National Cervical Screening Programme

Monitoring Report Number 51

National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019)

Technical report 51

Prepared December 2019
Revised February 2020
Finalised April 2021

By Megan Smith, Maddison Sherrah, and Karen Canfell
Cancer Research Division, Cancer Council NSW Australia, Sydney NSW Australia

Suggested citation:
Smith M, Sherrah M, Canfell K. National Cervical Screening Programme Monitoring Report Number 51 (National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019)). National Screening Unit: Wellington, 2021.

Acknowledgements

This report was prepared by the authors in collaboration with the National Screening Unit (NSU), Ministry of Health, in particular Ivan Rowe, Senior Analyst, Sector Development, of the National Screening Unit.

We would like to acknowledge the contribution from Ronnie de Does, NCSP Register Central Team, for data extraction; and Leanne Rumlee, Simon Edwards, Robert Walker, Sarsha Yap and Dr Mark Clements for assistance with code development and importing data for analysis.

About the authors

The authors are based at Cancer Research Division at Cancer Council NSW, Sydney, Australia. They are part of a research group (led by Prof Karen Canfell) which has as its core research focus the epidemiology of cervical cancer, cervical screening and human papillomavirus (HPV) vaccination. This research group has established an extensive track record both in research publication and in successful completion of commissioned projects related to national cervical screening programmes in New Zealand, Australia and England. The group has extensive experience in the analysis of descriptive data from cervical cancer screening programmes. The team also has a range of related skills in the analysis of linked datasets, systematic review and meta-analysis, biostatistics, health economics, and advanced statistical modelling techniques.

Contents

1. EXECUTIVE SUMMARY 1

2. BACKGROUND 13

3. METHODS 14

DATA USED 14
AGE 14
HYSTERECTOMY-ADJUSTED POPULATION 14
ETHNICITY ANALYSIS 15
CALCULATING NCSP COVERAGE 15

4. BIANNUAL NCSP MONITORING INDICATORS 17

INDICATOR 1 – COVERAGE 17
Indicator 1.1 – Three-year coverage 18
Indicator 1.2 – Regularity of screening 34
INDICATOR 2 – FIRST SCREENING EVENTS 35
INDICATOR 3 – WITHDRAWAL RATES 41
INDICATOR 4 – EARLY RE-SCREENING 45
INDICATOR 5 – LABORATORY INDICATORS 51
Indicator 5.1 – Laboratory cytology reporting 52
Indicator 5.2 – Accuracy of cytology predicting HSIL 64
Indicator 5.3 – Accuracy of negative cytology reports 70
Indicator 5.4 – Histology Reporting 71
Indicator 5.5 - Laboratory turnaround times 82
INDICATOR 6 – FOLLOW-UP WOMEN HIGH-GRADE CYTOLOGY, NO HISTOLOGY 89
INDICATOR 7 – COLPOSCOPY INDICATORS 102
Indicator 7.1 – Timeliness of colposcopic assessment – high-grade cytology 103
Indicator 7.2 – Timeliness of colposcopic assessment – low-grade cytology 111
Indicator 7.3 – Adequacy of documenting colposcopy assessment 117
Indicator 7.4 – Timeliness and appropriateness of treatment 123
Indicator 7.5 – Timely discharging of women after treatment 128
INDICATOR 8 – HPV TESTS 132
Indicator 8.1 – Triage of low-grade cytology 133
Indicator 8.2 – HPV test volumes 146
Indicator 8.3 – HPV tests for follow-up of women with a historical high-grade abnormality 157

APPENDIX A – ADDITIONAL DATA 164

INDICATOR 1 - COVERAGE 164
Indicator 1.1 – Three-year coverage 164
INDICATOR 2 – FIRST SCREENING EVENTS 177
INDICATOR 3 – WITHDRAWAL RATES 181
INDICATOR 4 – EARLY RE-SCREENING 182
INDICATOR 5 – LABORATORY INDICATORS 184
Indicator 5.1 – Laboratory cytology reporting 184
Indicator 5.2 – Accuracy of cytology predicting HSIL 185
Indicator 5.4 – Histology Reporting 187
Indicator 5.5 – Laboratory turnaround time 192
INDICATOR 6 – FOLLOW-UP OF WOMEN WITH HIGH-GRADE CYTOLOGY 195
INDICATOR 7 – COLPOSCOPY INDICATORS 197
Indicator 7.1 – Timeliness of colposcopic assessment – high-grade cytology 197
Indicator 7.2 – Timeliness of colposcopic assessment – low-grade cytology 199
Indicator 7.3 – Adequacy of documenting colposcopic assessment 201
Indicator 7.5 – Timely discharge of women after treatment 204

INDICATOR 8 – HPV TESTS 206
Indicator 8.1 – Triage of low-grade cytology *206*
Indicator 8.2 – HPV test volumes *209*
Indicator 8.3 –HPV tests for follow-up of women with a historical high-grade abnormality *213*
APPENDIX B – BETHESDA 2001 NEW ZEALAND MODIFIED 218
APPENDIX C – SNOMED CATEGORIES FOR HISTOLOGICAL SAMPLES 220
APPENDIX D – INDICATOR DEFINITIONS TARGETS AND REPORTING DETAILS 222
POSITIVE PREDICTIVE VALUE CALCULATIONS 222
APPENDIX E – DHB ASSIGNMENT FOR COLPOSCOPY CLINICS 223
APPENDIX F – GLOSSARY 225
REFERENCES 226

List of Tables

Table 1 - Satisfactory and unsatisfactory cytology reporting by laboratory (1 January – 30 June 2019) 58

Table 2 - Laboratory cytology reporting by general result (1 January – 30 June 2019) – percentage of satisfactory samples 58

Table 3 - Laboratory cytology reporting by type of cytological category (1 January – 30 June 2019) – counts of all satisfactory samples 59

Table 4 - Laboratory cytology reporting by cytological category (1 January – 30 June 2019) – percentage of all satisfactory samples 59

Table 5 - Laboratory reporting of cytological category by five-year age group (1 January – 30 June 2019) – counts of all satisfactory samples 60

Table 6 - Laboratory reporting of cytological category by five-year age group (1 January – 30 June 2019) – percentage of all satisfactory samples in women of that age group 61

Table 7 - Histology results reporting by SNOMED category 75

Table 8 - Histology results reporting by diagnostic category 76

Table 9 - Histology results by age – counts 77

Table 10 - Histology results by age – percentages 78

Table 11 - Histology results reporting by diagnostic category excluding samples from partial* or total hysterectomy specimens and where the result was negative/ benign. 79

Table 12 - Women with a histology report within 90 and 180 days of a high-grade cytology report, by DHB 95

Table 13 - Women with a histology report within 90 and 180 days of a high-grade cytology report, by age 96

Table 14 - Women with a histology report within 90 days of a high-grade cytology report, by DHB and ethnicity 96

Table 15 - Women with a histology report within 180 days of a high-grade cytology report, by DHB and ethnicity 97

Table 16 - Women with high-grade cytology who have follow-up within 90 and 180 days recorded on the NCSP Register, by urgency of referral and type of follow-up 97

Table 17 - Women without any follow-up test within 90 and 180 days of a high-grade cytology report recorded on the NCSP Register, by DHB 99

Table 18 - Women without any follow-up test within 180 days of a high-grade cytology report recorded on the NCSP Register, by ethnicity 99

Table 19 - Women with a high-grade cytology report (suspicion of invasive disease), accepted referral and colposcopy visit, by ethnicity 108

Table 20 - Timeliness and appropriateness of treatment, by DHB 127

Table 21 - HPV triage test results following ASC-US cytology, by age and cytology laboratory . 140

Table 22 - HPV triage test results following LSIL cytology, by age and cytology laboratory 141

Table 23 - Three-year coverage by DHB (women 25-69 years screened in the three years prior to 30 June 2019, hysterectomy adjusted) 164

Table 24 - Three-year coverage by ethnicity (women 25-69 years screened in the three years prior 30 June 2019, hysterectomy adjusted) 164

Table 25 – Three-year coverage by age (women 20-69 years screened in the three years prior to 30 June 2019, hysterectomy adjusted) 165

Table 26 – Three-year coverage (women aged 25-69 years screened in the three years prior to 30 June 2019, hysterectomy adjusted), by ethnicity and DHB 166

Table 27 – Three-year coverage (women aged 25-69 years screened in the three years prior to 30 June 2019 hysterectomy adjusted), by ethnicity and age 167

Table 28 – Five-year coverage by DHB (women aged 25-69 years screened in the five years prior 30 June 2019, hysterectomy adjusted) 168

Table 29– Five-year coverage by ethnicity (women aged 25-69 years screened in the five years prior to 30 June 2019, hysterectomy adjusted) 168

Table 30 - Five-year coverage by age (women 20-69 years screened in the five years prior to 30 June 2019, hysterectomy adjusted) 169

Table 31 Five-year coverage (women aged 25-69 years screened in the five years prior to 30 June 2019, by ethnicity and DHB (hysterectomy adjusted) 170

Table 32 - Women under 20 years of age, and aged 15-19 years, screened in the three years prior to 30 June 2019, by DHB. 171

Table 33 - Women screened under 20 years of age, as a proportion of all women screened in the three years to 30 June 2019, by DHB 172

Table 34 - Women screened under 20 years of age, and women aged 18-19 years when they were screened, in the three years to 30 June 2019, by DHB 173

Table 35– Estimated age-specific prevalence of hysterectomy in New Zealand, used to perform hysterectomy adjustment 173

Table 36 - Women (25-69 years) screened in the three years to 30 June 2019, as a percentage of the i) hysterectomy-adjustment NZ female population and ii) total NZ female population, by DHB 174

Table 37 - Trends in three-year coverage by DHB (women screened in the previous three years, as a percentage of the hysterectomy-adjusted female population) 175

Table 38 - Trends in three-year coverage by age (women screened in the previous three years, as a percentage of the hysterectomy-adjusted female population) 175

Table 39 - Trends in three-year coverage by ethnicity (women screened in the previous three years, as a percentage of the hysterectomy-adjusted female population) 176

Table 40 - Age distribution of first screening events for period 1 January – 30 June 2019 177

Table 41 - Women (ages 20-69 years) with first screening events as a proportion of total number of women with screening events 1 January – 30 June 2019 177

Table 42 - Women (aged 20-69 years) with first screening events as a proportion of i) total number of women with screening events, and ii) eligible women, by DHB, for period 1 January – 30 June 2019 179

Table 43 - Women (ages 20-69 years) with first screening events as a proportion of i) total number of women with screening events, and ii) eligible women, by ethnicity, for period 1 January – 30 June 2019 179

Table 44 - Median age of women with a first screening event, by ethnicity, for period 180

Table 45 - Number of women who withdrew from the NCSP Register 1 January – 30 June 2019 by ethnicity, and proportion of women who were enrolled at the start of the monitoring period who withdrew 181

Table 46 - Number of women (aged 20-69 years) who withdrew from the NCSP 1 January – 30 June 2019 by age, and proportion of women who were enrolled at the start of the monitoring period who withdrew 181

Table 47 - Early re-screening by DHB 182

Table 48 - Early re-screening by five-year age group 182

Table 49 - Early re-screening by ethnicity 183

Table 50 - Age-standardised percentage of satisfactory cytology samples reported as HSIL, by laboratory 184

Table 51 - Positive predictive value of a report of HSIL + SC cytology by laboratory 185

Table 52 - Positive predictive value of a report of ASC-H cytology by laboratory 185

Table 53 - Positive predictive value of a report of ASC-H + HSIL + SC cytology by laboratory 186

Table 54 - Rate of women with CIN 2/3 per 1,000 women screened, by age and ethnicity and for NZ overall, 1 January – 30 June 2019 187

Table 55 - Rate of women, per 1,000 women screened, with CIN 2/3 histology, by age and ethnicity, July-Dec 2007 to Jan-Jun 2019 188

Table 56 - Number of women screened, by age and ethnicity, July-Dec 2007 to Jan-Jun 2019 . 190

Table 57 - Timeliness of cytology reporting by laboratory, 1 January – 30 June 2019 192

Table 58 - Timeliness of histology reporting by laboratory, 1 January – 30 June 2019 193

Table 59 - Timeliness of reporting for cytology with associated HPV testing by laboratory, 1 January – 30 June 2019 194

Table 60 - Women with a histology report within 90 days of a high-grade cytology report, by DHB and age 195

Table 61 - Women with a histology report within 180 days of a high-grade cytology report, by DHB and age 196

Table 62 - Women with high-grade cytology (including cytological suspicion of invasive disease), by DHB 197

Table 63 - Women with a high-grade cytology report (no suspicion of invasive disease), accepted referral and a colposcopy visit within 20 and 40 working days, by ethnicity 197

Table 64 - Women with a high-grade cytology report (no suspicion of invasive disease), accepted referral and a colposcopy visit within 20 and 40 working days, by DHB 198

Table 65 - Women with cytological suspicion of invasive disease, by cytology result subcategory 198
Table 66 - Follow-up of women with persistent low-grade cytology/ low-grade cytology and positive hrHPV test, by DHB 199
Table 67 - Follow-up of women with persistent low-grade cytology/ low-grade cytology and positive hrHPV test, by ethnicity 200
Table 68 - Completion of colposcopic assessment fields, by DHB 201
Table 69 - Summary of colposcopic appearance findings, by DHB 202
Table 70 - Biopsies by colposcopic appearance and DHB 203
Table 71 - Follow-up of treated women with colposcopy and cytology in the period up to nine months post-treatment, and discharge of eligible women 204
Table 72 - Follow-up of treated women in the period up to nine months post-treatment 205
Table 73 - Triage testing of women with ASC-US cytology 206
Table 74 - Triage testing of women with LSIL cytology 207
Table 75 - Histological outcomes within 12 months in women with ASC-US cytology and positive HPV triage test 207
Table 76 - Histological outcomes within 12 months in women with LSIL cytology and positive HPV triage test 208
Table 77 - Volume of HPV test samples received during the monitoring period, by laboratory 209
Table 78 - Invalid HPV tests, by laboratory 209
Table 79 - Validity of HPV triage tests, by test technology 209
Table 80 - Volume of HPV test samples received during the monitoring period, by purpose and ethnicity 210
Table 81 - Volume of HPV test samples received during the monitoring period, by purpose and age 210
Table 82 - Volume of HPV test samples received during the monitoring period, by purpose and laboratory 211
Table 83 - HPV test samples collected at colposcopy, in relation to total colposcopies performed in the period, by DHB 212
Table 84 - Women eligible for and proportion who have received HPV testing for a historical high-grade abnormality, by age at 30 June 2019 213
Table 85 - Women eligible for and proportion who have received historical HPV testing, by DHB 214
Table 86 - Women eligible for and proportion who have received historical HPV testing, by ethnicity 214
Table 87 - Women screened in the previous five years and proportion of women with historical round 1 and 2 tests recorded, by DHB 217
Table 88 - Definition used for positive predictive value calculations 222

List of Figures

Figure 1 - Three-year coverage by ethnicity (women 25-69 years screened in the three years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population)..... 23

Figure 2 - Three-year coverage by five-year age group (women 20-69 years screened in the three years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population) 23

Figure 3 - Three-year coverage by DHB (women 25-69 years screened in the three years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population)..... 24

Figure 4 - Three-year coverage in Māori women (women 25-69 years screened in the three years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population), by DHB 24

Figure 5 - Three-year coverage in Pacific women (women 25-69 years screened in the three years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population), by DHB..... 25

Figure 6 - Three-year coverage in Asian women (women 25-69 years screened in the three years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population), by DHB 25

Figure 7 - Three-year coverage in European/ Other women (women 25-69 years screened in the three years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population), by DHB..... 26

Figure 8 - Three-year coverage (women 25-69 years screened in the three years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population), by ethnicity and five-year age group 26

Figure 9 - Five-year coverage by DHB (women screened in the five years prior to 31 December 2019, as a proportion of hysterectomy-adjusted female population) 27

Figure 10 - Five-year coverage by five-year age-group (women screened in the five years prior to 30 June 2019, as proportion of hysterectomy-adjusted female population)..... 27

Figure 11 - Five-year coverage by ethnicity (women screened in the five years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population) 28

Figure 12 - Five-year coverage in Māori women (women 25-69 years screened in the five years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population), by DHB 28

Figure 13 - Five-year coverage in Pacific women (women 25-69 years screened in the five years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population), by DHB 29

Figure 14 - Five-year coverage in Asian women (women 25-69 years screened in the five years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population), by DHB 29

Figure 15 - Five-year coverage in European/ Other women (women 25-69 years screened in the five years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population), by DHB..... 30

Figure 16 - Number of women screened who were aged less than 20 years at the time of their cervical sample in the three years to 30 June 2019, by DHB 30

Figure 17 - Trends in three-year coverage by DHB (women aged 25-69 years screened in the previous three years, as a proportion of hysterectomy-adjusted female population) 31

Figure 18 - Trends in three-year coverage by age (women screened in the previous three years, as a proportion of hysterectomy-adjusted female population)* 31

Figure 19 - Trends in three-year coverage by ethnicity (women aged 25-69 years screened in the previous three years, as a proportion of hysterectomy-adjusted female population)* 32

Figure 20 - Trends in the number of women screened in the preceding three years who were aged less than 20 years at the time of their cervical sample, by DHB 32

Figure 21 - Trends in the percent of women aged less than 20 years at the time of their cervical sample who were aged 18 or 19 years, by DHB 33

Figure 22 - Women with first screening events during the monitoring period, by five-year age group (women aged 20-69 years at 30 June 2019) 37

Figure 23 - Women with first screening events as a proportion of all women screened in that age group during the monitoring period, by five-year age group (women aged 20-69 years at 30 June 2019) 37

Figure 24 - Women with first screening events as a proportion of all women screened during the monitoring period, by DHB (women aged 20-69 years at 30 June 2019) 38

Figure 25 - Women with first screening events as a proportion of all women screened during the monitoring period, by ethnicity (women aged 20-69 years at 30 June 2019) 38

Figure 26 - Trends in the number of women with a first screening event, by age 39

Figure 27 - Trends in the number of women with a first screening event, by DHB 39

Figure 28 - Trends in the number of women with a first screening event, by ethnicity 40

Figure 29 - Number of women (aged 20-69 years) who withdrew from the NCSP Register by DHB, 1 January – 30 June 2019 43

Figure 30 - Number of women who withdrew from the NCSP Register by age, 1 January – 30 June 2019 43

Figure 31 - Number of women (aged 20-69 years) who withdrew from the NCSP Register by ethnicity, 1 January – 30 June 2019 44

Figure 32 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by DHB 48

Figure 33 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by five-year age group 48

Figure 34 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by ethnicity 49

Figure 35 - Trends in the proportion of women recommended to return at the routine interval (three years) who were re-screened early, by DHB 49

Figure 36 - Trends in the proportion of women recommended to return at the routine interval (three years) who were re-screened early, by age 50

Figure 37 - Trends in the proportion of women recommended to return at the routine interval (three years) who were re-screened early, by ethnicity 50
Figure 38 - Proportion of total LBC samples reported as unsatisfactory by laboratory, 1 January – 30 June 2019 56
Figure 39 - Proportion of total satisfactory samples reported as negative by laboratory 56
Figure 40 - Proportion of total satisfactory samples reported as abnormalities by laboratory, 1 January – 30 June 2019 57
Figure 41 - Proportion of total satisfactory samples reported as HSIL by laboratory, 1 January – 30 June 2019 57
Figure 42 - Trends in the proportion of total satisfactory samples reported as HSIL (last four monitoring periods), by age 62
Figure 43 - Longer term trends in the proportion of total satisfactory samples reported as ASC-H or HSIL (to 1 January – 30 June 2019) 62
Figure 44- Longer term trends in the proportion of total satisfactory samples reported as HSIL (to 1 January – 30 June 2019), selected age groups 63
Figure 45 - Trends in the proportion of total satisfactory samples reported as HSIL, by laboratory 63
Figure 46 - Positive predictive value for CIN 2+ in women with HSIL or SC cytology reports (cytology in 1 January – 30 June 2019), by laboratory 67
Figure 47 - Positive predictive value for CIN 2+ in women with other high-grade cytology results (i.e. collected from July – 31 December 2018 inclusive), by laboratory 67
Figure 48 - Trends in the positive predictive value for CIN 2+ in women with HSIL or SC cytology results, by laboratory 68
Figure 49 - Trends in the positive predictive value for CIN 2+ in women with ASC-H cytology results, by laboratory 68
Figure 50 - Trends in the positive predictive value for CIN 2+ in women with ASC-H, HSIL or SC cytology results, by laboratory 69
Figure 51 - Rate of women with CIN 2/3 per 1,000 women screened, by age and ethnicity for the period 1 January – 30 June 2019 80
Figure 52 - Trends in the age standardised rate of women with CIN 2/3 per 1,000 women screened, by ethnicity 80
Figure 53 - Trends in the rate of women with CIN 2/3 per 1,000 women screened, by age 81
Figure 54 - Trends in the rate of women with CIN 2/3 per 1,000 women screened, by ethnicity and selected ages 81
Figure 55 - Proportion of cytology samples reported within seven working days by laboratory, 1 January – 30 June 2019 86
Figure 56 - Proportion of cytology samples reported within 15 working days by laboratory, 1 January – 30 June 2019 86
Figure 57 - Proportion of histology samples reported within ten working days by laboratory, 1 January – 30 June 2019 87

Figure 58 - Proportion of histology samples reported within 15 working days by laboratory, 1 January – 30 June 2019 87

Figure 59 - Proportion of cytology samples with associated HPV triage testing and of all cytology samples reported within 15 days by laboratory, 1 January – 30 June 2019 88

Figure 60 - Proportion of women (ages 20-69) with a histology report within 90 days, and within 180 days of their high-grade cytology report, by DHB 95

Figure 61 - Proportion of women without any follow-up test within 90 days and within 180 days of a high-grade cytology report recorded on the NCSP Register, by DHB 98

Figure 62 - Proportion of women without any follow-up test within 90 days and within 180 days of a high-grade cytology report recorded on the NCSP Register, by ethnicity 98

Figure 63 – Trends in the proportion of women with high-grade cytology who have follow-up within 90 days recorded on the NCSP Register, by DHB 100

Figure 64 – Trends in the proportion of women with high-grade cytology who have follow-up within 180 days recorded on the NCSP Register, by DHB 100

Figure 65 - Trends in the proportion of women with high-grade cytology who have follow-up within 90 days recorded on the NCSP Register, by ethnicity 101

Figure 66 - Trends in the proportion of women with high-grade cytology who have follow-up within 180 days recorded on the NCSP Register, by ethnicity 101

Figure 67 - Percentage of women with a high-grade cytology (no suspicion of invasive disease) with a colposcopy visit within 20 and 40 working days, by ethnicity 108

Figure 68 - Percentage of women with a high-grade cytology (no suspicion of invasive disease) with a colposcopy visit within 20 and 40 working days, by DHB 109

Figure 69 – Trends of the proportion of women with a high-grade cytology report (no suspicion of invasive disease) seen within 4 weeks (20 working days), by ethnicity 109

Figure 70 – Trends of the proportion of women with a high-grade cytology report (no suspicion of invasive disease) seen within 4 weeks (20 working days), by DHB 110

Figure 71 - Follow-up recorded* for women with persistent LG cytology/ LG cytology and positive hrHPV test, by DHB 114

Figure 72 - Follow-up recorded* for women with persistent LG cytology/ LG cytology and positive hrHPV test, by ethnicity 114

Figure 73 - Women with persistent LG cytology/ LG cytology and positive hrHPV test and an accepted referral for colposcopy: percentage with a colposcopy visit recorded within 26 weeks of the date the referral was accepted, by DHB 115

Figure 74 - Women with persistent LG cytology or LG cytology and positive hrHPV test and an accepted referral for colposcopy: percentage with a colposcopy visit recorded within 26 weeks of the date the referral was accepted, by ethnicity 115

Figure 75 - Trends in the proportion of women with persistent LG cytology or LG cytology and positive hrHPV test and an accepted referral for colposcopy who have a colposcopy visit recorded within 26 weeks of the date the referral was accepted, by DHB 116

Figure 76 - Trends in proportion of women with persistent LG cytology or LG cytology and positive hrHPV test and an accepted referral for colposcopy who have a colposcopy visit recorded within 26 weeks of the date the referral was accepted, by ethnicity 116

Figure 77 - Completion of colposcopic assessment fields, by DHB 121
Figure 78 - Trends in the completion of all required colposcopic assessment fields, by DHB 121
Figure 79 - Trends in the number of colposcopies recorded on the NCSP Register, by DHB 122
Figure 80 - Proportion of women treated within eight weeks of histological confirmation of HSIL, by DHB 126
Figure 81 - Trends in the proportion of women treated within eight weeks of histological confirmation of HSIL, by DHB 126
Figure 82 - Percentage of women treated with colposcopy, and both colposcopy and cytology, within nine months post-treatment, by DHB 131
Figure 83 - Percentage of women discharged appropriately within 12 months of treatment, by DHB 131
Figure 84 - Proportion of women (aged 30 years or more) with low-grade cytology who have a subsequent HPV test, by laboratory and cytology result 138
Figure 85 - Proportion of HPV triage tests which are positive following ASC-US cytology (women aged 30 years or more), by cytology laboratory 138
Figure 86 - Proportion of HPV triage tests which are positive following LSIL cytology (women aged 30 years or more), by cytology laboratory 139
Figure 87 - Proportion of women with an HPV triage test who are HPV positive, by age and cytology result 139
Figure 88 – Triage-positive women with histologically-confirmed CIN 2+ within 12 months, as a percentage of all women with histology, by laboratory 142
Figure 89 – Triage-positive women with histologically-confirmed CIN 2+ within 12 months, as a percentage of all women who attended colposcopy, by laboratory 142
Figure 90 - Women with histologically-confirmed CIN 2+ within 12 months, as a percentage of all women who attended colposcopy, by laboratory and referral cytology 143
Figure 91 – Triage-positive women with histologically-confirmed CIN 2+ within 12 months, as a percentage of women with histology recorded, by age 143
Figure 92 – Triage-positive women with histologically-confirmed CIN 2+ within 12 months, as a percentage of women with colposcopy recorded, by age 144
Figure 93 – Trends in ASC-US triage-positive women with histologically-confirmed CIN 2+ within 12 months, as a percentage of women with colposcopy recorded, by laboratory 144
Figure 94 – Trends in LSIL triage-positive women with histologically-confirmed CIN 2+ within 12 months, as a percentage of women with colposcopy recorded, by laboratory 145
Figure 95 - Volume of HPV test samples received by laboratories during the monitoring period, by age 152
Figure 96 - Volume of HPV test samples received by laboratories during the monitoring period, by laboratory 152
Figure 97 - HPV test samples as a percentage of cytology test samples received during the monitoring period, by laboratory 153
Figure 98 - Volume of HPV test samples received during the monitoring period, by purpose ... 153

Figure 99 - HPV test samples received during the monitoring period, by purpose and age 154
Figure 100 - HPV test samples received during the monitoring period, by purpose and laboratory 154
Figure 101 - HPV test samples collected at colposcopy, in relation to total colposcopies* performed in the period, by DHB 155
Figure 102 - Trends in volumes of HPV test samples received, by laboratory 155
Figure 103 - Trends in volumes of HPV test samples received, by purpose 156
Figure 104 - Trends in HPV test samples collected at colposcopy, in relation to total colposcopies* performed in the period, by DHB 156
Figure 105 - Proportion of eligible women with squamous high-grade abnormality more than 3 years ago for whom an historical test is recorded on the NCSP Register, by age at 30 June 2019 161
Figure 106 - Proportion of eligible women with squamous high-grade abnormality more than 3 years ago for whom an historical test is recorded on the NCSP Register, by DHB at 30 June 2019 161
Figure 107 - Proportion of eligible women with squamous high-grade abnormality more than 3 years ago for whom an historical test is recorded on the NCSP Register, by ethnicity at 30 June 2019. 162
Figure 108 - Trends in the proportion of eligible women with squamous high-grade abnormality more than 3 years ago for whom a round 1 historical test is recorded on the NCSP Register, by DHB 162
Figure 109 - Trends in the proportion of eligible women with squamous high-grade abnormality more than 3 years ago for whom a round 1 historical test is recorded on the NCSP Register, by ethnicity 163
Figure 110 - Trends in the proportion of eligible women with squamous high-grade abnormality more than 3 years ago for whom a round 1 historical test is recorded on the NCSP Register, by age 163
Figure 111 - Proportion of population* in that age group with their first screening event during the monitoring period (women aged 20-69 years at 30 June 2019) 178
Figure 112 - Trends in histologically-confirmed HSIL as a percentage of all women with histology (To 1 July 2011 – 30 June 2019). 187
Figure 113 - Number of women eligible for historical testing within a DHB versus the percentage with a Round 1 historical HPV test recorded 215
Figure 114 - Relationship between women screened in the previous five years and proportion of women with historical tests recorded, by DHB 215
Figure 115 - Relationship between women screened in the previous five years and proportion of women with historical tests recorded, by ethnicity 216

1. Executive Summary

Purpose

This report provides data on performance indicators of the National Cervical Screening Programme (NCSP) for the period 1 January to 30 June 2019.

Key points on performance/trends

Indicator 1 — Coverage

Indicator 1.1 — Three-year coverage

Target: 80% of eligible women screened within the previous three years.

- Among an estimated 1,315,353 eligible women aged 25-69 years at the end of the monitoring period, 938,941 (71.4%) had a screening test in the previous three years.
- The coverage target was not met nationally (80% of women aged 25-69 years screened in the previous three years).
- The coverage target was not met nationally in any five-year age group.
- No DHBs met the coverage target for their total populations.
- Nationally, coverage targets were not met for any ethnic groups. Coverage was 77.2%, 65.1%, 61.6% and 59.8% for European/ Other, Pacific, Māori and Asian women, respectively.
- However, the target level of 80% of European/ Other women screened within the previous three years was achieved in six DHBs (Bay of Plenty, Capital and Coast, Lakes, Southern, and Taranaki and Tairawhiti).
- Three-year coverage among women aged 25-69 years (71.4%) is lower than that reported in the previous monitoring report (72.1%).
- Three-year coverage is lower in each of the ten age groups, each ethnic group and eighteen of the twenty DHBs.
- Five-year coverage among women aged 25-69 years (85.5%) is similar to that reported in the previous monitoring report (85.7%).
- Five-year coverage among women aged 25-69 years exceeded 80% in nineteen of the twenty DHBs, in Pacific and European/ Other women, and in all five-year age groups between 30-69 years.

Screens in women aged less than 20 years

Target: None

- In the three years to 30 June 2019, 4,499 women had a cervical sample taken when they were aged less than 20 years. This is fewer than in the previous monitoring period (4,919 women).

- This represents 0.4% of all women (of any age) who were screened in the three-year period (which is slightly lower than in the previous monitoring period, 0.5%).
- Most of these women (89.4%) were aged 18-19 years at the time of their cervical sample.

Indicator 1.2	<u>Regularity of screening</u> **Target:** Not yet defined This indicator is not assessed in this report, instead it is assessed annually. This indicator was last assessed in Report 50 and will be next assessed in Report 52.
Indicator 2	<u>First screening events</u> **Target:** None • There were 23,374 women who had their first screening event during the current monitoring period – slightly fewer compared to the previous monitoring period. • First screening events generally occur among young women (median age 26 years). • Asian women appear to have their first screening event at a later age (median age of Asian women attending for their first screening event was 31 years, compared to 22, 25 and 24 years for Maori, Pacific and European/ Other women, respectively). • The proportion of women screened who were being screened for the first time was highest for Asian.
Indicator 3	<u>Withdrawal rates</u> **Target:** Zero between ages 20-69 years • There were 12 women aged between 20-69 years who withdrew from the NCSP Register during this six-month period. This is fewer than the number of women in this age range who withdrew during the previous monitoring period (15 women).
Indicator 4	<u>Early re-screening</u> **Target:** Not yet defined Currently reporting on the percentage of women in routine screening (previous cytology sample negative and recommended to return in 36 months (3 years) who returned for a cytology sample within 30 months (2.5 years) of their index cytology sample. • 11.4% of a cohort of women with a recommendation to return at the routine interval had at least one cytology sample within 30 months of their index cytology sample.

- Early re-screening varies widely between DHBs, from 6.6% in Tairawhiti to 19.2% in Wairarapa.
- Early re-screening occurs in all ethnic groups, but is most common among European/ Other (11.8%) and least common among Pacific women (7.6%).
- Early re-screening occurs in all age groups, but is most common in women aged 20-24 years at the end of the period (16.9%) and least common in women aged 65-69 years at the end of the period (7.8%).
- Early re-screening is slightly lower overall since the previous report, from 11.6% to 11.4%, but rates are higher than in the previous report in some DHBs (Canterbury, Capital & Coast, South Canterbury, Waikato, Wairarapa) and age groups (women aged 20-24, 35-39 and 65-69 at the end of the period).

Indicator 5 — Laboratory Indicators

Indicator 5.1 — Cytology reporting

Unsatisfactory cytology

Target: 0.1% - 3% for LBC

- The target for the percentage of LBC samples reported as unsatisfactory was met by four of the six laboratories, and was met nationally (1.4%).
- The rate of unsatisfactory LBC samples is higher than in the previous report (1.1 %).

Negative cytology

Target: No more than 96% of satisfactory cytology samples

- The target for the percent of samples reported as negative was met by all six laboratories.
- Nationally, the percent of samples which are negative (93.0%) is slightly lower than what was reported in the previous period (93.3%).

Abnormal cytology

Target: No more than 10% of satisfactory cytology samples

- The target for the percent of samples reported as abnormal was met by four of the six laboratories.
- Nationally, the percent of samples which are abnormal (7.0%) is slightly higher than what was reported in the previous period (6.7%).

HSIL cytology

Target: No less than 0.5% of satisfactory cytology samples

- The target for the percent of HSIL samples was met by all six laboratories.
- Nationally the percent of HSIL samples (0.8%) was the same in the last monitoring report.
- This rate is generally lower than or similar to that in the previous report in women aged 20-70+ years; however the rate is higher in some age groups (women aged 30-34, 35-39, 45-49, 55-59 years) compared to this rate in the previous report.

Indicator 5.2

Cytology positive predictive value

HSIL + SC

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

- Five of the six laboratories met the target range for HSIL + SC.
- Nationally, the positive predictive value of HSIL + SC (76.3%) is lower than in the previous monitoring period (81.4%).

Other cytological abnormalities

Target: None

- Nationally, the positive predictive value of ASC-H is lower than the previous report (48.0% in this report; 52.2% in the previous reports).
- Nationally, the positive predictive value of the combination of ASC-H + HSIL + SC is lower than that in the previous report (66.6% in this report, compared to 70.5% in the previous report).
- Nationally, the percent of glandular cytological abnormalities confirmed as histological high-grade (39.9%) is lower than in the previous report (44.4%), however this measure is generally based on a comparatively small number of samples (173 samples with histology in the current report).

Indicator 5.3

Accuracy of negative cytology reports

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

Target: Not more than 10% identified as HS1, HS2, SC, AIS or AC1-AC5 (HSIL+) on review

This indicator is not assessed in this report. Data for this indicator is provided annually and this indicator was last assessed in Report 50 and will be next assessed in Report 52.

Indicator 5.4	Histology reporting **Target:** None • 12,102 histology samples were taken during the current monitoring period. 414 (3.4%) of these were insufficient for diagnosis. • Results for most severe histology from 10,470 women with samples which were sufficient for diagnosis are presented. • 55.5% of women had histology samples which were negative/ benign. This reduced to 45.2% of women when negative/ benign hysterectomy samples (total hysterectomy and partial hysterectomy with cervical component) were excluded. • 18.9% of women had CIN 2/3 or HSIL histology results. • 64 (0.61%) women had histology results indicating adenocarcinoma in situ (AIS). • 58 (0.55%) women had invasive squamous cell carcinoma (ISCC) histology results, 30 (0.29%) women had adenocarcinomas not arising from the endocervix and 10 (0.10%) women had adenocarcinoma arising from the endocervix histology results. One woman (<0.05%) had adenosquamous carcinoma histology results. • Rates of CIN2/3 per 1,000 women screened were higher than in the previous report in all age groups except three (women aged 20-24, 25-29 and 40-44 years).
Indicator 5.5	Turnaround times *Cytology* **Target:** 90% within seven working days; 98% within 15 working days • The seven-working-days target for cytology was met by five of six laboratories. • The 15-working-days target was met in four of six laboratories. • Overall, the percentage of cytology tests reported within seven working days (95.8%) is lower than in the previous report (96.9%) . • The overall percent of cytology samples reported within 15-working-days (98.8%) is lower than it was in the previous report (99.2%). *Histology* **Target:** 90% within 10 working days; 98% within 15 working days • Turnaround time target for histology reported within 10 working days was met by nine of fourteen laboratories. • The target for histology reported within 15 working days was met by five of fourteen laboratories.

- The overall proportion of histology samples reported within 10 working days (91.0%) is lower than it was in the previous report (92.9%).
- The overall proportion of histology samples reported within 15 days (96.2%) is lower than it was in the previous report (97.2%).

Low-grade cytology with associated HPV triage testing

Target: 98% within 15 working days

- There were 3,065 cytology samples with associated HPV triage testing in the current monitoring period.
- Three of the six laboratories met the 15-working-days target for turnaround time for cytology with associated HPV triage testing.
- Nationally, the overall proportion of cytology with associated HPV triage testing reported within 15 working days (98.9%) is lower than it was in the previous report (99.2%).

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).
- 81.2% of women had a histology report within 90 days of their high-grade cytology report; 87.8% of women had one within 180 days.
- Four DHBs met the target for histological follow-up within 90 days and one DHB met the target for 180 days.
- Nationally, the proportion of women with histological follow-up is lower within 90 days (81.2%) compared to the previous monitoring period (83.8%) and also lower within 180 days (87.8%) compared to the previous monitoring period (88.5%).
- Compared to the previous monitoring period, the proportion of women with follow-up histology within 90 days is higher for Māori women (from 78.2% to 82.1%), but is lower for European/ Other women (from 86.1% to 83.4%), Pacific women (from 74.0% to 60.2%) and Asian women (from 82.7 % to 77.3%).
- The proportion of women with follow-up histology within 180 days has is lower for Pacific, Asian and and European/ Other women but is higher for Māori women.

Women with no follow-up tests

Target: None

- Nationally, 205 (10.9%) women have no report of a follow-up test of any kind (colposcopy, subsequent cytology, histology or HPV test) within 90 days of their high-grade cytology report, and

119 (6.3%) women have no follow-up test report within 180 days.

- Nationally, the proportion of women with no record of a follow-up test report at 90 days is higher (from 8.5% to 10.9%) and for 180 days (from 5.5% to 6.3%).
- Compared to the previous monitoring period, the proportion of women with no follow-up test recorded at 180 days is lower for Māori women (from 8.8% to 7.2%), but is higher for Pacific women (from 12.5% to 16.5%), Asian women (from 4.6% to 8.1%), and European/ Other women (from 4.4% to 5.0%).

Indicator 7 — Colposcopy

Indicator 7.1 — Timeliness of colposcopic assessment – high-grade cytology

Target: 95% or more of women who have evidence of clinical suspicion of invasive carcinoma, or a cytological suspicion of invasive disease (TBS codes HS2, SC, AC1-AC5), receive colposcopy or a gynaecological assessment within 10 working days of receipt of referral.
95% or more of women who have other high-grade cytology sample abnormalities (TBS codes ASH, HS1, AG1-AG5, AIS) receive colposcopy within 20 working days of receipt of referral.

- There were 1,882 women with high-grade cytology results who were not already under specialist management (the same women reported on in Indicator 6).
- This comprised 66 women with high-grade results indicating a suspicion of invasive disease and 1,816 women with other high-grade results.
- Nationally, the proportion of women with accepted referrals recorded on the NCSP Register (87.9%) is lower than in the previous report (89.2%).

Suspicion of Invasive Disease

- Among the 66 women with high-grade cytology results indicating a suspicion of invasive disease, 48 (72.7%) had an accepted referral. Of the women with an accepted referral, 81.3% were seen within 10 working days of their referral being accepted. This is higher than in the previous report (80.6%).
- A colposcopy visit was recorded for 60 (90.9%)of these women up to 30 June 2019 (follow-up time of at least six and up to 12 months).

No Suspicion of Invasive Disease

- Among the 1,816 women with other high-grade cytology results, 1,607 (88.5%) had an accepted referral. Of the women with an accepted referral, 72.9% were seen within 20 working days of their referral being accepted. This is lower than the

	proportion seen within 20 working days in the previous monitoring period (76.5%). • A colposcopy visit is recorded for 1,704 (93.8%) of these women up to 30 June 2019 (follow-up time of at least six and up to 12 months).
Indicator 7.2	<u>Timeliness of colposcopic assessment – low-grade cytology</u> **Target**: 95% of women who have persistent low-grade abnormalities or a low-grade abnormality and positive HPV test, must receive a date for a colposcopy appointment within a period that does not exceed 26 weeks of the colposcopy unit accepting the referral from the sample taker. • There were 3,791 women with persistent low-grade cytology or low-grade cytology and a positive hrHPV test collected (the 6-month period ending 12 months prior to the end of the current monitoring period, i.e. between 1 January -30 June 2018). • Among these women, subsequent accepted referrals are recorded for (3,245 85.6%), and subsequent colposcopy is recorded (by 30 June 2019) for 3,449 (91.0%). • Nationally, 80.1% of women attended for colposcopy within 26 weeks of their accepted referral. This is lower than in the previous monitoring report (86.7%).
Indicator 7.3	<u>Adequacy of reporting colposcopy</u> **Target:** 100% of medical notes will accurately record colposcopic findings including visibility of the squamo-columnar junction, presence or absence of a visible lesion, and colposcopic opinion regarding the nature of the abnormality. • Based on 12,270 colposcopy visits in the current monitoring period recorded on the NCSP Register, no DHB nor the aggregate of colposcopy visits to private practice met the target of 100% completion of all recommended fields. • All items (degree of visibility of the squamo-columnar junction, presence or absence of a lesion and colposcopic opinion regarding abnormality) were documented for 93.0% of colposcopy visits. Reporting was 100% complete for presence/absence of a lesion, but not for degree of visibility of the squamo-columnar junction, nor for colposcopic opinion regarding abnormality. • The type of recommended follow-up was recorded for 90.1% of colposcopy visits, and the recommended timeframe for this follow-up was recorded for 89.4% of colposcopy visits. • Colposcopic appearance was reported as abnormal in 54.8% of colposcopies, and inconclusive in 4.3% of colposcopies. • Completion of most recommended fields is broadly similar to what was reported in the previous monitoring period.

	• Overall completion is higher in this monitoring period (93.0%) than in the previous monitoring period (92.5%). • The number of colposcopies recorded on the NCSP Register is 5.1% lower than in the previous reporting period. • All DHBs were reporting colposcopy data electronically to the NCSP Register throughout the current monitoring period.
Indicator 7.4	Timeliness and appropriateness of treatment **Target:** 90% or more of women with HSIL should be treated within eight weeks of histological confirmation. • 61.1% of 2,045 women with HSIL histology (CIN 2/3) during the period 1 July to 31 December 2018 have a record of treatment within eight weeks of their histology report. • The proportion of women with histologically confirmed CIN 2/3 treated within eight weeks of their histology result being reported (61.1%) was lower than in the previous monitoring period (66.3%). • No DHBs met the target.
Indicator 7.5	Timeliness of discharge following treatment **Target:** 90% or more of women treated for CIN 2/3 should have a colposcopy and cytology within the nine-month period post treatment. • Based on NCSP Register records, 1,350 women were treated for high-grade lesions in the period 1 January to 30 June 2018. • 73.1% of women treated have a record of both colposcopy and cytology within the nine months after their treatment visit. 74.4% have a record of at least a colposcopy visit (with or without cytology) in the same time period. • Four DHBs met the target for follow-up within nine months post-treatment. **Target:** 90% or more of women treated for CIN 2/3 should be discharged back to the sample taker as appropriate. • There were 1,001 women who were eligible for appropriate discharge within 12 months of their treatment (74.1% of all women treated for CIN 2/3). Of these women, 850 (84.9%) were discharged to their sample taker within 12 months. • Nine DHBs met the target of discharging 90% or more women who were eligible for discharge within 12 months.
Indicator 8	HPV testing
Indicator 8.1	HPV triage of low-grade cytology **Target:** None set.

HPV triage

- Nationally, 97.6% of women aged 30 years or more with an eligible ASC-US cytology result, and 96.0% of women aged 30 years or more with an eligible LSIL cytology result are recorded as having a subsequent HPV triage test.
- Small numbers of HPV triage tests occur in women aged under 30 years (in 1.1% of women with an ASC-US result, and 0.6% of women with an LSIL result; 22 women in total).
- The proportion of women aged 30 years and over who were eligible for HPV triage of low-grade cytology who subsequently received a triage test is higher than that in the previous monitoring period for women with ASC-US results (97.6% compared to 96.6% in the previous report) and also higher for women with LSIL results (96.0% compared to 95.6% in the previous report).

Positive triage tests

- Among women aged 30 years or more with a valid HPV triage test results, 23.7% of women with ASC-US results and 61.2% of women with LSIL results were positive for high risk HPV.
- Positivity for high risk HPV varied by laboratory (from 18.4% to 28.8% for ASC-US, and from 41.1% to 65.8% for LSIL).
- Positivity for high risk HPV generally decreased with increasing age.
- The proportion of women whose HPV tests were positive decreased compared to the previous monitoring period for ASC-US (23.7% compared to 24.0% in the previous period), but is higher for LSIL (61.2% compared to 59.1% in the previous period).

Histological outcomes in triage-positive women who attended colposcopy

- Among women with ASC-US cytology and a positive HPV triage test in the six-month period one year prior to the current monitoring period (January – June 2018), 91.7% of women have a record of colposcopy and 64.0% have a record of histology within 12 months of their triage test. The corresponding percentages for LSIL are 92.2% with colposcopy and 65.3% with histology within 12 months.
- Among women with colposcopy recorded within 12 months of a positive triage test, the proportion of women that had a CIN 2 or more severe outcome (CIN 2+) was 13.7% for women with triage-positive ASC-US cytology and 13.9% for women with triage-positive LSIL cytology. This corresponded to 47 of the women with ASC-US cytology and 116 of the women with LSIL cytology.

- Among women with histology recorded within 12 months of a triage test, 19.6% of women with ASC-US cytology and 19.7% of women with LSIL cytology had a histological outcome of CIN 2+.

Indicator 8.2

HPV test volumes

Target: None set.

- Nationally, there were 16,282 cervical samples received at laboratories for HPV testing during the current monitoring period.
- Nationally, 15.6% of HPV tests were taken for follow-up of women treated for confirmed high-grade squamous abnormalities in the previous four years (post-treatment follow-up), 34.6% were taken to manage women with high-grade squamous cytology or histology more than three years ago (historical testing), 8.4% were taken at colposcopy (potentially to assist in resolving discordant results), and 17.8% were taken for HPV triage of low-grade cytology in women aged 30 years or more. The remaining 24.7% of HPV tests did not fit into any of the previously described categories, and so the reason for testing was unclear.
- The proportion of HPV tests which are invalid is very small (0.06%).
- Overall HPV test volumes have decreased by 6.53% since the previous monitoring period. The reduction does not appear to be linked to any particular purpose (post-treatment, historical, taken at colposcopy, HPV triage and other).

Indicator 8.3

Historical HPV tests for follow-up of women with previous high-grade abnormality prior to 1 October 2006

Target: None set.

- This analysis followed up 48,987 women who were eligible for historical HPV testing as at 1 October 2009 to ascertain how many women had received an HPV test for management of their historical (more than three years prior) high-grade squamous abnormality.
- There were 34,546 women (70.5%) with a Round 1 historical HPV test recorded, and 29,657 women (60.5%) with a Round 2 historical HPV test recorded.
- The proportion of women who had received a historical HPV test varied by DHB, from 60.3% to 81.1% for Round 1 tests and from 48.1% to 73.7% for Round 2 tests.
- There was comparatively more variation by age in the proportion of women who had received a historical HPV test. For women aged 25 to 69 years this varied from 45.5% (25-29 years) to 73.8% (60-64 years) for Round 1 tests, and from 27.3% (25-29 years) to 64.1 (65-69 years) for Round 2 tests.

- The proportion of women who had received a historical HPV test varied somewhat by ethnicity, from 53.0% (Pacific women) to 72.4% (European/ Other women) for Round 1 tests and from 41.4% (Pacific women) to 63.1% (European/ Other women) for Round 2 tests.
- The proportion of eligible women with an HPV test recorded is higher than in the previous report, from 69.4% to 70.5% for Round 1 tests, and from 59.0% to 60.5% for Round 2 tests.

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 the number who die from it. The Programme recommends regular cervical screening at three-year intervals for women aged between 20 and 69 years who have ever been sexually active. Part 4A of the Health Act 1956, which came into effect in 2005, underpins the NCSP's operations to ensure the co-ordination of a high -quality screening programme for all women in New Zealand.

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

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

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

From Report 30 (July-December 2008) onwards, monitoring has been undertaken with the technical assistance of researchers based at the Cancer Research Division at Cancer Council NSW, Sydney, Australia. This has coincided with the 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 has been ongoing, however it is anticipated that from Report 44 going forward, there will be minimal further changes until the NCSP transitions to primary HPV screening in the near future.

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

Further information about the NCSP Advisory Group and the monitoring and performance of the NCSP is available on https://www.nsu.govt.nz/health-professionals/national-cervical-screening-programme/independent-monitoring-reports and on request from the NCSP:
Email: Ivan_Rowe@moh.govt.nz
Phone: (04) 816 3345, 021 711 432 or Fax: (04) 816 4484

3. Methods

Data used

The analyses in this report are based on data extracted from the NCSP Register on 9 August 2019.

Age

Unless otherwise specified, age is defined as the woman's age at the end of the monitoring period, i.e. the women's age at 30 June 2019.

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 cytology samples, depending on the type of hysterectomy that they received.

Since Report 49, the hysterectomy-adjustment has used estimates of the hysterectomy prevalence in the New Zealand population from Cleary and Wright.[1] Cleary and Wright used similar modelling techniques to those used by Gray[2] to provide hysterectomy estimates used in previous monitoring reports (Reports 37-48). Alterations to the methods used by Gray[2] include: slight modifications to the model used; additional procedure data and procedure codes were included (to include previously overlooked procedures where the cervix is removed, but did not include sub-total hysterectomies which leave part of the cervix intact); and attempts to account for mortality and migration. Hysterectomy incidence was estimated by fitting models to observed data on hysterectomies obtained from public and private hospital discharge data from the National Minimum Dataset and the Mortality collection and applied these incidence estimates to estimates of the usually resident female population from Statistics New Zealand. The New Zealand Health Survey was used to calibrate the estimates. The resulting estimates of hysterectomy incidence and survival in single-year age groups by calendar year were then used to estimate the prevalence of hysterectomy by five-year age group (among women aged 20-69 years) and calendar year (1957 to 2019). The estimates used from Report 49 on and that were employed in this monitoring report were updated to include actual hysterectomy data to 31 December 2016 (supplemented by New Zealand Health Survey data) in five-year age groups to better reflect the hysterectomy prevalence in the population, and have been projected forward using similar the methods similar to previously applied. A known limitation of previous estimates of hysterectomy prevalence is that they did not take into account deaths or women who leave New Zealand after they have a hysterectomy (which would tend to result in an overestimate of hysterectomy prevalence), nor women who migrate to New Zealand who have previously had a hysterectomy (which would tend to underestimate hysterectomy prevalence). In these new estimates attempts to account for mortality and migration have been applied, to reduce these limitations. The estimates of hysterectomy prevalence used in the current report are included in Table 35.

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, ethnicity and DHB) who had not had a hysterectomy prior to 30 June 2019 were obtained. Hysterectomy prevalence figures for the whole population (the denominator) were age-specific hysterectomy adjustments, and were applied equally across the estimated population within each DHB and ethnicity grouping. These adjusted population estimates were then used as the denominator in the hysterectomy-adjusted calculations.

The estimates used for the New Zealand female population (as at 30 June 2019) were also updated from Report 49 onwards, from projections made in 2016 based on 2013 Census data, to projections made in 2018, also based on 2013 Census data[3] .

Ethnicity analysis

The analysis by ethnicity considered four groups – Māori, Pacific, Asian, or European/ Other, based on women's prioritised ethnicity derived from level two ethnicity codes recorded on the NCSP Register. Women for whom ethnicity information was not available were included in the "European/ Other" ethnicity category. The data download used for the current analysis (NCSP Register data as at mid-August 2019) contained ethnicity codes for approximately 99.1% 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.[2] Coding of ethnicity on the NCSP Register follows the classification used by the Ministry of Health. The NCSP is continuing with work to improve the accuracy of ethnicity recording on the NCSP Register. This has included matching women's NHIs for which there is no ethnicity on the register with the Ministry of Health's NHI register to include ethnicities. This matching is done every three months.

Calculating NCSP coverage

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

In 2008 the NCSP Advisory Group agreed that NCSP report coverage for women aged 25-69 years at the end of the monitoring period. This includes women aged 22 and over at the beginning of the three-year period but excludes women aged 20 or 21 years at the beginning). This approach is consistent with practice in Australia and England. In England, until 2003, the target age range for screening was 20-64 years, but coverage was calculated for women aged 25-64 years, to ensure only women eligible throughout the period were included. Similarly, in Australia, women are eligible to start screening from 18 years, but coverage is measured among women aged 20-69 years. The difference between the starting ages (two years) is the same as the recommended screening interval in Australia.

The advantage of measuring coverage at ages 25-69 are that it provides a fairer estimate of coverage (by excluding women who are not eligible for the full three-year period) and allows international benchmarking with important peer group countries, including Australia and UK.

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

As with all indicators, coverage indicators and the statistics on which they are based continue to evolve and further changes in the construction of these indicators are to be expected in the future.

4. Biannual NCSP Monitoring Indicators

Indicator 1 – Coverage

This indicator includes two sub-indicators – three-year coverage (Indicator 1.1) and regularity of screening (Indicator 1.2). Indicator 1.1 also describes participation at longer intervals (five-year coverage). These two sub-indicators complement each other, in that the first allows monitoring of women who are screened versus those who are not screened over various timeframes; whereas the second (regularity of screening) allows more detailed monitoring of the timeliness among women who have attended for screening.

This is a re-structure compared to reports prior to Report 44, where only three-year (and five-year) coverage were included in the biannual monitoring reports, and regularity of screening was included in the annual reports.Indicator 1.2, regularity of screening, is analysed annually to allow for the full year to be examined, and so is only included in every second monitoring report.

Indicator 1.1 – Three-year coverage

Definition

The proportion of all 25-69 year old women who have had a screening event (cytology sample, HPV sample or histology sample) taken in the three years prior to the end of the monitoring 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, i.e. women aged 25-69 years at the end of the monitoring period. Screening coverage in women aged 20-69 years is also presented, for comparability with previous reports.

The denominator (eligible population) for this indicator is adjusted for the estimated proportion of women who have had a total hysterectomy. Women who have withdrawn from or are not enrolled on the NCSP Register are excluded from the counts of women screened.

Screening of women aged less than 20 years at the time of their cervical sample is also reported by DHB.

Target

80% of eligible women (aged 25-69 years at the end of the period) within three years.

This target applies nationally, and also to each ethnicity group (80% for Māori, 80% for Asian, 80% for Pacific, 80% for European/ Other women).

Current Situation

Coverage

938,941 (71.4%) women aged 25-69 at the end of the current monitoring period (30 June 2019) had at least one cervical sample taken during the previous three years. This does not yet meet the target of 80%. 1,124,697 (85.5%) women aged 25-69 at the end of the current monitoring period had at least one cervical sample taken during the previous five years.

Three-yearly coverage varied by ethnicity. Coverage targets of 80% were not met for any ethnic group. Coverage among women aged 25-69 years was 61.6%, 65.1%, 59.8% and 77.2% for Māori, Pacific, Asian and European/ Other women, respectively (Figure 1, Table 24).

The target coverage of 80% of women screened at least once within the previous three years was not achieved in any of the five-year age groups between 25 and 69 years Among women aged 25-69 years at the end of the period, coverage was lowest for women aged 25-29 years (57.6%) and was highest for women aged 45-49 (78.0%; Figure 2, Table 25). Coverage was also low for women aged 20-24 years (44.5%), however many women in this age group were not eligible for screening for the entire three-year period, and so the target is not applied to this age group.

Three-yearly coverage in women aged 25-69 years varied by DHB from 65.5% (Auckland and Counties Manukau) to 78.3% (Bay of Plenty). No DHBs

achieved the 80% target for women aged 25-69 years at the end of the period (Figure 3, Table 23). Coverage for each of Māori, Pacific, Asian or European/ Other women was also explored at the DHB level (Table 26), and by age group (Table 27). Three-yearly coverage for Māori women ranged from 49.6% (Auckland) to 72.1% (Tairawhiti; Figure 4). The target level of 80% of Māori women screened within the previous three years was not achieved in any DHB. Three-yearly coverage for Pacific women ranged from 49.9% (Northland) to all women (South Canterbury; Figure 5). The target level of 80% of Pacific women screened within the previous three years was achieved in four DHBs (Lakes, Nelson Marlborough, South Canterbury and Wairarapa). Three-yearly coverage in Asian women ranged from 46.6% (Whanganui) to 72.8% (Hutt Valley; Figure 6). The target level of 80% of Asian women screened within the previous three years was not met in any DHB. Three-yearly coverage for European/ Other women ranged from 69.3% (Counties Manukau) to 85.4% (Bay of Plenty; Figure 7). The target level of 80% of European/ Other women screened within the previous three years was achieved in six DHBs (Bay of Plenty, Capital and Coast, Lakes, Southern, and Taranaki and Tairawhiti).

Three-yearly coverage for Māori women ranged from 56.6% (25-29 years) to 65.8% (50-54 years and 55-59 years; Figure 8). The target level of 80% of Māori women screened within the previous three years was not achieved in any age group. Three-yearly coverage for Pacific women ranged from 48.8% (25-29 years) to 79.8% of women (60-64 years). The target level of 80% of Pacific women screened within the previous three years was not met nationally in any age group. Three-yearly coverage in Asian women ranged from 41.6% (25-29 years) to 67.6% (35-39 years). The target level of 80% of Asian women screened within the previous three years was not met in any age group. Three-yearly coverage for European/ Other women ranged from 64.6% (25-29 years) to 85.0% (45-49 years). The target level of 80% of European/ Other women screened within the previous three years was achieved in five age groups (each of the five-year age groups between ages 35 and 59 years).

When compared to the findings for three-year coverage, five-year coverage had broadly similar patterns of variation by age, DHB, and ethnicity. For women aged 25-69 years at the end of the monitoring period, five-year coverage varied from 79.4% for Auckland to 91.6% for Bay of Plenty and Nelson Marlborough (Figure 8, Table 26; by age from 70.8% for women aged 25-29 years to 93.1% for women aged 45-49 years (Figure 10, Table 30) and from 70.5% (Asian) to 91.3% (European/ Other; Figure 11, Table 29). Five-yearly coverage for Māori women ranged from 63.9% (Auckland) to 91.1% (Hawke's Bay; Figure 12, Table 31). Five-yearly coverage for Pacific women ranged from 64.2% (Northland) to all women (South Canterbury and Wairarapa; Figure 13, Table 31). Five-yearly coverage for Asian women ranged from 53.1% (Whanganui) to 85.0% (Hutt Valley; Figure 14, Table 31). Five-yearly coverage in European/ Other women ranged from 83.3% (Counties Manukau) to 98.5% women (Bay of Plenty and Capital & Coast; Figure 15. Table 31). Coverage was estimated to be over 100% of the eligible

population in some cases (Table 31); this is likely to be due to limitations in the estimates for population and hysterectomy prevalence.

Screens in women aged less than 20 years

A total of 4,499 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 2019. This represents 0.4% of women who were screened at any age (Table 33).

The number of women who were aged less than 20 years at the time they were screened varied by DHB from Tairawhiti (20) to Canterbury (847), however some differences in counts are to be expected due to differences in population size and age structure between DHBs. In order to take differences in population size between DHBs into account, the number of women who were screened in the previous three years and aged 15-19 years at the time of their cervical sample in each DHB was divided by the estimated population of females aged 15-19 years in that DHB. Note that as the events occurred over a three-year period, and the population estimate is for a single year, this cannot be interpreted directly as the proportion of 15-19 year old females in each DHB who have been screened in the last three years. However, this does allow the variation in DHB populations to be partly accounted for, and thus can give an indication of where screening among women aged less than 20 years is more or less common. Estimates for this proportion ranged from Tairawhiti (1.2%) to Canterbury (4.8%). Some DHBs screen a relatively low number of women when they are younger than 20 years, but at a comparatively high rate, because their population is small (for example West Coast). Details of screens of women aged less than 20 years by DHB are presented in Figure 16, and Table 32 to Table 34.

Further exploratory analysis determined that a very high proportion of the women who were aged less than 20 years at the time of their cervical sample were aged 18-19 years at the time (89.4%; Table 34). This may represent opportunistic screening of women aged 18-19 years. This proportion varied from 75.9% in West Coast to 96.9% in Capital & Coast. Where this proportion is higher, it indicates that a larger proportion of screening in women aged less than 20 years may be attributable to opportunistic screening of women aged 18-19 years; as this proportion decreases, it indicates that more of the screening in women aged under 20 years is occurring in women aged under 18 years, and less may be attributed to opportunistic screening of women aged 18-19 years.

Trends

Coverage

Overall coverage in New Zealand among women aged 25-69 years is lower in the current monitoring report (71.4% within the last three years, and 85.5% within the last five years) compared to the previous monitoring report (72.1% within the last three years, and 85.7% within the last five years).

Over the last two monitoring periods the proportion of Asian women screened is lower; from 59.9% in the previous period to 59.8% in the current

period. Māori women screened is lower; from 62.1% in the previous period to 61.6% in the current period. Pacific women screened is lower; from 67.3% in the previous period to 65.1% in the current period. European/ Other women screened is lower from 77.9% in the previous period to 77.2% in the current period (Figure 19, Table 39).

Screens in women aged less than 20 years

The number of women screened who were aged under 20 years is lower; from 4,919 in the previous monitoring period to 4,499 in the current monitoring period. The proportion of all women with screening events who were aged less than 20 years at the time of the event is also lower (0.4% in this report compared to 0.5% in the previous report). (Figure 20).

The proportion of these women who were aged 18-19 years is lower than in the previous monitoring period (89.4%, compared to 89.9% previously; Figure 21). As in previous reports, it would appear that in New Zealand overall, screens in very young women are reducing, and when women aged less than 20 years are screened, it mostly reflects opportunistic screening of women aged 18-19 years.

Comments

As noted in the *Trends* section, the estimates for the number of women eligible for screening including hysterectomy adjustment were updated in the previous and current report, and this change means that differences in coverage compared to prior reports should be interpreted with caution, as these may partially reflect differences in the population estimates. The estimates of age-specific hysterectomy prevalence used in the current report are included in Appendix A (Table 35). Table 35 also includes a comparison with the hysterectomy prevalence estimates used in the previous monitoring report.

Application of population projection changes from June 2017 to this monitoring period has also resulted in additional differences in estimates for report 49 and this report compared to all previous reports. These changes not only have an influence on the overall coverage but also at an age, ethnicity and DHB level. This limits the comparability between these reports and the previous reports as the majority of the differences are most likely to be due to changes in the denominator (eligible population) rather than changes in the number of women who attend screening. In particular, the updated population projections were higher than earlier projections for Pacific and Asian women, while there were smaller decreases in the estimated population of Māori and European/ Other women.

As discussed in the Methods section of this report (*Hysterectomy-adjusted population*; page 14), the hysterectomy prevalence estimates used to make the adjustment includes all women with a hysterectomy, some of whom may still require cervical screening. These women will have been removed from the denominator, but may still appear in the numerator. As a result of these limitations, coverage must be interpreted with some caution. We explored the impact of the hysterectomy-adjustment on the results by calculating coverage as a proportion of the total New Zealand female

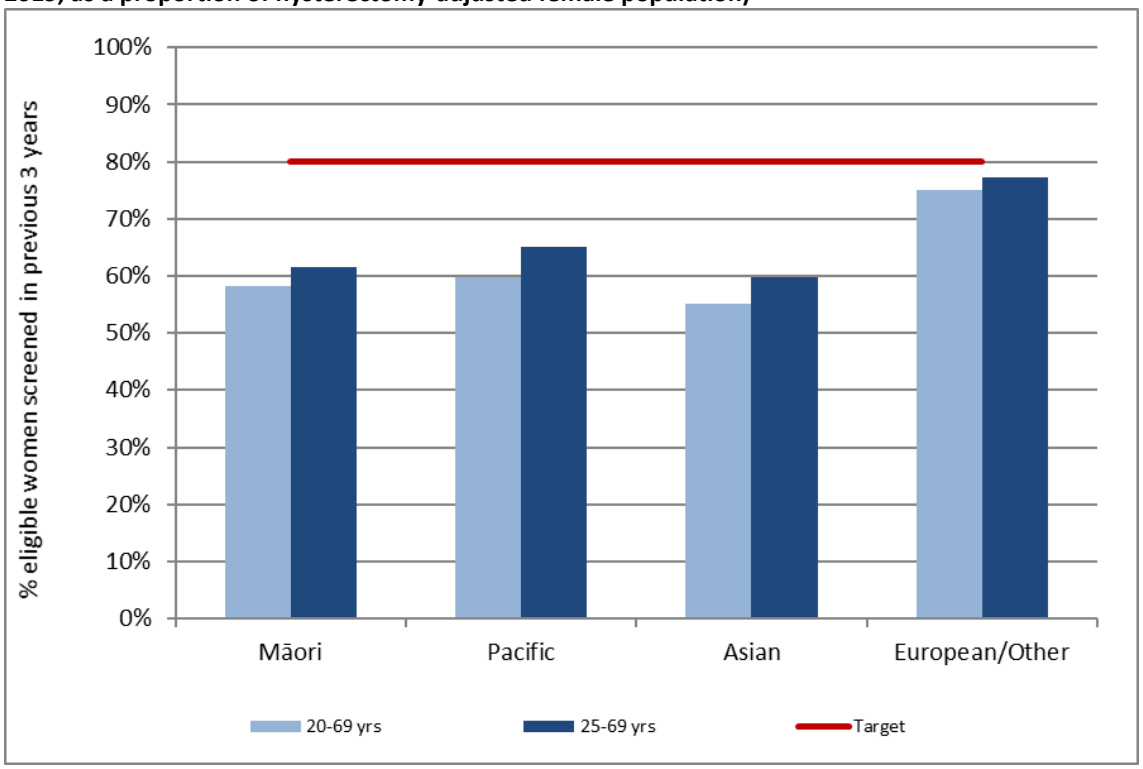
population (i.e. regardless of whether they have had a hysterectomy or not). Results for this analysis appear in Table 35.

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

Concerns about under- and over-counting of different ethnicity groups have led the Ministry to use the NHI for ethnicities as other Ministry collections do. This report relies on NCSP Register ethnicities; however regular matching is done with the NHI register for women on the NCSP Register who have no ethnicity recorded on the NCSP Register.

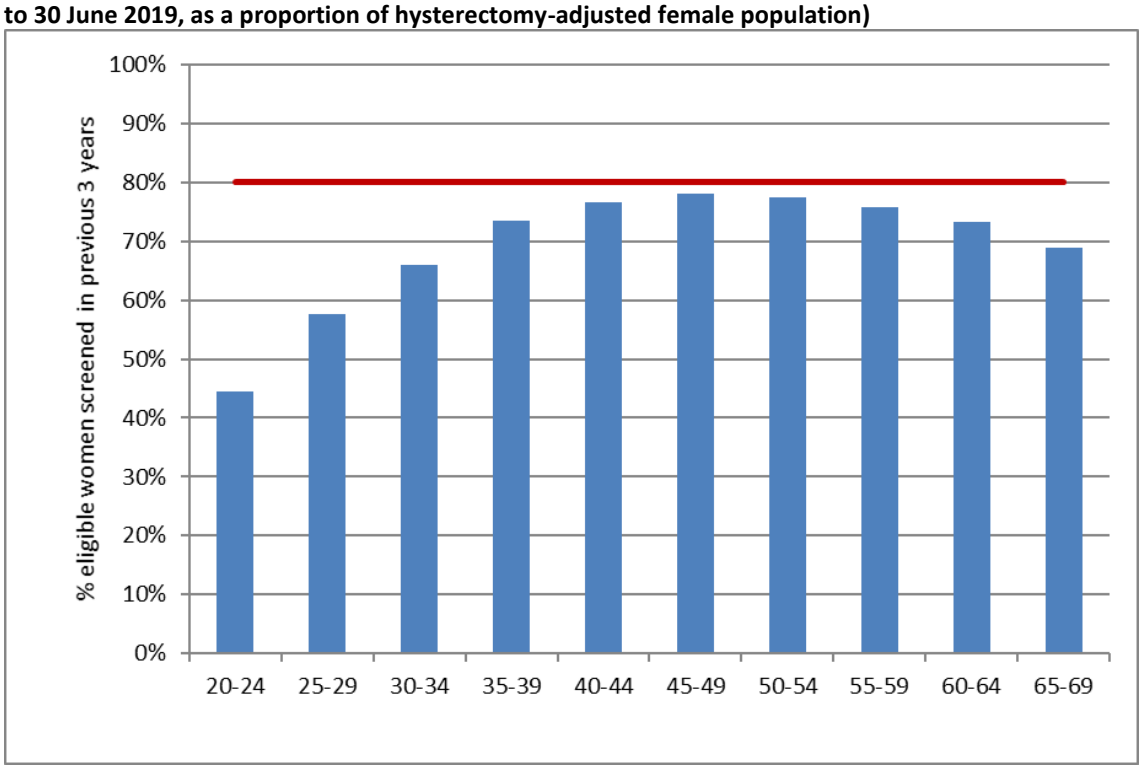
Coverage in women aged 20-24 years is likely to remain lower than for other ages and coverage in this age group should be interpreted with caution, as many women will have had a shorter period in which they were eligible for screening. In November 2019, National Cervical Screening Programme will be changing the starting age for cervical screening from 20 to 25 years, based on evidence that screening women between the ages of 20 and 24 provides little benefit to women and can cause harm.[4] This change is in line with the screening start age in many other countries.

Figure 1 - Three-year coverage by ethnicity (women 25-69 years screened in the three years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population)



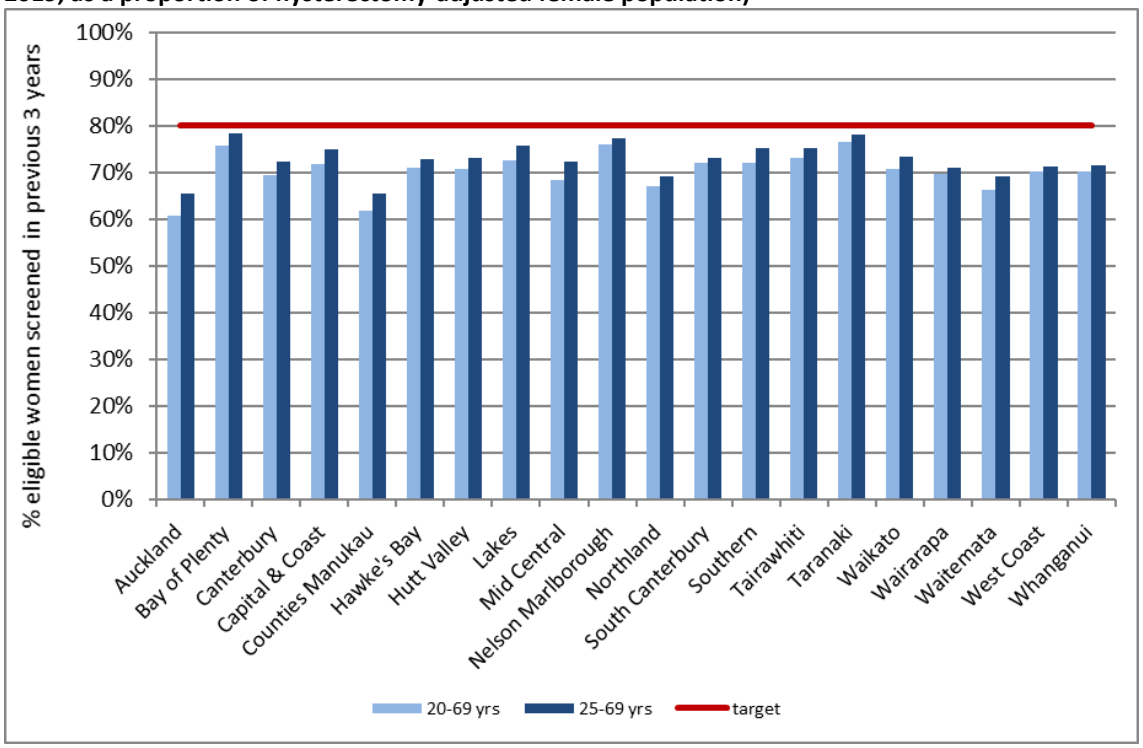
Note: Coverage calculated using population projection for 30 June 2019 based on 2013 Census data. Target: 80% for ages 25-69 years, hysterectomy adjusted. See also Table 24.

Figure 2 - Three-year coverage by five-year age group (women 20-69 years screened in the three years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population)



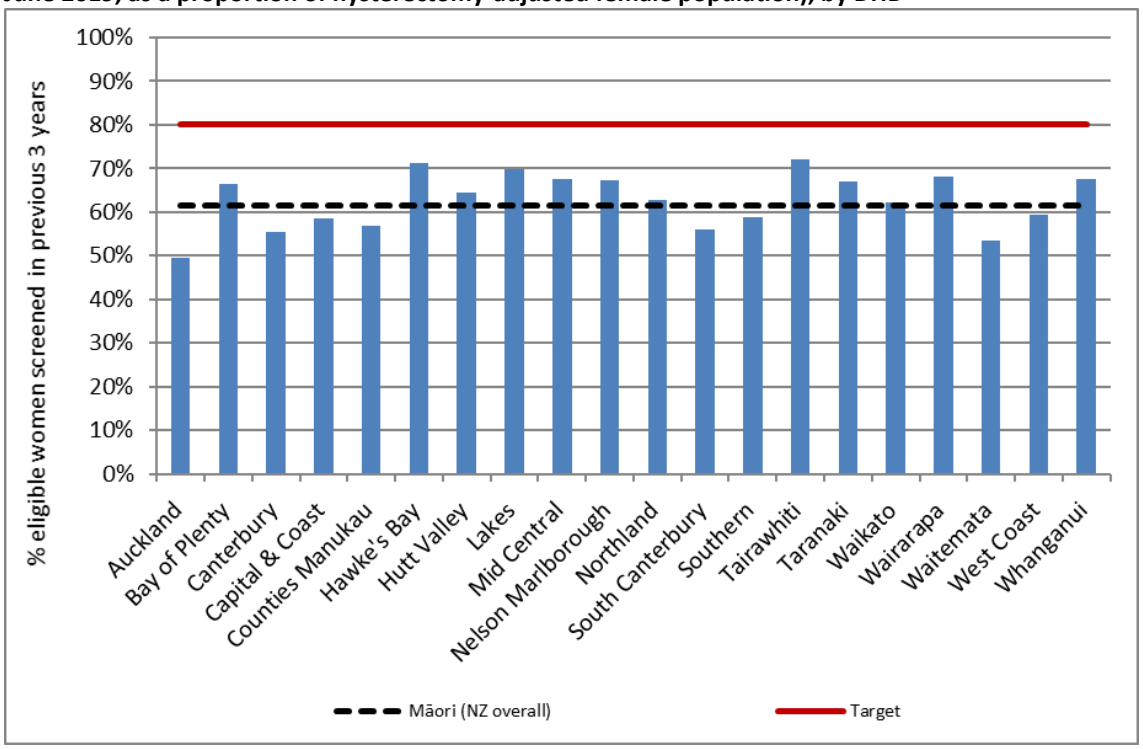
Note: Coverage calculated using population projection for 30 June 2019 based on 2013 Census data. Target: 80% for ages 25-69 years, hysterectomy adjusted. See also Table 25.

Figure 3 - Three-year coverage by DHB (women 25-69 years screened in the three years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population)



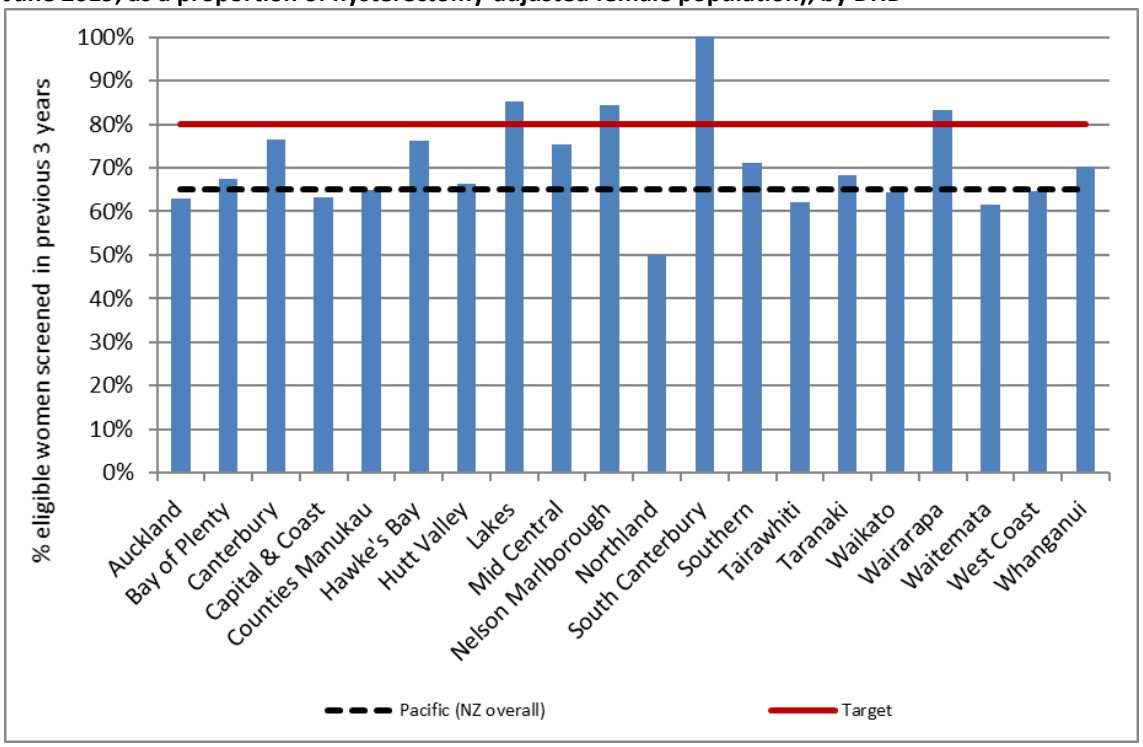
Note: Coverage calculated using population projection for 30 June 2019 based on 2013 Census data. Target 80%, hysterectomy adjusted. See also Table 23.

Figure 4 - Three-year coverage in Māori women (women 25-69 years screened in the three years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population), by DHB



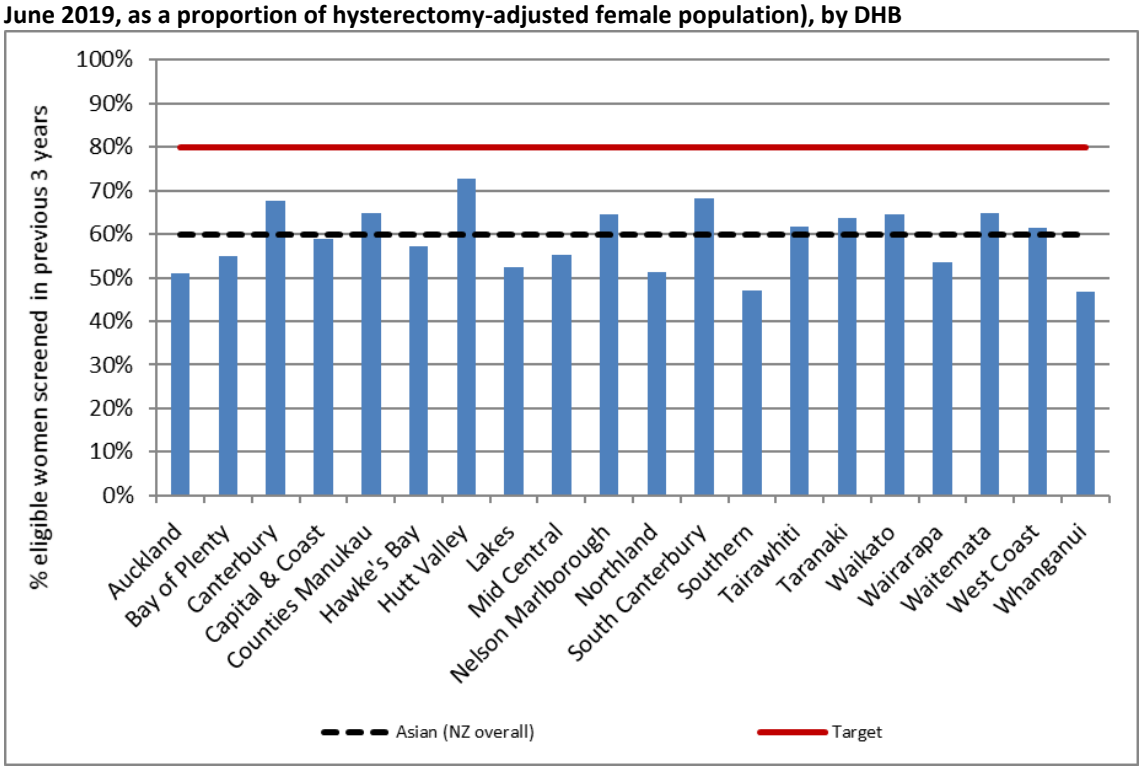
Note: Coverage calculated using population projection for 30 June 2019 based on 2013 Census data. Target 80%, hysterectomy adjusted.

Figure 5 - Three-year coverage in Pacific women (women 25-69 years screened in the three years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population), by DHB



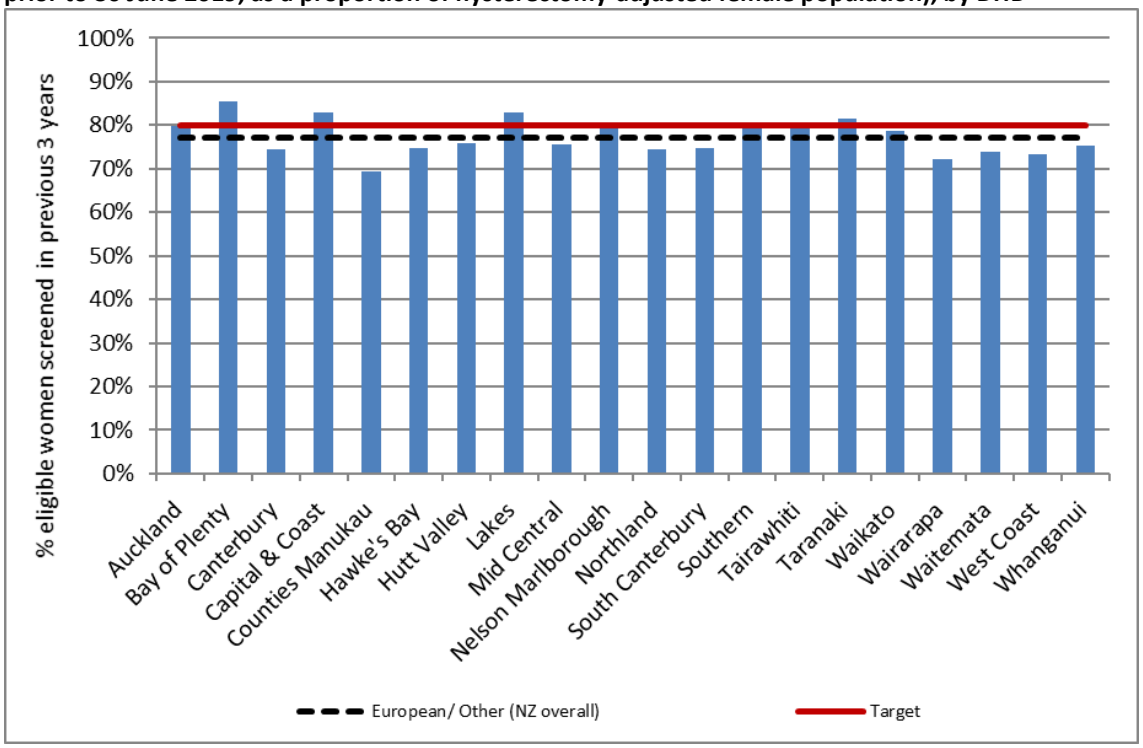
Note: Coverage calculated using population projection for 30 June 2019 based on 2013 Census data. Target 80%, hysterectomy adjusted.

Figure 6 - Three-year coverage in Asian women (women 25-69 years screened in the three years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population), by DHB



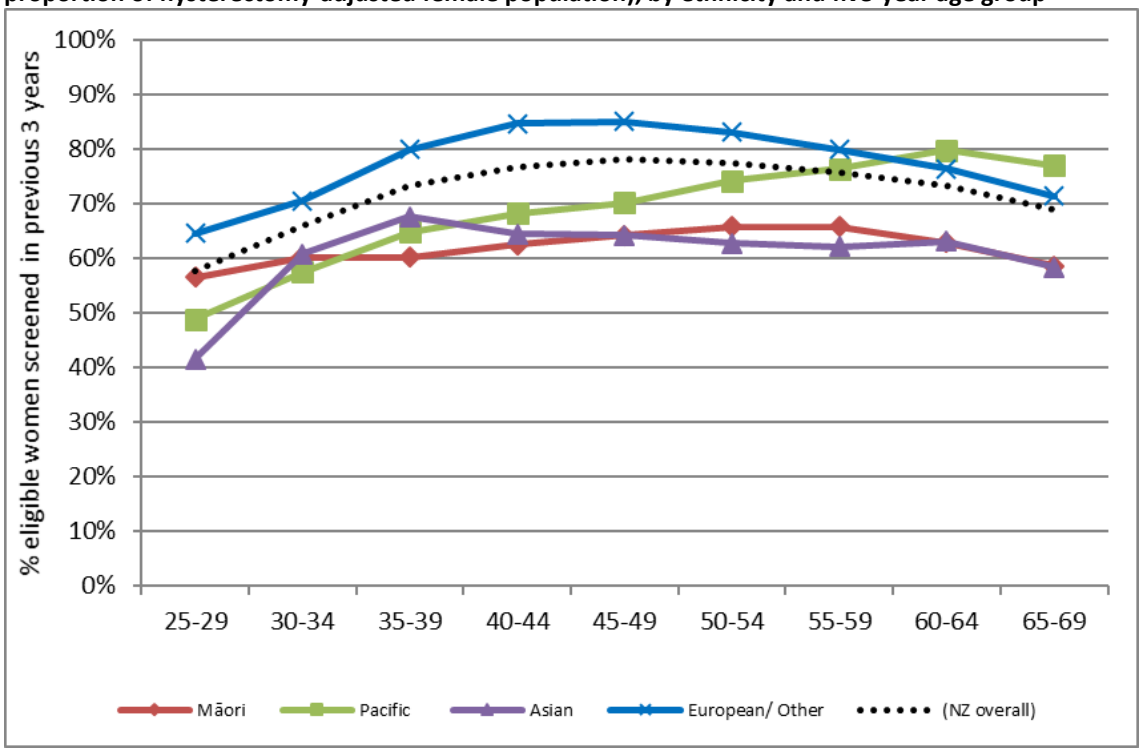
Note: Coverage calculated using population projection for 30 June 2019 based on 2013 Census data. Target 80%, hysterectomy adjusted.

Figure 7 - Three-year coverage in European/ Other women (women 25-69 years screened in the three years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population), by DHB



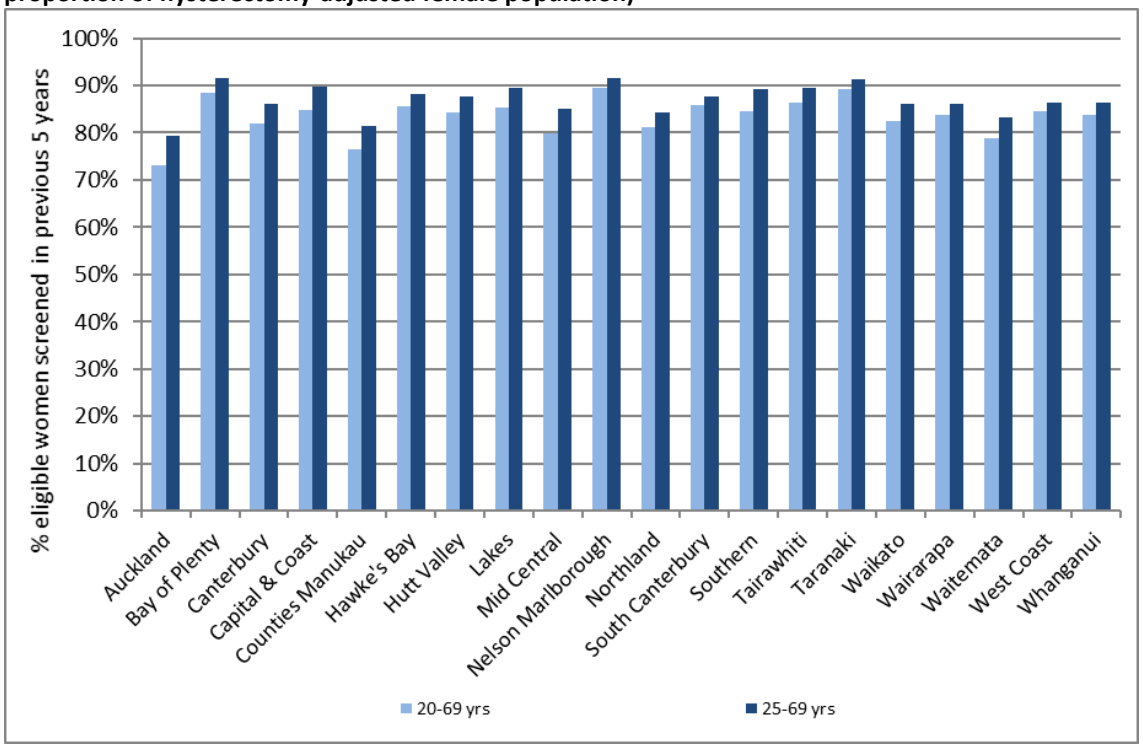
Note: Coverage calculated using population projection for 30 June 2019 based on 2013 Census data. Target 80%, hysterectomy adjusted.

Figure 8 - Three-year coverage (women 25-69 years screened in the three years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population), by ethnicity and five-year age group



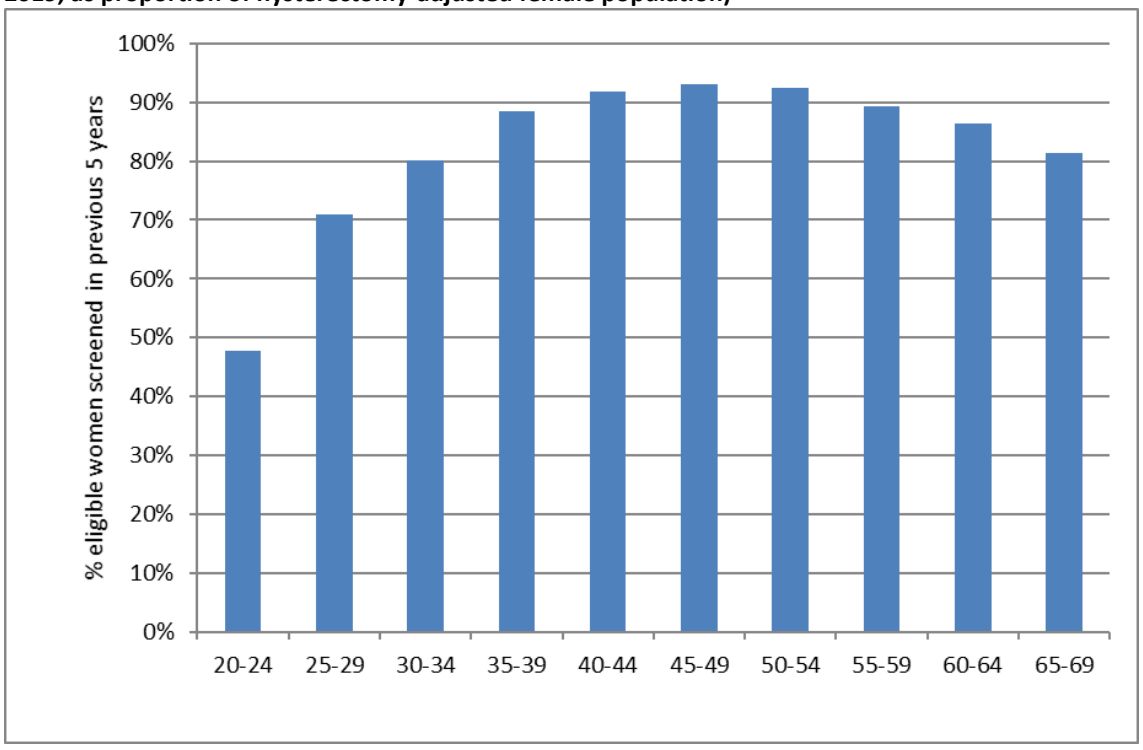
Note: Coverage calculated using population projection for 30 June 2019 based on 2013 Census data. Target 80%, hysterectomy adjusted.

Figure 9 - Five-year coverage by DHB (women screened in the five years prior to 31 December 2019, as a proportion of hysterectomy-adjusted female population)



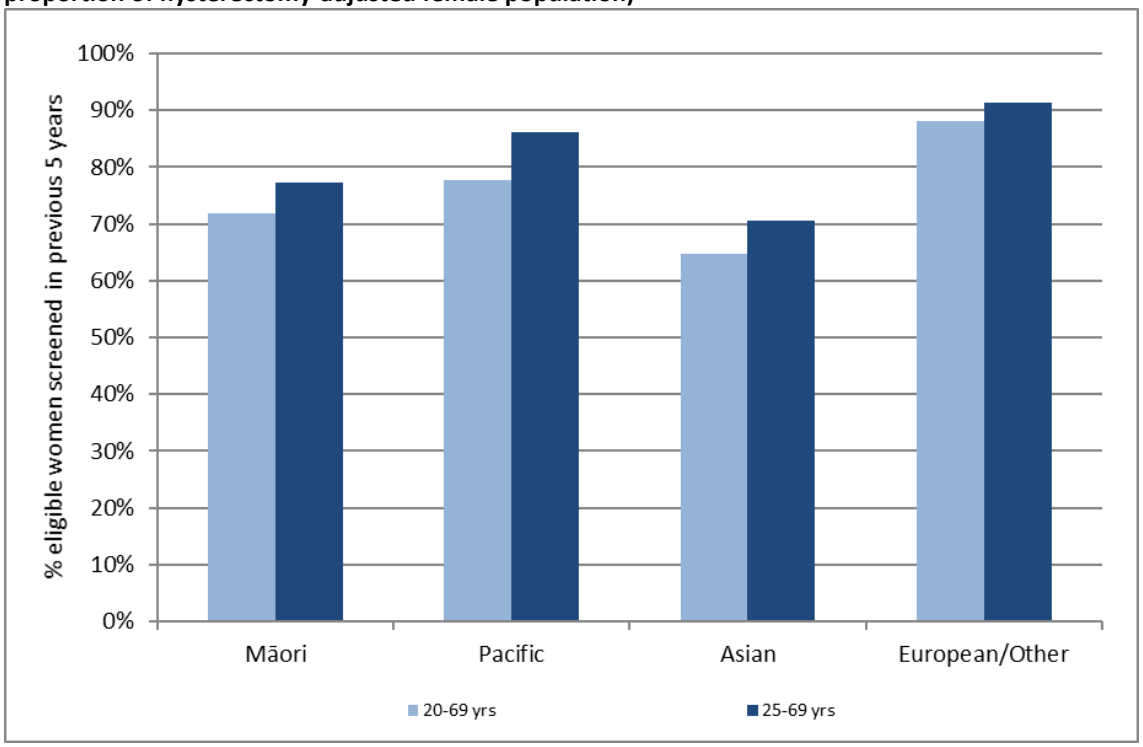
Note: Coverage calculated using population projection for 30 June 2019 based on 2013 Census data. See also Table 26.

Figure 10 - Five-year coverage by five-year age-group (women screened in the five years prior to 30 June 2019, as proportion of hysterectomy-adjusted female population)



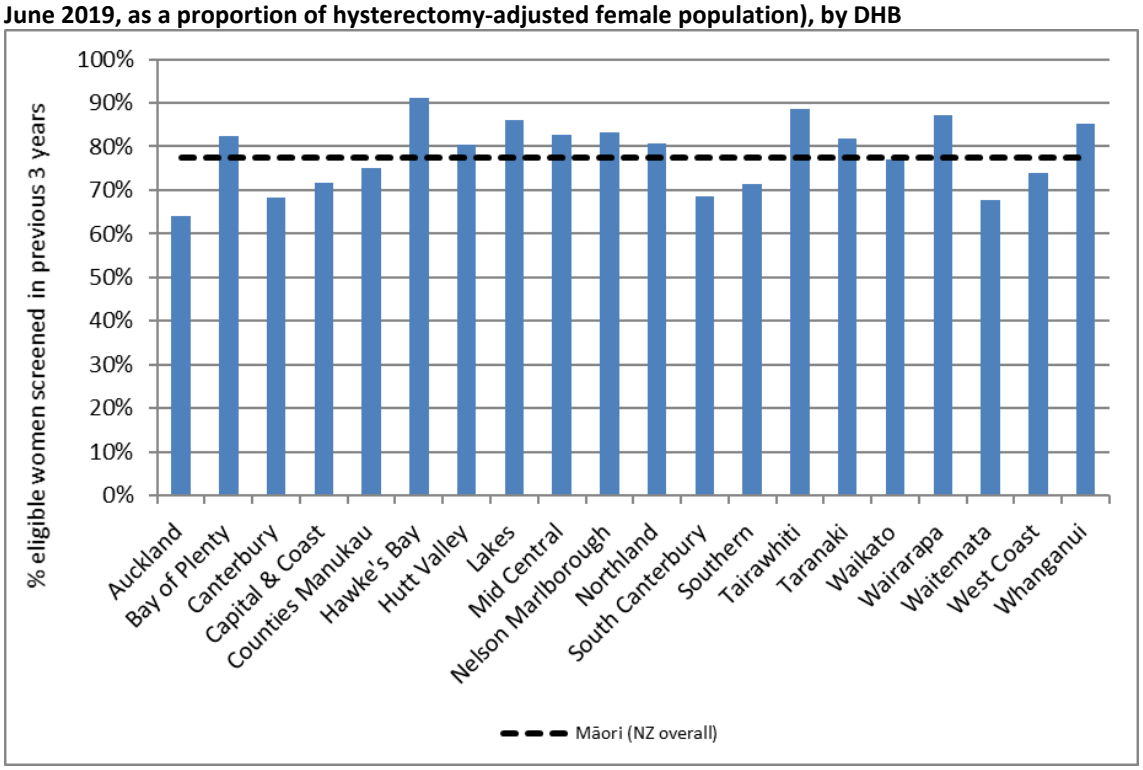
Note: Coverage calculated using population projection for 30 June 2019 based on 2013 Census data. See also Table 30.

Figure 11 - Five-year coverage by ethnicity (women screened in the five years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population)



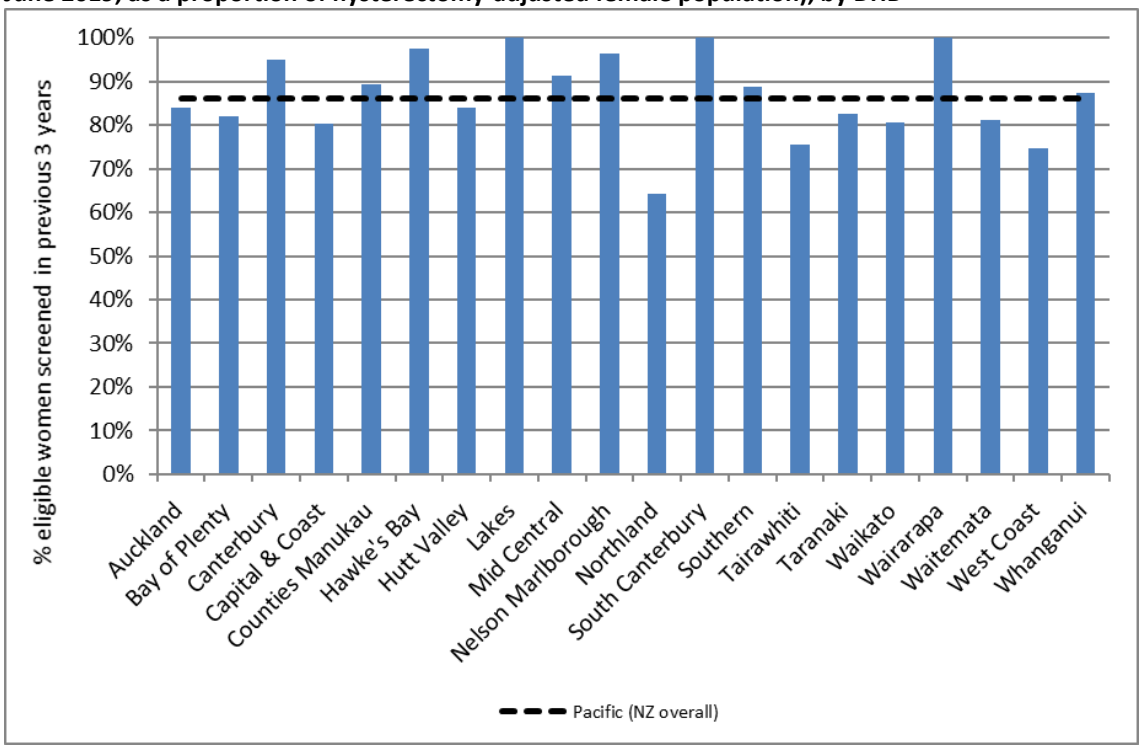
Note: Coverage calculated using population projection for 30 June 2019 based on 2013 Census data. See also Table 29.

Figure 12 - Five-year coverage in Māori women (women 25-69 years screened in the five years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population), by DHB



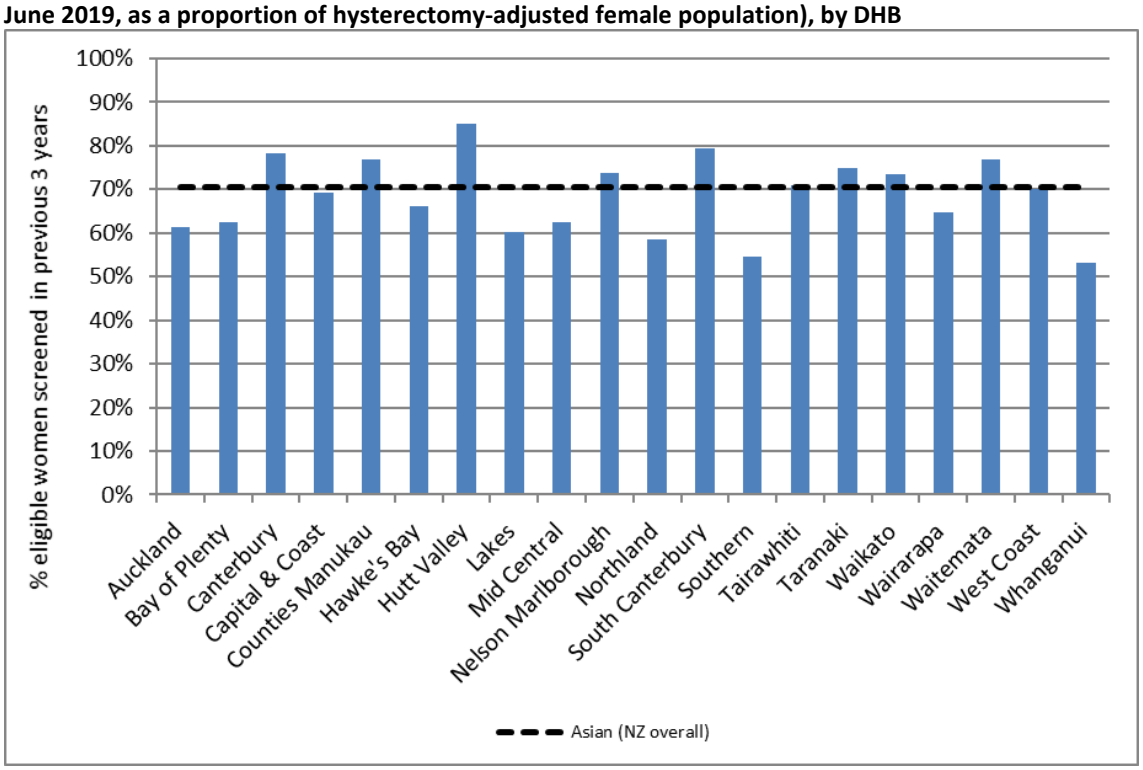
Note: Coverage calculated using population projection for 30 June 2019 based on 2013 Census data.

Figure 13 - Five-year coverage in Pacific women (women 25-69 years screened in the five years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population), by DHB



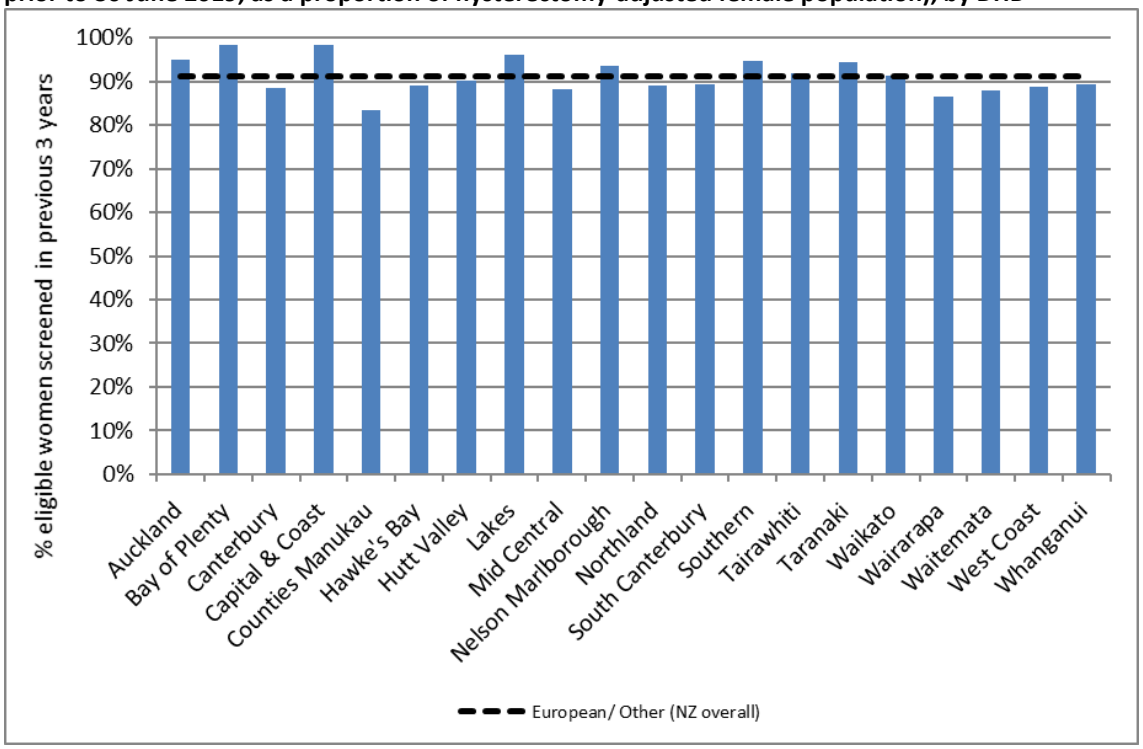
Note: Coverage calculated using population projection for 30 June 2019 based on 2013 Census data.

Figure 14 - Five-year coverage in Asian women (women 25-69 years screened in the five years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population), by DHB



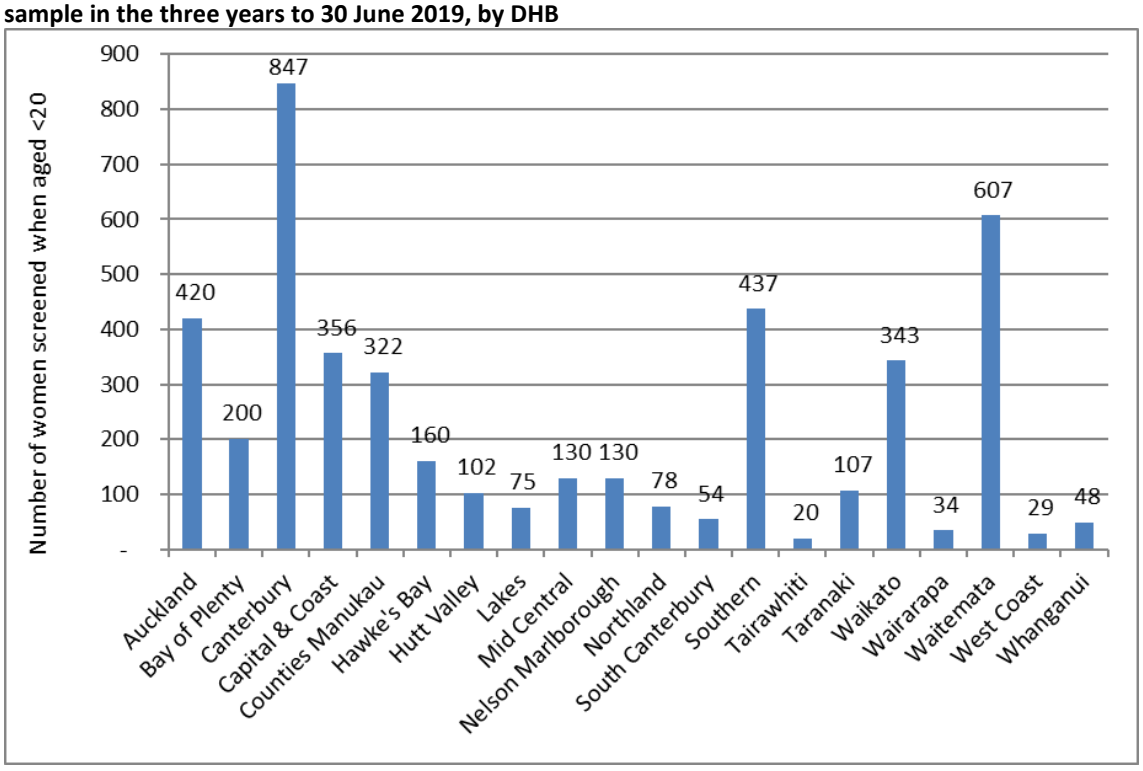
Note: Coverage calculated using population projection for 30 June 2019 based on 2013 Census data.

Figure 15 - Five-year coverage in European/ Other women (women 25-69 years screened in the five years prior to 30 June 2019, as a proportion of hysterectomy-adjusted female population), by DHB



Note: Coverage calculated using population projection for 30 June 2019 based on 2013 Census data.

Figure 16 - Number of women screened who were aged less than 20 years at the time of their cervical sample in the three years to 30 June 2019, by DHB



See also Table 32.

Figure 17 - Trends in three-year coverage by DHB (women aged 25-69 years screened in the previous three years, as a proportion of hysterectomy-adjusted female population)

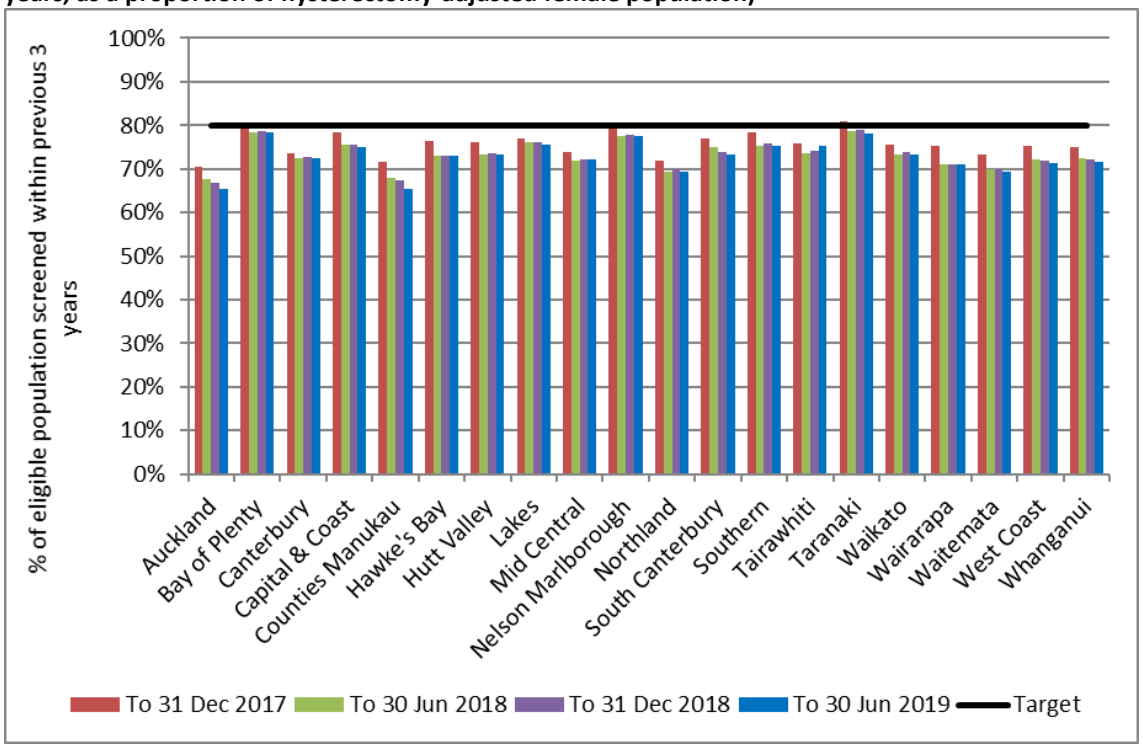


Figure 18 - Trends in three-year coverage by age (women screened in the previous three years, as a proportion of hysterectomy-adjusted female population)*

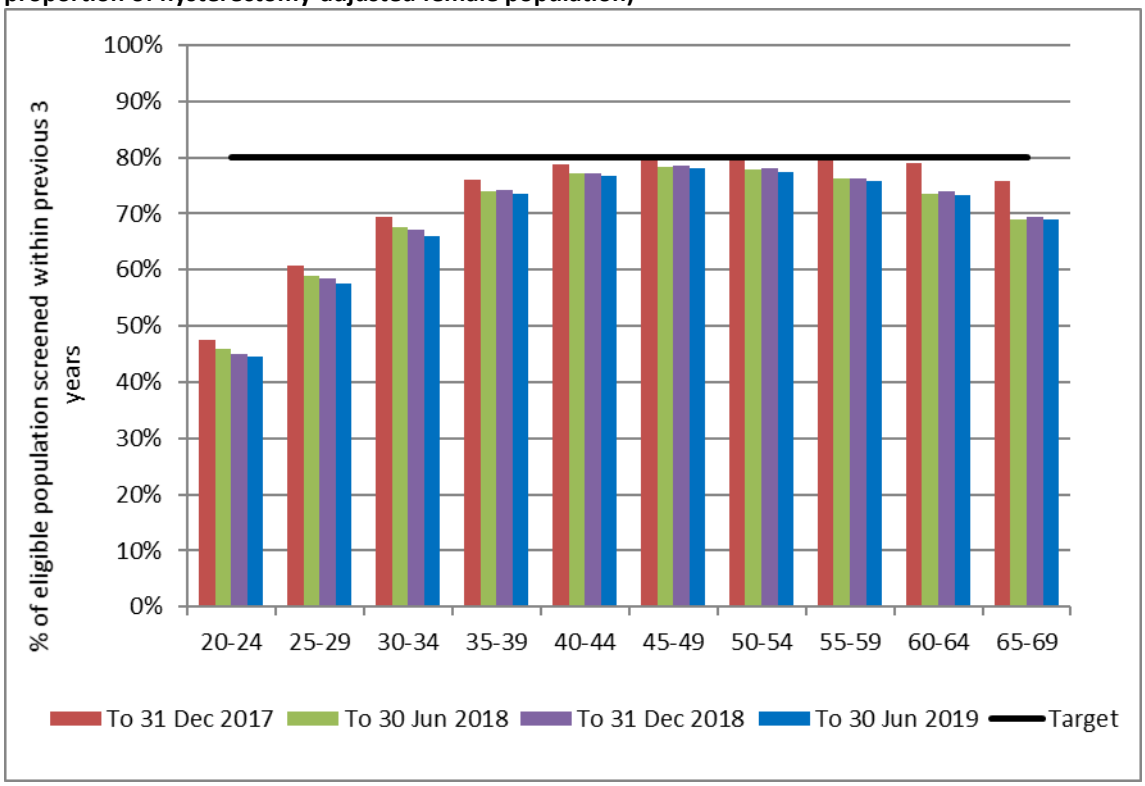
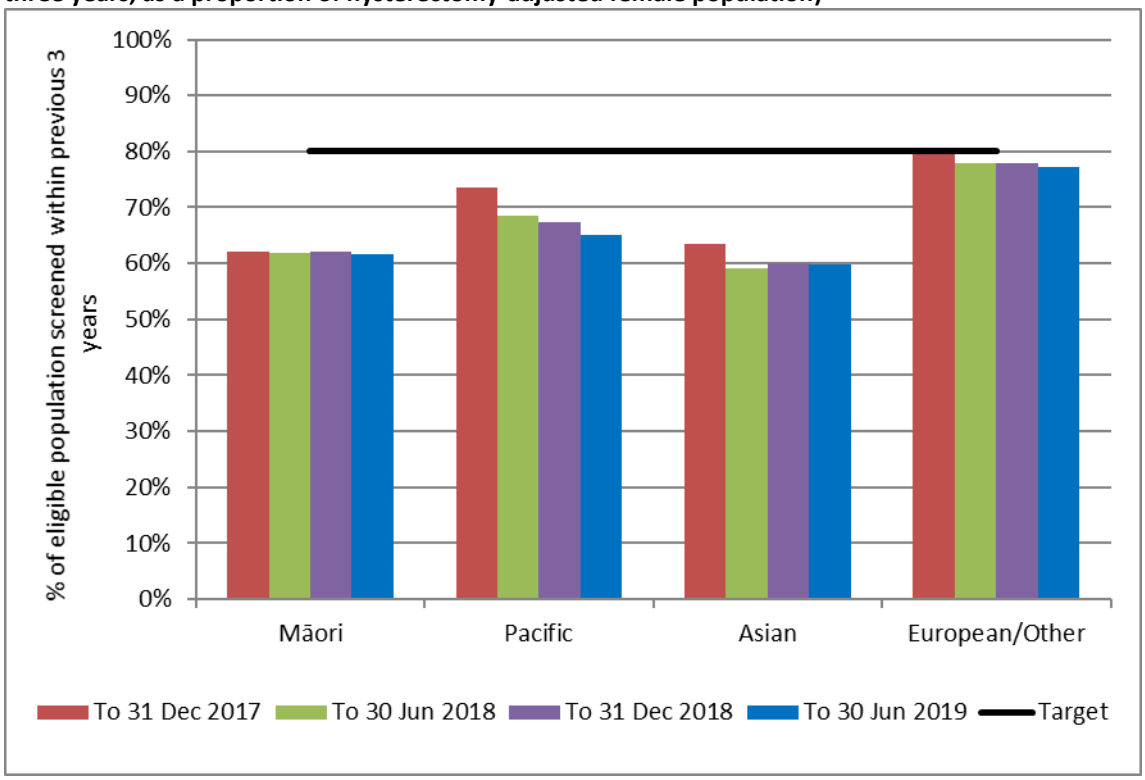
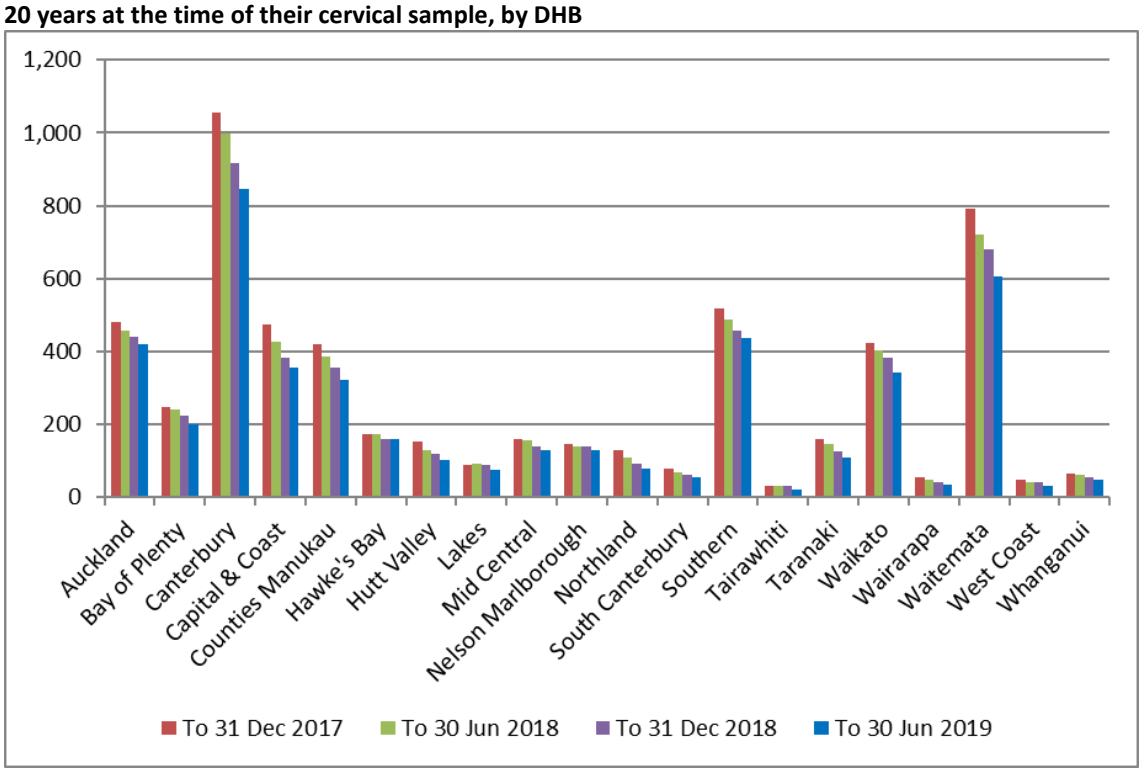


Figure 19 - Trends in three-year coverage by ethnicity (women aged 25-69 years screened in the previous three years, as a proportion of hysterectomy-adjusted female population)*



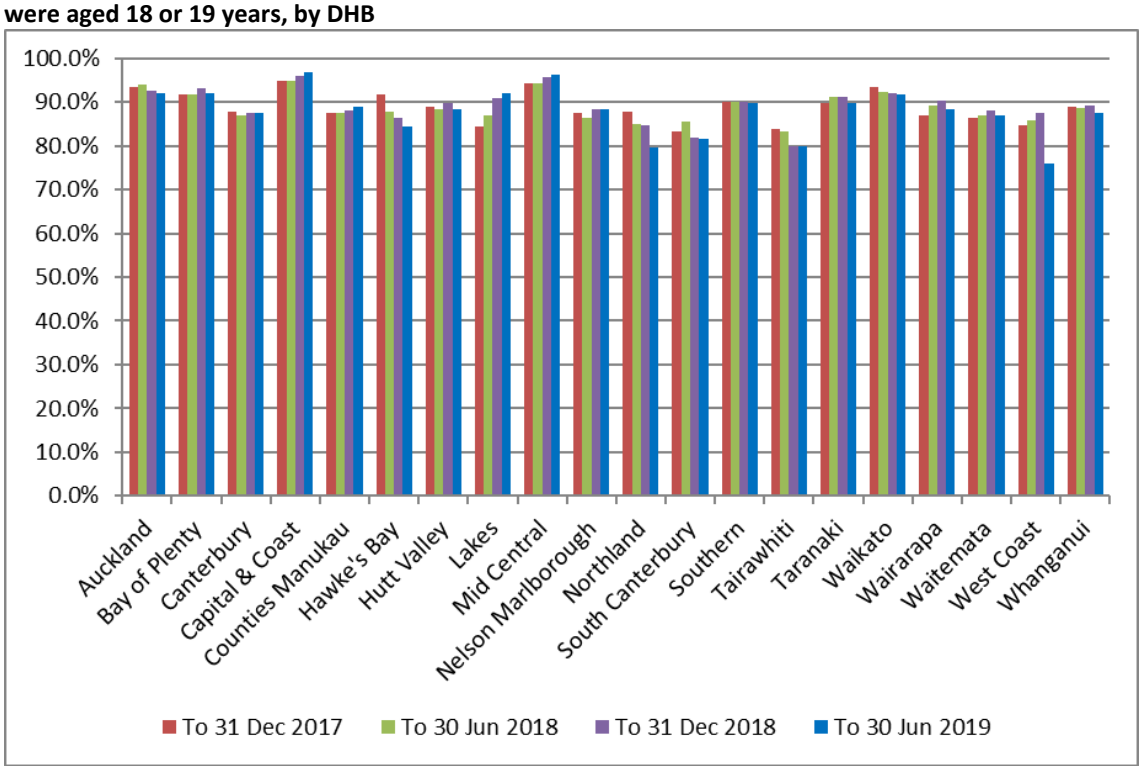
**Note: Coverage calculated using population projection at the date shown based on 2013 Census data. Updated population and hysterectomy 2013 Census population projection was used to calculate coverage for 30 June 2019. Original population projection estimates were used to calculate coverage for 30 June 2017 and prior. Target 80%. See also Table 39.*

Figure 20 - Trends in the number of women screened in the preceding three years who were aged less than 20 years at the time of their cervical sample, by DHB



See also Table 32.

Figure 21 - Trends in the percent of women aged less than 20 years at the time of their cervical sample who were aged 18 or 19 years, by DHB



Indicator 1.2 – Regularity of screening

Definition	This indicator reports on the timeliness of attendance, both for women recommended to return at the routine time of three years, or at an earlier interval of 12 months (for example following a recent abnormality). For women recommended to return at a three-year interval, on-time screening is defined as attending between 30-42 months of their previous test (that is, within +/- six months of their due date). Early and late screening are therefore respectively defined as women who attend either within 30 months (<2.5 years), or more than 42 months (>3.5 years) of their previous test. The timing of early re-screening in this context matches the definition used within Indicator 4 (the differences between early re-screening in this Indicator and in Indicator 4 are described in the *Comments* section). For women recommended to return at a 12-month interval, on-time screening is defined as attending between 9-12 months of their previous test (that is, within +/- three months of their due date). Early and late screening are therefore respectively defined as women who attend either within 9 months, or more than 15 months of their previous test.
Target	Not yet defined, however aim to maximise on-time attendance.
Current Situation	This indicator is analysed annually to allow for the full year to be examined. Timeliness of screening was last reported for women who attended during 1 January to 31 December 2018 and was provided in Report 50. This indicator will next be reported for women attending during 2019 and will be provided again in Report 52.
Trends	-
Comments	-

Indicator 2 – First screening events

Definition

Women with no cervical samples (cytology, histology, or HPV) 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 monitoring period (i.e. the women's age at 30 June 2019).

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

Target

There are no targets for first screening events

Current Situation

There were 23,374 women aged 20-69 years at the end of the period who had their first screening event in the period 1 January - 30 June 2019. This constituted 11.2% of the 208,985 women aged 20-69 years with a cervical sample taken in the period (screening event), and 1.6% of the eligible population. The median age (at the end of the monitoring 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. 9,886 women aged 20-24 had their first screening event recorded on the register during this monitoring period, accounting for 42.3% of all women aged 20-69 years with first screening events (Figure 22, Table 40). First screening events then tended to decrease with increasing age. Women aged 20-24 years also had the highest proportion of women screened in their age group who were being screened for the first time (44.7%; Figure 23), 20-24 and the highest proportion of the eligible population at that age with a first screening event recorded in the current monitoring period (5.8%; Figure 111).

The DHBs with the highest number of women aged 20-69 years with first screening events were Auckland (3,505) and Waitemata (3,354). The DHBs where women with first screening events(as a proportion of all women with screening events), were the highest, were Auckland (14.7%) followed by Capital & Coast (13.7%) and Counties Manukau (12.9%). The DHBs where this proportion was lowest was Wairarapa (6.6%), West Coast (6.7%) and Whanganui (7.0%; Figure 24, Table 42).

The majority of women with first screening events were European/Other (12,772 women; Figure 28, Table 43). However, the group with the highest proportion of their eligible population being screened for the first time was Asian women (2.6%), and the lowest was Māori women (1.1%; Table 43). The proportion of women screened who were being screened for the first time was highest for Asian women (22.3%; Figure 25, Table 43). This proportion is likely to be related to the median age of women with a first screening event, which is comparatively high for Asian women (31

	years; compared with 22 years for Māori women, 25 years for Pacific women, and 24 years for European/ Other women; Table 44).
Trends	The number of women with a first screening event recorded on the NCSP Register has decreased from 23,919 women in the previous period to 23,374 in the current period. Across the overall eligible population aged 20-69 years, the proportion of women with screening events that are their first screening event being recorded on the NCSP Register is similar in this period to the previous period (both 1.6%). Patterns by age, DHB, and ethnicity are broadly similar to those seen in the previous report. Trends by age show a steady number of first screens in most five-year age groups when compared to the previous report. A decrease in the number of first screens was seen in all age groups except women aged 30-34 years. The number and proportion of women with first screening events decreased in all ethnic groups except European/ Other women. Trends over the two years ending 30 June 2019 are shown in Figure 26 (by age), Figure 27 (by DHB), and Figure 28 (by ethnicity).
Comments	This indicator can only measure the number of women with their first screening event in New Zealand, recorded on the register since its introduction (1990). It does not capture screening events which occurred outside New Zealand, or among women who are not enrolled on the NCSP Register. Some differences in counts and proportion of women with first screens among screened women between DHBs are to be expected due to differences in population size, immigration 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. For example, the DHB with the highest coverage, Bay of Plenty, does not have a particularly high proportion of women with first events. If coverage remains high, then this proportion will inevitably decrease, as fewer women are available to be screened for the first time. Conversely, a relatively high number of women with first screens as a proportion of all women screened could be due to either a higher number of women with first events (due to increasing coverage), or a lower number of women with screening events (for example due to less frequent screening among women who have been screened at least once since the inception of the NCSP Register).

Figure 22 - Women with first screening events during the monitoring period, by five-year age group (women aged 20-69 years at 30 June 2019)

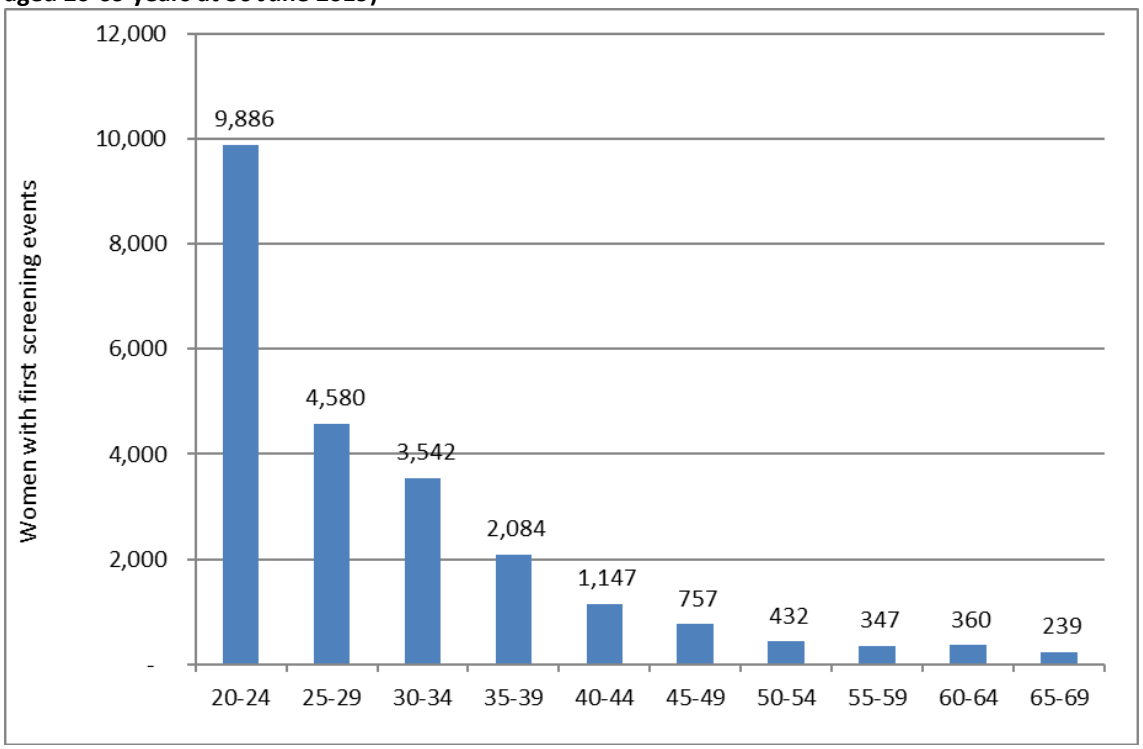


Figure 23 - Women with first screening events as a proportion of all women screened in that age group during the monitoring period, by five-year age group (women aged 20-69 years at 30 June 2019)

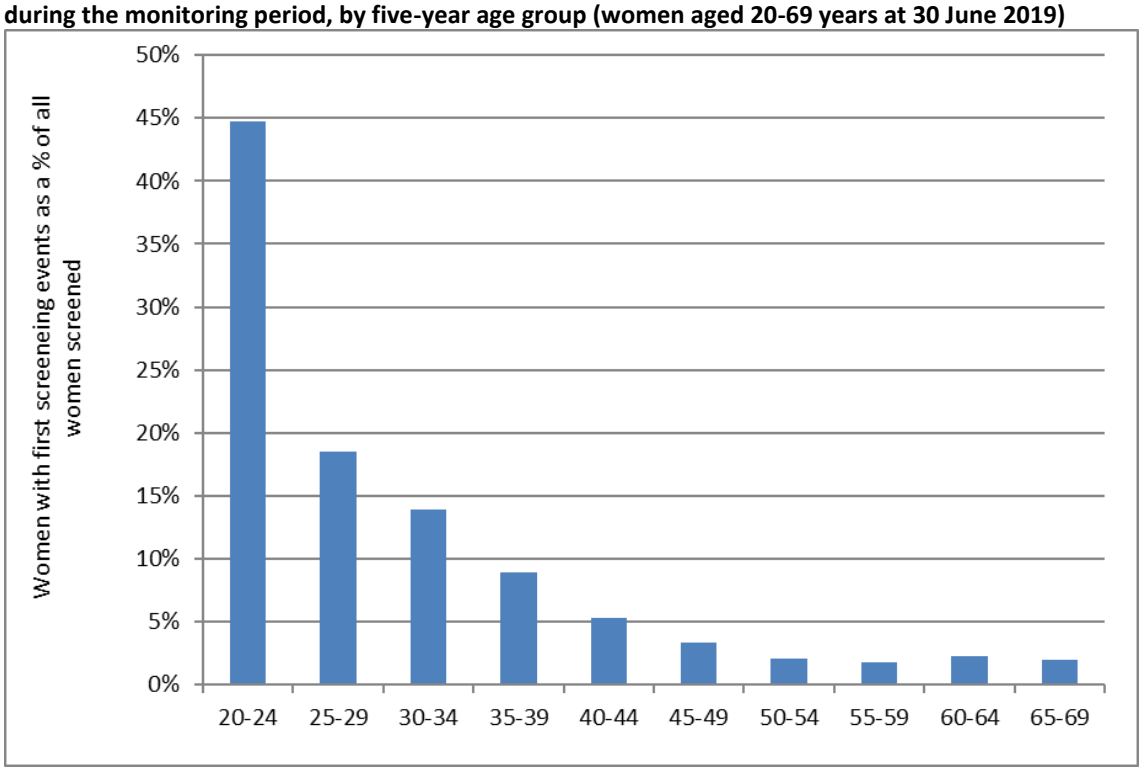


Figure 24 - Women with first screening events as a proportion of all women screened during the monitoring period, by DHB (women aged 20-69 years at 30 June 2019)

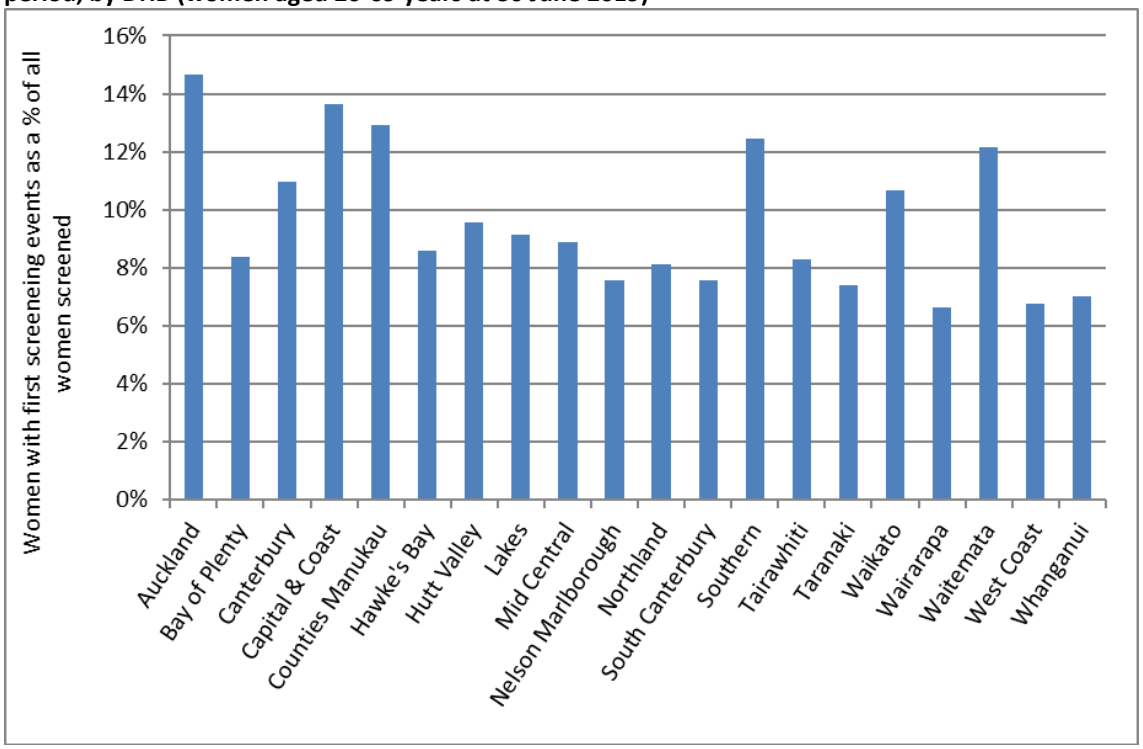


Figure 25 - Women with first screening events as a proportion of all women screened (within respective ethnicity) during the monitoring period, by ethnicity (women aged 20-69 years at 30 June 2019)

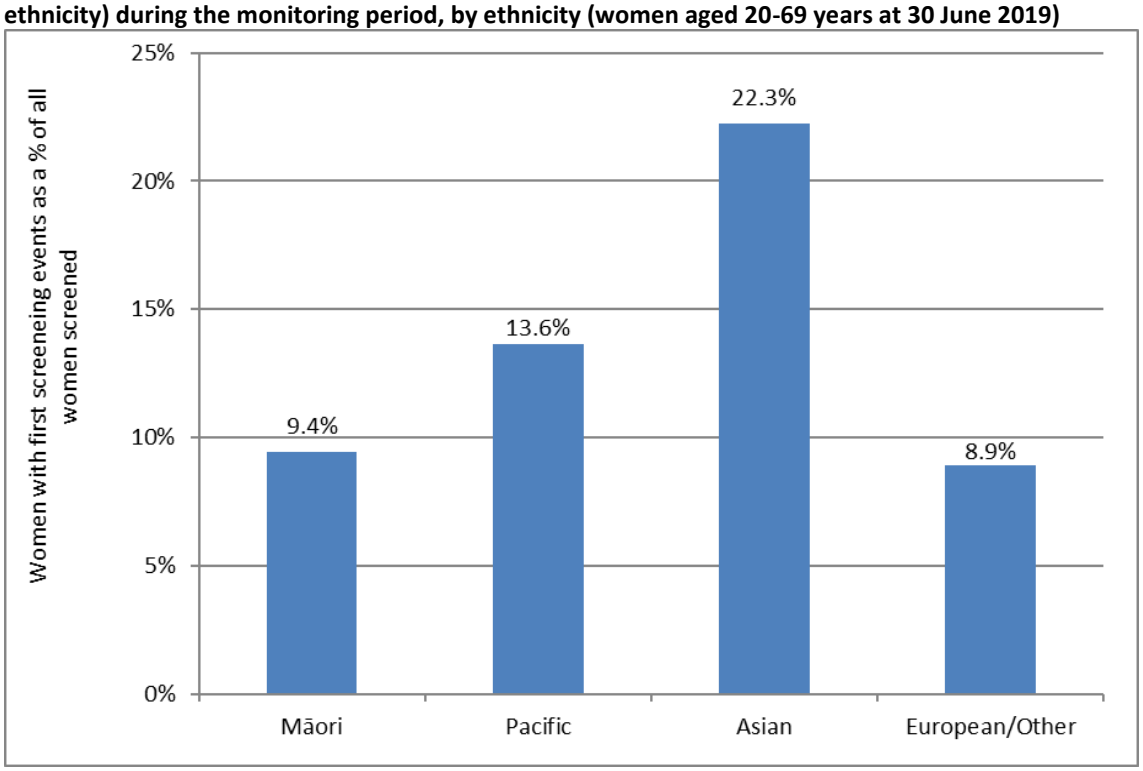


Figure 26 - Trends in the number of women with a first screening event, by age

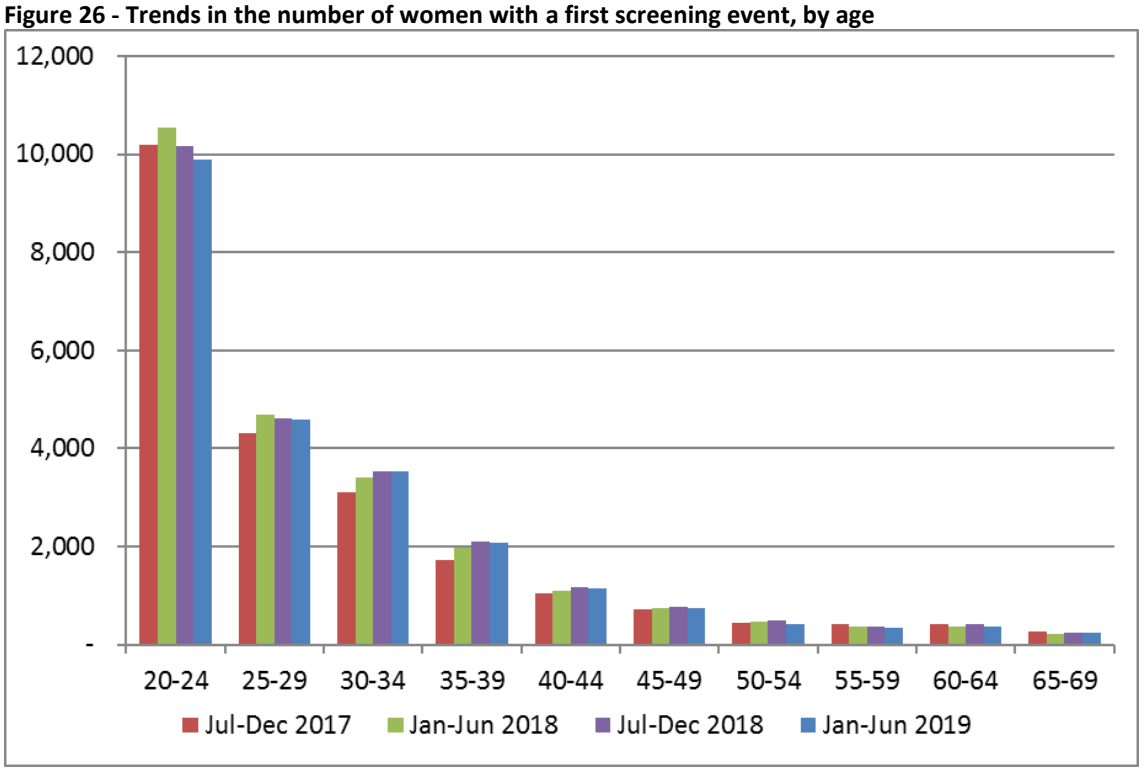


Figure 27 - Trends in the number of women with a first screening event, by DHB

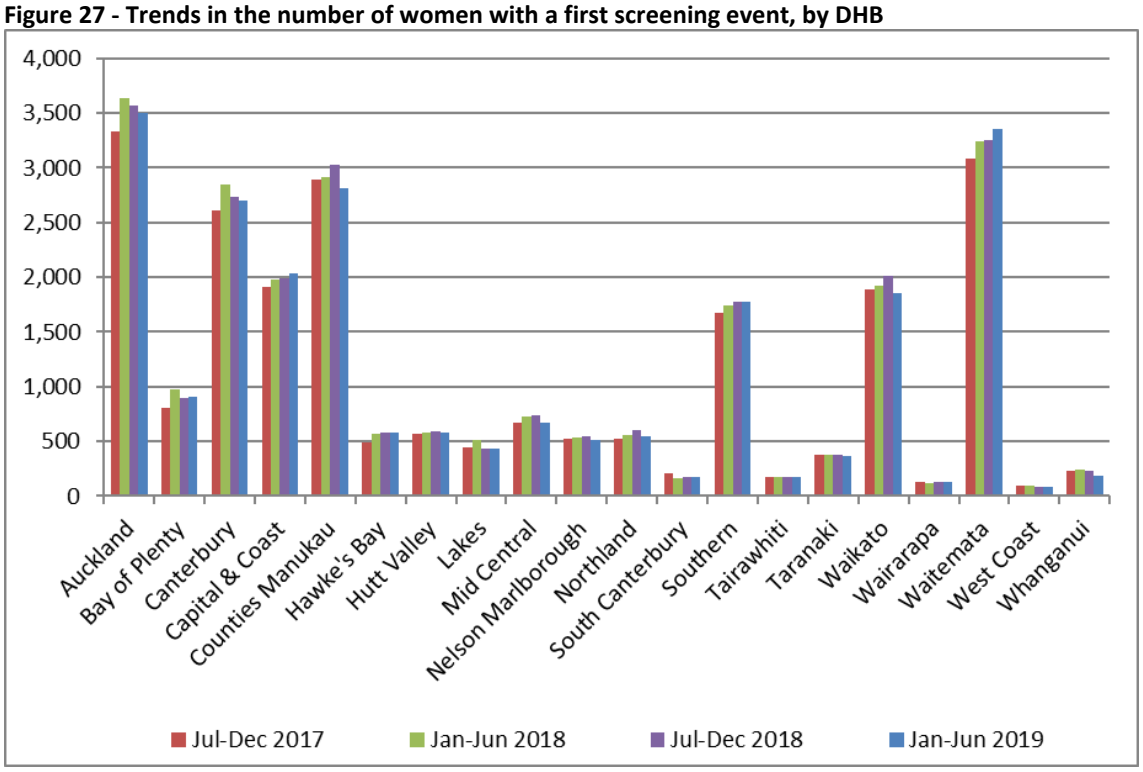
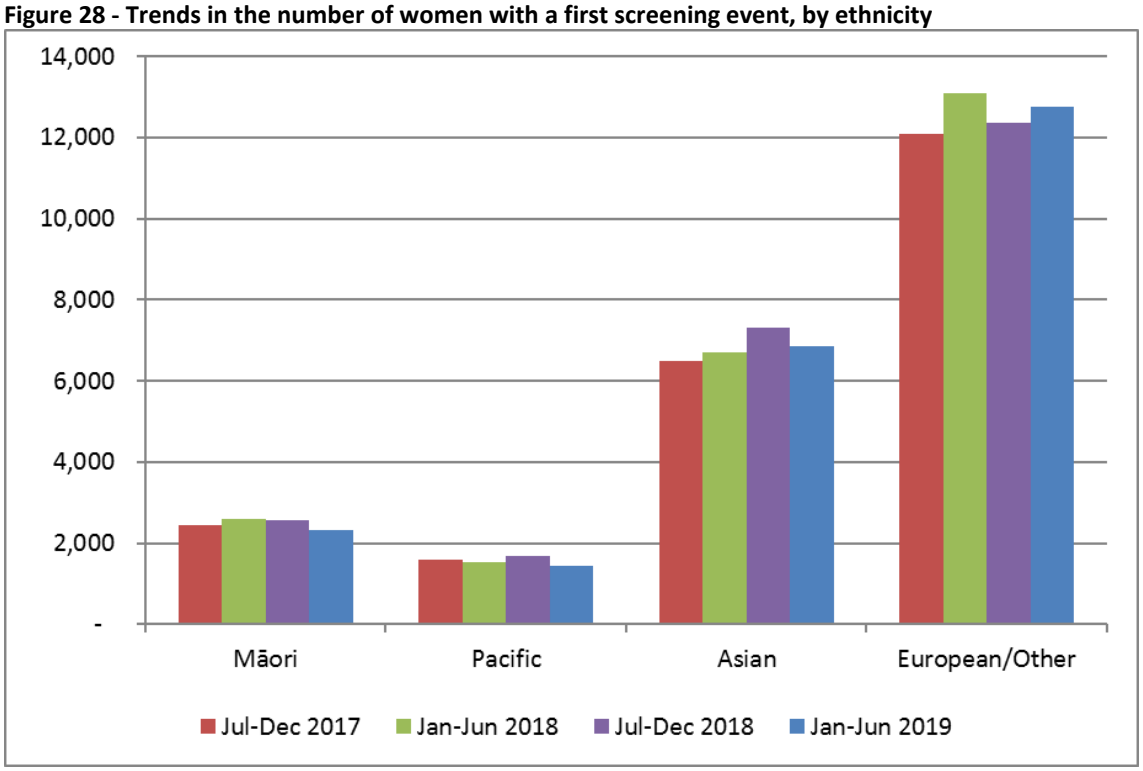


Figure 28 - Trends in the number of women with a first screening event, by ethnicity

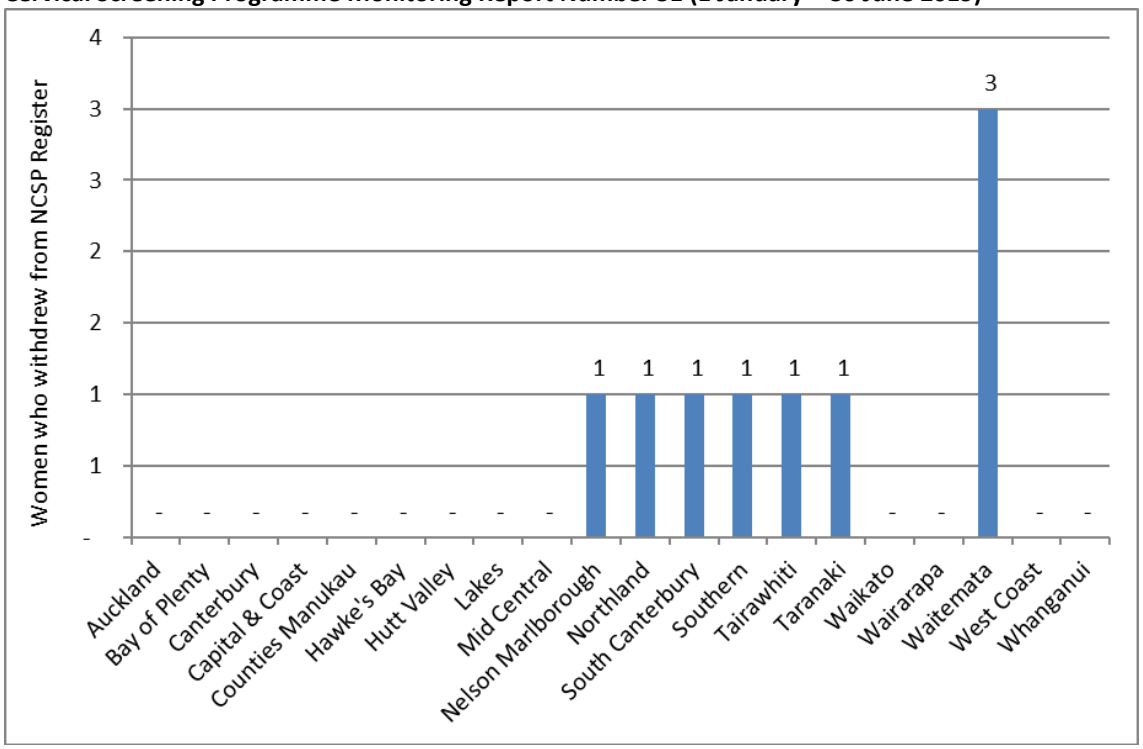


Indicator 3 – Withdrawal rates

Definition	The number of women, by age-group, DHB, and ethnicity not currently enrolled in the NCSP Register and whose enrolment ended during the monitoring period (withdrawals). Withdrawals relate to active withdrawals, where women specifically elect to be removed from the NCSP Register. Withdrawals are also reported as a proportion of women who were enrolled on the NCSP Register at 31 December 2018 (i.e. just prior to the commencement of the current monitoring period). This is also reported by age group, DHB, and ethnicity. Age is defined as a woman's age at the end of the monitoring period (i.e. at 30 June 2019).
Target	Zero for ages 20-69 years.
Current Situation	At the end of the previous monitoring period, 1,629,709 women aged 20-69 years were enrolled on the NCSP Register. During the current monitoring period, 12 of these women (0.001%) withdrew from the NCSP Register. In all DHBs, the number and proportion of women who withdrew was extremely small (maximum three women in the Waitemata DHB). No women withdrew in thirteen of the twenty DHB regions (Figure 29). The number and proportion of women withdrawing was extremely small for all age groups, but were largest among women aged 20-24 years (three women, 0.004% of those enrolled at the end of the previous monitoring period; Figure 30, Table 45). The number and proportion of women withdrawing was extremely small for all ethnic groups. Two Māori and three Pacific women withdrew in the current monitoring period (0.001% and 0.003%, respectively), while five European/ Other women (< 0.001%) and two Asian women (0.001%) withdrew during the current monitoring period (Figure 31, Table 46).
Trends	The number of women who withdrew in the current monitoring period (12 women) is lower than in the previous monitoring period (15 women). The overall number of withdrawals and the withdrawals as a proportion of all women enrolled both continue to be extremely small.
Comments	The proportion of women choosing to 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

	or who ask for no more communications but still participate in the Programme and have their results recorded on the NCSP Register.

Figure 29 - Number of women (aged 20-69 years) who withdrew from the NCSP Register by DHB, National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019)



Excludes 3 woman who withdrew whose DHB was not recorded.

Figure 30 - Number of women who withdrew from the NCSP Register by age, National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019)

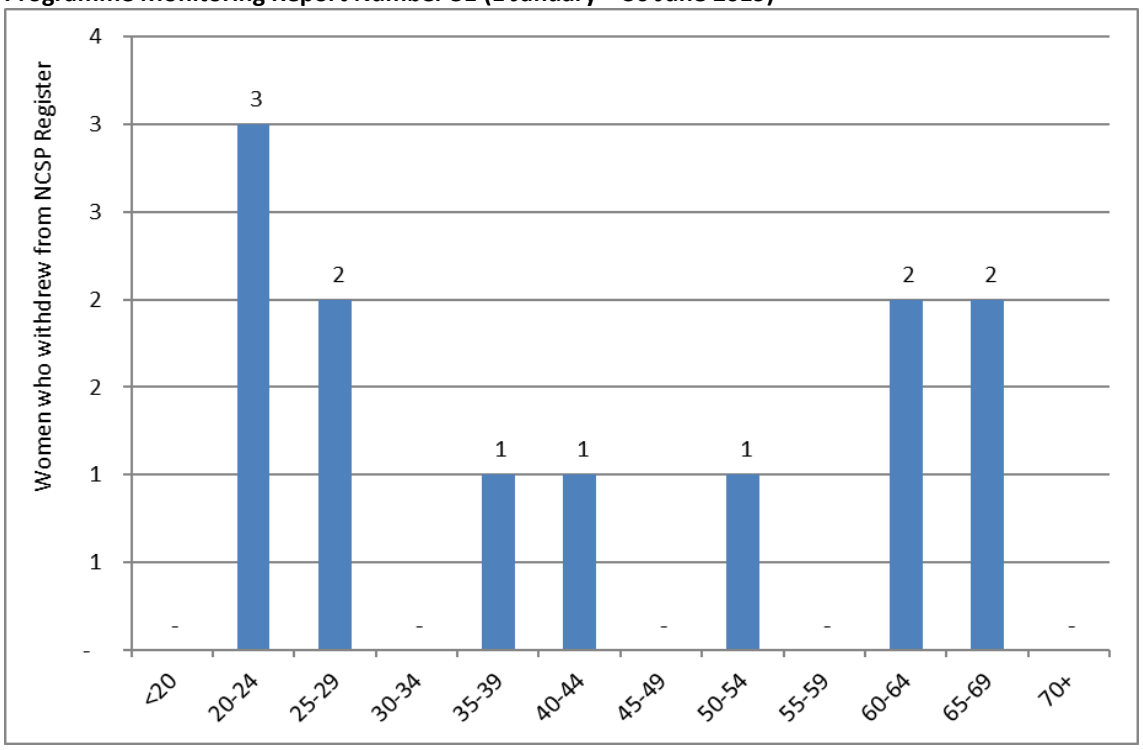
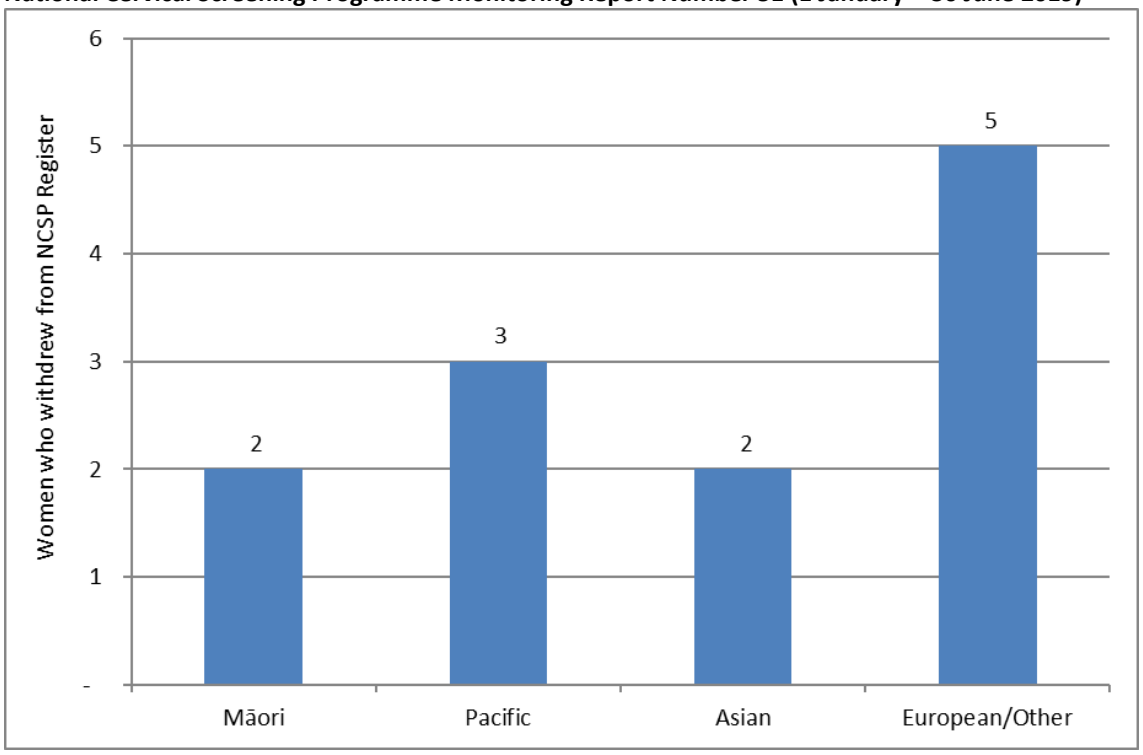


Figure 31 - Number of women (aged 20-69 years) who withdrew from the NCSP Register by ethnicity, National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019)



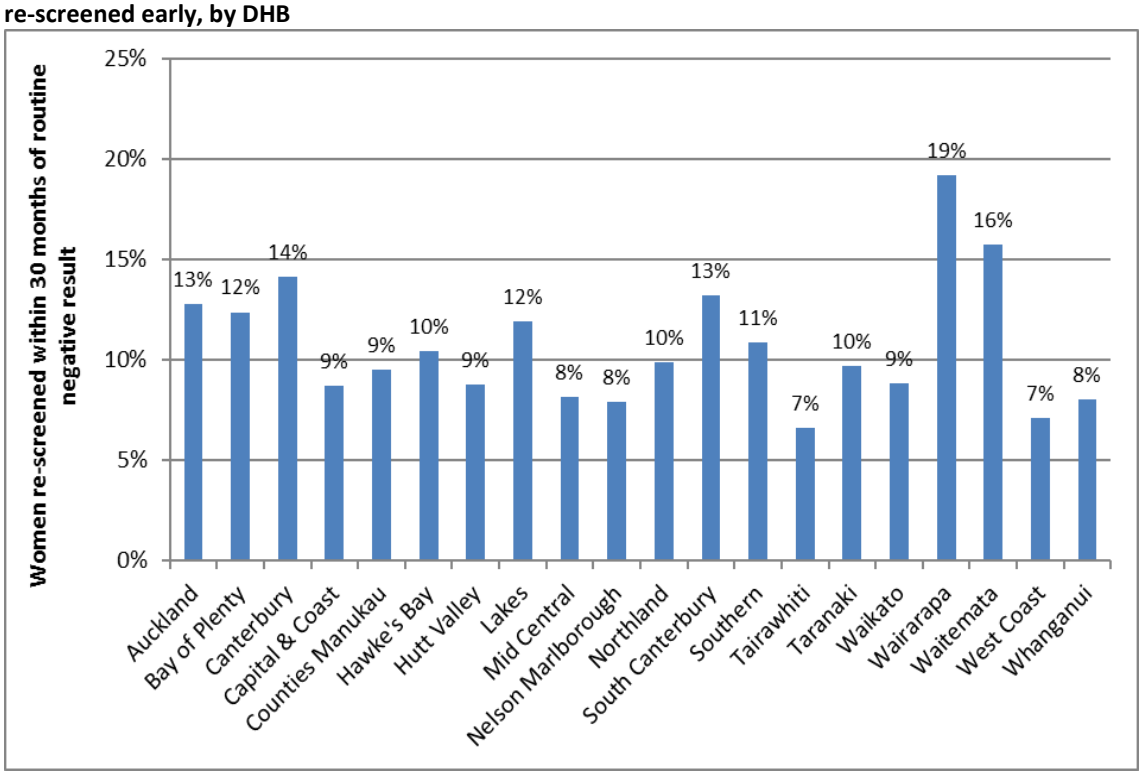
Indicator 4 – Early re-screening

Definition	The proportion of women who returned for a cytology sample within 30 months (2.5 years) of their index cytology sample is calculated for a cohort of women. The cohort comprises of women with an index cytology sample taken between 1 August – 30 September 2016 (inclusive), who i) were aged 20-66 years at the time the cytology sample 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 cytology sample in August/September 2016 (NZ Modified Bethesda code R1). Using this method of calculating the measure allows follow-up to be considered over 30 months for every individual woman. This measure excludes women who return early but are 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" cytology sample recommended "urgent referral regardless of cytological findings" in view of the abnormal clinical history provided (NZ Modified Bethesda code R14). In some cases, early re-screening may be the result of women being re-screened early in response to clinical symptoms, and this is appropriate. For the purposes of analysis by age group, a woman's age is defined as her age at the end of the current monitoring period (i.e. a women's age at 30 June 2019).
Target	A target has not been set for this cohort-based calculation method.
Current Situation	There were 46,946 women who had a cytology sample taken in 1 August – 30 September 2016, were aged between 20-66 years at the time of their cytology sample, and were given a recommendation to return for their next cytology sample at the routine interval of three years. Among these women, 5,339 (11.4%) had at least one subsequent cytology sample in the following 30 months (6 months earlier than recommended). There was wide variation in early re-screening by DHB. Early re-screening was most common in Wairarapa (19.2%) and Waitemata (15.7%), and was least common in Tairawhiti (6.6%; Figure 32, Table 48). There was also variability by age. Younger women (aged 20-24 years at the end of the period) were most likely to be re-screened early (16.9%) and older women (aged 65-69 and 60-64 years) were the least likely to be re-screened early (7.8 and 8.5%, respectively; Figure 33, Table 47). Rates of early re-screening were quite similar across five-year age groups from 25 to 54 years (between 11.4% and 13.3%).

	Among the ethnic groups considered, European/ Other were the most likely to be re-screened early (11.8%) followed by Asian women (10.8%) and Māori women (10.7%); while early re-screening was least common among Pacific women (7.6%; Figure 34, Table 49).
Trends	The level of early re-screening (11.4%) is slightly lower to what was reported in the previous monitoring period (11.6%) and has been declining over the last eight years of reporting. The DHB with the highest level of early rescreening in this report was Wairarapa (19.2%). In most DHBs, early rescreening is decreasing; however early rescreening is higher in the current report in seven DHBs and remained similar in five DHBs. Trends over the two years ending 30 June 2019 by DHB are shown in Figure 35. A reduction in the level of early re-screening was seen for five of the ten five-year age groups between 20 and 69 years since the previous report. An increase was seen in four age groups. Trends over the two years ending 30 June 2019 by five-year age group are shown in Figure 36. Small decreases in early re-screening were also seen in two ethnic groups with the greatest drop seen in European/ Other (from 12.2% to 11.8%), followed by Māori women (from 10.9% to 10.7%) since the last monitoring period. Early rescreening in Pacific women remained similar in Pacific women (7.6%), and is higher in Asian women (from 10.7% to 10.8%).
Comments	Early re-screening was assessed based on cytology recommendation codes, in order to exclude from the early re-screening group women with a negative cytology sample 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 just had their first cytology sample or more than five years have elapsed since their previous cytology sample (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. In some cases, early re-screening may be the result of women being re-screened early in response to clinical symptoms, and this is appropriate. We have used the NZ Modified Bethesda recommendation code for urgent referral regardless of cytological findings (R14) to try and exclude some of these cases from the count of women re-screened early, but this does not exclude all screens performed in response to clinical symptoms. There are some similarities between Indicator 4 and Indicator 1.2, although they examine different groups of women and the proportions reported answer somewhat different questions (as is described in more detail in the *Definition*

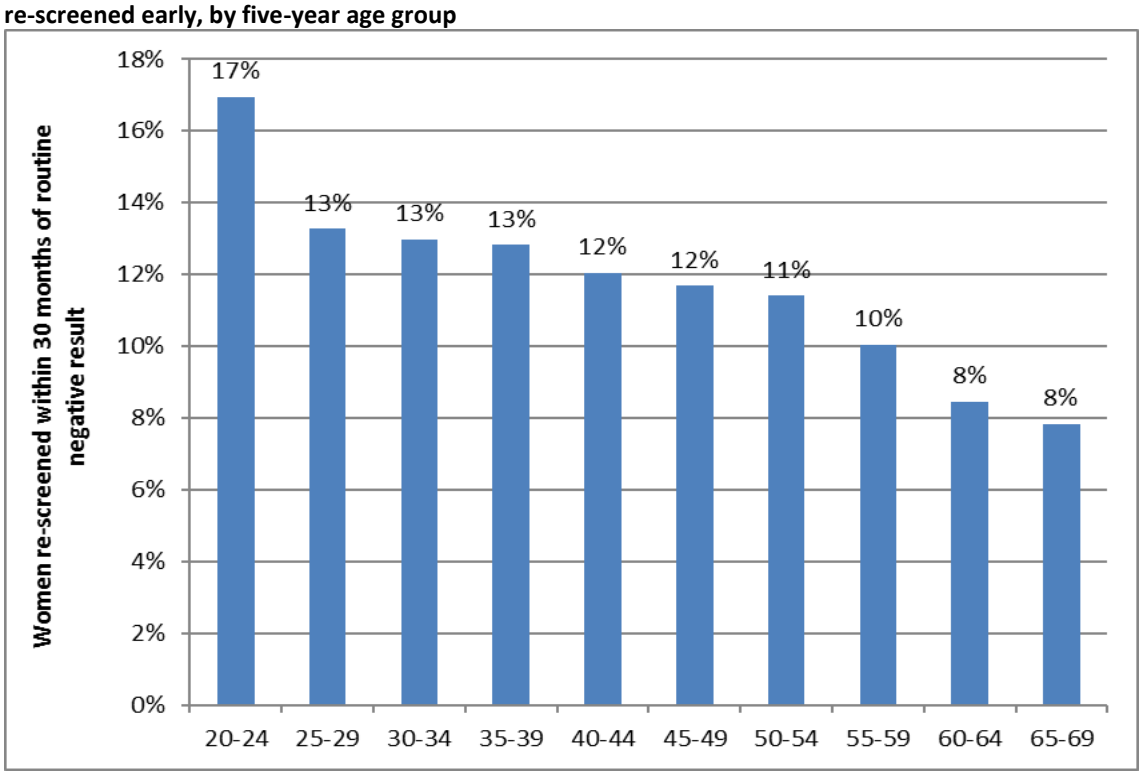
	and Comments section of Indicator 1.2). Indicator 1.2 addresses the question – "*What proportion of women who are re-attending for routine screening in a particular time period are returning at least six months early?*", and does not take into account women who did not attend for screening; whereas Indicator 4 addresses the question – "*What proportion of women recommended to return in three years for routine screening return at least six months early?*", and takes into account all women given a routine screening recommendation, whether they re-attend or not.

Figure 32 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by DHB



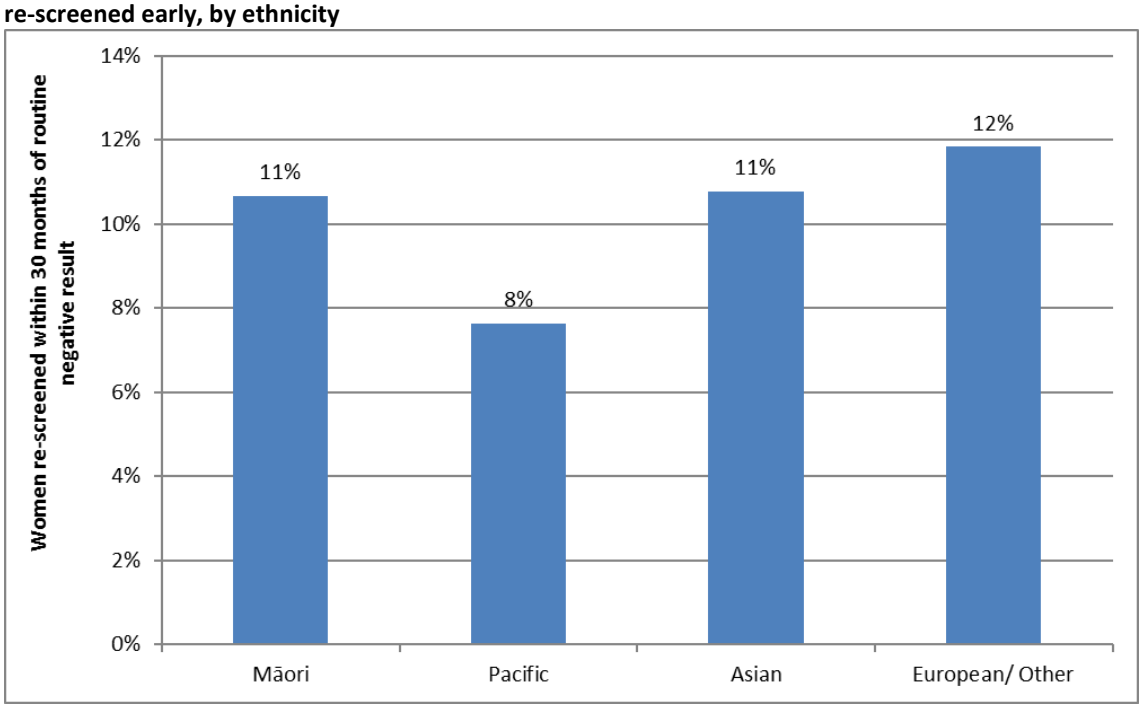
See also Table 48.

Figure 33 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by five-year age group



See also Table 47.

Figure 34 - Proportion of women recommended to return at the routine interval (three years) who were re-screened early, by ethnicity



See also Table 49.

Figure 35 - Trends in the proportion of women recommended to return at the routine interval (three years) who were re-screened early, by DHB

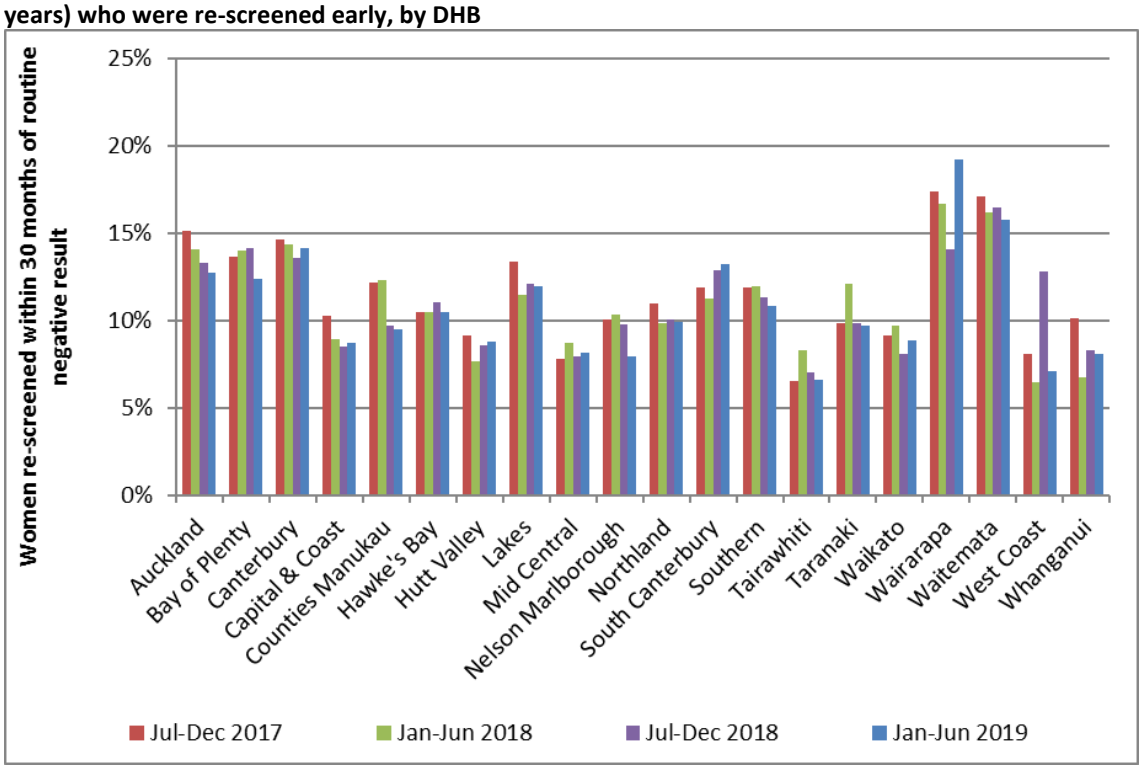


Figure 36 - Trends in the proportion of women recommended to return at the routine interval (three years) who were re-screened early, by age

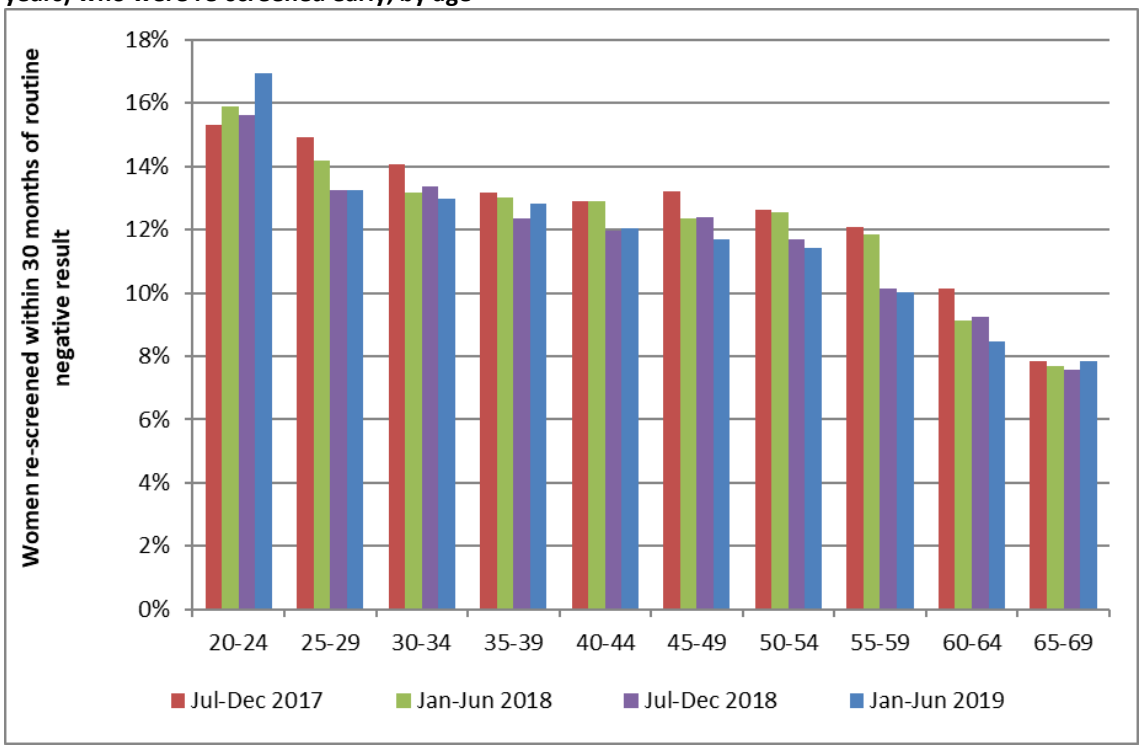
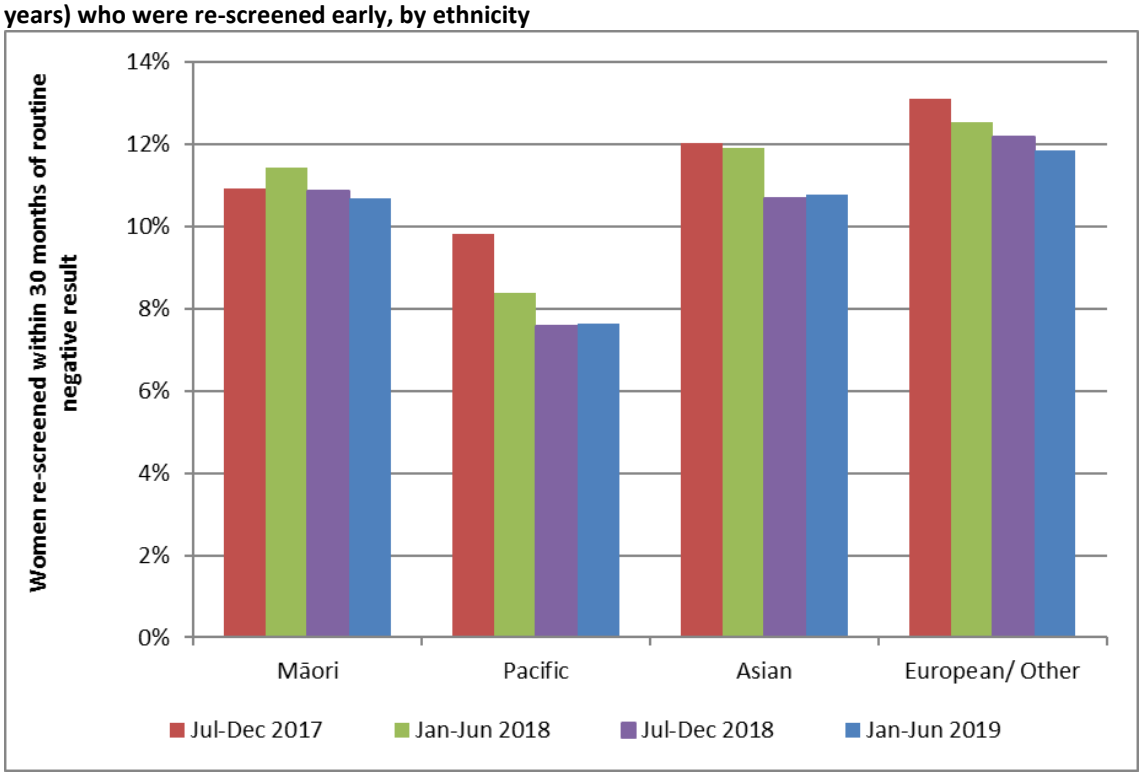


Figure 37 - Trends in the proportion of women recommended to return at the routine interval (three years) who were re-screened early, by ethnicity



Indicator 5 – Laboratory indicators

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

Indicator 5.1 – Laboratory cytology reporting

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

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

Definition	Bethesda codes used are provided in Appendix B. The Bethesda reporting system (TBS), introduced in New Zealand on 1 July 2005, is a New Zealand modification of the Bethesda 2001 cytology reporting system. The NCSP Register collects cytology results of samples taken from the cervix and vagina. "Total samples" data includes all cytology samples (satisfactory and unsatisfactory) taken during the monitoring period. Reporting rates for negative cytology, total abnormal cytology, and other reporting categories are as a percentage of all satisfactory cytology samples.
Target	0.1% - 3.0% of LBC samples reported as unsatisfactory. No more than 96% of satisfactory samples reported as negative. No more than 10% of satisfactory samples reported as abnormal. No less than 0.5% of satisfactory samples reported as HSIL (Bethesda HS1 or HS2).
Current Situation	Six laboratories reported on cytology taken during the current monitoring period, the same number as in the previous monitoring period. A total of 210,628 cytology samples were taken, almost all of which (>99.99%) were coded as liquid-based cytology (LBC) samples. The other <0.01% of cytology tests were miscoded. ***Unsatisfactory cytology*** 2,945 cytology samples (1.4%) were unsatisfactory. The unsatisfactory rate for LBC is 1.4%, which is within the 0.1% - 3.0% target range for LBC samples. Four of the six laboratories had unsatisfactory rates within the target range; the other two laboratories had a rate that exceeded the maximum target of 3.0%

(LabPLUS and Medlab Central Ltd had unsatisfactory rates of 3.6% and 4.3%, respectively). Pathlab and Canterbury Health Laboratories both had the lowest unsatisfactory percentage of 0.6% (Figure 38, Table 1).

Unsatisfactory samples are reported in more detail in Table 1 and Figure 38. The remaining satisfactory samples are reported on below and in more detail in Table 2 to Table 6.

Negative cytology reports

93.0% of satisfactory cytology results were negative (Table 2), consistent with the target of no more than 96%. The proportion of samples which were negative varied by laboratory from 74.9% (LabPLUS) to 95.0% (Southern Community Labs; Figure 39, Table 2). All six laboratories met the target of no more than 96%.

Abnormal cytology reports

Nationally, the proportion of satisfactory samples which were abnormal (7.0%) was less than the target of no more than 10% (Figure 40, Table 2). This varied by laboratory, from 5.0% (Southern Community Labs) to 25.1% (LabPLUS; Figure 40). Two laboratories (LabPLUS and Canterbury Health Laboratories) exceeded the target (25.1% and 10.6%, respectively). Abnormal cytology results were most common in younger women and LSIL was the most common abnormal result (Table 5, Table 6).

HSIL cytology reports

Overall, 0.8% of satisfactory cytology samples were HSIL, consistent with the target of at least 0.5% of samples (Table 4). Rates varied by laboratory from 0.5% (Pathlab) to 2.1% (LabPLUS). All six laboratories met the HSIL target (Table 4, Figure 41). Among women aged 20-69 years, rates of HSIL or worse were most common in women aged 25-29 and 30-34 years age groups (1.5%; Table 5, Table 6).

In the current report we additionally examined age-standardised rates of HSIL cytology reports. This was done to partially account for different rates which may arise in different laboratories due to differences in the age of the population whose cytology tests they process. The age-standardised HSIL rates were very similar to the crude rates, both nationally and within each laboratory, but tended to be slightly lower than the previous report (Table 50).

Trends

Unsatisfactory cytology

Overall, the percentage of unsatisfactory LBC samples for the current monitoring period (1.4%) is higher than that seen in the previous monitoring period (1.1% in the previous monitoring period). Medlab Central Ltd has remained above the upper target of 3.0% the last three monitoring periods and LabPLUS has moved above the upper target for the first time since the Jan-Jun 2017 reporting period.

Negative vs abnormal cytology reports

The proportion of satisfactory cytology samples which are negative for intraepithelial lesion or malignancy (93.0%) is lower than in the previous monitoring period (93.3%).The proportion of cytology samples reported as abnormal (7.0%) is higher than in the previous monitoring period (6.7%). All six laboratories continued to meet the target of below 96% for negative cytology. Canterbury Health Laboratories and LabPLUS had abnormal cytology rates above the target of 10%.

HSIL cytology reports

The proportion of satisfactory cytology samples reported as HSIL is similar to that reported in the previous monitoring report (0.8%). All six laboratories met the target, which is higher than in the previous report.

Longer term trends in the proportion of satisfactory cytology samples reported as HSIL are shown in Figure 42, Figure 43 (trends by age) and Figure 45 (trends by laboratory). Figure 42 and Figure 45 show trends over the last four monitoring report periods (two years), consistent with other trends presented in this report. Figure 43 shows longer term trends (1 July 2009 to 30 June 2019) in rates of HSIL cytology by age. The younger age groups in this figure would be the first to be potentially affected by HPV vaccination (the oldest birth cohorts eligible for vaccination through the publicly funded programme would be aged up to 28 years at the time of the current monitoring period). HSIL rates in women aged less than 20 years are quite variable; this is likely to be because far fewer women of this age group attend for screening, since routine screening is not recommended for women aged less than 20 years. HSIL reporting rates in women aged 20-24 years had been increasing prior to 2013 and reached a high of 2.2% for the July-December 2012 period (Report 38). HSIL rates then fell for four monitoring periods between January 2013 and December 2014. However, in the July-December 2015 monitoring period (Report 44) an increase was seen in virtually all age groups, including women aged 20-24 years (from 1.6% in January to June 2015, Report 43, to 2.0% in July to December 2015, Report 44). There has been a plateau or small decline in HSIL rates observed over the last five monitoring reports up to 30 Jun 2019, with rates being below or very similar to what they were prior to the increase in the latter half of 2015 especially for women 20-24 years and 25-29 years. For women aged 20-24 years HSIL reporting rates remain lower than the latter half of 2008 (around the time that the HPV vaccination programme began). In this report small increases were seen in women aged 30-34 (increase from 1.3% to 1.5%) and 45-49 (an increase from 0.4% to 0.6%).

Comments

High rates of abnormal samples from LabPLUS are consistent with previous reports, and as discussed in previous monitoring reports, investigation into this has shown that the case-mix of this laboratory (i.e. a significant proportion of samples received from colposcopy clinics compared to other laboratories) is an underlying factor.

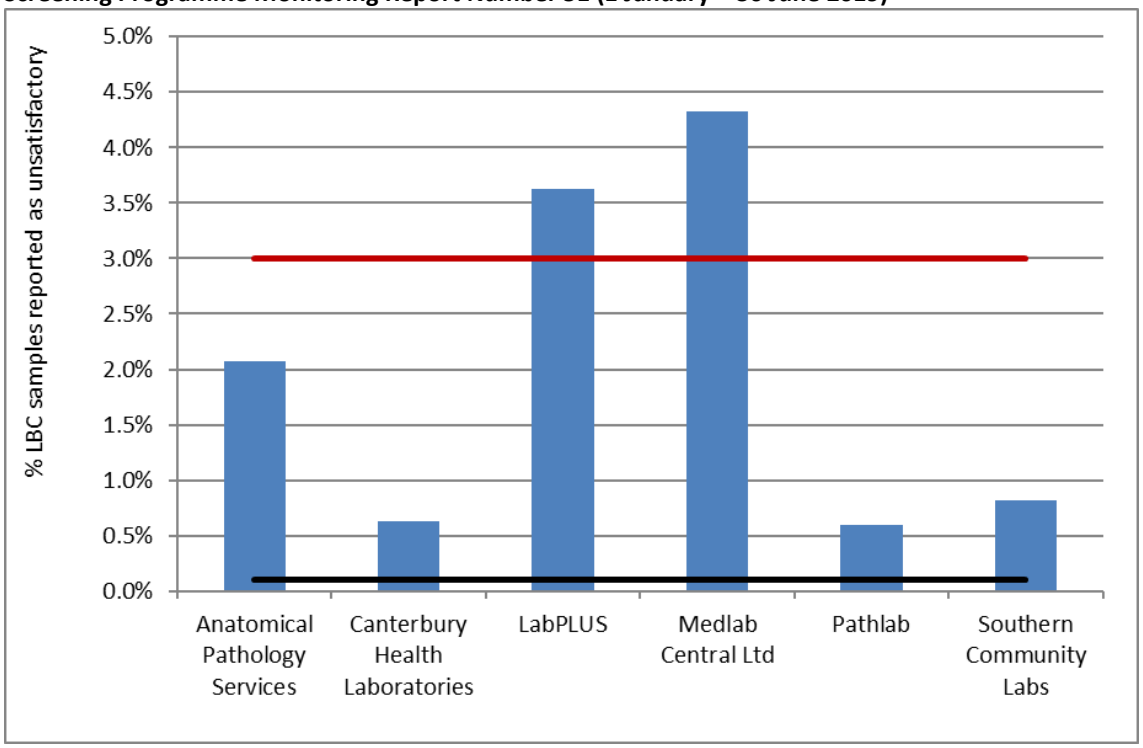
Workload catchments for laboratories may be regional or nationwide and may change because of laboratory service restructuring. As a result, it is not always

straightforward to determine the catchment population for a laboratory. Rates of negative and abnormal results for individual laboratories therefore need to be interpreted with some care, to allow for this difference in workloads and case-mix.

The national Human Papillomavirus (HPV) Immunisation Programme was introduced in New Zealand in September 2008, and involves routine vaccination of girls 12-13 years and catch-up vaccination has previously been offered to young women born in 1990 or later. International and New Zealand data indicate that most high-grade squamous cytology reports are associated with HPV types which are potentially preventable by vaccination (approximately 53% by first generation vaccines against HPV16/18; >70% with 9-valent vaccines),[5-8] and that this is particularly true for younger women.[5,9-11] It is anticipated that data will also soon be available from New Zealand to further quantify the potential impact of the Human Papillomavirus Immunisation Programme in New Zealand. As vaccinated cohorts enter the screening programme, it is anticipated that the proportion of satisfactory cytology samples reported as HSIL will gradually reduce, and that this will occur in younger age groups first (the oldest birth cohorts eligible for vaccination through the publicly funded programme would be aged up to 28 years at the time of the current monitoring period, while the oldest birth cohorts offered vaccination at the target age of 12-13 years would be aged up to 22 years). Therefore, trends in the proportion of satisfactory cytology samples reported as HSIL by age are included in these monitoring reports, in order to monitor the impact of HPV vaccination over time. This proportion of satisfactory cytology samples reported as HSIL in the 20-24 years age group is in the current report the lowest it has been since the latter half of 2008 (around the time that the HPV vaccination programme began), and is consistent with an HPV vaccine effect. At the current time, it is not possible to present HSIL rates separately for vaccinated and unvaccinated women, because information relating to whether or not individual women have been vaccinated is not available on the NCSP Register. This data therefore needs to be interpreted with some care, as they include results in all women, both vaccinated and unvaccinated.

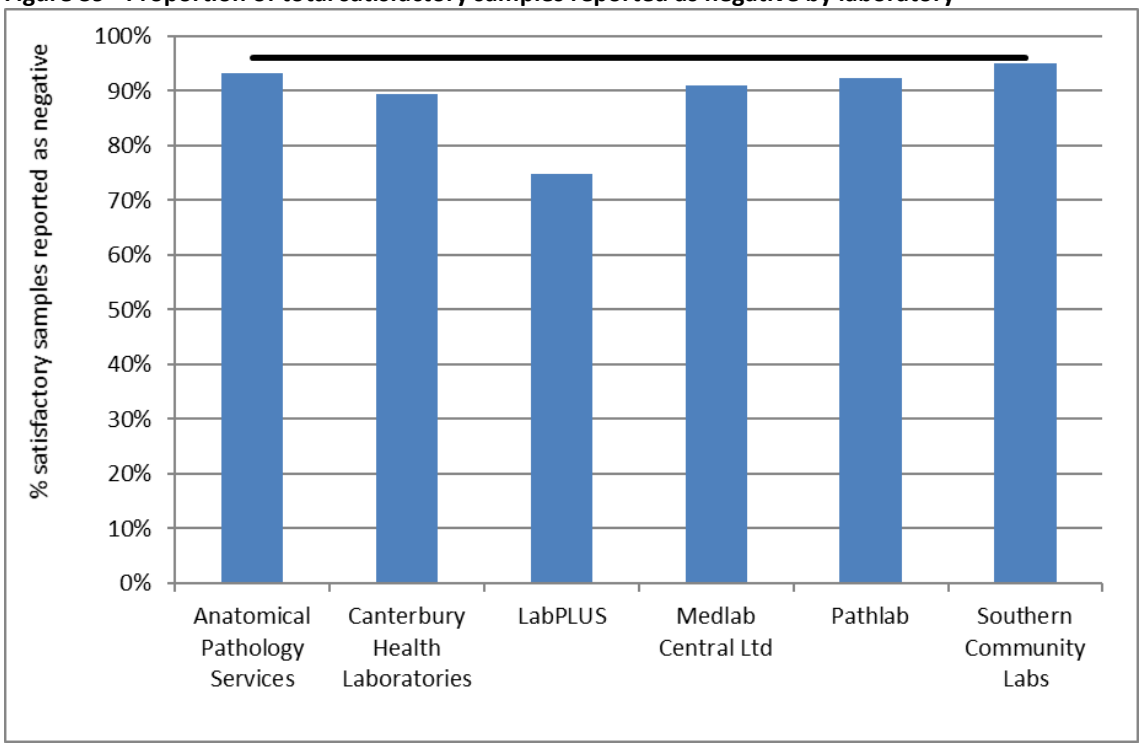
In the current report we additionally examined age-standardised rates of HSIL cytology reports, in order to partially account for differences in the age of the population whose cytology tests each laboratory processes. This could be an additional factor in some laboratories having higher or lower HSIL reporting rates. As the target does not specifically relate to age-standardised rates, these results cannot be directly compared to the target; however, as the target was set in 2013, standardising was done using the 2013 Census population (females). As the age-standardised HSIL rates were very similar to the crude rates within each laboratory, differences in age distribution of cytology tests reported do not appear to be a factor in differences between laboratories in HSIL reporting rates, or in why some laboratories are outside the target range.

Figure 38 - Proportion of total LBC samples reported as unsatisfactory by laboratory, National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019)



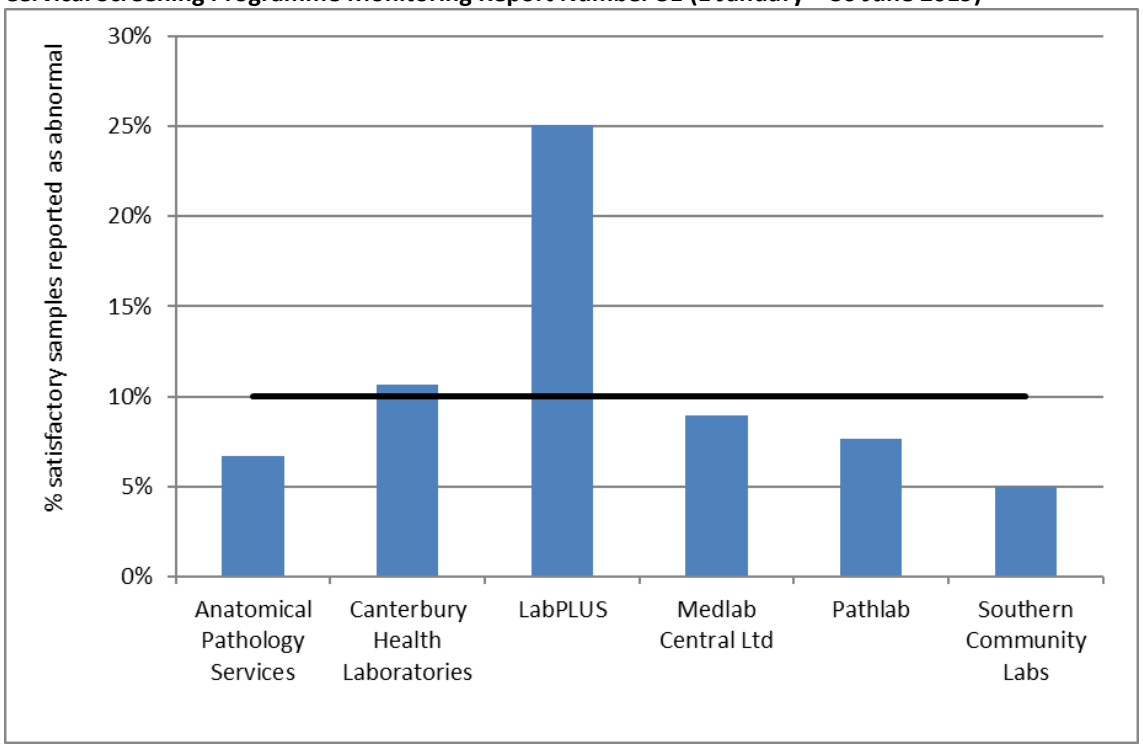
Target for LBC: 0.1-3.0% (Red line-upper target limit; black line=lower target limit).

Figure 39 - Proportion of total satisfactory samples reported as negative by laboratory



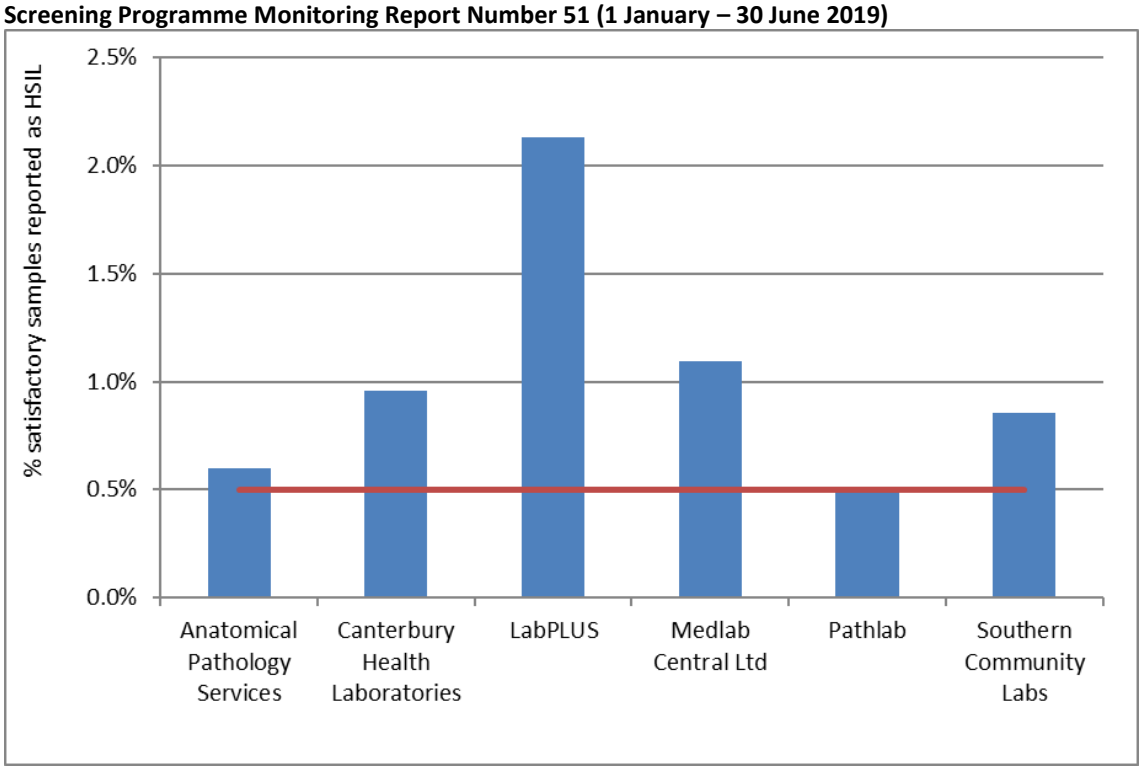
Note: Line shows negative target of no more than 96%.

Figure 40 - Proportion of total satisfactory samples reported as abnormalities by laboratory, National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019)



Note: Line shows abnormal target of no more than 10%.

Figure 41 - Proportion of total satisfactory samples reported as HSIL by laboratory, National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019)



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

Table 1 - Satisfactory and unsatisfactory cytology reporting by laboratory (National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019))

Laboratory	All samples	Satisfactory		Unsatisfactory	
	N	N	%	N	%
Anatomical Pathology Services	44,169	43,254	97.9	915	2.1
Canterbury Health Laboratories	9,693	9,632	99.4	61	0.6
LabPLUS	7,881	7,595	96.4	286	3.6
Medlab Central Ltd	15,129	14,475	95.7	654	4.3
Pathlab	26,967	26,807	99.4	160	0.6
Southern Community Labs	106,789	105,920	99.2	869	0.8
Total	**210,628**	**207,683**	**98.6**	**2,945**	**1.4**

Target total unsatisfactory: 0.1%-3.0% reported as unsatisfactory.

Table 2 - Laboratory cytology reporting by general result (National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019)) – percentage of satisfactory samples

Laboratory	Negative		Abnormal	
	N	%	N	%
Anatomical Pathology Services	40,355	93.3	2,899	6.7
Canterbury Health Laboratories	8,608	89.4	1,024	10.6
LabPLUS	5,690	74.9	1,905	25.1
Medlab Central Ltd	13,184	91.1	1,291	8.9
Pathlab	24,757	92.4	2,050	7.6
Southern Community Labs	100,629	95.0	5,291	5.0
Total	**193,223**	**93.0**	**14,460**	**7.0**

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

Table 3 - Laboratory cytology reporting by type of cytological category (National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019)) – counts of all satisfactory samples

Laboratory	Result									
	Negative	ASC-US	LSIL	ASC-H	HSIL	SC	AGC/AIS	Adeno-carcinoma	Malignant Neoplasm	Total
Anatomical Pathology Services	40,355	874	1,562	160	259	4	30	8	2	43,254
Canterbury Health Laboratories	8,608	358	438	116	92	1	14	4	1	9,632
LabPLUS	5,690	648	767	297	162	2	24	3	2	7,595
Medlab Central Ltd	13,184	514	483	118	158	1	11	6	-	14,475
Pathlab	24,757	665	1,098	120	130	6	24	3	4	26,807
Southern Community Labs	100,629	1,057	2,880	302	907	10	123	12	-	105,920
Total	**193,223**	**4,116**	**7,228**	**1,113**	**1,708**	**24**	**226**	**36**	**9**	**207,683**

Table 4 - Laboratory cytology reporting by cytological category (National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019)) – percentage of all satisfactory samples

Laboratory	Result								
	Negative	ASC-US	LSIL	ASC-H	HSIL	SC	AGC/AIS	Adeno-carcinoma	Malignant Neoplasm
Anatomical Pathology Services	93.3	2.0	3.6	0.4	0.6	0.01	0.07	0.02	<0.005
Canterbury Health Laboratories	89.4	3.7	4.5	1.2	1.0	0.01	0.15	0.04	0.01
LabPLUS	74.9	8.5	10.1	3.9	2.1	0.03	0.32	0.04	0.03
Medlab Central Ltd	91.1	3.6	3.3	0.8	1.1	0.01	0.08	0.04	-
Pathlab	92.4	2.5	4.1	0.4	0.5	0.02	0.09	0.01	0.01
Southern Community Labs	95.0	1.0	2.7	0.3	0.9	0.01	0.12	0.01	-
Total	**93.0**	**2.0**	**3.5**	**0.5**	**0.8**	**0.01**	**0.11**	**0.02**	**<0.005**

Target: HSIL ≥ 0.5% reported as HSIL.

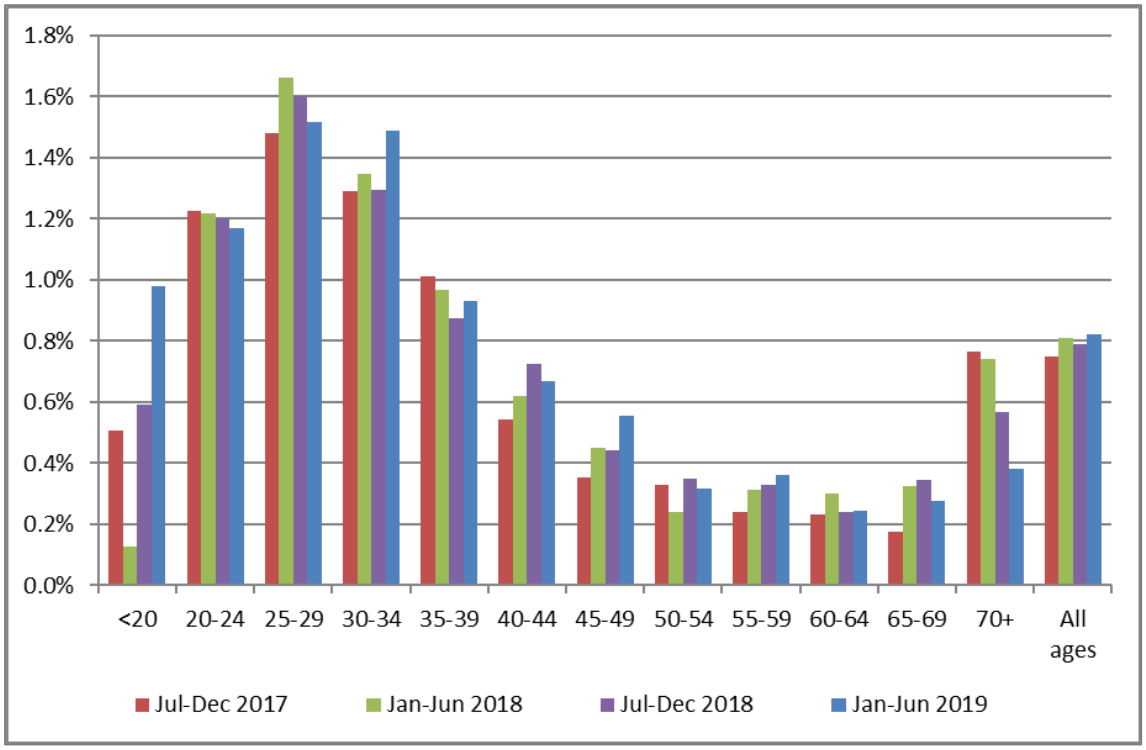
Table 5 - Laboratory reporting of cytological category by five-year age group (National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019)) – counts of all satisfactory samples

Age Group	Cytology Result									
	Negative	ASC-US	LSIL	ASC-H	HSIL	SC	AGC/AIS	Adeno-carcinoma	Malignant Neoplasm	Total
<20	613	20	72	4	7	-	-	-	-	716
20-24	19,458	733	2,277	199	268	-	1	-	-	22,936
25-29	21,985	604	1,341	201	372	2	12	-	-	24,517
30-34	23,258	532	846	179	375	1	20	1	-	25,212
35-39	21,463	415	542	121	212	1	18	-	1	22,773
40-44	19,883	363	483	79	140	1	21	2	-	20,972
45-49	21,254	434	468	95	124	2	24	-	-	22,401
50-54	19,162	366	415	64	64	4	39	2	-	20,116
55-59	18,383	276	331	73	69	5	29	7	-	19,173
60-64	14,712	178	209	58	37	3	26	5	1	15,229
65-69	11,146	149	170	25	32	-	20	4	1	11,547
70+	1,906	46	74	15	8	5	16	15	6	2,091
Total	**193,223**	**4,116**	**7,228**	**1,113**	**1,708**	**24**	**226**	**36**	**9**	**207,683**

Table 6 - Laboratory reporting of cytological category by five-year age group (National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019)) – percentage of all satisfactory samples in women of that age group

Age Group	Cytology Result								
	Negative	ASC-US	LSIL	ASC-H	HSIL	SC	AGC/AIS	Adeno-carcinoma	Malignant Neoplasm
<20	85.6	2.8	10.1	0.6	1.0	-	-	-	-
20-24	84.8	3.2	9.9	0.9	1.2	-	<0.005	-	-
25-29	89.7	2.5	5.5	0.8	1.5	0.01	0.05	-	-
30-34	92.2	2.1	3.4	0.7	1.5	<0.005	0.08	<0.005	-
35-39	94.2	1.8	2.4	0.5	0.9	<0.005	0.08	-	<0.005
40-44	94.8	1.7	2.3	0.4	0.7	<0.005	0.10	0.01	-
45-49	94.9	1.9	2.1	0.4	0.6	0.01	0.11	-	-
50-54	95.3	1.8	2.1	0.3	0.3	0.02	0.19	0.01	-
55-59	95.9	1.4	1.7	0.4	0.4	0.03	0.15	0.04	-
60-64	96.6	1.2	1.4	0.4	0.2	0.02	0.17	0.03	0.01
65-69	96.5	1.3	1.5	0.2	0.3	-	0.17	0.03	0.01
70+	91.2	2.2	3.5	0.7	0.4	0.24	0.77	0.72	0.29
Total	**93.0**	**2.0**	**3.5**	**0.5**	**0.8**	**0.01**	**0.11**	**0.02**	**<0.005**

Figure 42 - Trends in the proportion of total satisfactory samples reported as HSIL (last four monitoring periods), by age



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

Figure 43 - Longer term trends in the proportion of total satisfactory samples reported as ASC-H or HSIL (to National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019))

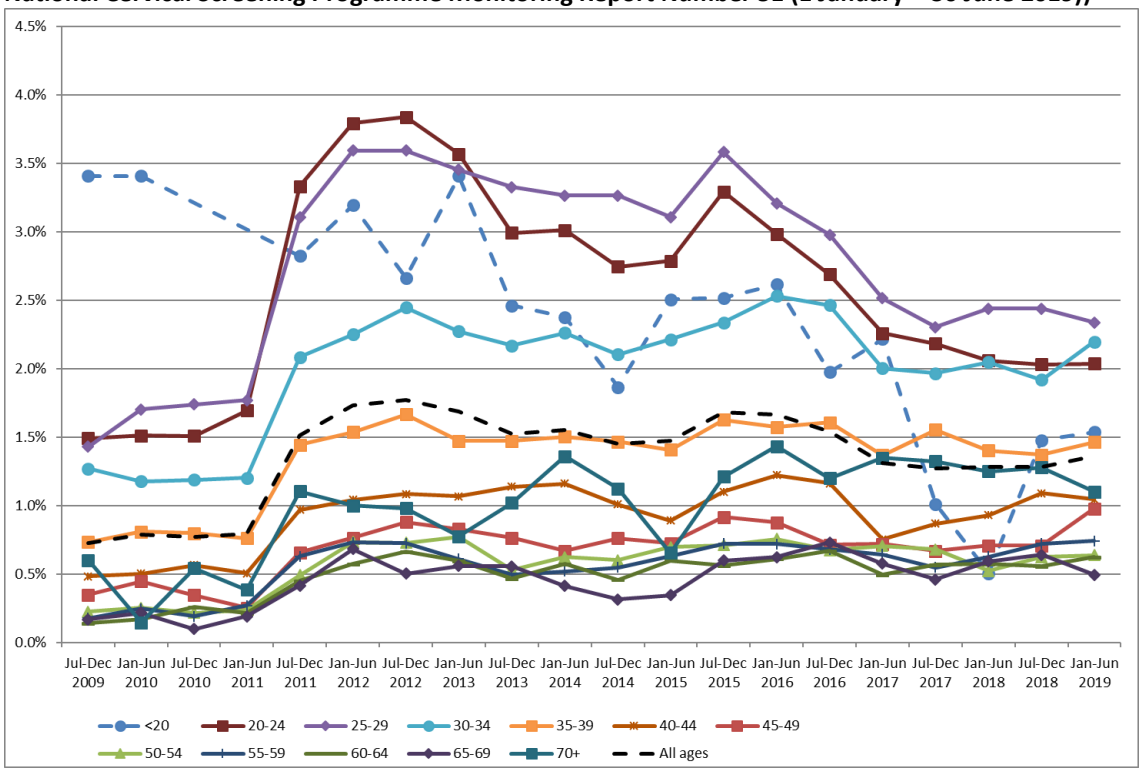
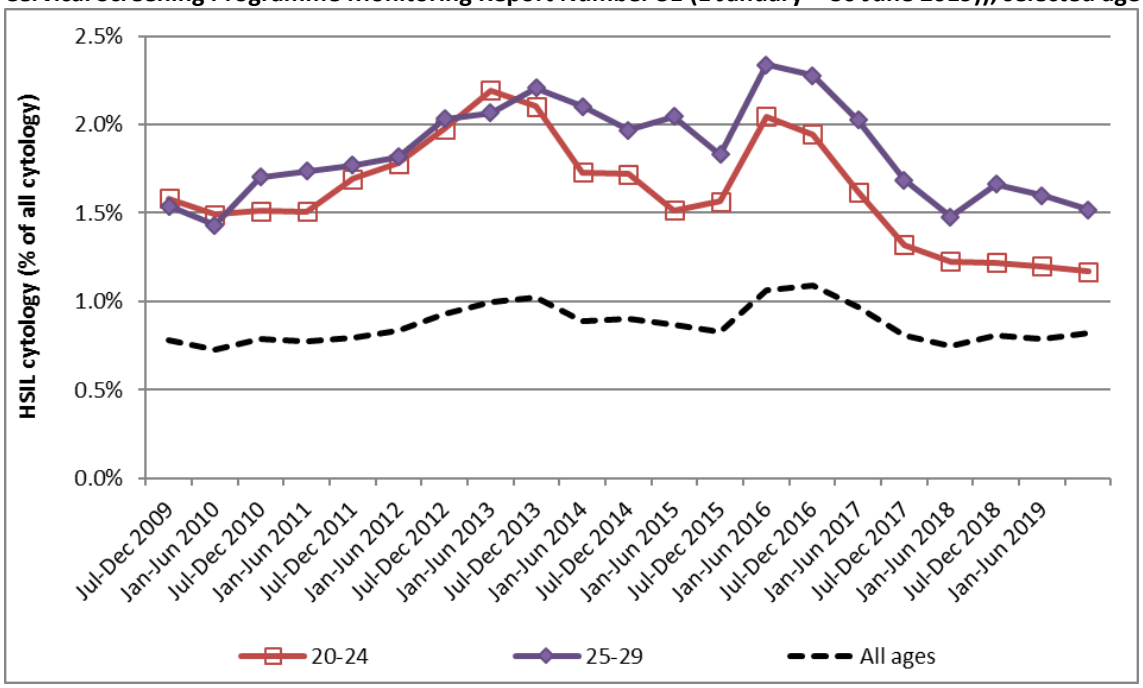
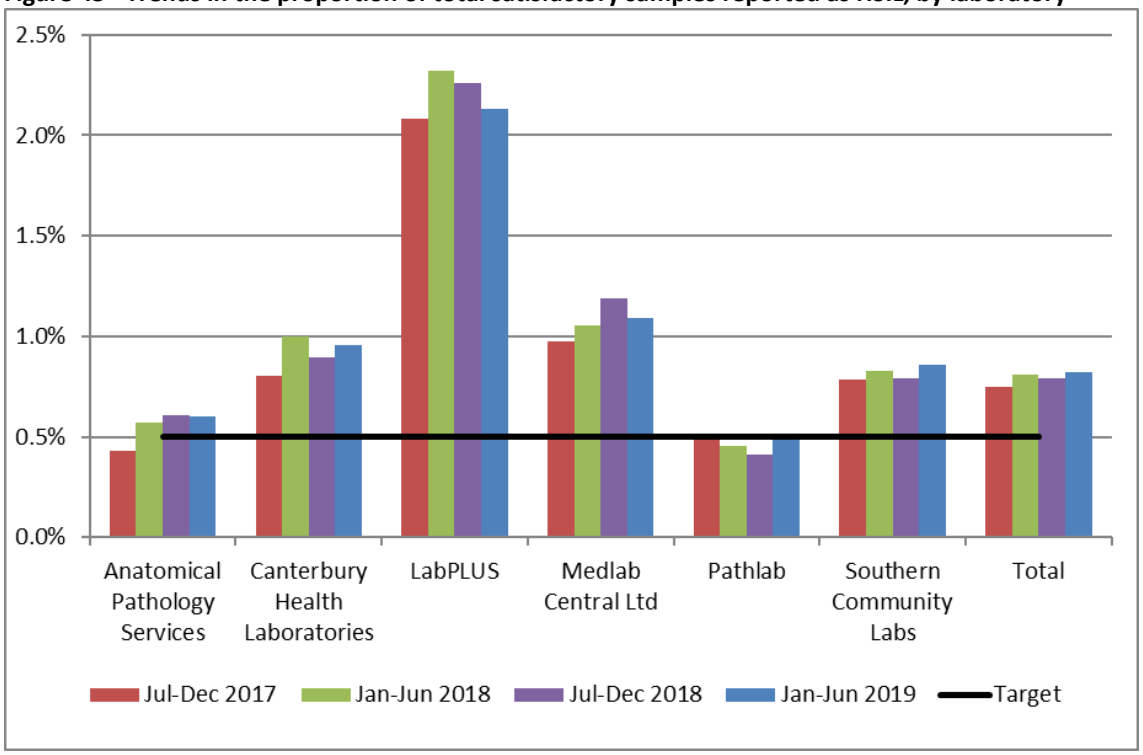


Figure 44- Longer term trends in the proportion of total satisfactory samples reported as HSIL (to National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019)), selected age groups



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

Figure 45 - Trends in the proportion of total satisfactory samples reported as HSIL, by laboratory



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

Indicator 5.2 – Accuracy of cytology predicting HSIL

Definition	The accuracy of cytology predicting HSIL/SC (positive predictive value – PPV) is defined as the probability of a high-grade histological report (CIN 2/3 or higher) given an HSIL/invasive squamous carcinoma cytology report. Refer to Appendix D for detailed definitions of histological confirmation. All satisfactory cytology samples collected in the six months prior to the current monitoring period (i.e. collected from 1 July – 31 December 2018 inclusive) were identified. Where a woman had multiple samples, or a report had multiple interpretation codes, the most serious cytology result category reported was used. If there were two cytology test results for a woman of the same grade, the earliest one was used. Histology samples taken up to six months after the cytology sample (but not on the same day) were included. Where there were multiple histology reports for a woman in the period, the most serious abnormality category was used. Commencing from Report 49, cytology samples were excluded from this measure if they were collected at a colposcopy visit (assessed by excluding cytology samples collected at the same facility and on the same date as either a colposcopy or a histology sample in the same woman; "excluding samples from colposcopy"). Prior to Report 49, this restriction had not been applied ("original method"). Additionally, reports prior to Report 49 included histology collected on the same day or up to five days prior to the cytology report. For this reason, results in the current report are not comparable to those in Report 48 or earlier, and so comparisons are restricted to Reports 49 and 50.
Target	Not less than 65% and not greater than 85% for cytology reported as HSIL or SC.
Current Situation	***HSIL + SC*** 1,077 women with HSIL or SC cytology reports were identified. 82 of these women (7.6%) had no histology taken in the six months after the cytology sample was taken. Among the remaining 995 for whom there was histology, 759 (76.3%) had their HSIL or SC cytology report confirmed as high-grade by histology (Figure 46, Table 51). By laboratory, the proportion of HSIL + SC being confirmed as high-grade by histology ranged from 74.3% for Southern Community Labs to 86.4% for LabPLUS. All six laboratories achieved the minimum target of at least 65% of cytological HSIL + SC being confirmed by histology. LabPLUS was the only laboratory to exceed the 85% upper target margin of HSIL + SC being histologically confirmed (Figure 46, Table 51).

Other cytological abnormalities

Similar calculations for positive predictive value were performed for ASC-H; glandular abnormalities (AG1-AG5, AIS, AC1-AC4); and the combination of ASC-H, HSIL and SC. There are no targets for these measures.

ASC-H

637 women with a cytology report of ASC-H were identified. 124 (19.5%) had no histology taken in the six months after the cytology sample. Among the remaining 513 women, 247 (48.1%) were histologically confirmed as high-grade. This proportion varied by laboratory, from 28.6% (LabPLUS) to 58.9% (Medlab Central Ltd; Figure 47, Table 52). This proportion for LabPLUS should be interpreted with caution as their was a small number of histology samples (N=49).

ASC-H + HSIL + SC

A total of 1,714 women had a cytology report of ASC-H, HSIL or SC. 206 (12.0%) had no histology taken in the six months after the cytology sample. Among the remaining 1,508 women, 1,006 (66.7%) were histologically confirmed as high-grade. This proportion varied by laboratory, from 46.5% (LabPLUS) to 70.7% (Medlab Central Ltd; Figure 47, Table 53).

Glandular abnormalities

There were 239 women with a glandular abnormality (AG1-AG5, AIS, AC1-AC4) identified. 66 women (27.6%) had no histology taken in the six months after the cytology sample. Among the remaining 173 women, 69 (39.9%) were identified as having high-grade histology. This was not analysed by laboratory, as the number of samples reported on by some laboratories was small.

Trends

As the method for defining the dataset changed in Report 49, the trend analysis includes results from that point on (three monitoring periods only).

HSIL + SC

Positive predictive value for HSIL and SC cytology has decreased since the previous monitoring report (79.6% in the previous period; 76.3% in the current period). In both the current and previous monitoring periods, all six laboratories had greater than 65% of their HSIL + SC cytology results confirmed by histology. The number of laboratories with PPVs above the upper target of 85% has remained the same (one) but the laboratory above the target range is different (in the previous monitoring period, only Medlab Central Ltd was above the upper target; in the current monitoring period LabPLUS is above the upper target). The proportion of cytology reports with histology available following HSIL or SC results is higher than in the previous report (92.4% in the current report; 92.0% in the previous report). Trends in the positive predictive value for HSIL and SC cytology by laboratory are shown in Figure 48. The positive predictive value for HSIL and SC cytology is lower than in the previous report at Medlab Central Ltd, Pathlab and Southern Community Labs, but higher than in the previous report at LabPLUS, Anatomical Pathology Services and Canterbury Health Laboratories.

ASC-H

Overall, the positive predictive value for ASC-H cytology is lower in the current report (48.1%) than in the previous report (52.2%), however there is no target for this measure. The proportion of ASC-H cytology reports with histology available is lower than in the current report compared to the previous monitoring report (80.5% in current report; 82.6% in previous report; Figure 49) LabPLUS is much lower in this monitoring period, 28.6%, compared to report 49 (53.2%). The positive predictive value for ASC-H cytology is lower than in the previous report in all six laboratories. The change was most marked in Canterbury Health Laboratories and LabPLUS, but quite marginal at APS.

ASC-H + HSIL + SC

The positive predictive value for the combined group ASC-H, HSIL and SC has decreased in the current report (to 66.7%, compared to 70.5% in the previous report). Note that there is no target for the positive predictive value of this combined group. Trends in the positive predictive value for the combined group ASC-H, HSIL and SC cytology by laboratory are shown in Figure 50. Decreases in the positive predictive value for the combined group of ASC-H, HSIL and SC cytology were evident for five of six laboratories.

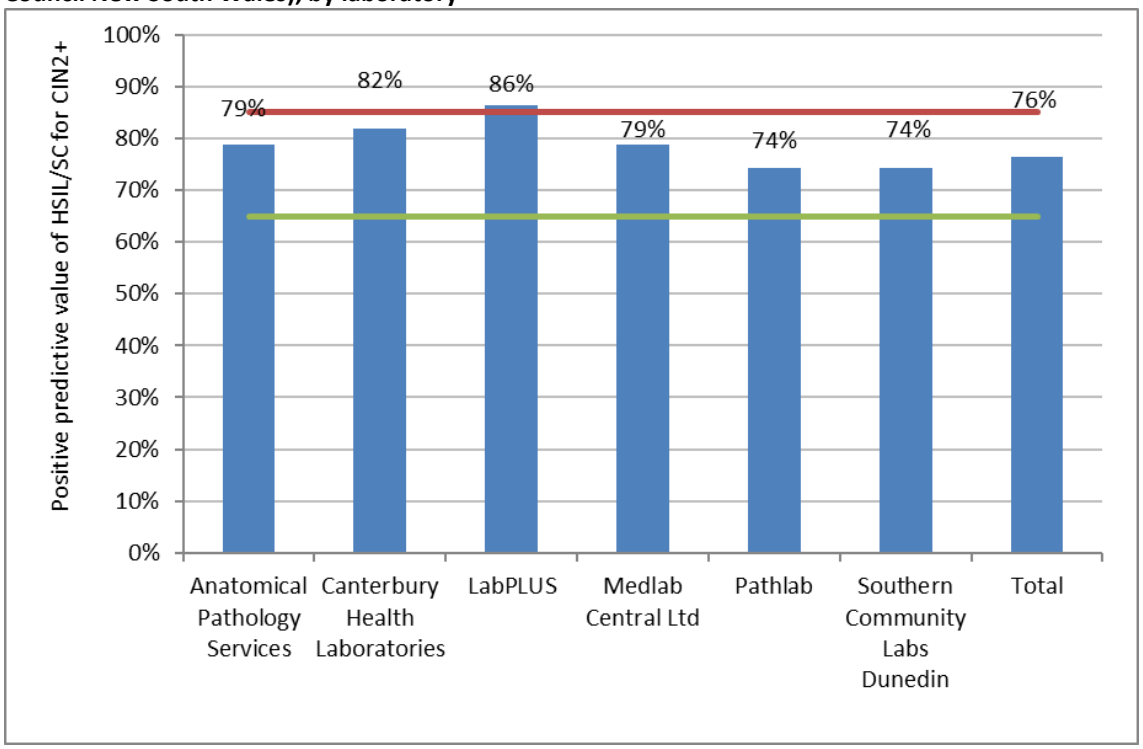
Glandular abnormalities

The positive predictive value of glandular abnormalities decreased (from 44.4% in the previous report to 39.9% in the current report). Compared to both ASC-H cytology, and the combined group of HSIL and SC cytology, there are far fewer glandular abnormalities, and an even smaller number with histology available. The proportion of glandular abnormalities with histology available (72.4%) is higher than than that in the previous monitoring period (66.7%), and remains less than that for ASC-H (80.5%) and HSIL + SC (92.4%). As a result, the positive predictive value of glandular abnormalities is more prone to fluctuations than positive predictive values for other high-grade abnormalities. Due to the small number of samples involved, glandular abnormalities were not analysed in further detail by laboratory.

Comments

This estimate does not take into account cytology predicting HSIL for which there is no histology available. Histology may be unavailable because the woman does not attend for follow-up colposcopy, or a biopsy may not be taken if the colposcopic impression is normal. When the monitoring period for this indicator is after all DHBs have started reporting in accordance the 2013 Colposcopy Standards (September 2017), it should be possible to better distinguish between these two possibilities. This can also be examined by calculating the probability of a high-grade histological report (CIN 2/3 or higher) among all women attending colposcopy after a high-grade cytology report (rather than only among the subset of women where a biopsy is taken). These results are presented in Figure 90, and compared with those for women with low-grade cytology results with a positive HPV triage test.

Figure 46 - Positive predictive value for CIN 2+ in women with HSIL or SC cytology reports (cytology in Cancer Council New South Wales), by laboratory



Target: 65% - 85%.

Figure 47 - Positive predictive value for CIN 2+ in women with other high-grade cytology results (i.e. collected from July – 31 December 2018 inclusive), by laboratory

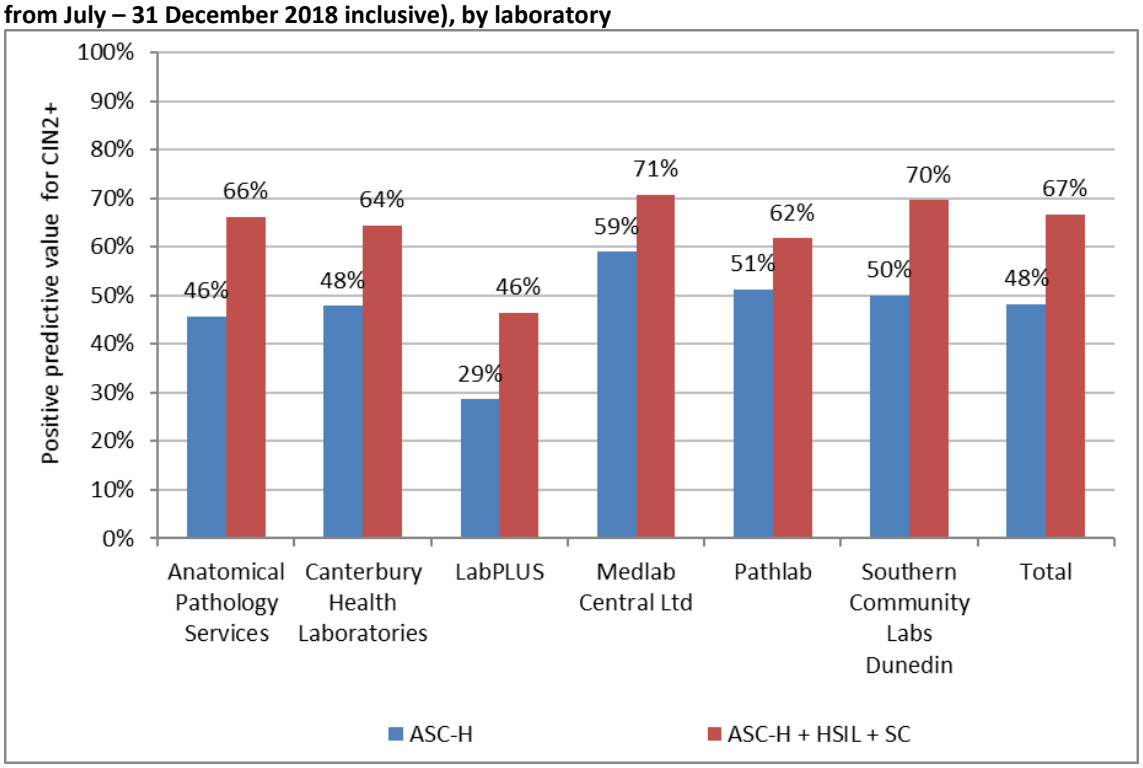
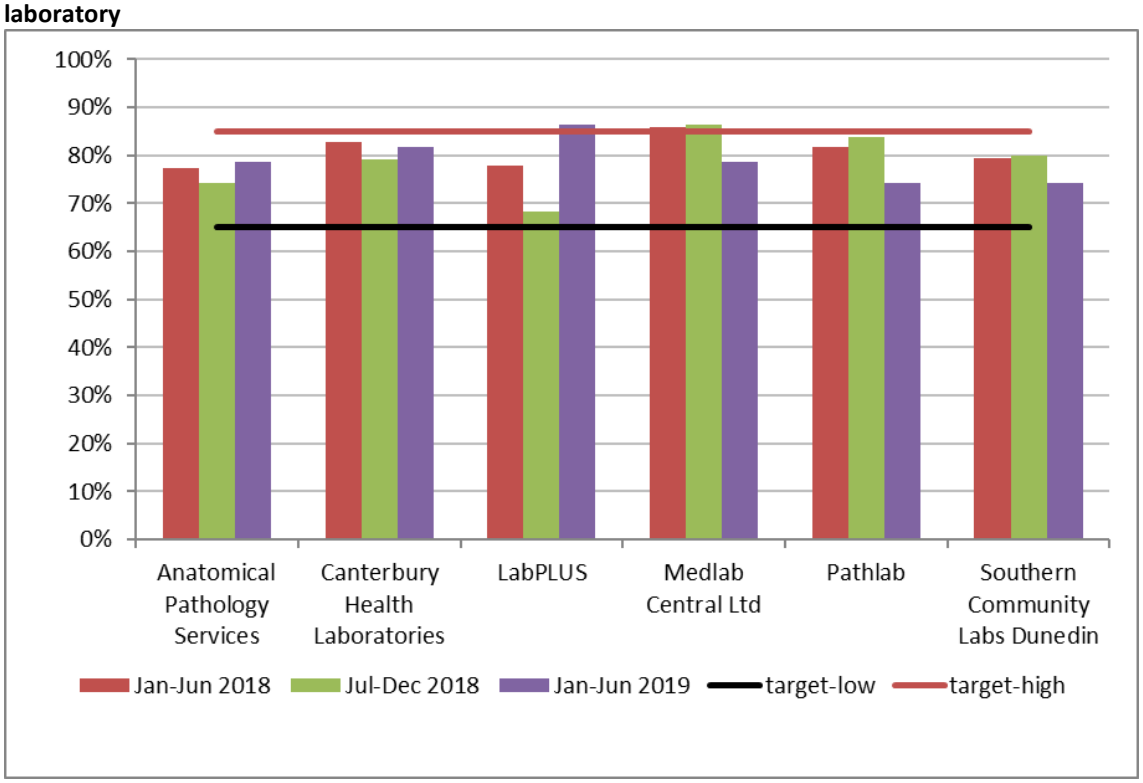
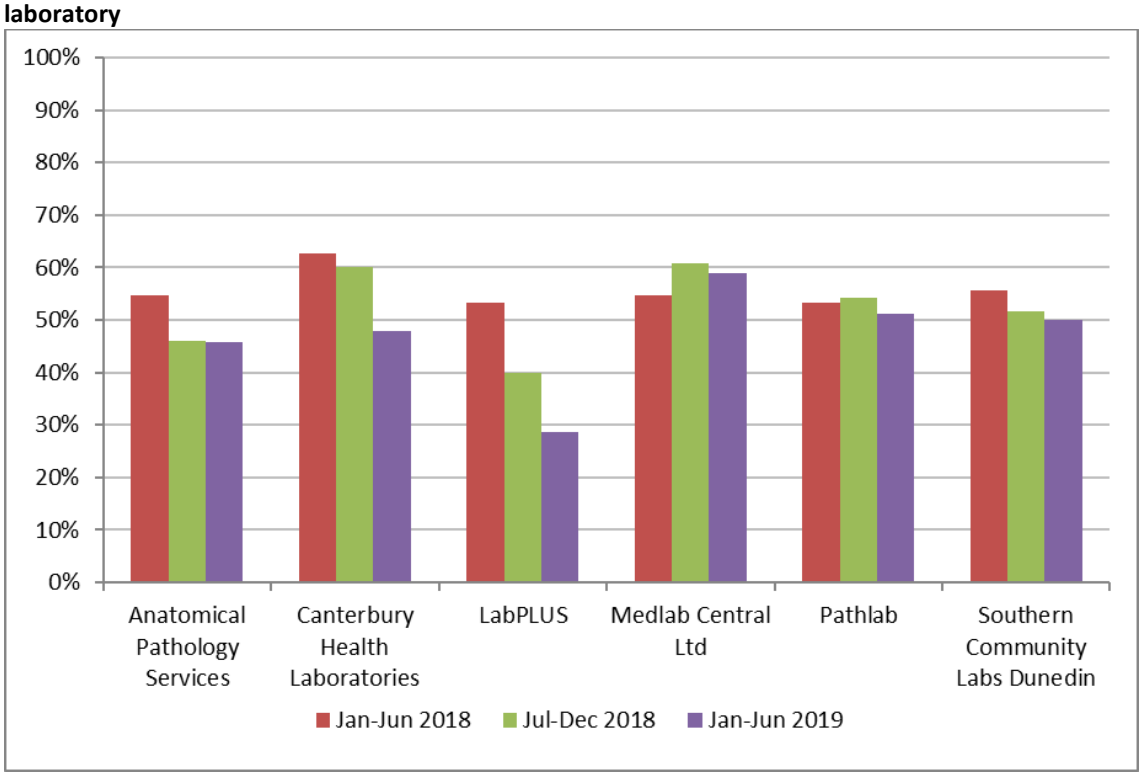


Figure 48 - Trends in the positive predictive value for CIN 2+ in women with HSIL or SC cytology results, by laboratory



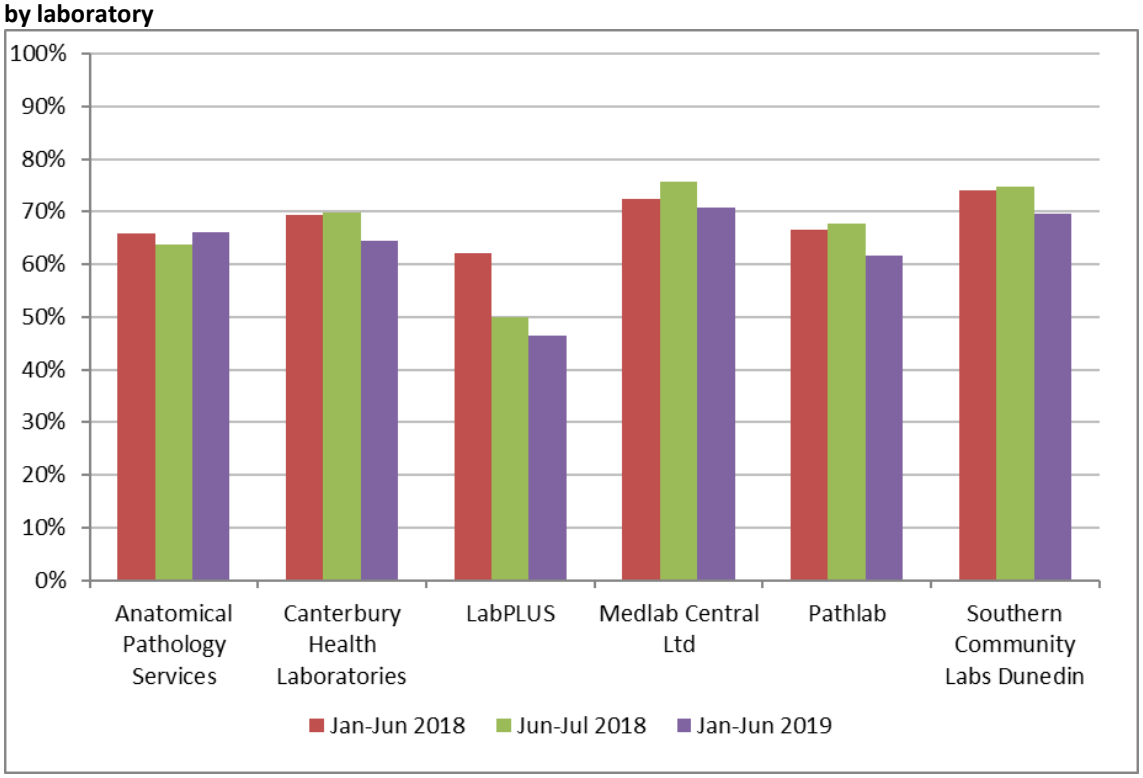
Time period relates to monitoring report period; cytology samples were collected in the period six months prior.

Figure 49 - Trends in the positive predictive value for CIN 2+ in women with ASC-H cytology results, by laboratory



Time period relates to monitoring report period; cytology samples were collected in the period six months prior.

Figure 50 - Trends in the positive predictive value for CIN 2+ in women with ASC-H, HSIL or SC cytology results, by laboratory



Time period relates to monitoring report period; cytology samples were collected in the period six months prior.

Indicator 5.3 – Accuracy of negative cytology reports

Definition	This indicator currently has two parts to its definition. 1. For women with a histological diagnosis of CIN 2, CIN 3, invasive SCC, AIS or invasive endocervical adenocarcinoma, the proportion of cytology slides originally reported within the preceding 42 months as negative, benign/reactive or unsatisfactory which on review are consistent with high-grade or worse category (Standard 522). 2. The ability of a laboratory to correctly identify a negative sample. All cases with a high-grade or invasive diagnosis on histology (CIN 2, CIN 3, invasive SCC, AIS or invasive endocervical adenocarcinoma) must have a review of any cytology slides that have been reported as negative, benign/reactive or unsatisfactory in the previous 42 months. Any abnormality identified as high-grade or worse on review of a previously reported negative or unsatisfactory cytology slide must be documented by the laboratory. Cumulative data must be forwarded to the National Screening Unit to help ensure the accuracy of submitted negative cytology reports.
Target	No more than 10% of cytology originally identified as negative is identified as consistent with a cytological interpretation of HS1, HS2, SC, AIS or AC1-AC5 (HSIL+) on review. Aim for less than 15%, but not more than 20% of cytology originally identified as negative is identified as consistent with a cytological interpretation of ASC-H, HS1, HS2, SC, AG4-AG5, AIS or AC1-AC5 (ASC-H +) on review.
Current Situation	This indicator is analysed annually to allow for the full year to be examined. Data for women with a histological diagnosis of high-grade/ invasive disease in the period 1 January – 31 December 2018 were provided in Report 50. Data for women with a histological diagnosis of high-grade/ invasive disease in the period 1 January – 31 December 2019 will be provided in Report 52.
Trends	-
Comments	-

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 the current monitoring 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). Results are presented both according to the detailed SNOMED category, and by broader histology diagnostic category. The mapping between SNOMED codes and diagnostic category is detailed in 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. A woman's age is defined as her age at the end of the monitoring period (i.e. a woman's age at 30 June 2019). Where trends are shown, a woman's age is her age at the end of the 6-month period in which the result was reported.
Target	None
Current Situation	12,102 histology samples were taken during the current monitoring period. 414 (3.4%) of these were insufficient for diagnosis. These samples were taken from 411 women, 65 (15.8%) of whom have a record of a subsequent sufficient histology test. The remaining 11,688 samples were taken from 10,470 women. Results for these women are reported on in Table 7 to Table 10. Table 7 shows histology results by SNOMED category, based on the most serious (highest ranked) result for each woman in the monitoring period. Table 8 to Table 11 show histology results by broader histology diagnostic category. 55.5% of women with histology tests had negative or benign histology results (Table 8). 18.9% of women with histology tests had high-grade squamous (CIN 2/3) histology results and 64 women (0.61%) had adenocarcinoma in situ. There were 58 women (0.55%) with invasive squamous cell carcinoma (ISCC) histology, 7 (0.07%) with microinvasive squamous cell carcinoma (SCC) histology and 40 (0.38%) with invasive adenocarcinoma; 10 (0.10%) were adenocarcinomas arising from the endocervix and 30 (0.29%) were adenocarcinomas not arising from the endocervix. There was one woman with adenosquamous carcinoma (<0.05%) as their most serious histology result. The age group with the largest number of women with histology samples was women aged 30-34 years (1,338 women; Table 9). Among women aged 20-69

years, the age group with the lowest rate of women with results which were negative or HPV only was women aged 25-29 years (37.9%; Table 10).

Histology samples were additionally analysed after excluding 1,975 women whose only histology result(s) originated from a hysterectomy (partial with cervical component or total hysterectomy) and were negative/ benign (non neoplastic; Table 11). This represented approximately 34.0% of the women with negative/ benign histology. This reduced the proportion with a histology result being negative/ benign from 55.5% to 45.2% of all women with a histology sample. If negative/ bening histology is removed from the hysterectomy samples, the new proportion of HSIL or worse histological abnormalities becomes: 22.7% for CIN2/3, 0.68% for ISCC, 0.08% for microinvasive SCC, 0.75% for adenocarcinoma in situ and <0.05% for adenosquamous carcinoma (Table 11).

The number of women with CIN 2/3 histology within the monitoring period was further explored as a rate per 1,000 women screened within the period (where a screening event included a cytology, histology or HPV event). There were 1,930 women with CIN 2/3 histology, corresponding to a rate of 10.1 women with CIN 2/3 histology per 1,000 women screened (age-standardised to WHO population aged 20-69 years[12]). Among women aged 20-69, the rate of women with CIN 2/3 histology samples taken per 1,000 women screened was highest in women aged 25-29 (17.9 per 1,000 women screened) and lowest in women aged 65-69 years (2.1 per 1,000 women screened; Figure 51). By ethnicity, Māori women had the highest rates per 1,000 women screened (12.3 per 1,000 women screened) and Asian women the lowest (6.3 per 1,000 women screened; age-standardised to WHO population aged 20-69 years; Table 54, Table 51, Figure 52).

Trends

The proportion of women with negative or benign histology (55.5%; or 45.2% if benign hysterectomy samples are excluded; Table 8, Table 11) is similar to the previous period (56.5%; 45.4% if benign hysterectomy samples are excluded) for all ages. The proportion of women aged 20-24 years with negative or benign histology decreased from 53.6% to 44.4% for all samples. The proportion of women with HSIL histology (18.9%) is higher than in the previous monitoring period (18.5%). There was a continued decrease in the percentage of HSIL histology in the 20-24 age group in this monitoring period compared to the previous report (Figure 51). This is consistent with the stability of the proportion of satisfactory cytology samples reported as HSIL in this age group (see Indicator 5.1 and Figure 43) and with an HPV vaccine effect.

Excluding women whose only histology result(s) originated from a hysterectomy and were negative/ benign (non neoplastic) the proportion of women with histological results of HSIL or worse were generally lower in the current monitoring period: adenocarcinoma arising from the endocervix is lower (0.20% to 0.12% in the current period), adenocarcinoma in situ is lower (0.95% in the previous period and 0.75% in the current period), the proportion decreased since the previous period for women with ISCC (0.84% in the previous period and 0.68% in the current period) however, invasive

adenocarcinoma not arising from the endocervix is higher in the current monitoring period (0.33% to 0.35% in the current period) and adenosqamous carcinoma is similar (<0.05%).

Trends in detection of CIN 2/3 per 1,000 women screened are shown by ethnicity in Figure 52 and by age in Figure 53. When looking at longer term changes, notable decreasing trends over time are seen in women aged 20-24 and 25-29, from the latter half of 2012 and early 2016, respectively (Figure 53).

Longer term trends by ethnicity are shown in Figure 54 for selected age groups (20-24 and 25-29), based on those ages which would include a proportion of women who have been vaccinated against HPV (cohorts offered vaccination would have been aged up to 29 in the current monitoring period). As for the results across all women aged 20-24 years, rates of CIN2/3 detection per 1,000 women screened increased in Māori and Asian women aged 20-24 years in the first half of 2019 compared to the latter half of 2018 (following a period of decreases in Māori women this age since around Jul-Dec 2012). In women aged 25-29 years, there appears to have been a decline in detection of CIN2/3 per 1,000 women screened between Jul-Dec 2013 and the current monitoring period for Māori women, between Jul-Dec 2014 and the previous monitoring period for Pacific women, and between Jul-Dec 2014 and the current monitoring period for European/ Other women. There is no clear trend for Asian women aged 25-29 years.

Comments

Histology samples include diagnostic biopsies, treatment biopsies, cervical polyps and the cervical tissue of total hysterectomy specimens. Histology samples may also include samples from non-cervical sites, where there is also a cervical component in the sample, for example endometrial samples. Also, pathologists are not always able to determine the site of origin particularly in small biopsies. “Adenocarcinoma not endocervical type” is the code that pathologists use for adenocarcinomas involving the cervix, but not primarily arising from the cervix. This means that the code category of endocervical adenocarcinoma of endocervical type should equate much more closely with data held on the Cancer Registry. In addition, it has been identified that the SNOMED codes that distinguish the two categories of adenocarcinoma have not been utilised consistently by some laboratories. Consequently, “invasive adenocarcinoma not endocervical type” may be over reported and “invasive adenocarcinoma endocervical type” under-reported in these laboratories. This is in the process of being corrected, and appears to have improved in the current monitoring period.

In recent reports (since Report 46), a supplementary analysis has been undertaken which excludes any samples which originated from a hysterectomy sample (partial with cervical component or total) which were negative/ benign. These supplementary results may more closely reflect the results of histology which were collected in relation to the NCSP.

Prior to Report 49, biannual monitoring reports examined trends in high grade abnormalities by looking at the rate of women with CIN 2/3 histology, as a

proportion of all women with histology; while trends in the more widely-used standard measure of CIN 2/3 histology per 1,000 women screened was included in Annual Reports (up to 2013). Since Report 49, this latter measure of examining trends in high-grade histological abnormalities has been brought across from the NCSP Annual Reports into the biannual monitoring reports. The previous measure has been included in this report in Figure 112, to allow comparison with earlier reports.

Apparent declines in CIN 2/3 histology per 1,000 women screened among women aged 20-24 and 25-29 years are consistent with results from other indicators within this report (see Indicator 5.1), and the anticipated effect of HPV vaccination. This is an important indicator that can be monitored regularly to look for the impact of HPV vaccination, and supplements proxy measures such as trends in genital warts, reported elsewhere.[13] Ecological measures such as this have played an important role in many countries in documenting the impact of HPV vaccination,[14] but have well-known limitations. Individual vaccination status is not available on the NCSP Register.

Table 7 - Histology results reporting by SNOMED category

SNOMED category	Women with that diagnosis	
	N	%
Negative/normal	3,277	31.3
Inflammation	618	5.9
Microglandular hyperplasia	5	<0.05
Squamous metaplasia	288	2.8
Polyp	1,310	12.5
Other*	315	3.0
Atypia	50	0.48
Benign glandular atypia	1	<0.05
HPV	644	6.2
Condyloma acuminatum	2	<0.05
CIN 1 (LSIL) or VAIN 1	1,728	16.5
Dysplasia/CIN NOS	25	0.24
Glandular dysplasia	1	-
CIN 2 (HSIL) or VAIN 2	792	7.6
HSIL not otherwise specified	54	0.52
CIN 3 (HSIL) or VAIN 3	1,138	10.9
Adenocarcinoma in situ	64	0.61
Microinvasive squamous cell carcinoma	7	0.07
Invasive squamous cell carcinoma	58	0.55
Adenocarcinoma endocervical type	10	0.10
Invasive adenocarcinoma (not endocervical type)	30	0.29
Adenosquamous carcinoma	1	<0.05
Undifferentiated carcinoma	3	<0.05
Sarcoma	1	<0.05
Carcinosarcoma	-	-
Choriocarcinoma	-	-
Miscellaneous primary tumour	3	<0.05
Metastatic tumour	33	0.32
Small cell carcinoma	-	-
Malignant tumour, small cell type	-	-
Melanoma	-	-
Other primary epithelial malignancy	12	0.11
Total	**10,470**	**100**

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

** Other morphologic abnormality, not dysplastic or malignant.*

Note: the SNOMED codes that distinguish the two categories of adenocarcinoma have not been utilised consistently by some laboratories. Consequently, "invasive adenocarcinoma not endocervical type" may be over reported and "invasive adenocarcinoma endocervical type" under-reported in these laboratories.

Table 8 - Histology results reporting by diagnostic category

Histology category	Women with that histology result	
	N	%
Negative/benign (non neoplastic)	5,814	55.5
HPV	646	6.2
CIN1	1,803	17.2
Glandular dysplasia	1	<0.05
CIN2	792	7.6
HSIL not otherwise specified	54	0.52
CIN3	1,138	10.9
Adenocarcinoma in situ	64	0.61
Microinvasive	7	0.07
Invasive squamous cell carcinoma	58	0.55
Adenocarcinoma endocervical type	10	0.10
Invasive adenocarcinoma (not endocervical type)	30	0.29
Adenosquamous carcinoma	1	<0.05
Other cancer	52	0.50
Total	**10,470**	**100.0**

Details of mapping between SNOMED category and diagnostic category are included in Appendix C. HSIL not otherwise specified = high-grade squamous intraepithelial lesion, not otherwise specified/ CIN 2/3 (SNOMED code M67017; see Appendix C). Note: the SNOMED codes that distinguish the two categories of adenocarcinoma have not been utilised consistently by some laboratories. Consequently, "invasive adenocarcinoma not endocervical type" may be over reported and "invasive adenocarcinoma endocervical type" under-reported in these laboratories.

Table 9 - Histology results by age – counts

Histology Diagnostic 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)	8	326	374	471	615	833	958	745	542	359	275	308	5,814
HPV	-	107	99	95	78	70	70	41	26	27	20	13	646
CIN1	7	354	321	293	209	179	162	109	76	43	32	18	1,803
Glandular dysplasia	-	-	-	-	1	-	-	-	-	-	-	-	1
CIN2	2	170	164	157	109	54	48	35	27	16	9	1	792
HSIL not otherwise specified	-	9	20	10	5	2	5	2	1	-	-	-	54
CIN3	1	126	257	276	160	102	72	50	44	26	16	8	1,138
Adenocarcinoma in situ	-	3	5	27	9	9	4	2	3	2	-	-	64
Microinvasive	-	-	1	2	1	1	1	-	-	-	1	-	7
Invasive squamous cell carcinoma	-	1	7	3	7	9	6	8	3	5	1	8	58
Adenocarcinoma endocervical type	-	-	-	1	-	1	2	2	2	1	1	-	10
Invasive adenocarcinoma (not endocervical type)	-	-	1	3	1	-	3	5	4	3	4	6	30
Adenosquamous carcinoma	-	-	-	-	-	1	-	-	-	-	-	-	1
Other cancer	-	-	-	-	3	2	4	5	9	3	6	20	52
Total	**18**	**1,096**	**1,249**	**1,338**	**1,198**	**1,263**	**1,335**	**1,004**	**737**	**485**	**365**	**382**	**10,470**

HSIL not otherwise specified = high-grade squamous intraepithelial lesion, not otherwise specified/ CIN 2/3 (SNOMED code M67017; see Appendix C).
Note: the SNOMED codes that distinguish the two categories of adenocarcinoma have not been utilised consistently by some laboratories. Consequently, "invasive adenocarcinoma not endocervical type" may be over reported and "invasive adenocarcinoma endocervical type" under-reported in these laboratories.

Table 10 - Histology results by age – percentages

Histology Diagnostic 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)	44.4	29.7	29.9	35.2	51.3	66.0	71.8	74.2	73.5	74.0	75.3	80.6
HPV	-	9.8	7.9	7.1	6.5	5.5	5.2	4.1	3.5	5.6	5.5	3.4
CIN1	38.9	32.3	25.7	21.9	17.4	14.2	12.1	10.9	10.3	8.9	8.8	4.7
Glandular dysplasia	-	-	-	-	0.08	-	-	-	-	-	-	-
CIN2	11.1	15.5	13.1	11.7	9.1	4.3	3.6	3.5	3.7	3.3	2.5	0.3
HSIL not otherwise specified	-	0.82	1.60	0.75	0.42	0.16	0.37	0.20	0.14	-	-	-
CIN3	5.6	11.5	20.6	20.6	13.4	8.1	5.4	5.0	6.0	5.4	4.4	2.1
Adenocarcinoma in situ	-	0.27	0.4	2.0	0.75	0.71	0.30	0.20	0.41	0.41	-	-
Microinvasive	-	-	0.08	0.15	0.08	0.08	0.07	-	-	-	0.3	-
Invasive squamous cell carcinoma	-	0.09	0.56	0.22	0.58	0.71	0.45	0.80	0.41	1.03	0.3	2.1
Adenocarcinoma endocervical type	-	-	0.08	0.22	0.08	-	0.22	0.50	0.54	0.62	1.1	1.57
Invasive adenocarcinoma (not endocervical type)	-	-	-	0.07	-	0.08	0.15	0.20	0.27	0.2	0.27	-
Adenosquamous carcinoma	-	-	-	-	-	0.08	-	-	-	-	-	-
Other cancer	-	-	-	-	0.25	0.16	0.30	0.50	1.22	0.62	1.6	5.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

HSIL not otherwise specified = high-grade squamous intraepithelial lesion, not otherwise specified/ CIN 2/3 (SNOMED code M67017; see Appendix C).
Note: the SNOMED codes that distinguish the two categories of adenocarcinoma have not been utilised consistently by some laboratories. Consequently, "invasive adenocarcinoma not endocervical type" may be over reported and "invasive adenocarcinoma endocervical type" under-reported in these laboratories.

Table 11 - Histology results reporting by diagnostic category excluding samples from partial* or total hysterectomy specimens and where the result was negative/ benign.

Histology category	Women with that histology result	
	N	%
Negative/benign (non neoplastic)	3,839	45.2
HPV	646	7.6
CIN1	1,803	21.2
Glandular dysplasia	1	<0.05
CIN 2	792	9.3
HSIL not otherwise specified	-	-
CIN 3	1,138	13.4
Adenocarcinoma in situ	64	0.75
Microinvasive	7	0.08
Invasive squamous cell carcinoma	58	0.68
Invasive adenocarcinoma (arising from the endocervix)	10	0.12
Invasive adenocarcinoma (not arising from the endocervix)	30	0.35
Adenosquamous carcinoma	1	<0.05
Other cancer	52	0.61
Total	**8,495**	**100.0**

**Partial with cervical component. Details of mapping between SNOMED category and diagnostic category are included in Appendix C.*

Results differ from those in Table 8 due to the exclusion of negative/ benign results from partial/ total hysterectomy samples.
HSIL not otherwise specified = high-grade squamous intraepithelial lesion, not otherwise specified/ CIN 2/3 (SNOMED code M67017; see Appendix C). Note: the SNOMED codes that distinguish the two categories of adenocarcinoma have not been utilised consistently by some laboratories. Consequently, "invasive adenocarcinoma not endocervical type" may be over reported and "invasive adenocarcinoma endocervical type" under-reported in these laboratories.

Figure 51 - Rate of women with CIN 2/3 per 1,000 women screened, by age and ethnicity for the period National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019)

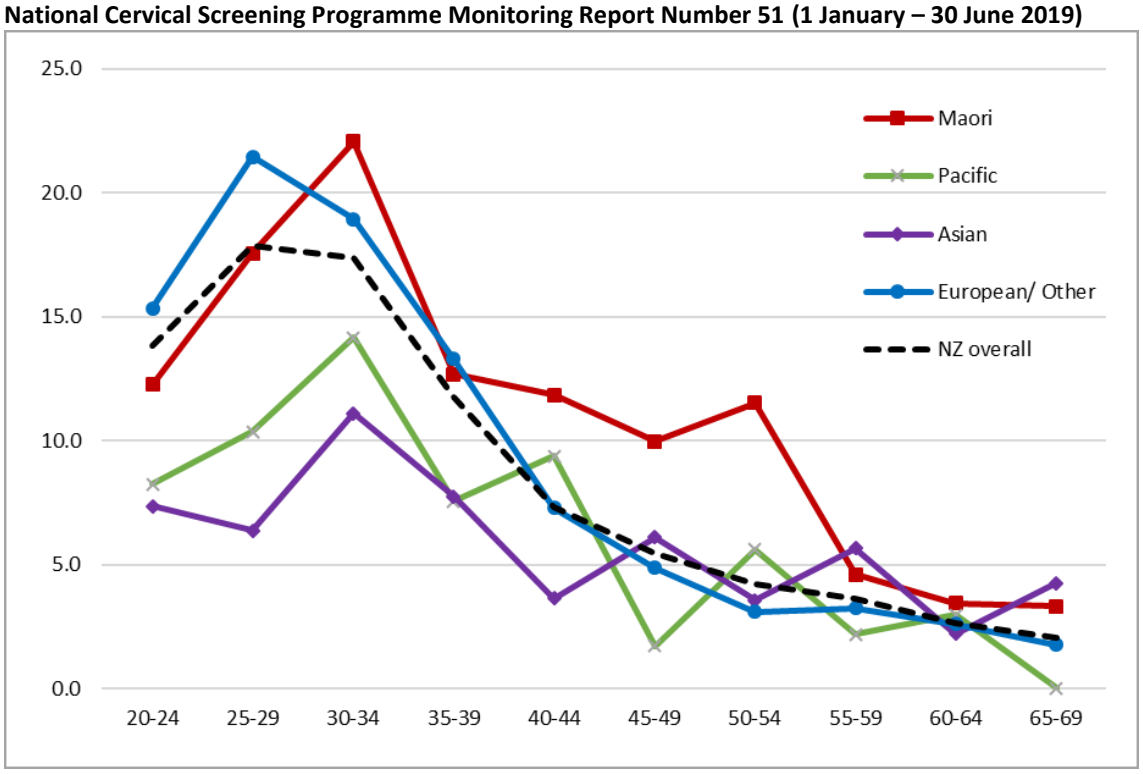
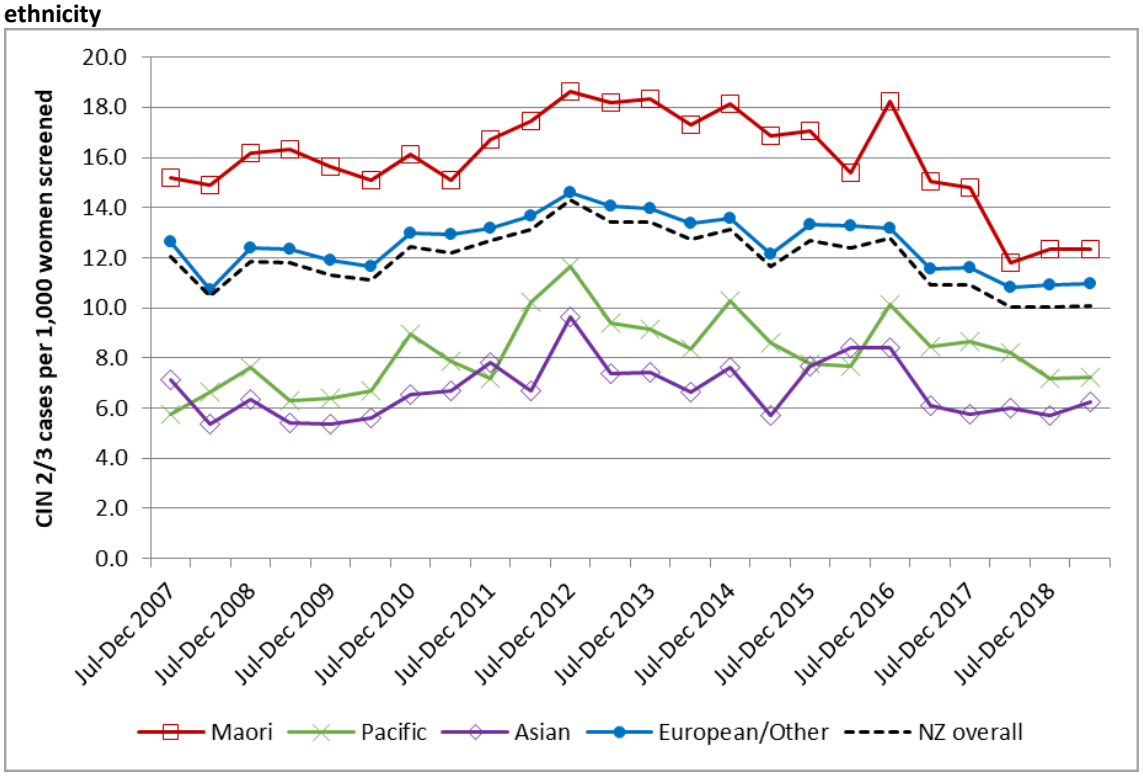


Figure 52 - Trends in the age standardised rate of women with CIN 2/3 per 1,000 women screened, by ethnicity



Age-standardised rate, standardised to the WHO population (ages 20-69 years)[12].

Figure 53 - Trends in the rate of women with CIN 2/3 per 1,000 women screened, by age

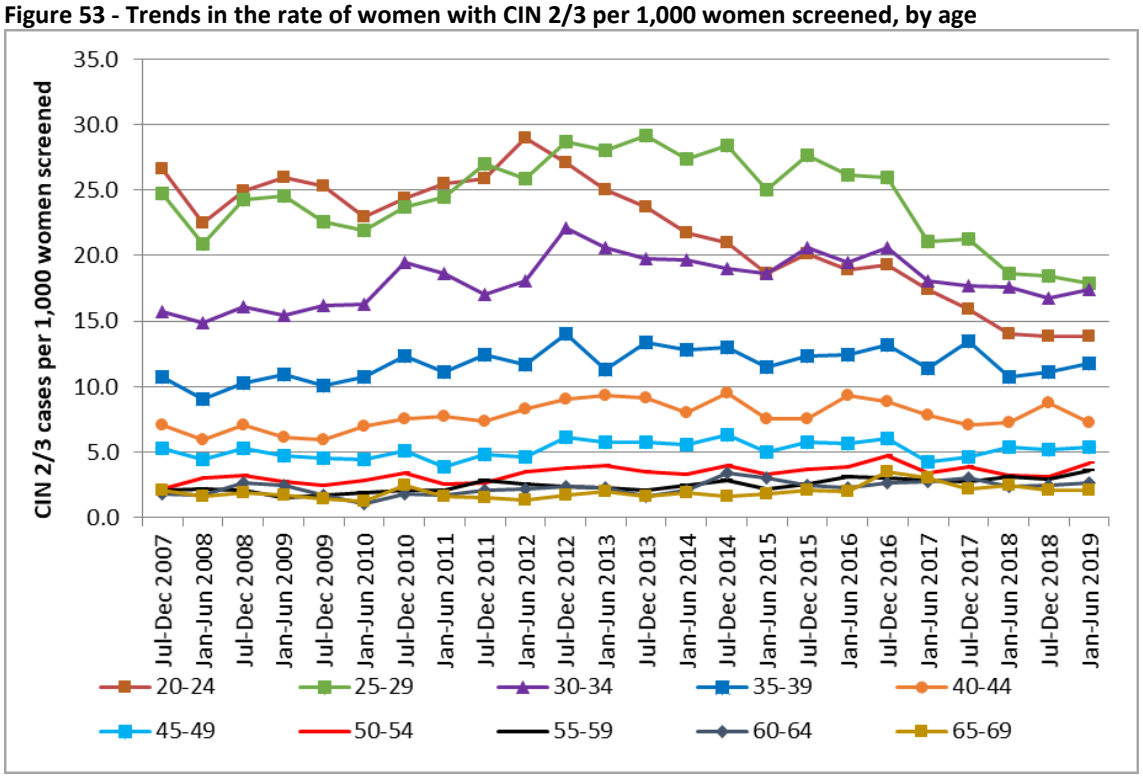
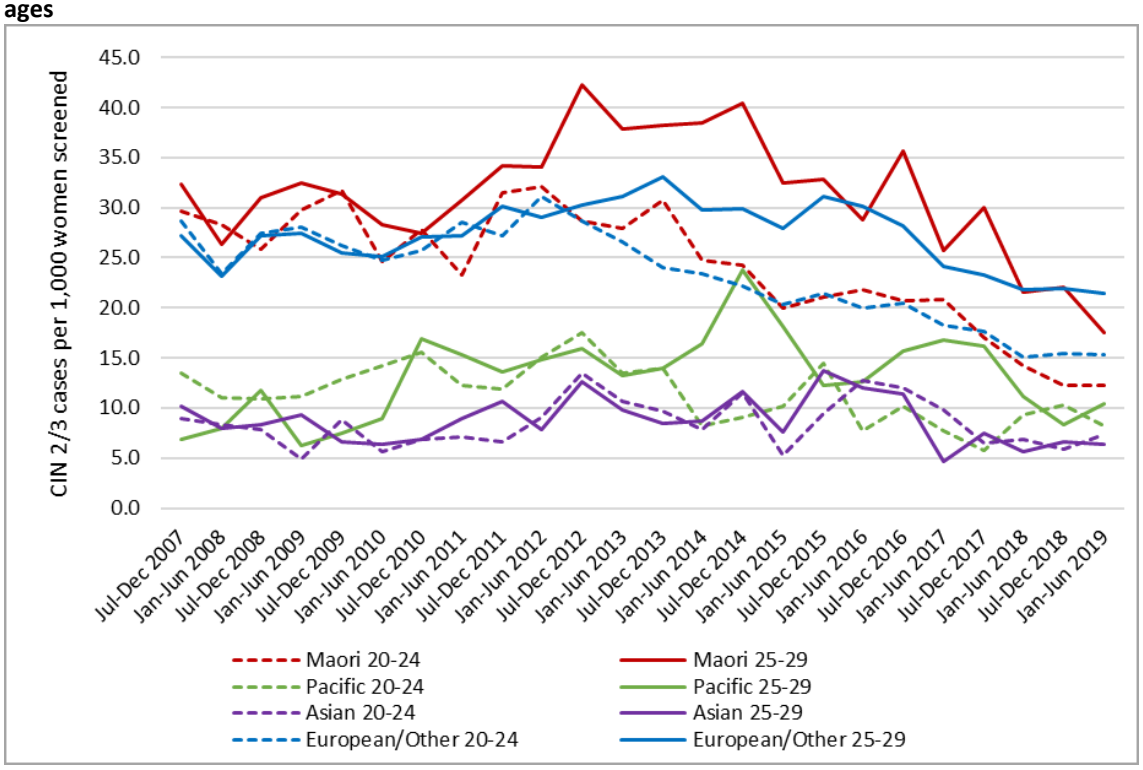


Figure 54 - Trends in the rate of women with CIN 2/3 per 1,000 women screened, by ethnicity and selected ages



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 sample taker (for cytology and hrHPV samples) or referring colposcopist (for histology samples). 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 sample takers within seven working days of receipt of the sample and 98% within 15 working days (Standard 513[15]). ***Histology*** Laboratories are required to report 90% of final histology results to referring colposcopists within ten working days of receipt of the sample and 98% of final histology results within 15 working days of receiving the sample (Standard 516[15]). ***Cytology with associated hrHPV testing*** Laboratories are required to report 98% of final cytology test results (including those associated with HPV test) within 15 working days of receiving the sample. Here, the turnaround time is measured specifically for cytology where HPV testing is performed for low-grade triage. Low-grade triage is defined further in Indicator 8; here it relates to cytology samples *received at the laboratory* in the monitoring period (as opposed to *samples collected* in the period, in Indicator 8). It is restricted to triage testing of women aged 30 years or more. These samples form a subset of those considered in the overall measure of turnaround time for cytology. Note that since reporting of cytology with adjunctive hrHPV testing requires that both test results be reported together (hrHPV test results must not be issued independently when adjunct to a cytology request), the turnaround time of the hrHPV test should not exceed that of the accompanying cytology, except where the HPV test was added after cytology was already reported.
Current Situation	***Cytology*** Six laboratories received 209,983 cytology samples during the current monitoring period. Overall, 95.8% of cytology samples were reported within seven working days, which is above the target of 90% (Table 57). Nationally, 98.8% were reported within 15 working days, which meets the target of 98%. Five of six laboratories met the target for 90% of cytology samples to be reported to sample takers in seven working days or less (LabPLUS reported 84.7% of cytology samples to sample takers within seven working days, (Figure 55, Table 57).

Four of the six laboratories also met the target of 98% of samples reported within 15 working days (Anatomical Pathology Services, Canterbury Health Laboratories, Pathlab, and Southern Community Labs Dunedin). The remaining laboratories (LabPLUS, Medlab Central Ltd), reported on 97.6% and 93.9% of reports within 15 days, respectively. (Figure 56, Table 57).

Histology

Fourteen laboratories received 12,094 histology samples in the current monitoring period. Overall 91.0% of samples were reported on within ten working days, which meets the target of 90%. Nationally 96.2% were reported on in 15 working days or less, which is below the target of 98% (Figure 58, Table 58). Nine of the fourteen laboratories met the target of 90% of final histology results to referring colposcopists within ten working days of receipt of the sample (Anatomical Pathology Services, Medlab Central Ltd, Memorial Hospital Hastings Lab, Middlemore Hospital Laboratory, Nelson Hospital Laboratory, North Shore Hospital Laboratory, Southern Community Labs Dunedin, Southern Community Labs Wellington, Taranaki Medlab; Figure 57). Five laboratories met the target of 98% of final histology results reported to the requestor within 15 working days of receiving the sample (Figure 58, Table 58). Ten of the remaining laboratories had reported on at least 95% of samples within 15 days (Figure 58, Table 58). The proportion of histology samples reported on within 15 days ranged from 86.1% (Pathlab) to 100.0% (Nelson Hospital Laboratory and Taranaki Medlab).

Low-grade cytology with associated HPV triage testing

Six laboratories received 3,065 cytology samples during the current monitoring period which were associated with HPV testing for the purpose of triage of low-grade abnormalities. Overall, 98.9% of these cytology samples were reported within 15 working days, which meets the target of 98%. The proportion of cytology samples with HPV triage tests reported within 15 days ranged from 96.4% (Medlab Central Ltd) to 100.0% (Anatomical Pathology Services; Figure 59, Table 59).

The target of 98% of tests reported within 15 working days was met by three of the six laboratories. Nationally, the proportion of cytology reported within 15 days for cytology associated with low-grade triage HPV testing (98.9%) was similar to the cytology reported overall (98.8%). At most laboratories, the proportion of cytology tests reported within 15 working days was similar regardless of whether there is an associated HPV triage test (Figure 59).

Trends

Cytology

The overall proportion of samples reported on within seven working days in the current report (95.8%) is lower than the proportion reported in the previous monitoring period (96.9%). Five laboratories met the target in this monitoring period which is lower than in the previous reporting period (all six laboratories). The proportion of samples reported on within 15 working days was lower than in the previous monitoring period (98.8% compared to 99.2% in the previous monitoring period). Four laboratories met the target of

reporting 98% of samples within 15 working days, which is two less than in the previous report.

Histology

The proportion of histology samples reported on within ten working days is lower than in the previous report (from 92.9% to 91.0%). Nine laboratories achieved the ten-working-days target in this monitoring period compared to eight in the last period. The proportion of histology samples reported on within 15 working days is lower than in the previous report (96.2%, compared to 97.2% in the previous report). Five laboratories met the target in this period compared to seven in the previous report. In the current period, ten of the fourteen laboratories had reported on at least 95% of samples within 15 days, the same as in the previous period.

Cytology with associated HPV triage testing

The proportion of cytology samples with an associated HPV triage test reported within 15 working days is lower than than in the previous report – from 99.2% to 98.9% in the current period.

Comments

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

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

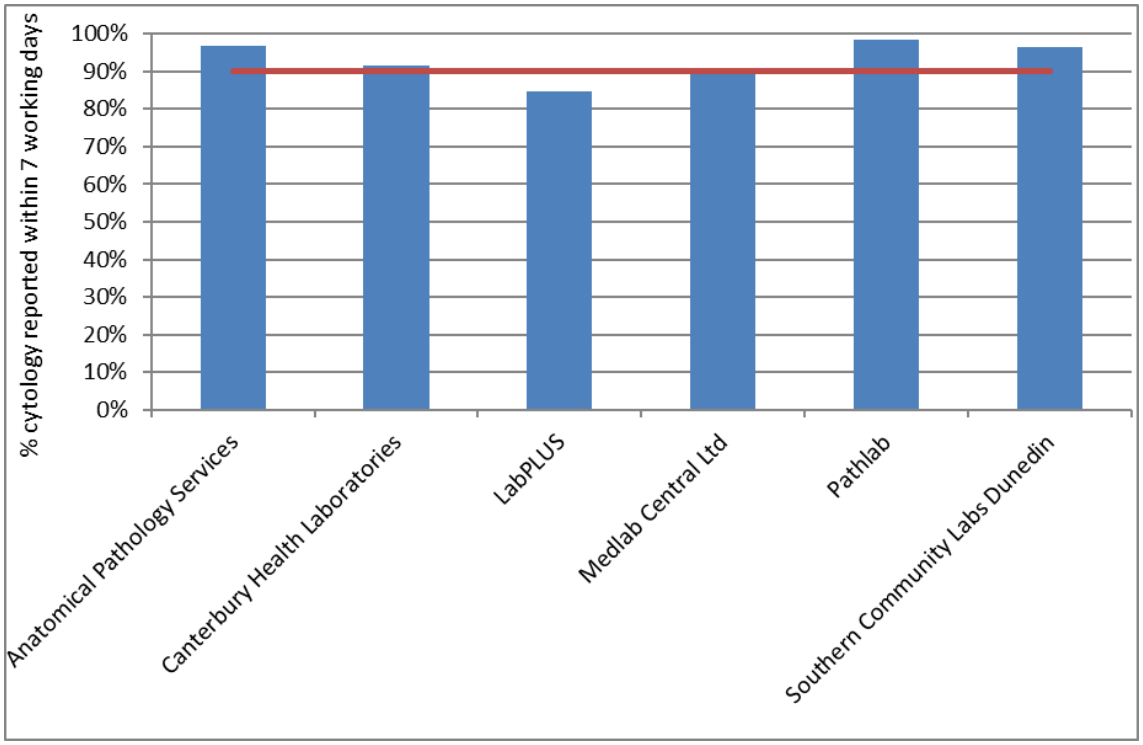
Turnaround time performance may be underestimated due to limitations in the report date recorded on the NCSP Register. When amended reports are sent to the NCSP Register, the report date in the NCSP Register is updated to reflect the date on which the report was re-transmitted after the amendments are made. The occurrence of these amended reports can therefore distort (and lengthen) turnaround time, as in these cases the report date recorded in the NCSP Register does not reflect the date on which results were first communicated to the sample taker or colposcopist. The extent of this cannot be directly determined from the NCSP Register, however audit results (which invariably find better turnaround time performance) suggest that it is a factor which should be considered in interpretation of these results.

There are some possible explanations why in some laboratories the turnaround time for cytology with associated HPV triage testing is longer than for other cytology. As the HPV triage test is performed in response to low-

grade cytology results in a subset of women (those aged 30 years or more without a recent cytological abnormality), the need for the HPV test is only apparent after the cytology result is available. Additionally, as HPV tests are generally performed in batches, laboratories with smaller HPV test volumes may take longer to accrue the required batch sizes, and therefore perform HPV tests less frequently.

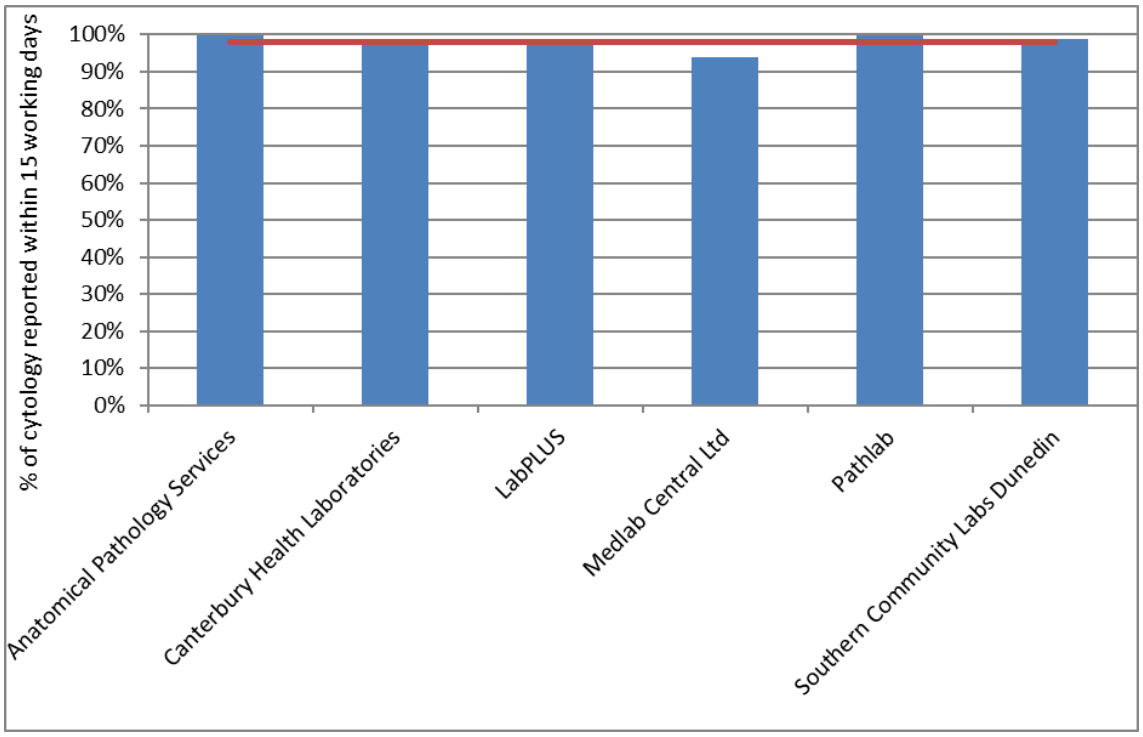
Caution must be taken when comparing percentages of reporting from this monitoring period to previous monitoring periods due to changes in the number of reporting laboratories. Differences in percentages from this and previous monitoring reports may be due to differences in caseloads.

Figure 55 - Proportion of cytology samples reported within seven working days by laboratory, Cancer Council New South Wales



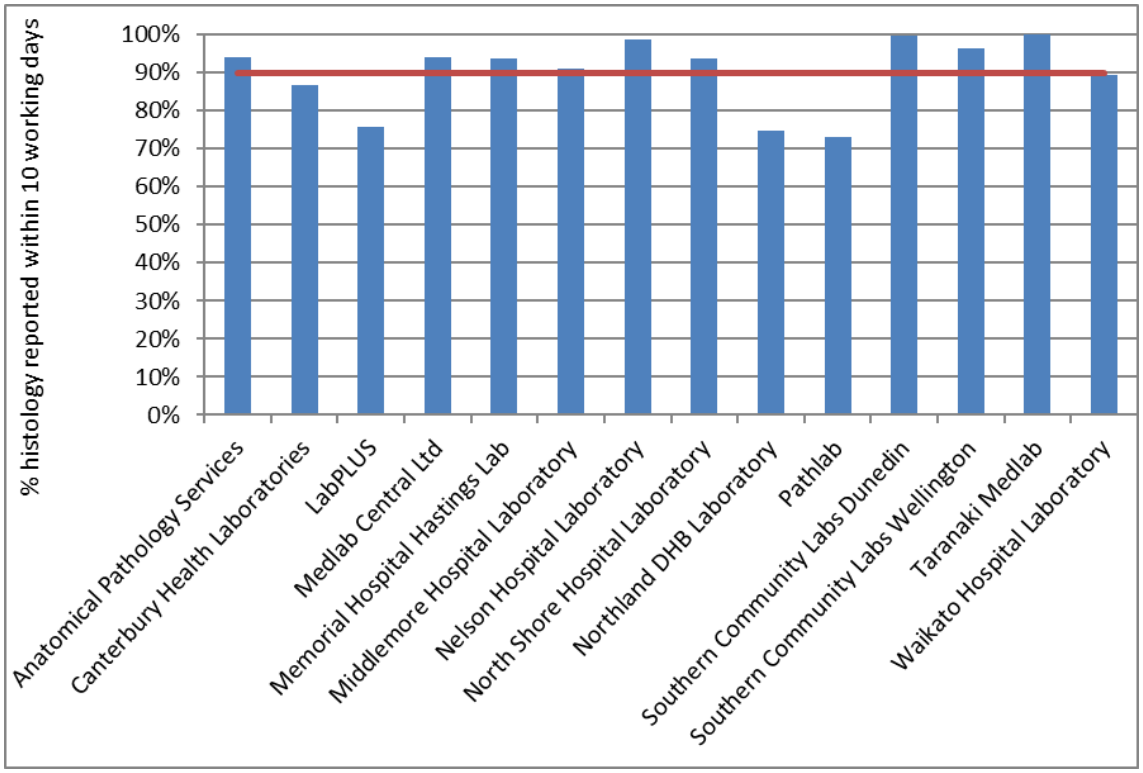
Target: 90% within seven working days (red line).

Figure 56 - Proportion of cytology samples reported within 15 working days by laboratory, Cancer Council New South Wales



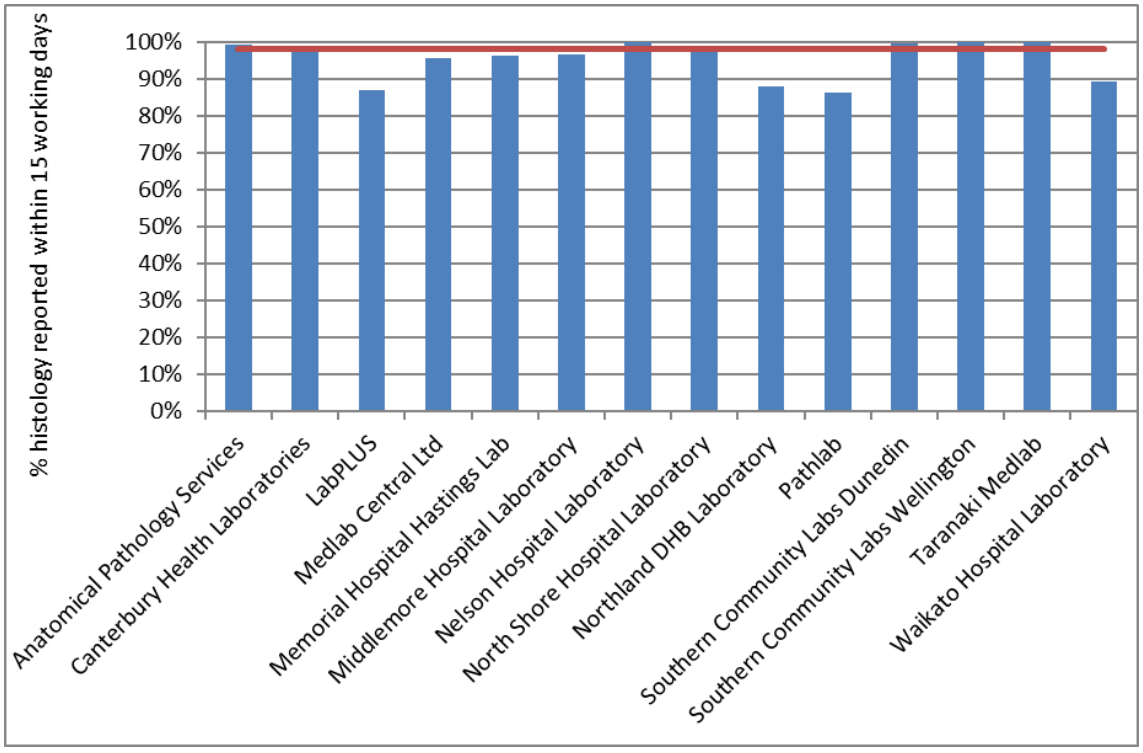
Target: 98% within 15 working days (red line).

Figure 57 - Proportion of histology samples reported within ten working days by laboratory, Cancer Council New South Wales



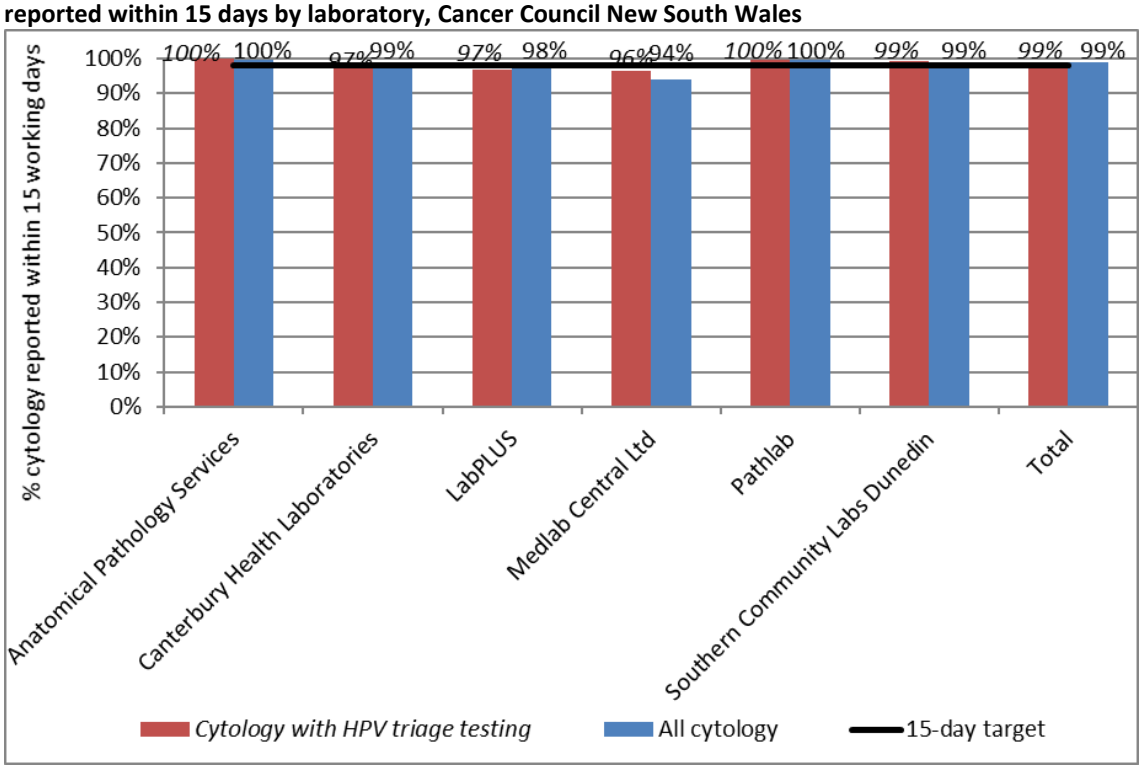
Target: 90% within ten working days (red line).

Figure 58 - Proportion of histology samples reported within 15 working days by laboratory, Cancer Council New South Wales



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

Figure 59 - Proportion of cytology samples with associated HPV triage testing and of all cytology samples reported within 15 days by laboratory, Cancer Council New South Wales



Target: 98% within 15 working days (black line).

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

Definition

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

Each woman with a high-grade cytology result, relating to a cytology sample taken in the six months preceding the current monitoring period (i.e. sample taken in the period of 1 July - 31 December 2018), is followed for any histology samples taken on or after the date of the cytology sample. The period of time between the cytology and histology reports relating to these samples is calculated. The proportion of women with a histology report up to and including 90 days after their cytology report is calculated. Histology reports which occur prior to the cytology report are included, as long as the histology sample was not taken before the cytology sample, to allow for differences in turnaround times between cytology and histology.

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

For the purposes of this indicator, the following Bethesda 2001 (New Zealand modified; TBS 2001 NZ modified)[16] interpretation codes are included as high-grade cytology: ASH, HS1, HS2, SC, AG1-AG5, AIS, AC1-AC5. Within this group, women are considered as having an urgent referral, due to suspicion of invasive disease if they have an interpretation code of HS2, SC, or AC1-AC5 and/or a recommendation code of R10 or R14.

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

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

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

A woman's age is defined as her age at the end of the current monitoring period (i.e. A woman's age at 30 June 2019).

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 3,011 high-grade cytology results relating to samples collected in the period 1 July - 31 December 2018; 1,124 of these cytology samples were collected at a colposcopy visit or the 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 1,887 cytology results, which related to 1,882 women. Histological follow-up for these 1,882 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, 1,529 women (81.2%) had a histology report within 90 days of their cytology report, and 1,653 (87.8%) had a histology report within 180 days. These were below the targets of 90% within 90 days and 99% within 180 days. The proportion of women with a histology report varied by DHB from 59.5% (Counties Manukau) to 95.2% (Whanganui) within 90 days of their cytology report, and from 76.2% (Wairarapa) to 100.0% (Lakes) within 180 days of their cytology report (Figure 60, Table 12). Four DHBs met the target for the proportion of women with histology within 90 days (Lakes, Nelson Marlborough, Waikato, Whanganui). However, only one DHB met the target for 180 days (Lakes). As shown in Table 12, some DHBs had a relatively small number of women with a high-grade cytology result recorded in the period (including South Canterbury and West Coast,with 17 and 9 women, respectively, with a high-grade result respectively), and this should be taken into account when interpreting these results. The proportion of women with a histology report also varied by age. Among women aged 20-69 years, the proportion varied from 65.8% (ages 55-59) to 89.5% (ages 35-39 years) within 90 days, with the target not met for any women in this age range. The target was not met in any age group for 180 days either and ranged from 75.0% (ages 65-69 years) to 95.0% (ages 35-39 years) within 180 days (Table 13). There was some variation by ethnicity in the proportion of women with histological follow-up, however the targets were not met by any groups of women. At 90 days, the proportion of women with histological follow-up ranged from 60.2% (Pacific women) to 83.4% (European/ Other women; Table 14). By 180 days, however, the difference had narrowed, and the proportion with histology reports ranged from 75.7% (Pacific women) to 89.5% (European/ Other women; Table 15). Further breakdown by DHB and ethnicity is also shown in Table 14 and Table 15, and breakdown by DHB and age is shown in Table 60 and Table 61.

Among women with an urgent referral, due to a suspicion of invasive disease, (N=66), a histology report was available within 90 days for 81.8% of women and within 180 days for 87.9% of women (Table 16). Among the remaining women where there was no suspicion of invasive disease (TBS 2001 NZ modified Bethesda codes ASH, HS1, AG1-AG5, AIS), 81.2% had a histology report available within 90 days and 87.8% within 180 days.

Women with no follow-up tests

When follow-up tests of any kind (colposcopy, histology, HPV test, or subsequent cytology test) were considered, there were 205 women (10.9%) who had no record of any subsequent follow-up within 90 days and 119 women (6.3%) who had no record of any subsequent follow-up within 180 days on the NCSP Register (Table 17).

This varied by DHB, from no women without follow-up (Whanganui) to 28.4% (Counties Manukau) of women without a record of follow-up of some kind by 90 days, from no women (Lakes, South Canterbury and Whanganui) to 22.2% (West Coast) of women without a record of follow-up of some kind by 180 days (Figure 61, Table 17). Among the DHBs where there remained women without a record of follow-up, at 90 days, the number remaining was generally small (ten or fewer women in 14 DHBs) and was a maximum of 54 women (28.4%) in Counties Manukau. At 180 days, the number remaining without a record of follow-up was ten or fewer in 17 DHBs, with a maximum of 27 women (14.2%%) without a record of follow-up also in Counties Manukau.

The proportion of women who had no record of any subsequent follow-up also varied by ethnicity, from 8.9% (European/ Other women) to 28.2% (Pacific women) at 90 days and from 5.0% (European/ Other women) to 16.5% (Pacific women) at 180 days (Table 18, Figure 62).

Among women with an urgent referral, due to a suspicion of invasive disease, a follow-up test of some kind was available within 90 days for 89.4% of women and 92.4% within 180 days (Table 16). At 180 days, there remained five women (7.6%) for whom no follow-up tests were recorded. Among women where there was no suspicion of invasive disease, 89.1% had a follow-up test report available within 90 days and 93.7% within 180 days (Table 16). At 180 days, there remained 114 women (6.3%) for whom no follow-up tests were recorded.

Trends

Histological follow-up

The proportion of women with a histology report within 90 days has decreased since the previous monitoring period (from 83.8% to 81.2% in the current period). The proportion of women with a histology report within 180 days has decreased (from 88.5% in the previous period to 87.8% in the current period).

Whilst the proportion of women with histological follow-up at 90 days and 180 days has decreased overall follow-up still varies for individual DHBs (Figure 63, Figure 64). In seven DHBs the proportion of women with histological follow-up

has is higher at 90 days (Lakes, Nelson Marlborough, South Canterbury, Tairawhiti, Waikato, Waitemata and Whanganui) and in nine DHBs at 180 days (Auckland, Hutt Valley, Lakes, Nelson Marlborough, South Canterbury, Tairawhiti, Waikato, Waitemata and Whanganui).

The proportion of women with follow-up histology at 90 days in the current monitoring period is higher than in the previous report for Māori women (from 78.2% to 82.1%), but decreased for European/ Other women (from 86.1% to 83.4%), Pacific women (from 74.0% to 60.2%) and Asian women (from 82.7% to 77.3%) with follow-up histology within 90 days over the last two monitoring periods. The proportion of women with follow-up histology at 180 days has is higher for Māori women (from 83.4% to 87.3%), decreased for European/ Other women (from 90.1% to 89.5%), Pacific women (from 81.3% to 75.7%) and Asian women (from 89.6% to 84.4%). The proportions of women with follow-up histology are quite variable within individual DHBs when broken down by DHB and ethnicity, as the number of women with high-grade cytology generally becomes comparatively small when broken down in those categories (except in some cases such as for European/ Other women, and Māori women in a few DHBs). Trend charts for ethnicity can be seen in Figure 65 and Figure 66.

As in previous reports, the proportion of women with histological follow-up varied substantially by age, and is generally lower in women aged 50 years or more, than in women younger than 50 years. Increases in the proportion of women with histological follow-up were seen in four of the ten age groups at 90 days follow-up, and in six age groups at 180 days. Decreases were seen in the remaining five-year age groups (20-24, 25-29, 30-34, 40-44, 50-54 and 55-59 years) at 90 days, and 180 days (25-29, 40-44, 50-54 and 55-59 years).

Women with no follow-up tests

The proportion of women with no record of a follow-up test is higher when compared to the previous report at 90 days (from 8.5% to 10.9% in the current report), and is higher at 180 days (from 5.5% to 6.3%).

Trends by DHB were complex, but the proportion of women with no follow-up test recorded at 180 days reduced in six of the twenty DHBs, and the reductions were greatest in Hutt Valley and Waikato. Increases were observed in thirteen DHBs and were largest in West Coast and Wairarapa.

In the current monitoring period, the proportion of women for whom there was no follow-up test recorded is higher for Pacific women at 90 days (from 19.8% to 28.2%) and at 180 days (from 12.5% to 16.5%). For Māori women, there was a decrease from 13.0% to 11.7% at 90 days, and a decrease at 180 days from 8.8% to 7.2%. For Asian women, there was an increase from 8.7% to 13.3% at 90 days, and an increase at 180 days from 4.6% to 8.1%. For European/ Other women, there was an increase from 6.6% to 8.9% at 90 days, and an increase was observed at 180 days from 4.4% to 5.0%.

Comments

The proportion of women with a follow-up test of any kind provides useful additional information. While 18.8% of women with high-grade cytology reports had no record of a histology report within 90 days, the proportion without a record of a follow-up test of any kind was much lower (10.9%). The same was also true at 180 days, where 12.2% of women with high-grade cytology reports had no record of a histology report within 180 days, but the proportion without a record of a follow-up test of any kind was much lower (6.3%). Consistent with previous monitoring reports, many of the women with no follow-up histology recorded do have a record of some follow-up test. This provides reassurance that many women without histology have not been lost to follow-up.

The measure of whether or not there has been a follow-up test of any sort considers cytology, colposcopy, histology and HPV tests. Therefore, changes in women with a follow-up test of any kind may also reflect changes in the completeness of reporting colposcopy data to the NCSP Register. This is expected to improve now that the time period of the data used to report on this indicator is after all DHBs began electronically reporting 2013 Colposcopy Standards data to the Register for the full reporting period.

Note that some women presenting with high grade glandular cytology or cancer may be referred directly to gynae-oncology and therefore not be recorded on the NCSP Register. Analyses undertaken for the related performance measure, Indicator 7.1, show that women with abnormal glandular results consistent with adenocarcinoma (Bethesda codes AC1-5) were less likely to have a colposcopy referral recorded than other women with cytological suspicion of invasive disease (Table 65). While these represent a small number of women in absolute terms, they are potentially a noticeable proportion of the women with an urgent referral (for example, the six women with no follow-up within 180 days). This may have contributed to the lower rates of follow-up recorded for women with an urgent referral, due to a suspicion of invasive disease.

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

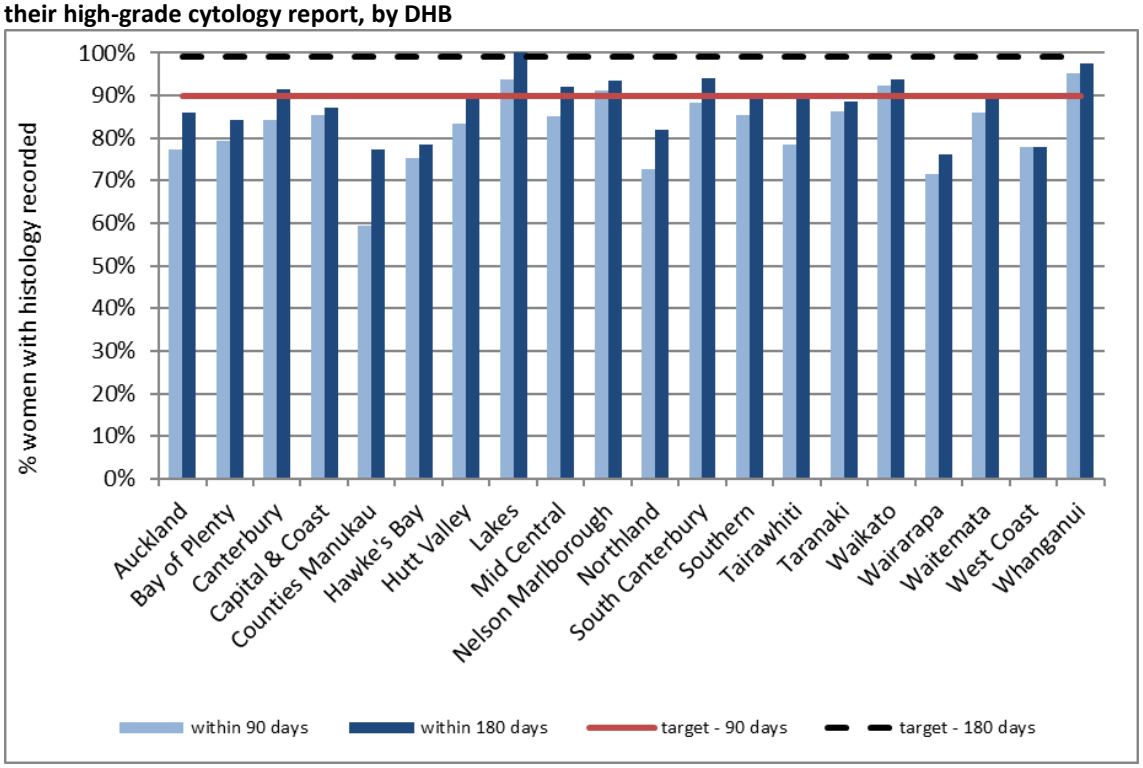
The risk level for women with no recorded biopsy is difficult to ascertain because a lack of histology can be due to a number of reasons, including:

i) examined but no biopsy taken,
ii) did not attend (DNA) or refusal to attend

iii) wait time issue
iv) died or left New Zealand

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

Figure 60 - Proportion of women (ages 20-69) 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 12 - Women with a histology report within 90 and 180 days of a high-grade cytology report, by DHB

DHB	High-grade cytology	Follow-up histology within 90 days		Follow-up histology within 180 days	
	N	N	%	N	%
Auckland	250	193	77.2	215	86.0
Bay of Plenty	82	65	79.3	69	84.1
Canterbury	208	175	84.1	190	91.3
Capital & Coast	102	87	85.3	89	87.3
Counties Manukau	190	113	59.5	147	77.4
Hawke's Bay	65	49	75.4	51	78.5
Hutt Valley	78	65	83.3	70	89.7
Lakes	32	30	93.8	32	100.0
Mid Central	100	85	85.0	92	92.0
Nelson Marlborough	46	42	91.3	43	93.5
Northland	55	40	72.7	45	81.8
South Canterbury	17	15	88.2	16	94.1
Southern	129	110	85.3	116	89.9
Tairawhiti	28	22	78.6	25	89.3
Taranaki	44	38	86.4	39	88.6
Waikato	128	118	92.2	120	93.8
Wairarapa	21	15	71.4	16	76.2
Waitemata	256	220	85.9	230	89.8
West Coast	9	7	77.8	7	77.8
Whanganui	42	40	95.2	41	97.6
Total	**1,882**	**1,529**	**81.2**	**1,653**	**87.8**

Table 13 - Women with a histology report within 90 and 180 days of a high-grade cytology report, by age

Age (years)	High-grade cytology	Follow-Up histology Within 90 days		Follow-up histology Within 180 days	
	N	N	%	N	%
<20	2	2	100.0	2	100.0
20-24	253	213	84.2	230	90.9
25-29	355	295	83.1	320	90.1
30-34	330	285	86.4	302	91.5
35-39	200	179	89.5	190	95.0
40-44	177	152	85.9	159	89.8
45-49	134	113	84.3	123	91.8
50-54	124	87	70.2	99	79.8
55-59	120	79	65.8	91	75.8
60-64	94	66	70.2	73	77.7
65-69	56	38	67.9	42	75.0
70+	37	20	54.1	22	59.5
Total	**1,882**	**1,529**	**81.2**	**1,653**	**87.8**

Table 14 - Women with a histology report within 90 days of a high-grade cytology report, by DHB and ethnicity

DHB	Māori		Pacific		Asian		European/ Other	
	N	%	N	%	N	%	N	%
Auckland	20	80.0	8	40.0	44	81.5	121	80.1
Bay of Plenty	15	83.3	1	33.3	1	50.0	48	81.4
Canterbury	17	94.4	0	0.0	10	100.0	148	83.6
Capital & Coast	5	100.0	4	100.0	9	69.2	69	86.3
Counties Manukau	13	50.0	25	58.1	26	55.3	49	66.2
Hawke's Bay	15	78.9	-	-	1	50.0	33	75.0
Hutt Valley	17	94.4	2	100.0	4	80.0	42	79.2
Lakes	10	83.3	1	100.0	1	100.0	18	100.0
Mid Central	20	83.3	3	100.0	5	100.0	57	83.8
Nelson Marlborough	3	100.0	-	-	4	100.0	35	89.7
Northland	13	72.2	1	50.0	1	33.3	25	78.1
South Canterbury	1	100.0	-	-	-	-	14	87.5
Southern	10	76.9	2	66.7	6	66.7	92	88.5
Tairawhiti	15	93.8	-	-	-	-	7	58.3
Taranaki	8	100.0	-	-	-	-	30	83.3
Waikato	24	85.7	2	100.0	10	90.9	82	94.3
Wairarapa	4	80.0	-	-	-	-	11	68.8
Waitemata	18	85.7	13	76.5	41	91.1	148	85.5
West Coast	1	50.0	-	-	-	-	6	85.7
Whanganui	10	90.9	-	-	-	-	30	96.8
Total	**239**	**82.1**	**62**	**60.2**	**163**	**77.3**	**1,065**	**83.4**

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

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

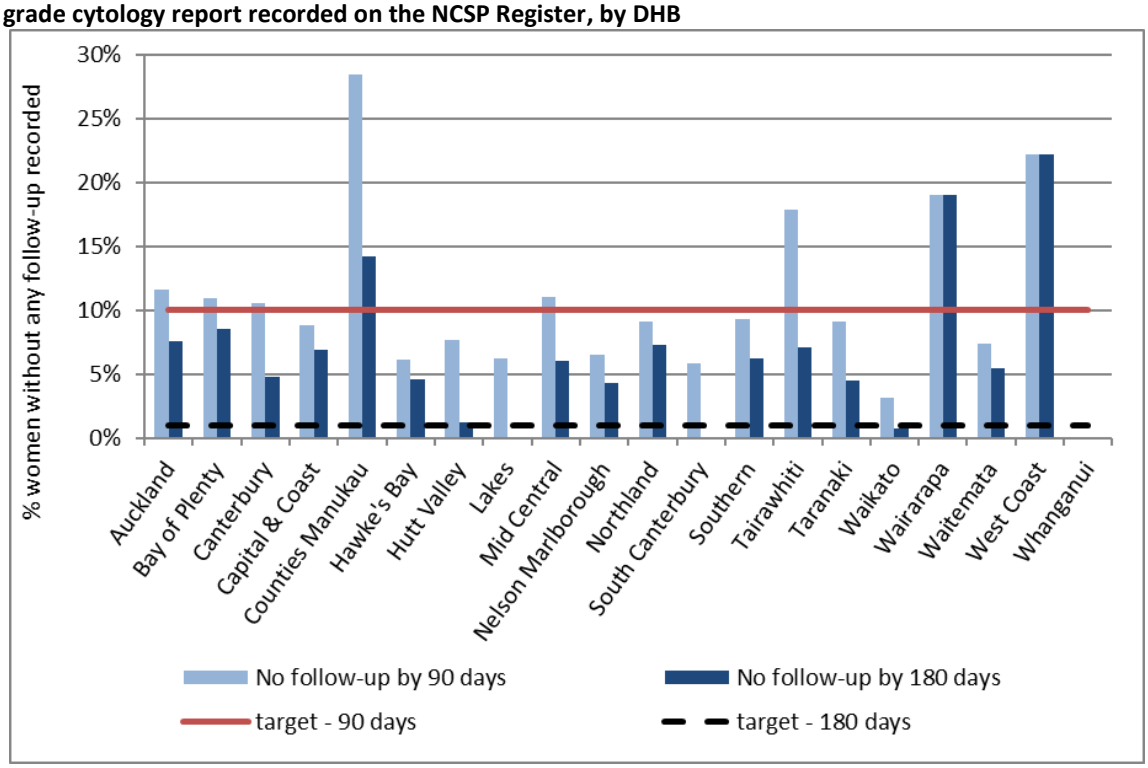
DHB	Māori		Pacific		Asian		European/ Other	
	N	%	N	%	N	%	N	%
Auckland	20	80.0	14	70.0	48	88.9	133	88.1
Bay of Plenty	16	88.9	1	33.3	1	50.0	51	86.4
Canterbury	17	94.4	1	33.3	10	100.0	162	91.5
Capital & Coast	5	100.0	4	100.0	9	69.2	71	88.8
Counties Manukau	17	65.4	33	76.7	34	72.3	63	85.1
Hawke's Bay	16	84.2	-	-	1	50.0	34	77.3
Hutt Valley	17	94.4	2	100.0	5	100.0	46	86.8
Lakes	12	100.0	1	100.0	1	100.0	18	100.0
Mid Central	21	87.5	3	100.0	5	100.0	63	92.6
Nelson Marlborough	3	100.0	-	-	4	100.0	36	92.3
Northland	14	77.8	2	100.0	2	66.7	27	84.4
South Canterbury	1	100.0	-	-	-	-	15	93.8
Southern	12	92.3	2	66.7	6	66.7	96	92.3
Tairawhiti	16	100.0	-	-	-	-	9	75.0
Taranaki	8	100.0	-	-	-	-	31	86.1
Waikato	24	85.7	2	100.0	11	100.0	83	95.4
Wairarapa	4	80.0	-	-	-	-	12	75.0
Waitemata	19	90.5	13	76.5	41	91.1	157	90.8
West Coast	1	50.0	-	-	-	-	6	85.7
Whanganui	11	100.0	-	-	-	-	30	96.8
Total	**254**	**87.3**	**78**	**75.7**	**178**	**84.4**	**1143**	**89.5**

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

Table 16 - Women with high-grade cytology who have follow-up within 90 and 180 days recorded on the NCSP Register, by urgency of referral and type of follow-up

	Urgent referral (HS2, SC, AC1-AC5)		No suspicion of invasion (ASH, HS1, AG1-AG5, AIS)	
	N	%	N	%
Follow-up within 90 days				
- histology	54	81.8	1,475	81.2
- any follow-up	59	89.4	1,618	89.1
- no follow-up	7	10.6	198	10.9
Follow-up within 180 days				
- histology	58	87.9	1,595	87.8
- any follow-up	61	92.4	1,702	93.7
- no follow-up	5	7.6	114	6.3

Figure 61 - Proportion of women without any follow-up test within 90 days and within 180 days of a high-grade cytology report recorded on the NCSP Register, by DHB



There were no women without follow-up recorded within 180 days in Lakes, South Canterbury and Whanganui.

Figure 62 - Proportion of women without any follow-up test within 90 days and within 180 days of a high-grade cytology report recorded on the NCSP Register, by ethnicity

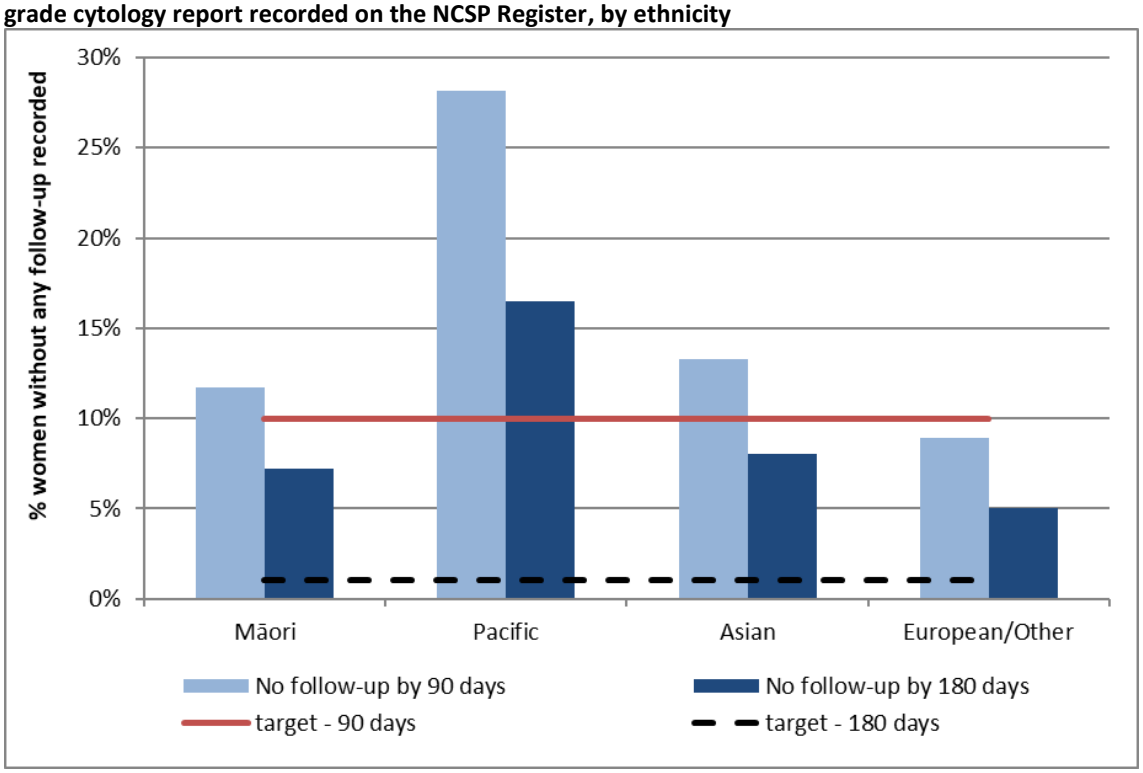


Table 17 - Women without any follow-up test within 90 and 180 days of a high-grade cytology report recorded on the NCSP Register, by DHB

DHB	High-grade cytology	Without a follow-up test by 90 days		Without a follow-up test by 180 days	
	N	N	%	N	%
Auckland	250	29	11.6	19	7.6
Bay of Plenty	82	9	11.0	7	8.5
Canterbury	208	22	10.6	10	4.8
Capital & Coast	102	9	8.8	7	6.9
Counties Manukau	190	54	28.4	27	14.2
Hawke's Bay	65	4	6.2	3	4.6
Hutt Valley	78	6	7.7	1	1.3
Lakes	32	2	6.3	-	0.0
Mid Central	100	11	11.0	6	6.0
Nelson Marlborough	46	3	6.5	2	4.3
Northland	55	5	9.1	4	7.3
South Canterbury	17	1	5.9	-	0.0
Southern	129	12	9.3	8	6.2
Tairawhiti	28	5	17.9	2	7.1
Taranaki	44	4	9.1	2	4.5
Waikato	128	4	3.1	1	0.8
Wairarapa	21	4	19.0	4	19.0
Waitemata	256	19	7.4	14	5.5
West Coast	9	2	22.2	2	22.2
Whanganui	42	-	0.0	-	0.0
Unspecified	-	-		-	
Total	**1,882**	**205**	**10.9**	**119**	**6.3**

Table 18 - Women without any follow-up test within 180 days of a high-grade cytology report recorded on the NCSP Register, by ethnicity

Ethnicity	High-grade cytology	Without follow-up by 90 days		Without follow-up by 180 days	
	N	N	%	N	%
Māori	291	34	11.7	21	7.2
Pacific	103	29	28.2	17	16.5
Asian	211	28	13.3	17	8.1
European/ Other	1,277	114	8.9	64	5.0
Total	**1,882**	**205**	**10.9**	**119**	**6.3**

Figure 63 – Trends in the proportion of women with high-grade cytology who have follow-up within 90 days recorded on the NCSP Register, by DHB

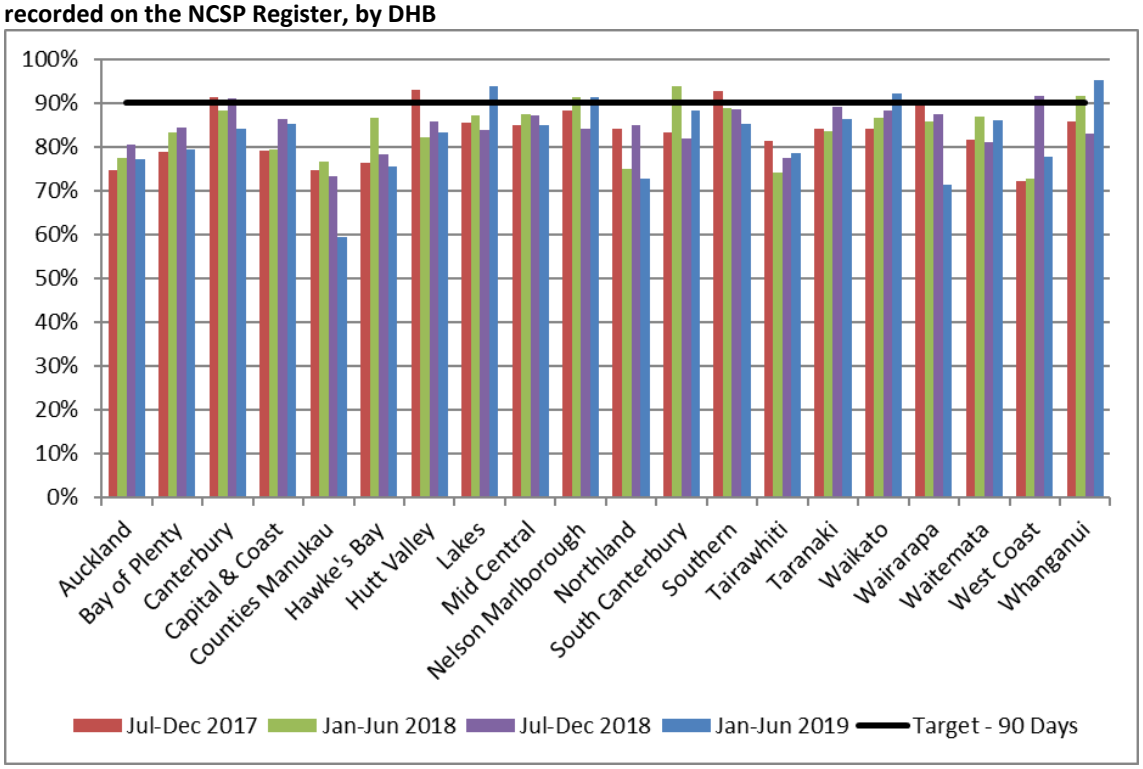


Figure 64 – Trends in the proportion of women with high-grade cytology who have follow-up within 180 days recorded on the NCSP Register, by DHB

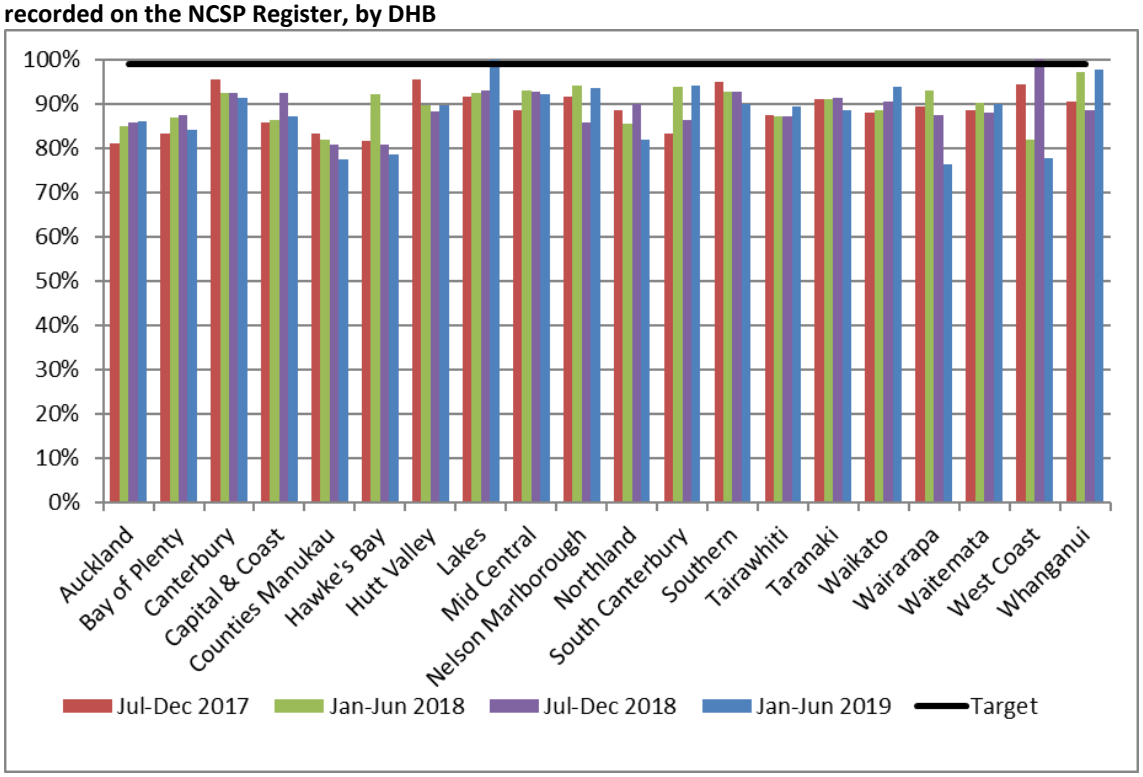


Figure 65 - Trends in the proportion of women with high-grade cytology who have follow-up within 90 days recorded on the NCSP Register, by ethnicity

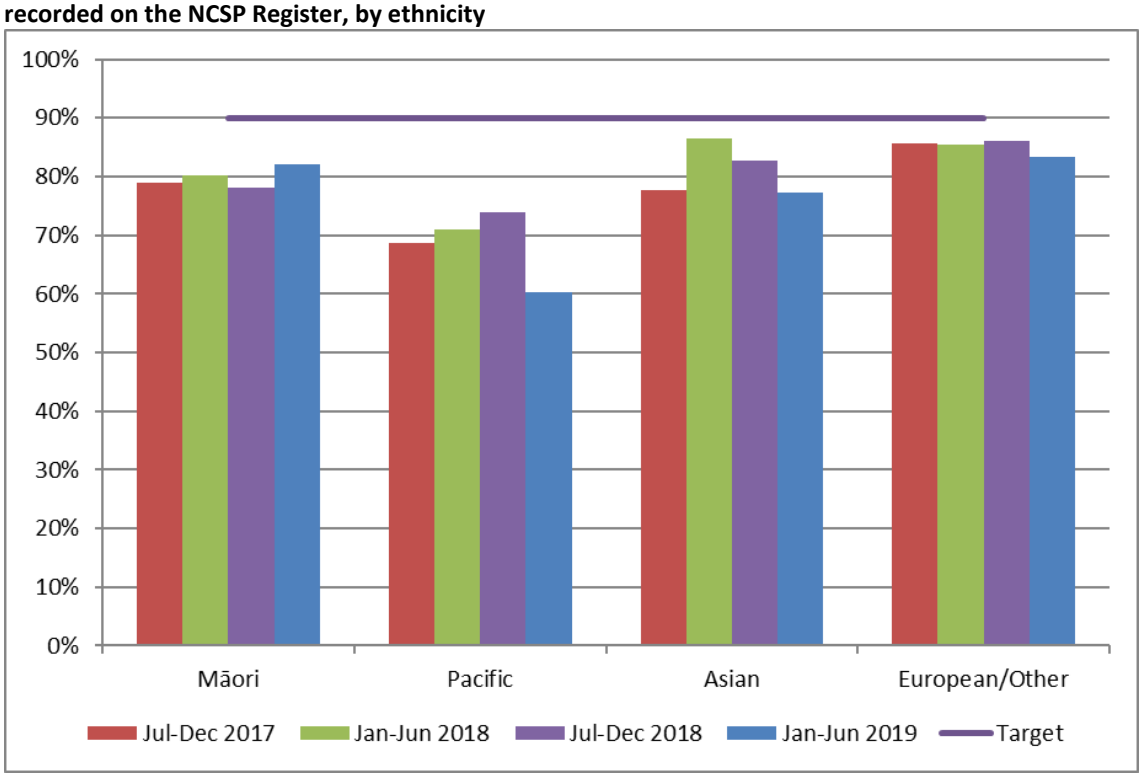
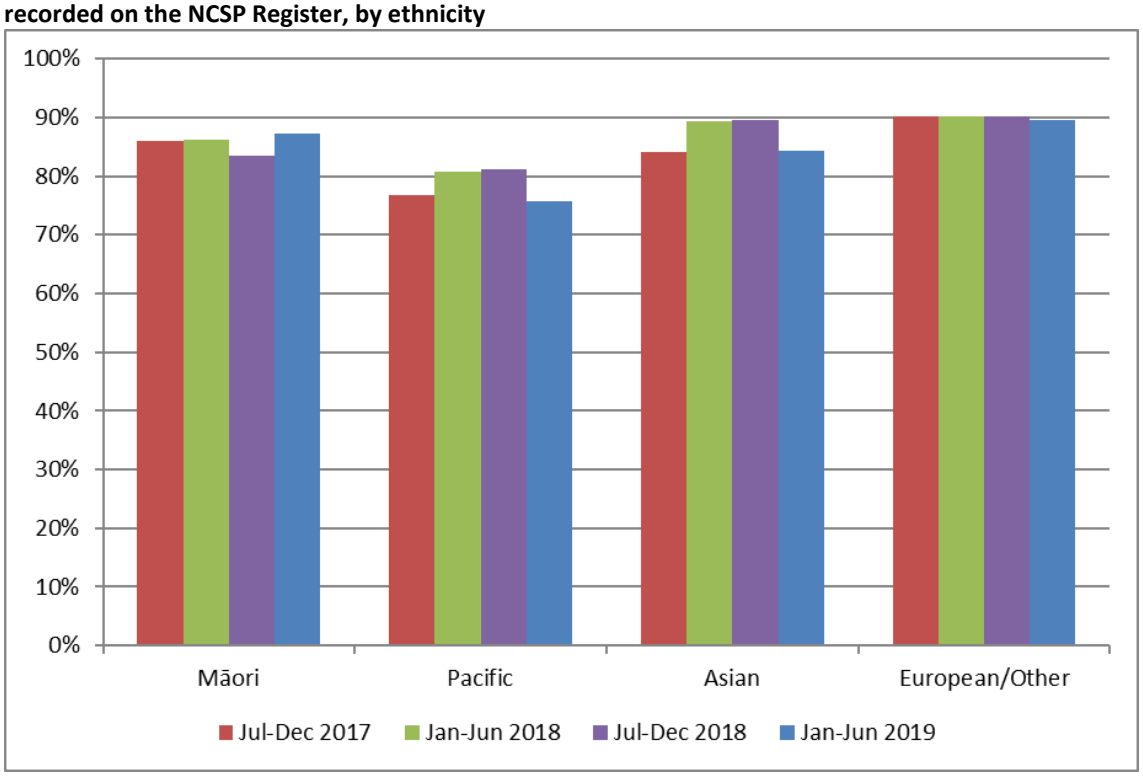


Figure 66 - Trends in the proportion of women with high-grade cytology who have follow-up within 180 days recorded on the NCSP Register, by ethnicity



Indicator 7 – Colposcopy Indicators

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

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

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

7.3. Adequacy of documenting colposcopy assessment (Standard 603)

7.4. Timeliness of treatment (Standard 605)

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

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

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

Some of these indicators (7.6 and 7.7) have not been developed. It is envisioned that all indicators will be reviewed as part of the planned transition to primary HPV screening, and so these may be included in future monitoring reports after the programme transitions.

Colposcopy data has been recorded on the NCSP Register for a relatively short time, compared to cytology and histology data. There is incomplete reporting of colposcopy data to the NCSP Register, and therefore results for these indicators may need to be interpreted with some caution. However, it was and is felt that colposcopy indicators were an important quality measure of the NCSP, and reporting on them should not be unduly delayed. This was also a recommendation of the 2011 Parliamentary Review into the NCSP.[17] It is anticipated that completeness of colposcopy data on the NCSP Register will continue to improve over time. The 2015 Parliamentary Review again emphasised that achieving complete recording of colposcopy data on the NCSP Register is essential. [18]

Additionally, not all DHBs were yet reporting the full data required by Colposcopy Policies and Standards 2013 for the full -time periods reported on in this report (as all indicators in this section other than 7.3 can report on colposcopy which occurred earlier than the current monitoring period); the last three DHBs went live with the 2013 Standards in August 2016. This means that in many cases performance indicators are not directly compared to the targets or have had to rely on proxy data to measure performance. Where relevant, this is described in the sections relating to the individual indicators.

Indicator 7.1 – Timeliness of colposcopic assessment – high-grade cytology

Definition

This indicator measures performance against Standard 602. It relates to the proportion of women seen at colposcopy within the recommended time period, from the time of the receipt of a referral from the sample taker for a high-grade cytology.

As in Indicator 6, high-grade cytology results are included if the cytology sample was collected in the six months preceding the current monitoring period (i.e. 1 July - 31 December 2018). High-grade cytology is defined as that associated with any of the TBS codes ASH, HS1, HS2, SC, AG1-AG5, AIS, AC1-AC5. Where a woman has more than one high-grade cytology result in the relevant time period, the result from the first high-grade cytology sample collected is used. Timeliness of colposcopic assessment is calculated separately for those women with clinical suspicion of invasive carcinoma, or a suspicion of invasive carcinoma (based on either cytological interpretation TBS codes HS2, SC, AC1-AC5 or recommendation codes R10 or R14 that may be used in the context of symptoms); and for women with other high-grade cytology results (TBS codes ASH, HS1, AG1-AG5, AIS), since the timeframes differ for these two groups.

Referrals and colposcopy visits for these women were retrieved from the NCSP Register. The standard requires that a woman be seen within a time period from when the colposcopy unit received the referral. However due to the completeness of the accepted referral date compared to the received date, referral accepted date is used in this indicator as a proxy for the date the referral was received, and the start date for calculating timeliness. Referrals were retrieved where the date on which the referral was accepted occurred after the date the cytology sample was collected, and the referral was accepted no later than four weeks prior to the end of the current monitoring period. Colposcopy visits recorded on the NCSP Register were retrieved if they occurred after an accepted referral (to the same DHB) and no later than the end of the current monitoring period. The difference of four weeks between the two was to ensure that there were at least four weeks of data following every accepted referral which could be searched for colposcopy visits. In the current report, histology data are also used to supplement colposcopy data and help ascertain if a colposcopy visit occurred. Women with a histology sample collected after their cytology sample are assumed to have attended a colposcopy clinic for follow-up on the date the histology sample was collected, even if a colposcopy visit is not explicitly recorded on the NCSP Register.

Histology results have been used by the NCSP Register to follow up missing colposcopy visit data to improve the quality of colposcopy data on the Register. During the previous and current monitoring periods all DHBs adopted electronic reporting of the 2013 Standards, with the last three DHBs going live in August 2016. This has greatly improved the data on the Register and for public DHBs and when data are sufficiently complete future reports will be able to report directly against the 2013 Standards without using the current proxies for DHBs (with limited exceptions). Whereas, for private clinics complete reporting against the 2013 Standards is taking more time with the majority still

	reporting against 2008 standards. Therefore, values reported for the private aggregate will need to continue to use histology proxies (where necessary) until all private data is in accordance with the 2013 Standards. Results are reported by ethnicity and DHB. For women who attended colposcopy, DHB is assigned on the basis of the DHB of the colposcopy facility where they attended for colposcopy. The date on which the referral to that DHB was accepted is used to calculate timeliness. If there are multiple referrals for the same woman to that DHB, the date of the first accepted referral following the cytology sample is used. Women who attended colposcopy but had no relevant referral to that DHB recorded on the NCSP Register were excluded from the calculations of timeliness (since the time between the acceptance of the referral and the colposcopy visit could not be calculated). However, these women were reported on separately. For women who did not attend colposcopy prior to the end of the current monitoring period, DHB is assigned based on the DHB of the facility which accepted the referral for that woman (where the referral was accepted no later than four weeks prior to the end of the current monitoring period). If there were multiple referrals for the same woman which occurred after the cytology sample, the most recently accepted referral within the timeframe was used. For women who neither attended colposcopy nor had an accepted referral with any DHB, DHB is assigned on the basis of the health facility where their high-grade cytology sample was collected. Since cytology samples were collected in the six months prior to the current monitoring period, this allows a follow-up period of at least six months for all women (and up to 12 months for some women) where a woman can attend colposcopy and be assigned to a DHB, or alternately have a referral accepted by a DHB. High-grade cytology tests indicating that a woman was already under specialist management (TBS=R13) were excluded from this measure.
Target	***Timeliness – high-grade cytology indicating suspicion of invasive disease*** 95% or more of women who have evidence of clinical suspicion of invasive carcinoma, or a laboratory report indicating 'features suspicious for invasion', or 'changes consistent with squamous cell carcinoma' (TBS codes HS2, SC, AC1-AC5), or similar, must receive a date for a colposcopy appointment or a gynaecological assessment that is within 10 working days from when the colposcopy unit received the referral from the cytology sample taker/ referrer. ***Timeliness – high-grade cytology (no suspicion of invasive disease)*** 95% or more of women who have high-grade cytology sample abnormalities (but no suspicion of invasive disease; TBS codes ASH, HS1, AG1-AG5, AIS) must receive a date for a colposcopy appointment within 20 working days from when the colposcopy unit received the referral from the cytology sample taker/ referrer.

	The targets for this indicator rely on records of colposcopy appointments on the NCSP Register. As advised by the Ministry and NCSP Advisory Group for all women with a high-grade cytology test in the six months prior to the current monitoring period, timeliness is instead measured from the time between a referral is accepted to when women *have their first subsequent* colposcopy visit, acknowledging that this is not exactly as stated in the Standard target above.
Current Situation	In the period 1 July - 31 December 2018, there were 1,882 women with high-grade cytology results who were not already under specialist management. There were 66 women who had results indicating suspicion of invasive disease, and the remaining 1,816 had other high-grade cytology results. In total, accepted referrals were found for 1,655 (87.9%) of the 1,882 women (Table 62). ***Timeliness – high-grade cytology indicating suspicion of invasive disease*** Accepted referrals for colposcopy were found for 48 (72.7%) of the 66 women who had high-grade cytology indicating suspicion of invasive disease. For those with an accepted colposcopy referral recorded, referrals are broken down by the detailed cytological result in Table 65. Of these 48 women with a referral, 39 (81.3%) have a record of a colposcopy visit on the NCSP Register within ten working days of their referral, and 41 (85.4%) have a visit within 20 working days (Table 19). Considering all 66 women with high-grade cytology indicating suspicion of invasive disease, regardless of whether or not a referral to colposcopy was recorded, a total of 60 (90.9%) have a record of a colposcopy visit prior to 30 June 2019 representing a follow-up period of at least six and up to 12 months after their high-grade cytology report. ***Timeliness – high-grade cytology (no suspicion of invasive disease)*** Accepted referrals for colposcopy were found for 1,607 women (88.5%) of the 1,816 women who had high-grade cytology not indicating suspicion of invasive disease. Among the women with accepted referrals, 1,172 (72.9%) were seen at colposcopy within 20 working days of their referral, and 1,407 (87.6%) were seen within 40 working days (Table 63). The proportion of women seen within 20 working days varied by ethnicity, from 47.7% (Pacific women) to 76.4% (European/ Other women; Figure 67, Table 63). This proportion also varied by DHB from 36.0% (Counties Manukau) to 94.7% (Whanganui; Figure 68, Table 64). In total, 1,704 (93.8%) of the 1,816 women with high-grade cytology (but no suspicion of invasive disease) relating to a sample collected in the period 1 July - 31 December 2018 have a record of a colposcopy visit prior to 30 June 2019 (representing a follow-up period of at least six and up to 12 months after their high-grade cytology).

Trends	Nationally, the proportion of women with high-grade cytology indicating suspicion of invasive disease and an accepted colposcopy referral who were seen within the target timeframe (10 working days) is higher from 80.6% to 81.3%. The percentage of women with high-grade cytology indicating suspicion of invasive disease and an accepted colposcopy referral who were seen within 20 working days (85.4%) is lower than in the previous report (94.4%). The proportion of women with high-grade cytology (but no suspicion of invasive disease) and an accepted colposcopy referral who were seen within 20 working days has decreased from 76.5% in the previous report to 72.9% in the current report. This trend was also representative when investigated by ethnicity, with a decrease in all ethnic groups (Māori: 71.6% to 70.2%; Pacific: 55.8% to 47.7%; Asian: 69.1% to 68.1%; European /Other: 80.1% to 76.4%; Figure 69). The proportion of all women with high-grade results for whom an accepted referral was available on the NCSP Register is lower in the current report compared to the previous report (87.9% in the current report; 89.2% in the previous report).
Comments	Since this indicator relies on colposcopy data in the NCSP Register, any incompleteness in reporting of referrals and colposcopy visits as at the time of the data extract from the NCSP Register (August 2019 for the current report) would lead to an underestimate of the number of women with referrals and/or follow-up colposcopy visits. In order to help address this, in the current report, histology data are also used to help ascertain if a colposcopy visit occurred. Women with a histology sample collected after their cytology sample are assumed to have attended a colposcopy clinic for follow-up, even if a colposcopy visit is not explicitly recorded on the NCSP Register. Among the 1,764 women (with or without a referral) who had a colposcopy visit by the end of the current monitoring period, there were 134, 8.2%) women where the colposcopy visit was not explicitly recorded on the NCSP Register and was inferred by using the histology result proxy. For women with high-grade cytology indicating suspicion of invasive disease, the number referred for colposcopy is likely to be an underestimation of women with appropriate follow-up. Many women referred with suspicion of invasive disease are referred directly to gynae-oncology for a cone biopsy instead of colposcopy. This likely explains the comparatively low proportion of women with SC or AC1-5 results who have a record of colposcopy referral (50% or less). Therefore, the proportion with colposcopy in this group does not fully reflect the level of performance. Additional information about follow-up tests performed in women with high-grade cytology is included in Indicator 6. The same 1,882 women (66 with suspicion of invasive disease, 1,816 with other high-grade cytology) are included in both this measure and Indicator 6. In Indicator 6, it was found that 1,653 (87.8%) had histology within 180 days and 1,763 (93.7%) had a follow-up test of some sort within 180 days. While in this indicator, colposcopy and histology records indicate that 1,764 (93.7%) women had attended colposcopy prior to 30 June 2019 (i.e. in a period of at least 181 days and up to one year

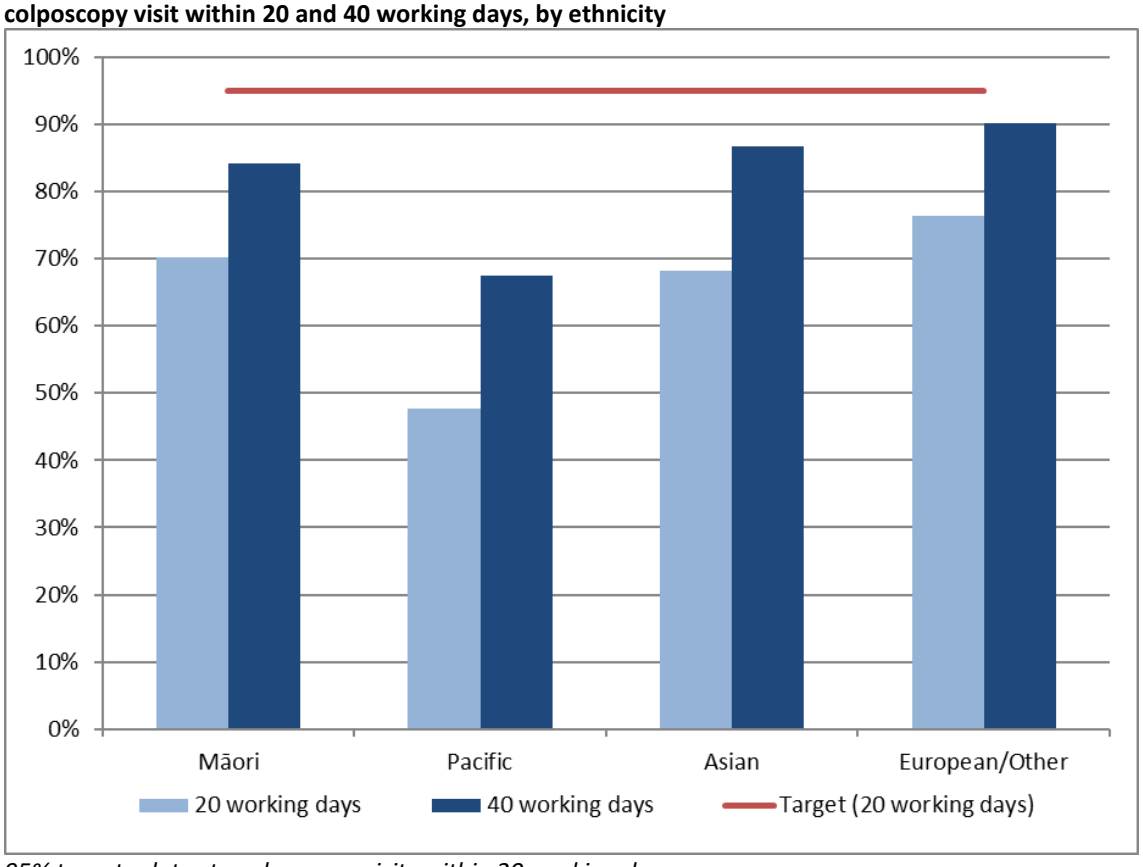
after their high-grade cytology sample). Note that there may be some differences in results by DHB, however, since in Indicator 6 the DHB assigned to a woman is her own DHB (or, where this information is not available on the NCSP Register, the DHB of her responsible health facility, based on the clinic's geographic location). In this indicator, women are assigned to a DHB based on either the DHB where they attended colposcopy, or the most recent DHB to which they have been referred (for women without colposcopy visits), or to the DHB of the health facility where the high-grade cytology sample was collected (for women with no referral and no colposcopy visit). Additionally, only public clinics are assigned a DHB within Indicator 7.1; private clinics are separated out and reported on as a group.

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

Table 19 - Women with a high-grade cytology report (suspicion of invasive disease), accepted referral and colposcopy visit, by ethnicity

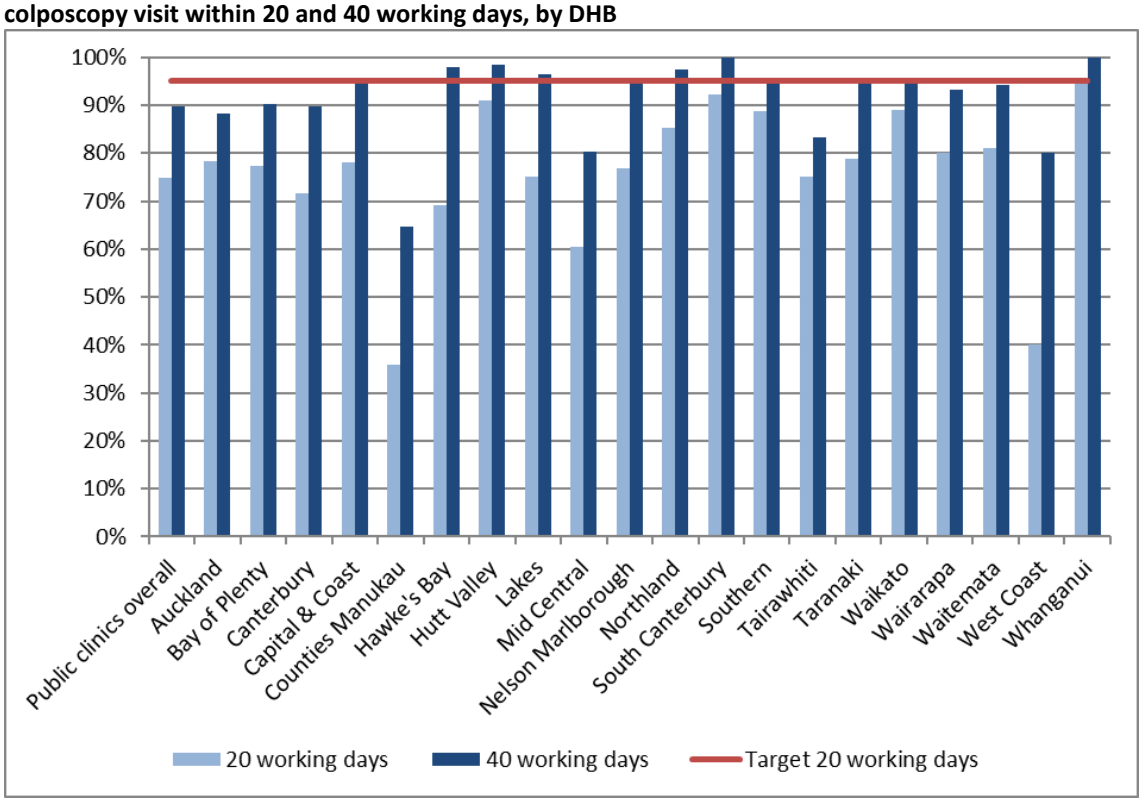
Ethnicity	HG women (suspicion of invasion)	Urgent referrals received	Women seen within: 10 working days		20 working days	
	N	N	N	%	N	%
Māori	16	10	8	80.0	8	80.0
Pacific	9	5	4	80.0	4	80.0
Asian	7	7	4	57.1	5	71.4
European/ Other	34	26	23	88.5	24	92.3
Total	**66**	**48**	**39**	**81.3**	**41**	**85.4**

Figure 67 - Percentage of women with a high-grade cytology (no suspicion of invasive disease) with a colposcopy visit within 20 and 40 working days, by ethnicity



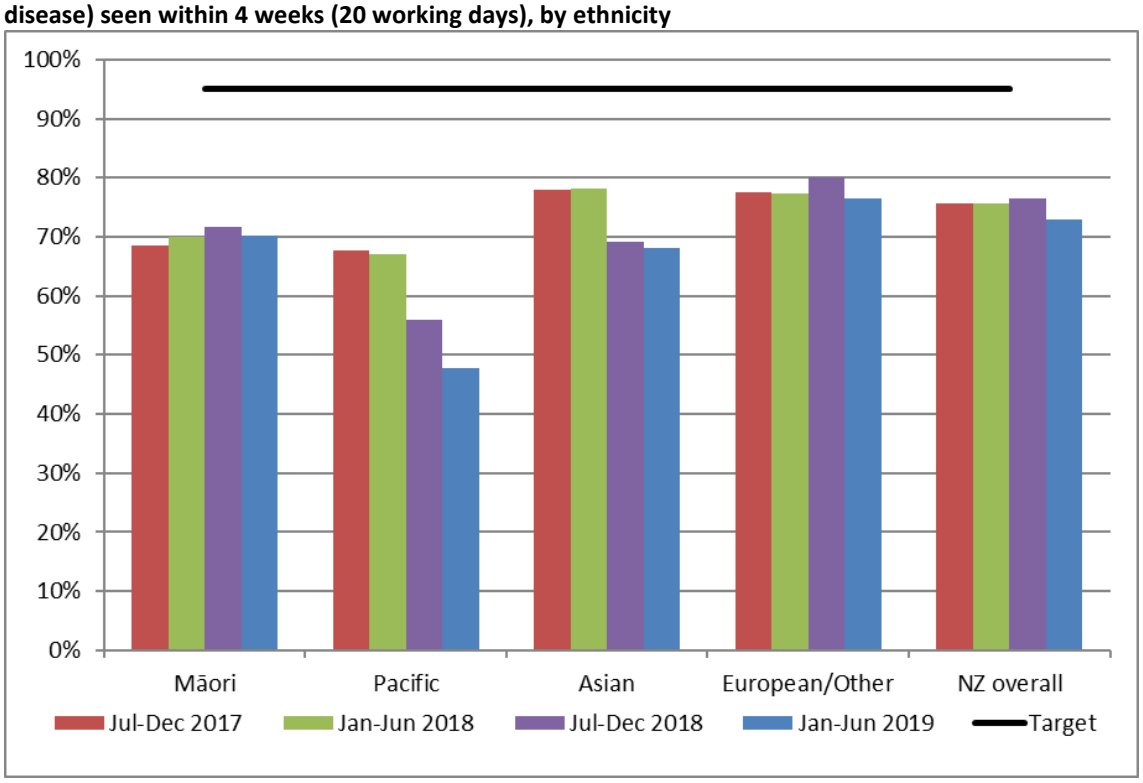
95% target relates to colposcopy visits within 20 working days.

Figure 68 - Percentage of women with a high-grade cytology (no suspicion of invasive disease) with a colposcopy visit within 20 and 40 working days, by DHB



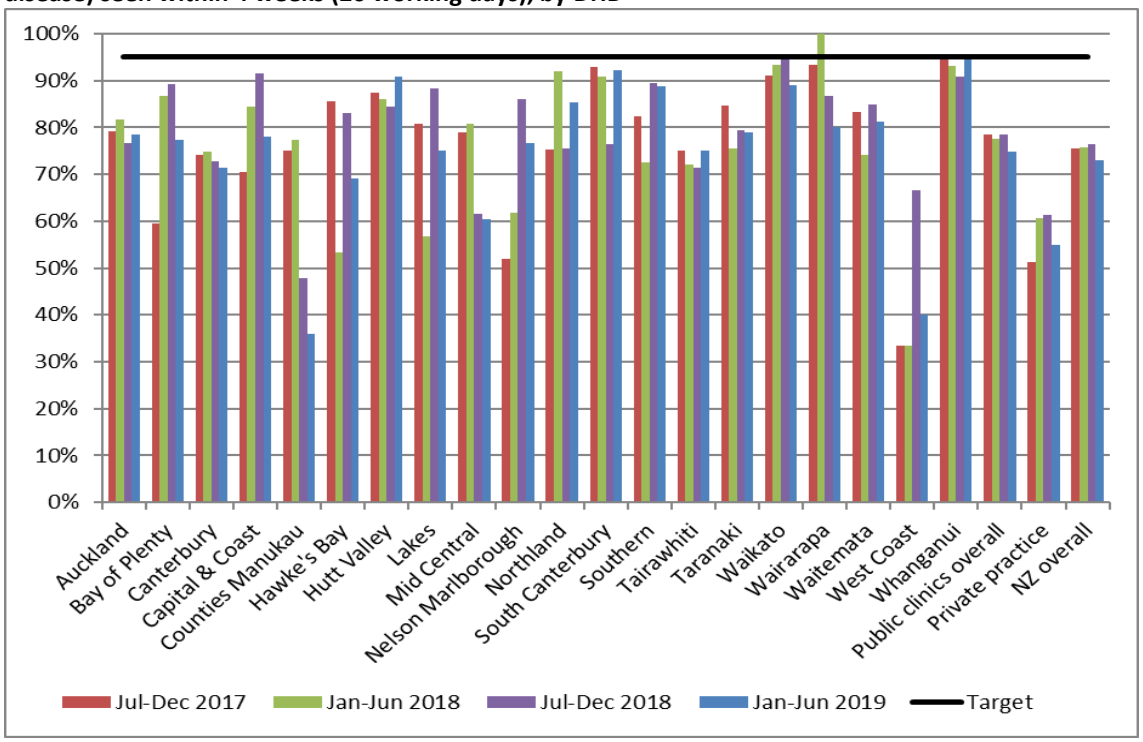
95% target relates to colposcopy visits within 20 working days.

Figure 69 – Trends of the proportion of women with a high-grade cytology report (no suspicion of invasive disease) seen within 4 weeks (20 working days), by ethnicity



95% target relates to colposcopy visits within 20 working days.

Figure 70 – Trends of the proportion of women with a high-grade cytology report (no suspicion of invasive disease) seen within 4 weeks (20 working days), by DHB



95% target relates to colposcopy visits within 20 working days.

Indicator 7.2 – Timeliness of colposcopic assessment – low-grade cytology

Definition

This indicator measures performance against Standard 602. It reports on the timeliness of colposcopic assessment of women with either persistent low-grade cytology, or low-grade cytology and concurrent positive hrHPV test.

Women were included in this measure if they had a cytology sample collected in the 6-month period ending 12 months prior to the end of the current monitoring period (1 January – 30 June 2018 for the current report) where the results were low-grade (ASC-US or LSIL), and either a positive hrHPV test (within four weeks of the cytology result) or a previous low-grade cytology result (within the previous five years). Women undergoing test-of-cure management for a recent treatment of a high-grade squamous lesion (within the previous 4 years) were excluded.

Referrals and colposcopy visits for these women were retrieved from the NCSP Register. Referrals were retrieved where the date on which the referral was accepted occurred after the date the cytology sample was collected, and at least 26 weeks before the end of the current monitoring period (i.e. 26 weeks before 30 June 2019, to allow at least 26 weeks following the referral for colposcopy to occur). Colposcopy visits recorded on the NCSP Register were retrieved if they occurred after the cytology test and no later than the end of the current monitoring period. In addition to explicit colposcopy visit records, histology samples in the same timeframe were used as a proxy for a colposcopy visit, to supplement colposcopy visit data.

Results are reported by ethnicity and DHB. DHB is assigned in the same way as in Indicator 7.1. For women who attended colposcopy, DHB is assigned on the basis of the DHB of the colposcopy facility where they attended for colposcopy (or where the histology sample was collected if a visit is not explicitly recorded). If there are multiple referrals for the same woman to that DHB, the date of the first accepted referral following the cytology sample is used.

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

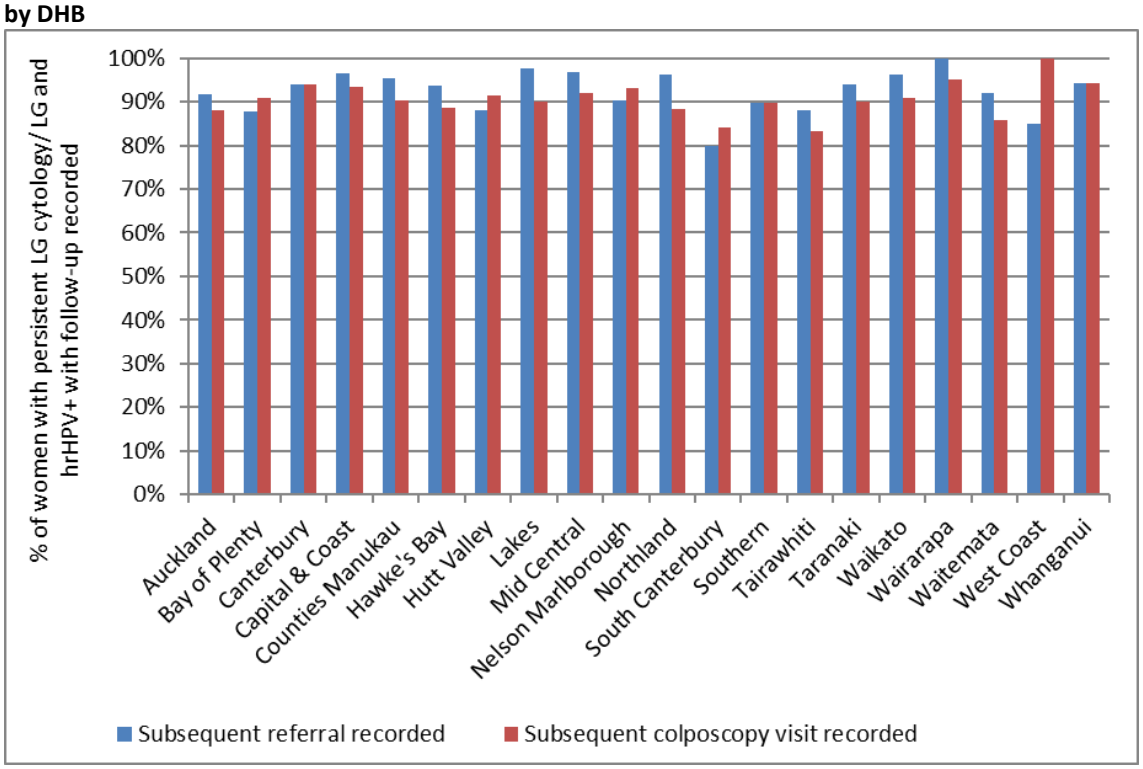
For women who neither attended colposcopy nor had an accepted referral with any DHB, DHB is assigned on the basis of the geographic region of the health facility where their low-grade cytology sample was collected.

Since cytology samples were collected in the 6-month period ending 12 months prior to the end of the current monitoring period, this allows a follow-up period of at least twelve months for all women (and up to 18 months for some women) where a woman can attend colposcopy and be assigned to a DHB.

Target	95% of women who have persistent low-grade abnormalities, or a low-grade abnormality and positive HPV test, must receive a date for a colposcopy appointment that does not exceed 26 weeks of receipt of the referral. At present, this indicator reports on aspects of follow-up, but not specifically on timeliness in relation to the standard, as the date of the first colposcopic assessment is not yet available for all women with a low-grade cytology test in the 6-month period 12-months prior to the end of the current monitoring period. In the interim, it reports on the number and percentage of women for whom a subsequent accepted referral and/ or a colposcopy visit are recorded, and the number and proportion of women who attended colposcopy within 26 weeks of an accepted referral.
Current situation	There were 3,791 women with either persistent low-grade cytology or low-grade cytology and a positive hrHPV test collected in the period 1 January – 30 June 2018. Nationally, subsequent accepted referrals are recorded for 3,245 (85.6%) of these women, and subsequent colposcopy for 3,449 (91.0%). The proportion of women for whom a subsequent referral and colposcopy visit are recorded are shown by DHB in Figure 71, and by ethnicity in Figure 72. The proportion of women for whom an accepted referral was recorded on the NCSP Register ranged from 80.0% (South Canterbury) to all women (Wairarapa; Figure 71). The proportion of women with a subsequent colposcopy visit (which occurred by the end of the current monitoring period) recorded on the NCSP Register ranged from 83.3% (Tairawhiti) to all women (West Coast; Figure 71). For ethnicity, the proportion of women for whom an accepted referral was recorded on the NCSP Register ranged from 84.4% for European/ Other women to 92.2% for Pacific women (Figure 72). The proportion of women with a subsequent colposcopy visit recorded on the NCSP Register (regardless of whether or not a referral was recorded) ranged from 85.5% (Pacific women) to 92.1% (European/ Other women; Figure 72). Timeliness of colposcopic assessment is provided by examining the time between when a referral is accepted for a colposcopy and when a woman attended for colposcopy. Among the 3,245 women with an accepted referral nationally, 2,600 (80.1%) women attended for colposcopy within 26 weeks of their accepted referral (Table 66). By DHB, the proportion of women who attended for colposcopy within 26 weeks of their accepted referral ranged from 54.7% (Hawke's Bay) to all women (West Coast; Figure 73, Table 66). By ethnicity, this figure ranged from 67.9% of Māori women attending for colposcopy within 26 weeks of their accepted referral, to 83.7% of Asian women (Figure 74, Table 67). Overall 3,041 women attended colposcopy following an accepted referral on the NCSP Register, and by the end of the current monitoring period (a follow-up period of 12 - 18 months after their cytology sample). This is equivalent to 80.2% of all women with persistent low-grade cytology or low-grade cytology and a positive hrHPV test, and 93.7% of women who had an accepted referral following their low-grade cytology.

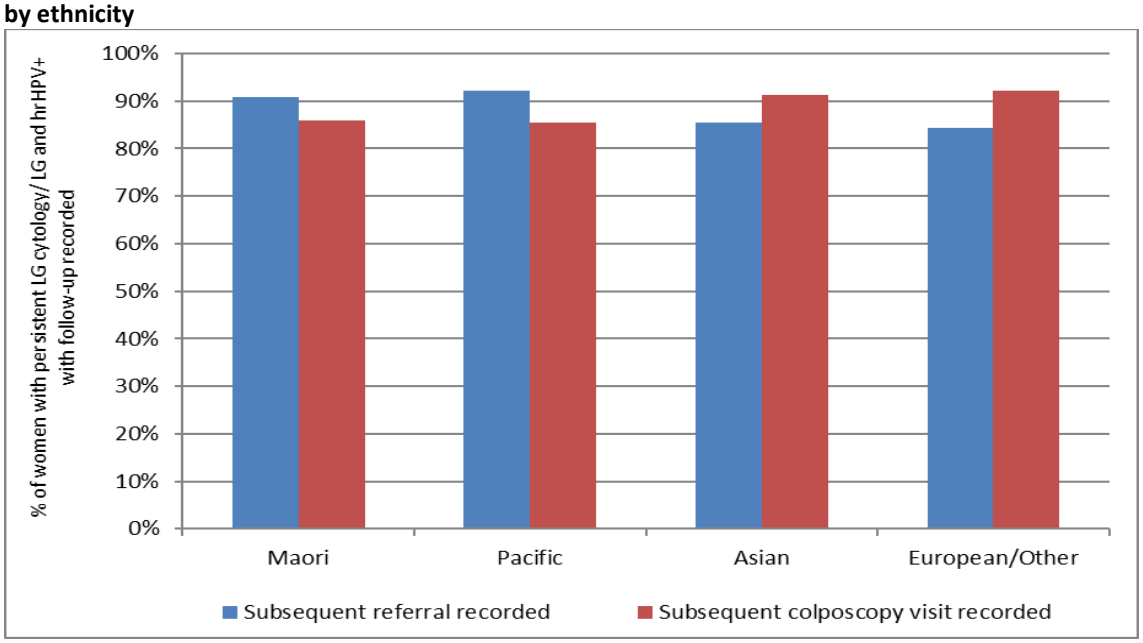
Trends	Nationally, the proportion of women with a record of colposcopy within 26 weeks of being referred is lower in the current report (80.1%), compared to the previous report (86.7%). This decrease has been seen in all ethnicities (Figure 76). The proportion of women seen within 26 weeks is higher than in the previous report in three out of twenty DHBs (Figure 75). A substantial decrease (greater than 10 percentage points) in the proportion seen within 26 weeks was observed in four DHBs (Bay of Plenty, Lakes, Mid Central, Waikato). Conversely, a substantial increase (greater than 10 percentage points) in the proportion of women with colposcopy within 26 weeks compared to the previous report was seen in one DHB (Hutt Valley).
Comments	Since this indicator relies on colposcopy data in the NCSP Register, any incompleteness in reporting of referrals and colposcopy visits as at the time of the data extract from the NCSP Register (August 2019 for the current report) would lead to an underestimate of the number of women with referrals and/ or follow-up colposcopy visits. In order to help address this, in the current report, histology data are also used to help ascertain if a colposcopy visit occurred. Women with a histology sample collected after their cytology sample are assumed to have attended a colposcopy clinic for follow-up, even if a colposcopy visit is not explicitly recorded on the NCSP Register. As has been the case for previous monitoring periods, it is evident that referrals are incompletely recorded on the NCSP Register, as some women have a record of a colposcopy visit, but no record of an accepted referral.

Figure 71 - Follow-up recorded* for women with persistent LG cytology/ LG cytology and positive hrHPV test, by DHB



** For colposcopies 'follow-up' includes colposcopies recorded on the NCSP Register which occurred no later than the end of the current monitoring period, regardless of whether there is a referral or not. Referrals includes those recorded on the NCSP Register that were accepted no later than 26 weeks prior to the end of the current monitoring period. A colposcopy is assumed to have occurred if a histology sample is recorded in the relevant timeframe.*

Figure 72 - Follow-up recorded* for women with persistent LG cytology/ LG cytology and positive hrHPV test, by ethnicity



** For colposcopies 'follow-up' includes colposcopies recorded on the NCSP Register which occurred no later than the end of the current monitoring period, regardless of whether there is a referral or not. Referrals includes those recorded on the NCSP Register that were accepted no later than 26 weeks prior to the end of the current monitoring period. A colposcopy is assumed to have occurred if a histology sample is recorded in the relevant timeframe.*

Figure 73 - Women with persistent LG cytology/ LG cytology and positive hrHPV test and an accepted referral for colposcopy: percentage with a colposcopy visit recorded within 26 weeks of the date the referral was accepted, by DHB

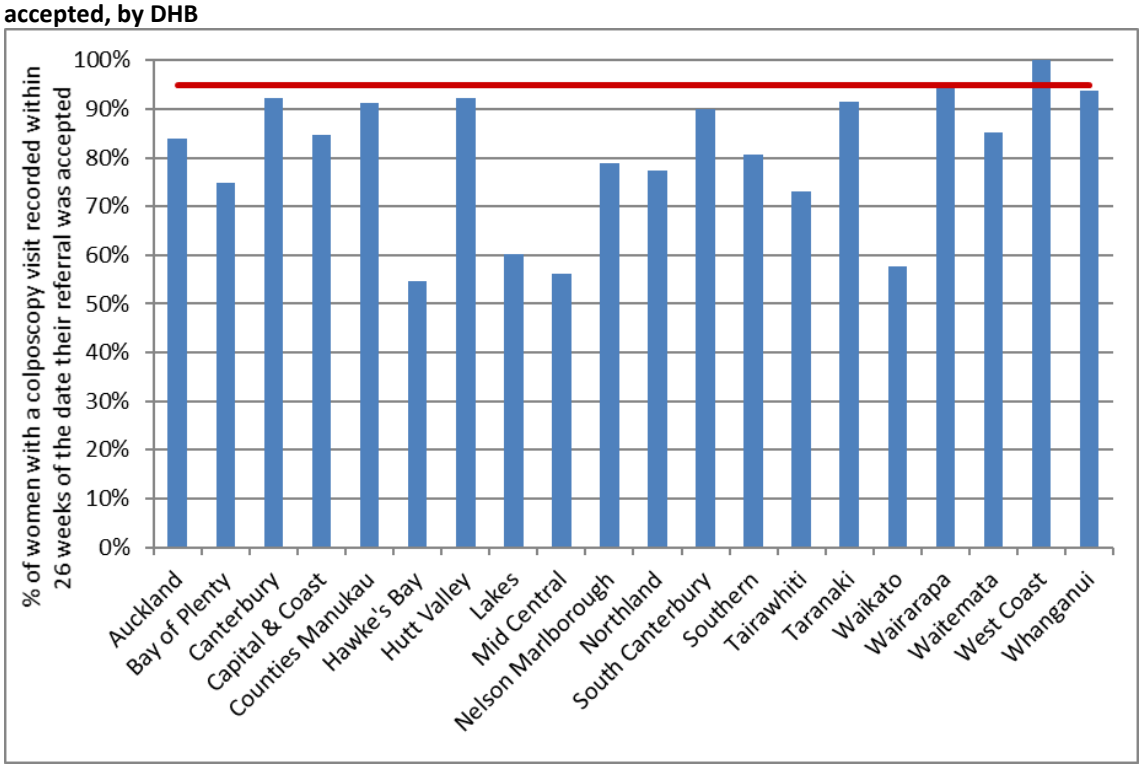


Figure 74 - Women with persistent LG cytology or LG cytology and positive hrHPV test and an accepted referral for colposcopy: percentage with a colposcopy visit recorded within 26 weeks of the date the referral was accepted, by ethnicity

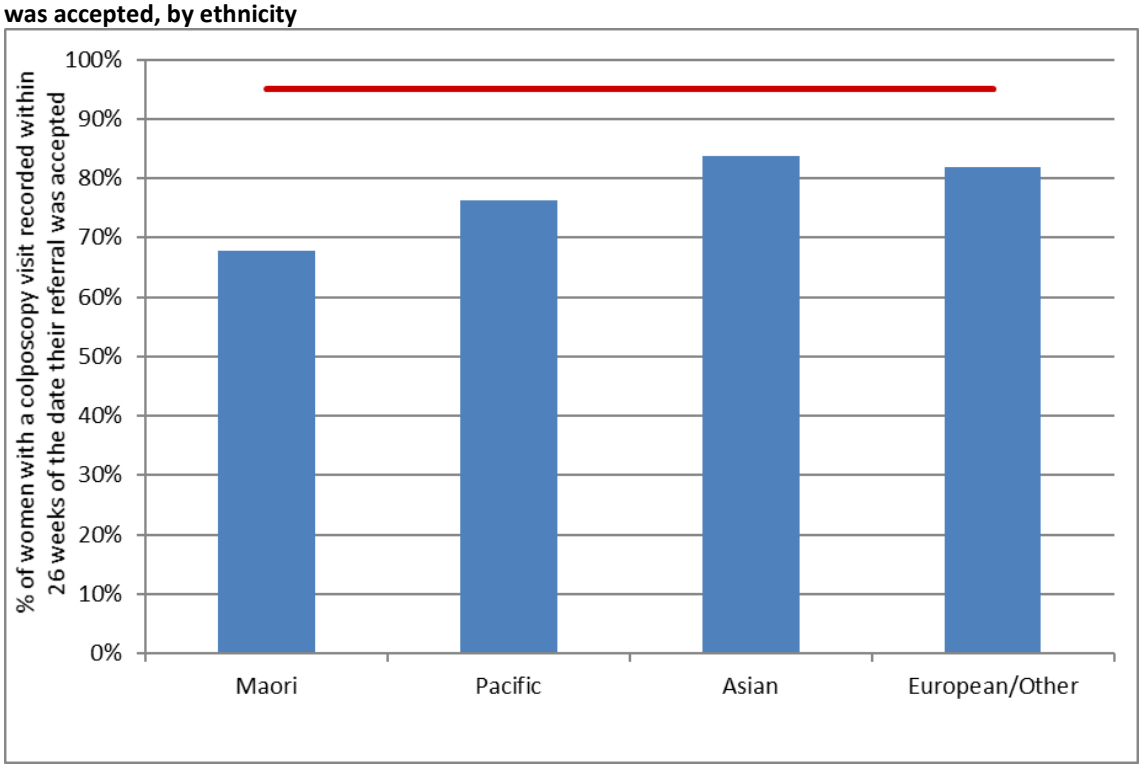


Figure 75 - Trends in the proportion of women with persistent LG cytology or LG cytology and positive hrHPV test and an accepted referral for colposcopy who have a colposcopy visit recorded within 26 weeks of the date the referral was accepted, by DHB

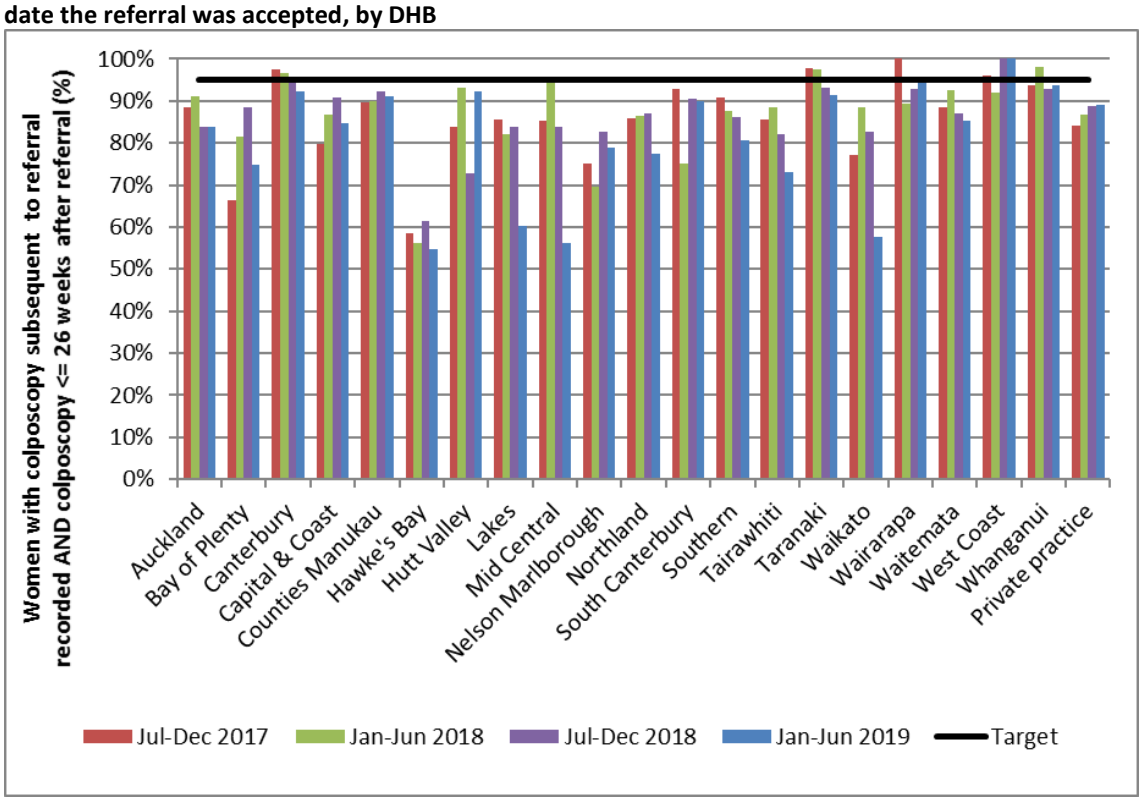
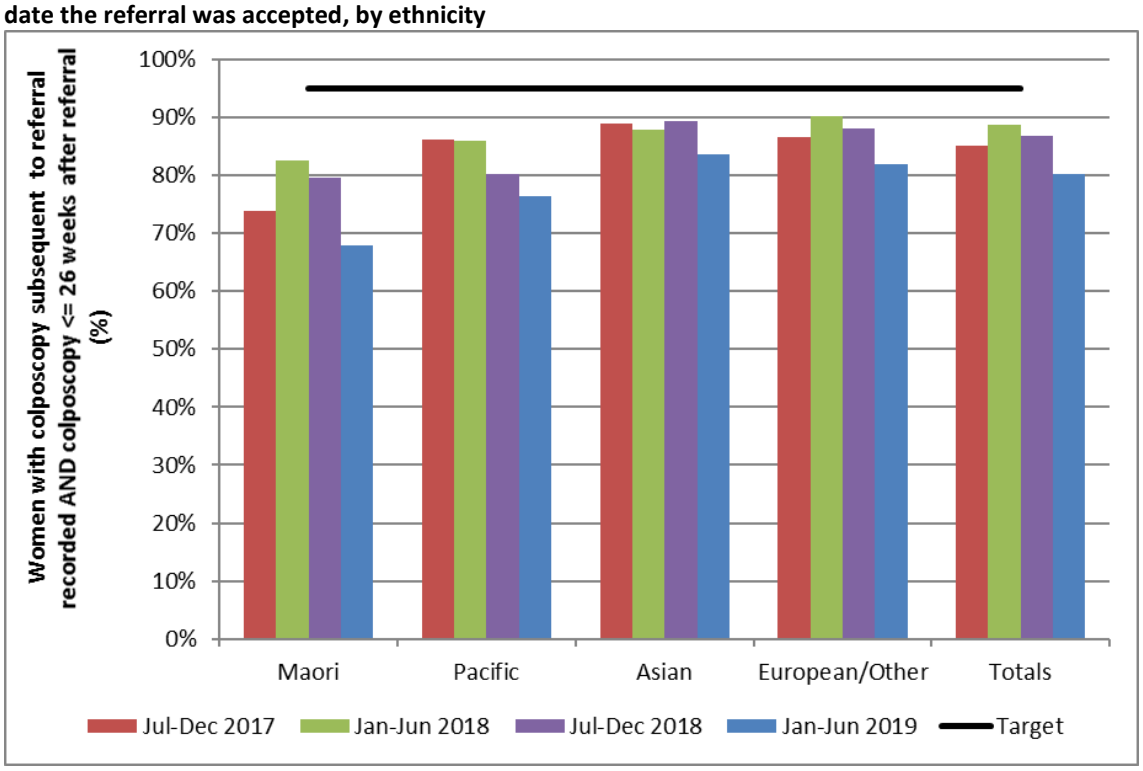


Figure 76 - Trends in proportion of women with persistent LG cytology or LG cytology and positive hrHPV test and an accepted referral for colposcopy who have a colposcopy visit recorded within 26 weeks of the date the referral was accepted, by ethnicity



Indicator 7.3 – Adequacy of documenting colposcopy assessment

Definition

This indicator measures performance against Standard 603.

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

i) visibility of the squamo-columnar junction

ii) presence or absence of a visible lesion

iii) colposcopic opinion regarding the nature of the abnormality

iv) recommended management and follow-up

v) timeframe recommended for follow-up

vi) items i), ii), and iii) completed

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

Target

100% of medical notes will accurately record colposcopic findings at first and any subsequent assessments, including:

i) visibility of the squamo-columnar junction

ii) presence or absence of a visible lesion

iii) visibility of the limits of lesion

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

v) recommended management and follow-up

vi) timeframe recommended for follow-up.

Items i), ii), v), vi) and the first of the items in iv) can be assessed using data in the NCSP Register, and are reported on below. Item iii) and the second half of item iv) cannot currently be assessed as although all DHBs have transitioned to reporting using 2013 Standards these fields cannot be fully utilised due to a lack of completeness. For private clinics, however, complete reporting against the 2013 Standards is likely to take more time with the majority still reporting against 2008 standards. Therefore, values reported for the private aggregate will continue to use proxies for a much longer period until complete 2013 reporting occurs.

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

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

Current Situation

There were 12,270 colposcopy visits within the current monitoring period recorded on the NCSP Register. Documentation relating to these visits was analysed (Table 68).

Nationally, the visibility of the squamo-columnar junction was documented for 97.1% of visits; the presence or absence of a lesion was documented for all visits; and an opinion regarding the lesion grade was documented for 92.7% of visits where the presence of a lesion could not be ruled out. Additionally, the type of follow-up was documented for 90.1% of visits and the timeframe for follow-up was documented for 89.4% of visits. The visibility of the squamo-columnar junction, presence or absence of a visible lesion, and the colposcopic opinion regarding the nature of the abnormality (where relevant) were all documented for 93.0% of visits.

The colposcopic appearance was reported to be abnormal in 54.8% of colposcopies, and inconclusive in 4.3% of colposcopies (Table 69). Biopsies were taken at 91.3% of colposcopies when the colposcopic appearance was abnormal; 38.3% of colposcopies where the colposcopic appearance was reported as inconclusive, and 18.8% of colposcopies where colposcopic appearance was reported as normal (Table 70).

Documentation varied by DHB, as shown in Figure 77 and Table 68. Documentation of visibility of the squamo-columnar junction varied from 91.7% (West Coast) to all cases in Hutt Valley and Wairarapa. In all DHBs, all colposcopy reports documented the presence or absence of a lesion. Recording of the opinion regarding the abnormality grade (which was only assessed if the colposcopic appearance was recorded as abnormal or inconclusive), ranged from 82.8% (West Coast) to 97.0% (Waikato). Recording of the recommended type of follow-up ranged from 60.8% (Nelson Marlborough) to 98.3% of cases (Northland) and recording of the recommended timeframe for follow-up ranged from 60.5% (Nelson Marlborough) to 98.0% (Northland). Complete documentation of the visibility of the squamo-columnar junction, presence or absence of a visible lesion, and the colposcopic opinion regarding the nature of the abnormality (where required) ranged from 79.2% (West Coast) to 97.8% (Wairarapa; Figure 78, Table 68).

Abnormal colposcopic appearance ranged from 41.0% of colposcopies (Capital & Coast and Northland) to 73.6% of colposcopies (Whanganui). Inconclusive colposcopic appearance ranged from 1.8% of colposcopies (Waikato) to 13.9% of colposcopies (West Coast; Table 69). The proportion of colposcopies where a biopsy was taken also varied by DHB. This proportion ranged from 82.6% of visits in South Canterbury, up to 98.5% (Southern) when the colposcopic appearance was abnormal, and from West Coast (7.1%) up to Wairarapa (52.6%) when the colposcopic appearance was normal (Table 70).

Colposcopies performed in private practice accounted for 9.8% of all colposcopies recorded on the NCSP Register in New Zealand in the current monitoring period. The documentation rate varied according to the recorded section in private practice when compared with public clinics overall (Table 68). Documentation completion rate was similar in private and public clinics overall for the proportion of colposcopies documenting visibility of the squamo-columnar junction (96.3% for private practice and 97.1% for public clinics overall) and for documenting the presence or absence of a lesion (100.0% in both private and public clinics). An opinion regarding the lesion grade was documented for 92.7% of visits in public practice where the presence of a lesion could not be ruled out and 93.0% of visits in private clinics. The proportion completed was lower in public clinics compared to private clinics overall for documenting follow-up timeframe (89.4% public clinics; 91.8% for private practice) and somewhat higher in private clinics overall for follow-up type (92.7% for public clinics and 90.1% for private practice). Complete documentation of the visibility of the squamo-columnar junction, presence or absence of a visible lesion, and the colposcopic opinion regarding the nature of the abnormality was slightly higher in public clinics overall than for private clinics overall for lesion grade (93.0% for public clinics; 92.6% for private practice).

Trends

For New Zealand as a whole, documentation of colposcopy visit items has remained fairly consistent over the last four monitoring periods. In the current period visibility of the squamo-columnar junction was documented for 97.1% of colposcopies, compared with between 96.9% and 97.3% over the previous three monitoring periods. The presence or absence of a lesion was documented for all visits in both the current period and the previous three periods. In the current period an opinion regarding the lesion grade was documented for 92.7% of visits where the presence of a lesion could not be ruled out, compared with between 91.6% and 91.7% for the previous three monitoring periods. Recording of recommended follow-up type was documented for 90.1% of visits in the current period, which is lower than the range seen for the previous three periods (94.1% - 95.6%). This was also the case for recommended timeframe for follow-up, which was recorded for 89.4% of visits in the current period compared with 93.4% - 94.9% in the previous three periods.

Trends in the completion of all required fields by DHB are shown in Figure 78. In total 59.4% of colposcopies had an associated biopsy compared to 60.7% in the previous report. Of these, biopsies were taken in 91.3% of colposcopies with an abnormal appearance in this report and 92.3% in the previous report. 18.8% of colposcopies with a normal appearance also had documentation of a biopsy taken in this reporting period and between 18.9% and 21.4% in previous reporting periods.

Trends in the number of colposcopies recorded on the NCSP Register by DHB are shown in Figure 79. The number of colposcopies decreased in the current monitoring period in seven of the twenty DHBs with an overall decrease in the number of colposcopies of 5.1%.

Comments

The current colposcopy standard was published in July 2013 (available at https://www.nsu.govt.nz/health-professionals/national-cervical-screening-programme/policies-and-standards). This indicator is only able to assess adequacy of documentation where colposcopy visits have been entered onto the NCSP Register in accordance with the 2013 Colposcopy Standard. Therefore, it cannot provide an absolute estimate of adequacy if these data are incomplete on the NCSP Register (that is, if the colposcopy visit itself is not recorded on the NCSP Register). The data used in this analysis was extracted from the NCSP Register in mid August 2019.

Some items required by the standard, such as the recording of recommended follow-up type and timeframe, cannot necessarily be completed at the time of the colposcopy visit – for example because they will depend on results of histology tests or other reviews. For DHBs that electronically report data to the NCSP Register, the completeness of these fields is likely to lag behind that of other fields, because the colposcopy visit data will be loaded onto the NCSP Register soon after the visit and before this information is available. As more DHBs have moved to electronic reporting, this lag could explain the reduction in the percentage of colposcopies where these items are complete, compared to previous reports. Additionally, since there is a lag in reporting recommended type and timeframe for follow-up, these two items were removed from the calculation of 'all items complete' in Report 43 and this has remained the case in subsequent reports. These are often not the fields with the lowest completion rates however, and therefore removing them from the calculation made a relatively small difference to 'all items complete'. In 15 out of the 20 DHBs, the field with the lowest completion rate is the documentation of the opinion regarding the nature of abnormality grade (only required where the presence of a lesion could not be ruled out). It is possible that the low completion rate for predicted abnormality grade could be because some clinics are incorrectly interpreting the requirement to document a *predicted* abnormality grade (which should be documented at the time of colposcopy) as a requirement to document the *diagnosed* abnormality grade, which can only be done after histology results are available.

Some items in the 2013 colposcopy standard are not included in the 2008 colposcopy visit form or on the NCSP Register, in particular the visibility of the limits of the lesion, the biopsy site, and an explicit colposcopic opinion regarding the need for treatment (although a recommended follow-up timeframe is recorded, and whether follow-up is recommended with a colposcopist, oncology services, or sample taker). It is also not possible to determine the reason for the visit from the colposcopy visit form, for example if this is a first visit or a follow-up visit; or whether it was prompted by a high-grade cytology result, a low-grade cytology result which is either persistent or accompanied by a positive high -risk HPV test result, a request for referral regardless of cytology results, or another reason. As most private colposcopists were still reporting to the NCSP Register using the 2008 standard and due to the low completeness of the fields required to calculate the additional items for those DHBs using 2013 Standards, these items could not be taken into account in this indicator for the current report.

Figure 77 - Completion of colposcopic assessment fields, by DHB

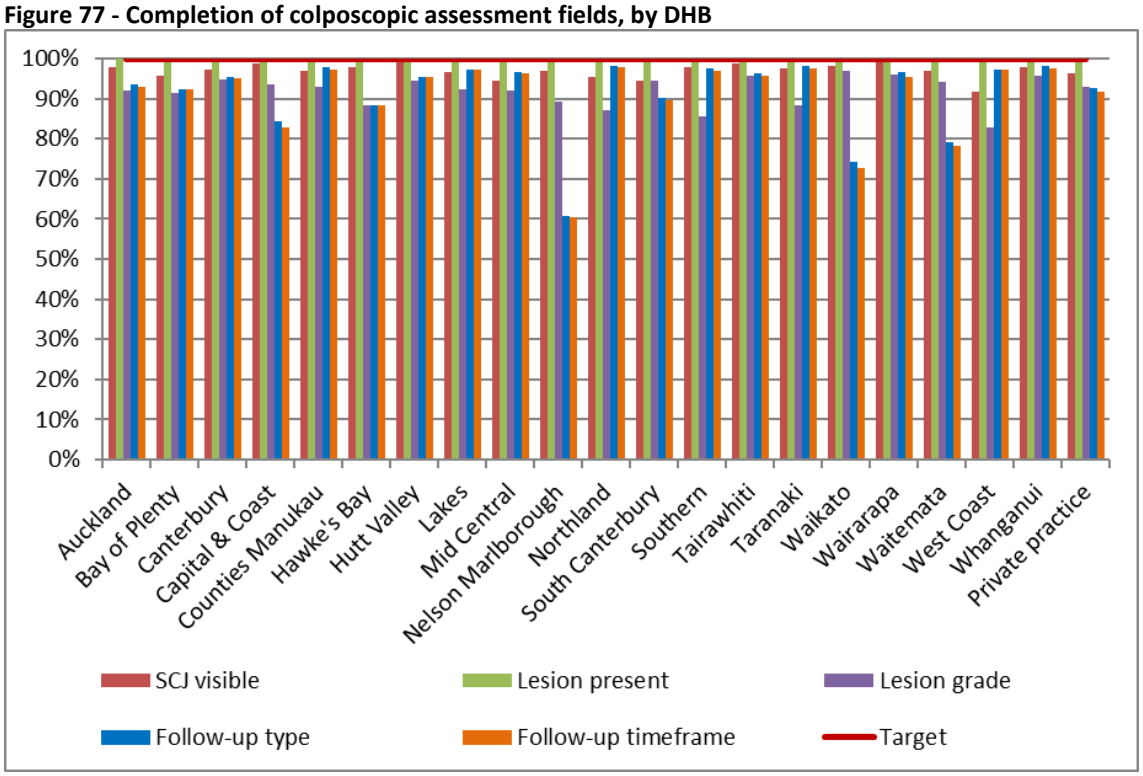


Figure 78 - Trends in the completion of all required colposcopic assessment fields, by DHB

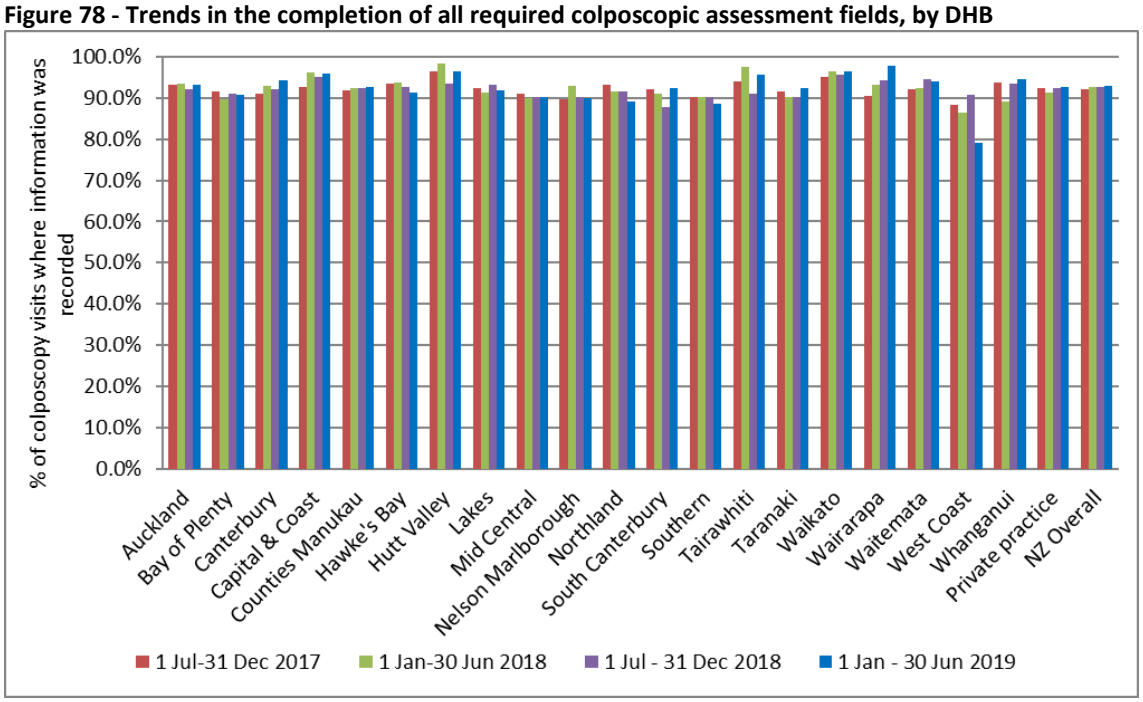
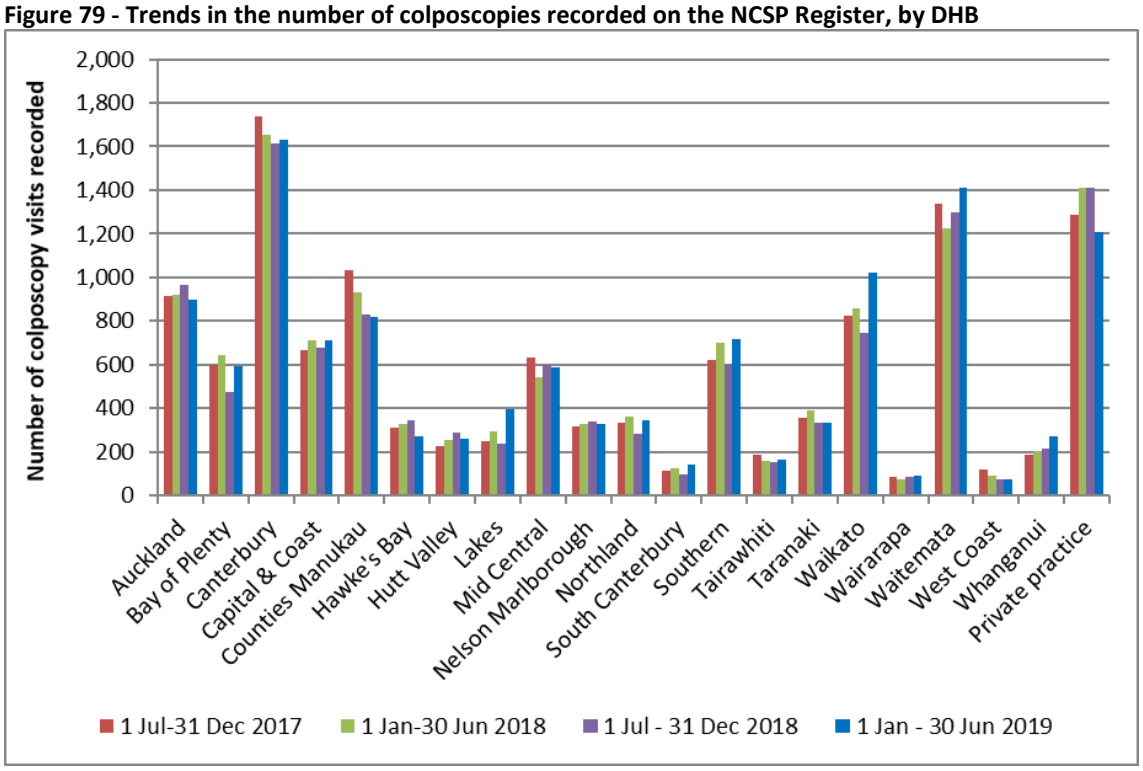


Figure 79 - Trends in the number of colposcopies recorded on the NCSP Register, by DHB



Indicator 7.4 – Timeliness and appropriateness of treatment

Definition

This indicator measures performance against Standard 605.

It reports on the proportion of women with histological high-grade squamous intraepithelial lesions (HSIL) who are treated within eight weeks of histological confirmation. Histological HSIL is defined as CIN 2, CIN 3, CIN 2/3 or HSIL not otherwise specified (SNOMED codes M74007, M74008, M80102, M80702 and M67017).

Histological LSIL is not routinely treated, as treatment is not recommended for women with low-grade abnormalities in the 2013 Colposcopy Standards (consistent with 2008 NCSP *Guidelines for Cervical Screening in New Zealand*). The 2013 Colposcopy Standard recommends that the number of women who are treated with low-grade lesions (less than CIN 2 on histology) be minimised. Therefore, treatment of LSIL is included in this report for descriptive purposes and to examine the appropriateness (not timeliness) of treatment. This report describes the number and proportion of women with histological low-grade squamous intraepithelial lesions (LSIL) who are treated. To ensure consistency in the follow-up time examined for each woman and in order to allow timely reporting, treatments are included if they occur within 26 weeks of histological confirmation. Histological LSIL is defined as CIN1 or CIN not otherwise specified (SNOMED codes M74006, M67016, M74000 and M67015). Women with histological LSIL who are treated but who also have a record of histological HSIL in the six-month period prior to their treatment are excluded, as their treatment in considered appropriate.

Women are included in this indicator if they have a histology sample where the result is HSIL or LSIL (as previously defined, above), and the sample was collected in the six-month period immediately prior to the current monitoring period (i.e. in the period 1 July - 31 December 2018). HSIL results must have been reported at least 8 weeks prior to the end of the current monitoring period, and LSIL results must have been reported at least 26 weeks prior to the end of the current monitoring period, in order to allow sufficient follow-up time for this indicator.

Treatment was defined as a colposcopy visit where there was a record of electrosurgical excision, laser ablation or excision, cold knife cone biopsy, or total hysterectomy. Colposcopy visits involving punch biopsies only are not included.

DHB is assigned based on the clinic where the histology sample was collected.

Target

90% or more of women with HSIL are treated within 8 weeks of histological confirmation of CIN 2/3.

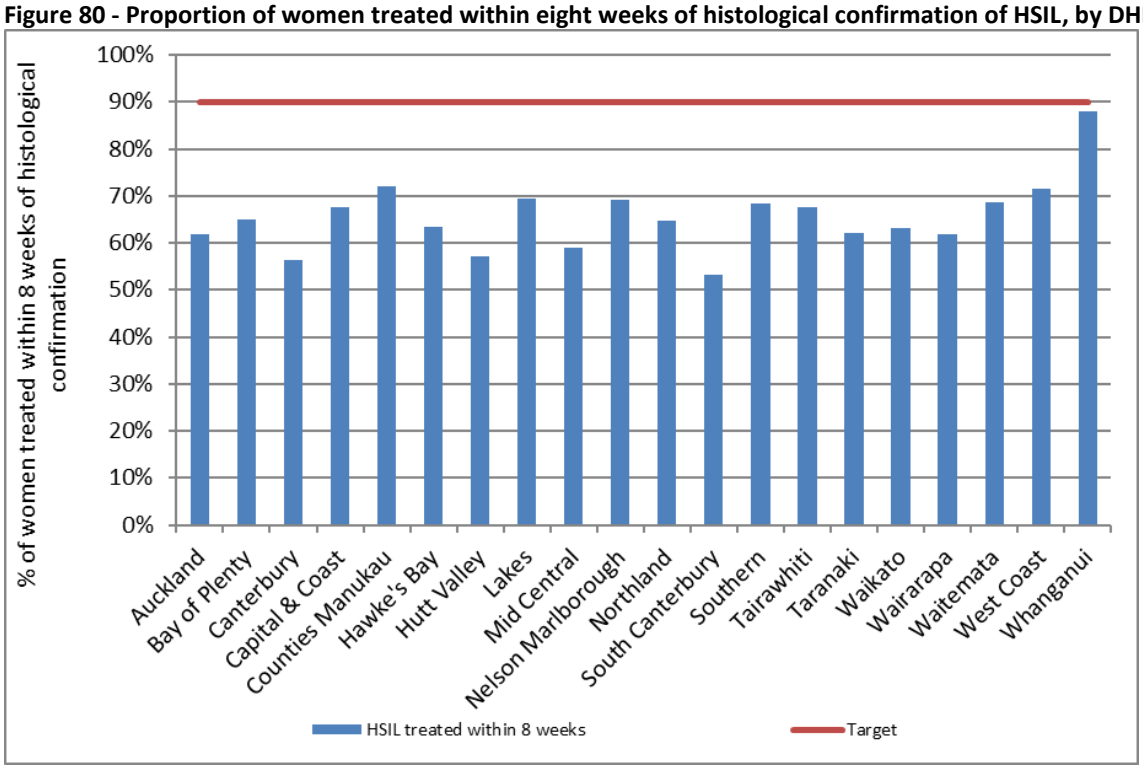
There is no explicit target relating to low-grade lesions, but the standard recommends that the number of women who are treated with low-grade lesions (less than CIN 2 on histology) be minimised.

Current Situation	There were 2,045 women with a histological diagnosis of CIN 2/3 (associated with histology samples collected in the previous six months, and reported at least eight weeks prior to 30 June 2019). Of these women, 1,249 women (61.1%) were treated within eight weeks of HSIL being histologically confirmed. The proportion of women treated within eight weeks varied widely by DHB, from 53.3% (South Canterbury) to 88.0% of women (Whanganui). No DHBs met the target of at least 90% of women treated within eight weeks of histological confirmation of HSIL (Figure 80, Table 20). There were 1,869 women with a histological diagnosis of LSIL (associated with histology samples collected in the previous six months, and reported at least 26 weeks prior to 30 June 2019). Treatment for histological LSIL is not routinely recommended in the 2013 Colposcopy Standards or the 2008 NCSP *Guidelines for Cervical Screening in* New *Zealand*[19], and so timeliness of treatment is not examined or compared to a target for LSIL. However, for descriptive purposes and to examine appropriateness of treatment, follow-up records were retrieved for the 1,869 women with histological LSIL. Of these women, 110 (5.9%) women were subsequently treated within 26 weeks of LSIL being histologically confirmed and had no additional record of high-grade histology in the six months preceding their treatment. The proportion of women subsequently treated varied widely by DHB, from no women (Hutt Valley, Whanganui, South Canterbury) to 29.4% (Northland; Table 20). The DHB where the largest number of women were treated was Counties Manukau (18 women).
Trends	Nationally, the proportion of women with histological HSIL who were treated within eight weeks of histological confirmation is lower than in the previous monitoring report (66.3% in the previous report, 61.1% in the current report. The proportion of women with histological HSIL who were treated within eight weeks for the current report period is higher than in the previous report in five of the twenty DHBs, but lower than in the previous report in 15 DHBs (Figure 81). The proportion of women with histological LSIL who were subsequently treated (within 26 weeks of LSIL being histologically confirmed) has increased, from 5.2% for the previous report to 5.9% in the current report.
Comments	Whether or not treatment has occurred is determined for this indicator via colposcopy data in the NCSP Register. Trends may reflect changes in the completeness of colposcopy data recording treatment within a DHB rather than necessarily true increases or decreases in the proportion of women treated. This incomplete recording of treatment potentially affects the results for treatments for both HSIL and LSIL. In some cases, treatment may have occurred in a different clinic to that where the original histology sample was collected. Facilities not explicitly defined as DHB (public) clinics are aggregated together as private practice. It is possible that women whose original HSIL (or LSIL) histology sample was collected outside a DHB clinic may in practice have been treated at a DHB clinic (or conversely a woman whose histology sample

was collected at a DHB clinic may have been treated outside a DHB clinic). Note, however, that timeliness is assessed here by including any treatment visits, regardless of where they occurred.

The 2013 National Cervical Screening Programme Policies and Standards: 'Section 6 – Providing a Colposcopy Service' requires colposcopy clinics to provide information about the "decision to treat date" and "date histology result is received". At present, these dates are not available to use due to low completeness of this item on the NCSP Register. When this information is available for all DHBs for a full monitoring period, it will be used to calculate timeliness of treatment for women with histological HISL.

Figure 80 - Proportion of women treated within eight weeks of histological confirmation of HSIL, by DHB



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

Figure 81 - Trends in the proportion of women treated within eight weeks of histological confirmation of HSIL, by DHB

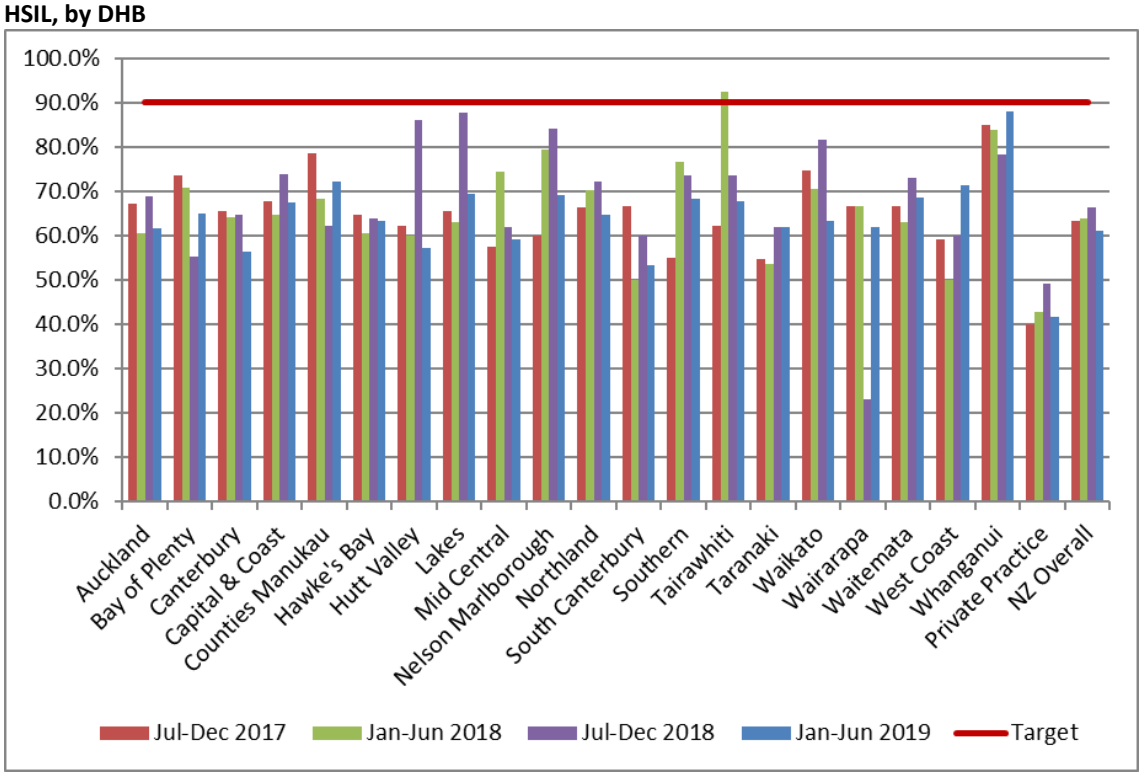


Table 20 - Timeliness and appropriateness of treatment, by DHB

Age	Women with CIN 2/3	Treated within 8 weeks		Women with histological LSIL*	Women subsequently treated†	
	N	N	%	N	N	%
Public clinics (overall)	1,726	1,116	64.7	1,453	99	6.8
Auckland	149	92	61.7	169	14	8.3
Bay of Plenty	83	54	65.1	82	4	4.9
Canterbury	247	139	56.3	398	16	4.0
Capital & Coast	74	50	67.6	85	7	8.2
Counties Manukau	143	103	72.0	189	18	9.5
Hawke's Bay	60	38	63.3	14	4	28.6
Hutt Valley	56	32	57.1	21	0	0.0
Lakes	49	34	69.4	40	2	5.0
Mid Central	122	72	59.0	53	5	9.4
Nelson Marlborough	39	27	69.2	23	1	4.3
Northland	68	44	64.7	17	5	29.4
South Canterbury	15	8	53.3	11	0	0.0
Southern	136	93	68.4	40	4	10.0
Tairawhiti	34	23	67.6	12	1	8.3
Taranaki	50	31	62.0	26	4	15.4
Waikato	147	93	63.3	73	1	1.4
Wairarapa	21	13	61.9	15	0	0.0
Waitemata	169	116	68.6	149	10	6.7
West Coast	14	10	71.4	15	2	13.3
Whanganui	50	44	88.0	21	1	4.8
Private Practice	319	133	41.7	416	11	2.6
Total	**2,045**	**1,249**	**61.1**	**1,869**	**110**	**5.9**

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

Indicator 7.5 – Timely discharging of women after treatment

Definition

This indicator measures performance against Standard 608.

It reports on the proportion of women treated for a high-grade lesion who:

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

Treatment was defined as a colposcopy visit where there was a record of electrosurgical excision, laser ablation or excision, cold knife cone biopsy, or total hysterectomy. Colposcopy visits involving punch biopsies only are not included. Treatment was included if it was for a high-grade lesion (CIN 2 or CIN 3), based on histology results for any histology specimen collected concurrent with or up to six months prior to treatment.

To allow for 12 months of follow-up information to be available, this indicator reports on women treated in the six-month period ending 12 months prior to the end of the current monitoring period (i.e. 1 January - 30 June 2018). Records for each woman treated in the six-month period ending 12 months prior to the end of current monitoring period were retrieved from the NCSP Register. Among these treated women, the number of women with a colposcopy visit, and with both a colposcopy visits and a cytology sample was calculated. Follow-up colposcopy visits were not restricted to only those within the same DHB as where initial treatment occurred; rather any colposcopy visit recorded on the NCSP Register for that woman was included. Follow-up visits were retrieved for the period up to nine months after the treatment visit.

Eligibility for discharge is not explicitly defined in the NCSP Colposcopy Standard, so based on advice from the NCSP Advisory Group, women were defined as eligible for discharge if they had a colposcopy visit and cytology test following their treatment, and their cytology result was negative.

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

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

Target	90% or more of women treated for CIN 2 or 3 should have a colposcopy and cytology sample within the nine-month period post-treatment 90% or more of women treated for CIN 2 or 3 should be discharged back to the sample taker as appropriate.
Current Situation	There were 1,350 women treated for CIN 2 or CIN 3 lesions in the six-month period from 1 January - 30 June 2018. These women were followed up for 12 months from the date of their treatment visit. ***Follow-up post treatment*** There were 1,005 women (74.4%) with a follow-up colposcopy, and 987 women (73.1%) with both a follow-up colposcopy and a cytology sample in the nine month period after their treatment visit. Figure 82 shows the percentage of treated women with a record of follow-up colposcopy, and both follow-up colposcopy and a cytology sample, in the period up to nine months post-treatment by DHB. Generally, the number of women with both cytology and colposcopy was very similar to the number of women with at least colposcopy (Table 72). The maximum number of women with colposcopy only and no record of a cytology sample in the timeframe was at most four in Capital & Coast. Nationally, the percentage of women treated for high-grade lesions with a record of colposcopy and cytology within the nine-month period post-treatment (73.1%) is below the target value of 90%. Four DHBs met the target of at least 90% of women receiving cytology and colposcopy within nine months post-treatment (Figure 82, Table 72) The percentage of treated women with a record of both follow-up colposcopy and a cytology sample in the period up to nine months post-treatment varied by DHB from 24.2% (Bay of Plenty) to 95.0% women (Hutt Valley). ***Women discharged appropriately*** In total, 1,001 women (74.1% of those treated) were eligible to be discharged by 12 months after their treatment visit, and 850 of these women (84.9%) were discharged within 12 months of treatment (Table 71). Figure 83 shows how these percentages varied by DHB. The percentage of women eligible for discharge who were discharged within 12 months of treatment ranged from 25.0% (South Canterbury) to all eligible women (Hutt Valley, Wairarapa, West Coast, Whanganui; Table 71). In some cases, the number of women eligible for discharge was small, so these results should be interpreted with caution (ten or fewer women in Wairarapa and West Coast). Nine DHBs met the target of discharging 90% of women where appropriate within 12 months (Auckland, Counties Manukau, Hutt Valley, Nelson Marlborough, Southern, Waikato, Wairarapa, West Coast, Whanganui).

	In total (that is, without considering whether or not women met the criteria suggested by the NCSP Advisory Group to be eligible for discharge), 965 women were discharged within 12 months of being treated for a high-grade lesion (71.5% of all women treated for a high-grade lesion).
Trends	The proportion of women with follow-up has decreased overall (from 75.8% to 74.4% for colposcopy, and from 75.0% to 73.1% for follow-up with both cytology and colposcopy). Four DHBs met the target of 90% of women having colposcopy and cytology within nine months of treatment, compared to three DHBs in the previous report. The proportion of women discharged appropriately to their sample taker by 12 months has decreased (86.0% in the previous report; 84.9% in the current report). The number of DHBs meeting the target of 90% remained similar (nine).
Comments	Since this indicator relies on colposcopy data in the NCSP Register, there is the possibility that incomplete reporting of colposcopy visits has led to an underestimate of the number of women with follow-up colposcopy visits and the number discharged in a given time period. The data used in this analysis was extracted from the NCSP Register in mid August 2019. The target that 90% or more of women treated for CIN 2 or 3 should be discharged back to the sample taker as appropriate was assessed in this monitoring report, based on guidance from the NCSP Advisory Group as to when discharge would be appropriate. However, it should be noted that neither the 2008 NCSP Guidelines for Cervical Screening in New Zealand nor the 2013 Colposcopy Standards themselves provide explicit guidance for when discharge back to the sample taker is appropriate. In some circumstances, women may be treated within one DHB, but referred to another DHB for follow-up. This information is not always recorded in the NCSP Register, however this measure does take into account all follow-up visits which women attend, regardless of the DHB in which they occurred. For clarity in this report, women remain assigned to the DHB where their treatment was performed.

Figure 82 - Percentage of women treated with colposcopy, and both colposcopy and cytology, within nine months post-treatment, by DHB

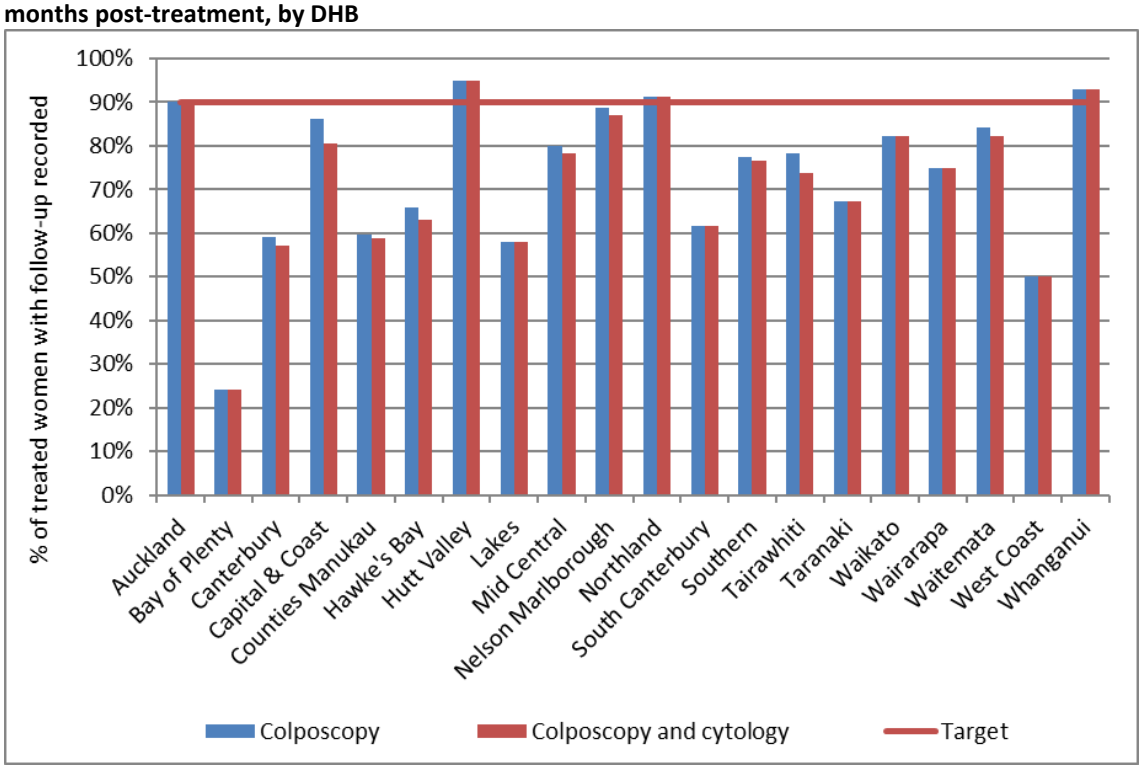
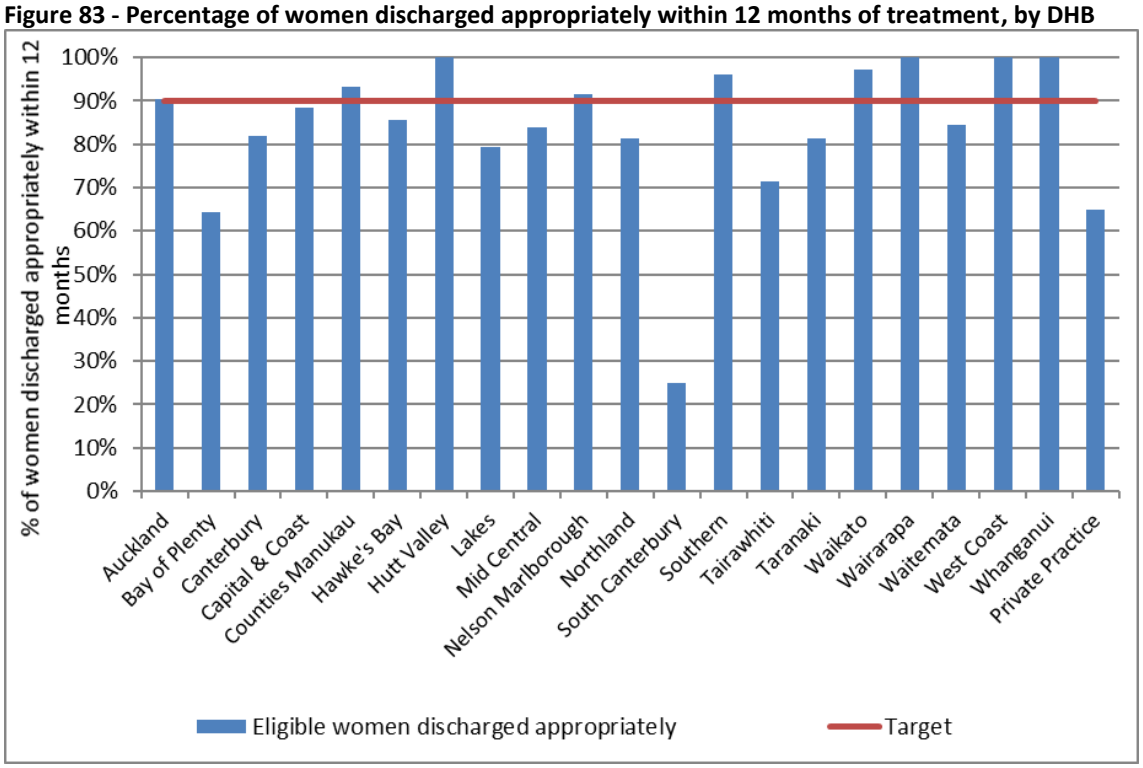


Figure 83 - Percentage of women discharged appropriately within 12 months of treatment, by DHB



Indicator 8 – HPV tests

The indicators report on the use of HPV testing. At present, they incorporate the following indicators:

8.1 Triage of low-grade cytology

8.2 HPV test volumes (including purpose for which the test was performed)

8.3 HPV tests for follow-up of women with a historical high-grade abnormality

Other than HPV test volumes (indicator 8.2) specific monitoring of the other uses of HPV testing is not yet included. These other purposes include:

- Management of women previously treated for CIN
- Management of women with a high-grade squamous cytology result in the past followed by negative cytology
- Resolution of discordant cytology, colposcopy and histology

Indicator 8.1 – Triage of low-grade cytology

Definition	For women with an ASC-US or LSIL (low-grade) cytology result relating to a cervical sample taken in the monitoring period, and with no recent abnormal cytology (i.e. abnormal cytology results relating to specimens taken in the preceding five years), the following are reported on as follows: • The number and proportion of women with a subsequent HPV triage test (by age group, and cytology laboratory) • Women with positive HPV triage result, as a proportion of women with a valid HPV test (by age group, and cytology laboratory) • Histological outcomes in women with a positive triage test, where this information is available within 12 months following a positive HPV triage test Where a woman has two different low-grade cytology results, relating to a sample or samples collected on the same date, she is grouped in accordance with the most serious result (i.e. LSIL). A subsequent HPV triage test is defined as an HPV test where the sample was collected at the same time or shortly after an initial cytology sample, and where there is a result available (including invalid results). Women whose ASC-US or LSIL cytology test is associated with a recommendation code of R14 (refer regardless of cytology result) are excluded, as they may be symptomatic. Women who are aged less than 30 years are excluded from this indicator if they have ever had either a high-grade squamous cytology result (ASC-H, HSIL) or a high-grade squamous histology result (CIN 2/3), as they may be having an HPV test in order to follow-up a previous high-grade squamous abnormality (cytology or histology, i.e. historical testing or as a test-of-cure following treatment for CIN2/3). If a laboratory which performed the cytology refers the HPV test to a different laboratory, measures are based on the laboratory which performed the cytology test. Measures reported by age are based on the age of the women on the date that the cytology sample was collected.
Target	Targets have not yet been set.
Current Situation	There were 761 women aged less than 30 years and 1,672 women aged 30 years or more with an ASC-US cytology result relating to a sample collected in the current monitoring period, and who had no abnormal cytology results relating to samples taken in the previous five years. The corresponding figures

for LSIL are 2,189 women aged less than 30 years and 1,518 women aged 30 years or more.

HPV triage

NCSP Guidelines (2008) recommend that women aged 30 years or more who have not had an abnormal cytology report in the previous five years are offered a HPV triage test following ASC-US or LSIL cytology. Among these eligible women, 97.6% of women aged 30 years or more with an ASC-US cytology result, and 96.0% of women aged 30 years or more with an LSIL cytology result are recorded as having a subsequent HPV test (Table 73, Table 74). These proportions ranged from 93.3% (Medlab Central Ltd) to 100.0% (Canterbury Health Laboratories) for ASC-US cytology results and from 89.3% (Medlab Central Ltd) to 98.4% (Pathlab) for LSIL cytology results (Figure 84, Table 73, Table 74).

HPV triage is not included in the recommendations for women aged less than 30 years, and accordingly the proportions of women aged less than 30 years with a subsequent HPV test were historically very small. Subsequent HPV tests are recorded in the NCSP Register for 1.1% of women aged less than 30 years with ASC-US results, and 0.6% of women aged less than 30 years with LSIL results. These proportions ranged from no women (LabPLUS, Canterbury Health Laboratories, Medlab Central Ltd) to 2.0% (Southern Community Labs) for women with ASC-US results, and from no women (Canterbury Health Laboratories, LabPLUS) to 0.9% (Southern Community Labs) for women with LSIL results (Table 73, Table 74).

Positive triage tests

Among women aged 30 years or more with a valid HPV triage test result, the proportion who were positive for high risk HPV (hrHPV) was 23.7% for women with ASC-US results, and 61.2% for women with LSIL results. These proportions varied by laboratory from 18.4% (LabPLUS) to 28.8% (Pathlab) for women with ASC-US cytology (Figure 85), and from 41.1% (LabPLUS) to 65.8% (Medlab Central Ltd) for women with LSIL cytology (Figure 86).

The proportion of women whose HPV triage test was positive also varied by age. Among women aged 30-69 years, HPV positivity rates were highest for those aged 30-39 years for women with ASC-US cytology (32.2%), and 30-39 years for those with LSIL cytology (68.8%). For women with ASC-US results, the positivity rates in the 10-year age groups between 40 and 69 years ranged between 16.5% and 25.3% (Figure 87, Table 21). For women with LSIL results, the positivity rates were between 52.9% and 56.9% for these 10-year age groups (Figure 87, Table 22).

Histological outcomes in triage-positive women who attended colposcopy

In order to allow sufficient time for women to have attended colposcopy following a positive triage test, histological outcomes were assessed in women with low-grade cytology and a positive HPV triage test in the six-month period 1 January – 30 June 2018. In this period, there were 375 women with an ASC-US cytology result and positive HPV triage test, and 903 who had an LSIL cytology result and positive HPV triage test. 344 (91.7%) of the women with

ASC-US who were triage-positive and 833 (92.2%) of the women with LSIL who were triage-positive had a record of colposcopy and/or histology within the 12 months following their initial test results. Among the women with a record of colposcopy, 240 (69.8%) and 590 (70.8%) of the women with ASC-US and LSIL respectively have a histology record.

Histological outcomes in these women were initially considered in an analogous manner to Indicator 5.2 – that is, the number of women with CIN 2 or worse histology (CIN 2+; also see Appendix D), as a percentage of women who had a histology result available. The percentage of women with histology whose histology result was CIN 2+ was 19.6% for HPV triage-positive ASC-US and 19.7% for HPV triage-positive LSIL (Table 75, Table 76). These percentages varied by laboratory from 16.7% (Anatomical Pathology Services) to 35.3% (Medlab Central Ltd) for HPV triage-positive ASC-US and from 12.8% (Canterbury Health Laboratories) to 25.8% (Medlab Central Ltd) for HPV triage-positive LSIL (Figure 88).

We additionally considered histological outcomes as a percentage of women who attended colposcopy (rather than only those with a histology result), as some women may have no histology because the colposcopic impression was normal. The corresponding percentages of women with CIN 2+ histology was 13.7% for HPV triage-positive ASC-US and 13.9% for HPV triage-positive LSIL (Table 75, Table 76). These percentages varied by laboratory from 11.9% (Pathlab) to 22.2% (Medlab Central Ltd) for HPV triage-positive ASC-US and from 10.6% (Anatomical Pathology Services) to 17.1% (Southern Community Labs Dunedin) for HPV triage-positive LSIL (Figure 89). For context, these are also compared with the corresponding percentages for women with ASC-H and HSIL cytology with CIN 2+ histology (among women who attended colposcopy within six months), by laboratory, in Figure 89 and Figure 90.

Histological outcomes within 12 months in women with triage-positive test results are shown by age, as a percentage of women with histology recorded (Figure 91), and as a percentage of women with colposcopy recorded (Figure 92). Among women aged 30-69 years, the percentage of women with CIN 2+ histology within 12 months generally decreased with increasing age for HPV triage-positive ASC-US and LSIL. There were no cases of CIN 2+ among women aged 70+ years with ASC-US and a positive HPV triage test. There was one case for women ages 70+ years with LSIL. The age group with the highest proportion of triage positive women with CIN2+ histology was 40-49 years for both ASC-US and LSIL (26.6% and 22.0%, respectively).

Trends

HPV triage

The proportion of women aged 30 years or more with low-grade cytology (and no recent abnormal cytology in the preceding five years) who received a subsequent HPV test is higher than in the previous report for women with ASC-US results (96.6% in the previous period compared to 97.6% in the current period), and for women with LSIL results (95.6% in the previous period compared to 96.0% in the current period). The proportion of women aged less than 30 years with a subsequent HPV test is higher than in the previous

monitoring period for ASC-US but lower for LSIL results (0.8% in the previous period compared to 1.1% for ASC-US in the current period and 0.7% to 0.6% for LSIL).

Positive triage tests

The proportion of women aged 30 years or more who tested positive for a high risk HPV type is lower than the current report for ASC-US (24.0% in the previous report; 23.7% in the current report), and higher for LSIL (59.1% in the previous report; 61.2% in the current report).

Histological outcomes in triage-positive women who attended colposcopy

91.7% of women with ASC-US cytology and a positive HPV triage test in the six-month reference period for the current report had a record of colposcopy and/or histology within the 12 months following their test result, which is lower than in the previous report (93.0%). For the current report, 69.8% of these women with colposcopy also had a histology record, which is higher than to the previous report (66.2%). Of these women with a histology record, the histology result was CIN 2+ for 19.6% of women in the current report, compared to 21.4% in the previous report. When histological CIN 2+ outcomes were considered as a proportion of women with colposcopy, rather than histology, the corresponding figures were 13.7% in the current report versus 14.2% in the previous report. The proportion of triage-positive ASC-US women with CIN 2+ histology (among those who attended colposcopy) also decreased compared to the previous report at three of six laboratories (Canterbury Health Laboratories, Pathlab, Southern Community Labs; Figure 93). Caution must be taken when interpreting differences at LabPLUS due to frequently having small numbers of triage-positive women and therefore highly variable percentages).

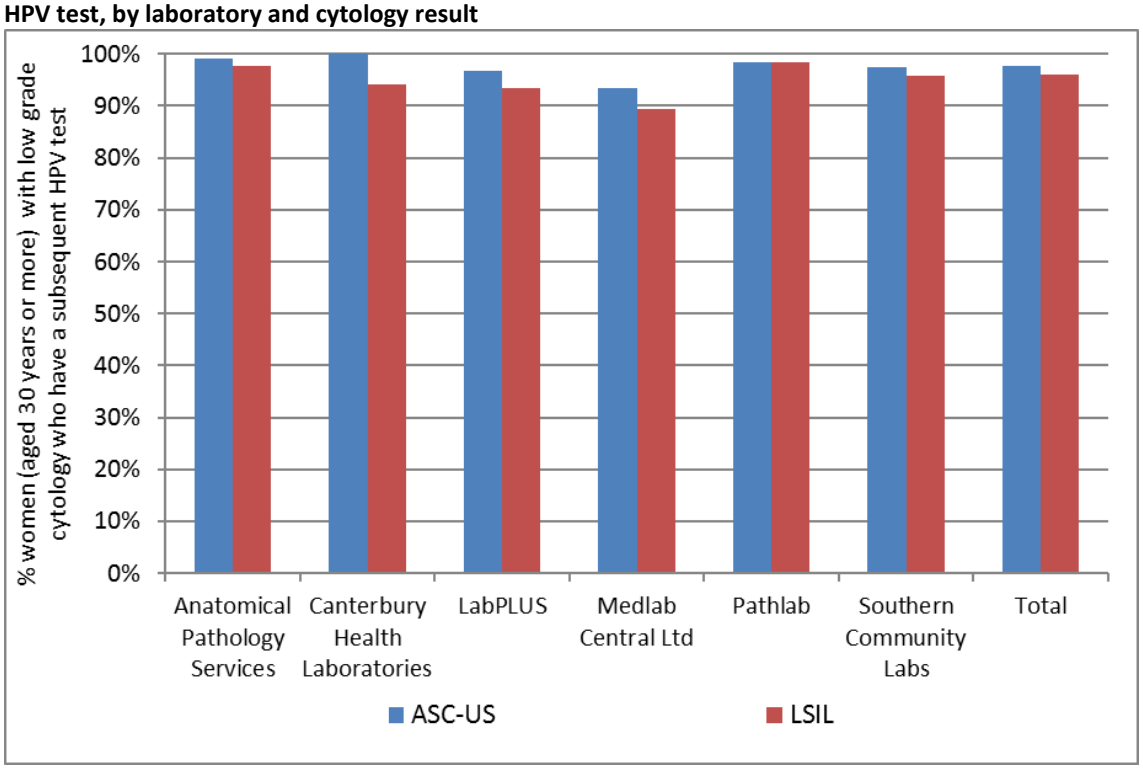
For women with LSIL cytology and a positive HPV triage test in the reference period for the current report, 92.2% had a record of colposcopy and/ or histology within 12 months of their result, which is lower than the 92.8% of women in the previous report. For the current report 70.8% of these women with colposcopy also had a histology record, compared with 71.8% in the previous report. Of those women with a histology record, the histology result was CIN 2+ for 19.7% of women in the current report, compared with 19.6% in the previous report. When histological CIN 2+ outcomes were considered as a proportion of women with colposcopy, rather than histology, the corresponding figures were 13.9% for the current report and 14.1% for the previous report. Trends in this proportion of LSIL triage-positive women with CIN 2+ histology (among those who attended colposcopy) are shown in Figure 94. The proportion with CIN2+ histology decreased in four laboratories (Anatomical Pathology Services, Canterbury Health Laboratories, Medlab Central Ltd, Pathlab).

Comments

A small number of women aged less than 30 years with low-grade results, no recent abnormalities (in the previous five years) and no record at any time of a previous high-grade squamous abnormality (cytological or histological), have a record of a subsequent HPV test (22 women). This is just higher than the number of women in the previous report (21 women). It is uncertain whether

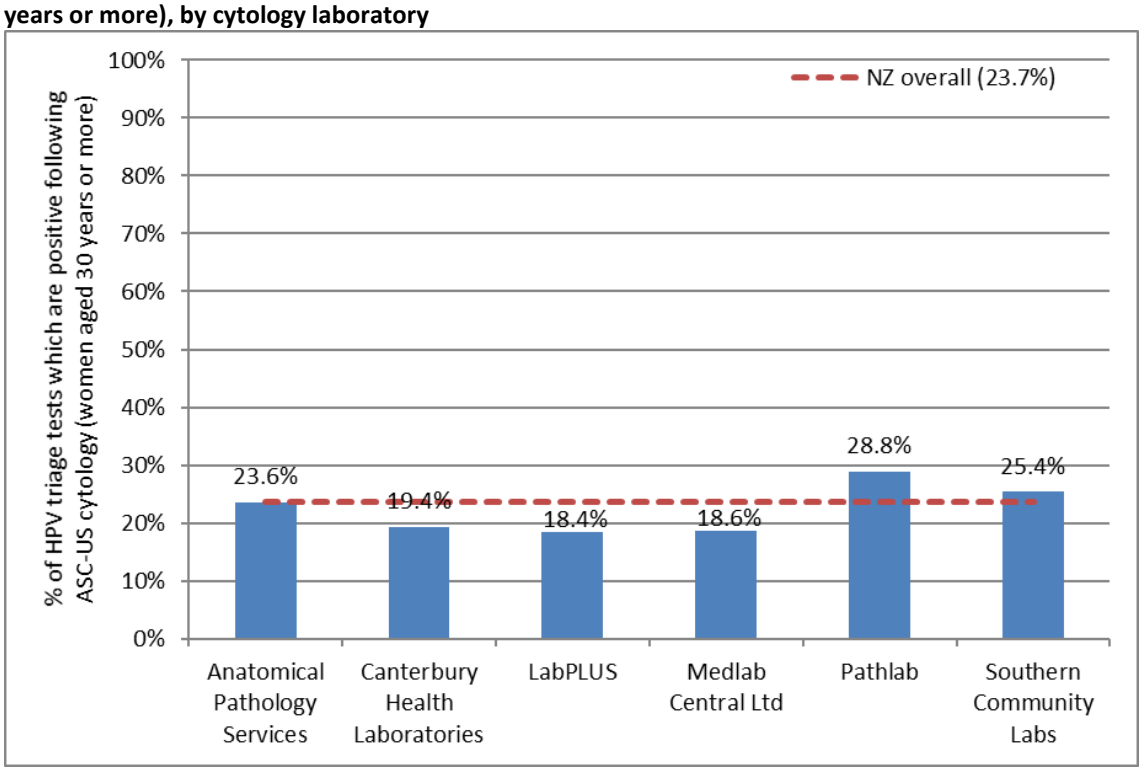
these HPV tests were performed for the purpose of triage, or for other reasons. In this report, we excluded women aged less than 30 years from this indicator if they had ever had a previous high-grade squamous abnormality (either ASC-H/ HSIL cytology, or CIN 2/3 histology). This was done in order to avoid potential inadvertent inclusion in this group of women being tested for HPV in concordance with the guidelines as part of "historical testing". This could occur as a result of a previous high-grade squamous abnormality (either ASC-H/ HSIL cytology, or CIN 2/3 histology) currently managed by annual cytology, which occurred more than five years earlier (since abnormalities within the previous five years are already taken into account). It is also possible that some women were aged 29 years at the time of their cytology sample, but 30 years at the time of the cytology result, although previous exploration has suggested that the extent of this is likely to be small.[20,21] Another possible explanation is that these women are being followed up for a previous high-grade result but this is not recorded on the NCSP Register (for example because this occurred overseas). The HPV test may also have been ordered by a specialist. However note that inadvertent inclusion of HPV tests ordered by a specialist to resolve discordant results (or for historical testing) should be minimised since women were excluded from this indicator if they had any recent abnormalities (past five years, any abnormality grade); if they had ever had a high-grade squamous abnormality (but no glandular abnormality) recorded on the NCSP Register; if the sample for HPV testing was collected on the same day as a recorded colposcopy visit for that woman; or if the sample for HPV testing was collected more than five weeks after the cytology sample.

Figure 84 - Proportion of women (aged 30 years or more) with low-grade cytology who have a subsequent HPV test, by laboratory and cytology result



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

Figure 85 - Proportion of HPV triage tests which are positive following ASC-US cytology (women aged 30 years or more), by cytology laboratory



Note that LabPLUS results are based in very small numbers of triage-positive women (see Table 75).

Figure 86 - Proportion of HPV triage tests which are positive following LSIL cytology (women aged 30 years or more), by cytology laboratory

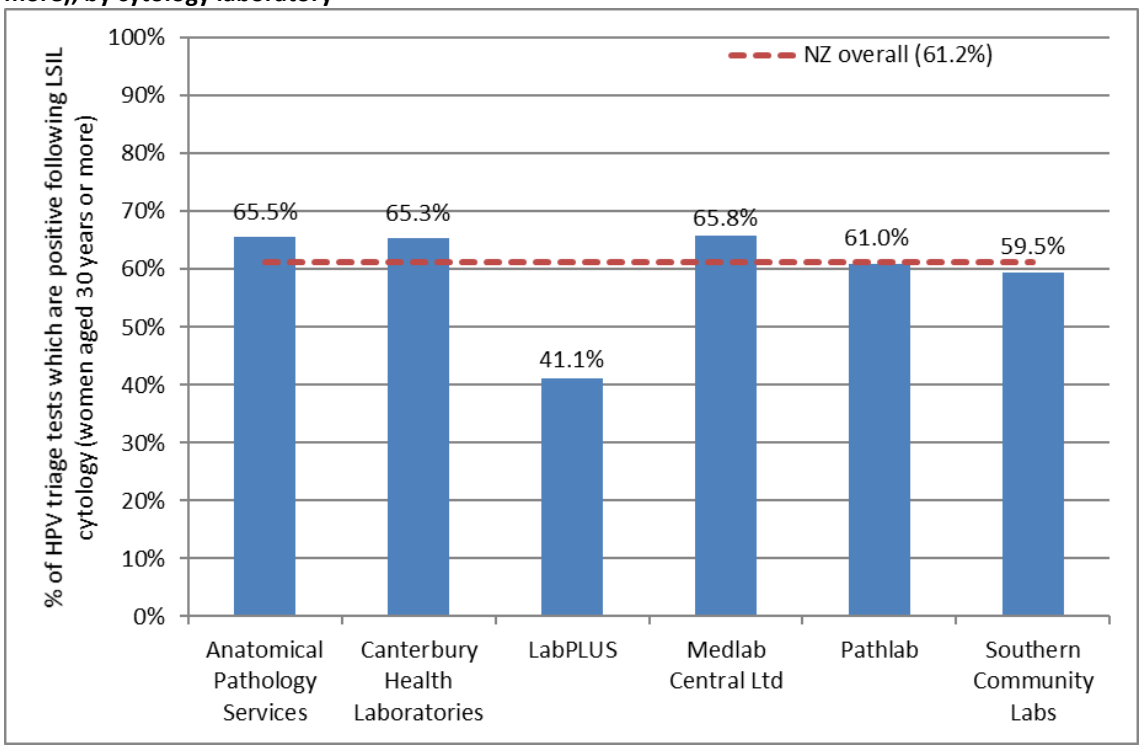
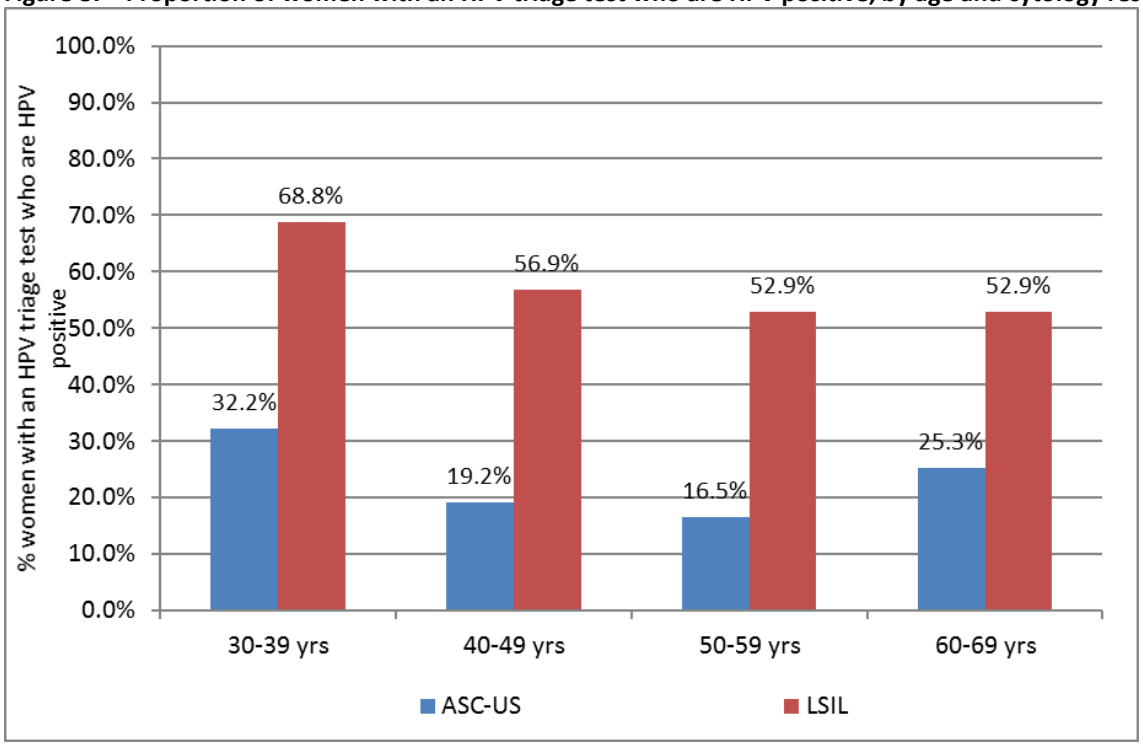


Figure 87 - Proportion of women with an HPV triage test who are HPV positive, by age and cytology result



Note: Excludes results for women aged less than 30 years and aged 70 years or more, since these are based on very small numbers of women with valid HPV test results.

Table 21 - HPV triage test results following ASC-US cytology, by age and cytology laboratory

Laboratory	Women with valid HPV test results		Women with positive HPV test results (number and % within each age group)											
	< 30yrs*	30+ yrs	< 30yrs*		30-39 yrs		40-49 yrs		50-59 yrs		60-69 yrs		70+ yrs	
	N	N	N	%	N	%	N	%	N	%	N	%	N	%
Anatomical Pathology Services	2	356	1	50.0	41	33.3	16	15.5	14	18.9	12	23.5	1	20.0
Canterbury Health Laboratories	0	124	0	0.0	12	23.5	5	17.2	5	13.5	2	28.6	0	0.0
LabPLUS	0	147	0	0.0	14	28.6	8	16.3	2	5.7	2	16.7	1	50.0
Medlab Central Ltd.	0	210	0	0.0	16	19.3	10	17.5	11	21.2	2	11.1	0	0.0
Pathlab	1	312	1	100.0	43	41.0	23	25.3	13	18.3	11	25.6	0	0.0
Southern Community Laboratories	5	481	3	60.0	53	36.6	30	20.0	20	16.1	19	32.2	0	0.0
Total	**8**	**1630**	**5**	**62.5**	**179**	**32.2**	**92**	**19.2**	**65**	**16.5**	**48**	**25.3**	**2**	**16.7**

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

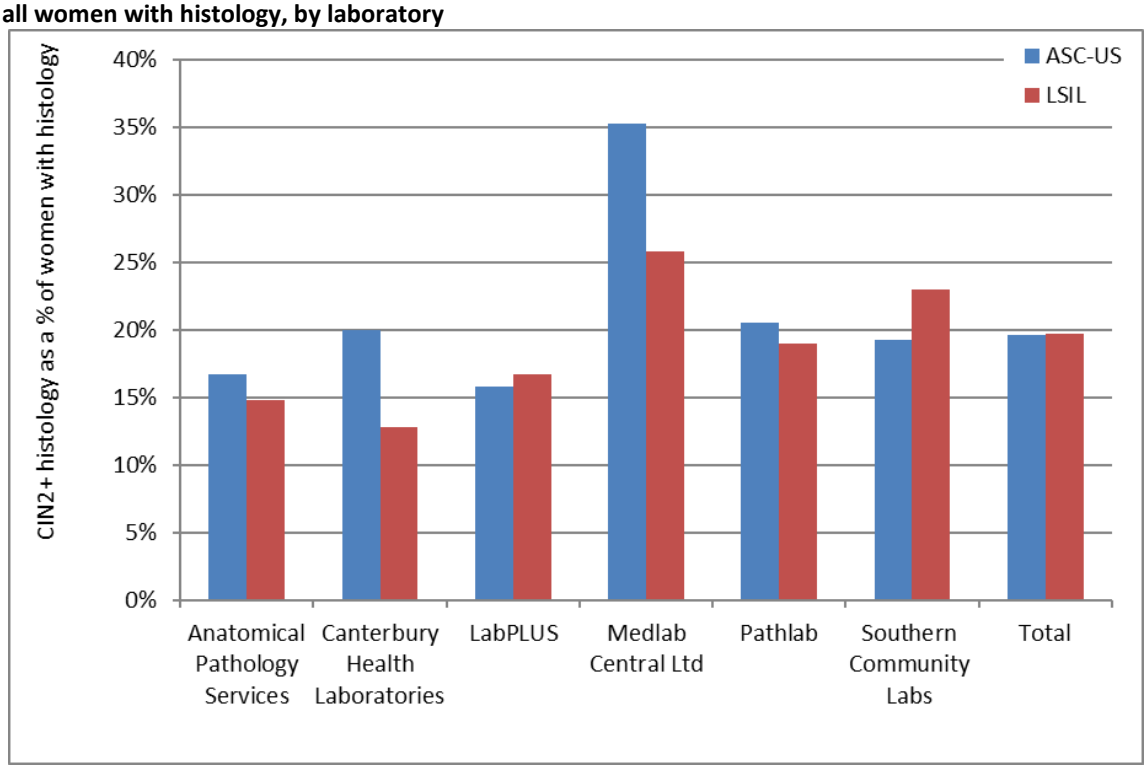
** Additionally excludes women with any previous squamous high-grade (cytology or histology).*

Table 22 - HPV triage test results following LSIL cytology, by age and cytology laboratory

Laboratory	Women with valid HPV test results		Women with positive HPV test results (number and % within each age group)											
	< 30yrs*	30+ yrs	< 30yrs*		30-39 yrs		40-49 yrs		50-59 yrs		60-69 yrs		70+ yrs	
	N	N	N	%	N	%	N	%	N	%	N	%	N	%
Anatomical Pathology Services	2	354	2	100.0	131	75.3	61	56.5	31	55.4	9	60.0	0	0.0
Canterbury Health Laboratories	0	49	-	-	14	66.7	14	82.4	3	42.9	1	25.0	0	0.0
LabPLUS	0	56	-	-	13	61.9	5	31.3	4	28.6	0	0.0	1	50.0
Medlab Central Ltd.	1	117	1	100.0	35	71.4	21	63.6	16	55.2	5	83.3	0	0.0
Pathlab	2	254	1	50.0	71	62.8	47	63.5	24	55.8	12	57.1	1	33.3
Southern Community Laboratories	9	627	8	88.9	190	67.4	104	53.3	60	53.6	18	50.0	1	50.0
Total	**14**	**1457**	**12**	**85.7**	**454**	**68.8**	**252**	**56.9**	**138**	**52.9**	**45**	**52.9**	**3**	**37.5**

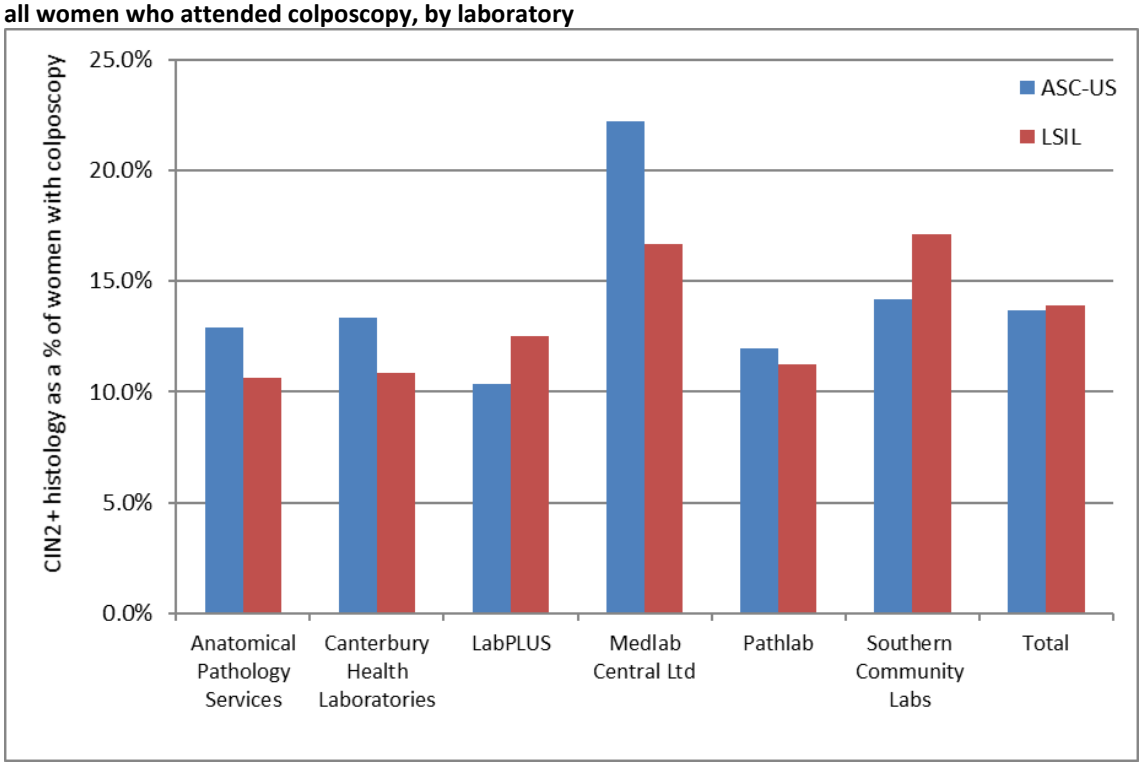
Excludes women with abnormal cytology in the five years preceding their low-grade cytology sample.
** Additionally excludes women with any previous squamous high-grade (cytology or histology).*

Figure 88 – Triage-positive women with histologically-confirmed CIN 2+ within 12 months, as a percentage of all women with histology, by laboratory



Note that LabPLUS results are based in very small numbers of triage-positive women (see Table 75 and Table 76).

Figure 89 – Triage-positive women with histologically-confirmed CIN 2+ within 12 months, as a percentage of all women who attended colposcopy, by laboratory



Note that LabPLUS results are based in very small numbers of triage-positive women (see Table 75 and Table 76).

Figure 90 - Women with histologically-confirmed CIN 2+ within 12 months, as a percentage of all women who attended colposcopy, by laboratory and referral cytology

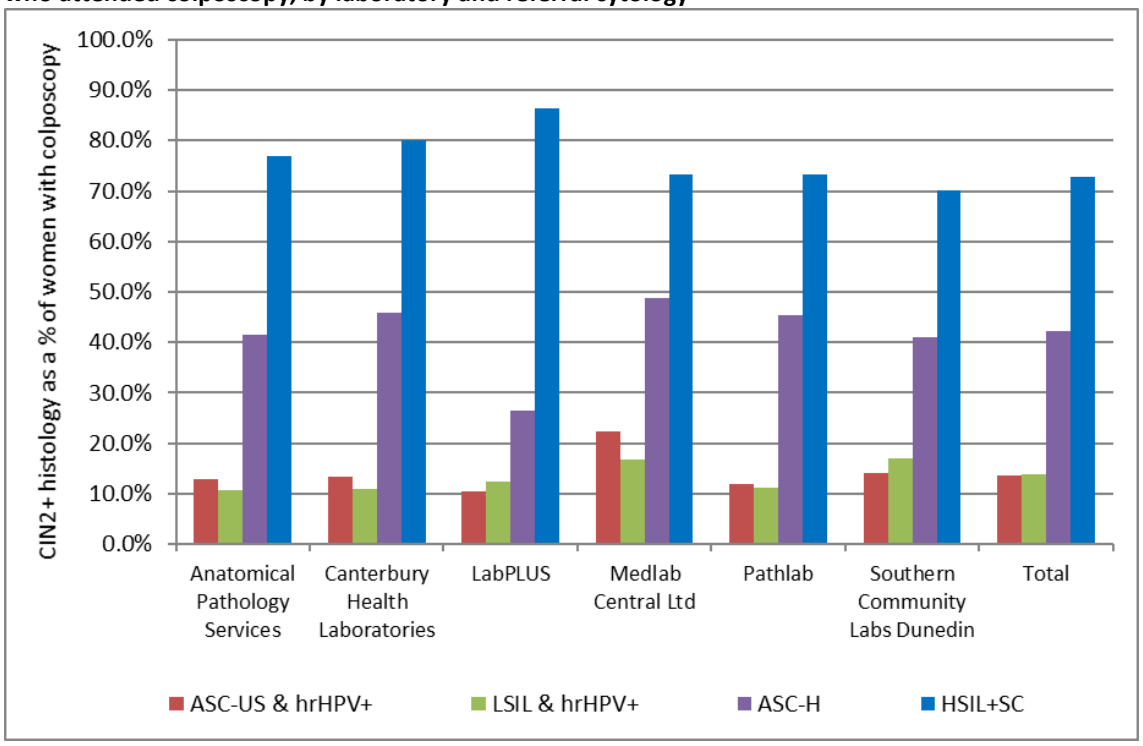


Figure 91 – Triage-positive women with histologically-confirmed CIN 2+ within 12 months, as a percentage of women with histology recorded, by age

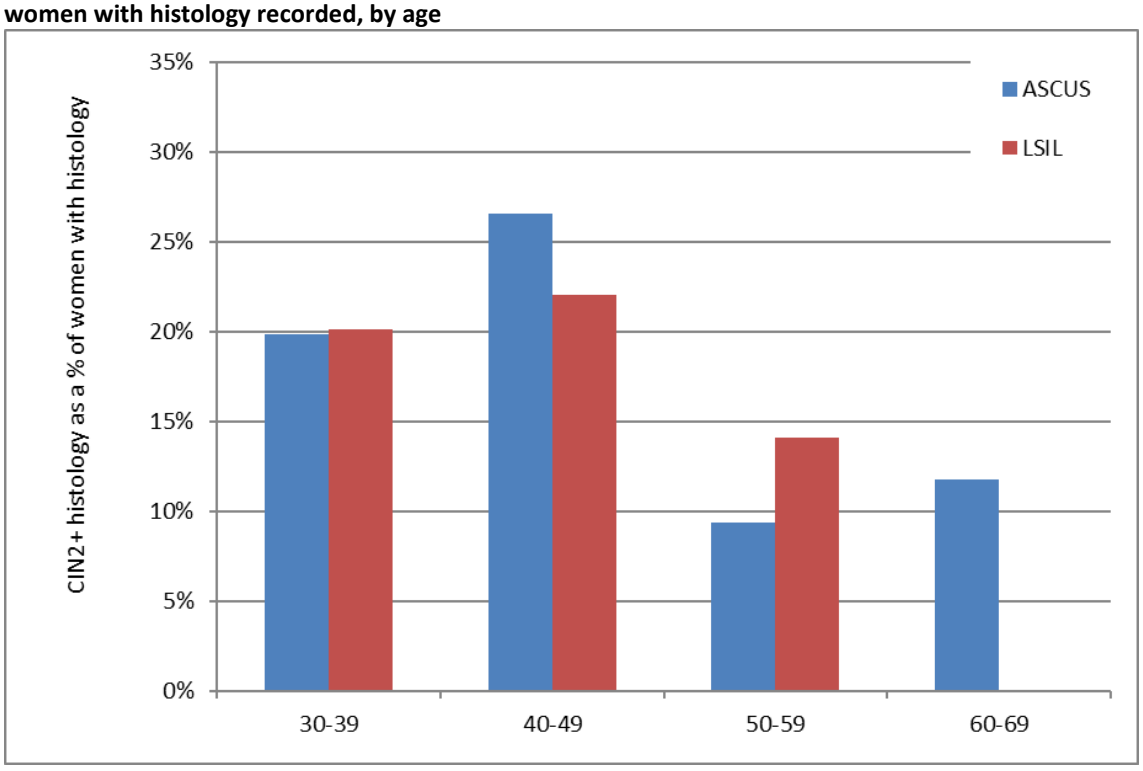


Figure 92 – Triage-positive women with histologically-confirmed CIN 2+ within 12 months, as a percentage of women with colposcopy recorded, by age

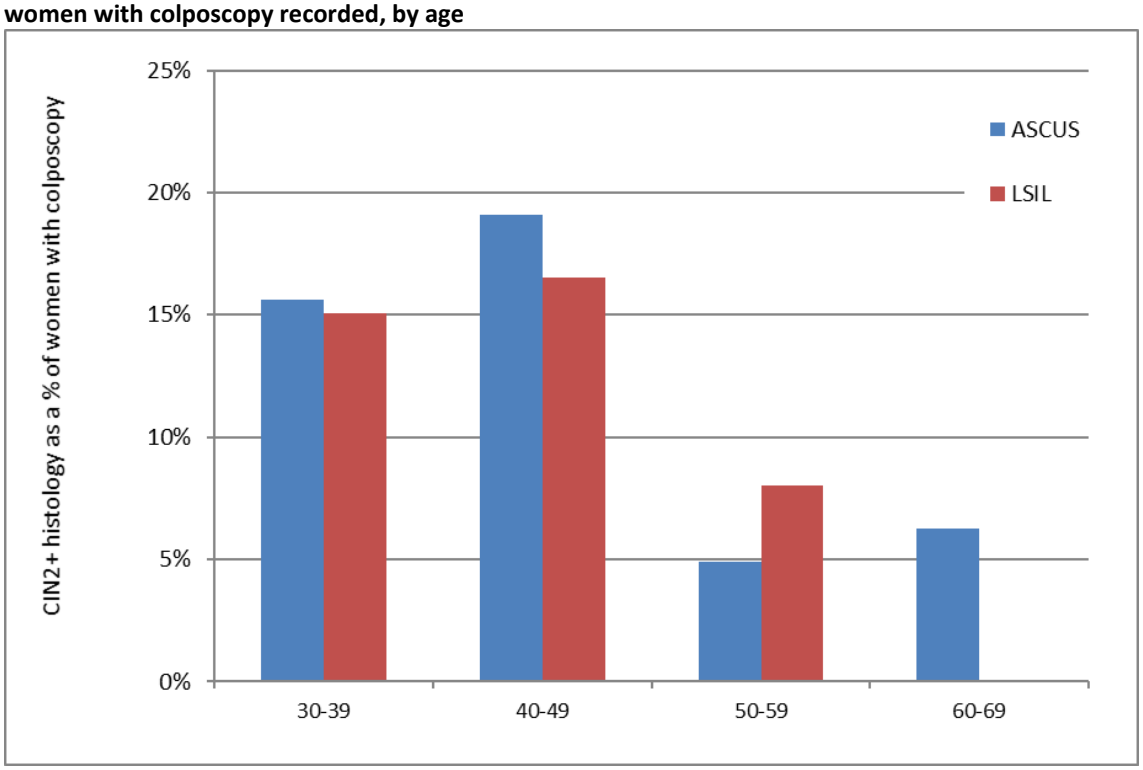
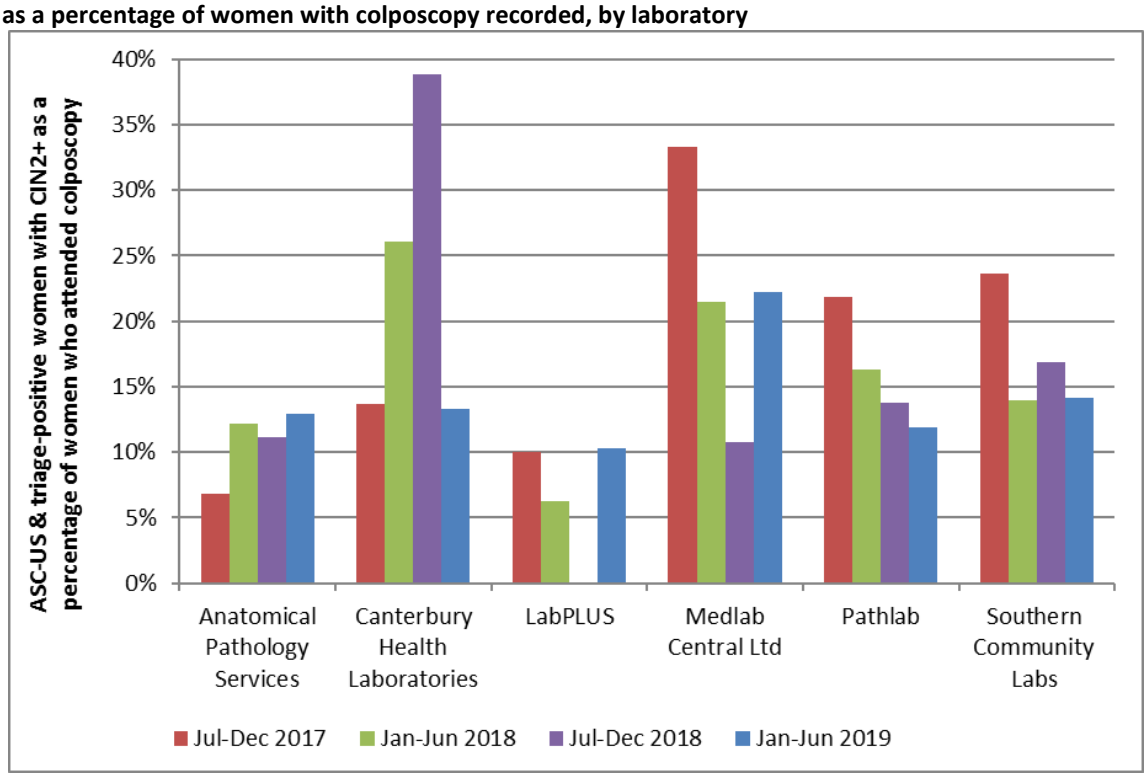
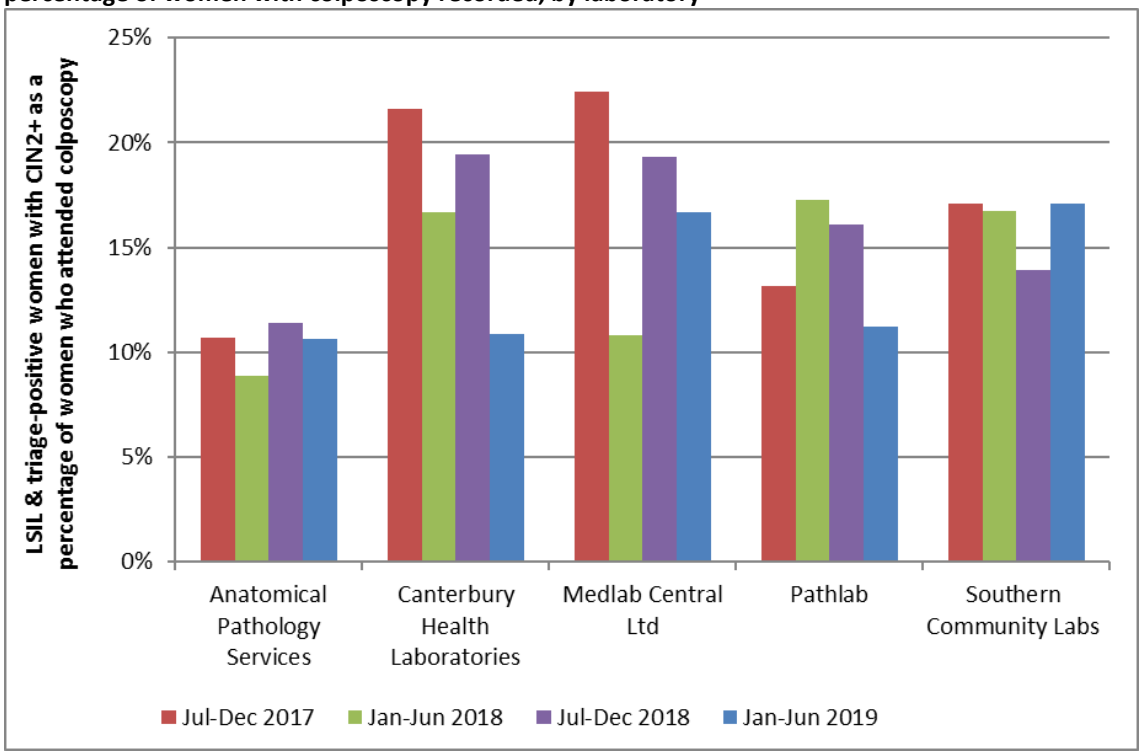


Figure 93 – Trends in ASC-US triage-positive women with histologically-confirmed CIN 2+ within 12 months, as a percentage of women with colposcopy recorded, by laboratory



Time periods relate to monitoring report periods; results relate to samples collected in the 6-month period 12 months prior to the monitoring period, to allow for sufficient follow-up time for colposcopy/ histology. See Table 75.

Figure 94 – Trends in LSIL triage-positive women with histologically-confirmed CIN 2+ within 12 months, as a percentage of women with colposcopy recorded, by laboratory



Time periods relate to monitoring report periods; results relate to samples collected in the 6-month period 12 months prior to the monitoring period, to allow for sufficient follow-up time for colposcopy/ histology. Note that this graph excludes LabPLUS due to frequently having small numbers of triage-positive women and highly variable percentages. See Table 76.

Indicator 8.2 – HPV test volumes

Definition

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

- Laboratory
- Ethnicity
- Age group
- Purpose

Purpose is defined as one of the following categories:

i) Post-treatment *(women treated for high-grade squamous lesions (specifically CIN 2/3) in the period six months to four years prior to the HPV sample date, to capture two rounds of testing)*

ii) Historical *(high-grade squamous cytology (ASC-H/ HSIL) or histology (CIN 2/3) more than three years prior to the HPV test sample)*

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

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

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

These categories are defined hierarchically in the order shown; that is, a test cannot fit into more than one category, and tests are only considered for inclusion in a category if no previous categories in the list apply. The purpose of tests is not at its final stage of development and is an item that is under ongoing review.

Tests in the 'Other' category were explored further. The number of tests that fell into the 'Other' category was found to be relatively high in this report, but this analysis is nonetheless indicative of the appropriate purposes. It is also useful to report the extent of hrHPV tests for other purposes and the need to eliminate hrHPV tests for other purposes that are not within the NCSP guidelines. For this reason, the purpose of hrHPV tests are discussed in this report.

Rates of invalid HPV tests are also reported.

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

Target

Targets have not yet been set.

Current Situation

Overall volumes

There were 16,282 samples received by laboratories for HPV testing within the current monitoring period. These are reported further in Table 77 to Table 83. Virtually all (98.3%) samples for HPV testing were from women aged 20-69 years. The large majority of women (85.8%) were aged 30 years or more (Figure 95, Table 81).

The number of samples received by laboratories for HPV testing ranged from 778 (LabPLUS; 4.8% of all HPV tests received) to 7,235 (Southern Community Labs; 44.4% of all HPV tests received; Figure 96, Table 77). Figure 97 and Table 77 show for each laboratory the ratio of the number of HPV tests received, divided by the number of cytology tests received (expressed as a percentage). This measure provides some correction for the variation in workloads between different laboratories. It is likely, for example, that laboratories which process a larger volume of cytology tests would also undertake a larger volume of HPV tests. The proportion of HPV tests compared to cytology tests reported was on average 7.8% across New Zealand – that is, on average 7.8% of cytology tests are associated with an HPV test. This varied by laboratory from 6.8% (Southern Community Labs; i.e. fewer HPV tests processed in relation to cytology tests processed than the national average) to 12.7% (Canterbury Health Laboratories; i.e. more HPV tests processed in relation to cytology tests processed than the national average). The distribution of HPV tests by ethnicity is shown in Table 80. The overall proportion of HPV tests with invalid results was 0.1% (Table 78). The proportion was small for all HPV test technologies used. (Table 79).

Purpose of HPV tests

These HPV tests were further analysed in order to ascertain the purpose for which they were performed. Nationally, it was calculated that 2,536 (15.6%) were for post-treatment management for women treated in the past four years; 5,641 (34.6%) were for follow-up management of women with high-grade squamous cytology or histology more than three years previously (historical testing); 1,367 (8.4%) were on samples collected at a colposcopy visit which did not fit into a previous category (possibly for resolution of discordant results); and 2,898 (17.8%) were for triage of low-grade cytology in women aged 30 years or more. There were 3,840 (23.6%) HPV tests that did not fit into any of the previously described categories (Figure 98). Further breakdowns of HPV tests by purpose are presented by age (Figure 99, Table 81), laboratory (Figure 100), and ethnicity (Table 80, Table 82).

There were variations in HPV test purpose by age (Figure 99, Table 81). HPV triage (by the definition used here, and consistent with NCSP Guidelines) did not occur in women aged less than 30 years. In women aged less than 30 years, a comparatively larger proportion were taken for post-treatment management (31.3%) or at colposcopy (16.1%). For women aged 20-24 years the most common reason that HPV tests were performed were for Other. For women aged 25-29 years the most common reason that HPV tests were performed was post-treatment. For women aged 30-59 years the most common reason that HPV tests were performed were for historical high-grade squamous

abnormalities (more than three years ago). For all women aged 60 years and over the most common reason that HPV tests were performed were for Other.

HPV test purpose also varied by laboratory (Figure 100, Table 82). Among tests for which the purpose could be determined, the most common reason for HPV testing for Anatomical Pathology Services was historical high-grade squamous abnormalities (more than three years ago), post-treatment for Canterbury Health Laboratories, taken at colposcopy for LabPLUS, and historical high-grade squamous abnormalities (more than three years ago) for Medlab Central Ltd, Pathlab, and Southern Community Labs. In all laboratories, however, tests for which the purpose was unclear were quite common, varying from 10.0% at LabPLUS to 30.3% Southern Community Labs. The proportion of tests performed for post-treatment management varied from 13.7% (Anatomical Pathology Services) to 25.2% (Canterbury Health Laboratories), while the proportion performed to follow up women with historical high-grade squamous abnormalities varied from 21.1% (LabPLUS) to 40.1% (Anatomical Pathology Services). The proportion of tests where the sample was collected at colposcopy but not for one of the previous purposes ranged from 2.8% (Anatomical Pathology Services) to 25.8% (LabPLUS). Finally, the proportion of tests performed for HPV triage ranged from 13.9% (Canterbury Health Laboratories) to 25.2% (LabPLUS).

The most common reason for HPV testing for Māori, Pacific and European/ Other women was historical high-grade squamous abnormalities (more than three years ago), whilst HPV triage was the most common reason for Asian women (Table 80).

Tests in the 'Other' category were further explored. A proportion of the 'Other' tests (3.1%; 120 tests) were potentially tests performed for post-treatment management, because the same woman had CIN 2/3 histology recorded on the NCSP Register, however there was no explicit record of treatment available on the NCSP Register, potentially due to incomplete colposcopy data on the NCSP Register. Another 5.1% occurred after treatment, but did not meet the criteria for post-treatment management because they occurred within 6 months of treatment (1.3%; 51 tests), or after treatment of either a non-squamous high-grade (1.2%; 47 tests), or a non-high-grade (2.6%; 98 tests) or following treatment of cervical cancer (0.03%; 1 test). A further 16.5% of the 'Other' HPV tests occurred after a previous abnormality but one which did not meet the criteria for historical testing either because it was non-squamous (7.7%; 294 tests), the high-grade squamous cytology was less than three years ago (8.7%; 335 tests), or the histology diagnosis was cervical cancer (0.2%; 6 tests).

A larger proportion of the 'Other' tests (24.8%; 951 tests) occurred in women who did not have any specific high-grade abnormality recorded on the NCSP Register, but who did have a record on the NCSP Register suggesting that they had a previous high-grade abnormality (although the Register does not record whether it was a squamous abnormality or not; consequently, HPV testing is not indicated in these women by the NCSP guidelines). These records predominantly indicated prior high-grade cytology (20.3%; 781 tests), but some suggested prior high-grade histology (4.4%; 170 tests). Smaller proportions of

HPV tests were associated with a low-grade abnormality, including either a current low-grade cytology result which did not meet the criteria for triage because the woman had another recent abnormality and triage was not required (3.1%; 118 tests), a record suggesting a previous low-grade cytology not explicitly recorded on the NCSP Register (3.1%; 118 tests), or collected by a specialist where none of the above reasons applied (5.8%; 224 test). After this exploration, there remained 1,477 tests (38.5% of 'Other' tests; 9.1% of all HPV tests in the monitoring period) where purpose still could not be determined.

HPV tests at colposcopy

HPV tests taken at colposcopy, were further explored based on the DHB of the colposcopy clinic where the sample was taken and whether or not it was a public or a private clinic. This included only HPV tests where a colposcopy record exists and not those inferred by a histology result. Nationally, more of the HPV tests that were taken at colposcopy came from public facilities (88.8%; 1,078 tests) than from private facilities (11.2%; 136 tests). As the number of HPV tests collected at a colposcopy clinic is potentially reflective of the number of colposcopies performed there, a rate of HPV tests at colposcopy which takes this variation into account was derived, in order to provide more information. The rate of HPV tests at colposcopy was calculated by dividing the number of HPV tests collected at colposcopy by the total number of colposcopies within that DHB or across private colposcopy clinics, expressed as a percentage. This rate can be broadly interpreted as the percentage of colposcopies (within a given DHB or sector) where an HPV test sample is collected. Across New Zealand, HPV test samples were collected in approximately 9.9% of colposcopies. In DHBs where HPV tests were collected at colposcopy, this value ranged from 1.9% (Hutt Valley) to 23.1% (Lakes), and was 9.7% overall across all public DHB clinics (Figure 101, Table 83). In private practice, this rate was 11.3%. No HPV tests were conducted in Tairawhiti.

Trends

A lower volume of HPV samples was received at laboratories for testing in the current monitoring period (16,282) compared to the previous monitoring period (17,419; a decrease of 6.5%). One laboratory experienced an increase in the number of samples received between the current monitoring period compared with the previous report period (LabPLUS). The laboratory with the largest percentage decrease in the number of tests between the previous and current period was Anatomical Pathology Services (from 3,773 to 3,332; 11.7% decrease). Trends by laboratory can be seen in Figure 102.

Changes in HPV test volumes varied across all test purpose categories. The only increase in the number of tests performed for the four guidelines categories (post-treatment, historical testing, HPV triage or tests at colposcopy) occurred in HPV tests taken at colposcopy (11.7% increase; 143 tests) and the greatest decrease was seen in HPV tests taken 'Other' reasons (decrease of 13.3% or 587 tests; Figure 103). A decrease was seen in both the number of HPV tests taken for historical high-grade squamous abnormalities (more than three years ago) (580 tests) and the percent of all HPV tests in this category (from 35.7% to 34.6%). Similarly, for tests taken for post-treatment, the number of tests reduced by 22 tests; however, the proportion of all HPV tests in this category

	increased, from 14.7% to 15.6%. HPV triage reduced by 3.0% in the number of HPV tests but the proportion of all HPV tests in this category increased from 17.2% to 17.8%. The proportion of HPV tests which are invalid remains very small (Table 79).
Comments	HPV volumes by laboratory will vary for a number of reasons, one of which being the general volume of work in that laboratory. In order to provide some correction for the variation in workloads between different laboratories, we calculated the ratio of HPV tests received to cytology tests reported on (Figure 97, Table 77). Other reasons for variations in the rate of HPV testing by laboratory (which are not taken into account in this ratio) may include differences in the population they serve, because HPV testing is performed in specific subgroups of women. For example, HPV triage testing is performed in women with low-grade (ASC-US/LSIL) cytology results (but without recent abnormalities), therefore laboratories reporting higher rates of low-grade abnormalities may also have higher rates of triage testing. Conversely, laboratories reporting on a larger proportion of cytology from colposcopy clinics may be more likely to perform HPV tests arising from colposcopy (for example LabPLUS) but less likely to perform HPV triage testing, because women attending colposcopy have generally had a recent abnormality and therefore do not require triage. These issues may for example partly explain differences in the ratios between different Laboratories. To understand in more detail, the reasons for the differences, an explicit exploration of the purpose for which the HPV test was performed has been examined here. Exploration is ongoing into the potential reason for tests in the 'Other' category, as is the refinement of specifications for the analysis of purpose. Some possible explanations include follow-up of women previously treated for high-grade squamous abnormalities where these abnormalities occurred outside New Zealand, prior to the woman being enrolled on the NCSP Register, or prior to the inception of the NCSP Register. The latter may potentially explain why the proportion of 'Other' tests is higher in older women than in younger women (except for women aged 20-24). Synopses held on the NCSP Register of previous (self-reported) high-grade abnormalities have been used in this report to explore this possibility further (although these synopses do not distinguish between squamous abnormalities and glandular abnormalities; HPV testing is currently only recommended for the management of women with previous squamous abnormalities). The proportion associated with a synopsis reflecting a previous high-grade abnormality (cytological or historical) reported here (24.8%) is lower than that in the previous report (26.1%), and the number of tests in this category has decreased since the previous report (from 1,155 to 951). In a June 2015 newsletter, the NCSP reminded laboratories that women with a previous glandular lesion, or a high-grade synopsis code on their screening history but no confirmation that the previous abnormality was squamous, should remain on annual screening and HPV testing is not indicated for these women. In reports prior to Number 49 (July – December 2017), some HPV tests that were collected at colposcopy were incorrectly classified in the 'Other' category (generally within the sub-category of a recent high-grade abnormality that therefore did not meet the criteria for post-treatment

management or historical testing). This was corrected in Report 49 and the increase in tests collected at colposcopy is explained by this change. The number of tests collected at colposcopy reduced in Report 50 but increased this reporting period, however it is still lower than Report 49.

Figure 95 - Volume of HPV test samples received by laboratories during the monitoring period, by age

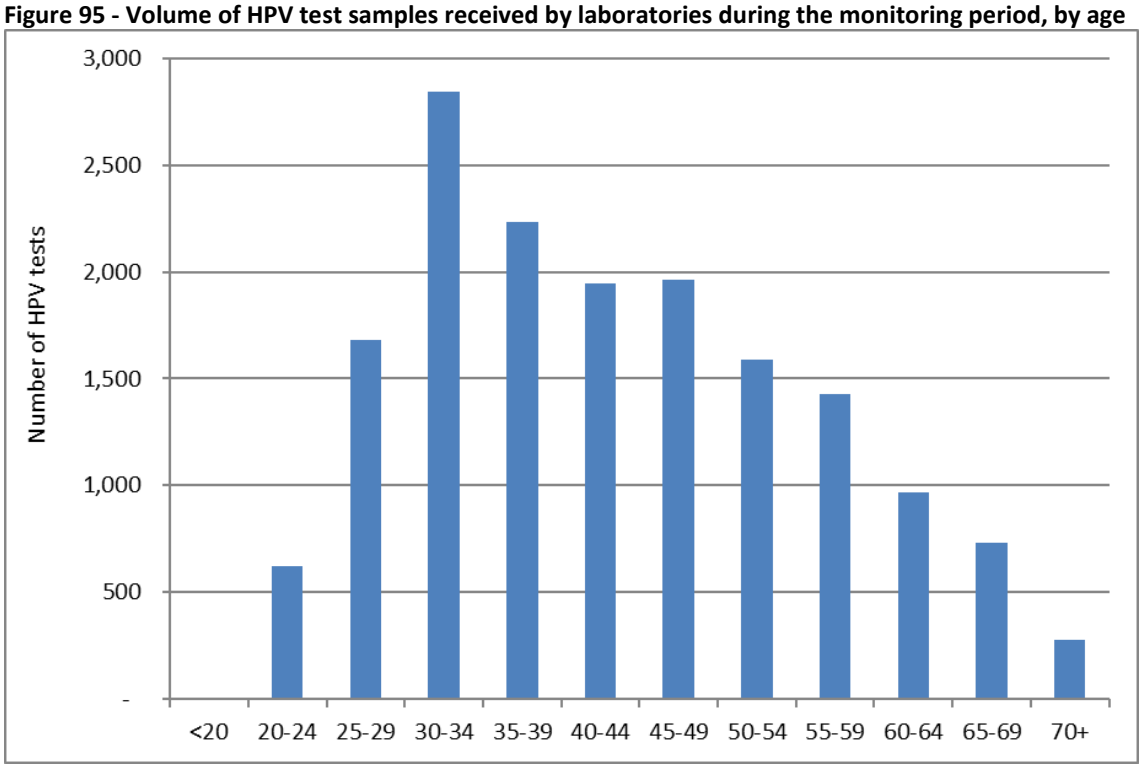


Figure 96 - Volume of HPV test samples received by laboratories during the monitoring period, by laboratory

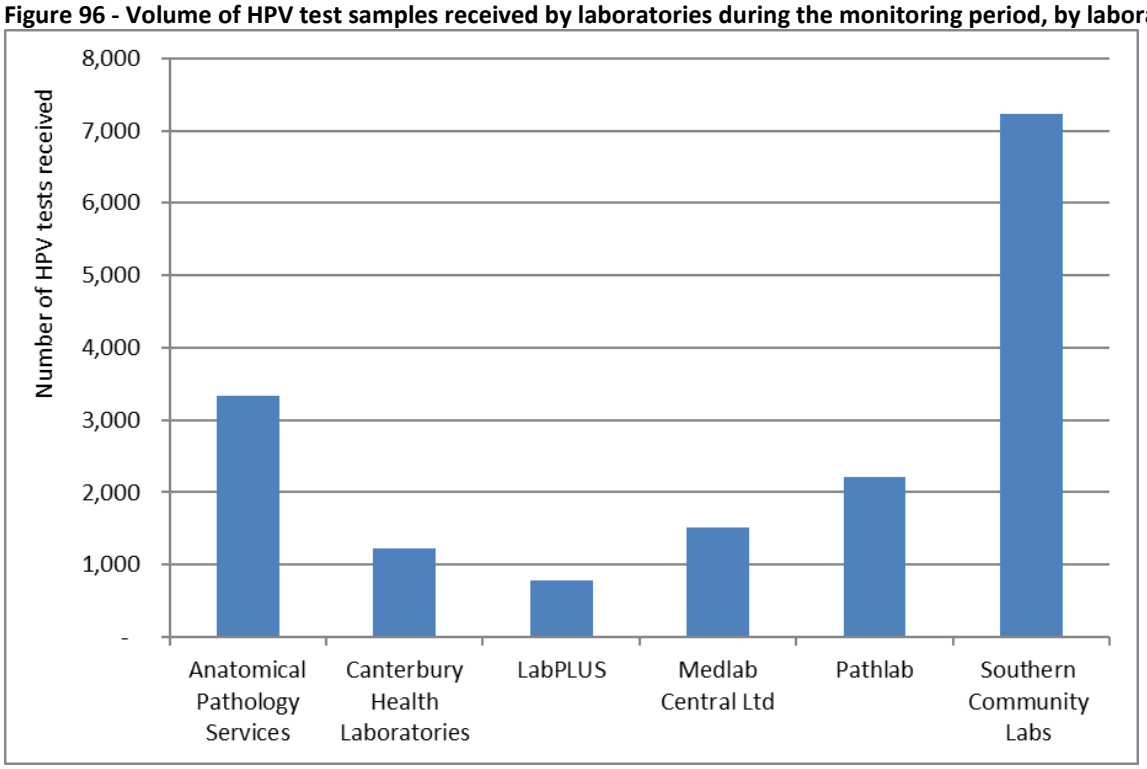
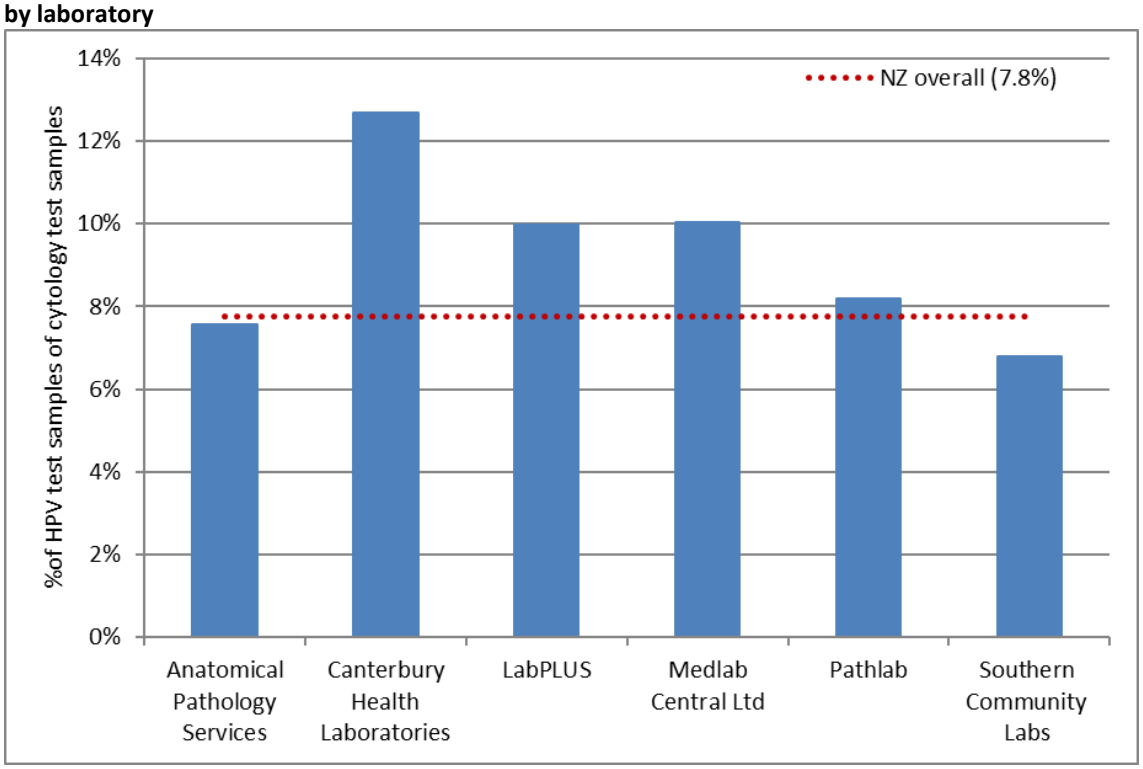


Figure 97 - HPV test samples as a percentage of cytology test samples received during the monitoring period, by laboratory



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

Figure 98 - Volume of HPV test samples received during the monitoring period, by purpose

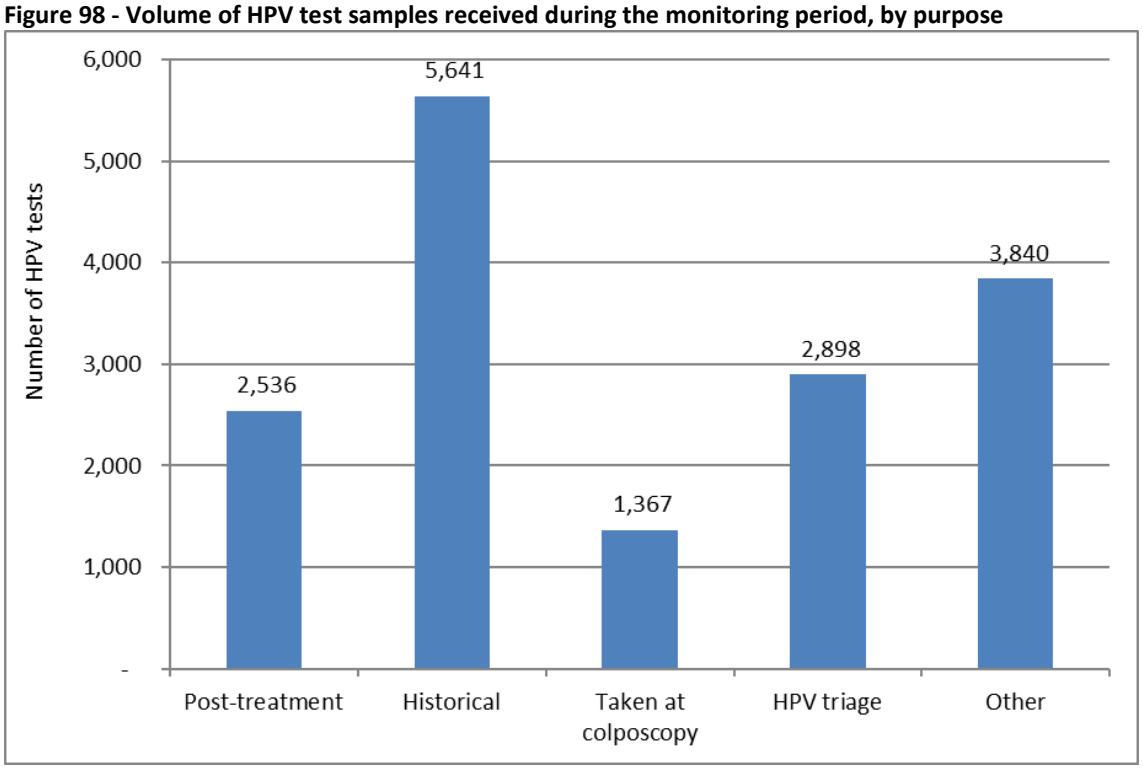


Figure 99 - HPV test samples received during the monitoring period, by purpose and age

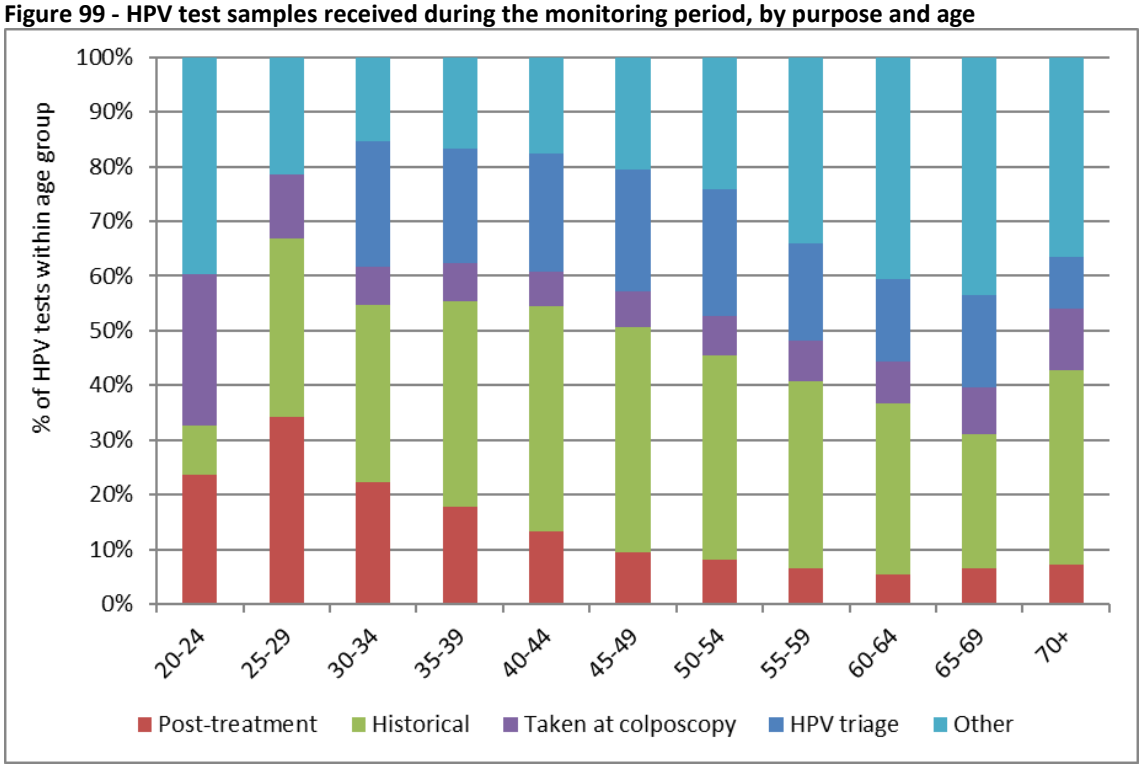


Figure 100 - HPV test samples received during the monitoring period, by purpose and laboratory

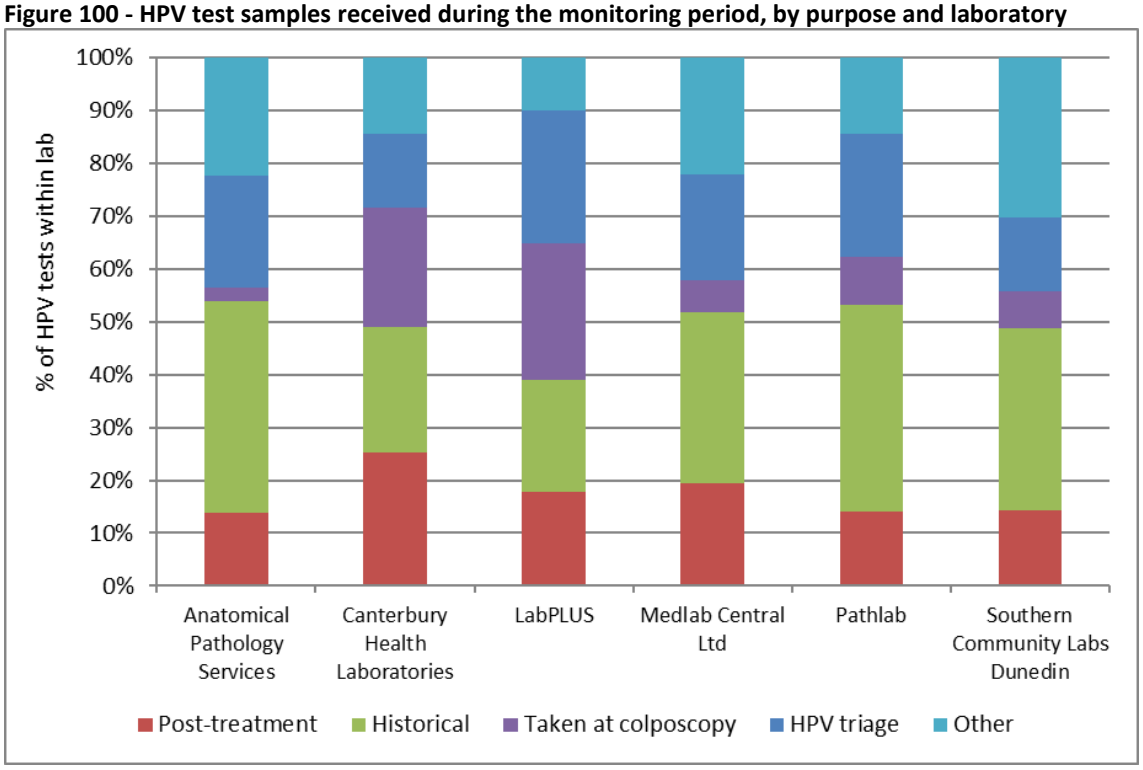
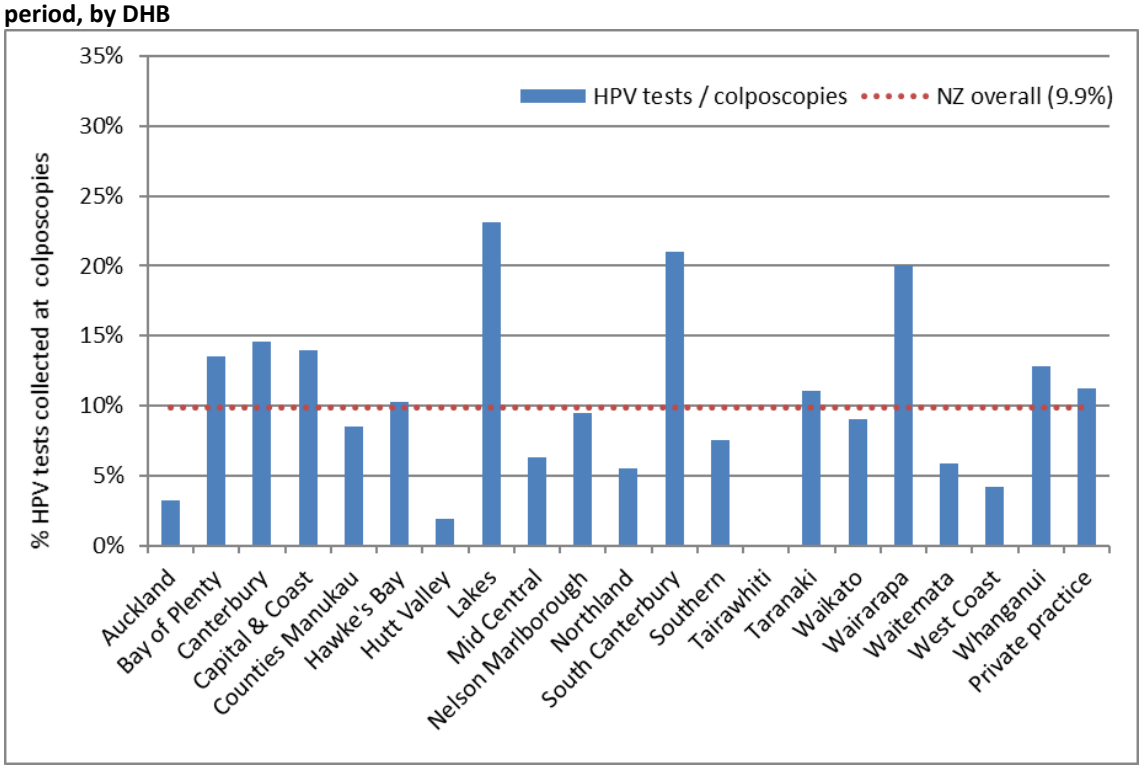


Figure 101 - HPV test samples collected at colposcopy, in relation to total colposcopies* performed in the period, by DHB



*HPV tests/ colposcopy can be interpreted broadly as the percentage of colposcopies within this DHB/ sector where a sample is collected for HPV testing. *the number of HPV tests here includes only HPV test samples where a colposcopy report record exists and is not inferred by a histology result.*

Figure 102 - Trends in volumes of HPV test samples received, by laboratory

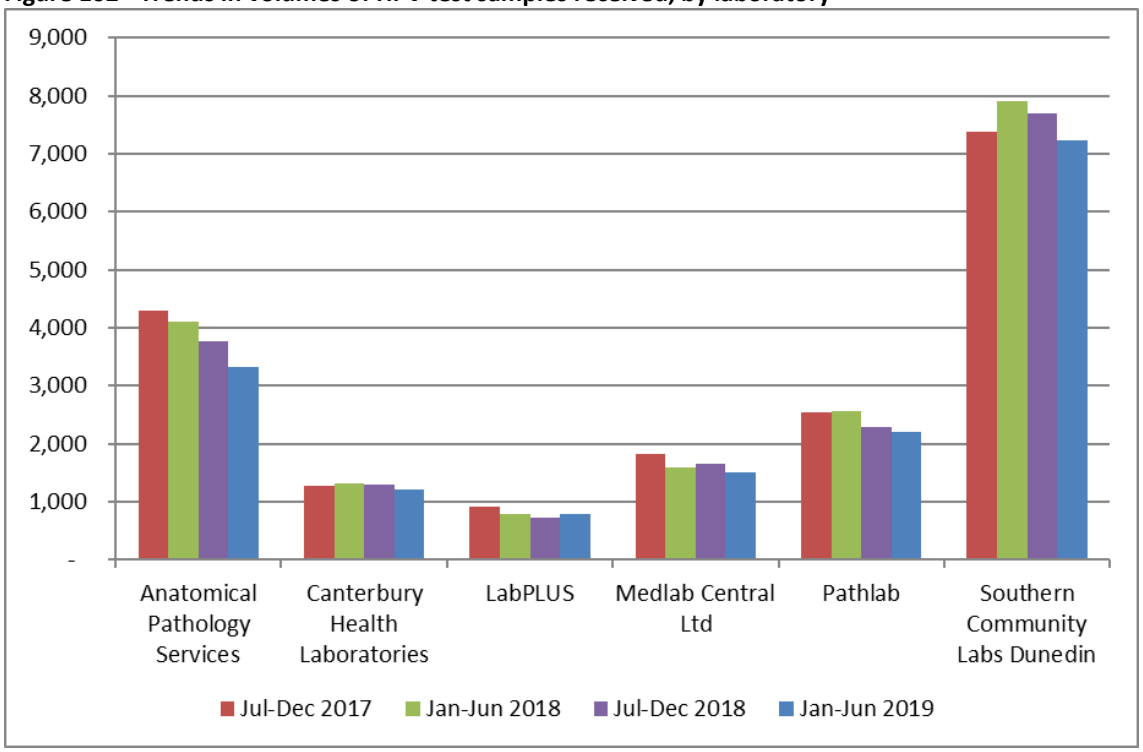


Figure 103 - Trends in volumes of HPV test samples received, by purpose

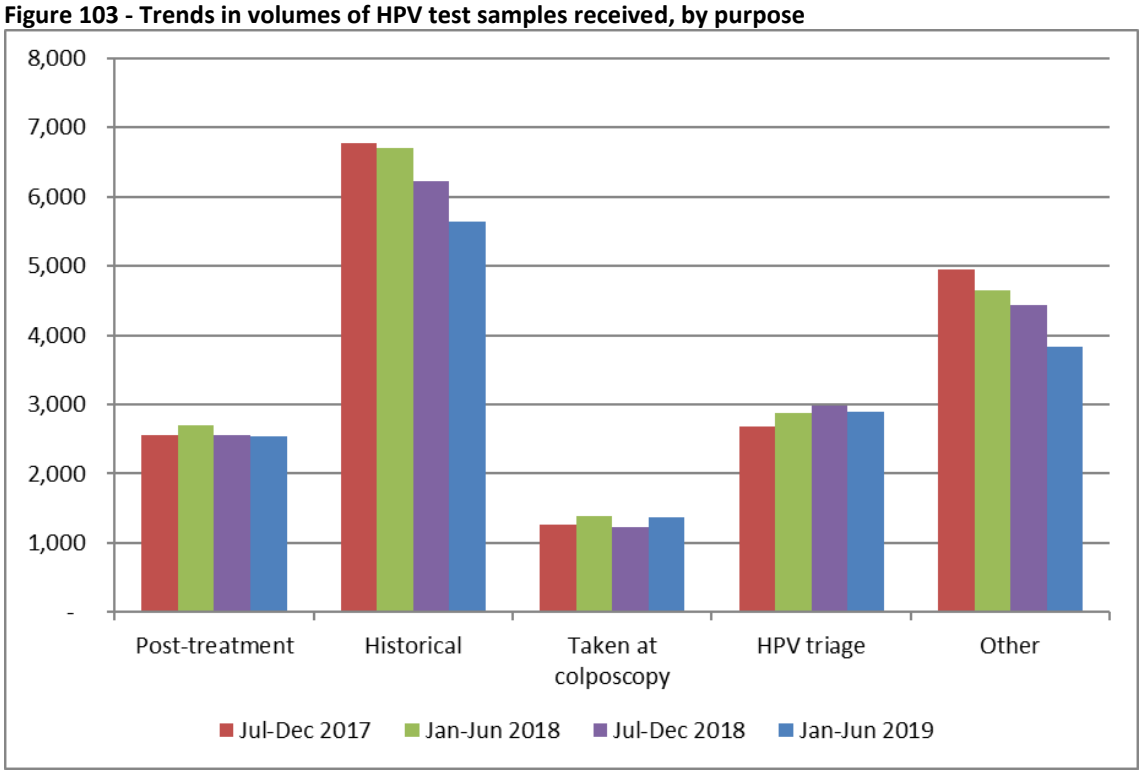
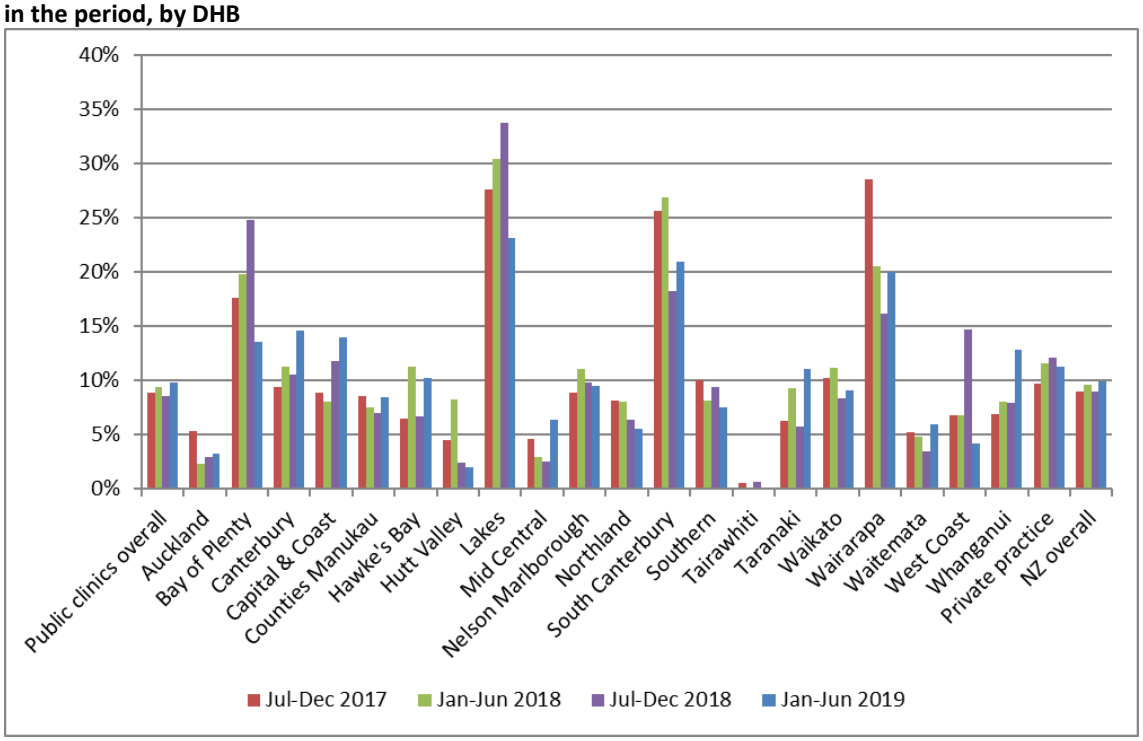


Figure 104 - Trends in HPV test samples collected at colposcopy, in relation to total colposcopies* performed in the period, by DHB



*HPV tests/ colposcopy can be interpreted broadly as the percentage of colposcopies within this DHB/ sector where a sample is collected for HPV testing. *the number of HPV tests here includes only HPV test samples where a colposcopy report record exists and is not inferred by a histology result.*

Indicator 8.3 – HPV tests for follow-up of women with a historical high-grade abnormality

Definition

NCSP Guidelines for Cervical Screening in New Zealand state that women with a previous high-grade squamous abnormality (ASC-H, HSIL, CIN 2/3) more than three years ago may benefit from two rounds of dual cytology and hrHPV testing ("historical testing"). If women test negative on both tests over two years, they can safely be screened according to the routine screening recommendations (cytology alone every three years until 70). HPV testing is not recommended for management of women with a historic non-squamous high-grade abnormality.

The purpose of this indicator is to examine the extent to which historical testing is being used for women who are eligible for it, and the outcomes of these tests.

Predominantly, women who are eligible for historical testing will be those who were eligible for it at the time it was introduced (1 October 2009), because women with more recent high-grade squamous abnormalities will be followed up with hrHPV testing in other ways (as part of standard post-treatment management and/ or use of hrHPV testing to assist in resolving discordant cytology and colposcopy/ histology). Women are considered to have been eligible for historical testing as at 1 October 2009 if:

i) They had a high-grade squamous abnormality (cytology or histology) more than three years prior to 1 October 2009, as per the definition of historical testing (i.e. prior to 1 October 2006) and

ii) They had no previous glandular abnormality (i.e. prior to 1 October 2009); and

iii) Between their historical high-grade squamous abnormality and 1 October 2009, they had *either* no cytology OR only negative cytology OR three consecutive negative cytology tests as their most recent cytology results; and

iv) They were alive on 1 October 2009.

Women were excluded, however, if they had been treated for a high-grade squamous abnormality within the three years prior to 1 October 2009, because this meant they met the criteria for *post-treatment women*, rather than *historical testing.* Note that this indicator also does not report on historical testing in any women who became eligible for it after 1 October 2009 (although as noted above, this should be a small group as women with more recent high-grade squamous abnormalities will be followed up with hrHPV testing in other ways).

Within the current report, Round 1 and Round 2 historical tests are only considered for women who were both eligible for historical testing on 1 October 2009 *and* who also remained eligible for it throughout the current monitoring period. Therefore, in the current report, women were excluded if:

i) They were not still alive at the end of the current monitoring period *(follow-up no longer possible)*; or

ii) They had a non-squamous high-grade abnormality between becoming eligible (on 1 October 2009) and the end of the current monitoring period *(no longer eligible for historical testing)*

HPV tests in these women from 1 October 2009 were retrieved. HPV tests which appeared to have been carried out for other recommended uses of HPV testing (such as HPV triage of low-grade cytology; HPV tests taken at colposcopy; or HPV tests performed to follow-up treatment of a high-grade squamous abnormality within the previous three years) were excluded since they were not performed for the purpose of historical testing. After excluding those tests, the first HPV test in each woman was defined as her Round 1 historical test. A Round 2 historical test was defined as the first HPV test which occurred at least 9 months after a Round 1 historical test.

Measures reported by age are based on the age of the women at the end of the current monitoring period (i.e. a woman's age at 30 June 2019). Measures reported by DHB are based on the geographic area relating to the woman's residence (or if this information is not available, that of her responsible health provider).

Target

Targets have not yet been set.

Current Situation

Overall women eligible for historical testing

There were 50,512 women who, at 1 October 2009, were eligible for HPV testing to follow-up a historical squamous high-grade abnormality ("historical testing"). Of these women, 48,987 are considered in the current report (the remaining women were excluded because they were no longer alive at the end of the current monitoring period, or were no longer eligible for historical testing because they had a non-squamous high-grade abnormality since 1 October 2009). There were no women eligible for historical testing who were aged less than 25 years at the end of the current monitoring period; however, this is not unexpected, as women in this age group would have been aged less than 18 years old on 1 October 2009 and few women this age are screened or treated for high-grade abnormalities (Table 84).

HPV tests performed for historical reasons

Overall, 34,546 (70.5%) of the women eligible for historical testing have a Round 1 historical test recorded on the NCSP Register. There were 29,657 women who also have a Round 2 historical tests (60.5% of eligible women; 85.8% of those with a Round 1 test).

The proportion of women with historical tests varied by age. Among women aged 25 to 69 years at the end of the current monitoring period, the proportion of eligible women with a historical test varied from 45.5% (25-29 years) to 73.8% (60-64 years) for Round 1 tests, and from 27.3% (25-29 years) to 64.1% (60-64 and 65-69 years) for Round 2 tests (Figure 105, Table 84).

The proportion of eligible women with historical tests also varied by DHB, from 60.3% (Auckland) to 81.1% (Nelson Marlborough) for Round 1 tests, and from 48.1% (Counties Manukau) to 73.7% (Nelson Marlborough) for Round 2 tests (Figure 106, Table 85). The number of women eligible for historical testing in a given DHB did not appear to have any relationship with the proportion who had received a historical test (Figure 113).

The proportion of eligible women with Round 1 historical tests ranged from 53.0% in Pacific women to 72.4% in European/ Other women (Figure 107, Table 86). For Round 2 tests, this proportion ranged from 41.4% in Pacific women to 63.1% in European/ Other women.

We explored whether the proportion of women with a historical HPV test was influenced by screening participation within the previous five years (asking the question does higher screening participation for any test, increase the likelihood of initiating a historical test). The variation in the proportion of women with historical tests recorded did not appear to be fully explained by variations in screening participation, either by DHB (Figure 114, Table 87) or by ethnicity (Figure 115).

Trends

As this Indicator is reporting on the cumulative proportion of women who were eligible for HPV testing for the management of a historical high-grade squamous lesion as at 1 October 2009, the proportion is generally expected to increase over time. The proportion of eligible women with an HPV test recorded is higher than in the previous report from 69.4% to 70.5% for Round 1 tests, and from 59.0% to 60.5% for Round 2 tests. It has also done so in every DHB (Figure 108), ethnicity (Figure 109) and age group (Figure 110) between this and the previous report, except the 25-29 age group which saw a drop in women with a Round 1 and Round 2 test recorded (from 50.0% to 45.5% and 40.9% to 27.3%, respectively) in the current reporting period.

Comments

This indicator currently only considers women who had a high-grade squamous abnormality more than three years prior to 1 October 2009. It is anticipated that women with more recent high-grade squamous abnormalities will be followed up via standard post-treatment management which also includes hrHPV testing. It was intended that future monitoring reports would also incorporate reporting on the use of hrHPV tests for the purpose of post-treatment management as a separate sub-indicator within Indicator 8. However, development of additional indicators has been suspended prior to the programme's planned transition to primary HPV screening, as indicators will be reviewed as part of the transition process.

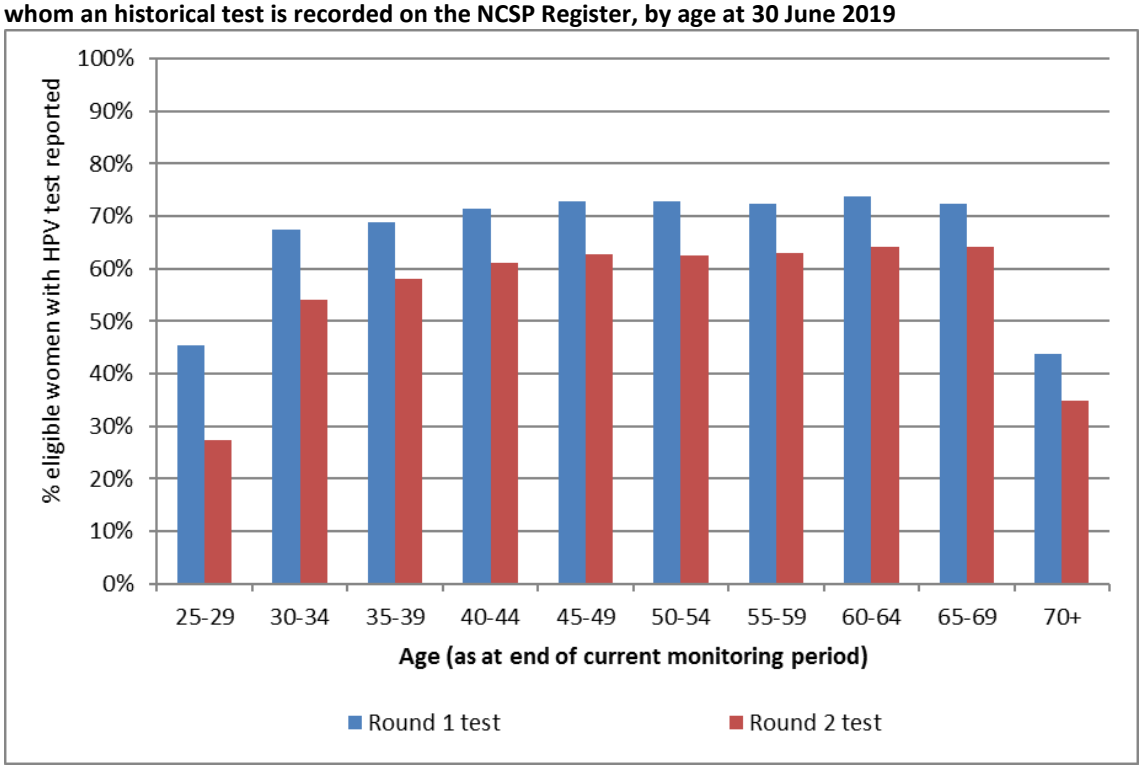
Planned future refinements include reporting on the proportion of the Round 1 and Round 2 historical tests where hrHPV was detected, and on how many women are able to be returned to routine screening after two rounds of negative cytology and hrHPV tests; considering women with a historical high-grade squamous abnormality who became eligible for historical testing after 1

October 2009; and taking into account whether women have attended for any screening test, since women who have not attended for any testing could not be offered historical testing. This last point has been partially explored within the current report, by considering whether there was any relationship between the variations in women with Round 1 and Round 2 historical tests by DHB or ethnicity and the variations in screening participation within the previous five years by DHB or ethnicity. An extended period of five-years was examined for screening participation (rather than three, which is the usual measure), since it corresponds more closely than three-year participation during which we searched for HPV tests in this group of women (i.e. from 1 October 2009 to the time of the data download from NCSP Register used within this report, late XX). However, as women with a previous abnormality are recommended to re-attend for screening more frequently than the routine interval, the variations in overall attendance by DHB or by ethnicity may differ from the variations by DHB or ethnicity in this subgroup of women who have had a previous abnormality.

It is possible that in some cases eligible women were offered historical HPV testing, but did not consent to the test. It has not been possible to take this into account within the current report. While this affects Round 1 tests, this should be less of an issue for Round 2 tests, because in June 2015 the NCSP requested that laboratories prompt sample takers to add on an HPV test where this is indicated by the Guidelines, but was not requested by the sample taker. Additionally, for women who had already consented to the Round 1 HPV test, separate consent was not required for a Round 2 HPV test.

It is also possible that the reason some women underwent Round 1 tests, but not Round 2 tests, is because their concurrent cytology result indicated that other management (for example colposcopy referral) was required. This might be explored when this indicator is further refined to report on the test results in women who have undergone historical testing.

Figure 105 - Proportion of eligible women with squamous high-grade abnormality more than 3 years ago for whom an historical test is recorded on the NCSP Register, by age at 30 June 2019



No women aged less than 25 years at the end of the current monitoring period were eligible for historical testing on 1 October 2009.

Figure 106 - Proportion of eligible women with squamous high-grade abnormality more than 3 years ago for whom an historical test is recorded on the NCSP Register, by DHB at 30 June 2019

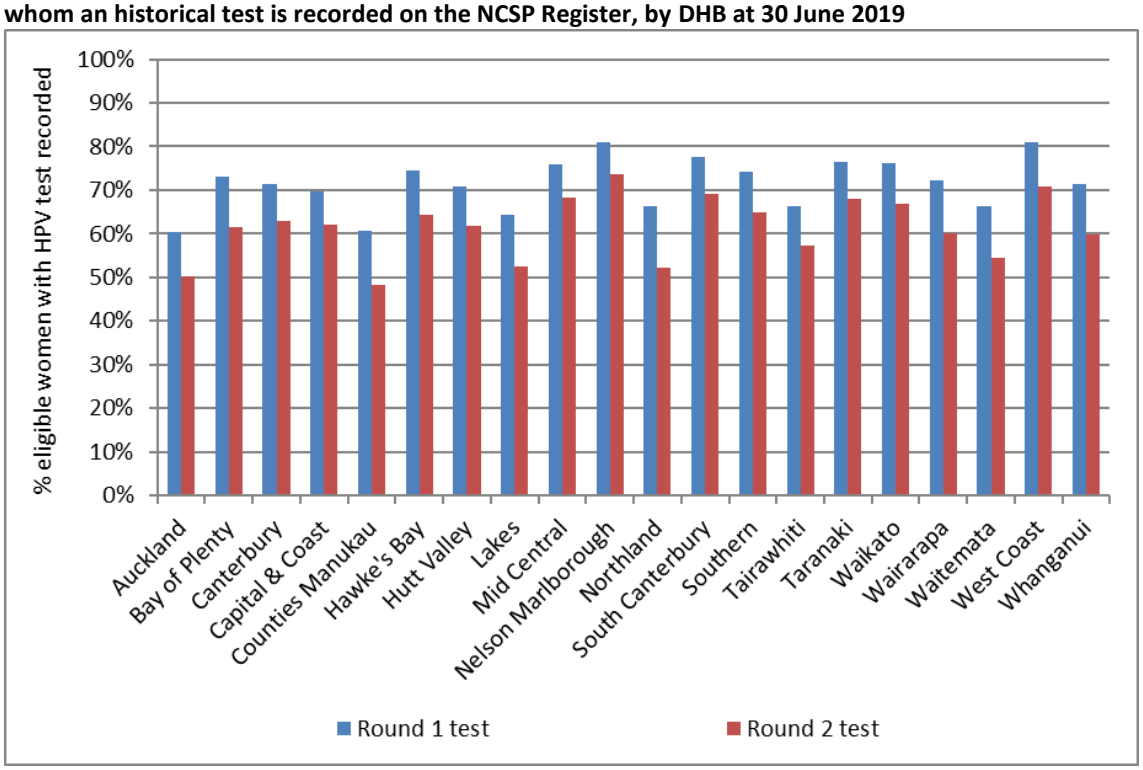


Figure 107 - Proportion of eligible women with squamous high-grade abnormality more than 3 years ago for whom an historical test is recorded on the NCSP Register, by ethnicity at 30 June 2019.

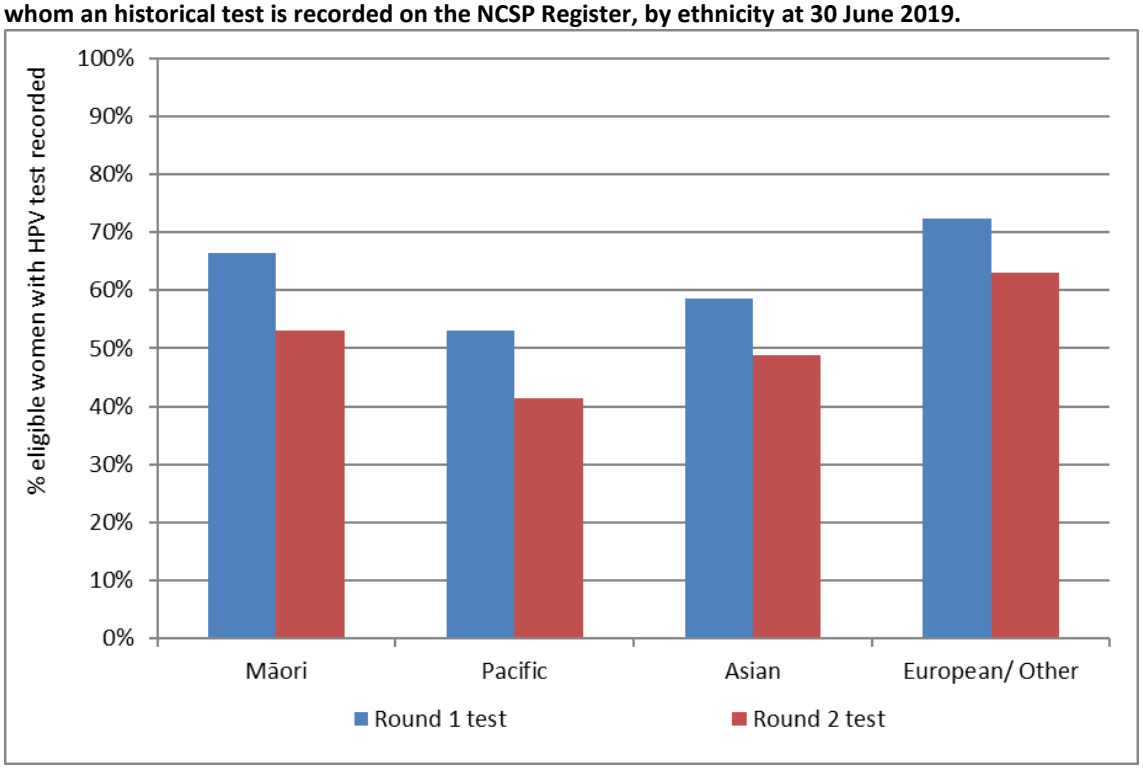


Figure 108 - Trends in the proportion of eligible women with squamous high-grade abnormality more than 3 years ago for whom a round 1 historical test is recorded on the NCSP Register, by DHB

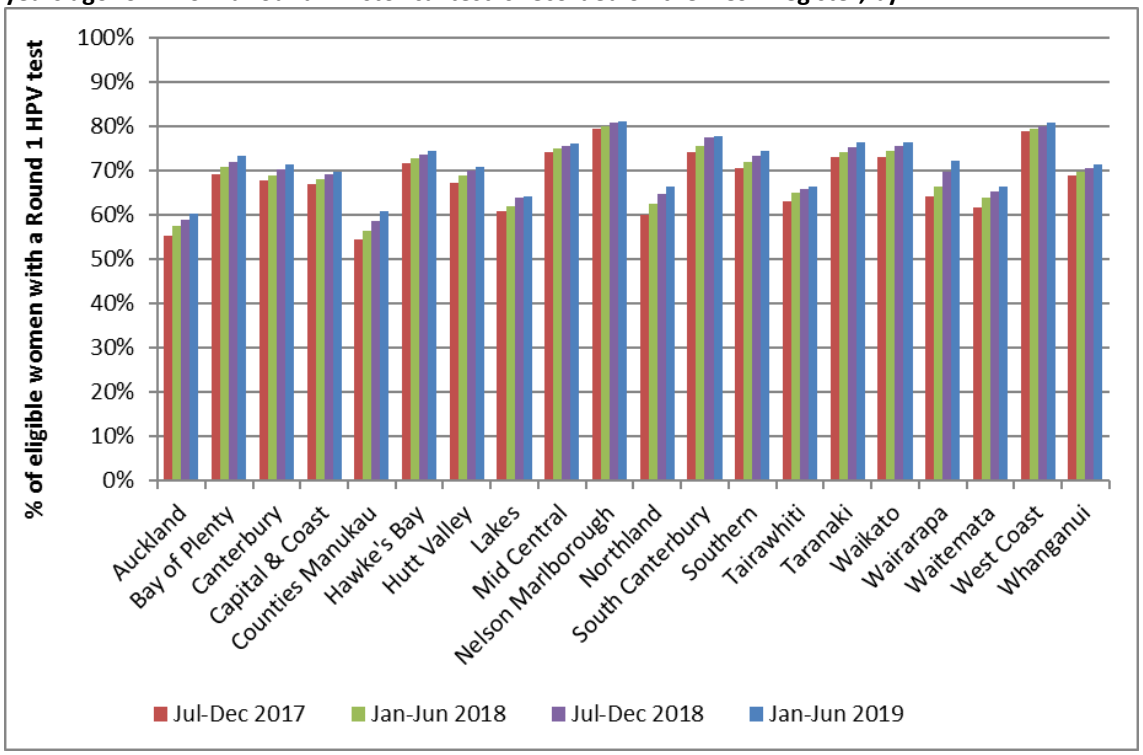


Figure 109 - Trends in the proportion of eligible women with squamous high-grade abnormality more than 3 years ago for whom a round 1 historical test is recorded on the NCSP Register, by ethnicity

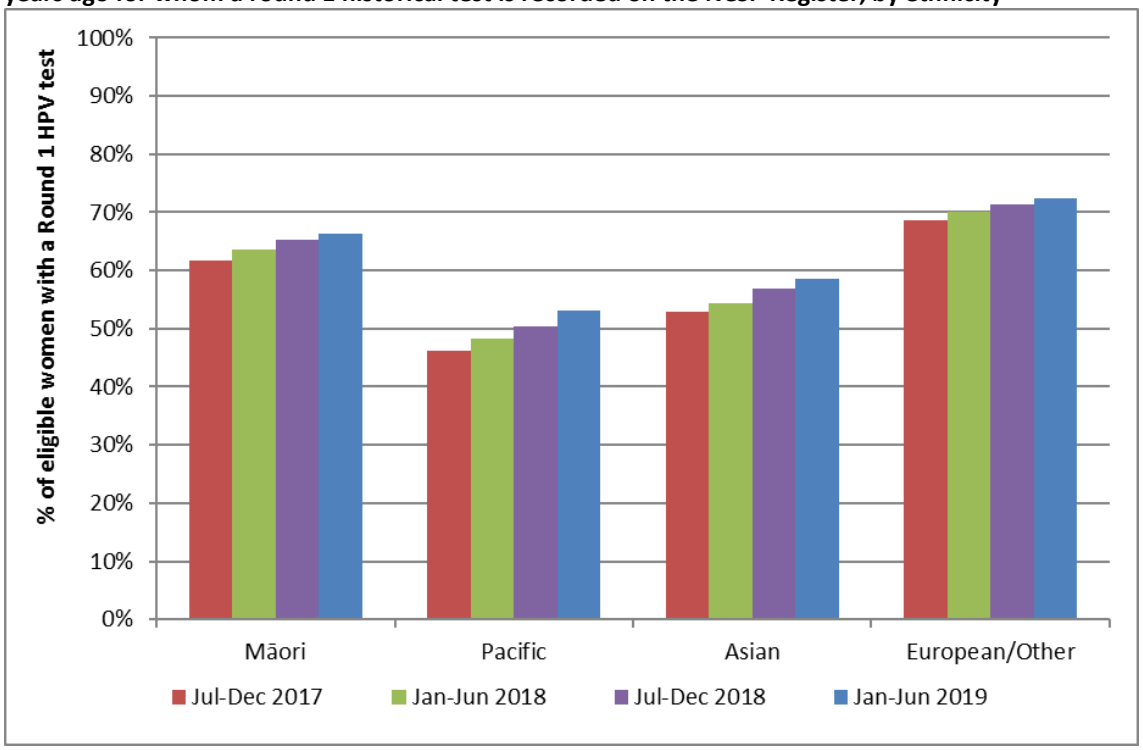
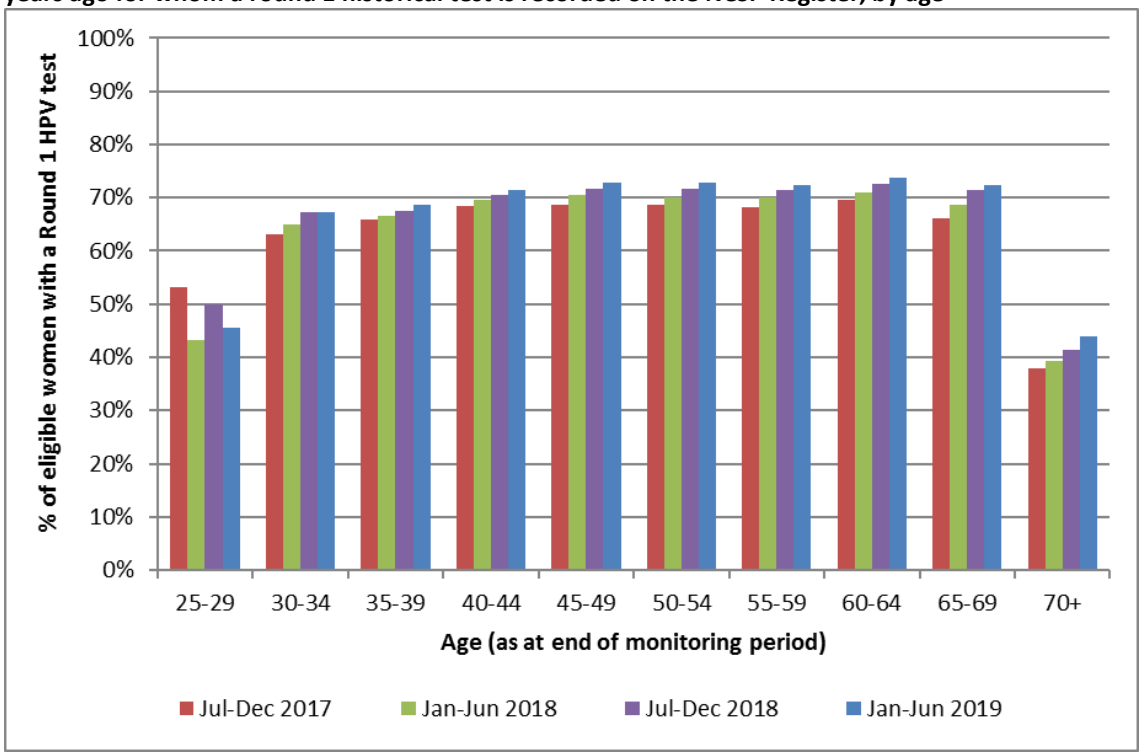


Figure 110 - Trends in the proportion of eligible women with squamous high-grade abnormality more than 3 years ago for whom a round 1 historical test is recorded on the NCSP Register, by age



No women aged less than 25 years at the end of the current monitoring period were eligible for historical testing on 1 October 2009.

Appendix A – Additional data

Indicator 1 - Coverage

Indicator 1.1 – Three-year coverage

Table 23 - Three-year coverage by DHB (women 25-69 years screened in the three years prior to 30 June 2019, hysterectomy adjusted)

DHB	Hysterectomy adjusted population	Women screened in the last 3 years	
	N	N	%
Auckland	159,373	104,354	65.5
Bay of Plenty	62,043	48,609	78.3
Canterbury	148,402	107,465	72.4
Capital & Coast	87,990	66,065	75.1
Counties Manukau	151,661	99,315	65.5
Hawke's Bay	42,630	31,095	72.9
Hutt Valley	40,669	29,784	73.2
Lakes	28,521	21,591	75.7
Mid Central	45,663	33,017	72.3
Nelson Marlborough	39,859	30,872	77.5
Northland	45,923	31,828	69.3
South Canterbury	15,271	11,186	73.2
Southern	85,205	64,211	75.4
Tairawhiti	12,462	9,387	75.3
Taranaki	31,184	24,353	78.1
Waikato	107,718	79,025	73.4
Wairarapa	11,852	8,424	71.1
Waitemata	174,022	120,541	69.3
West Coast	8,566	6,104	71.3
Whanganui	16,339	11,715	71.7
Total	**1,315,353**	**938,941**	**71.4**

Table 24 - Three-year coverage by ethnicity (women 25-69 years screened in the three years prior 30 June 2019, hysterectomy adjusted)

Ethnicity	Hysterectomy adjusted population (ages 25-69 years)	Women screened in the last 3 years (ages 25-69 years)	
		N	%
Māori	174,337	107,364	61.6
Pacific	75,947	49,473	65.1
Asian	229,337	137,181	59.8
European/ Other	835,732	644,923	77.2
Total	**1,315,353**	**938,941**	**71.4**

Table 25 – Three-year coverage by age (women 20-69 years screened in the three years prior to 30 June 2019, hysterectomy adjusted)

Age	Hysterectomy adjusted population	Women screened in the last 3 years N	%
20-24	170,167	75,782	44.5
25-29	189,624	109,212	57.6
30-34	175,566	115,986	66.1
35-39	153,483	112,661	73.4
40-44	141,868	108,738	76.6
45-49	153,737	119,987	78.0
50-54	143,006	110,643	77.4
55-59	140,766	106,651	75.8
60-64	119,026	87,320	73.4
65-69	98,277	67,743	68.9
20-69	**1,485,520**	**1,014,723**	**68.3**

Table 26 – Three-year coverage (women aged 25-69 years screened in the three years prior to 30 June 2019, hysterectomy adjusted), by ethnicity and DHB

	Māori		Pacific		Asian		European/ Other	
DHB	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Auckland	5,558	49.6	9,123	63.0	30,069	51.1	59,604	79.7
Bay of Plenty	8,878	66.4	609	67.5	2,981	54.9	36,141	85.4
Canterbury	6,017	55.5	2,291	76.5	11,671	67.7	87,486	74.6
Capital & Coast	5,216	58.5	3,486	63.3	8,788	58.8	48,575	82.9
Counties Manukau	11,632	56.9	18,641	64.8	28,672	64.8	40,370	69.3
Hawke's Bay	6,765	71.2	917	76.2	1,478	57.3	21,935	74.7
Hutt Valley	3,794	64.6	1,836	66.3	3,981	72.8	20,173	76.0
Lakes	6,188	69.8	478	85.2	1,559	52.5	13,366	82.9
Mid Central	5,248	67.6	805	75.3	2,405	55.1	24,559	75.6
Nelson Marlborough	2,330	67.3	417	84.4	1,474	64.5	26,651	79.3
Northland	8,577	62.8	421	49.9	1,307	51.2	21,523	74.6
South Canterbury	612	56.0	133	106.4	479	68.2	9,962	74.6
Southern	4,133	58.7	978	71.1	3,441	47.1	55,659	80.1
Tairawhiti	4,182	72.1	166	62.2	252	61.8	4,787	80.0
Taranaki	3,223	66.9	215	68.3	1,065	63.6	19,850	81.4
Waikato	13,207	62.3	1,866	64.4	7,988	64.5	55,964	78.6
Wairarapa	1,156	68.0	144	83.2	239	53.5	6,885	72.2
Waitemata	7,486	53.5	6,648	61.7	28,693	64.9	77,714	74.0
West Coast	544	59.5	64	64.6	216	61.4	5,280	73.3
Whanganui	2,618	67.7	235	70.4	423	46.6	8,439	75.1
NZ overall		**61.6**		**65.1**		**59.8**		**77.2**

Ethnicity-specific estimates for some DHBs exceed 100%. This is potentially due in part to limitations in the hysterectomy prevalence estimators which are used to adjust the eligible population.

Table 27 – Three-year coverage (women aged 25-69 years screened in the three years prior to 30 June 2019 hysterectomy adjusted), by ethnicity and age

	Māori		Pacific		Asian		European/ Other	
Age group	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
25-29	16,865	56.6	7,054	48.8	15,560	41.6	69,733	64.6
30-34	14,968	60.1	6,573	57.5	23,765	60.8	70,680	70.6
35-39	12,834	60.2	6,336	64.8	24,016	67.6	69,475	80.0
40-44	12,779	62.5	6,174	68.3	17,159	64.4	72,626	84.7
45-49	13,579	64.2	6,120	70.2	15,577	64.3	84,711	85.0
50-54	12,053	65.8	5,933	74.2	13,278	62.8	79,379	83.1
55-59	11,188	65.8	4,912	76.5	11,587	62.2	78,964	80.0
60-64	7,919	62.8	3,710	79.8	9,732	63.1	65,959	76.4
65-69	5,179	58.6	2,661	77.0	6,507	58.3	53,396	71.4
NZ overall		**61.6**		**65.1**		**59.8**		**77.2**

Table 28 – Five-year coverage by DHB (women aged 25-69 years screened in the five years prior 30 June 2019, hysterectomy adjusted)

DHB	Hysterectomy adjusted population	Women screened in the last 5 years	
	N	N	%
Auckland	159,373	126,532	79.4
Bay of Plenty	62,043	56,843	91.6
Canterbury	148,402	127,587	86.0
Capital & Coast	87,990	78,946	89.7
Counties Manukau	151,661	123,605	81.5
Hawke's Bay	42,630	37,642	88.3
Hutt Valley	40,669	35,684	87.7
Lakes	28,521	25,485	89.4
Mid Central	45,663	38,811	85.0
Nelson Marlborough	39,859	36,504	91.6
Northland	45,923	38,746	84.4
South Canterbury	15,271	13,405	87.8
Southern	85,205	76,011	89.2
Tairawhiti	12,462	11,142	89.4
Taranaki	31,184	28,489	91.4
Waikato	107,718	92,877	86.2
Wairarapa	11,852	10,201	86.1
Waitemata	174,022	144,692	83.1
West Coast	8,566	7,388	86.2
Whanganui	16,339	14,107	86.3
Total	**1,315,353**	**1,124,697**	**85.5**

Table 29– Five-year coverage by ethnicity (women aged 25-69 years screened in the five years prior to 30 June 2019, hysterectomy adjusted)

Ethnicity	Hysterectomy adjusted population	Women screened in the last 5 years	
		N	%
Māori	174,337	134,823	77.3
Pacific	75,947	65,395	86.1
Asian	229,337	161,681	70.5
European/ Other	835,732	762,798	91.3
Total	**1,315,353**	**1,124,697**	**85.5**

Table 30 - Five-year coverage by age (women 20-69 years screened in the five years prior to 30 June 2019, hysterectomy adjusted)

Age	Hysterectomy adjusted population	Women screened in the last 5 years N	%
20-24	170,167	81,144	47.7
25-29	189,624	134,300	70.8
30-34	175,566	140,699	80.1
35-39	153,483	135,707	88.4
40-44	141,868	130,319	91.9
45-49	153,737	143,112	93.1
50-54	143,006	132,077	92.4
55-59	140,766	125,748	89.3
60-64	119,026	102,699	86.3
65-69	98,277	80,036	81.4
20-69	**1,485,520**	**1,205,841**	**81.2**

Table 31 Five-year coverage (women aged 25-69 years screened in the five years prior to 30 June 2019, by ethnicity and DHB (hysterectomy adjusted)

DHB	Māori		Pacific		Asian		European/ Other	
	N	%	N	%	N	%	N	%
Auckland	7,164	63.9	12,150	83.9	36,146	61.4	71,072	95.0
Bay of Plenty	11,015	82.3	740	82.0	3,392	62.5	41,696	98.5
Canterbury	7,415	68.4	2,845	95.0	13,495	78.3	103,832	88.5
Capital & Coast	6,400	71.8	4,426	80.3	10,375	69.4	57,745	98.5
Counties Manukau	15,326	75.0	25,705	89.4	34,054	77.0	48,520	83.3
Hawke's Bay	8,654	91.1	1,173	97.5	1,707	66.2	26,108	88.9
Hutt Valley	4,727	80.5	2,323	83.9	4,652	85.0	23,982	90.3
Lakes	7,621	85.9	568	101.2	1,784	60.1	15,512	96.2
Mid Central	6,421	82.7	975	91.2	2,721	62.4	28,694	88.4
Nelson Marlborough	2,882	83.2	476	96.4	1,685	73.7	31,461	93.6
Northland	11,032	80.7	542	64.2	1,495	58.6	25,677	89.0
South Canterbury	748	68.4	157	125.6	558	79.5	11,942	89.4
Southern	5,032	71.5	1,223	88.9	3,976	54.5	65,780	94.7
Tairawhiti	5,148	88.7	202	75.7	289	70.8	5,503	92.0
Taranaki	3,947	81.9	260	82.5	1,252	74.7	23,030	94.5
Waikato	16,353	77.1	2,339	80.7	9,116	73.6	65,069	91.4
Wairarapa	1,480	87.1	185	106.9	289	64.7	8,247	86.5
Waitemata	9,490	67.8	8,740	81.1	33,966	76.9	92,496	88.0
West Coast	676	73.9	74	74.7	247	70.2	6,391	88.8
Whanganui	3,292	85.1	292	87.4	482	53.1	10,041	89.4
NZ OVERALL	**134,823**	**77.3**	**65,395**	**86.1**	**161,681**	**70.5**	**762,798**	**91.3**

Ethnicity-specific estimates for some DHBs exceed 100%. This is potentially due in part to limitations in the hysterectomy prevalence estimators which are used to adjust the eligible population.

Table 32 - Women under 20 years of age, and aged 15-19 years, screened in the three years prior to 30 June 2019, by DHB.

DHB	Number of women screened in last 3 years		% of population aged 15-19 years screened
	aged 10-20 years	aged 15-19 years	
Auckland	420	419	2.6
Bay of Plenty	200	200	2.9
Canterbury	847	845	4.8
Capital & Coast	356	356	3.3
Counties Manukau	322	322	1.7
Hawke's Bay	160	160	3.1
Hutt Valley	102	101	2.2
Lakes	75	74	2.1
Mid Central	130	130	2.1
Nelson Marlborough	130	129	3.2
Northland	78	77	1.5
South Canterbury	54	54	3.6
Southern	437	437	3.7
Tairawhiti	20	20	1.2
Taranaki	107	107	3.2
Waikato	343	342	2.5
Wairarapa	34	34	2.8
Waitemata	607	604	3.2
West Coast	29	29	3.8
Whanganui	48	47	2.5
Unspecified		-	-
Total	**4,499**	**4,487**	**2.9**

Table 33 - Women screened under 20 years of age, as a proportion of all women screened in the three years to 30 June 2019, by DHB

DHB	Number of women screened in last 3 years aged < 20 years	all ages	Proportion of women screened who were aged < 20 years (%)
Auckland	420	114,634	0.4
Bay of Plenty	200	53,566	0.4
Canterbury	847	120,696	0.7
Capital & Coast	356	74,997	0.5
Counties Manukau	322	109,166	0.3
Hawke's Bay	160	34,499	0.5
Hutt Valley	102	32,588	0.3
Lakes	75	23,719	0.3
Mid Central	130	37,053	0.4
Nelson Marlborough	130	33,896	0.4
Northland	78	35,018	0.2
South Canterbury	54	12,422	0.4
Southern	437	73,195	0.6
Tairawhiti	20	10,381	0.2
Taranaki	107	27,005	0.4
Waikato	343	88,724	0.4
Wairarapa	34	9,389	0.4
Waitemata	607	132,608	0.5
West Coast	29	6,700	0.4
Whanganui	48	13,006	0.4
Unspecified	-	-	-
Total	**4,499**	**1,043,262**	**0.4**

Table 34 - Women screened under 20 years of age, and women aged 18-19 years when they were screened, in the three years to 30 June 2019, by DHB

DHB	Number of women screened in last 3 years		
	aged 10-19 years	aged 18-19 years	% aged 18-19 years
Auckland	420	387	92.1
Bay of Plenty	200	184	92.0
Canterbury	847	742	87.6
Capital & Coast	356	345	96.9
Counties Manukau	322	286	88.8
Hawke's Bay	160	135	84.4
Hutt Valley	102	90	88.2
Lakes	75	69	92.0
Mid Central	130	125	96.2
Nelson Marlborough	130	115	88.5
Northland	78	62	79.5
South Canterbury	54	44	81.5
Southern	437	392	89.7
Tairawhiti	20	16	80.0
Taranaki	107	96	89.7
Waikato	343	315	91.8
Wairarapa	34	30	88.2
Waitemata	607	527	86.8
West Coast	29	22	75.9
Whanganui	48	42	87.5
Unspecified	-	-	-
Total	**4,499**	**4,024**	**89.4**

Table 35– Estimated age-specific prevalence of hysterectomy in New Zealand, used to perform hysterectomy adjustment

	Estimated hysterectomy prevalence (%)			
Age group	Report 51	Report 50	Report 49	Report 48
20-24	0.021%	0.021%	0.016%	0.344%
25-29	0.171%	0.172%	0.171%	0.913%
30-34	0.746%	0.782%	0.781%	1.789%
35-39	2.359%	2.403%	2.406%	3.503%
40-44	5.466%	5.446%	5.447%	6.561%
45-49	8.600%	8.493%	8.494%	10.030%
50-54	12.073%	12.136%	12.135%	13.283%
55-59	14.309%	14.428%	14.428%	17.529%
60-64	17.797%	18.283%	18.282%	23.689%
65-69	21.421%	21.919%	21.916%	29.103%

Based on estimates from Cleary and Wright[1] (Reports 49 - 51) and Gray[2] (Report 48).

Table 36 - Women (25-69 years) screened in the three years to 30 June 2019, as a percentage of the i) hysterectomy-adjustment NZ female population and ii) total NZ female population, by DHB

DHB	Women screened in the last 3 years (hysterectomy-adjusted)	Women screened in the last 3 years (no hysterectomy adjustment)
Auckland	65.5	60.9
Bay of Plenty	78.3	71.0
Canterbury	72.4	66.0
Capital & Coast	75.1	69.0
Counties Manukau	65.5	60.3
Hawke's Bay	72.9	65.8
Hutt Valley	73.2	66.9
Lakes	75.7	68.8
Mid Central	72.3	65.7
Nelson Marlborough	77.5	69.6
Northland	69.3	62.4
South Canterbury	73.2	65.9
Southern	75.4	68.5
Tairawhiti	75.3	68.4
Taranaki	78.1	70.9
Waikato	73.4	66.9
Wairarapa	71.1	64.0
Waitemata	69.3	63.6
West Coast	71.3	64.3
Whanganui	71.7	64.8
Total	**71.4**	**65.2**

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

DHB	To 31 Dec 2017	To 30 Jun 2018	To 31 Dec 2018	To 30 Jun 2019
Auckland	70.6%	67.6%	66.8%	65.5%
Bay of Plenty	80.3%	78.4%	78.6%	78.3%
Canterbury	73.7%	72.4%	72.7%	72.4%
Capital & Coast	78.3%	75.6%	75.7%	75.1%
Counties Manukau	71.8%	68.0%	67.4%	65.5%
Hawke's Bay	76.3%	73.0%	73.1%	72.9%
Hutt Valley	76.0%	73.4%	73.7%	73.2%
Lakes	77.0%	76.1%	76.1%	75.7%
Mid Central	73.9%	71.8%	72.1%	72.3%
Nelson Marlborough	80.4%	77.7%	77.8%	77.5%
Northland	71.8%	69.4%	69.8%	69.3%
South Canterbury	76.9%	75.1%	74.0%	73.2%
Southern	78.5%	75.3%	76.0%	75.4%
Tairawhiti	75.8%	73.7%	74.1%	75.3%
Taranaki	81.0%	78.8%	78.9%	78.1%
Waikato	75.6%	73.3%	73.9%	73.4%
Wairarapa	75.2%	71.1%	71.1%	71.1%
Waitemata	73.4%	70.0%	70.0%	69.3%
West Coast	75.3%	72.2%	72.0%	71.3%
Whanganui	75.1%	72.5%	72.2%	71.7%
Total	**74.8%**	**72.1%**	**72.1%**	**71.4%**

Note:
Updated hysterectomy estimates and population projections were used to calculate coverage for 31 December 2017, 30 June 2018, 31 December 2018 and 30 June 2019 (2017 update 2013 Census, 2018 update 2013 Census and 2019 update 2013 Census, respectively).

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

Age	To 31 Dec 2017	To 30 Jun 2018	To 31 Dec 2018	To 30 Jun 2019
20-24	47.5%	45.9%	45.1%	44.5%
25-29	60.8%	58.9%	58.4%	57.6%
30-34	69.4%	67.6%	67.1%	66.1%
35-39	76.1%	74.1%	74.2%	73.4%
40-44	78.7%	77.2%	77.1%	76.6%
45-49	80.5%	78.3%	78.5%	78.0%
50-54	79.5%	77.9%	78.1%	77.4%
55-59	79.4%	76.2%	76.4%	75.8%
60-64	79.1%	73.6%	74.0%	73.4%
65-69	75.8%	68.9%	69.4%	68.9%
Total	**71.6%**	**69.0%**	**69.0%**	**68.3%**

Note: Coverage calculated using population projection at the date shown based on 2013 Census data. Updated hysterectomy estimates and population projections were used to calculate coverage for 31 December 2017, 30 June 2018, 31 December 2018 and 30 June 2019 (2017 update 2013 Census, 2018 update 2013 Census and 2019 update 2013 Census, respectively).

Table 39 - Trends in three-year coverage by ethnicity (women screened in the previous three years, as a percentage of the hysterectomy-adjusted female population)

Ethnicity	To 31 Dec 2017	To 30 Jun 2018	To 31 Dec 2018	To 30 Jun 2019
Māori	62.0%	61.8%	62.1%	61.6%
Pacific	73.4%	68.6%	67.3%	65.1%
Asian	63.4%	59.1%	59.9%	59.8%
European/ Other	80.4%	78.0%	77.9%	77.2%
Total	**74.8%**	**72.1%**	**72.1%**	**71.4%**

Note: Coverage calculated using population projection at the date shown based on 2013 Census data. Updated hysterectomy estimates and population projections were used to calculate coverage for 31 December 2017, 30 June 2018, 31 December 2018 and 30 June 2019 (2017 update 2013 Census, 2018 update 2013 Census and 2019 update 2013 Census, respectively).

Indicator 2 – First screening events

Table 40 - Age distribution of first screening events for period National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019)

Age	Women with first events	% of first events (ages 20-69 yrs) which occurred in that age group
20-24	9,886	42.3
25-29	4,580	19.6
30-34	3,542	15.2
35-39	2,084	8.9
40-44	1,147	4.9
45-49	757	3.2
50-54	432	1.8
55-59	347	1.5
60-64	360	1.5
65-69	239	1.0
20-69 yrs	**23,374**	**100.0**

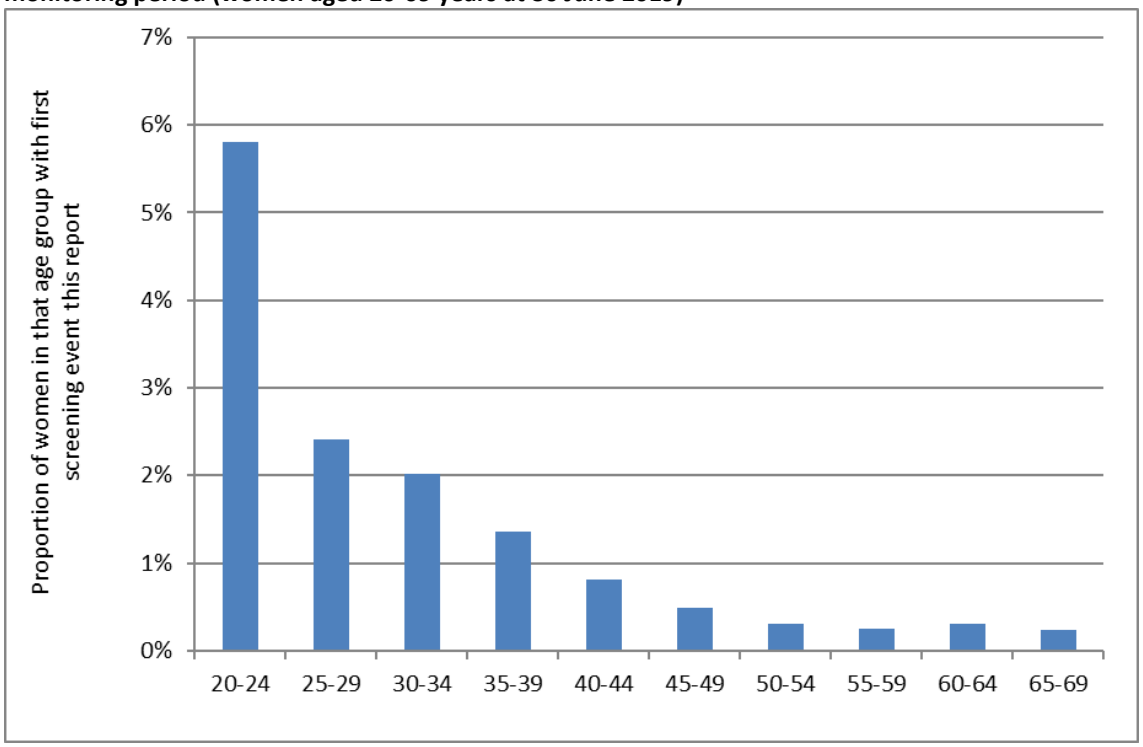
Percentage = number of first screens in age group divided by total number of first screens x 100

Table 41 - Women (ages 20-69 years) with first screening events as a proportion of total number of women with screening events National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019)

Age	Women with first events	As a proportion of women with a screening event	
		N	%
20-24	10,163	22,094	44.7
25-29	4,623	24,694	18.5
30-34	3,530	25,479	13.9
35-39	2,098	23,333	8.9
40-44	1,181	21,635	5.3
45-49	769	23,060	3.3
50-54	507	20,747	2.1
55-59	380	19,908	1.7
60-64	418	15,897	2.3
65-69	250	12,138	2.0
20-69 yrs	**23,919**	**208,985**	**11.2**

Percentage = number of first screens in age group divided by all women with a screening event within that age group (first or subsequent events) x 100.

Figure 111 - Proportion of population* in that age group with their first screening event during the monitoring period (women aged 20-69 years at 30 June 2019)



**Hysterectomy adjusted, 2013 Census data projected to 30 June 2019.*

Table 42 - Women (aged 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 National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019)

DHB	Women with first events	As a proportion of women with a screening event		As a proportion of eligible population	
	N	N	%	N	%
Auckland	3,505	23,885	14.7	184,607	1.9
Bay of Plenty	906	10,818	8.4	68,202	1.3
Canterbury	2,702	24,612	11.0	168,369	1.6
Capital & Coast	2,034	14,893	13.7	102,328	2.0
Counties Manukau	2,816	21,783	12.9	172,507	1.6
Hawke's Bay	580	6,756	8.6	46,880	1.2
Hutt Valley	580	6,077	9.5	44,978	1.3
Lakes	435	4,751	9.2	31,771	1.4
Mid Central	666	7,505	8.9	52,452	1.3
Nelson Marlborough	509	6,748	7.5	42,919	1.2
Northland	543	6,691	8.1	50,393	1.1
South Canterbury	179	2,365	7.6	16,606	1.1
Southern	1,778	14,303	12.4	98,393	1.8
Tairawhiti	173	2,087	8.3	13,882	1.2
Taranaki	368	4,989	7.4	34,084	1.1
Waikato	1,849	17,364	10.6	122,115	1.5
Wairarapa	129	1,942	6.6	12,907	1.0
Waitemata	3,354	27,552	12.2	194,917	1.7
West Coast	87	1,290	6.7	9,226	0.9
Whanganui	181	2,574	7.0	17,984	1.0
Total	**23,374**	**208,985**	**11.2**	**1,485,520**	**1.6**

Note: Proportions shown are women with first screening event within a DHB, divided by i) all women with a screening event within that DHB (first or subsequent events) and ii) the hysterectomy-adjusted 2013 Census population projected to 30 June 2019 for that DHB, as a percent. Total women screened and women with first events exclude those for whom DHB could not be ascertained.

Table 43 - 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 National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019)

Ethnicity	Women with first events	As a proportion of women with a screening event[i]		As a proportion of eligible population[ii]	
		N	%	N	%
Māori	2,309	24,499	9.4	208,123	1.1
Pacific	1,443	10,574	13.6	90,820	1.6
Asian	6,850	30,765	22.3	258,963	2.6
European/ Other	12,772	143,147	8.9	927,614	1.4
Total	**23,374**	**208,985**	**11.2**	**1,485,520**	**1.6**

Note: Proportions shown are women with first screening event in an ethnicity group, divided by i) all women with a screening event within that ethnicity group (first or subsequent events) and ii) the hysterectomy-adjusted 2013 Census population projected to 30 June 2019 for that ethnicity group, as a percent.

Table 44 - 25th and 75th Percentile, median and mean age of women with a first screening event, by ethnicity, for period 1 July - 30 June 2019

Ethnic Group	25th Percentile	75th Percentile	Median Age	Mean Age
Māori	20	25	22	24.4
Pacific	22	33	25	29.2
Asian	27	37	31	33.4
European/ Other	21	32	24	28.1

Indicator 3 – Withdrawal Rates

Table 45 - Number of women who withdrew from the NCSP Register National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019) by age, and proportion of women who were enrolled at the start of the monitoring period who withdrew

Age	Enrolled at start	Women withdrawn	
	N	N	%
<20	686	-	0
20-24	71,459	3	0.004
25-29	145,018	2	0.001
30-34	173,085	-	0.000
35-39	182,995	1	0.001
40-44	184,507	1	0.001
45-49	206,017	-	0.000
50-54	194,784	1	0.001
55-59	188,502	-	0.000
60-64	156,755	2	0.001
65-69	126,587	2	0.002
70+	300,570	-	0.000
Total (all ages)	**1,930,965**	**12**	**0.001**
Total (20-69)	**1,629,709**	**12**	**0.001**

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

Table 46 - Number of women (aged 20-69 years) who withdrew from the NCSP National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019) by ethnicity, and proportion of women who were enrolled at the start of the monitoring period who withdrew

Ethnicity	Enrolled at start		Women withdrawn
	N	N	%
Māori	206,247	2	0.001
Pacific	104,567	3	0.003
Asian	211,129	2	0.001
European/ Other	1,107,766	5	0.000
Total	**1,629,709**	**12**	**0.001**

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

Indicator 4 – Early re-screening

Table 47 - Early re-screening by five-year age group

Age group	Women recommended to return in 3 years	Women with >1 subsequent test	
		N	%
20-24	1,092	185	16.9
25-29	3,973	527	13.3
30-34	4,721	612	13.0
35-39	5,171	663	12.8
40-44	5,525	666	12.1
45-49	6,397	747	11.7
50-54	5,841	666	11.4
55-59	5,849	587	10.0
60-64	4,755	402	8.5
65-69	3,622	284	7.8
All ages	**46,946**	**5,339**	**11.4**

Table 48 - Early re-screening by five-year DHB

DHB	Women recommended to return in 3 years	Women with >1 subsequent test	
		N	%
Auckland	5,219	666	12.8
Bay of Plenty	2,390	296	12.4
Canterbury	5,409	765	14.1
Capital & Coast	3,275	285	8.7
Counties Manukau	4,897	465	9.5
Hawke's Bay	1,493	156	10.4
Hutt Valley	1,475	129	8.7
Lakes	1,014	121	11.9
Mid Central	1,471	120	8.2
Nelson Marlborough	1,603	127	7.9
Northland	1,519	150	9.9
South Canterbury	545	72	13.2
Southern	3,556	386	10.9
Tairawhiti	425	28	6.6
Taranaki	1,360	132	9.7
Waikato	4,103	362	8.8
Wairarapa	469	90	19.2
Waitemata	5,868	923	15.7
West Coast	296	21	7.1
Whanganui	559	45	8.1
Unspecified	-	-	-
Total	**46,946**	**5,339**	**11.4**

Table 49 - Early re-screening by ethnicity

Ethnicity	Women recommended to return in 3 years	Women with >1 subsequent test	
		N	%
Māori	4,835	516	10.7
Pacific	2,280	174	7.6
Asian	6,088	656	10.8
European/ Other	33,743	3,993	11.8
Total	**46,946**	**5,339**	**11.4**

Indicator 5 – Laboratory indicators

Indicator 5.1 – Laboratory cytology reporting

Table 50 - Age-standardised percentage of satisfactory cytology samples reported as HSIL, by laboratory

Laboratory	% satisfactory smears reported as HSIL	
	Age-standardised rate* (20-69 years)	Crude rate
Anatomical Pathology Services	0.59%	0.60%
Canterbury Health Laboratories	0.93%	0.96%
LabPLUS	2.08%	2.13%
Medlab Central Ltd.	1.13%	1.09%
Pathlab	0.49%	0.48%
Southern Community Laboratories	0.86%	0.86%
Total	**0.82%**	**0.82%**

** Age-standardised to the NZ 2013 Census population (females, ages 20-69 years).*

Indicator 5.2 – Accuracy of cytology predicting HSIL

Table 51 - Positive predictive value of a report of HSIL + SC cytology by laboratory

Laboratory	Histology available		HSIL confirmed by histology		No histology		Total reports
	N	%	N	%	N	%	N
Anatomical Pathology Services	211	94.2	166	78.7	13	5.8	224
Canterbury Health Laboratories	44	95.7	36	81.8	2	4.3	46
LabPLUS	22	95.7	19	86.4	1	4.3	23
Medlab Central Ltd.	108	90.0	85	78.7	12	10.0	120
Pathlab	74	98.7	55	74.3	1	1.3	75
Southern Community Laboratories	534	90.7	395	74.0	55	9.3	589
Total	**993**	**92.2**	**756**	**76.1**	**84**	**7.8**	**1,077**

Target: 65% - 85%.

Table 52 - Positive predictive value of a report of ASC-H cytology by laboratory

Laboratory	Histology available		HSIL confirmed by histology		No histology		Total reports
	N	%	N	%	N	%	N
Anatomical Pathology Services	129	81.6	59	45.7	29	18.4	158
Canterbury Health Laboratories	46	85.2	22	47.8	8	14.8	54
LabPLUS	49	81.7	14	28.6	11	18.3	60
Medlab Central Ltd.	72	75.8	42	58.3	23	24.2	95
Pathlab	88	84.6	45	51.1	16	15.4	104
Southern Community Laboratories	128	77.1	64	50.0	38	22.9	166
Total	**512**	**80.4**	**246**	**48.0**	**125**	**19.6**	**637**

Table 53 - Positive predictive value of a report of ASC-H + HSIL + SC cytology by laboratory

Laboratory	Histology available		HSIL confirmed by histology		No histology		Total reports
	N	%	N	%	N	%	N
Anatomical Pathology Services	340	89.0	225	66.2	42	11.0	382
Canterbury Health Laboratories	90	90.0	58	64.4	10	10.0	100
LabPLUS	71	85.5	33	46.5	12	14.5	83
Medlab Central Ltd.	180	83.7	127	70.6	35	16.3	215
Pathlab	162	90.5	100	61.7	17	9.5	179
Southern Community Laboratories	662	87.7	459	69.3	93	12.3	755
Total	**1,505**	**87.8**	**1,002**	**66.6**	**209**	**12.2**	**1,714**

Indicator 5.4 – Histology Reporting

Figure 112 - Trends in histologically-confirmed HSIL as a percentage of all women with histology (To 1 July 2011 – 30 June 2019).

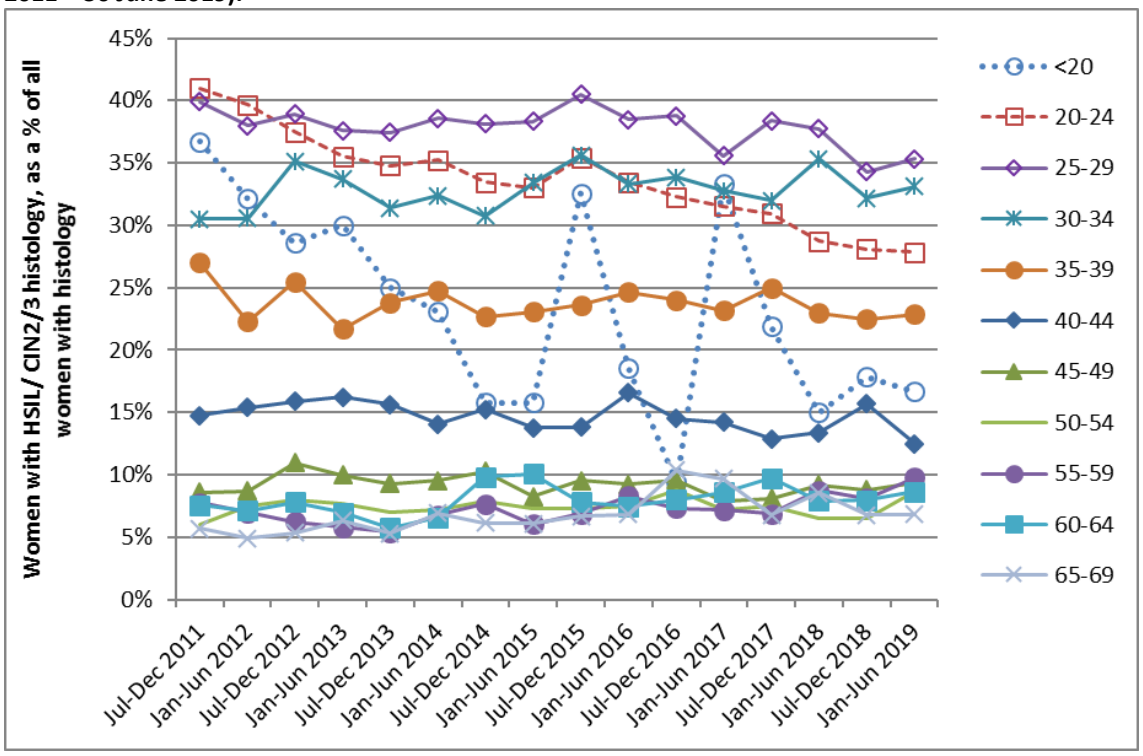


Table 54 - Rate of women with CIN 2/3 per 1,000 women screened, by age and ethnicity and for NZ overall, National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019)

Age group	Ethnicity				
	Māori	Pacific	Asian	European/ Other	NZ overall
<20	0.0	0.0	0.0	8.4	6.3
20-24	12.3	8.3	7.3	15.3	13.8
25-29	17.6	10.4	6.4	21.5	17.9
30-34	22.1	14.2	11.1	18.9	17.4
35-39	12.7	7.6	7.8	13.3	11.7
40-44	11.8	9.4	3.6	7.3	7.3
45-49	10.0	1.7	6.1	4.9	5.4
50-54	11.5	5.6	3.5	3.1	4.2
55-59	4.6	2.2	5.7	3.2	3.6
60-64	3.4	3.0	2.2	2.6	2.6
65-69	3.3	0.0	4.2	1.8	2.1
70+	13.1	12.7	0.0	2.4	3.2
ASR (20-69 years)^	**12.3**	**7.2**	**6.3**	**11.0**	**10.1**

^Age Standardised to the WHO population (ages 20-69 years)[12].

Table 55 - Rate of women, per 1,000 women screened, with CIN 2/3 histology, by age and ethnicity, July-Dec 2007 to Jan-Jun 2019

		Period																							
	Age Group	Jul-Dec 2007	Jan-Jun 2008	Jul-Dec 2008	Jan-Jun 2009	Jul-Dec 2009	Jan-Jun 2010	Jul-Dec 2010	Jan-Jun 2011	Jul-Dec 2011	Jan-Jun 2012	Jul-Dec 2012	Jan-Jun 2013	Jul-Dec 2013	Jan-Jun 2014	Jul-Dec 2014	Jan-Jun 2015	Jul-Dec 2015	Jan-Jun 2016	Jul-Dec 2016	Jan-Jun 2017	Jul-Dec 2017	Jan-Jun 2018	Jul-Dec 2018	Jan-Jun 2019
Māori	<20	15.3	13.5	21.4	21.2	20.5	8.5	19.3	13.9	24.1	19.9	12.1	4.7	0.0	0.0	14.0	7.0	7.8	7.5	0.0	20.2	0.0	10.3	0.0	0.0
	20-24	29.6	28.2	25.9	29.7	31.7	24.6	27.8	23.3	31.5	32.2	28.6	28.0	30.8	24.8	24.3	19.9	21.0	21.8	20.7	20.8	17.1	14.3	12.2	12.3
	25-29	32.3	26.4	31.0	32.5	31.4	28.3	27.4	30.7	34.1	34.1	42.3	37.8	38.2	38.5	40.5	32.5	32.8	28.7	35.6	25.8	30.0	21.5	22.1	17.6
	30-34	17.8	26.2	26.6	20.6	18.0	23.7	29.9	26.4	21.4	27.5	34.2	30.2	29.2	29.2	25.4	32.0	31.5	23.0	31.0	27.3	27.9	23.4	23.1	22.1
	35-39	12.7	12.0	13.9	16.9	16.5	19.9	17.0	15.1	17.2	16.3	13.4	18.2	21.2	16.9	17.5	17.0	22.0	17.6	20.0	20.3	19.2	11.9	13.1	12.7
	40-44	9.8	9.4	10.4	9.4	9.3	10.4	10.0	12.2	11.1	11.1	9.7	10.5	12.9	10.6	14.3	12.4	10.9	15.2	15.0	13.9	8.8	7.6	12.6	11.8
	45-49	10.2	6.5	6.5	11.2	9.4	5.0	8.1	6.1	6.6	6.3	5.9	9.4	7.3	7.6	9.8	8.7	10.3	5.8	8.1	5.9	7.7	7.7	6.7	10.0
	50-54	3.4	4.2	7.7	6.5	2.4	4.4	5.0	4.5	2.2	7.1	8.5	6.0	3.9	5.1	7.6	8.0	4.6	4.9	8.3	4.0	4.8	4.1	4.9	11.5
	55-59	6.0	6.6	5.1	3.3	5.3	0.7	4.1	2.0	8.4	5.8	4.3	3.1	1.8	3.5	2.9	3.2	2.5	4.7	3.3	3.2	4.5	6.5	4.1	4.6
	60-64	2.6	2.3	5.8	4.9	2.2	4.6	2.8	2.0	4.0	3.9	2.7	3.7	2.7	5.2	10.1	7.8	3.8	6.0	4.6	2.4	3.0	2.0	6.5	3.4
	65-69	2.0	2.1	6.0	1.9	3.8	5.6	1.7	1.7	3.4	0.0	6.4	6.3	1.6	2.9	1.4	2.5	3.8	3.8	13.4	1.2	0.0	1.1	1.1	3.3
	70+	7.2	7.6	8.5	0.0	0.0	0.0	0.0	0.0	8.0	7.5	7.4	8.5	17.5	13.4	0.0	0.0	7.8	9.0	0.0	0.0	7.7	14.3	16.9	13.1
Pacific	<20	7.3	4.2	10.9	11.6	7.2	0.0	0.0	0.0	0.0	10.4	0.0	0.0	25.6	20.4	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0
	20-24	13.4	11.0	10.9	11.1	12.9	14.3	15.5	12.2	11.9	15.1	17.5	13.5	14.0	8.2	9.1	10.1	14.4	7.8	10.2	7.7	5.7	9.3	10.3	8.3
	25-29	6.9	7.9	11.8	6.2	7.5	8.9	16.9	15.3	13.6	14.9	15.9	13.2	14.0	16.4	23.7	18.1	12.3	12.6	15.7	16.8	16.2	11.1	8.4	10.4
	30-34	2.3	7.5	11.2	9.3	10.7	11.9	10.5	10.7	6.3	18.4	18.6	11.8	13.8	15.1	17.3	16.1	13.7	14.4	18.8	17.0	15.5	15.5	13.0	14.2
	35-39	9.0	10.5	4.8	8.8	6.6	7.2	10.2	6.4	7.4	9.5	14.3	13.5	11.7	10.0	12.4	8.8	8.5	6.6	10.6	6.3	11.6	10.7	9.2	7.6
	40-44	6.3	5.6	8.2	5.3	3.0	5.0	4.7	5.3	8.3	7.4	10.2	6.5	7.3	6.2	9.3	4.5	3.5	8.5	12.0	7.5	6.4	3.2	8.9	9.4
	45-49	7.9	3.4	7.5	7.8	4.1	3.3	4.7	4.2	4.8	7.3	8.1	5.7	3.7	4.6	4.7	4.3	5.1	5.8	6.8	3.3	3.4	5.8	4.4	1.7
	50-54	0.0	6.2	4.4	1.2	2.4	1.1	6.0	3.2	2.0	5.6	8.1	8.0	2.7	3.9	1.8	5.2	4.2	5.0	2.7	2.5	4.9	3.7	1.7	5.6
	55-59	1.8	1.6	2.8	1.6	4.3	1.4	2.7	1.5	1.5	2.7	2.8	6.5	6.4	5.3	3.3	2.1	1.2	1.0	3.5	4.7	5.5	6.7	2.3	2.2
	60-64	0.0	4.7	2.4	2.3	4.1	2.1	5.7	8.3	3.8	5.2	3.5	1.7	1.6	0.0	3.3	1.5	1.5	2.9	3.0	3.1	4.5	6.2	3.1	3.0
	65-69	0.0	0.0	3.6	0.0	0.0	0.0	0.0	3.2	3.1	2.8	0.0	2.6	5.0	2.4	2.5	2.3	0.0	2.2	7.0	7.1	4.7	2.2	0.0	0.0
	70+	0.0	0.0	0.0	15.9	15.6	15.6	13.2	0.0	0.0	0.0	0.0	0.0	17.5	0.0	0.0	15.4	0.0	0.0	12.7	15.4	14.1	14.9	12.7	12.7
Asian	<20	0.0	10.3	0.0	13.5	19.2	0.0	20.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	62.5	0.0	0.0	0.0	0.0	0.0
	20-24	8.9	8.3	7.8	4.9	8.8	5.7	6.8	7.1	6.6	9.1	13.5	10.6	9.7	7.8	11.5	5.3	9.5	12.8	12.0	9.8	6.4	6.9	5.8	7.3
	25-29	10.2	8.0	8.4	9.3	6.6	6.3	6.8	8.9	10.7	7.8	12.6	9.8	8.4	8.7	11.7	7.6	13.8	12.1	11.4	4.7	7.4	5.7	6.6	6.4
	30-34	10.0	7.1	6.5	6.5	6.7	8.9	7.8	9.5	14.5	9.4	11.6	9.7	10.0	9.4	7.4	9.2	10.9	12.1	11.1	8.6	9.7	7.5	9.4	11.1
	35-39	9.0	8.4	8.0	8.7	6.7	7.5	10.6	9.7	10.9	7.8	12.5	7.8	10.7	10.3	8.0	8.6	6.6	7.7	9.7	7.4	6.8	9.7	8.8	7.8

	Age Group	Period																							
		Jul-Dec 2007	Jan-Jun 2008	Jul-Dec 2008	Jan-Jun 2009	Jul-Dec 2009	Jan-Jun 2010	Jul-Dec 2010	Jan-Jun 2011	Jul-Dec 2011	Jan-Jun 2012	Jul-Dec 2012	Jan-Jun 2013	Jul-Dec 2013	Jan-Jun 2014	Jul-Dec 2014	Jan-Jun 2015	Jul-Dec 2015	Jan-Jun 2016	Jul-Dec 2016	Jan-Jun 2017	Jul-Dec 2017	Jan-Jun 2018	Jul-Dec 2018	Jan-Jun 2019
Eur/Other	40-44	8.3	2.2	7.4	5.3	4.1	7.8	8.8	5.4	5.8	8.7	11.4	9.3	9.5	4.9	9.8	5.2	7.8	9.4	8.5	5.7	3.9	6.9	5.9	3.6
	45-49	7.5	6.7	4.7	4.3	4.8	3.4	6.2	4.4	5.6	2.2	9.9	6.0	4.3	6.5	6.1	4.4	6.3	5.2	4.7	4.3	4.5	4.2	4.9	6.1
	50-54	2.6	1.8	3.3	1.2	3.6	3.2	2.5	3.5	2.4	3.8	5.0	3.6	5.9	3.0	3.6	4.2	6.3	4.7	5.7	4.4	4.5	4.0	2.9	3.5
	55-59	3.0	2.8	0.0	3.5	2.4	4.0	1.5	6.4	6.3	3.8	4.2	2.3	3.2	2.8	3.9	3.3	1.0	2.0	4.3	1.9	3.2	3.8	2.3	5.7
	60-64	1.8	0.0	8.8	4.4	1.2	1.2	2.2	5.5	4.1	5.2	2.8	4.3	3.1	3.1	4.2	2.6	1.3	5.7	2.8	4.1	3.8	2.2	2.0	2.2
	65-69	0.0	0.0	5.1	0.0	2.3	2.2	8.3	0.0	3.8	3.9	0.0	1.6	0.0	3.0	1.3	0.0	3.7	3.1	6.3	6.0	1.9	4.8	2.6	4.2
	70+	0.0	17.2	12.5	0.0	10.5	0.0	0.0	0.0	0.0	0.0	10.8	9.5	28.6	0.0	0.0	9.3	8.4	0.0	0.0	0.0	0.0	7.4	0.0	0.0
	<20	23.0	14.3	22.3	18.6	23.6	7.9	11.5	11.8	19.8	19.7	17.6	20.7	16.8	12.0	6.9	8.8	25.0	6.8	7.8	16.9	18.1	4.8	15.3	8.4
	20-24	28.6	23.4	27.5	28.1	26.2	24.8	25.7	28.5	27.3	31.2	28.7	26.6	24.0	23.4	22.1	20.3	21.4	20.0	20.5	18.3	17.6	15.1	15.5	15.3
	25-29	27.2	23.1	27.2	27.5	25.5	25.1	27.1	27.2	30.2	29.1	30.3	31.1	33.1	29.7	29.9	27.9	31.1	30.2	28.2	24.2	23.3	21.9	21.9	21.5
	30-34	17.1	14.5	16.1	16.5	18.1	16.6	20.5	19.6	17.7	18.2	22.6	22.4	21.1	21.2	21.4	19.3	22.2	21.8	22.1	19.8	18.6	20.0	18.5	18.9
	35-39	10.8	8.6	10.4	10.5	9.9	10.0	11.9	11.0	12.2	11.7	14.3	10.6	12.7	12.9	13.3	11.4	12.3	13.3	13.2	11.5	14.8	10.9	11.8	13.3
	40-44	6.5	6.0	6.4	5.8	5.9	6.5	7.2	7.5	7.0	7.9	8.6	9.3	8.6	8.3	8.6	7.4	7.3	8.5	7.6	7.2	7.5	7.6	8.8	7.3
	45-49	4.3	4.0	5.1	3.7	3.8	4.5	4.6	3.5	4.5	4.6	5.5	5.2	5.9	5.2	6.0	4.6	5.0	5.6	5.9	4.1	4.2	5.1	5.0	4.9
	50-54	2.2	2.8	2.6	2.5	2.4	2.7	3.2	2.2	2.8	2.9	2.8	3.6	3.2	3.1	3.6	2.4	3.1	3.5	4.2	3.2	3.5	2.9	3.0	3.1
	55-59	1.7	1.7	1.9	1.2	1.2	1.9	1.9	1.7	1.9	2.1	2.0	2.0	1.7	2.1	2.6	1.9	2.8	3.2	2.8	2.8	2.2	2.4	3.0	3.2
	60-64	1.8	1.6	2.0	2.2	1.7	0.7	1.5	1.2	1.7	1.7	2.2	2.0	1.4	1.7	2.6	2.6	2.5	1.4	2.3	2.6	2.8	2.2	2.0	2.6
	65-69	2.3	1.7	1.4	1.8	1.3	0.9	2.2	1.6	1.1	1.2	1.5	1.6	1.7	1.7	1.7	1.9	1.9	1.8	2.2	2.7	2.3	2.4	2.2	1.8
	70+	4.6	3.0	2.1	4.9	2.4	2.6	5.0	3.8	2.0	3.0	1.7	7.9	5.1	1.8	3.6	1.8	4.5	7.6	2.6	4.2	5.9	6.2	4.9	2.4

Table 56 - Number of women screened, by age and ethnicity, July-Dec 2007 to Jan-Jun 2019

	Age Group	Period																							
		Jul-Dec 2007	Jan-Jun 2008	Jul-Dec 2008	Jan-Jun 2009	Jul-Dec 2009	Jan-Jun 2010	Jul-Dec 2010	Jan-Jun 2011	Jul-Dec 2011	Jan-Jun 2012	Jul-Dec 2012	Jan-Jun 2013	Jul-Dec 2013	Jan-Jun 2014	Jul-Dec 2014	Jan-Jun 2015	Jul-Dec 2015	Jan-Jun 2016	Jul-Dec 2016	Jan-Jun 2017	Jul-Dec 2017	Jan-Jun 2018	Jul-Dec 2018	Jan-Jun 2019
Māori	<20	782	813	653	614	438	471	362	359	290	302	248	213	157	156	143	142	128	134	102	99	73	97	85	86
	20-24	3817	4177	4131	4375	4452	4597	4715	4816	4760	4571	4750	4579	4580	4476	4319	4469	4565	4404	3954	3993	3864	3997	3844	3670
	25-29	3185	3527	3132	3384	3123	3321	3353	3516	3251	3317	3261	3306	3431	3402	3409	3536	3783	3792	3399	3490	3433	3717	3672	3473
	30-34	3199	3284	3079	3259	2996	3082	3149	3140	3034	3053	2951	2752	2805	2804	2753	2970	2920	3047	2648	2675	2868	3204	3118	3082
	35-39	3216	3345	3229	3133	3093	3165	3293	3182	3083	2881	2903	2741	2694	2718	2626	2765	2866	2735	2499	2509	2501	2782	2680	2523
	40-44	2870	2992	2971	2863	2916	2874	2996	3123	3052	2978	3097	2857	2865	2739	2928	2914	3014	2763	2597	2593	2487	2758	2701	2450
	45-49	2539	2763	2749	2688	2755	2791	2824	2779	2724	2683	2692	2549	2586	2649	2644	2774	2818	2743	2596	2540	2614	2863	2823	2509
	50-54	1750	1886	1960	1854	2084	2034	2183	2203	2267	2248	2364	2344	2297	2371	2485	2386	2615	2451	2291	2268	2299	2433	2431	2257
	55-59	1166	1205	1378	1217	1327	1403	1472	1521	1548	1560	1615	1593	1635	1712	1708	1858	2009	1922	1823	1857	2022	2150	2202	2175
	60-64	758	853	857	820	910	876	1061	986	1012	1021	1101	1078	1101	1150	1189	1288	1300	1332	1311	1276	1336	1475	1528	1452
	65-69	506	469	496	517	522	533	600	595	587	645	621	631	632	697	726	797	798	794	819	847	855	915	908	908
	70+	138	132	117	117	118	128	134	118	125	133	135	117	114	149	124	134	129	111	145	128	130	140	177	153
Pacific	<20	274	238	184	172	138	131	110	126	93	96	52	60	39	49	41	37	29	28	25	20	19	11	14	7
	20-24	1339	1448	1463	1442	1476	1542	1737	1634	1678	1723	1542	1631	1646	1593	1535	1577	1596	1801	1472	1426	1401	1296	1359	1212
	25-29	1309	1518	1441	1449	1341	1463	1416	1372	1395	1481	1319	1437	1433	1467	1433	1544	1626	1669	1467	1425	1361	1441	1436	1447
	30-34	1324	1470	1524	1506	1405	1428	1530	1399	1432	1465	1291	1358	1303	1328	1328	1433	1462	1599	1280	1237	1290	1353	1309	1272
	35-39	1333	1430	1459	1471	1368	1390	1477	1403	1360	1364	1330	1262	1281	1306	1291	1367	1408	1521	1230	1279	1210	1314	1308	1190
	40-44	1260	1432	1472	1320	1321	1413	1476	1333	1331	1344	1273	1230	1361	1290	1294	1321	1434	1416	1246	1193	1100	1242	1239	1172
	45-49	1010	1171	1198	1159	1215	1212	1287	1204	1263	1225	1237	1229	1353	1305	1267	1388	1368	1378	1177	1215	1173	1210	1147	1163
	50-54	783	811	910	801	841	895	994	933	996	1065	990	1001	1111	1034	1122	1154	1190	1195	1096	1182	1022	1078	1157	1072
	55-59	552	645	711	611	699	702	746	689	676	739	712	770	777	748	900	935	867	954	860	858	912	896	882	916
	60-64	371	430	418	426	486	477	530	482	524	575	564	585	622	603	604	676	664	698	675	635	667	648	647	675
	65-69	248	274	276	278	288	269	294	315	318	363	359	378	397	419	406	433	460	457	428	424	426	450	469	455
	70+	63	76	55	63	64	64	76	58	57	44	55	58	57	64	64	65	77	77	79	65	71	67	79	79
Asian	<20	97	97	83	74	52	62	49	57	41	43	36	25	32	26	20	34	24	25	16	20	20	22	21	25
	20-24	1681	1686	1668	1626	1474	1590	1463	1407	1511	1542	1555	1597	1645	1659	1652	1691	1690	1719	1673	1731	1706	1749	1713	1770
	25-29	2548	2885	2985	3209	3181	3309	3230	3247	3176	3337	3183	3160	3212	3097	3339	3564	3488	3813	3504	3622	3907	4038	4241	3932
	30-34	2392	2676	2598	2766	2845	3017	3060	3160	3235	3529	3630	3899	4087	4164	4326	4913	4661	5033	4793	5136	5060	5334	5400	5501
	35-39	2772	2863	2987	2865	2995	2933	2938	2977	2833	2964	2879	2946	3076	3104	3268	3710	3626	3882	3937	4171	4443	4733	5092	5031

	Age Group	Period																							
		Jul-Dec 2007	Jan-Jun 2008	Jul-Dec 2008	Jan-Jun 2009	Jul-Dec 2009	Jan-Jun 2010	Jul-Dec 2010	Jan-Jun 2011	Jul-Dec 2011	Jan-Jun 2012	Jul-Dec 2012	Jan-Jun 2013	Jul-Dec 2013	Jan-Jun 2014	Jul-Dec 2014	Jan-Jun 2015	Jul-Dec 2015	Jan-Jun 2016	Jul-Dec 2016	Jan-Jun 2017	Jul-Dec 2017	Jan-Jun 2018	Jul-Dec 2018	Jan-Jun 2019
Eur/Other	40-44	2664	2753	2839	2818	2897	2836	2954	2952	2924	2992	2897	3005	3045	3051	3065	3249	3064	3304	3178	3171	3292	3327	3587	3581
	45-49	2255	2385	2574	2567	2687	2610	2733	2703	2664	2719	2725	2681	2818	2776	2794	2961	2846	2883	2986	3033	3078	3067	3287	3121
	50-54	1538	1712	1812	1734	1923	1853	1965	1973	2081	2094	2196	2249	2391	2316	2508	2592	2523	2532	2476	2475	2460	2513	2783	2536
	55-59	1000	1080	1129	1127	1268	1265	1354	1415	1578	1575	1666	1709	1877	1782	2076	2107	2017	2008	2117	2054	2178	2131	2217	2299
	60-64	558	583	684	684	801	851	908	913	970	962	1063	1160	1311	1270	1434	1544	1560	1573	1756	1706	1842	1788	1967	1817
	65-69	326	373	395	394	435	454	480	498	526	516	568	638	713	659	766	886	817	971	953	999	1039	1032	1156	1177
	70+	75	58	80	86	95	93	103	87	100	98	93	105	105	111	113	107	119	93	127	132	134	135	166	138
	<20	2309	2588	1974	1985	1440	1512	1217	1274	1060	1014	850	821	655	667	577	569	521	586	387	474	387	420	327	358
	20-24	17383	18643	17757	18607	17800	18495	18763	18817	19116	18806	18620	18560	18522	18025	17858	18324	17771	18078	16330	16632	15801	16292	15371	15442
	25-29	15186	16601	15170	16569	14622	15779	14932	15171	14982	15236	14714	15153	14974	15177	14985	15954	15649	16279	14841	15730	14870	16332	14711	15842
	30-34	17493	18706	16820	17807	15732	16878	15781	15728	15416	15678	14995	15276	14776	14673	14416	15166	14542	15178	14233	14702	14226	16032	14821	15624
	35-39	21088	22570	20663	21682	19762	20149	19440	18743	18002	17983	16831	16613	15703	15613	14808	15487	14937	15250	14267	14396	13730	14917	13988	14589
	40-44	20798	21480	20507	20646	19974	20347	20417	19853	20267	19938	19529	18849	18917	18224	17939	18504	17390	16757	15888	15596	14578	15705	14705	14432
	45-49	20190	20876	20765	20225	20609	19948	20230	19121	19428	18654	18781	17774	17970	17075	17605	17645	17828	17375	16851	16778	16776	17492	16961	16267
	50-54	16146	16635	16622	16502	17091	16803	17580	16934	17839	17500	17694	17123	17770	16692	17322	17315	17307	16191	15899	15428	15512	15866	15779	14882
	55-59	13159	13391	13503	13091	13921	13561	13924	13411	14093	13990	14221	13585	14405	13895	14443	14466	15106	14430	14541	14658	14745	15347	15511	14518
	60-64	10057	10416	10821	10652	11435	11409	11645	11232	11943	11324	11590	11078	11690	11073	11872	11728	11974	11688	11567	11575	11863	12241	12655	11953
	65-69	7034	7091	7325	7193	7595	7632	7643	7392	7931	8171	8622	8577	9071	8928	9572	9746	9765	9573	9450	9298	9511	10051	9893	9598
	70+	2394	2352	2402	2251	2486	2338	2382	2355	2464	2359	2327	2159	2342	2193	2249	2163	2199	2229	2351	2353	2381	2584	2474	2477

Indicator 5.5 – Laboratory turnaround time

Table 57 - Timeliness of cytology reporting by laboratory, National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019)

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
Anatomical Pathology Services	42,665	96.9	1,260	2.9	43,925	99.7	121	0.3	44,046
Canterbury Health Laboratories	8,796	91.7	690	7.2	9,486	98.9	108	1.1	9,594
LabPLUS	6,605	84.7	1,005	12.9	7,610	97.6	191	2.4	7,801
Medlab Central Ltd	13,706	90.9	460	3.0	14,166	93.9	918	6.1	15,084
Pathlab	26,511	98.3	341	1.3	26,852	99.6	109	0.4	26,961
Southern Community Labs Dunedin	102,876	96.6	2,481	2.3	105,357	98.9	1,140	1.1	106,497
Total	**201,159**	**95.8**	**6,237**	**3.0**	**207,396**	**98.8**	**2,587**	**1.2**	**209,983**

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

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

Table 58 - Timeliness of histology reporting by laboratory, National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019)

Laboratory	Laboratory turnaround time - histology								
	Within 10 days		10-15 days		Total within 15 days		More than 15 days		Total
	N	%	N	%	N	%	N	%	N
Anatomical Pathology Services	1,377	93.9	77	5.3	1,454	99.2	12	0.8	1,466
Canterbury Health Laboratories	1,229	86.8	157	11.1	1,386	97.9	30	2.1	1,416
LabPLUS	594	75.6	90	11.5	684	87.0	102	13.0	786
Medlab Central Ltd.	889	94.2	13	1.4	902	95.6	42	4.4	944
Memorial Hospital Hastings Laboratory	74	93.7	2	2.5	76	96.2	3	3.8	79
Middlemore Hospital Laboratory	695	91.2	40	5.2	735	96.5	27	3.5	762
Nelson Hospital Laboratory	82	98.8	1	1.2	83	100.0	-	0.0	83
North Shore Hospital Laboratory	957	93.5	38	3.7	995	97.3	28	2.7	1,023
Northland Pathology Laboratory	160	74.8	28	13.1	188	87.9	26	12.1	214
Pathlab	848	73.2	150	12.9	998	86.1	161	13.9	1,159
Southern Community Laboratories Dunedin	2,857	99.5	4	0.1	2,861	99.7	9	0.3	2,870
Southern Community Laboratories Wellington	854	96.5	29	3.3	883	99.8	2	0.2	885
Taranaki Medlab	239	100.0	-	0.0	239	100.0	-	0.0	239
Waikato Hospital Laboratory	150	89.3	-	0.0	150	89.3	18	10.7	168
Total	**11,005**	**91.0**	**629**	**5.2**	**11,634**	**96.2**	**460**	**3.8**	**12,094**

Target: 90% within ten working days and 98% within 15 working days of receipt of the sample.
Note: total histology samples reported on for this Indicator is different from that reported in Indicator 5.4. Indicator 5.5 includes all histology samples received by laboratories within the monitoring period, while 5.4 includes all histology samples taken within the monitoring period.

Table 59 - Timeliness of reporting for cytology with associated HPV testing by laboratory, National Cervical Screening Programme Monitoring Report Number 51 (1 January – 30 June 2019)

Laboratory	Laboratory turnaround time - cytology with HPV testing				
	Within 15 days		More than 15 days		Total
	N	%	N	%	N
Anatomical Pathology Services	710	100.0	-	0.0	710
Canterbury Health Laboratories	177	97.3	5	2.7	182
LabPLUS	207	96.7	7	3.3	214
Medlab Central Ltd.	322	96.4	12	3.6	334
Pathlab	546	99.6	2	0.4	548
Southern Community Laboratories	1,069	99.3	8	0.7	1,077
Total	**3,031**	**98.9**	**34**	**1.1**	**3,065**

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

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

DHB	<20		20-24		25-29		30-34		35-39		40-44		45-49		50-54		55-59		60-64		65-69		70+		Total
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Auckland	-	-	23	85.2	41	78.8	40	88.9	18	78.3	20	95.2	16	80.0	10	55.6	10	55.6	12	80.0	1	20.0	2	33.3	193
Bay of Plenty	-	-	10	90.9	11	73.3	8	88.9	5	71.4	8	100.0	4	80.0	5	55.6	5	71.4	3	75.0	2	66.7	4	100.0	65
Canterbury	-	-	26	92.9	33	91.7	40	85.1	22	84.6	14	87.5	13	92.9	8	66.7	6	54.5	4	50.0	3	75.0	5	100.0	175
Capital & Coast	-	-	16	84.2	14	87.5	16	94.1	12	100.0	7	77.8	10	90.9	5	83.3	4	80.0	1	33.3	2	50.0	0	0.0	87
Counties Manukau	0	0.0	11	57.9	26	60.5	16	59.3	6	60.0	17	85.0	7	70.0	7	38.9	5	35.7	10	71.4	4	80.0	4	40.0	113
Hawke's Bay	-	-	5	62.5	14	87.5	9	81.8	6	85.7	5	62.5	0	0.0	3	100.0	2	50.0	3	60.0	2	66.7	0	0.0	49
Hutt Valley	-	-	9	90.0	14	93.3	11	91.7	9	90.0	7	87.5	3	100.0	-	-	3	42.9	-	-	3	60.0	-	-	65
Lakes	-	-	4	100.0	5	100.0	7	100.0	4	100.0	0	0.0	0	0.0	1	50.0	6	100.0	3	100.0	0	0.0	0	0.0	30
Mid Central	-	-	22	88.0	22	88.0	11	84.6	9	100.0	8	80.0	4	80.0	1	100.0	4	80.0	2	66.7	1	50.0	1	50.0	85
Nelson Marlborough	-	-	5	100.0	5	83.3	10	100.0	6	100.0	3	75.0	5	100.0	4	100.0	1	33.3	0	0.0	2	100.0	1	100.0	42
Northland	-	-	5	83.3	7	77.8	8	88.9	6	100.0	0	0.0	4	66.7	4	66.7	4	66.7	2	66.7	0	0.0	0	0.0	40
South Canterbury	-	-	4	100.0	0	0.0	2	100.0	0	0.0	5	100.0	-	-	1	50.0	1	100.0	0	0.0	0	0.0	1	100.0	15
Southern	-	-	13	81.3	19	82.6	32	91.4	15	100.0	5	71.4	7	100.0	7	87.5	3	60.0	4	66.7	4	80.0	1	50.0	110
Tairawhiti	-	-	2	50.0	4	80.0	3	75.0	5	83.3	1	100.0	-	-	-	-	3	100.0	2	100.0	0	0.0	0	0.0	22
Taranaki	-	-	1	100.0	9	90.0	7	100.0	4	100.0	4	100.0	2	100.0	-	-	2	66.7	2	66.7	2	66.7	0	0.0	38
Waikato	-	-	12	100.0	24	92.3	27	90.0	10	90.9	16	100.0	12	92.3	6	85.7	8	100.0	1	50.0	2	100.0	0	0.0	118
Wairarapa	-	-	2	50.0	3	100.0	2	100.0	-	-	0	0.0	-	-	2	66.7	-	-	-	-	-	-	-	-	15
Waitemata	-	-	33	84.6	36	90.0	33	84.6	33	94.3	25	83.3	18	78.3	13	86.7	10	83.3	10	83.3	7	87.5	1	50.0	220
West Coast	-	-	1	100.0	0	0.0	1	50.0	-	-	-	-	2	100.0	1	100.0	-	-	-	-	-	-	-	-	7
Whanganui	-	-	9	90.0	8	100.0	2	100.0	6	100.0	6	100.0	2	100.0	-	-	-	-	1	50.0	3	100.0	0	0.0	40
Total	**2**	**100.0**	**213**	**84.2**	**295**	**83.1**	**285**	**86.4**	**179**	**89.5**	**152**	**85.9**	**113**	**84.3**	**87**	**70.2**	**79**	**65.8**	**66**	**70.2**	**38**	**67.9**	**20**	**54.1**	**1,529**

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

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

DHB	<20		20-24		25-29		30-34		35-39		40-44		45-49		50-54		55-59		60-64		65-69		70+		Total
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Auckland	-	-	25	92.6	48	92.3	42	93.3	21	91.3	20	95.2	17	85.0	11	61.1	12	66.7	13	86.7	2	40.0	4	66.7	215
Bay of Plenty	-	-	10	90.9	12	80.0	8	88.9	6	85.7	8	100.0	4	80.0	6	66.7	6	85.7	3	75.0	2	66.7	4	100.0	69
Canterbury	-	-	28	100.0	34	94.4	44	93.6	23	88.5	15	93.8	14	100.0	9	75.0	8	72.7	5	62.5	4	100.0	5	100.0	190
Capital & Coast	-	-	17	89.5	15	93.8	16	94.1	12	100.0	7	77.8	10	90.9	5	83.3	4	80.0	1	33.3	2	50.0	0	0.0	89
Counties Manukau	0	0.0	14	73.7	36	83.7	22	81.5	9	90.0	17	85.0	9	90.0	13	72.2	8	57.1	11	78.6	4	80.0	4	40.0	147
Hawke's Bay	-	-	6	75.0	14	87.5	9	81.8	6	85.7	6	75.0	0	0.0	3	100.0	2	50.0	3	60.0	2	66.7	0	0.0	51
Hutt Valley	-	-	9	90.0	15	100.0	11	91.7	9	90.0	8	100.0	3	100.0	-	-	6	85.7	-	-	3	60.0	-	-	70
Lakes	-	-	4	100.0	5	100.0	7	100.0	4	100.0	1	100.0	0	0.0	2	100.0	6	100.0	3	100.0	0	0.0	0	0.0	32
Mid Central	-	-	23	92.0	23	92.0	12	92.3	9	100.0	10	100.0	5	100.0	1	100.0	4	80.0	3	100.0	1	50.0	1	50.0	92
Nelson Marlborough	-	-	5	100.0	6	100.0	10	100.0	6	100.0	3	75.0	5	100.0	4	100.0	1	33.3	0	0.0	2	100.0	1	100.0	43
Northland	-	-	5	83.3	7	77.8	8	88.9	6	100.0	0	0.0	6	100.0	5	83.3	4	66.7	3	100.0	1	50.0	0	0.0	45
South Canterbury	-	-	4	100.0	0	0.0	2	100.0	0	0.0	5	100.0	-	-	2	100.0	1	100.0	0	0.0	0	0.0	1	100.0	16
Southern	-	-	16	100.0	20	87.0	33	94.3	15	100.0	5	71.4	7	100.0	7	87.5	3	60.0	4	66.7	5	100.0	1	50.0	116
Tairawhiti	-	-	2	50.0	4	80.0	4	100.0	6	100.0	1	100.0	-	-	-	-	3	100.0	2	100.0	0	0.0	0	0.0	25
Taranaki	-	-	1	100.0	10	100.0	7	100.0	4	100.0	4	100.0	2	100.0	-	-	2	66.7	2	66.7	2	66.7	0	0.0	39
Waikato	-	-	12	100.0	24	92.3	28	93.3	11	100.0	16	100.0	12	92.3	6	85.7	8	100.0	1	50.0	2	100.0	0	0.0	120
Wairarapa	-	-	2	50.0	3	100.0	2	100.0	-	-	0	0.0	-	-	2	66.7	-	-	-	-	-	-	-	-	16
Waitemata	-	-	36	92.3	36	90.0	34	87.2	34	97.1	26	86.7	20	87.0	13	86.7	11	91.7	11	91.7	7	87.5	1	50.0	230
West Coast	-	-	1	100.0	0	0.0	1	50.0	-	-	-	-	2	100.0	1	100.0	-	-	-	-	-	-	-	-	7
Whanganui	-	-	10	100.0	8	100.0	2	100.0	6	100.0	6	100.0	2	100.0	-	-	-	-	1	50.0	3	100.0	0	0.0	41
Total	**2**	**100.0**	**230**	**90.9**	**320**	**90.1**	**302**	**91.5**	**190**	**95.0**	**159**	**89.8**	**123**	**91.8**	**99**	**79.8**	**91**	**75.8**	**73**	**77.7**	**42**	**75.0**	**22**	**59.5**	**1,653**

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

Indicator 7 – Colposcopy indicators

Indicator 7.1 – Timeliness of colposcopic assessment – high-grade cytology

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

DHB	HG women	HG women with referral recorded on the NCSP Register
	N	N
Auckland	185	170
Bay of Plenty	75	67
Canterbury	180	169
Capital & Coast	88	75
Counties Manukau	156	144
Hawke's Bay	62	56
Hutt Valley	73	67
Lakes	32	28
Mid Central	89	87
Nelson Marlborough	46	43
Northland	51	44
South Canterbury	14	13
Southern	116	110
Tairawhiti	28	25
Taranaki	42	38
Waikato	116	114
Wairarapa	17	15
Waitemata	186	179
West Coast	10	10
Whanganui	41	39
Private practice	275	162
Total	**1,882**	**1,655**

Table 63 - Women with a high-grade cytology report (no suspicion of invasive disease), accepted referral and a colposcopy visit within 20 and 40 working days, by ethnicity

Ethnicity	HG women	Accepted referrals recorded on NCSP Register	Women seen within 20 working days		Women seen within 40 working days	
	N	N	N	%	N	%
Māori	275	265	186	70.2	223	84.2
Pacific	94	86	41	47.7	58	67.4
Asian	204	182	124	68.1	158	86.8
European/ Other	1,243	1,074	821	76.4	968	90.1
Total	**1,816**	**1,607**	**1,172**	**72.9**	**1,407**	**87.6**

Table 64 - Women with a high-grade cytology report (no suspicion of invasive disease), accepted referral and a colposcopy visit within 20 and 40 working days, by DHB

DHB	HG women	Accepted referrals recorded on NCSP Register	Women seen within 20 working days		Women seen within 40 working days	
	N	N	N	%	N	%
Public clinics overall	1,546	1,447	1,084	74.9	1,299	89.8
Auckland	174	162	127	78.4	143	88.3
Bay of Plenty	69	62	48	77.4	56	90.3
Canterbury	175	165	118	71.5	148	89.7
Capital & Coast	85	73	57	78.1	69	94.5
Counties Manukau	148	139	50	36.0	90	64.7
Hawke's Bay	58	52	36	69.2	51	98.1
Hutt Valley	72	66	60	90.9	65	98.5
Lakes	32	28	21	75.0	27	96.4
Mid Central	87	86	52	60.5	69	80.2
Nelson Marlborough	46	43	33	76.7	41	95.3
Northland	46	41	35	85.4	40	97.6
South Canterbury	14	13	12	92.3	13	100.0
Southern	113	108	96	88.9	102	94.4
Tairawhiti	27	24	18	75.0	20	83.3
Taranaki	42	38	30	78.9	36	94.7
Waikato	111	109	97	89.0	104	95.4
Wairarapa	17	15	12	80.0	14	93.3
Waitemata	180	175	142	81.1	165	94.3
West Coast	10	10	4	40.0	8	80.0
Whanganui	40	38	36	94.7	38	100.0
Private Practice	270	160	88	55.0	108	67.5
Total	**1,816**	**1,607**	**1,172**	**72.9**	**1,407**	**87.6**

Table 65 - Women with cytological suspicion of invasive disease, by cytology result subcategory

Cytology result sub-category	Total women	Accepted referrals recorded on NCSP Register*
	N	N
HS2	26	21
SC	13	11
AC1-AC5	22	11
R10, R14	5	5
Total	**66**	**48**

** Referral accepted date no later than four weeks prior to the end of the current monitoring period, in order to allow at least four weeks of follow-up time available.*

Indicator 7.2 – Timeliness of colposcopic assessment – low-grade cytology

Table 66 - Follow-up of women with persistent low-grade cytology/ low-grade cytology and positive hrHPV test, by DHB

DHB	LG women	Women with subsequent referral recorded		Women with subsequent colposcopy visit recorded		Women with colposcopy subsequent to referral recorded		Women with colposcopy subsequent to referral recorded AND referral:colposcopy interval <= 26 weeks	
	N	N	%*	N	% *	N	% †	N	% †
Auckland	406	372	91.6	357	87.9	352	94.6	312	83.9
Bay of Plenty	253	222	87.7	230	90.9	214	96.4	166	74.8
Canterbury	292	274	93.8	274	93.8	264	96.4	253	92.3
Capital & Coast	169	163	96.4	158	93.5	156	95.7	138	84.7
Counties Manukau	344	328	95.3	311	90.4	307	93.6	299	91.2
Hawke's Bay	113	106	93.8	100	88.5	96	90.6	58	54.7
Hutt Valley	59	52	88.1	54	91.5	49	94.2	48	92.3
Lakes	90	88	97.8	81	90.0	80	90.9	53	60.2
Mid Central	125	121	96.8	115	92.0	113	93.4	68	56.2
Nelson Marlborough	73	66	90.4	68	93.2	64	97.0	52	78.8
Northland	78	75	96.2	69	88.5	68	90.7	58	77.3
South Canterbury	25	20	80.0	21	84.0	18	90.0	18	90.0
Southern	127	114	89.8	114	89.8	108	94.7	92	80.7
Tairawhiti	42	37	88.1	35	83.3	33	89.2	27	73.0
Taranaki	50	47	94.0	45	90.0	44	93.6	43	91.5
Waikato	359	345	96.1	326	90.8	321	93.0	199	57.7
Wairarapa	21	21	100.0	20	95.2	20	95.2	20	95.2
Waitemata	432	398	92.1	371	85.9	370	93.0	339	85.2
West Coast	20	17	85.0	20	100.0	17	100.0	17	100.0
Whanganui	51	48	94.1	48	94.1	46	95.8	45	93.8
Private practice	662	331	50.0	632	95.5	301	90.9	295	89.1
Total	**3,791**	**3,245**	**85.6**	**3,449**	**91.0**	**3,041**	**93.7**	**2,600**	**80.1**

LG women = women with persistent LG/ who are LG & hrHPV positive.

** Percentage of women with persistent LG/ who are LG & hrHPV positive; † percentage of women with a referral.*

Table 67 - Follow-up of women with persistent low-grade cytology/ low-grade cytology and positive hrHPV test, by ethnicity

Ethnicity	LG women	Women with subsequent referral recorded		Women with subsequent colposcopy visit recorded		Women with colposcopy subsequent to referral recorded		Women with colposcopy subsequent to referral recorded AND referral: colposcopy interval <= 26 weeks	
	N	N	%*	N	% *	N	% †	N	% †
Māori	428	389	90.9	368	86.0	344	88.4	264	67.9
Pacific	179	165	92.2	153	85.5	145	87.9	126	76.4
Asian	445	380	85.4	406	91.2	360	94.7	318	83.7
European/ Other	2,739	2,311	84.4	2,522	92.1	2,192	94.9	1,892	81.9
Total	**3,791**	**3,245**	**85.6**	**3,449**	**91.0**	**3,041**	**93.7**	**2,600**	**80.1**

LG women = women with persistent LG/ who are LG & hrHPV positive.

** Percentage of women with persistent LG/ who are LG & hrHPV positive; † percentage of women with a referral.*

Indicator 7.3 – Adequacy of documenting colposcopic assessment

Table 68 - Completion of colposcopic assessment fields, by DHB

DHB	Total colposcopies N	% of colposcopies performed where items are completed					
		SCJ visibility[(i)]	Presence/ absence lesion[(ii)]	Opinion re abnormality grade[(iii)]	Follow-up type	Follow-up timeframe	Items i, ii, & iii complete
Public clinics overall	11,062	97.2	100.0	92.7	89.8	89.2	93.0
Auckland	897	98.0	100.0	91.9	93.4	93.1	93.1
Bay of Plenty	592	95.8	100.0	91.5	92.4	92.4	90.7
Canterbury	1,631	97.2	100.0	94.7	95.4	95.0	94.3
Capital & Coast	710	98.7	100.0	93.6	84.2	83.0	95.9
Counties Manukau	816	96.9	100.0	92.9	97.9	97.3	92.8
Hawke's Bay	274	97.8	100.0	88.5	88.3	88.3	91.2
Hutt Valley	259	100.0	100.0	94.6	95.4	95.4	96.5
Lakes	398	96.5	100.0	92.5	97.2	97.2	91.7
Mid Central	588	94.4	100.0	92.1	96.6	96.3	90.1
Nelson Marlborough	329	97.0	100.0	89.3	60.8	60.5	90.0
Northland	344	95.3	100.0	87.0	98.3	98.0	89.2
South Canterbury	143	94.4	100.0	94.5	90.2	89.5	92.3
Southern	717	97.9	100.0	85.6	97.6	96.9	88.6
Tairawhiti	163	98.8	100.0	95.8	96.3	95.7	95.7
Taranaki	336	97.6	100.0	88.3	98.2	97.6	92.3
Waikato	1,021	98.2	100.0	97.0	74.2	72.6	96.5
Wairarapa	90	100.0	100.0	96.2	96.7	95.6	97.8
Waitemata	1,409	97.1	100.0	94.2	79.2	78.2	94.1
West Coast	72	91.7	100.0	82.8	97.2	97.2	79.2
Whanganui	273	97.8	100.0	95.7	98.2	97.4	94.5
Private practice	1,208	96.3	100.0	93.0	92.7	91.8	92.6
Total	**12,270**	**97.1**	**100.0**	**92.7**	**90.1**	**89.4**	**93.0**

Table 69 - Summary of colposcopic appearance findings, by DHB

DHB	Total colposcopies	SCJ visible*	Colposcopic appearance (as % of colposcopies where items are completed)	Total colposcopies
	N	N	Abnormal	Inconclusive
Public clinics overall	11,062	10,757	54.8	4.3
Auckland	897	879	57.3	5.0
Bay of Plenty	592	567	60.1	5.6
Canterbury	1,631	1,586	58.5	3.2
Capital & Coast	710	701	41.0	2.8
Counties Manukau	816	791	54.4	4.2
Hawke's Bay	274	268	50.4	6.6
Hutt Valley	259	259	60.6	3.5
Lakes	398	384	58.5	4.8
Mid Central	588	555	53.4	4.6
Nelson Marlborough	329	319	58.4	7.0
Northland	344	328	41.0	6.1
South Canterbury	143	135	48.3	2.8
Southern	717	702	55.5	9.3
Tairawhiti	163	161	69.9	3.1
Taranaki	336	328	42.6	5.7
Waikato	1,021	1,003	57.4	1.8
Wairarapa	90	90	55.6	2.2
Waitemata	1,409	1,368	50.9	3.1
West Coast	72	66	66.7	13.9
Whanganui	273	267	73.6	3.3
Private practice	1,208	1,163	55.4	4.1
Total	**12,270**	**11,920**	**54.8**	**4.3**

**** Field has been completed.***

Table 70 - Biopsies by colposcopic appearance and DHB

DHB	Colposcopic appearance								
	Abnormal			Inconclusive			Normal		
	Total	Biopsy taken		Total	Biopsy taken		Total	Biopsy taken	
	N	N	%	N	N	%	N	N	%
Public clinics overall	6,060	5,587	92.2	480	170	35.4	4,522	847	18.7
Auckland	514	469	91.2	45	15	33.3	338	55	16.3
Bay of Plenty	356	306	86.0	33	15	45.5	203	28	13.8
Canterbury	954	897	94.0	53	17	32.1	624	135	21.6
Capital & Coast	291	267	91.8	20	12	60.0	399	109	27.3
Counties Manukau	444	429	96.6	34	12	35.3	338	43	12.7
Hawke's Bay	138	122	88.4	18	3	16.7	118	22	18.6
Hutt Valley	157	145	92.4	9	4	44.4	93	24	25.8
Lakes	233	195	83.7	19	8	42.1	146	33	22.6
Mid Central	314	283	90.1	27	6	22.2	247	48	19.4
Nelson Marlborough	192	180	93.8	23	8	34.8	114	38	33.3
Northland	141	131	92.9	21	6	28.6	182	45	24.7
South Canterbury	69	57	82.6	4	2	50.0	70	6	8.6
Southern	398	392	98.5	67	31	46.3	252	70	27.8
Tairawhiti	114	108	94.7	5	2	40.0	44	22	50.0
Taranaki	143	132	92.3	19	3	15.8	174	16	9.2
Waikato	586	552	94.2	18	9	50.0	417	40	9.6
Wairarapa	50	47	94.0	2	2	100.0	38	20	52.6
Waitemata	717	632	88.1	44	11	25.0	648	84	13.0
West Coast	48	47	97.9	10	2	20.0	14	1	7.1
Whanganui	201	196	97.5	9	2	22.2	63	8	12.7
Private practice	669	558	83.4	50	33	66.0	489	93	19.0
Total	**6,729**	**6,145**	**91.3**	**530**	**203**	**38.3**	**5,011**	**940**	**18.8**

Indicator 7.5 – Timely discharge of women after treatment

Table 71 - Follow-up of treated women with colposcopy and cytology in the period up to nine months post-treatment, and discharge of eligible women

DHB	Total treatments	Eligible for discharge*		Women discharged appropriately	
	N	N	% of women treated	N	% of eligible
Auckland	101	72	71.3	65	90.3
Bay of Plenty	62	45	72.6	29	64.4
Canterbury	166	122	73.5	100	82.0
Capital & Coast	72	60	83.3	53	88.3
Counties Manukau	97	59	60.8	55	93.2
Hawke's Bay	38	28	73.7	24	85.7
Hutt Valley	40	32	80.0	32	100.0
Lakes	38	29	76.3	23	79.3
Mid Central	60	37	61.7	31	83.8
Nelson Marlborough	62	48	77.4	44	91.7
Northland	46	32	69.6	26	81.3
South Canterbury	13	12	92.3	3	25.0
Southern	98	77	78.6	74	96.1
Tairawhiti	23	14	60.9	10	71.4
Taranaki	52	43	82.7	35	81.4
Waikato	123	104	84.6	101	97.1
Wairarapa	4	4	100.0	4	100.0
Waitemata	107	71	66.4	60	84.5
West Coast	10	6	60.0	6	100.0
Whanganui	28	18	64.3	18	100.0
Private Practice	110	88	80.0	57	64.8
Total	**1,350**	**1,001**	**74.1**	**850**	**84.9**

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

Table 72 - Follow-up of treated women in the period up to nine months post-treatment

DHB	Total treatments	Colposcopy within 9 months post-treatment		Colposcopy & cytology within 9 months post-treatment	
	N	N	%	N	%
Auckland	101	91	90.1	91	90.1
Bay of Plenty	62	15	24.2	15	24.2
Canterbury	166	98	59.0	95	57.2
Capital & Coast	72	62	86.1	58	80.6
Counties Manukau	97	58	59.8	57	58.8
Hawke's Bay	38	25	65.8	24	63.2
Hutt Valley	40	38	95.0	38	95.0
Lakes	38	22	57.9	22	57.9
Mid Central	60	48	80.0	47	78.3
Nelson Marlborough	62	55	88.7	54	87.1
Northland	46	42	91.3	42	91.3
South Canterbury	13	8	61.5	8	61.5
Southern	98	76	77.6	75	76.5
Tairawhiti	23	18	78.3	17	73.9
Taranaki	52	35	67.3	35	67.3
Waikato	123	101	82.1	101	82.1
Wairarapa	4	3	75.0	3	75.0
Waitemata	107	90	84.1	88	82.2
West Coast	10	5	50.0	5	50.0
Whanganui	28	26	92.9	26	92.9
Private practice	110	89	80.9	86	78.2
Total	**1,350**	**1,005**	**74.4**	**987**	**73.1**

Indicator 8 – HPV tests

Indicator 8.1 – Triage of low-grade cytology

Table 73 - Triage testing of women with ASC-US cytology

Laboratory	Total ASC-US results		Women with an HPV test			
	aged < 30yrs	aged 30+ yrs	aged < 30yrs		aged 30+ yrs	
	N	N	N	%	N	%
Anatomical Pathology Services	174	359	2	1.1	356	99.2
Canterbury Health Laboratories	58	124	0	0.0	124	100.0
LabPLUS	60	153	0	0.0	148	96.7
Medlab Central Ltd.	108	225	0	0.0	210	93.3
Pathlab	109	318	1	0.9	313	98.4
Southern Community Laboratories	252	493	5	2.0	481	97.6
Total	**761**	**1,672**	**8**	**1.1**	**1,632**	**97.6**

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

Table 74 - Triage testing of women with LSIL cytology

Laboratory	Total LSIL results		Women with an HPV test			
	aged < 30yrs	aged 30+ yrs	aged < 30yrs		aged 30+ yrs	
	N	N	N	%	N	%
Anatomical Pathology Services	520	362	2	0.4	354	97.8
Canterbury Health Laboratories	97	52	0	0.0	49	94.2
LabPLUS	83	60	0	0.0	56	93.3
Medlab Central Ltd.	147	131	1	0.7	117	89.3
Pathlab	345	258	2	0.6	254	98.4
Southern Community Laboratories	997	655	9	0.9	627	95.7
Total	**2,189**	**1,518**	**14**	**0.6**	**1,457**	**96.0**

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

Table 75 - Histological outcomes within 12 months in women with ASC-US cytology and positive HPV triage test

Laboratory	Women with ASC-US cytology & positive HPV triage test	Triage -positive women who attended colposcopy		Triage -positive women with histology recorded		Triage -positive women with CIN 2+ histology		
	N	N	%*	N	%*	N	%†	%‡
Anatomical Pathology Services	105	93	88.6	72	68.6	12	12.9	16.7
Canterbury Health Laboratories	15	15	100.0	10	66.7	2	13.3	20.0
LabPLUS	31	29	93.5	19	61.3	3	10.3	15.8
Medlab Central Ltd.	30	27	90.0	17	56.7	6	22.2	35.3
Pathlab	72	67	93.1	39	54.2	8	11.9	20.5
Southern Community Laboratories	122	113	92.6	83	68.0	16	14.2	19.3
Total	**375**	**344**	**91.7**	**240**	**64.0**	**47**	**13.7**	**19.6**

** % of women with ASC-US cytology and positive triage test † expressed as a percentage of women with colposcopy ‡ expressed as a percentage of women with histology. Results are for ASC-US cytology collected in the 6-month period 12 months prior to the current monitoring period (i.e. in 1 January – 30 June 2018), to allow for sufficient follow-up time for colposcopy/ histology.*

Table 76 - Histological outcomes within 12 months in women with LSIL cytology and positive HPV triage test

Laboratory	Women with LSIL cytology & positive HPV triage test	Triage -positive women who attended colposcopy		Triage -positive women with histology recorded		Triage -positive women with CIN 2+ histology		
	N	N	%*	N	%*	N	%†	%‡
Anatomical Pathology Services	225	198	88.0	142	63.1	21	10.6	14.8
Canterbury Health Laboratories	47	46	97.9	39	83.0	5	10.9	12.8
LabPLUS	25	24	96.0	18	72.0	3	12.5	16.7
Medlab Central Ltd.	51	48	94.1	31	60.8	8	16.7	25.8
Pathlab	175	160	91.4	95	54.3	18	11.3	18.9
Southern Community Laboratories	380	357	93.9	265	69.7	61	17.1	23.0
Total	**903**	**833**	**92.2**	**590**	**65.3**	**116**	**13.9**	**19.7**

** % of women with LSIL cytology and positive triage test † expressed as a percentage of women with colposcopy ‡ expressed as a percentage of women with histology. Results are for ASC-US cytology collected in the 6-month period 12 months prior to the current monitoring period (i.e. in 1 January – 30 June 2018), to allow for sufficient follow-up time for colposcopy/ histology.*

Indicator 8.2 – HPV test volumes

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

Laboratory	HPV tests received		Ratio HPV tests: cytology samples received (%)
	N	% of national total	
Anatomical Pathology Services	3,332	20.5	7.6
Canterbury Health Laboratories	1,217	7.5	12.7
LabPLUS	778	4.8	10.0
Medlab Central Ltd	1,515	9.3	10.0
Pathlab	2,205	13.5	8.2
Southern Community Labs	7,235	44.4	6.8
Total	**16,282**	**100.0**	**7.8**

Table 78 - Invalid HPV tests, by laboratory

Laboratory	Total	Valid		Invalid	
	N	N	%	N	%
Anatomical Pathology Services	3,332	3,327	99.8	5	0.15
Canterbury Health Laboratories	1,217	1,217	100.0	-	0.00
LabPLUS	778	777	99.9	1	0.13
Medlab Central Ltd.	1,515	1,515	100.0	-	0.00
Pathlab	2,205	2,202	99.9	3	0.14
Southern Community Laboratories	7,235	7,235	100.0	-	0.00
Total	**16,282**	**16,273**	**99.9**	**9**	**0.06**

Table 79 - Validity of HPV triage tests, by test technology

Test technology	Total HPV tests		Valid		Invalid	
	N	%	N	%	N	%
Abbott RealTime High Risk HPV	8,452	51.9	8,452	100.0	-	0.00
BD Onclarity	2,205	13.5	2,202	99.9	3	0.14
Roche COBAS 4800 HPV	5,625	34.5	5,619	99.9	6	0.11
Total	**16,282**	**100.0**	**16,273**	**99.9**	**9**	**0.06**

Table 80 - Volume of HPV test samples received during the monitoring period, by purpose and ethnicity

Ethnicity	Post-treatment		Historical		Taken at colposcopy		HPV triage		Other		Total
	N	%	N	%	N	%	N	%	N	%	N
Māori	372	16.4	924	40.6	141	6.2	342	15.0	495	21.8	2,274
Pacific	77	12.4	187	30.2	41	6.6	161	26.0	154	24.8	620
Asian	235	15.7	354	23.6	142	9.5	463	30.9	306	20.4	1,500
European/ Other	1,852	15.6	4,176	35.1	1,043	8.8	1,932	16.3	2,885	24.3	11,888
Total	**2,536**	**15.6**	**5,641**	**34.6**	**1,367**	**8.4**	**2,898**	**17.8**	**3,840**	**23.6**	**16,282**

Table 81 - Volume of HPV test samples received during the monitoring period, by purpose and age

Age	Post-treatment		Historical		Taken at colposcopy		HPV triage		Other		Total
	N	%	N	%	N	%	N	%	N	%	N
<20	-	0.0	-	-	-	0.0	-	0.0	6	100.0	6
20-24	148	23.7	55	8.8	174	27.9	-	0.0	247	39.6	624
25-29	575	34.2	549	32.7	197	11.7	-	0.0	359	21.4	1,680
30-34	634	22.3	925	32.5	194	6.8	656	23.1	435	15.3	2,844
35-39	396	17.7	840	37.6	159	7.1	465	20.8	373	16.7	2,233
40-44	259	13.3	803	41.3	122	6.3	421	21.6	341	17.5	1,946
45-49	185	9.4	809	41.2	127	6.5	439	22.4	403	20.5	1,963
50-54	128	8.1	593	37.3	116	7.3	369	23.2	382	24.1	1,588
55-59	92	6.5	488	34.2	108	7.6	254	17.8	484	33.9	1,426
60-64	52	5.4	302	31.3	75	7.8	146	15.1	391	40.5	966
65-69	47	6.4	179	24.5	64	8.8	122	16.7	318	43.6	730
70+	20	7.2	98	35.5	31	11.2	26	9.4	101	36.6	276
Total	**2,536**	**15.6**	**5,641**	**34.6**	**1,367**	**8.4**	**2,898**	**17.8**	**3,840**	**23.6**	**16,282**

Table 82 - Volume of HPV test samples received during the monitoring period, by purpose and laboratory

Laboratory	Post-treatment		Historical		Taken at colposcopy		HPV triage		Other		Total
	N	%	N	%	N	%	N	%	N	%	N
Anatomical Pathology Services	458	13.7	1,335	40.1	93	2.8	703	21.1	743	22.3	3,332
Canterbury Health Laboratories	307	25.2	291	23.9	275	22.6	169	13.9	175	14.4	1,217
LabPLUS	139	17.9	164	21.1	201	25.8	196	25.2	78	10.0	778
Medlab Central Ltd.	293	19.3	492	32.5	92	6.1	302	19.9	336	22.2	1,515
Pathlab	311	14.1	864	39.2	198	9.0	516	23.4	316	14.3	2,205
Southern Community Laboratories	1,028	14.2	2,495	34.5	508	7.0	1,012	14.0	2,192	30.3	7,235
Total	**2,536**	**15.6**	**5,641**	**34.6**	**1,367**	**8.4**	**2,898**	**17.8**	**3,840**	**23.6**	**16,282**

Table 83 - HPV test samples collected at colposcopy, in relation to total colposcopies performed in the period, by DHB

DHB	HPV tests N	Colposcopies N	HPV tests / colposcopies %
Public clinics overall	1,078	11,062	9.7
Auckland	29	897	3.2
Bay of Plenty	80	592	13.5
Canterbury	237	1,631	14.5
Capital & Coast	99	710	13.9
Counties Manukau	69	816	8.5
Hawke's Bay	28	274	10.2
Hutt Valley	5	259	1.9
Lakes	92	398	23.1
Mid Central	37	588	6.3
Nelson Marlborough	31	329	9.4
Northland	19	344	5.5
South Canterbury	30	143	21.0
Southern	54	717	7.5
Tairawhiti	-	163	-
Taranaki	37	336	11.0
Waikato	92	1,021	9.0
Wairarapa	18	90	20.0
Waitemata	83	1,409	5.9
West Coast	3	72	4.2
Whanganui	35	273	12.8
Private practice	136	1,208	11.3
Total	**1,214**	**12,270**	**9.9**

HPV tests/ colposcopy can be interpreted broadly as the percentage of colposcopies within this DHB/ sector where a sample is collected for HPV testing. Consistent with the count of colposcopies column, the number of HPV tests here includes only HPV test samples where a colposcopy report record exists.

Indicator 8.3 –HPV tests for follow-up of women with a historical high-grade abnormality

Table 84 - Women eligible for and proportion who have received HPV testing for a historical high-grade abnormality, by age at 30 June 2019

Age group	Number of women eligible for testing as at 1 Oct 2009		Round 1 test recorded		Round 2 test recorded	
	All	In current report*	N	%	N	%
<20	-	-	-	-	-	-
20-24	-	-	-	-	-	-
25-29	11	11	5	45.5	3	27.3
30-34	1,020	1,014	683	67.4	549	54.1
35-39	5,000	4,969	3,416	68.7	2,884	58.0
40-44	8,780	8,699	6,208	71.4	5,327	61.2
45-49	11,115	10,984	7,989	72.7	6,890	62.7
50-54	8,611	8,453	6,147	72.7	5,283	62.5
55-59	6,459	6,253	4,526	72.4	3,934	62.9
60-64	4,006	3,856	2,847	73.8	2,470	64.1
65-69	2,417	2,256	1,633	72.4	1,447	64.1
70+	3,093	2,492	1,092	43.8	870	34.9
Total	**50,512**	**48,987**	**34,546**	**70.5**	**29,657**	**60.5**

** Women are not followed up in the current report if they are no longer alive at the end of the current monitoring period; or if they have since had a non-squamous high-grade abnormality (no longer eligible for HPV testing to follow-up historical high-grade abnormality).*

Table 85 - Women eligible for and proportion who have received historical HPV testing, by DHB

DHB	Number of women eligible for historical testing as at 1 Oct 2009		Round 1 test recorded		Round 2 test recorded	
	All	In current report*	N	%	N	%
Auckland	3,942	3,861	2,328	60.3	1,944	50.3
Bay of Plenty	3,029	2,931	2,144	73.1	1,799	61.4
Canterbury	6,045	5,887	4,201	71.4	3,699	62.8
Capital & Coast	2,772	2,722	1,897	69.7	1,690	62.1
Counties Manukau	3,503	3,384	2,057	60.8	1,629	48.1
Hawke's Bay	2,258	2,174	1,619	74.5	1,396	64.2
Hutt Valley	1,530	1,481	1,047	70.7	914	61.7
Lakes	1,615	1,570	1,008	64.2	825	52.5
Mid Central	2,258	2,178	1,653	75.9	1,484	68.1
Nelson Marlborough	1,930	1,866	1,513	81.1	1,376	73.7
Northland	1,962	1,880	1,244	66.2	982	52.2
South Canterbury	834	805	625	77.6	556	69.1
Southern	4,767	4,637	3,446	74.3	3,014	65.0
Tairawhiti	916	876	581	66.3	501	57.2
Taranaki	2,223	2,136	1,631	76.4	1,455	68.1
Waikato	4,049	3,927	2,996	76.3	2,626	66.9
Wairarapa	527	510	368	72.2	307	60.2
Waitemata	5,068	4,925	3,272	66.4	2,680	54.4
West Coast	431	423	342	80.9	300	70.9
Whanganui	841	804	574	71.4	480	59.7
Unspecified	12	10	-	-	-	-
Total	**50,512**	**48,987**	**34,546**	**70.5**	**29,657**	**60.5**

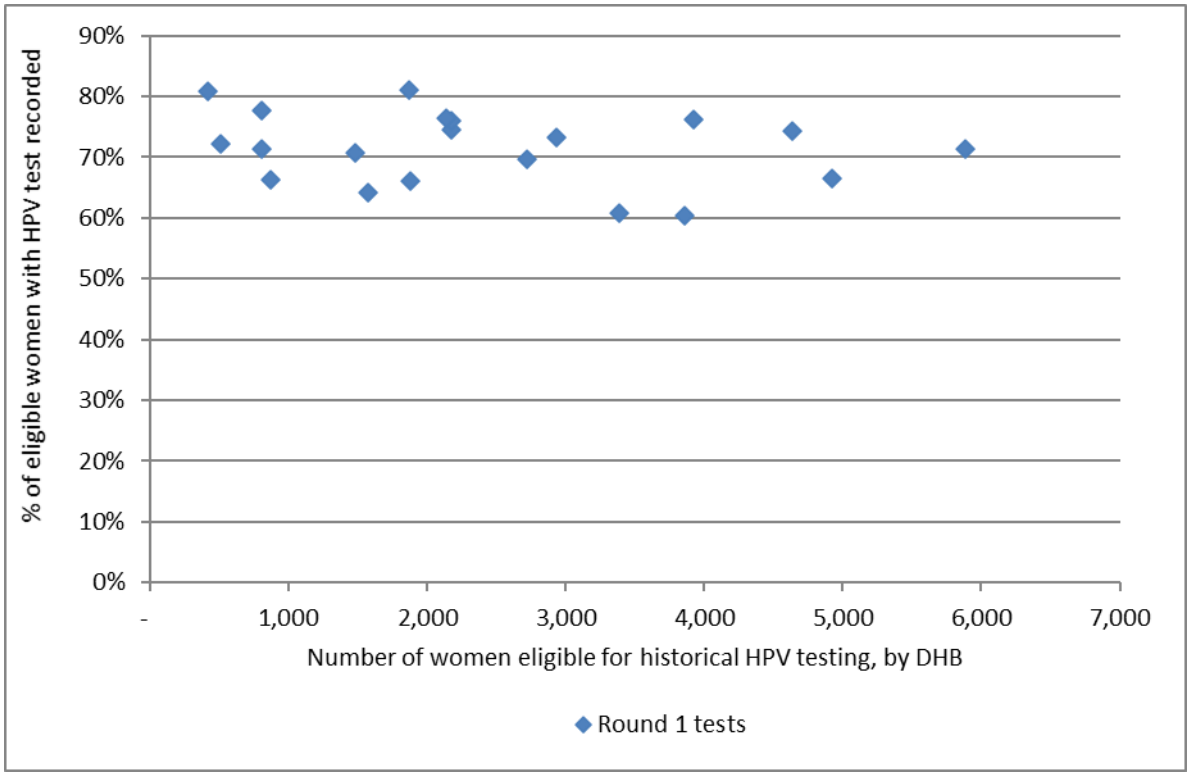
** Women are not followed up in the current report if they are no longer alive at the end of the current monitoring period; or if they have since had a non-squamous high-grade abnormality (no longer eligible for historical HPV testing).*

Table 86 - Women eligible for and proportion who have received historical HPV testing, by ethnicity

Ethnicity	Number of women eligible for historical testing as at 1 Oct 2009		Round 1 test recorded		Round 2 test recorded	
	All	In current report*	N	%	N	%
Māori	7,997	7,646	5,078	66.4	4,063	53.1
Pacific	1,240	1,197	635	53.0	496	41.4
Asian	1,706	1,681	984	58.5	822	48.9
European/ Other	39,569	38,463	27,849	72.4	24,276	63.1
Total	**50,512**	**48,987**	**34,546**	**70.5**	**29,657**	**60.5**

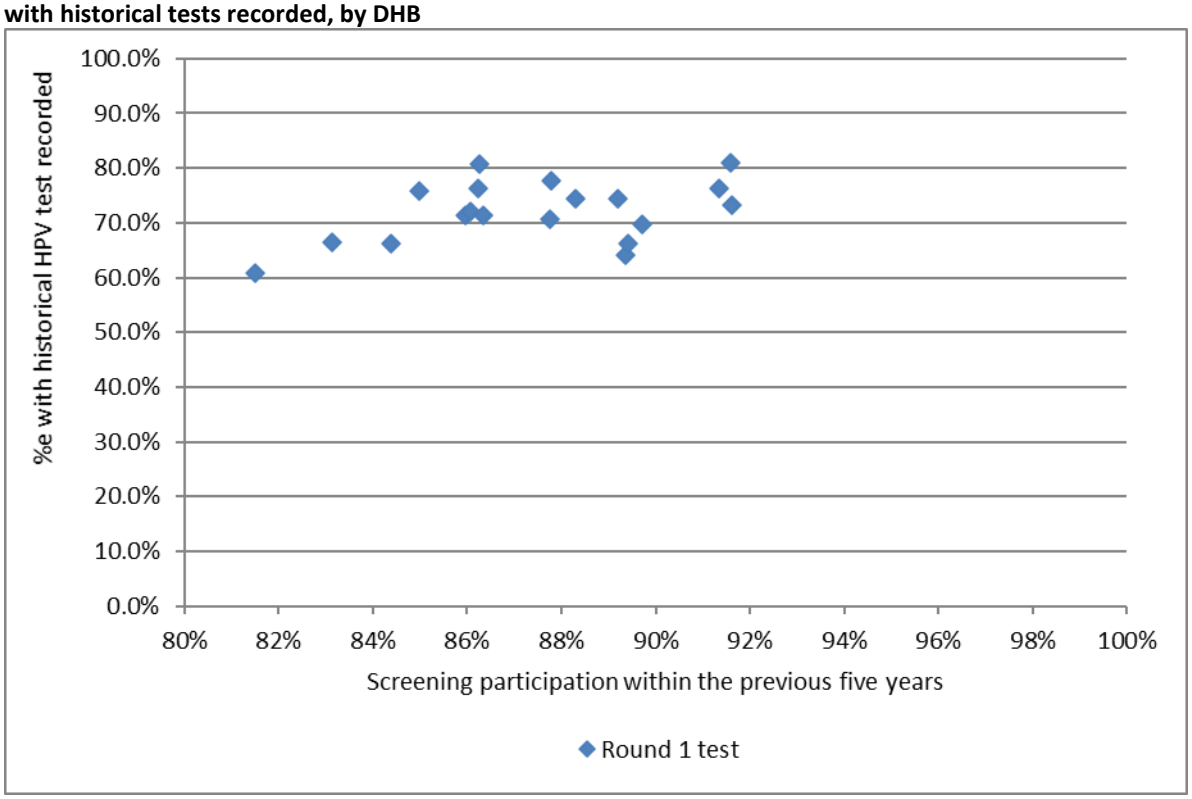
** Women are not followed up in the current report if they are no longer alive at the end of the current monitoring period; or if they have since had a non-squamous high-grade abnormality (no longer eligible for historical HPV testing).*

Figure 113 - Number of women eligible for historical testing within a DHB versus the percentage with a Round 1 historical HPV test recorded



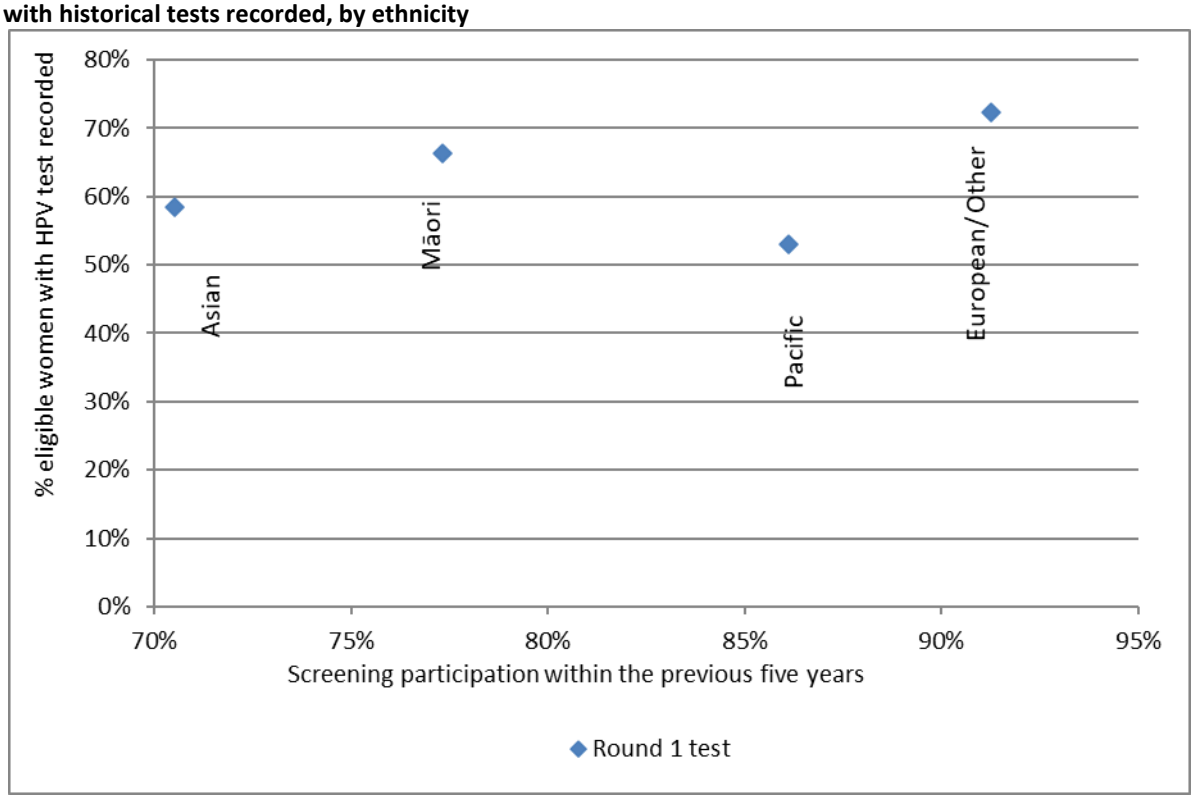
Each dot represents a DHB.
This chart does not suggest that there is any relationship between the number of women eligible for testing and percent of women who have been tested, therefore this does not seem a likely explanation for the variation in women tested in different DHBs.

Figure 114 - Relationship between women screened in the previous five years and proportion of women with historical tests recorded, by DHB



Each dot represents a DHB. See also Table 87.

Figure 115 - Relationship between women screened in the previous five years and proportion of women with historical tests recorded, by ethnicity



Each dot represents an ethnicity.

Table 87 - Women screened in the previous five years and proportion of women with historical round 1 and 2 tests recorded, by DHB

DHB	Women screened in the last 5 years %	Round 1 test recorded %	Round 2 test recorded %
Auckland	83.8%	55.3%	41.7%
Bay of Plenty	93.4%	69.2%	53.7%
Canterbury	87.5%	67.6%	59.1%
Capital & Coast	93.3%	66.9%	58.7%
Counties Manukau	86.0%	54.3%	40.2%
Hawke's Bay	91.0%	71.6%	60.5%
Hutt Valley	91.4%	67.1%	57.6%
Lakes	91.6%	60.8%	46.2%
Mid Central	87.9%	74.1%	64.1%
Nelson Marlborough	94.1%	79.3%	71.9%
Northland	87.1%	60.0%	45.1%
South Canterbury	88.9%	74.1%	64.5%
Southern	92.8%	70.4%	60.6%
Tairawhiti	90.0%	63.1%	50.8%
Taranaki	93.8%	73.0%	64.2%
Waikato	88.0%	73.1%	61.9%
Wairarapa	90.2%	64.0%	54.9%
Waitemata	86.8%	61.6%	44.8%
West Coast	88.3%	78.7%	69.6%
Whanganui	89.8%	68.8%	52.3%

Appendix B – Bethesda 2001 New Zealand Modified

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

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

Appendix C – SNOMED categories for histological samples

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

Other codes accepted	Code stored on register	1986 Code	1993 Code	Diagnostic category	Rank
Melanoma	M80003	M87203	M87203	Other cancer	32
Other primary epithelial malignancy	M80003	M80103	M80103	Other cancer	33

Appendix D – Indicator Definitions Targets and Reporting Details

Positive predictive value calculations

Table 88 - 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/CIN 2-3				p	x	x	b	b	b		
Squam Microinvasive SCC				p	x	x	b	b	b		
Squam-Invasive SCC				p	x	x	b	b	b		
Gland-Benign Atypia				q	y	y	a	a	a		
Gland-Dyplasia				p	x	x	b	b	b		
Gland-AIS				p	x	x	b	b	b		
Gland-Invasive Adeno				p	x	x	b	b	b		
Other Malignant Neoplasm				p	x	x	b	b	b		

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

Appendix E – DHB assignment for colposcopy clinics

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

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

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

** Assignment of specific facilities to a DHB was provided by the NCSP, in order to distinguish between DHB clinics and private practice, because the NCSP Register records geographic DHB and does not record public vs private clinic.*

Appendix F – Glossary

Term	Definition
AGC	Atypical glandular cells
AIS	Adenocarcinoma in situ. High-grade changes to the glandular (endocervical) cells of the cervix
ASC-H	Atypical squamous cells of undetermined significance, cannot exclude high-grade
ASC-US	Atypical squamous cells of undetermined significance
ASR	Age standardised rate
CI	Confidence interval
CIN	Cervical intra-epithelial neoplasia; CINI: low-grade; CIN 2 or 3: high-grade
CIS	Carcinoma in situ. An older classification of CIN 3. 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
HPV test	Testing for a high risk (oncogenic) subtype of human papillomavirus
hrHPV	A high risk (oncogenic) subtype of 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
NHI	National Health Index
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

References

1. Cleary L, Wright C. Estimating hysterectomy prevalence in New Zealand 2010-2018: Report on methods, 2018.
2. Gray A. Methodology for estimating hysterectomy prevalence in women 20-69. Wellington, New Zealand, 2011.
3. Aotearoa SNT. NZ.Stat. 2013. http://nzdotstat.stats.govt.nz/wbos/index.aspx.
4. National Screening Unit. Age range change for cervical screening. 7th June 2018 2018. https://www.nsu.govt.nz/health-professionals/national-cervical-screening-programme/age-range-change-cervical-screening (accessed 4th July 2018.
5. Simonella L, Lewis H, Smith M, Neal H, Bromhead C, Canfell K. The prevalence of type-specific oncogenic human papillomavirus infection in high grade cervical disease in New Zealand. *BMC Infect Dis* 2013; **13**(114).
6. Smith JS, Lindsay L, Hoots B, et al. Human papillomavirus type distribution in invasive cervical cancer and high-grade cervical lesions: a meta-analysis update. *Int J Cancer* 2007; **121**(3): 621-32.
7. Stevens MP, Garland SM, Tan JH, Quinn MA, Petersen RW, Tabrizi SN. HPV genotype prevalence in women with abnormal pap smears in Melbourne, Australia. *J Med Virol* 2009; **81**(7): 1283-91.
8. Brestovac B, Harnett GB, Smith DW, Shellam GR, Frost FA. Human papillomavirus genotypes and their association with cervical neoplasia in a cohort of Western Australian women. *J Med Virol* 2005; **76**(1): 106-10.
9. Porras C, Rodriguez AC, Hildesheim A, et al. Human papillomavirus types by age in cervical cancer precursors: predominance of human papillomavirus 16 in young women. *Cancer Epidemiol Biomarkers Prev* 2009; **18**(3): 863-5.
10. Baandrup L, Munk C, Andersen KK, Junge J, Iftner T, Kjaer SK. HPV16 is associated with younger age in women with cervical intraepithelial neoplasia grade 2 and 3. *Gynecol Oncol* 2012; **124**(2): 281-5.
11. Miyamoto J, Berkowitz Z, Unger E, et al. Vaccine-type HPV distribution in CIN3/AIS: 3 U.S. cancer registries, 1994-2005. International Papillomavirus Conference and Clinical Workshop; 2011 17-22/9/2011; Berlin, Germany; 2011.
12. Ahmad OB, Boschi-Pinto C, Lopez AD, Murray CJL, Lozano R, Inoue M. Age standardization of rates: A new WHO standard. Geneva: World Health Organization; 2001.
13. Sherwood J, Borman A, Scullion L, Gray R. Sexually Transmitted Infections in New Zealand: Annual Surveillance Report 2016. Porirua, New Zealand, 2019.
14. Drolet M, Bénard É, Pérez N, et al. Population-level impact and herd effects following the introduction of human papillomavirus vaccination programmes: updated systematic review and meta-analysis. *Lancet* 2019; **394**(10197): 497-509.
15. National Cervical Screening Programme. NCSP Operational Policy and Quality Standards, Section 5.
16. National Cervical Screening Programme. Bethesda 2001 (NZ Modified) codes for Cytology Laboratories: Codes, descriptors and assessment of sample adequacy for cytology laboratories. Wellington, 2014.
17. Ministry of Health. Report of the Parliamentary Review Committee regarding the New Zealand Cervical Screening Programme Wellington: Ministry of Health, 2011.
18. Parliamentary Review Committee. Report of the Parliamentary Review Committee regarding the New Zealand Cervical Screening Programme, June 2015. Wellington, 2015.
19. National Screening Unit. Guidelines for Cervical Screening in New Zealand: Incorporating the management of women with abnormal cervical smears. Wellington: National Screening Unit, Ministry of Health, 2008.
20. Smith M, Walker R, Canfell K. National Cervical Screening Programme Monitoring Report Number 33. Wellington, 2012.
21. Smith M, Walker R, Canfell K. National Cervical Screening Programme Monitoring Report Number 34. Wellington, 2012.