratories met the target of 100% of samples reported within 15 working days (Medlab South Christchurch, Pathlab) (Figure 16, Figure 17, Table 42). Of the remaining seven laboratories, four had reported on over 99% of cytology samples within 15 days (Aotea Pathology Ltd, Diagnostic Medlab Ltd, Medlab Central Ltd, Southern Community Labs – Christchurch and Southern Community Labs - Dunedin), and only one laboratory had reported on less than 95% within 15 working days (Auckland LabPLUS, 94.7%).

Histology

Twenty one laboratories received 12,136 histology samples in the current reporting period. Overall 86.6% of samples were reported on within five working days, and 98.9% were reported on in 15 working days or less. These values are slightly below the targets (Table 43).

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

Ten laboratories met the target of 90% of final histology results to referring colposcopists within five working days of receipt of the sample (Diagnostic Medlab Limited, LabTests, Medlab Central Ltd, Medlab South Christchurch, Medlab Timaru, Middlemore Hospital Laboratory, North Shore Hospital Laboratory, Northland Pathology Laboratory, Southern Community Labs Christchurch, Taranaki Medlab) (Figure 18, Table 43). Fifteen laboratories met the target of 99% of final histology results within 15 working days of receiving the sample, and all of the remaining six had reported on at least 95% of samples within 15 days (Figure 19, Table 43).

Trends

Cytology

Both the overall proportion number of samples reported on within seven working days, and number of laboratories meeting the cytology turnaround time target for seven working days increased during this period compared to the previous reporting period. In the previous report, 87.0% of samples were reported on within seven working days (compared to 92.1% during this reporting period), and four of the nine laboratories met the seven-working-days target of 90% (compared to five of the nine in this period). The proportion of samples reported on within 15 working days was slightly lower in the current reporting period (99.4%, compared to 99.7% in the previous reporting period), as was the number of laboratories meeting the target (two of nine, compared to four of nine in the previous report). In the previous reporting period all laboratories had reported on at least 98% of samples within 15 days; in the current report one laboratory had reported on less than 98% (Auckland LabPLUS; 94.7%).

The trends over three of the most recent reporting periods are shown in Figure 54 and Figure 55 (Appendix F).

Histology

Overall, the proportion of histology samples reported on within five working days is higher than it was in the previous reporting period (86.6% during this period compared to 84.1% in the previous report), and the proportion reported on within 15 working days was also slightly higher (98.9%, compared to 98.5% in the previous report). The same number of laboratories met the five working-days target as did in the previous reporting period, and the number of laboratories that had reported on 99% of samples within 15 days increased from 13 to 15 in the current reporting period. Only two laboratories had reported on less than 98% of samples within 15 days in the current reporting period, compared to six in the previous period.

The trends over three the most recent reporting periods are shown in Figure 56 and Figure 57 (Appendix F).

Comments

This is the first reporting period where there is a record on the NCSP Register of HPV test samples being received by laboratories. The 2008 *Guidelines for*

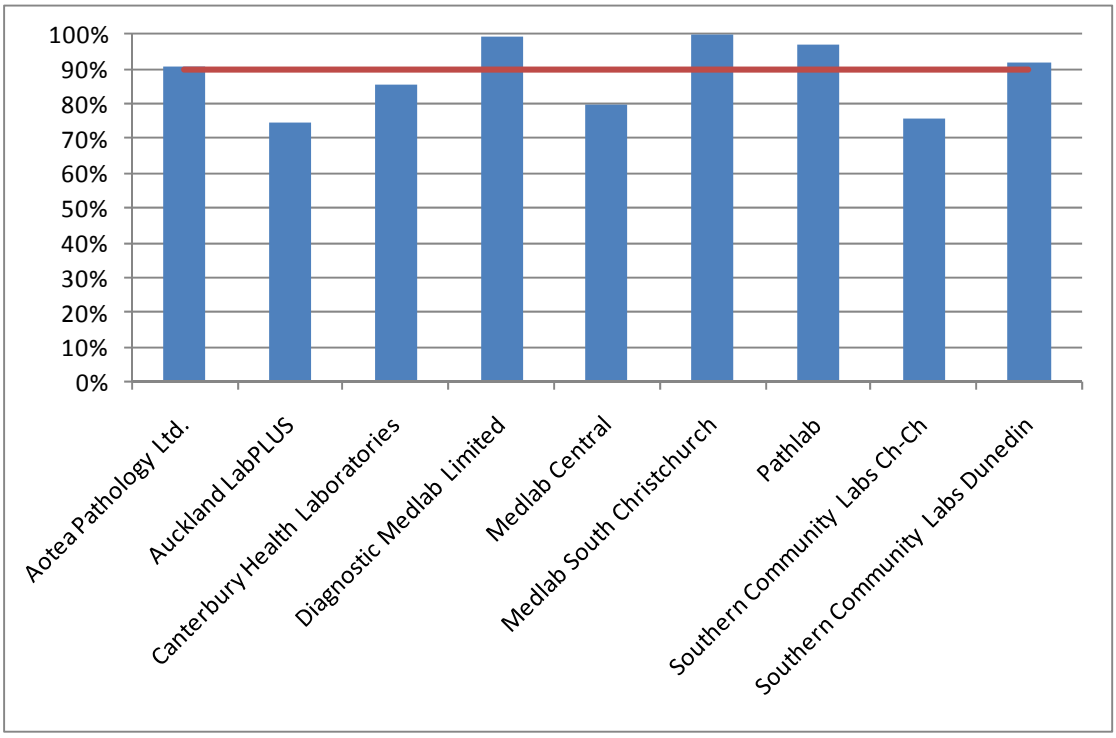
Cervical Screening in New Zealand, and *NCSP Best Practice Guidance on HPV Testing* indicate the use of HrHPV tests for the triage of women 30 years and over with ASC-US or LSIL cytology; the follow-up of women who have been treated for a high grade lesion; and post-colposcopy management of women with discordant results, starting from this reporting period. As the more widespread use of HPV tests has commenced very recently, turnaround time for HPV samples has not been reported on in this report. It is anticipated that the volume of HPV tests will increase in subsequent reporting periods, and that turnaround time for HPV tests will be reported on starting from Report 33.

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 is all cytology *received by laboratories* within the reporting period, rather than cytology *taken* during the reporting period which was the criteria for Indicator 5.1.

The definition used for turnaround time differs between laboratories. For example a turnaround time of one day can mean within 24 hours, on the same day the sample is received, or on the day after the sample is received, therefore it has not been possible to use a definition here which is consistent with what all laboratories use.

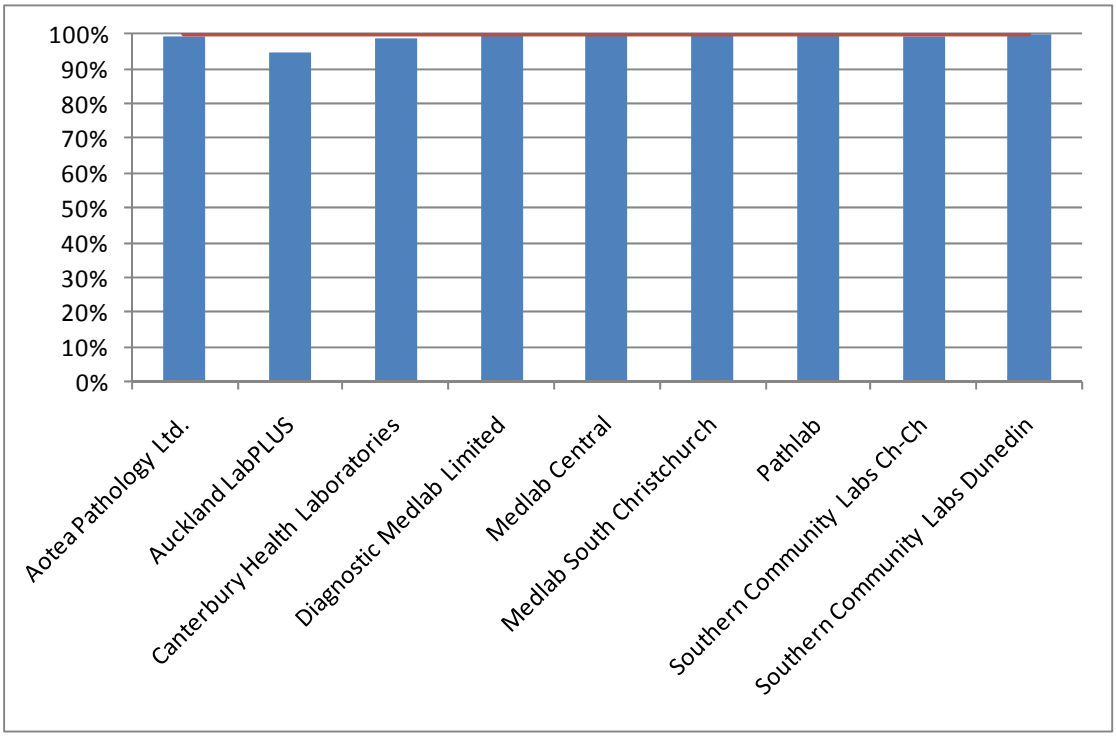
The calculations currently include public holidays as working days.

Figure 26 - Proportion of cytology samples reported within seven working days by laboratory, 1 July to 31 December 2009



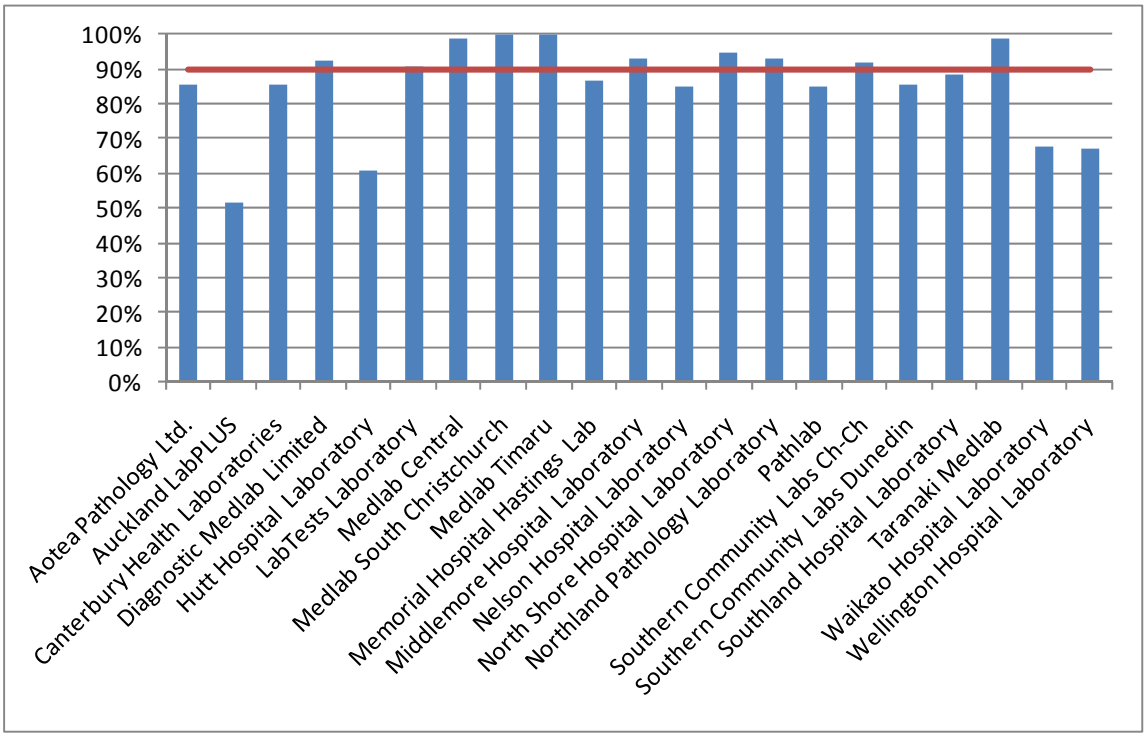
Target: 90 % within seven working days (red line)

Figure 27 - Proportion of cytology samples reported within 15 working days by laboratory, 1 July to 31 December 2009



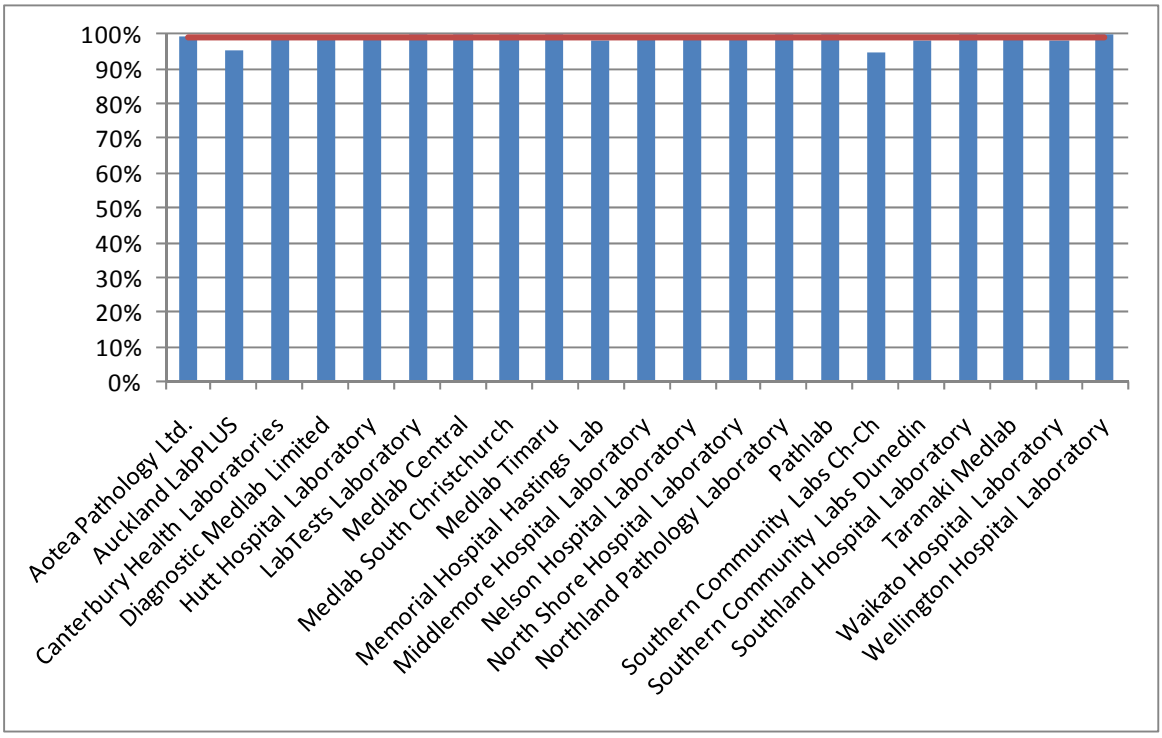
Target: 100% within 15 working days (red line)

Figure 28 - Proportion of histology samples reported within five working days or less by laboratory, 1 July to 31 December 2009



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

Figure 29 - Proportion of histology samples reported within 15 working days or less by laboratory, 1 July to 31 December 2009



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

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

Definition

The proportion of women (20-69 years) who have had a cervical sample showing a high grade cytology result for whom a histological report has been received by the NCSP Register. This proportion is a measure of the completeness of follow up of women with high grade cytology.

Each woman with a high grade cytology result, relating to a cytology sample taken in the six months preceding the current reporting period (ie 1 January 2009 – 30 June 2009), is followed for any histology samples taken on or after the date of the cytology sample. The period of time between the cytology and histology reports relating to these samples is calculated. The proportion of women with a histology report up to and including 90 days after their cytology report is calculated. Histology reports which occur prior to the cytology report are included, as long as the histology sample was not taken before the cytology sample, to allow for differences in turnaround times between cytology and histology.

In this report, exploratory 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 NZ modified (2005) interpretation codes are included as high grade cytology: ASH, HS1, HS2, SC, AG1-AG5, AIS, AC1-AC5.

High grade cytology reports which indicated that women were already under specialist management (TBS 2001 NZ modified 2005 recommendation code R13) are excluded. After these are excluded, follow-up of women who have more than one high grade cytology sample is based on the first cytology sample collected in the period.

Note that some women may be assessed at colposcopy but no biopsy taken. The colposcopy visit data for this group of women (Indicator 7.1) will supplement this indicator. As complete data were not available for Indicator 7.1, an exploratory analysis was performed 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, and within 360 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 2009).

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 3,406 high grade cytology results relating to samples collected in the period 1 July 2009 – 31 December 2009; 3,299 in women aged 20-69 years at the end of the period. 933 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 2,366 cytology results, which related to 2,242 women aged 20-69 years at the end of the reporting period. Histological follow-up for these 2,242 women is considered in this indicator. Where women had more than one high grade cytology result relating to a sample taken in the period, histological follow-up of the earliest cytology sample taken in the period was assessed. ***Histological follow-up*** Nationally, 1,762 women (78.6%) aged 20-69 years at the end of the period had a histology report within 90 days of their cytology report, and 1,928 (86.0%) 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 within 90 days of their cytology report varied by DHB from 65.9% (Southland) to 90.3% (South Canterbury). By 180 days this had increased to 73.2% (Southland) to 100.0% (West Coast) (Figure 30, Table 44). Two DHBs met the target for the proportion of women with histology within 90 days (South Canterbury, West Coast); one DHB met the target for 180 days (West Coast). The proportion of women with a histology report also varies by age, from 52.9% (ages 65-69 years) to 84.2% (ages 35-39 years) within 90 days, and from to 64.7% (ages 65-69 years) to 90.0% (ages 35-39 years) within 180 days (Table 45). The targets were not met in any age group nationally. There was some variation in the proportion of women with histological follow-up by ethnicity, however the targets were not met for any group of women nationally. At 90 days, it ranged from 57.1% (Pacific) to 80.6% (European/Other ethnic groups) at 90 days. By 180 days, however, the difference had narrowed slightly, and histology reports were available for 74.3% of Pacific women and 86.9% of European/Other women (Table 18, Table 19). Further breakdown by DHB and ethnicity is shown in Table 18 and Table 19, and breakdown by DHB and age is shown in Table 20 and Table 21. ***Any follow-up tests*** When follow-up tests of any kind (colposcopy, histology, an HPV test, or a subsequent cytology test) were considered, there remained 140 women (6.2%)

who had no record of any subsequent follow-up within 180 days on the NCSP Register, and 88 women (3.9%) who had no record of a follow-up test at 360 days (Figure 31, Table 46).

This varied by DHB at 180 days from 0.0% (West Coast) to 10.9% (Waikato), and at 360 days from 0.0% (South Canterbury, West Coast, Whanganui) to 7.7% (Tairawhiti). It also varied by ethnicity, from 5.2% (European/Other ethnic groups) to 11.0% (Asian) at 180 days, and from 3.7% (European/Other ethnic groups) to 7.1% (Pacific) at 360 days.

Trends

Histological follow-up

The proportion of women with a histology report within 90 days and within 180 days has increased, from 75.0% within 90 days in the previous reporting period to 78.6% in the current period, and from 83.7% within 180 days in the previous period to 86.0% in the current period.

The trends by DHB were more complex. In most DHBs the proportion of women for whom there was a histological report increased, but in some DHBs the proportion of women with a histology report decreased (Auckland, Bay of Plenty, Canterbury, Hawkes Bay). Three of the DHBs where there were the greatest decreases in the proportion of women with follow-up histology in the previous reporting period have had large increases during the current period (Capital & Coast, Southland, South Canterbury).

Trends over the three most recent reporting periods are shown in Figure 58 and Figure 59 (Appendix F).

Any follow-up tests

The proportion of women with no record of a follow-up test at 180 days has decreased slightly since the previous period, from 6.6% to 6.2%, but the proportion with no follow-up at 360 days increased slightly, from 3.1% in the previous reporting period to 3.9%. There was a decrease in the proportion of Māori women and Pacific women for whom there was no follow-up test record, but either no change or a slight increase among Asian women and European/Other women. Trends by DHB were once again complex, but reductions in the proportion of women with no follow-up test recorded were greatest in Capital & Coast, Counties Manukau, Lakes, Nelson Marlborough, South Canterbury, Southland, and Taranaki. In some DHBs the proportion of women without a follow-up test recorded increased, for example in Auckland, Bay of Plenty, Canterbury, Tairawhiti, and Waikato, however in some cases the increase in the current reporting period follows a decrease seen in the last monitoring period (Auckland, Bay of Plenty, Canterbury, Waikato), so does not appear to form a trend.

Trends over the three most recent reporting periods are shown in Figure 60 and Figure 61 (Appendix F).

Comments

The proportion of women with a follow-up test of any kind provides useful additional information. While 14.0% of women with high grade cytology reports had no record of a histology report within 180 days, the proportion without a record of a follow-up test of any kind was much lower (6.2%). This provides reassurance that the majority of women without histology have not been lost to follow-up.

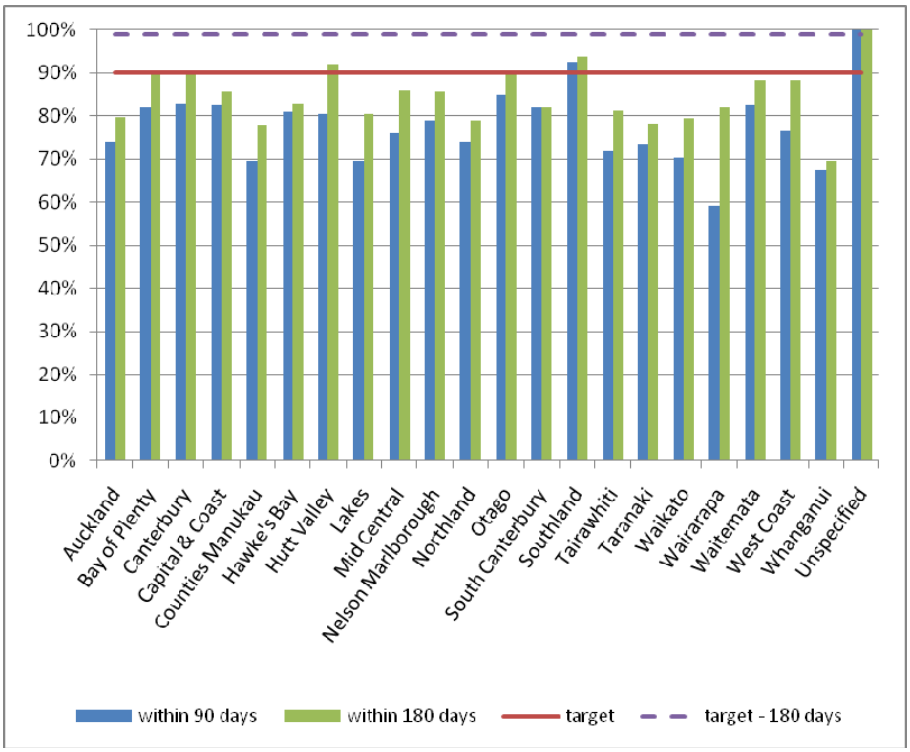
Note that while all *cytology results* which indicated that a woman was under specialist management were excluded from the measure of follow-up, not all *women* who had these cytology results were. If all cytology results for a woman indicated that she was under specialist management, she was excluded. 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) a wait time issue.

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

Figure 30 - Proportion of women (ages 20-69 years) with a histology report within 90 days, and within 180 days of their high grade cytology report, by DHB



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

Table 18 - Women (ages 20-69 years) with a histology report within 90 days of a high grade cytology report, by DHB and ethnicity

	Māori		Pacific		Asian		European/Other	
DHB	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Auckland	11	78.6	1	9.1	24	68.6	102	73.4
Bay of Plenty	22	71.0	3	75.0	3	100.0	74	81.3
Canterbury	14	63.6	3	100.0	6	85.7	165	80.1
Capital & Coast	13	86.7	4	80.0	3	60.0	69	80.2
Counties Manukau	17	58.6	12	60.0	15	78.9	69	85.2
Hawke's Bay	27	69.2	0	0.0	1	50.0	67	76.1
Hutt Valley	5	100.0	2	66.7	1	100.0	35	83.3
Lakes	23	85.2	0	0.0	1	33.3	36	81.8
Mid Central	19	95.0	1	50.0	1	50.0	72	73.5
Nelson Marlborough	5	100.0	-	-	-	-	59	86.8
Northland	21	67.7	0	0.0	0	0.0	25	73.5
Otago	3	75.0	1	100.0	4	100.0	97	85.8
South Canterbury	1	50.0	-	-	-	-	27	93.1
Southland	6	54.5	1	100.0	1	50.0	46	67.6
Tairawhiti	9	81.8	-	-	-	-	12	80.0
Taranaki	5	45.5	-	-	1	100.0	46	79.3
Waikato	46	88.5	3	60.0	10	62.5	151	81.6
Wairarapa	4	66.7	-	-	-	-	20	74.1
Waitemata	20	87.0	8	72.7	20	83.3	138	90.2
West Coast	2	100.0	1	100.0	-	-	15	88.2
Whanganui	6	85.7	-	-	-	-	27	75.0
Total	**279**	**76.0**	**40**	**57.1**	**91**	**71.7**	**1352**	**80.6**

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

Table 19 - Women (ages 20-69 years) with a histology report within 180 days of a high grade cytology report, by DHB and ethnicity

	Māori		Pacific		Asian		European/Other	
DHB	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Auckland	11	78.6	4	36.4	28	80.0	109	78.4
Bay of Plenty	26	83.9	3	75.0	3	100.0	79	86.8
Canterbury	17	77.3	3	100.0	6	85.7	178	86.4
Capital & Coast	14	93.3	5	100.0	3	60.0	79	91.9
Counties Manukau	20	69.0	15	75.0	16	84.2	74	91.4
Hawke's Bay	32	82.1	0	0.0	1	50.0	73	83.0
Hutt Valley	5	100.0	2	66.7	1	100.0	38	90.5
Lakes	25	92.6	0	0.0	2	66.7	38	86.4
Mid Central	19	95.0	2	100.0	2	100.0	85	86.7
Nelson Marlborough	5	100.0	-	-	-	-	64	94.1
Northland	24	77.4	0	0.0	2	66.7	27	79.4
Otago	4	100.0	1	100.0	4	100.0	105	92.9
South Canterbury	2	100.0	-	-	-	-	28	96.6
Southland	7	63.6	1	100.0	2	100.0	50	73.5
Tairawhiti	9	81.8	-	-	-	-	13	86.7
Taranaki	9	81.8	0	0.0	1	100.0	52	89.7
Waikato	49	94.2	5	100.0	11	68.8	154	83.2
Wairarapa	5	83.3	-	-	-	-	26	96.3
Waitemata	20	87.0	10	90.9	23	95.8	140	91.5
West Coast	2	100.0	1	100.0	-	-	17	100.0
Whanganui	7	100.0	-	-	-	-	30	83.3
Total	**312**	**85.0**	**52**	**74.3**	**105**	**82.7**	**1,459**	**86.9**

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

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

	20-24		25-29		30-34		35-39		40-44		45-49		50-54		55-59		60-64		65-69		Total
DHB	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	
Auckland	17	56.7	27	65.9	29	67.4	26	86.7	11	68.8	14	77.8	6	100.0	1	25.0	5	62.5	2	66.7	138
Bay of Plenty	21	75.0	20	83.3	16	94.1	17	89.5	8	88.9	7	70.0	5	62.5	5	55.6	1	100.0	2	50.0	102
Canterbury	35	76.1	48	87.3	35	92.1	27	84.4	17	70.8	11	73.3	6	50.0	3	42.9	4	80.0	2	50.0	188
Capital & Coast	24	75.0	19	73.1	17	89.5	9	81.8	6	85.7	7	100.0	-	-	3	100.0	2	66.7	2	66.7	89
Counties Manukau	16	80.0	29	76.3	17	77.3	11	78.6	14	82.4	11	64.7	6	66.7	2	66.7	7	87.5	0	0.0	113
Hawke's Bay	19	79.2	23	76.7	14	77.8	16	88.9	7	63.6	3	42.9	4	40.0	4	66.7	4	80.0	1	100.0	95
Hutt Valley	10	83.3	13	92.9	8	80.0	5	100.0	3	50.0	4	100.0	-	-	-	-	-	-	-	-	43
Lakes	11	73.3	13	92.9	8	80.0	9	75.0	5	83.3	6	75.0	3	100.0	4	100.0	-	-	1	33.3	60
Mid Central	28	71.8	20	90.9	10	58.8	10	90.9	8	88.9	7	63.6	1	100.0	2	100.0	6	66.7	1	100.0	93
Nelson Marlborough	15	93.8	15	88.2	9	90.0	8	88.9	3	75.0	3	100.0	5	83.3	2	50.0	2	100.0	2	100.0	64
Northland	10	71.4	8	72.7	9	81.8	6	85.7	5	71.4	3	60.0	2	28.6	2	50.0	0	0.0	1	50.0	46
Otago	34	87.2	23	92.0	17	89.5	10	90.9	6	100.0	8	72.7	3	75.0	1	50.0	3	75.0	0	0.0	105
South Canterbury	12	80.0	7	100.0	2	100.0	3	100.0	1	100.0	1	100.0	-	-	1	100.0	1	100.0	-	-	28
Southland	8	47.1	14	70.0	12	70.6	7	70.0	2	66.7	7	87.5	3	75.0	0	0.0	1	50.0	-	-	54
Tairawhiti	7	77.8	3	100.0	3	75.0	2	66.7	3	100.0	-	-	1	100.0	-	-	2	66.7	-	-	21
Taranaki	18	75.0	10	76.9	8	66.7	6	75.0	2	100.0	3	75.0	2	66.7	1	100.0	1	50.0	1	100.0	52
Waikato	61	85.9	49	83.1	27	93.1	25	73.5	16	84.2	11	73.3	9	69.2	3	60.0	7	87.5	2	40.0	210
Wairarapa	5	83.3	7	77.8	2	66.7	4	100.0	2	66.7	0	0.0	2	66.7	1	100.0	1	50.0	0	0.0	24
Waitemata	31	81.6	38	92.7	35	89.7	28	90.3	19	95.0	13	86.7	9	90.0	7	70.0	5	83.3	1	100.0	186
West Coast	5	100.0	3	75.0	2	100.0	1	100.0	4	100.0	1	100.0	1	100.0	0	0.0	1	100.0	-	-	18
Whanganui	10	71.4	6	100.0	6	100.0	5	83.3	2	100.0	3	75.0	0	0.0	0	0.0	1	50.0	0	0.0	33
Total	**397**	**77.2**	**395**	**82.5**	**286**	**82.2**	**235**	**84.2**	**144**	**80.4**	**123**	**74.5**	**68**	**66.7**	**42**	**60.9**	**54**	**74.0**	**18**	**52.9**	**1,762**

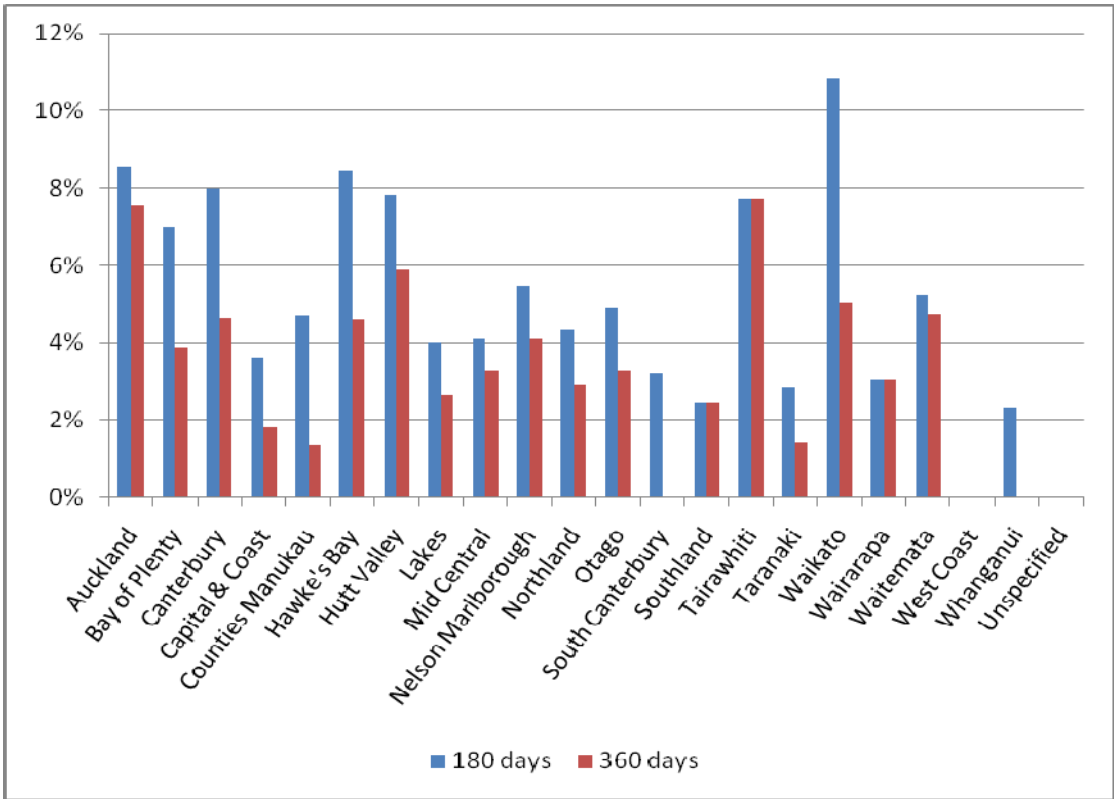
' – ' indicates there were no women in this sub-category with a high grade cytology report

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

	20-24		25-29		30-34		35-39		40-44		45-49		50-54		55-59		60-64		65-69		Total
DHB	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	
Auckland	20	66.7	31	75.6	32	74.4	27	90.0	11	68.8	15	83.3	6	100.0	2	50.0	6	75.0	2	66.7	152
Bay of Plenty	23	82.1	22	91.7	16	94.1	17	89.5	9	100.0	7	70.0	5	62.5	7	77.8	1	100.0	4	100.0	111
Canterbury	41	89.1	50	90.9	35	92.1	31	96.9	20	83.3	11	73.3	7	58.3	3	42.9	4	80.0	2	50.0	204
Capital & Coast	28	87.5	22	84.6	18	94.7	11	100.0	7	100.0	7	100.0	-	-	3	100.0	2	66.7	3	100.0	101
Counties Manukau	16	80.0	31	81.6	20	90.9	12	85.7	15	88.2	13	76.5	8	88.9	3	100.0	7	87.5	0	0.0	125
Hawke's Bay	20	83.3	24	80.0	17	94.4	16	88.9	8	72.7	4	57.1	7	70.0	5	83.3	4	80.0	1	100.0	106
Hutt Valley	10	83.3	14	100.0	9	90.0	5	100.0	4	66.7	4	100.0	-	-	-	-	-	-	-	-	46
Lakes	12	80.0	14	100.0	8	80.0	10	83.3	6	100.0	7	87.5	3	100.0	4	100.0	-	-	1	33.3	65
Mid Central	34	87.2	22	100.0	14	82.4	11	100.0	9	100.0	8	72.7	1	100.0	2	100.0	6	66.7	1	100.0	108
Nelson Marlborough	16	100.0	15	88.2	9	90.0	8	88.9	4	100.0	3	100.0	6	100.0	4	100.0	2	100.0	2	100.0	69
Northland	11	78.6	10	90.9	10	90.9	6	85.7	5	71.4	4	80.0	4	57.1	2	50.0	0	0.0	1	50.0	53
Otago	38	97.4	23	92.0	19	100.0	11	100.0	6	100.0	8	72.7	3	75.0	2	100.0	4	100.0	0	0.0	114
South Canterbury	14	93.3	7	100.0	2	100.0	3	100.0	1	100.0	1	100.0	-	-	1	100.0	1	100.0	-	-	30
Southland	9	52.9	16	80.0	14	82.4	7	70.0	2	66.7	7	87.5	3	75.0	0	0.0	2	100.0	-	-	60
Tairawhiti	7	77.8	3	100.0	4	100.0	2	66.7	3	100.0	-	-	1	100.0	-	-	2	66.7	-	-	22
Taranaki	21	87.5	12	92.3	10	83.3	7	87.5	2	100.0	4	100.0	3	100.0	1	100.0	1	50.0	1	100.0	62
Waikato	64	90.1	50	84.7	27	93.1	27	79.4	16	84.2	12	80.0	10	76.9	3	60.0	8	100.0	2	40.0	219
Wairarapa	6	100.0	9	100.0	3	100.0	4	100.0	2	66.7	1	100.0	3	100.0	1	100.0	2	100.0	0	0.0	31
Waitemata	31	81.6	39	95.1	37	94.9	29	93.5	20	100.0	14	93.3	9	90.0	7	70.0	6	100.0	1	100.0	193
West Coast	5	100.0	4	100.0	2	100.0	1	100.0	4	100.0	1	100.0	1	100.0	1	100.0	1	100.0	-	-	20
Whanganui	11	78.6	6	100.0	6	100.0	6	100.0	2	100.0	4	100.0	0	0.0	0	0.0	1	50.0	1	100.0	37
Total	**437**	**85.0**	**424**	**88.5**	**312**	**89.7**	**251**	**90.0**	**156**	**87.2**	**135**	**81.8**	**80**	**78.4**	**51**	**73.9**	**60**	**82.2**	**22**	**64.7**	**1,928**

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

Figure 31 – Proportion of women (ages 20-69 years) without any follow-up test within 180 days and 360 days of a high grade cytology report, by DHB



Indicator 7 – Colposcopy indicators

Definition	The calculation of these indicators is under development, and will include measures such as: 1. Waiting time for colposcopic assessment of abnormal cytology results 2. Adequacy of recording at colposcopy 3. Minimum colposcopy volumes 4. Correlation between colposcopy and histology 5. Adequacy of treatment Some of these measures are still being defined.
Current Situation	Colposcopy data is being collected on the NCSP Register, but data relating to the time period of this report are believed to be incomplete, therefore measures were not calculated for the current reporting period. Data completeness is improving, and it is anticipated that these colposcopy indicators will be reported upon in future.

Appendix A – Additional data

Indicator 1 - Coverage

Table 22 - Coverage by age (women 20-69 years screened in the three years prior to 31 December 2009, hysterectomy adjusted)

Age (years)	Hysterectomy-adjusted population	Women screened in the last 3 years	
		N	%
20-24	**138,856**	**82,949**	**59.7**
25-29	**126,643**	**96,903**	**76.5**
30-34	**143,204**	**101,663**	**71.0**
35-39	**156,288**	**120,764**	**77.3**
40-44	**154,324**	**120,037**	**77.8**
45-49	**137,222**	**119,648**	**87.2**
50-54	**109,471**	**97,267**	**88.9**
55-59	**94,032**	**76,944**	**81.8**
60-64	**70,367**	**62,630**	**89.0**
65-69	**60,445**	**42,722**	**70.7**
TOTAL	**1,190,853**	**921,527**	**77.4**

Target: 75%

Table 23 - Coverage by DHB (women 25-69 years screened in the three years prior to 31 December 2009, hysterectomy adjusted)

DHB	Hysterectomy-adjusted population	Women screened in the last 3 years	
		N	%
Auckland	121,197	92,357	76.2
Bay of Plenty	49,456	40,836	82.6
Canterbury	119,230	97,680	81.9
Capital & Coast	74,302	62,657	84.3
Counties Manukau	111,484	83,973	75.3
Hawke's Bay	37,275	29,770	79.9
Hutt Valley	35,428	28,438	80.3
Lakes	25,793	19,672	76.3
Mid Central	39,320	30,132	76.6
Nelson Marlborough	34,930	27,923	79.9
Northland	37,252	28,781	77.3
Otago	43,342	36,425	84.0
South Canterbury	13,112	10,564	80.6
Southland	27,498	21,678	78.8
Tairawhiti	10,808	8,480	78.5
Taranaki	25,596	22,373	87.4
Waikato	82,602	67,032	81.2
Wairarapa	9,675	7,852	81.2
Waitemata	130,773	104,288	79.7
West Coast	7,628	5,736	75.2
Whanganui	15,218	11,241	73.9
Unspecified	-	*690*	-
Total	**1,051,997**	**838,578**	**79.7**

Target: 75%

Table 24 - Coverage by ethnicity (women 25-69 years screened in the three years prior to 31 December 2009, hysterectomy adjusted)

Ethnicity	Hysterectomy adjusted population (ages 25-69 years)	Women screened in the last 3 years (ages 25-69 years)	
		N	%
Māori	138,653	80,156	57.8
Pacific	58,608	37,921	64.7
Asian	106,289	72,102	67.8
European/Other	748,447	648,399	86.6
Total	**1,051,997**	**838,578**	**79.7**

Table 25 - Coverage by ethnicity (women 25-69 years screened in the three years prior to 31 December 2009, hysterectomy adjusted) – counts weighted using ethnicity adjustors to correct for undercounting in NCSP Register

Ethnicity	Hysterectomy adjusted population (ages 25-69 years)	Women screened in the last 3 years (ages 25-69 years; adjusted for ethnicity misclassification)	
		N	%
Māori	138,653	95,598	68.9
Pacific	58,608	42,417	72.4
Asian	106,289	94,774	89.2
European/Other	748,447	600,132	80.2

Table 26 - Coverage by ethnicity (women 20-69 years screened in the three years prior to 31 December 2009, hysterectomy adjusted) – counts weighted using ethnicity adjustors to correct for undercounting in NCSP Register

Ethnicity	Hysterectomy adjusted population (ages 20-69 years)	Women screened in the last 3 years (ages 20-69 years; adjusted for ethnicity misclassification)	
		N	%
Māori	163,913	112,452	68.6
Pacific	68,598	47,968	69.9
Asian	129,626	100,315	77.4
European/ Other	828,716	651,553	78.6

Table 27 - Coverage by age (women 20-69 years screened in the five years prior to 31 December 2009, hysterectomy adjusted)

Age (years)	Number of women screened in last 5 years	Hysterectomy-adjusted population	% screened in the last 5 years
20-24	89,922	138,856	64.8
25-29	116,943	126,643	92.3
30-34	120,443	143,204	84.1
35-39	140,699	156,288	90.0
40-44	138,948	154,324	90.0
45-49	137,876	137,222	100.5
50-54	112,284	109,471	102.6
55-59	88,079	94,032	93.7
60-64	71,698	70,367	101.9
65-69	49,661	60,445	82.2
TOTAL	**1,066,553**	**1,190,853**	**89.6**

Table 28 - Coverage by DHB (women aged 25-69 years screened in the five years prior to 31 December 2009, hysterectomy adjusted)

DHB	Hysterectomy adjusted population	Women screened in the last 5 years	
		N	%
Auckland	121,197	109,308	90.2
Bay of Plenty	49,456	47,121	95.3
Canterbury	119,230	114,031	95.6
Capital & Coast	74,302	72,540	97.6
Counties Manukau	111,484	98,667	88.5
Hawke's Bay	37,275	34,328	92.1
Hutt Valley	35,428	33,063	93.3
Lakes	25,793	22,984	89.1
Mid Central	39,320	34,863	88.7
Nelson Marlborough	34,930	32,389	92.7
Northland	37,252	33,652	90.3
Otago	43,342	42,089	97.1
South Canterbury	13,112	12,158	92.7
Southland	27,498	25,311	92.0
Tairawhiti	10,808	10,083	93.3
Taranaki	25,596	25,605	100.0
Waikato	82,602	78,101	94.6
Wairarapa	9,675	8,840	91.4
Waitemata	130,773	120,760	92.3
West Coast	7,628	6,744	88.4
Whanganui	15,218	13,171	86.5
Unspecified	-	*823*	-
Total	**1,051,997**	**976,631**	**92.8**

Table 29 - Coverage by ethnicity (women aged 25-69 years screened in the five years prior to 31 December 2009, hysterectomy adjusted)

Ethnicity	Hysterectomy adjusted population	Women screened in the last 5 years	
		N	%
Māori	138,653	96,971	69.9
Pacific	58,608	45,405	77.5
Asian	106,289	83,875	78.9
European/Other	748,447	750,380	100.3
TOTAL	**1,051,997**	**976,631**	**92.8**

Table 30 - Women under 20 years of age, and aged 15-19 years, screened in the three years prior to 31 December 2009, by DHB

DHB	Number of women screened in last 3 years		% of population aged 15-19 years screened
	aged < 20 years	aged 15-19 years	
Auckland	1,972	1,963	12.1
Bay of Plenty	656	652	8.6
Canterbury	3,074	3,058	16.8
Capital & Coast	1,050	1,045	9.1
Counties Manukau	2,599	2,576	12.5
Hawke's Bay	719	713	11.7
Hutt Valley	509	504	8.5
Lakes	365	365	8.5
Mid Central	511	507	6.7
Nelson Marlborough	467	464	10.0
Northland	513	509	8.1
Otago	973	967	11.0
South Canterbury	321	314	16.6
Southland	474	473	12.3
Tairawhiti	226	224	11.1
Taranaki	421	420	9.9
Waikato	1,081	1,077	7.1
Wairarapa	171	169	11.5
Waitemata	2,645	2,634	13.1
West Coast	125	125	11.7
Whanganui	170	169	6.3
Unspecified	*14*	*14*	-
Total	**19,058**	**18,942**	**11.1**

Table 31 – Women screened under 20 years of age, as a proportion of all women screened in the three years to 31 December 2009, by DHB

DHB	Number of women screened in last 3 years		Proportion of women screened who were aged < 20 years (%)
	aged < 20 years	all ages	
Auckland	1,972	103,418	1.9
Bay of Plenty	656	45,986	1.4
Canterbury	3,074	111,633	2.8
Capital & Coast	1,050	71,337	1.5
Counties Manukau	2,599	95,051	2.7
Hawke's Bay	719	33,523	2.1
Hutt Valley	509	31,732	1.6
Lakes	365	21,994	1.7
Mid Central	511	34,607	1.5
Nelson Marlborough	467	30,872	1.5
Northland	513	32,171	1.6
Otago	973	42,724	2.3
South Canterbury	321	11,855	2.7
Southland	474	24,493	1.9
Tairawhiti	226	9,624	2.3
Taranaki	421	25,200	1.7
Waikato	1,081	76,193	1.4
Wairarapa	171	8,741	2.0
Waitemata	2,645	116,748	2.3
West Coast	125	6,390	2.0
Whanganui	170	12,685	1.3
Unspecified	*14*	*767*	*1.8*
Total	**19,058**	**947,744**	**2.0**

Indicator 2 – First screening events

Table 32 - Age distribution of first screening events for period 1 July to 31 December 2009

Age (years)	Number of first screening events	% of first events which are in that age group
20-24	10,053	43.4
25-29	3,654	15.8
30-34	2,457	10.6
35-39	2,008	8.7
40-44	1,529	6.6
45-49	1,168	5.0
50-54	798	3.4
55-59	646	2.8
60-64	522	2.3
65-69	347	1.5
Total (20-69 years)	**23,182**	

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

Figure 32 - Women with a first screening event as a proportion of all women with screening event (ages 20-69 years) by DHB, 1 July to 31 December 2009

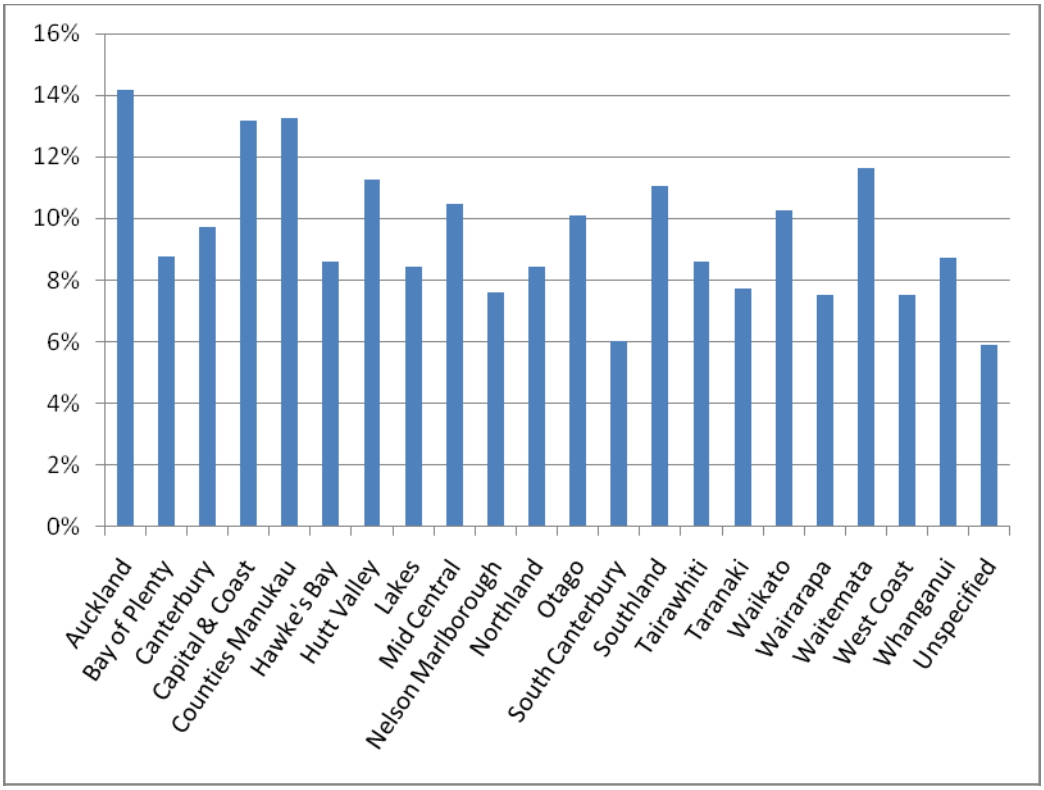


Table 33 - Women with a first screening event as a proportion of all women with screening event (ages 20-69 years) by ethnicity, 1 July to 31 December 2009: counts weighted using ethnicity adjustors to correct for undercounting in NCSP Register.

Ethnicity	Women with first events (adjusted)	As a proportion of women with a screening event[i]		As a proportion of eligible population[ii]	
		N	%	N	%
Māori	3,069	26,596	11.5	163,913	1.9
Pacific	2,082	10,974	19.0	68,598	3.0
Asian	6,321	25,589	24.7	129,626	4.9
European/Other	12,319	148,684	8.3	828,716	1.5

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

Indicator 3 – Withdrawals

Table 34 - Withdrawal rates by DHB for the period 1 July to 31 December 2009

DHB	Enrolled at start	Women withdrawn	
		N	%
Auckland	161,513	8	0.005
Bay of Plenty	63,954	2	0.003
Canterbury	155,379	6	0.004
Capital & Coast	100,910	6	0.006
Counties Manukau	137,481	4	0.003
Hawke's Bay	46,729	1	0.002
Hutt Valley	47,088	-	0.000
Lakes	32,378	-	0.000
Mid Central	48,757	-	0.000
Nelson Marlborough	41,718	2	0.005
Northland	45,511	2	0.004
Otago	58,286	2	0.003
South Canterbury	15,903	2	0.013
Southland	34,473	1	0.003
Tairawhiti	13,859	-	0.000
Taranaki	33,309	1	0.003
Waikato	106,873	4	0.004
Wairarapa	11,270	-	0.000
Waitemata	161,012	3	0.002
West Coast	9,077	-	0.000
Whanganui	18,409	2	0.011
Unspecified	*2,165*	*1*	*0.046*
Total	**1,346,054**	**47**	**0.003**

Indicator 4 – Early re-screening

Table 35 - Early re-screening by five-year age group, 1 July to 31 December 2009 (cohort method)

Age	Women recommended to return in 3 yrs	Women with >= 1 subsequent test	
		N	%
20-24	1,180	382	32.4
25-29	3,795	1,074	28.3
30-34	4,136	1,140	27.6
35-39	5,255	1,517	28.9
40-44	5,697	1,597	28.0
45-49	5,777	1,615	28.0
50-54	4,850	1,379	28.4
55-59	3,981	1,078	27.1
60-64	3,188	730	22.9
65-69	2,192	447	20.4
TOTAL	**40,051**	**10,959**	**27.4**

Table 36 - Early re-screening by DHB, 1 July to 31 December 2009 (cohort method)

DHB	Women recommended to return in 3 yrs	Women with >= 1 subsequent test	
		N	%
Auckland	4,531	1,660	36.6
Bay of Plenty	1,956	616	31.5
Canterbury	4,767	1,182	24.8
Capital & Coast	3,103	869	28.0
Counties Manukau	3,714	1,030	27.7
Hawke's Bay	1,325	295	22.3
Hutt Valley	1,355	277	20.4
Lakes	946	362	38.3
Mid Central	1,290	257	19.9
Nelson Marlborough	1,452	251	17.3
Northland	1,332	393	29.5
Otago	1,805	310	17.2
South Canterbury	464	113	24.4
Southland	1,029	184	17.9
Tairawhiti	320	78	24.4
Taranaki	922	116	12.6
Waikato	3,171	567	17.9
Wairarapa	396	106	26.8
Waitemata	5,345	2,127	39.8
West Coast	263	51	19.4
Whanganui	517	104	20.1
Unspecified	*48*	*11*	*22.9*
Total	**40,051**	**10,959**	**27.4**

Table 37 - Early re-screening by ethnicity, 1 July to 31 December 2009 (cohort method)

Ethnicity	Women recommended to return in 3 yrs	Women with >= 1 subsequent test	
		N	%
Māori	3,263	832	25.5
Pacific	1,285	322	25.1
Asian	2,984	1,016	34.0
European/Other	32,519	8,789	27.0
Total	**40,051**	**10,959**	**27.4**

Indicator 5 – Laboratory indicators

Indicator 5.2 – Accuracy of cytology predicting HSIL

Table 38 - Positive predictive value of a report of HSIL+SC cytology by laboratory, 1 July to 31 December 2009

Laboratory	Histology available		HSIL confirmed by histology		No histology		Total reports
	N	%	N	%	N	%	N
Aotea Pathology Ltd	85	92.4	65	76.5	7	7.6	92
Auckland LabPLUS	190	92.2	173	91.1	16	7.8	206
Canterbury Health Laboratories	140	93.3	120	85.7	10	6.7	150
Diagnostic Medlab Limited	203	90.6	160	78.8	21	9.4	224
Medlab Central Ltd	127	91.4	102	80.3	12	8.6	139
Medlab South Christchurch	60	93.8	55	91.7	4	6.3	64
Pathlab	125	90.6	97	77.6	13	9.4	138
Southern Community Labs Ch-Ch	62	92.5	49	79.0	5	7.5	67
Southern Community Labs Dunedin	411	89.5	352	85.6	48	10.5	459
Total	**1,403**	**91.2**	**1,173**	**83.6**	**136**	**8.8**	**1,539**

Target: 65% - 85%

Table 39 - Positive predictive value of a report of ASC-H cytology by laboratory, 1 July to 31 December 2009

Laboratory	Histology available		ASC-H confirmed by histology		No histology		Total reports
	N	%	N	%	N	%	N
Aotea Pathology Ltd	79	81.4	32	40.5	18	18.6	97
Auckland LabPLUS	166	76.9	85	51.2	50	23.1	216
Canterbury Health Laboratories	135	88.2	87	64.4	18	11.8	153
Diagnostic Medlab Limited	238	77.5	116	48.7	69	22.5	307
Medlab Central Ltd	114	74.0	52	45.6	40	26.0	154
Medlab South Christchurch	80	85.1	44	55.0	14	14.9	94
Pathlab	91	72.8	40	44.0	34	27.2	125
Southern Community Labs Ch-Ch	18	75.0	9	50.0	6	25.0	24
Southern Community Labs Dunedin	65	77.4	38	58.5	19	22.6	84
Total	**986**	**78.6**	**503**	**51.0**	**268**	**21.4**	**1,254**

Table 40 - Positive predictive value of a report of ASC-H + HSIL + SC cytology by laboratory, 1 July to 31 December 2009

Laboratory	Histology available		Abnormality confirmed by histology		No histology		Total reports
	N	%	N	%	N	%	N
Aotea Pathology Ltd	164	86.8	97	59.1	25	13.2	189
Auckland LabPLUS	356	84.4	258	72.5	66	15.6	422
Canterbury Health Laboratories	275	90.8	207	75.3	28	9.2	303
Diagnostic Medlab Limited	441	83.1	276	62.6	90	16.9	531
Medlab Central Ltd	241	82.3	154	63.9	52	17.7	293
Medlab South Christchurch	140	88.6	99	70.7	18	11.4	158
Pathlab	216	82.1	137	63.4	47	17.9	263
Southern Community Labs Ch-Ch	80	87.9	58	72.5	11	12.1	91
Southern Community Labs Dunedin	476	87.7	390	81.9	67	12.3	543
Total	**2,389**	**85.5**	**1,676**	**70.2**	**404**	**14.5**	**2,793**

Table 41 - Positive predictive value of a report of glandular abnormalities (AG1-AG5, AC1-AC4) by laboratory, 1 July to 31 December 2009

Laboratory	Histology available		Abnormality confirmed by histology		No histology		Total reports
	N	%	N	%	N	%	N
Aotea Pathology Ltd	10	83.3	3	30.0	2	16.7	12
Auckland LabPLUS	29	69.0	10	34.5	13	31.0	42
Canterbury Health Laboratories	15	62.5	8	53.3	9	37.5	24
Diagnostic Medlab Limited	32	84.2	17	53.1	6	15.8	38
Medlab Central Ltd	10	71.4	3	30.0	4	28.6	14
Medlab South Christchurch	6	50.0	3	50.0	6	50.0	12
Pathlab	35	74.5	13	37.1	12	25.5	47
Southern Community Labs Ch-Ch	5	83.3	4	80.0	1	16.7	6
Southern Community Labs Dunedin	20	71.4	12	60.0	8	28.6	28
Total	**162**	**72.6**	**73**	**45.1**	**61**	**27.4**	**223**

Indicator 5.5 – Laboratory turnaround time

Table 42 - Timeliness of cytology reporting by laboratory, 1 July to 31 December 2009

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	20,616	90.6	1,946	8.6	22,562	99.2	193	0.8	**22,755**
Auckland LabPLUS	6,864	74.4	1,875	20.3	8,739	94.7	488	5.3	**9,227**
Canterbury Health Laboratories	10,584	85.4	1,635	13.2	12,219	98.6	176	1.4	**12,395**
Diagnostic Medlab Limited	66,197	99.3	379	0.6	66,576	99.8	112	0.2	**66,688**
Medlab Central Ltd	14,822	79.9	3,673	19.8	18,495	99.7	59	0.3	**18,554**
Medlab South Christchurch	15,552	100.0	-	0.0	15,552	100.0	-	0.0	**15,552**
Pathlab	19,690	96.9	619	3.0	20,309	100.0	2	0.0	**20,311**
Southern Community Labs Ch-Ch	7,670	75.5	2,443	24.0	10,113	99.5	46	0.5	**10,159**
Southern Community Labs Dunedin	39,273	91.6	3,468	8.1	42,741	99.7	127	0.3	**42,868**
Total	**201,268**	**92.1**	**16,038**	**7.3**	**217,306**	**99.4**	**1,203**	**0.6**	**218,509**

Target: 90 % within seven working days and 100% within 15 working days.
Note: total samples reported on for this Indicator is different from that reported in Indicator 5.1. Here, 'total samples' refers to all cytology samples received by laboratories *within the reporting period. Indicator 5.1 shows the total number of cytology samples* taken *during the period.*

Table 43 - Timeliness of histology reporting by laboratory, 1 July to 31 December 2009

Laboratory	Laboratory turnaround time - histology								
	Within 5 days		6-15 days		Total within 15 days		More than 15 days		Total
	N	%	N	%	N	%	N	%	N
Aotea Pathology Ltd	289	85.5	47	13.9	336	99.4	2	0.6	**338**
Auckland LabPLUS	319	51.5	272	43.9	591	95.3	29	4.7	**620**
Canterbury Health Laboratories	925	85.4	152	14.0	1,077	99.4	6	0.6	**1,083**
Diagnostic Medlab Limited	1,324	92.5	96	6.7	1,420	99.2	11	0.8	**1,431**
Hutt Hospital Laboratory	138	60.5	87	38.2	225	98.7	3	1.3	**228**
LabTests Laboratory	10	90.9	1	9.1	11	100.0	-	0.0	**11**
Medlab Central Ltd	1,200	99.0	12	1.0	1,212	100.0	-	0.0	**1,212**
Medlab South Christchurch	94	100.0	-	0.0	94	100.0	-	0.0	**94**
Medlab Timaru	173	100.0	-	0.0	173	100.0	-	0.0	**173**
Memorial Hospital Hastings Lab	85	86.7	11	11.2	96	98.0	2	2.0	**98**
Middlemore Hospital Laboratory	698	92.7	49	6.5	747	99.2	6	0.8	**753**
Nelson Hospital Laboratory	365	84.7	62	14.4	427	99.1	4	0.9	**431**
North Shore Hospital Laboratory	930	94.6	48	4.9	978	99.5	5	0.5	**983**
Northland Pathology Laboratory	336	93.1	24	6.6	360	99.7	1	0.3	**361**
Pathlab	988	84.9	175	15.0	1,163	99.9	1	0.1	**1,164**
Southern Community Labs Ch-Ch	528	91.8	18	3.1	546	95.0	29	5.0	**575**
Southern Community Labs Dunedin	1,259	85.6	186	12.7	1,445	98.3	25	1.7	**1,470**
Southland Hospital Laboratory	100	88.5	13	11.5	113	100.0	-	0.0	**113**
Taranaki Medlab	222	98.7	2	0.9	224	99.6	1	0.4	**225**
Waikato Hospital Laboratory	142	67.9	63	30.1	205	98.1	4	1.9	**209**
Wellington Hospital Laboratory	380	67.4	182	32.3	562	99.6	2	0.4	**564**
Total	**10,505**	**86.6**	**1,500**	**12.4**	**12,005**	**98.9**	**131**	**1.1**	**12,136**

Target: 90% within five working days and 100% within a reasonable time period of receipt of the sample
Note: total histology samples reported on for this Indicator is different from that reported in Indicator 5.4. Indicator 5.5 includes all histology samples received by laboratories *within the reporting period, while 5.4 includes all histology samples* taken *within the reporting period*

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

Table 44 – Women (ages 20-69 years) with a histology report within 90 and 180 days of a high grade cytology report, by DHB

DHB	High-grade cytology	Follow-up histology within 90 days		Follow-up histology within 180 days	
	N	N	%	N	%
Auckland	199	138	69.3	152	76.4
Bay of Plenty	129	102	79.1	111	86.0
Canterbury	238	188	79.0	204	85.7
Capital & Coast	111	89	80.2	101	91.0
Counties Manukau	149	113	75.8	125	83.9
Hawke's Bay	130	95	73.1	106	81.5
Hutt Valley	51	43	84.3	46	90.2
Lakes	75	60	80.0	65	86.7
Mid Central	122	93	76.2	108	88.5
Nelson Marlborough	73	64	87.7	69	94.5
Northland	69	46	66.7	53	76.8
Otago	122	105	86.1	114	93.4
South Canterbury	31	28	90.3	30	96.8
Southland	82	54	65.9	60	73.2
Tairawhiti	26	21	80.8	22	84.6
Taranaki	70	52	74.3	62	88.6
Waikato	258	210	81.4	219	84.9
Wairarapa	33	24	72.7	31	93.9
Waitemata	211	186	88.2	193	91.5
West Coast	20	18	90.0	20	100.0
Whanganui	43	33	76.7	37	86.0
Total	**2,242**	**1,762**	**78.6**	**1,928**	**86.0**

Table 45 - Women (ages 20-69 years) with a histology report within 90 and 180 days of a high grade cytology report, by age

Age (years)	Follow-up histology within 90 days		Follow-up histology within 180 days	
	N	%	N	%
20-24	397	77.2	437	85.0
25-29	395	82.5	424	88.5
30-34	286	82.2	312	89.7
35-39	235	84.2	251	90.0
40-44	144	80.4	156	87.2
45-49	123	74.5	135	81.8
50-54	68	66.7	80	78.4
55-59	42	60.9	51	73.9
60-64	54	74.0	60	82.2
65-69	18	52.9	22	64.7
Total	**1,762**	**78.6**	**1,928**	**86.0**

Table 46 - Women (ages 20-69 years) without any follow-up test within 180 days and within 360 days of a high grade cytology report, by DHB

DHB	High grade cytology	Without a follow-up test by 180 days		Without a follow-up test by 360 days	
	N	N	%	N	%
Auckland	199	17	8.5	15	7.5
Bay of Plenty	129	9	7.0	5	3.9
Canterbury	238	19	8.0	11	4.6
Capital & Coast	111	4	3.6	2	1.8
Counties Manukau	149	7	4.7	2	1.3
Hawke's Bay	130	11	8.5	6	4.6
Hutt Valley	51	4	7.8	3	5.9
Lakes	75	3	4.0	2	2.7
Mid Central	122	5	4.1	4	3.3
Nelson Marlborough	73	4	5.5	3	4.1
Northland	69	3	4.3	2	2.9
Otago	122	6	4.9	4	3.3
South Canterbury	31	1	3.2	0	0.0
Southland	82	2	2.4	2	2.4
Tairawhiti	26	2	7.7	2	7.7
Taranaki	70	2	2.9	1	1.4
Waikato	258	28	10.9	13	5.0
Wairarapa	33	1	3.0	1	3.0
Waitemata	211	11	5.2	10	4.7
West Coast	20	0	0.0	0	0.0
Whanganui	43	1	2.3	0	0.0
Total	**2,242**	**140**	**6.2**	**88**	**3.9**

Table 47 - Women (ages 20-69 years) without any follow-up test within 180 days and within 360 days of a high grade cytology report, by ethnicity

Ethnicity	High grade cytology	Without a follow-up test by 180 days		Without a follow-up test by 360 days	
	N	N	%	N	%
Māori	367	32	8.7	14	3.8
Pacific	70	6	8.6	5	7.1
Asian	127	14	11.0	7	5.5
European/Other	1,678	88	5.2	62	3.7
Total	**2,242**	**140**	**6.2**	**88**	**3.9**

Appendix B – Bethesda 2001 New Zealand Modified (2005)

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

TBS code	Descriptor
AG1	carcinoma There are atypical endocervical cells present
AG2	There are atypical endometrial cells present
AG3	There are atypical glandular cells present
AG4	There are atypical endocervical cells favouring a neoplastic process
AG5	There are atypical glandular cells favouring a neoplastic process
AIS	There are abnormal endocervical cells consistent with adenocarcinoma in-situ (AIS)
AC1	There are abnormal glandular cells consistent with endocervical adenocarcinoma
AC2	There are abnormal glandular cells consistent with endometrial adenocarcinoma
AC3	There are abnormal glandular cells consistent with extrauterine adenocarcinoma
AC4	There are abnormal glandular cells consistent with adenocarcinoma
AC5	There are abnormal cells consistent with a malignant neoplasm
Recommendation	
R1	The next smear should be taken at the usual screening interval
R2	Please repeat the smear within three months
R3	Please repeat the smear within three months of the end of pregnancy
R4	Please repeat the smear in three months
R5	Please repeat the smear in six months
R6	Please repeat the smear in 12 months
R7	Because a previous smear showed atypical squamous cells or low grade changes, please repeat the smear in 12 months
R8	Annual smears are indicated because of previous high grade abnormality
R9	Referral for specialist assessment is indicated
R10	Urgent referral for specialist assessment is indicated
R11	Further assessment is recommended
R12	Please repeat the smear shortly after a course of oestrogen treatment
R13	Under specialist care
R14	In view of the abnormal clinical history provided, urgent referral for assessment is recommended regardless of cytological findings

Appendix C – SNOMED categories for histological samples

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

Melanoma	M80003	M87203	M87203	Other cancer	31
Other primary epithelial malignancy	M80003	M80103	M80103	Other cancer	32

Appendix D – Indicator Definitions Targets and Reporting Details

Positive predictive value calculations

Table 48 – 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 – Glossary

Term	Definition
AGC	Atypical glandular cells
AIS	Adenocarcinoma in situ. High-grade changes to the glandular (endocervical) cells of the cervix
ASC-H	Atypical squamous cells of undetermined significance, cannot exclude high grade
ASC-US	Atypical squamous cells of undetermined significance
ASR	Age standardised rate
CI	Confidence interval
CIN	Cervical intra-epithelial neoplasia; CINI: low grade; CIN2 or 3: high grade
CIS	Carcinoma in situ. An older classification of CIN3. Abnormal cells that are confined to the surface epithelium of the cervix.
CPS	Conventional Pap (Papanicolaou) Smear
DHB	District Health Board
European/ Other	European women and women from non-Māori and non-Pacific ethnic groups
HPV	Human papillomavirus
HSIL	High grade squamous intra-epithelial lesion
ISC	Invasive squamous carcinoma
LBC	Liquid based cytology
LSIL	Low grade squamous intra-epithelial lesion
NCSP	National Cervical Screening Programme
NILM	Negative for intraepithelial lesion or malignancy (a negative cytology report)
NSU	National Screening Unit of the Ministry of Health
NPV	Negative predictive value. The proportion of the screened population with negative test results who do not have the disease being tested for.
OR	Odds ratio
PCR	Polymerase chain reaction. A technique in molecular genetics used in many types of HPV testing
PPV	Positive predictive value. The proportion of the screened population with positive test results who have the disease being tested for.
RR	Relative risk
SC	Squamous cell carcinoma (TBS 2001)
SCC	Squamous cell carcinoma
SNOMED	Systematised Nomenclature of Medicine. A systematically organised collection of medical terminology including histopathological diagnoses.
TBS 2001 (New Zealand Modified)	The Bethesda System 2001 NZ Modified. A management system based on categorising the cytological interpretation of cellular abnormality as negative, low-grade or high-grade.
TZ	Transformation zone. The region of the cervix where the glandular precursor cells change to squamous cells

Appendix F – Trends In Indicators

Figure 33 - Three-year coverage by DHB (women aged 25-69 years screened in the previous three years, as a proportion of hysterectomy-adjusted 2006 female population within that DHB)

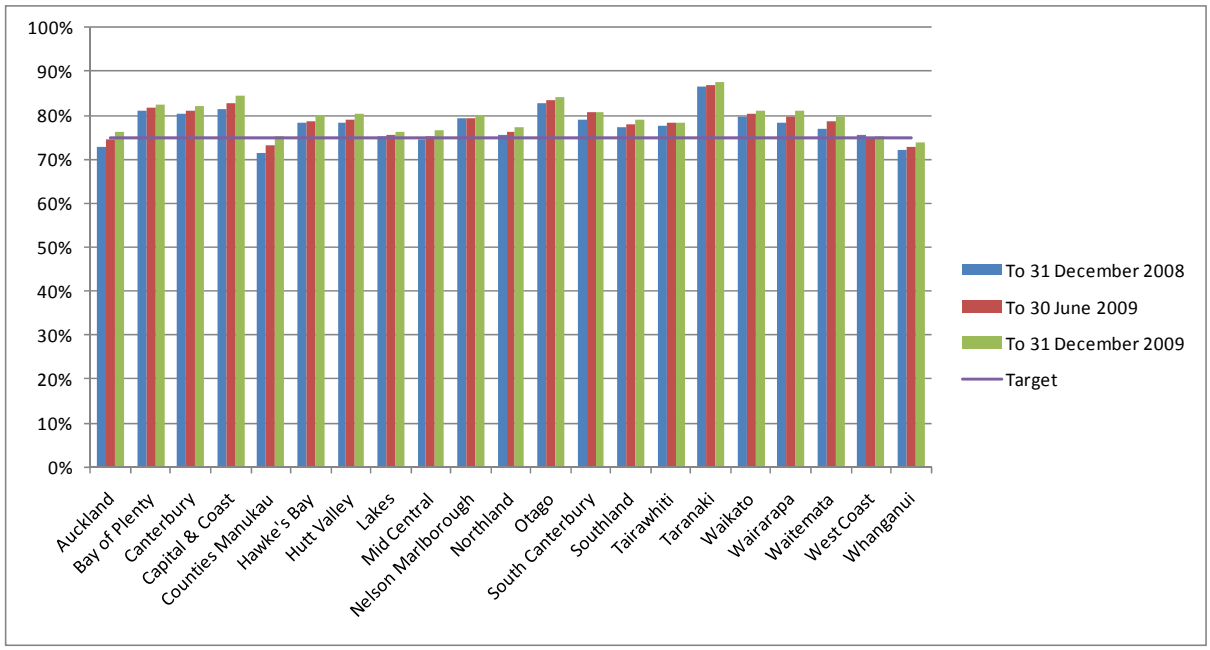


Figure 34 - Three-year coverage by five-year age group (women 20-69 years screened in the previous three years, as a proportion of hysterectomy-adjusted 2006 female population)

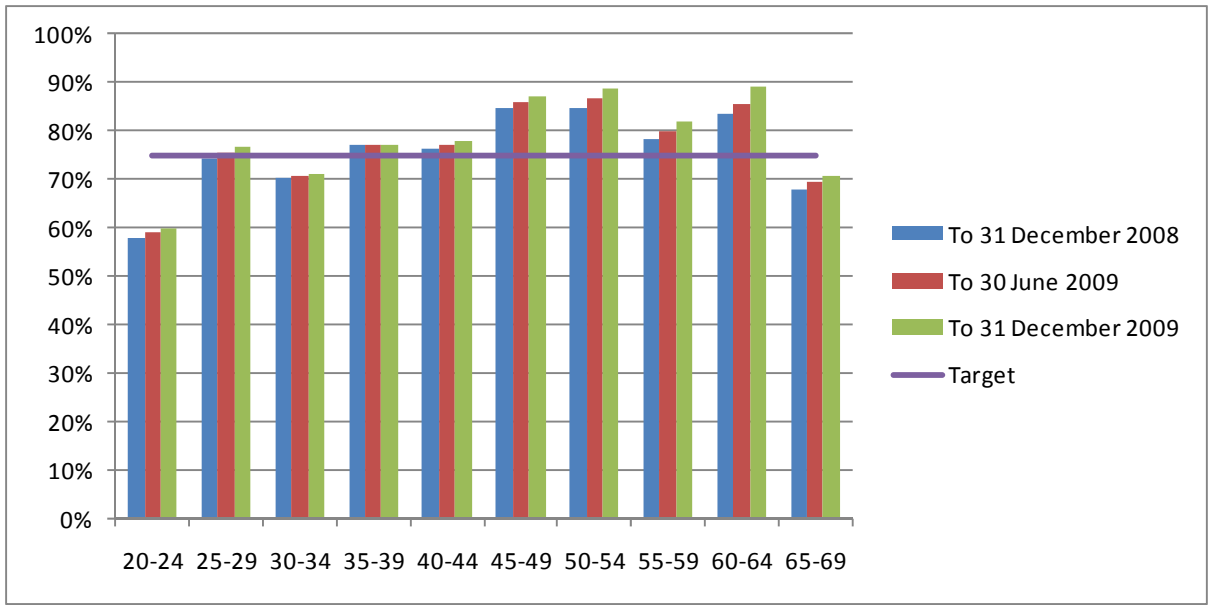


Figure 35 - Three-year coverage by ethnicity (women aged 25-69 years screened in the previous three years, as a proportion of hysterectomy-adjusted 2006 female population)

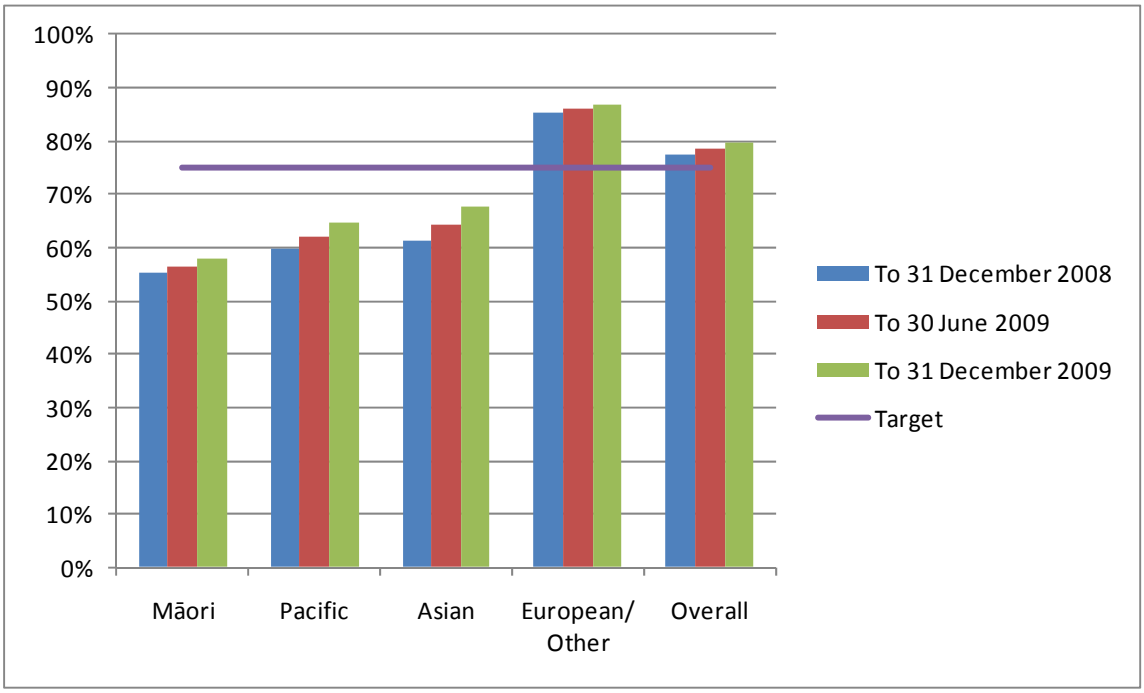


Figure 36 - Number of women screened in the previous three years who were aged less than 20 years at the time of their cervical sample, by DHB

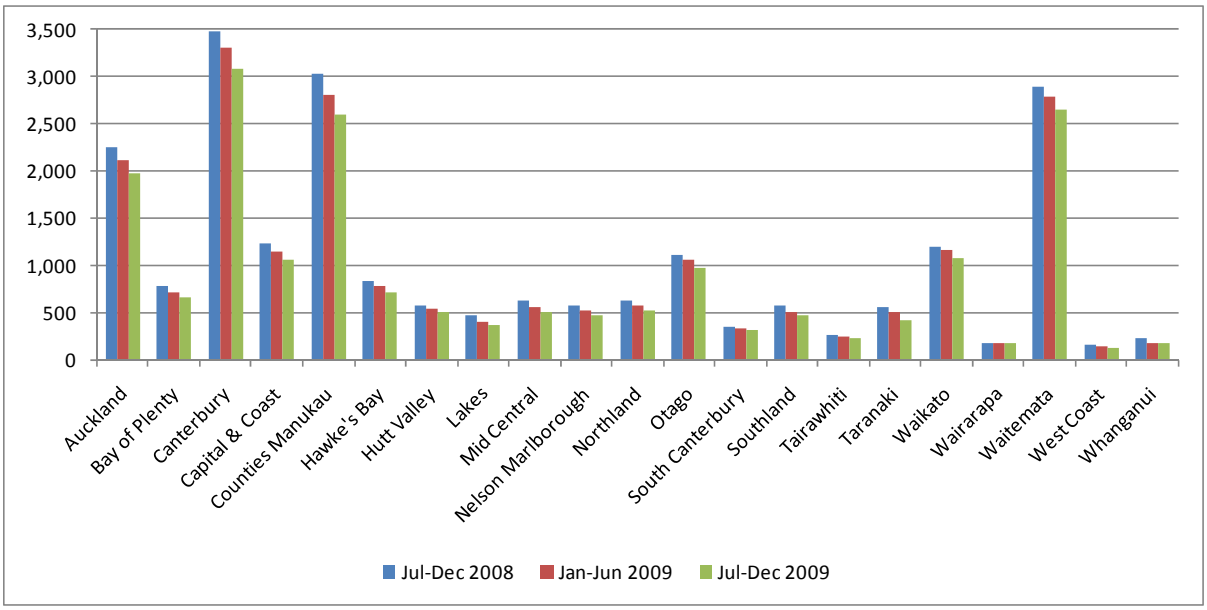


Figure 37 – Number of women with first screening events, by DHB

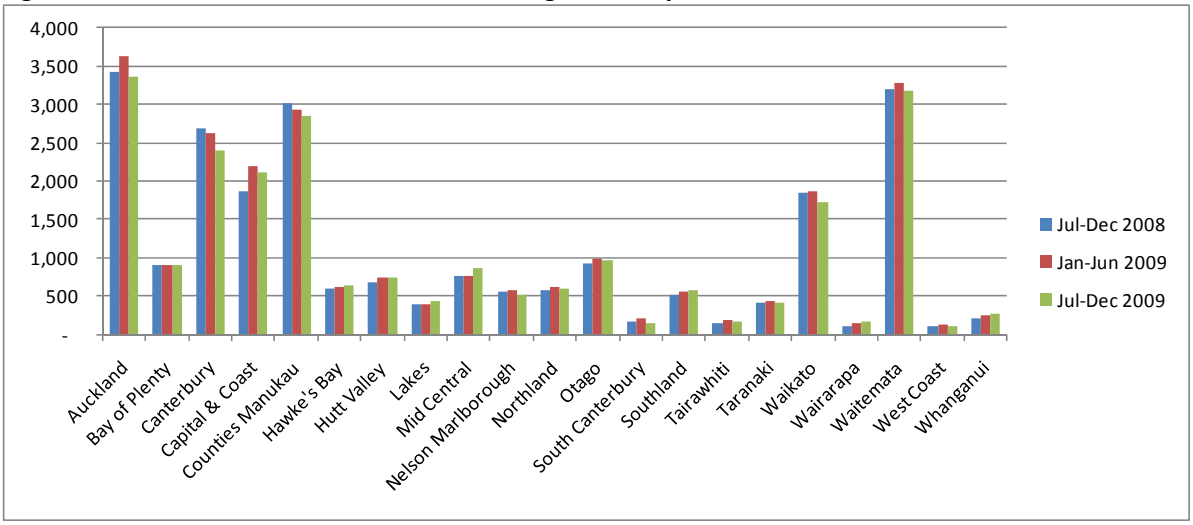


Figure 38 - Number of women who withdrew from the Programme, by DHB

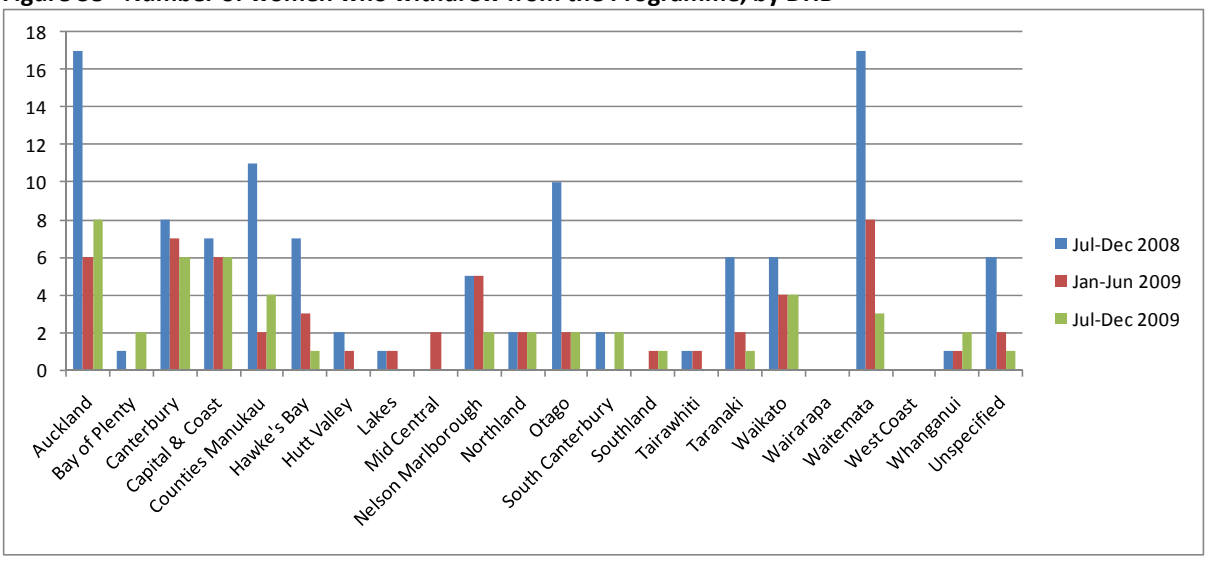


Figure 39 - Number of women who withdrew from the Programme, by age

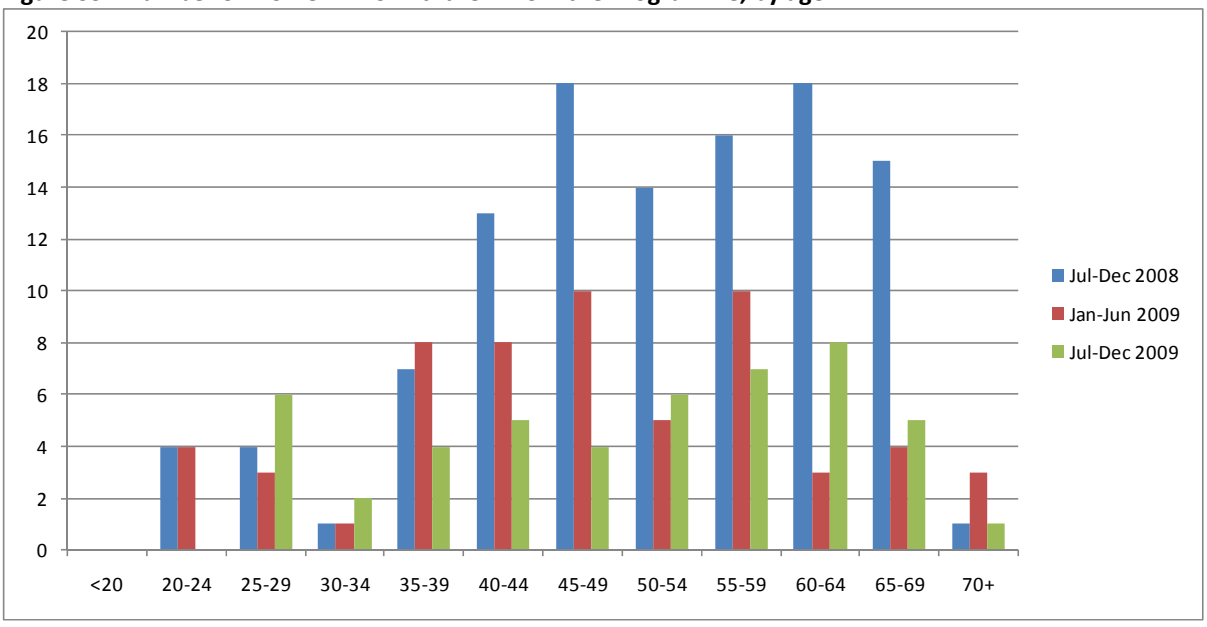


Figure 40 - Number of women who withdrew from the Programme, by ethnicity

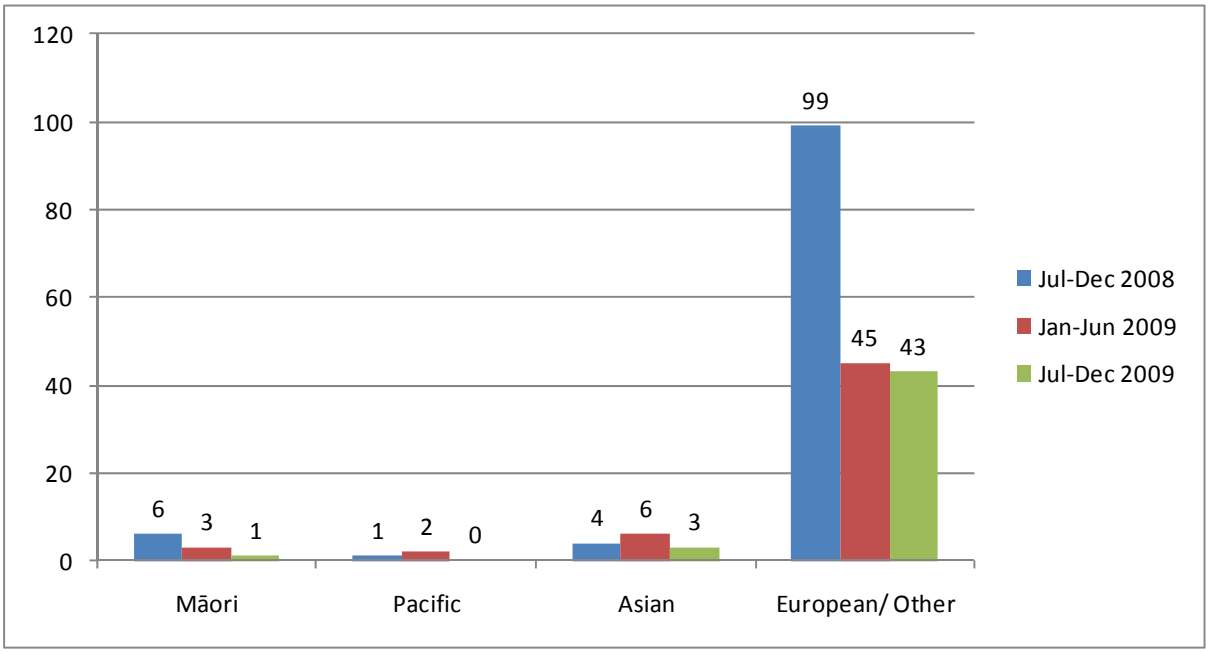


Figure 41 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by DHB (cohort method)

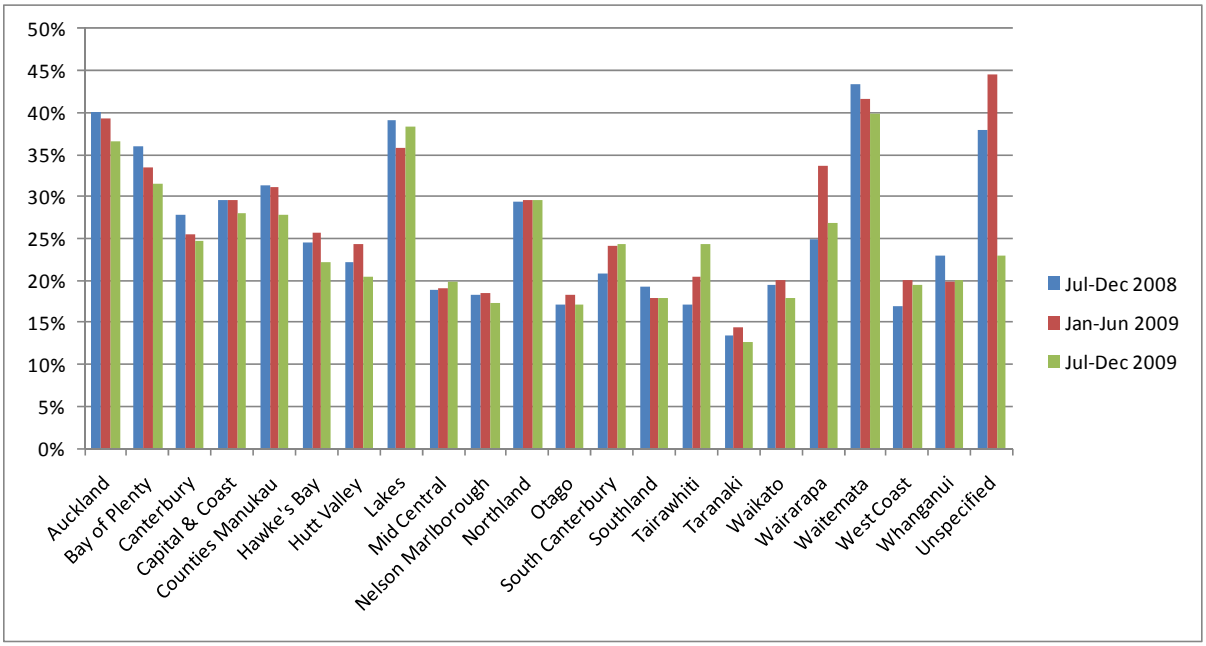


Figure 42 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by age (cohort method)

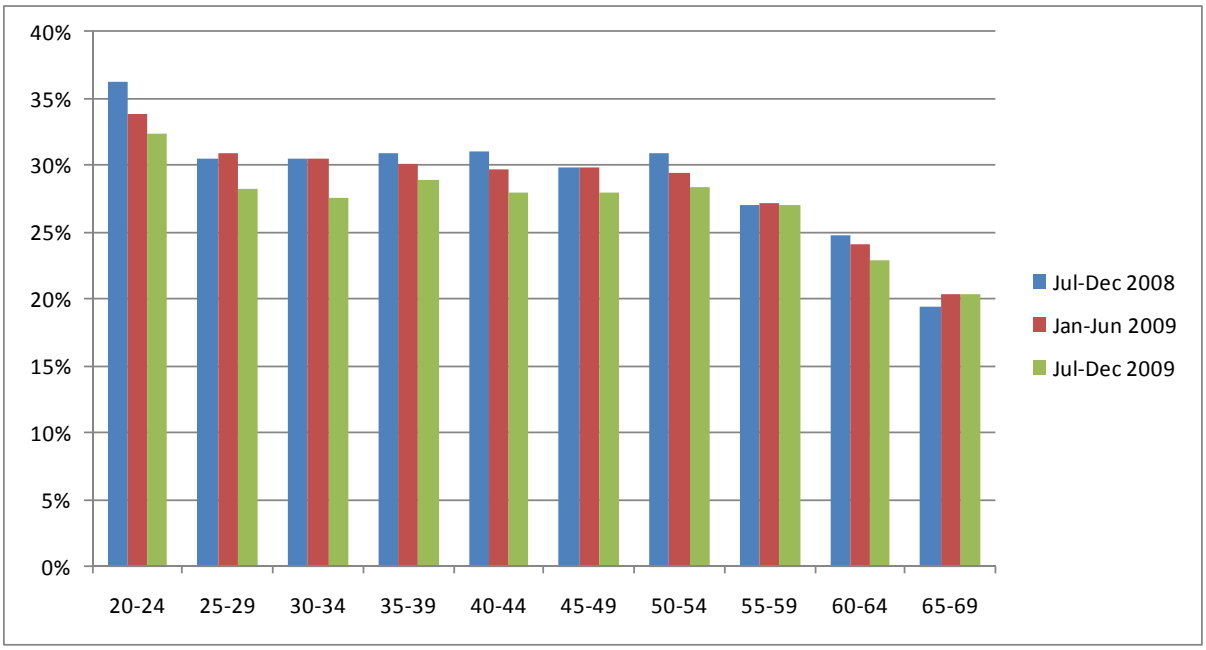


Figure 43 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by ethnicity (cohort method)

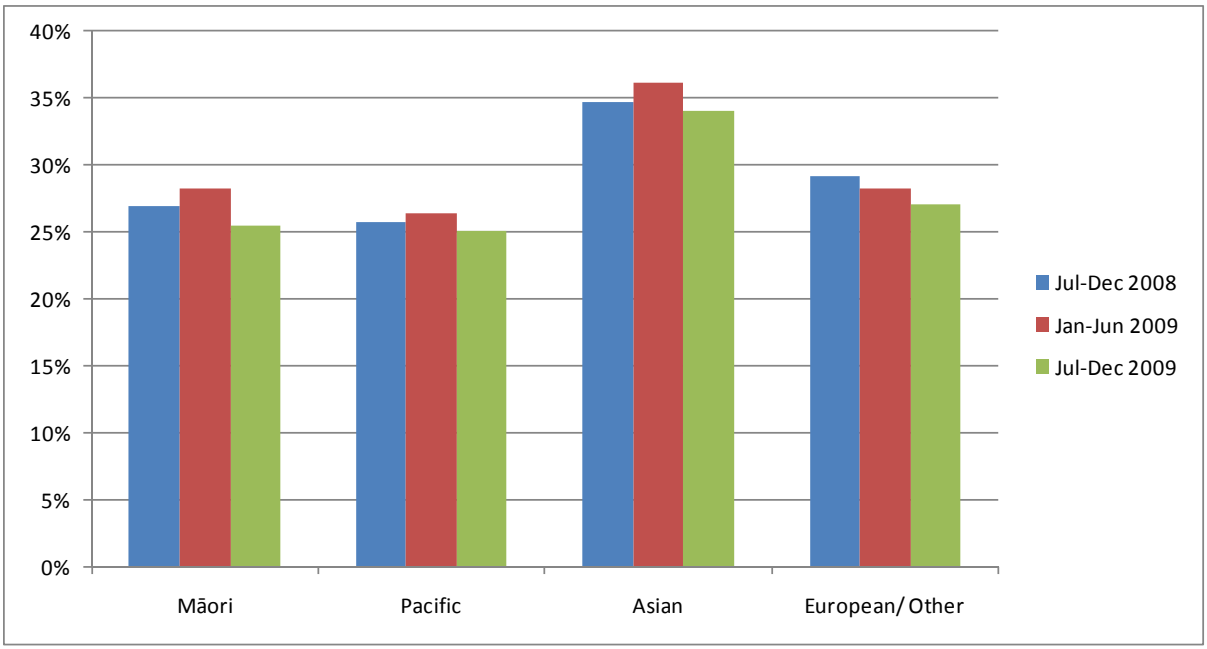


Figure 44 - Proportion of total conventional cytology samples reported as unsatisfactory, by laboratory

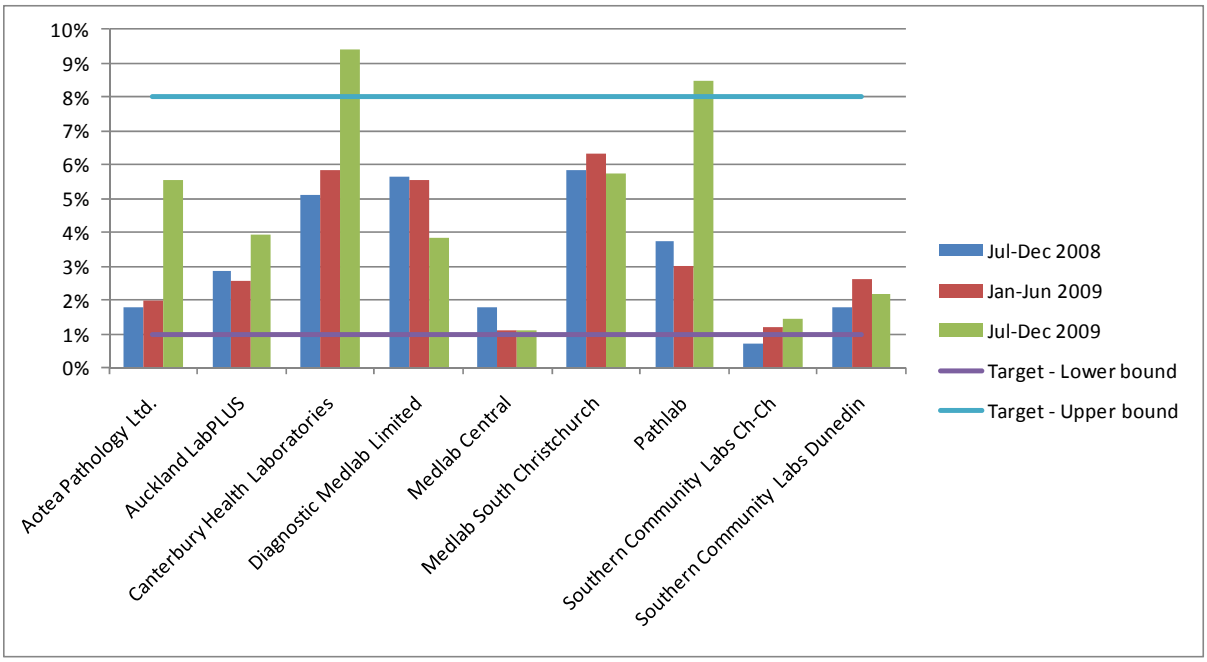


Figure 45 - Proportion of total LBC samples reported as unsatisfactory, by laboratory

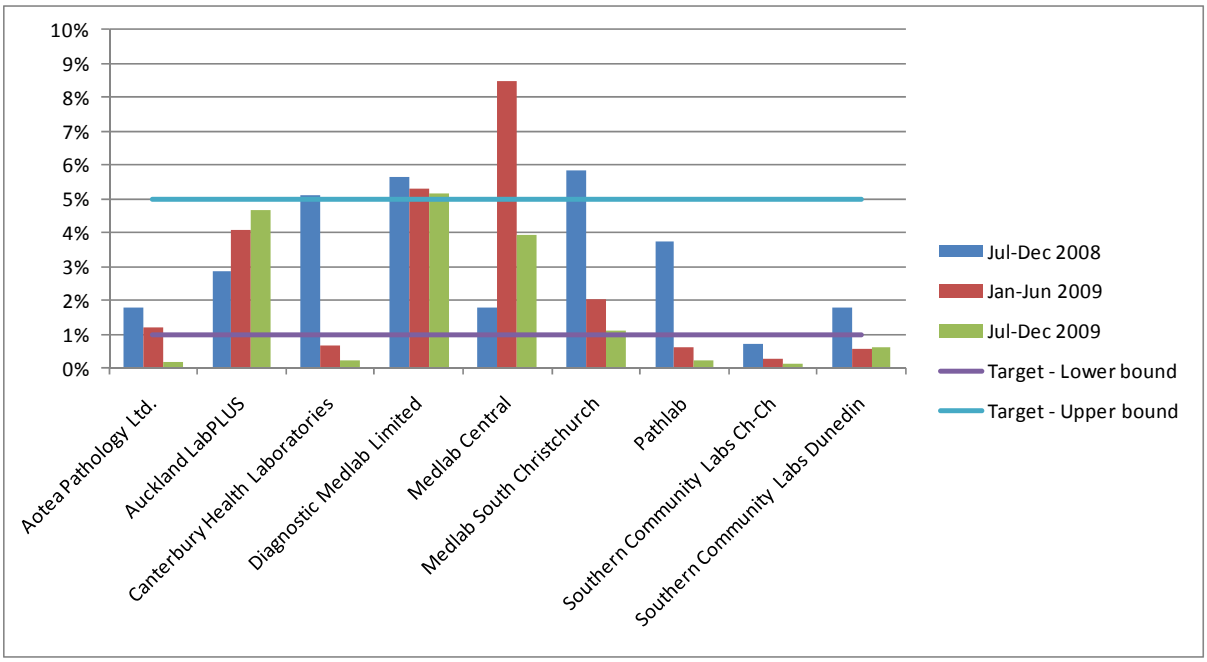


Figure 46 - Proportion of satisfactory samples reported as negative, by laboratory

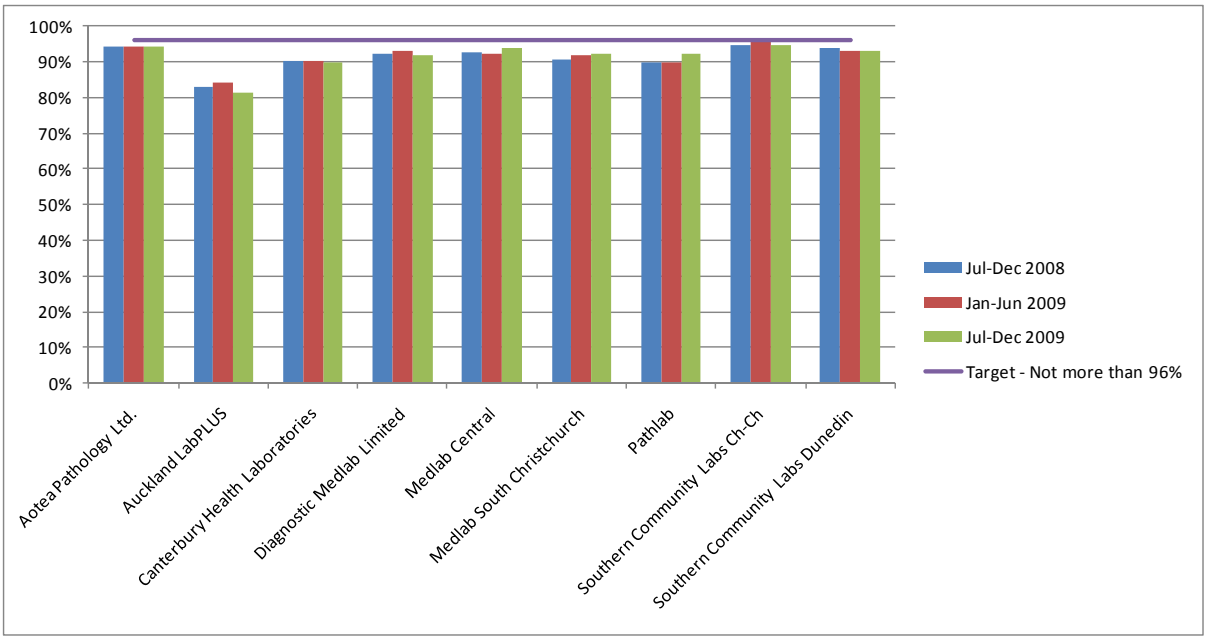


Figure 47 - Proportion of satisfactory samples reported as abnormal, by laboratory

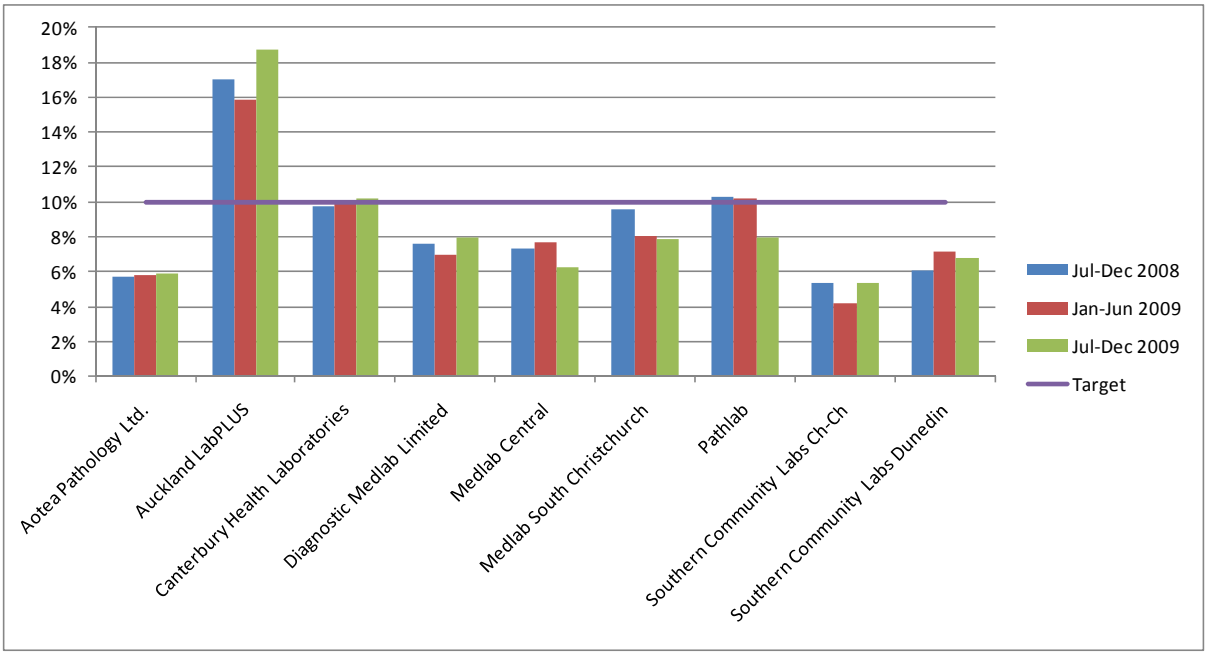


Figure 48 - Proportion of satisfactory samples reported as HSIL, by laboratory

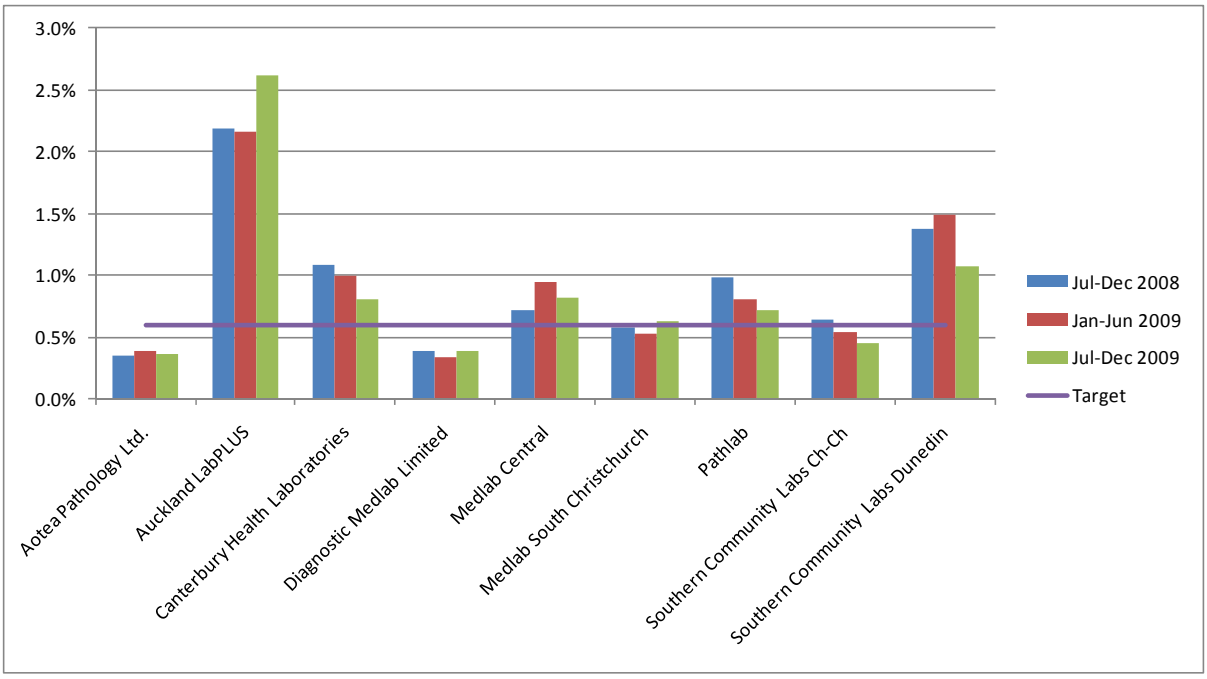


Figure 49 - Proportion of total cytology samples which were LBC, by laboratory

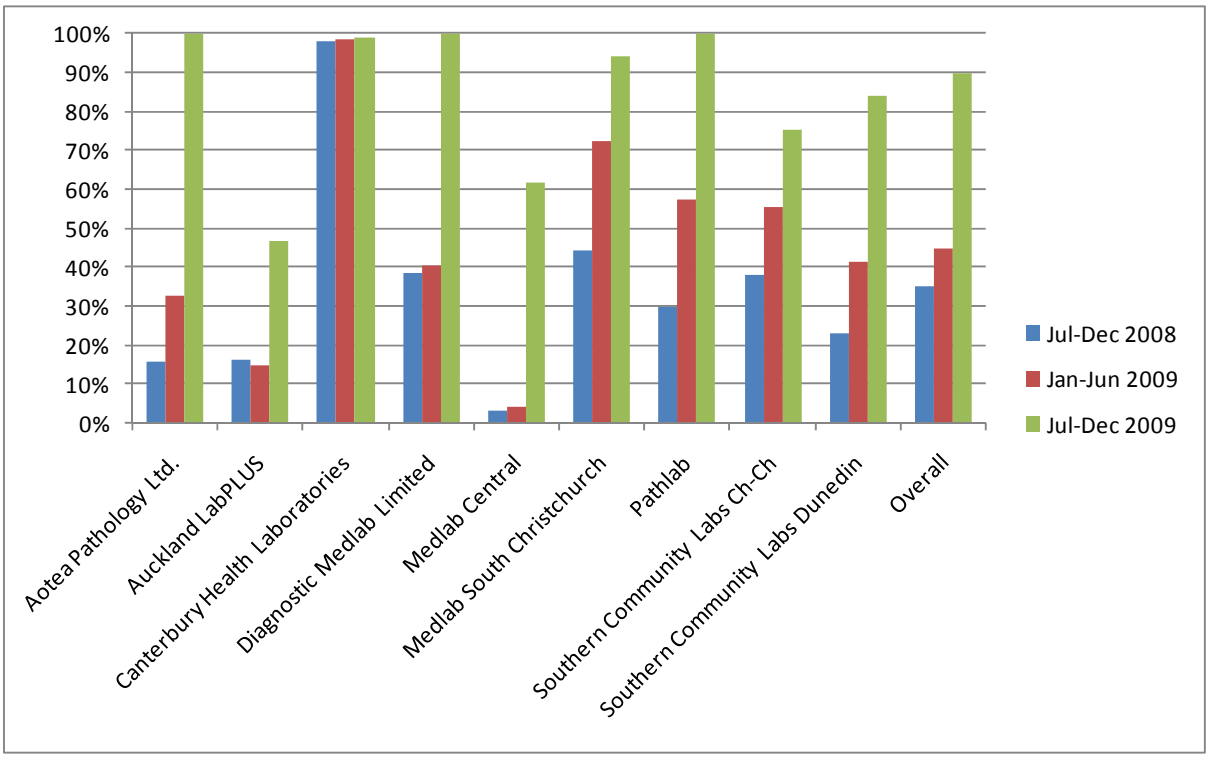


Figure 50 - Positive predictive value for CIN2+ in women with HSIL or SC cytology reports, by laboratory

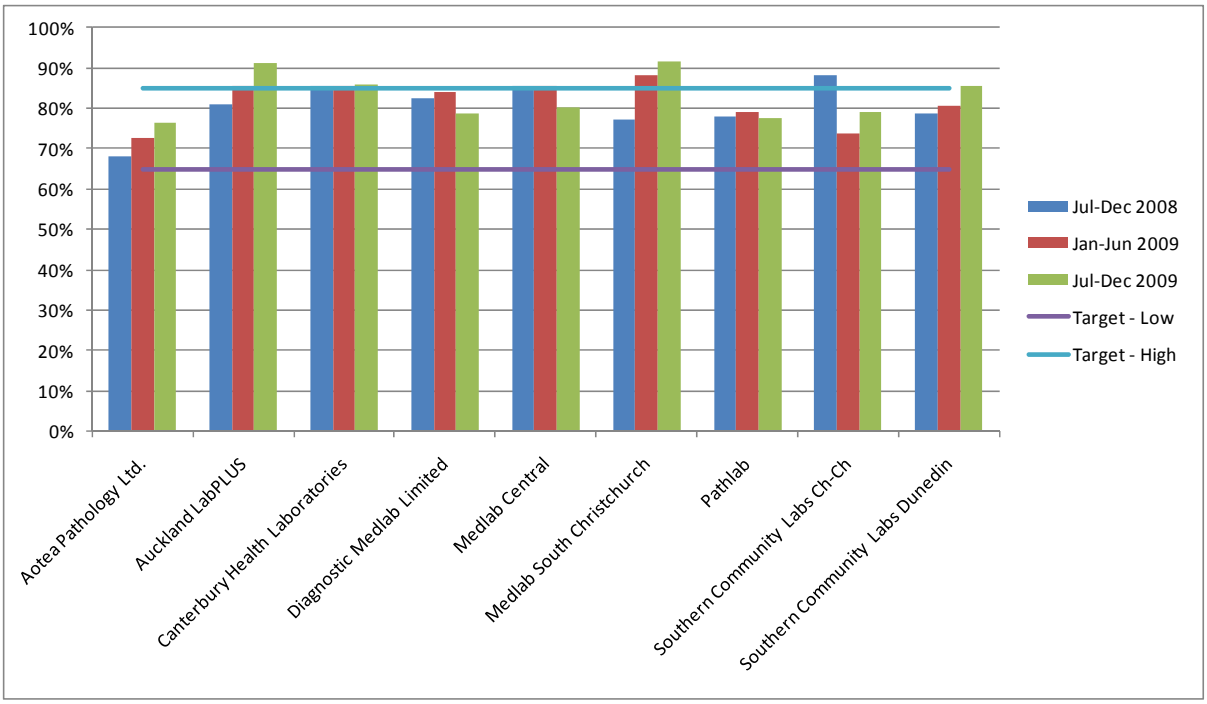


Figure 51 - Positive predictive value for CIN2+ in women with ASC-H cytology reports, by laboratory

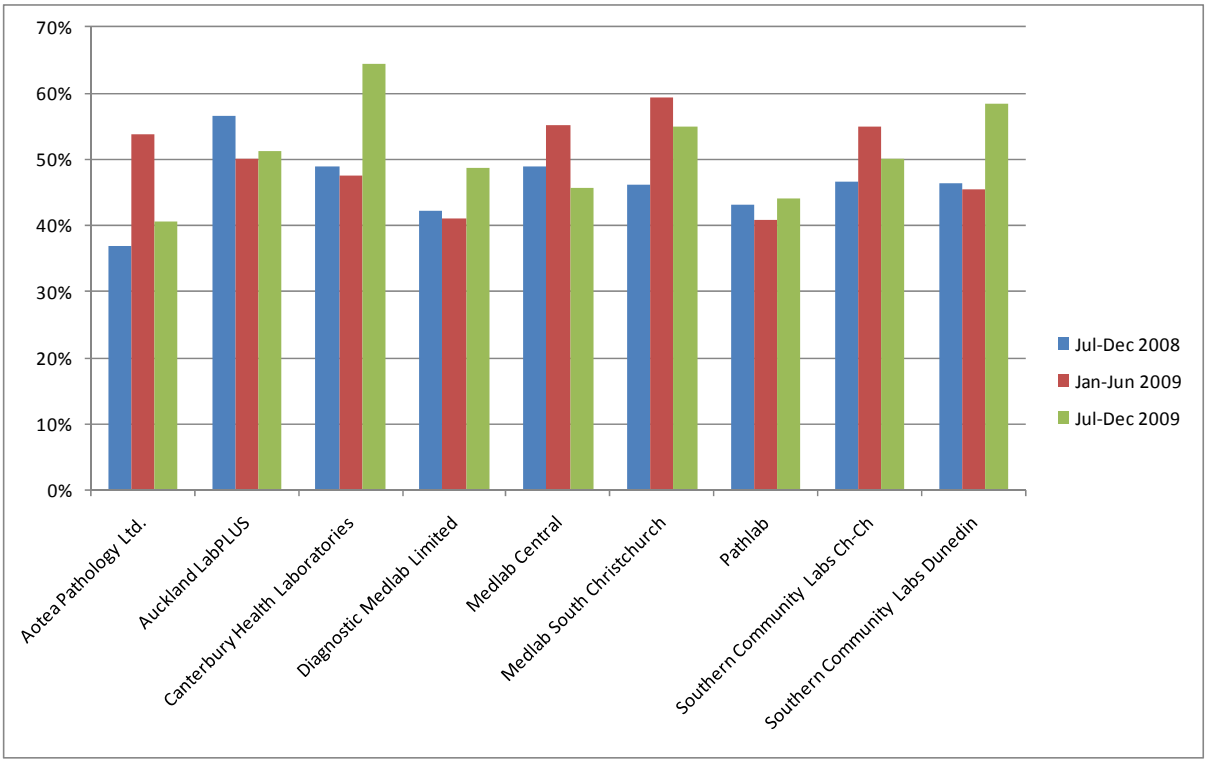


Figure 52 - Positive predictive value for CIN2+ in women with ASC-H, HSIL or SC cytology reports, by laboratory

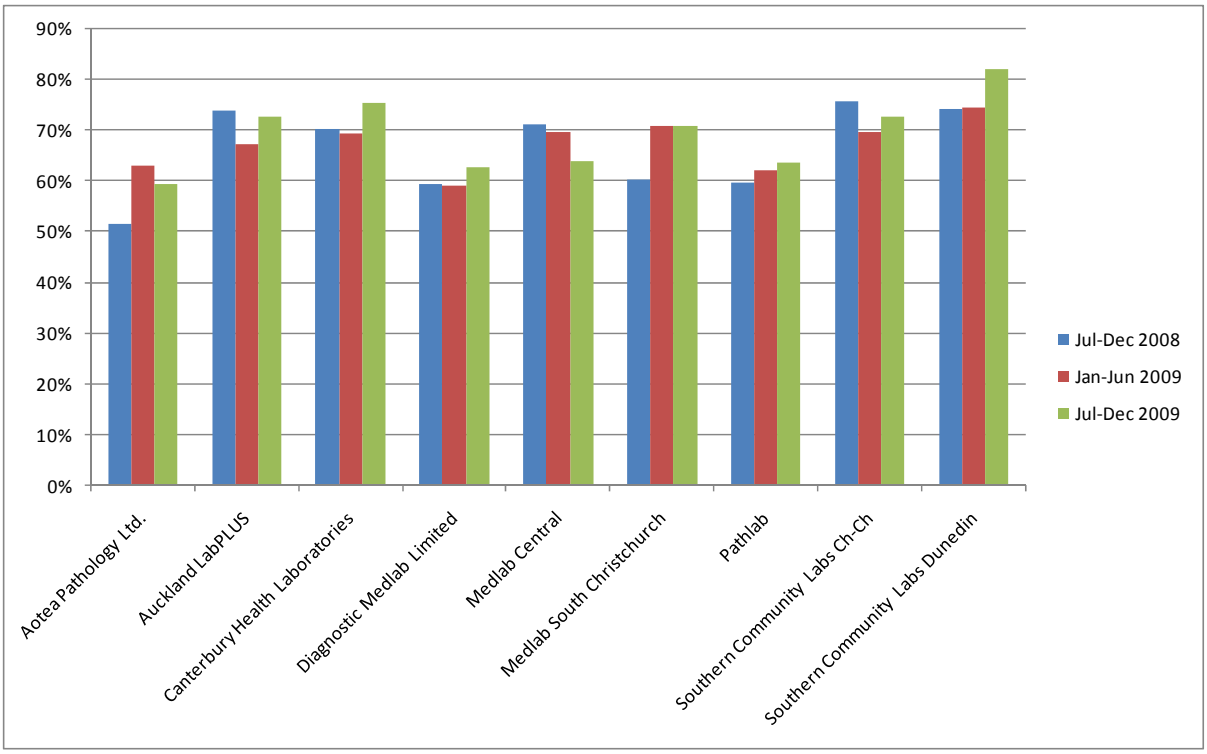
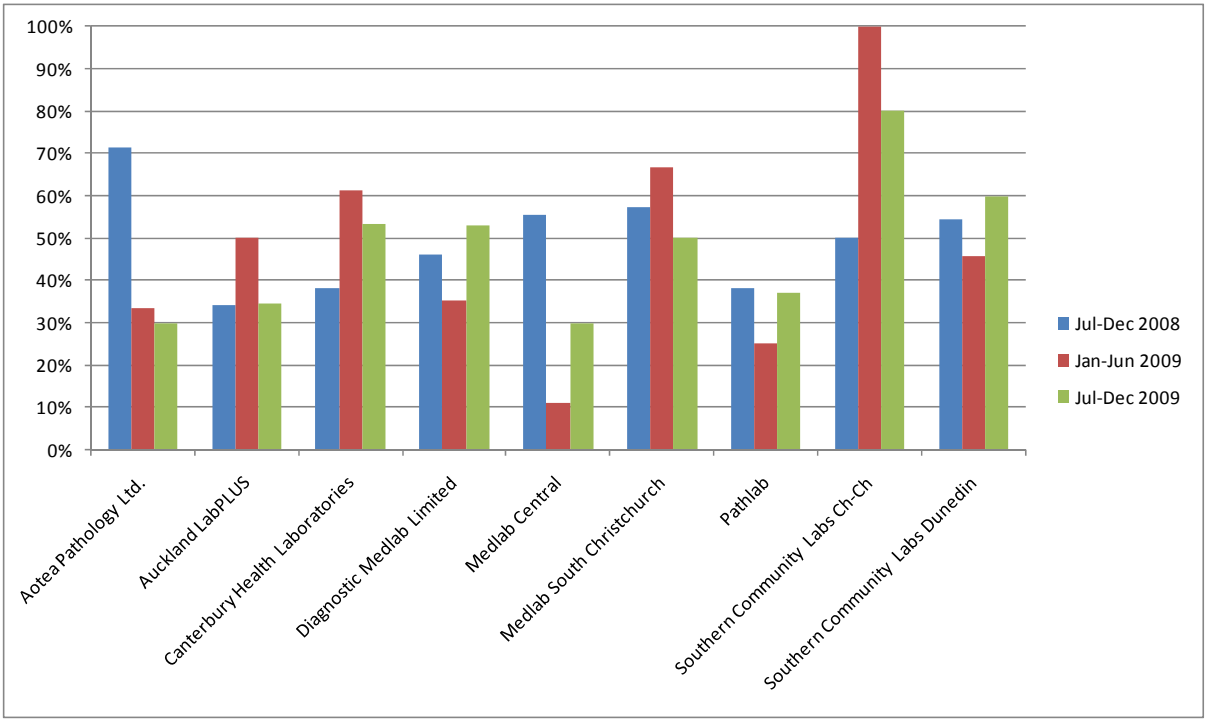


Figure 53- Positive predictive value for CIN2+ in women with glandular abnormalities on cytology reports, by laboratory



Note: Glandular abnormalities include the Bethesda codes AG1-AG5, AIS, AC1-AC4

Figure 54 - Proportion of cytology results reported within seven working days, by laboratory

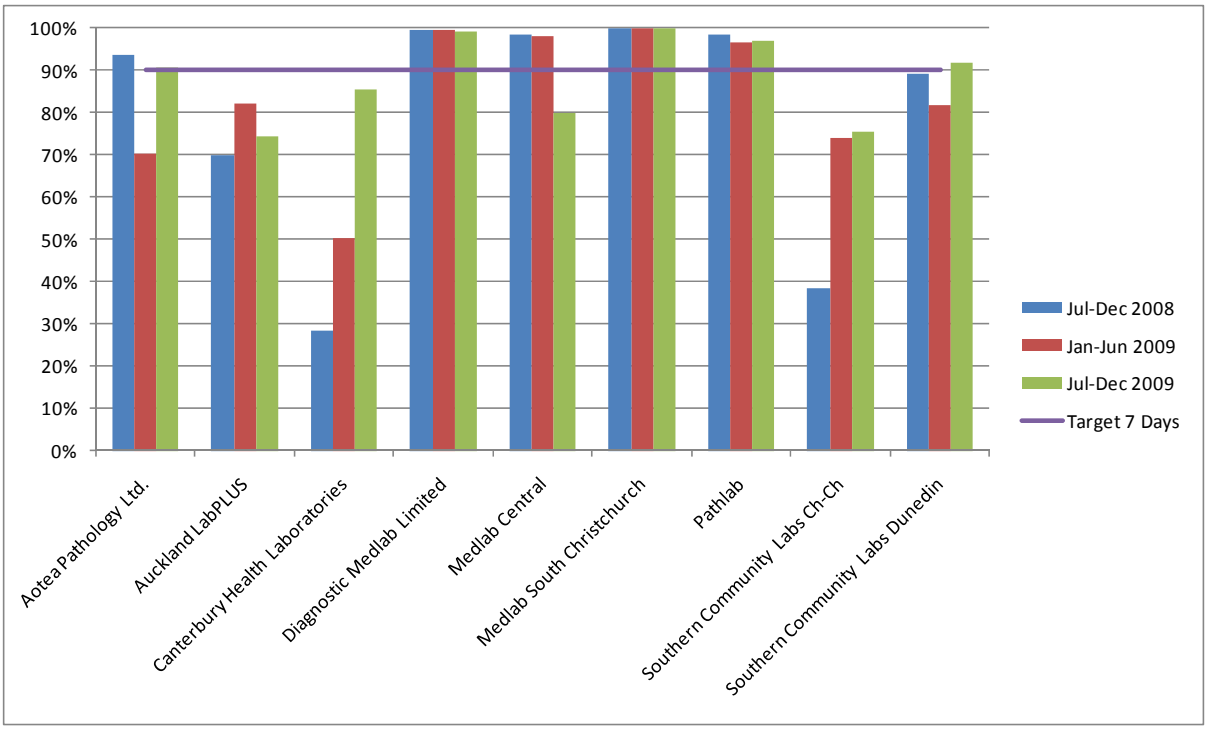


Figure 55 - Proportion of cytology results reported within 15 working days, by laboratory

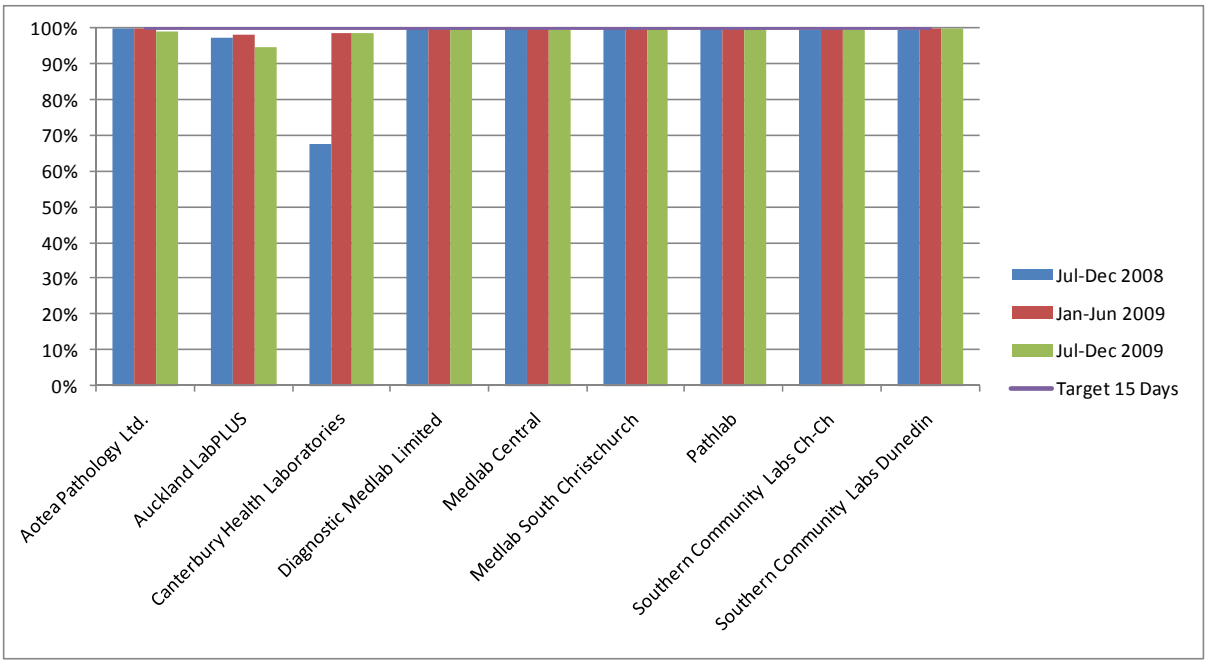


Figure 56 - Proportion of histology results reported within five working days, by laboratory

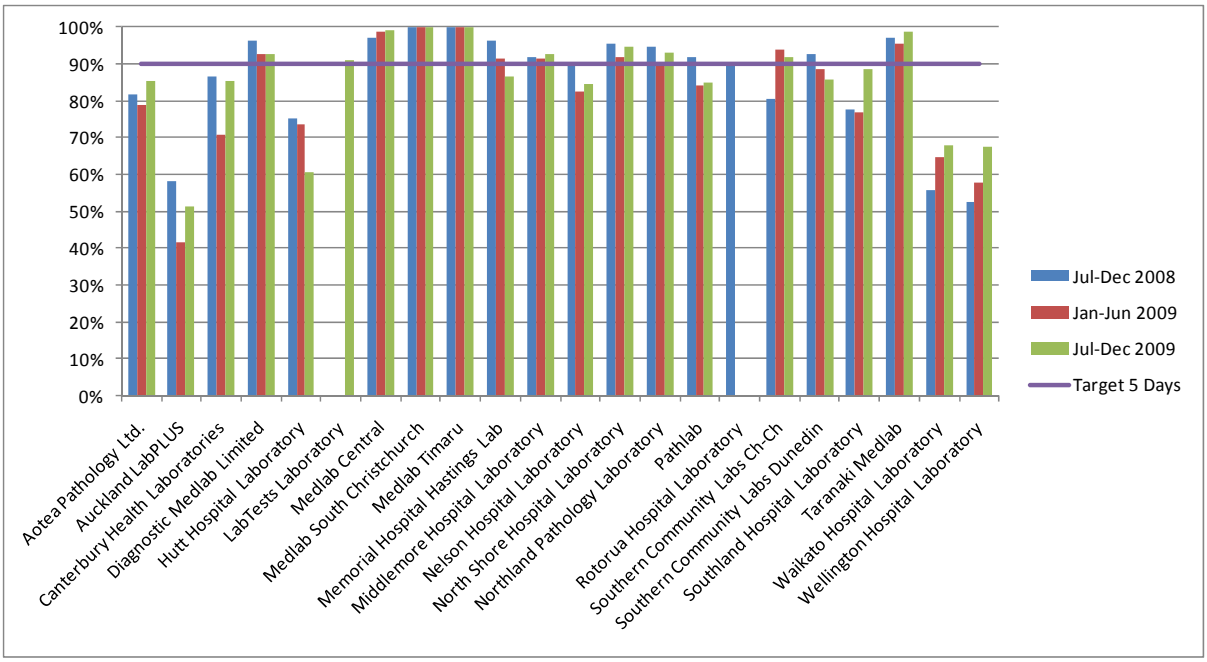


Figure 57 - Proportion of histology results reported within 15 working days, by laboratory

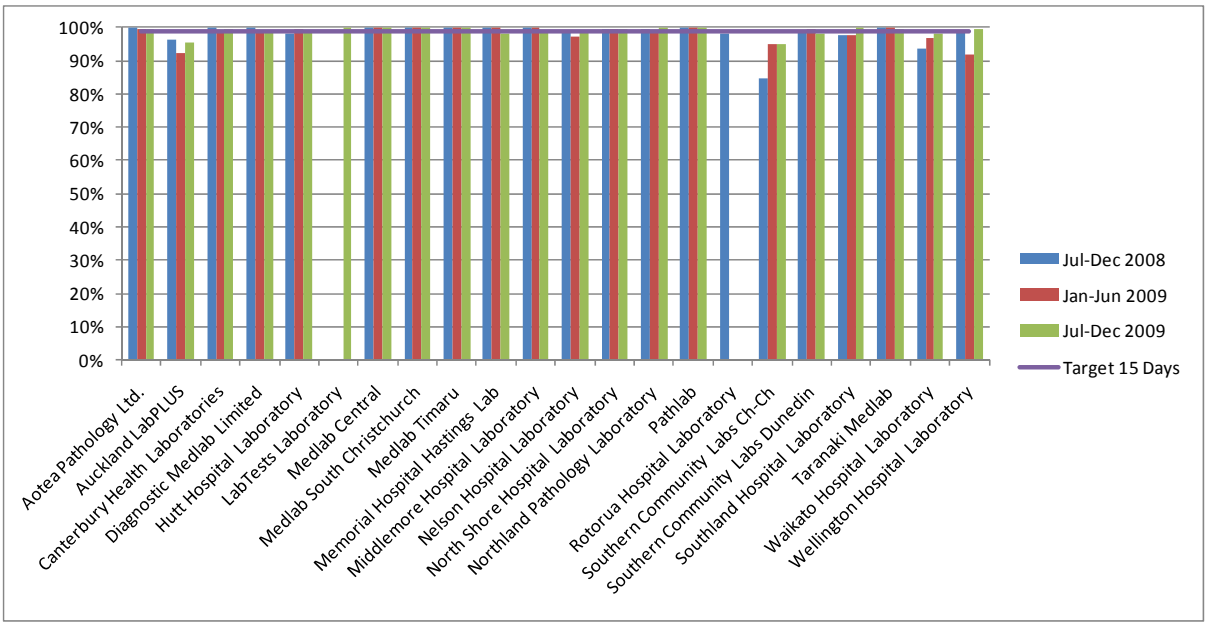
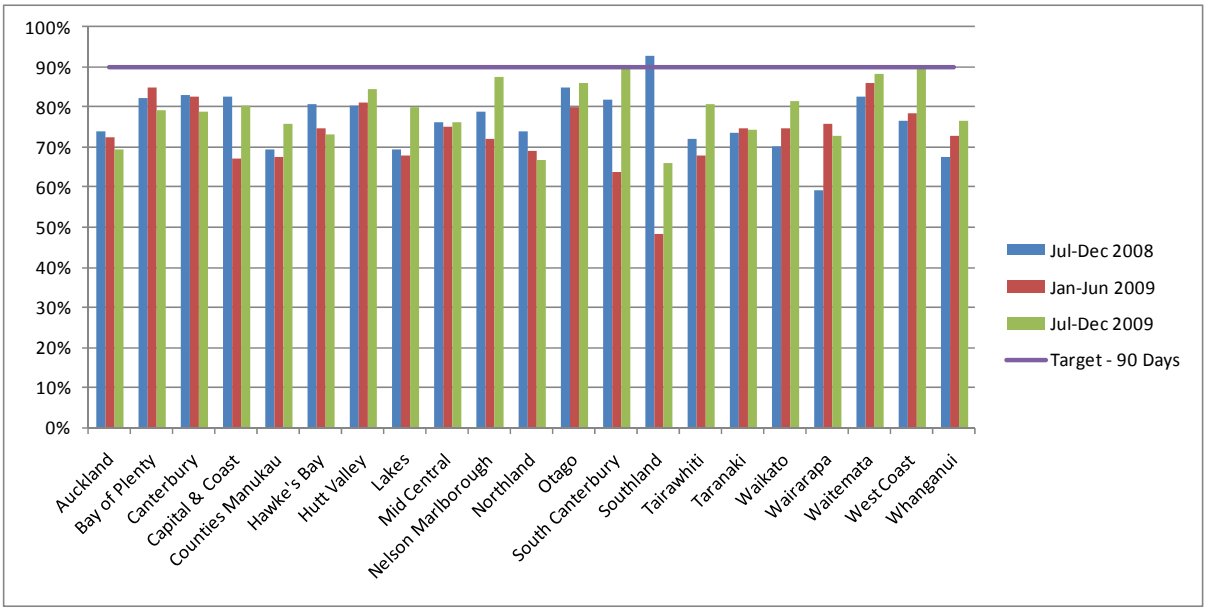
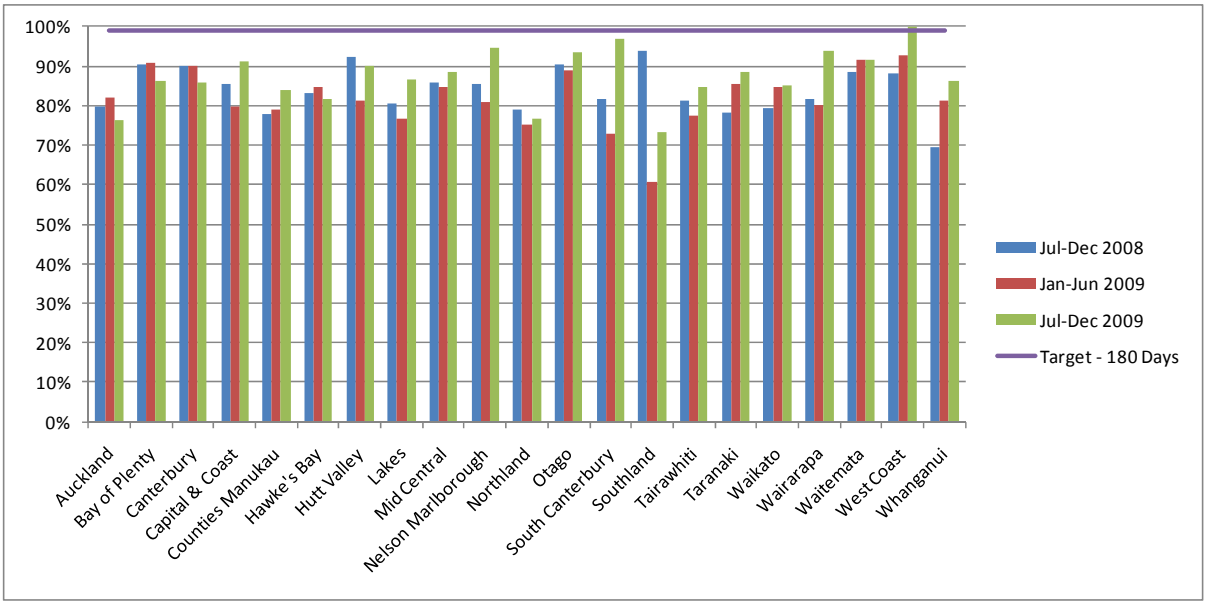


Figure 58 - Proportion of women (ages 20-69 years) with a histology report within 90 days of their high grade cytology report, by DHB



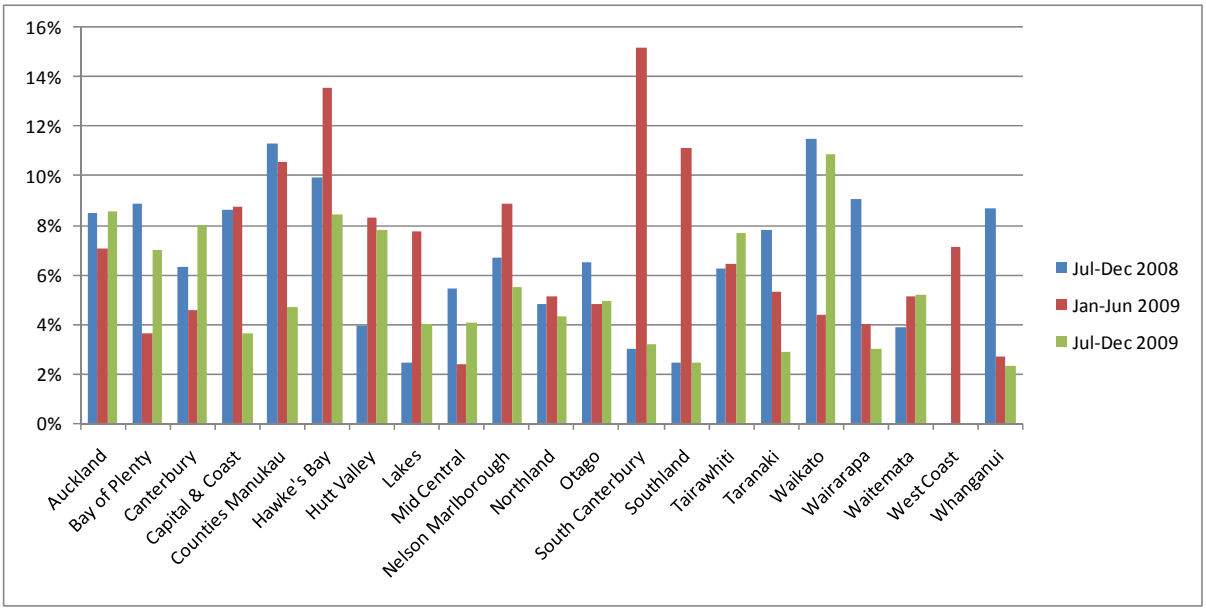
Note: for the purposes of this indicator, high grade cytology includes the following Bethesda 2001 NZ modified (2005) interpretation codes: ASH, HS1, HS2, SC, AG1-AG5, AIS, AC1-AC5

Figure 59 - Proportion of women (ages 20-69 years) with a histology report within 180 days of their high grade cytology report, by DHB



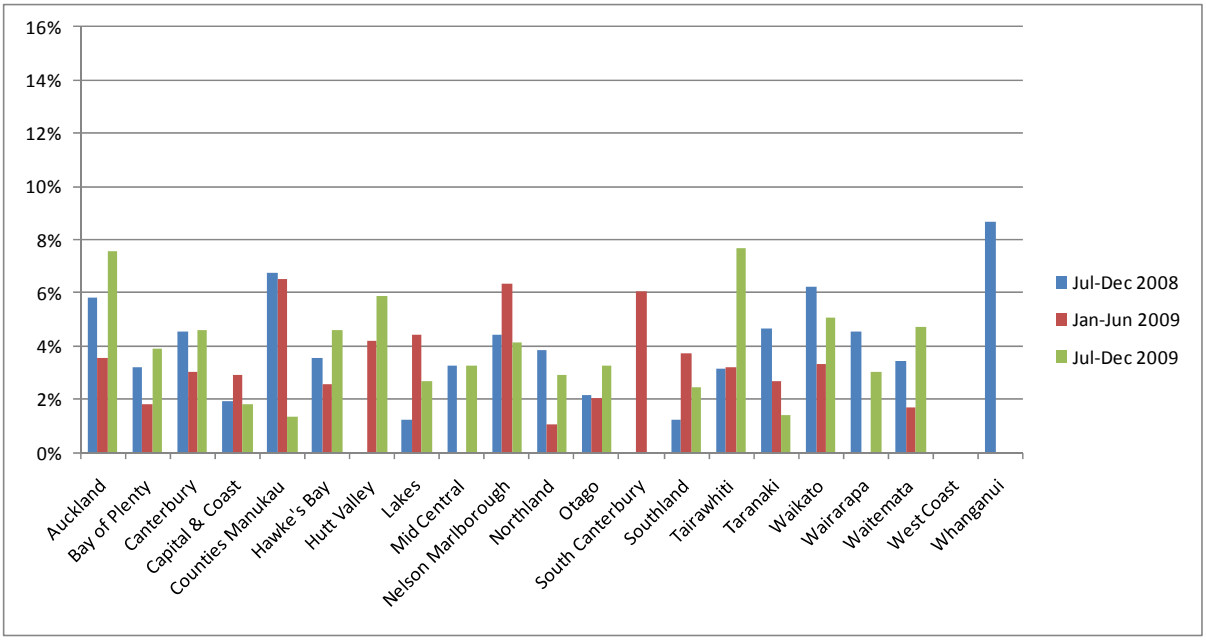
Note: for the purposes of this indicator, high grade cytology includes the following Bethesda 2001 NZ modified (2005) interpretation codes: ASH, HS1, HS2, SC, AG1-AG5, AIS, AC1-AC5

Figure 60 - Proportion of women (ages 20-69 years) with no follow-up test within 180 days of their high grade cytology report, by DHB



Note: for the purposes of this indicator, high grade cytology includes the following Bethesda 2001 NZ modified (2005) interpretation codes: ASH, HS1, HS2, SC, AG1-AG5, AIS, AC1-AC5

Figure 61 - Proportion of women (ages 20-69 years) with no follow-up test within 360 days of their high grade cytology report, by DHB



Note: for the purposes of this indicator, high grade cytology includes the following Bethesda 2001 NZ modified (2005) interpretation codes: ASH, HS1, HS2, SC, AG1-AG5, AIS, AC1-AC5