Cervical Cytology Registry (CCR) of Western Australia

2003 Statistical Report

WA Cervical Cancer Prevention Program

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Acknowledgements

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The continued support of medical practitioners, service providers and pathology laboratory staff is also greatly appreciated.

Special thanks must also be reserved for the women of WA.

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Summary

This report is the eighth Annual Statistical Report of the Cervical Cytology Registry (CCR) of WA. The main features of the following Statistical Report are summarised below. Slight variation from previous Statistical Reports in the proportion of women screened is due to population adjustments, system enhancements and standardisation of reporting parameters i.e. exclusion of women who appear to have had a hysterectomy.

Incidence and mortality

- The number of new cases of cervical cancer in WA has continued to decline. There were 75 new cases in WA in 2003 compared with 88 detected in 1996.
- Cervical cancer mortality has fluctuated from 1996 to 2003 with a high point of 30 deaths in 1996 to a low point of 20 deaths in 1998. In 2003, cervical cancer accounted for 24 deaths in WA.
- Since 1996 incidence and mortality rates have generally declined in both metropolitan and country target populations* of WA. The country target population* however, generally experienced higher incidence and mortality rates from cervical cancer than their metropolitan counterparts.
- Cervical cancer incidence rates were 2 times higher and mortality rates 2.6 times higher for Indigenous women compared with non-Indigenous women for the years 1996-2003.

Participation

- In 2003, 197,674 women in the target population* of WA participated in cervical screening. This represented an increase of 2,126 from 2002 (195,548).
- The proportion of women who had been screened in a two-year period declined from 60.8% in 2001-02 to 60.6% in the two-year period 2002-03.
- In the 2002-03 period, women living in metropolitan areas of WA had a cervical screening participation rate 2.8% above that of their country counterparts. Women aged 20-24 years were the exception to this trend where women living in country areas of WA had a cervical screening participation rate 2.4% above women living in metropolitan areas of WA.
- There is a general declining trend in cervical screening participation rates in younger women (under 30 years) and a general inclining trend in older women (55 years and over) in WA.

Early re-screening

- The *National Policy on Screening to Prevent Cancer of the Cervix* (1991) states that the recommended cervical screening interval is 2 years following a normal Pap smear result. Of a cohort of women screened in February 2002 who had a normal Pap smear result, 22.6% had a subsequent smear within 21 months. The previous year's figure was 22%.

Follow-up

- In 2003, 49,120 reminder letters were sent to women following a normal smear which represented a 1.4% decrease from 2002. Of these women 17.6% had a follow-up smear within three months of the reminder letter being sent.

* The target population for the WA Cervical Cancer Prevention Program is those women aged 20 to 69 years of age.

- In 2003, 4,608 follow-up letters pertaining to unsatisfactory and abnormal Pap smears were sent to providers and 2,491 letters were sent to women.

Abnormalities

- In 2003, 89.8% of smears were reported as normal, 7.3% indicated the presence of a low-grade abnormality and 1.3% were reported as either possible or definite high-grade abnormalities. These figures are consistent with previous years.
- Both low and high-grade abnormality rates declined with age and were highest for women aged between 20-29 years than any other age group in 2003. This is consistent with previous year's figures.

1. Background

The Western Australian Cervical Cancer Prevention Program (WACCPP) was established in 1992 as part of the *Organised Approach to Prevention of Cancer of the Cervix*, now the National Cervical Screening Program.

The Cervical Cytology Registry (CCR) is an integral component of the Program. It compiles and maintains the Register – a central database of Pap smear and cervical biopsy test results from women resident in WA at the time of their Pap smear. The CCR has been operational since late 1994.

Participation in the Register is voluntary and the confidentiality of data held is governed by legislation. Service providers are encouraged to inform women about the CCR and if the woman does not object, the pathology laboratory routinely forwards her Pap smear results (together with basic identifying information) to the CCR. The quality of information received by the CCR is dependent on all laboratories providing accurate data by electronic transmission.

As of 31 December 2003, there were approximately 2.4 million records (including all smears and biopsies) in the Register. Provision is made for women to remove their name from the Register at any time by contacting the CCR. Sixteen women were withdrawn from the Register at their request in 2003.

The CCR has produced Statistical Reports since 1996. The data presented in this report refers to the 2003 calendar year unless otherwise specified.

2. Functions of the CCR

- To act as a 'safety net', providing a reminder to women and medical practitioners when Pap smears and other cervical investigations are overdue.
- To provide a linked record of women's previous smears in order to assist pathologists and cytologists in the reporting of current smear results, and to assist clinicians in the management of abnormalities detected in the screening process.
- To provide feedback to pathology laboratories about cytology and histopathology results to assist with quality control.
- To provide epidemiological data to enable monitoring of participation rates in cervical screening and trends in abnormalities.
- To provide data for use in approved research into cervical cancer, its alleviation and prevention.
- To contribute to the policy requirements of the National Pathology Accreditation Advisory Council (NPAAC) and the National Cervical Screening Program (NCSP).
- To assist with planning and evaluation of recruitment strategies for the WACCPP.

3. Cervical cancer in WA

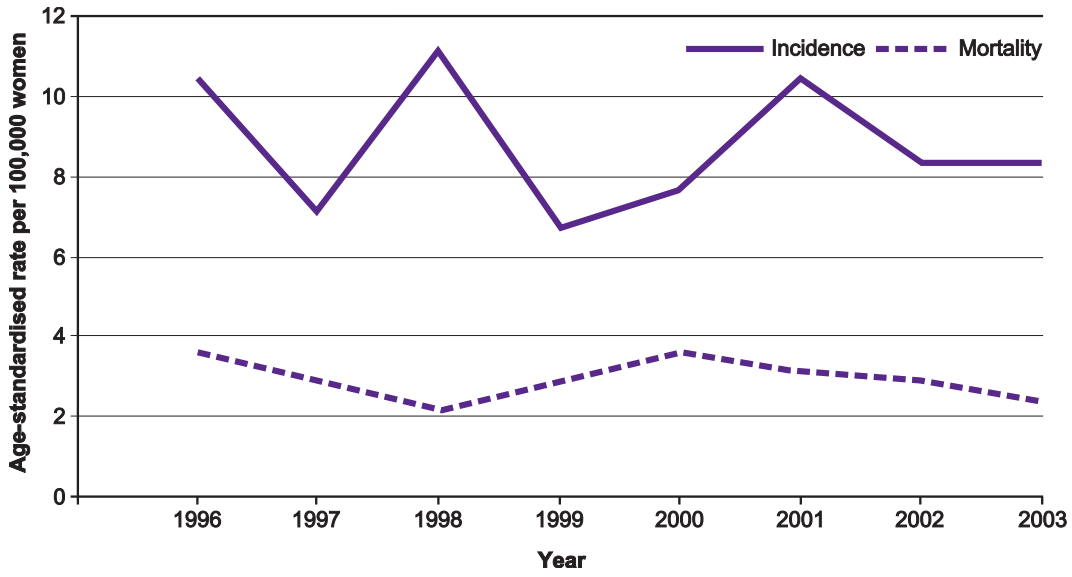
The aim of the WACCPP is to improve the health and well-being of Western Australian women by reducing incidence and mortality from cervical cancer through the implementation of population based cervical screening strategies.

Note: The numbers of cases of cervical cancer and the number of deaths from cervical cancer in WA are relatively small, especially in rural areas, and so even small changes in the numbers can lead to marked fluctuations in the rates.

As seen in Figure 3.1 there has been a general decline in the incidence rate of cervical cancer over the past eight years (1996-2003). The peak seen in 1998 coincided with a national media campaign which effectively increased the number of women participating in cervical screening. The declining incidence rate apparent in 1999 corresponded with a decline in women screened in the same period. By contrast, the ascending rate of incidence in 2001 accompanied the lowest proportion of women screened since 1996 (see Table 4.1). Caution should be exercised when interpreting these results as there are many factors contributing to the observed incidence rates of cervical cancer.

The cervical cancer mortality rate has fluctuated, but the general trend has been downwards, with a high point of 3.6 per 100,000 women (30 deaths) in 1996 to a low point of 2.2 per 100,000 women (20 deaths) in 1998. In 2003, this rate was 2.4 per 100,000 women (24 deaths).

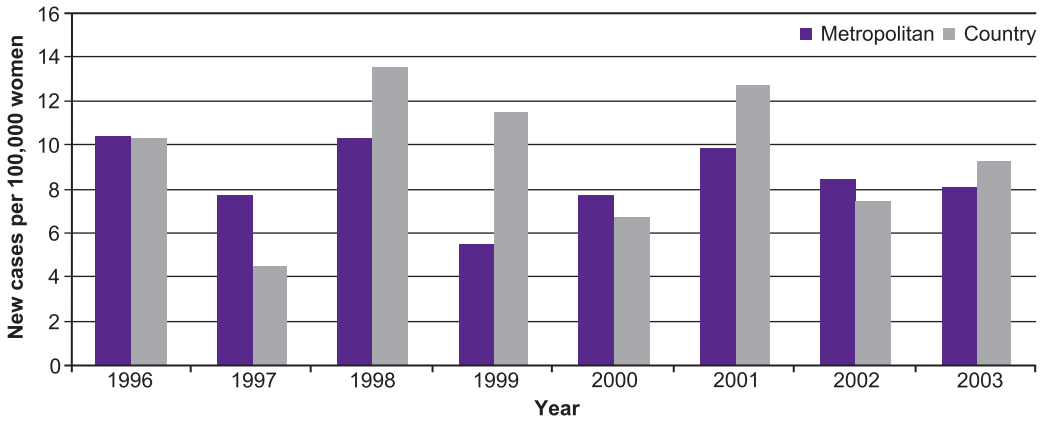
Figure 3.1 Age-standardised cervical cancer incidence and mortality rates WA 1996-2003



Note: Rates are expressed per 100,000 women and age-standardised to the Australian 2001 population.
Source: WA Cancer Registry, Department of Health WA (unpublished data current as at February 2005).

Figure 3.2 indicates women from country areas generally experienced higher incidence rates of cervical cancer than their metropolitan counterparts.

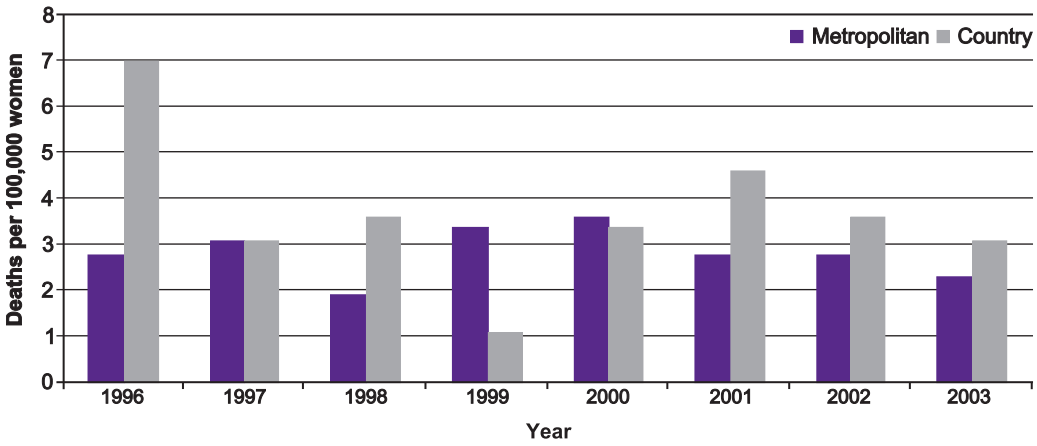
Figure 3.2 Age-standardised incidence rates of cervical cancer in women aged 20-69 years (metropolitan and country areas of WA) 1996-2003



Note: Rates are expressed per 100,000 women and age-standardised to the Australian 2001 population.
Source: WA Cancer Registry, Department of Health WA (unpublished data current as at February 2005).

Mortality rates from cervical cancer for both metropolitan and country target populations have generally declined over the past eight years (Figure 3.3).

Figure 3.3 Age-standardised mortality rates from cervical cancer in women aged 20-69 years (metropolitan and country areas of WA) 1996-2003

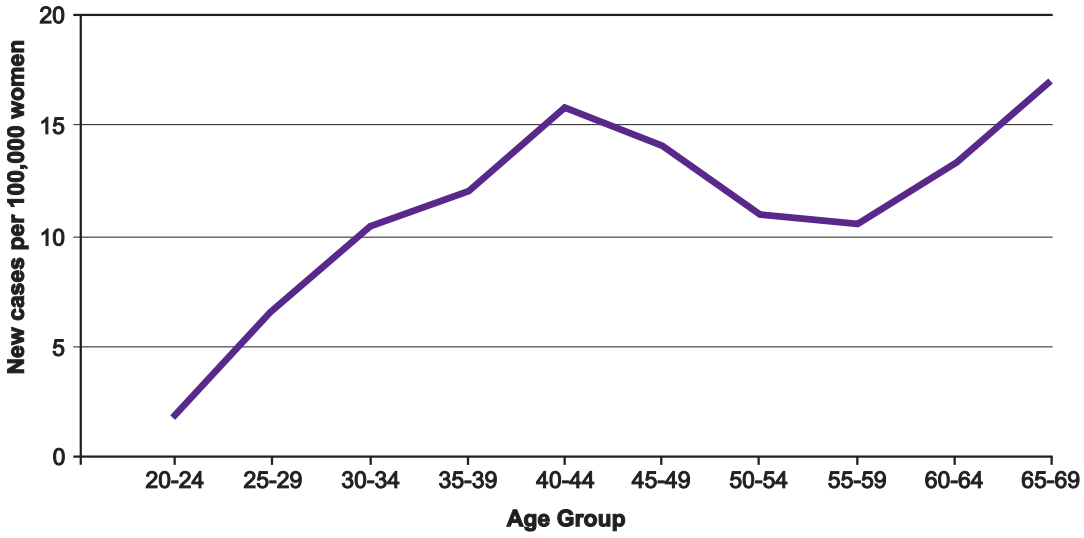


Note: Rates are expressed per 100,000 women and age-standardised to the Australian 2001 population.
Source: WA Cancer Registry, Department of Health WA (unpublished data current as at February 2005).

Figures for 1996-2003 were pooled for examination of incidence (Figure 3.4) and mortality (Figure 3.5) rates by age.

From Figure 3.4 it is evident that the incidence rate of cervical cancer was higher among women aged 40-49 years and also women in the 65-69 years age group during 1996-2003.

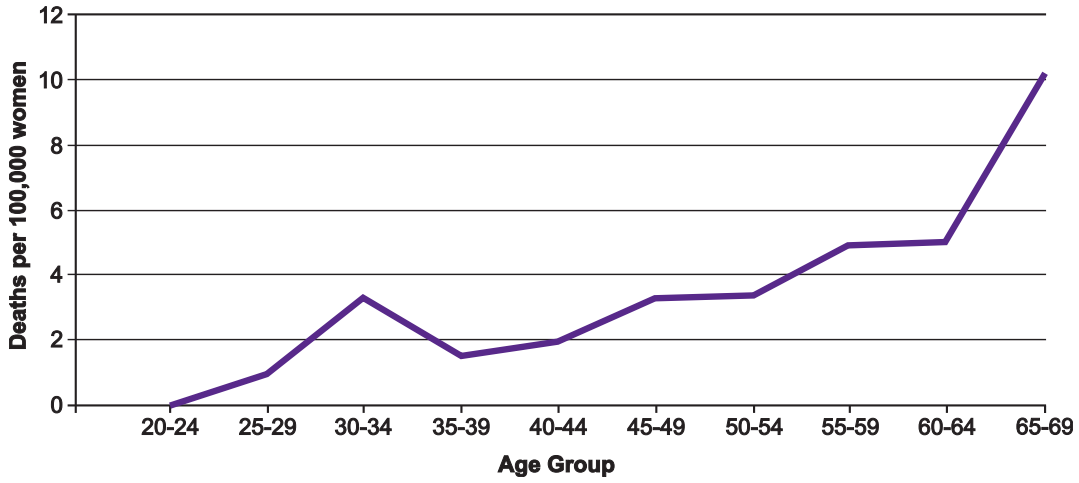
Figure 3.4 Age-specific incidence rates of cervical cancer in women aged 20-69 years WA 1996-2003



Note: Rates are expressed per 100,000 women.
Source: WA Cancer Registry, Department of Health WA (unpublished data current as at February 2005).

Figure 3.5 shows that amongst the target population of women (aged 20-69 years) the highest mortality rate was in women aged 65-69 years (10.1 per 100,000 women). This age group accounted for 25 deaths out of the total 217 deaths for WA during the period 1996-2003.

Figure 3.5 Age-specific mortality rates from cervical cancer in women aged 20-69 years WA 1996-2003



Note: Rates are expressed per 100,000 women.
Source: WA Cancer Registry, Department of Health WA (unpublished data current as at February 2005).

In WA, cervical cancer incidence rates were 2 times higher and mortality rates 2.6 times higher for Indigenous women compared with non-Indigenous women, for the years 1996-2003[1].

[1] WA Cancer Registry, Department of Health WA (unpublished data current as at February 2005).

4. Participation

The *National Policy on Screening to Prevent Cancer of the Cervix (1991)* provides consensus guidelines on women who require screening and how often Pap smears should be taken. It states:

*Routine screening with Pap smears should be carried out every **two** years for women who have no symptoms or history suggestive of cervical pathology.*

All women who have ever been sexually active should commence having Pap smears between the ages of 18 to 20 years, or one or two years after first sexual intercourse, whichever is later. In some cases, it may be appropriate to start screening before 18 years of age.

Pap smears may cease at the age of 70 years for women who have had two normal Pap smears within the last five years. Women over 70 years who have never had a Pap smear, or who request a Pap smear, should be screened.

This policy only applies to women without symptoms that could be due to cervical pathology. Women with a past history of high-grade cervical lesions, or who are being followed-up for a previous abnormal smear, should be managed in accordance with the National Health and Medical Research Council (NHMRC) guidelines[2], which were updated and endorsed in June 2005, following extensive review of the previous guidelines (1994).

4.1 Number of tests and women screened per year

A total of 209,799 cytology tests were performed in 2003 with 197,674 women screened during the year (Table 4.1).

Table 4.1 Number of tests performed and the number of individual women screened 1996-2003

Year	Number of tests performed	Number of women screened
1996	208,132	192,755
1997	209,319	194,988
1998	222,986	209,794
1999	208,273	196,377
2000	208,523	197,498
2001	204,531	193,948
2002	207,243	195,548
2003	209,799	197,674

Note: Includes all women with an address in WA at the time of the Pap smear. Excludes women's records after the date of hysterectomy or from the initial vault smear i.e. post-hysterectomy.

From 1996 to 1998, the number of Pap smears performed, and the number of women screened increased steadily, peaking in 1998. From 1998 these numbers declined to a low point in 2001 with a gradual improvement experienced in 2002 and again in 2003.

[2] *Guidelines for the Management of Women with Screen Detected Abnormalities*, National Health and Medical Research Council (NHMRC) 2005.

The peak shown in 1998 may be attributed to the national media campaign conducted over that period. The ensuing variable annual numbers however, highlight difficulties around sustaining and increasing screening participation.

Several factors influence the number of tests performed and recorded on the CCR. Women who choose not to have their results available to the CCR (opt off) are omitted from these figures; these constitute 1.2% of the tests performed. This data is dependent on medical and laboratory data management and transmission to the CCR.

It must be acknowledged that there are likely to be minor inaccuracies in the number of women screened according to the CCR due to incomplete record linkage, as there is no unique identifier for each woman available to the CCR at this time.

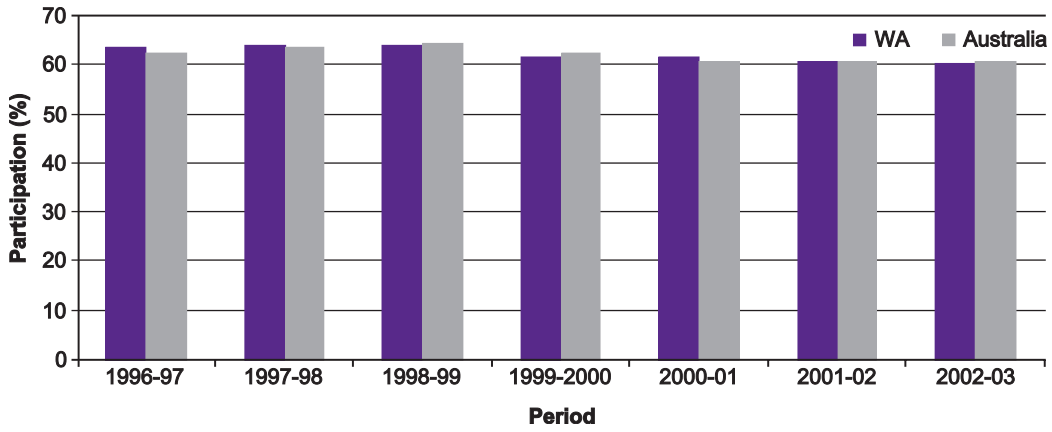
4.2 Proportion of target population screened

The proportion of the target population screened is measured by the number of women having a Pap smear in a two-year period.

The denominators for the following percentages are based on the Australian Bureau of Statistics (ABS) *Estimated Resident Population (ERP) - Female - by Statistical Local Areas (SLA) in WA by five-year age groups,* adjusted for hysterectomy using ABS *1995 National Health Survey* for 1996 ERP and ABS *2001 National Health Survey* for 1997-2003 ERP (1997-2000 ERP have been revised based on the 2001 census). The proportion of women screened in the two-year periods (1996-97, 1997-98, 1998-99, 1999-2000, 2000-01, 2001-02 and 2002-03) was calculated using an average of yearly ERP data.

WA screening participation rates are comparable with national rates. In the 2002-03 period the participation rate in WA was marginally lower (60.6%) than the national cervical screening rate of 61.0%. Attention to identified barriers and strengthening of regional collaborative working relationships is required to ensure continual improvement of the uptake of cervical screening in WA.

Figure 4.1 Estimated percentage of women with an intact uterus who had at least one Pap smear for the two-year periods 1996-97, 1997-98, 1998-99, 1999-2000, 2000-01, 2001-02 and 2002-03: comparison of WA with Australia as a whole



Note: Includes all women aged between 20 and 69 years with an address in WA at the time of the Pap smear.
Source: National figures - Australian Institute of Health and Welfare (AIHW) Cervical Screening in Australia 1996-97, 1997-98, 1998-99, 1999-2000, 2000-01, 2001-02 and unpublished data 2002-03.

In keeping with the results seen in the number of women screened (Table 4.1)[3], the 1997-98 period witnessed a peak in the rate of participation of WA women in the target age group (20-69 years) corresponding with the 1998 National Media Campaign (Table 4.2). Between the 1997-98 period and 2002-03 period cervical screening participation rates in WA have experienced a decline of 3.6%.

The overall participation rates for cervical screening have marginally declined from the two-year period 2001-02 to the period 2002-03. There has been a declining trend in younger women (under 30 years) and an inclining trend among older women (55 years and over) across the entire study period (1996-97 to 2002-03). The decline in the rate of participation among women under the age of 30 years seen in the 1999-2000 period has continued through to the 2002-03 period. While participation rates among older women show overall improvement, the participation rate of women aged 60-69 years has remained low (51.1%) compared to other age groups.

Some fluctuations in participation rates over time may be influenced by the implementation of improvements in record linkage procedures in the CCR. These allow more accurate tracking of individual screening participants over time and may lead to an apparent decrease in recorded participation rates.

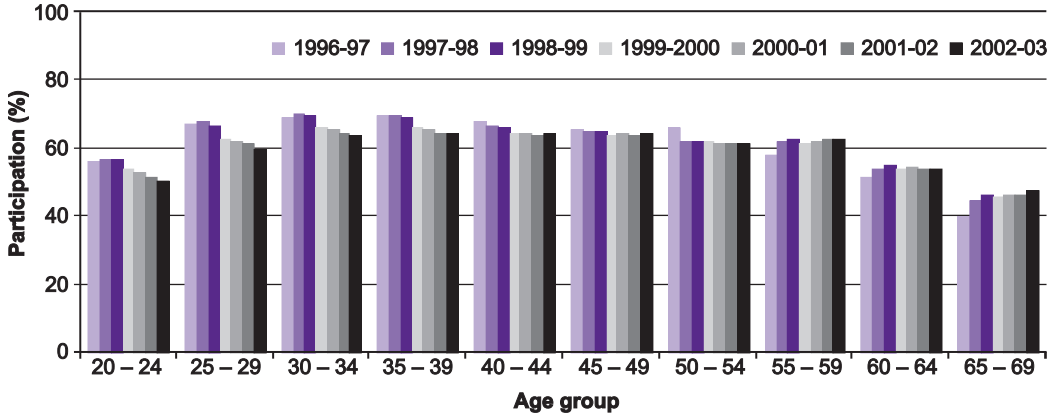
Table 4.2 Estimated percentage of women with an intact uterus who had at least one Pap smear for the two-year periods 1996-97, 1997-98, 1998-99, 1999-2000, 2000-01, 2001-02 and 2002-03

Age group	% women screened							% change from 1996-97 to 2002-03
	1996-97	1997-98	1998-99	1999-2000	2000-01	2001-02	2002-03	
20 - 24	56.4	56.8	57.0	53.9	52.9	51.9	50.6	-5.8
25 - 29	67.2	67.7	66.8	62.9	62.4	61.4	59.9	-7.3
30 - 34	69.2	70.1	69.5	66.1	65.5	64.5	64.0	-5.2
35 - 39	69.5	69.6	68.9	66.2	66.0	64.6	64.5	-5.0
40 - 44	67.8	66.6	66.5	64.7	64.7	64.1	64.4	-3.4
45 - 49	65.6	65.2	65.2	64.1	64.3	64.0	64.8	-0.8
50 - 54	66.3	62.2	62.3	62.0	61.7	61.4	61.6	-4.7
55 - 59	58.2	62.5	62.6	61.8	62.4	62.7	63.1	4.9
60 - 64	51.7	54.3	55.0	54.1	54.6	54.1	54.0	2.3
65 - 69	39.9	44.7	46.4	45.8	46.6	46.6	47.5	7.6
20 - 69	**63.8**	**64.2**	**64.1**	**61.8**	**61.6**	**60.8**	**60.6**	**-3.2**

Note: Includes all women aged between 20 and 69 years, with an address in WA at the time of the Pap smear.

[3] Slight variation from previous Statistical Reports in the proportion of women screened is due to population adjustments, system enhancements and standardisation of reporting parameters i.e. exclusion of women who appear to have had a hysterectomy.

Figure 4.2 Estimated percentage of women with an intact uterus who had at least one Pap smear for the two-year periods 1996-97, 1997-98, 1998-99, 1999-2000, 2000-01, 2001-02 and 2002-03



The following table shows the estimated percentage of eligible women who had at least one Pap smear during a two-year period compared with a three-year period.

Table 4.3 Estimated percentage of women with an intact uterus who had at least one Pap smear for the two-year period 2002-03 and the three-year period 2001-03

Age group	% women screened	
	2002-03	2001-03
20 - 24	50.6	65.4
25 - 29	59.9	76.3
30 - 34	64.0	78.4
35 - 39	64.5	78.1
40 - 44	64.4	76.3
45 - 49	64.8	75.6
50 - 54	61.6	71.3
55 - 59	63.1	70.5
60 - 64	54.0	61.5
65 - 69	47.5	53.2
20 - 69	**60.6**	**72.9**

Note: Includes all women aged between 20 and 69 years, with an address in WA at the time of the Pap smear.

Policies for screening intervals vary internationally, with most countries having a three-year screening interval. Australian policy advises a two-year screening cycle for women who have had a negative Pap smear[4]. While discussion continues around the optimal length of screening intervals, there is a recognised need for the development of health systems to identify and actively target two important groups. They consist of women who have never been screened and women who have not been screened for more than four years (underscreened).

[4] *Guidelines for the Management of Asymptomatic Women with Screen Detected Abnormalities*, National Health and Medical Research Council (NHMRC) 2005.

It can be seen from Table 4.3 that a high proportion of women aged 25 to 60 years were screened at least once in the three-year period 2001-03. This is consistent with previous years. Women over 60 years of age appear to have a low level of participation in both the two-year and three-year periods.

4.2.1 Practice Incentive Program (PIP)

Implementation of the 2001 Federal Cervical Screening Budget Initiative, which built on the existing Practice Incentives Program, attempted to contribute to addressing the issue of underscreened women through incentives for general practitioners who screen women who have not had a Pap smear in the past four years.

In 2003 the CCR developed and implemented enhancements to the database to enable the identification and extraction of women in the identified target population (females with an intact cervix aged 20-69 years). In addition, the PIP Data Request Form was created to assist with the implementation of the Cervical Screening component of the Commonwealth PIP initiatives.

In November 2003, following collaborative efforts with the WA Divisions of General Practice, the PIP Data Request Form was released to GPs. Submission of a completed form enables the CCR to identify for a GP a list of women for whom they were the last known care provider and who have not had a Pap smear in the past four years. Completed lists are provided to the GP either by the relevant Divisional representative or directly, at their preference.

The main goals of this project are to improve participation rates in cervical screening of underscreened women; to raise the profile of the WACCPP and to provide much needed support to GPs in the community.

As the project commenced in November 2003, there is insufficient data for presentation in this report. It is, however, anticipated that assessment of this project will be presented in the 2004 Statistical Report.

4.3 Comparison of metropolitan and country participation

Table 4.4 and Figure 4.3 compare the screening coverage for women living in the Perth metropolitan area with those living in country WA.

The denominators for these percentages are as previously described in Section 4.2. Classification as metropolitan or country was based on information provided by the Health Information Centre, Department of Health WA[5].

Table 4.4 demonstrates that for all seven time-periods, the proportion of women aged 20-69 years living in country WA, who had been screened within two years, was lower than for women living in the Perth metropolitan area. In the 1996-97 period, a 2.9% difference in participation rates between metropolitan and country areas was reported. This difference peaked at 3.7% in the 2000-01 period and has since declined to a difference of 2.8% in 2002-03.

The exception to this was women in the 20-24 years age group, who experienced a higher rate of cervical screening participation in country areas for all seven time-periods.

[5] Postcode Allocation, Epidemiology, Health Information Centre, Department of Health WA.

Table 4.4 Estimated percentage of women with an intact uterus who had at least one Pap smear for the two-year periods 1996-97,1997-98, 1998-99, 1999-2000, 2000-01, 2001-02 and 2002-03: comparison of the Perth metropolitan area with country WA

Age group		% women screened						
		1996-97	1997-98	1998-99	1999-2000	2000-01	2001-02	2002-03
20 - 24	Metro	55.7	56.1	56.5	53.8	52.7	51.5	50.1
	Country	58.6	59.6	58.8	54.4	53.5	53.3	52.5
25 - 29	Metro	67.7	68.2	67.4	63.6	63.2	62.2	60.6
	Country	64.5	66.0	64.6	60.3	59.4	58.5	57.4
30 - 34	Metro	70.0	71.0	70.7	67.3	66.6	65.7	65.3
	Country	65.0	66.8	65.6	61.9	61.8	60.6	59.6
35 - 39	Metro	69.1	70.3	69.6	66.9	67.0	65.6	65.3
	Country	64.3	66.7	66.2	63.6	62.2	61.0	61.1
40 - 44	Metro	66.9	67.7	67.5	65.7	65.5	64.6	64.8
	Country	60.8	62.0	62.3	60.9	61.4	61.8	62.3
45 - 49	Metro	65.1	66.2	66.7	65.5	65.7	65.1	65.5
	Country	60.2	61.0	59.4	58.6	58.4	59.3	61.6
50 - 54	Metro	63.7	63.2	63.4	63.3	62.9	62.4	62.7
	Country	57.9	57.9	57.6	56.8	56.6	57.1	56.9
55 - 59	Metro	59.8	63.2	63.5	62.7	63.2	63.8	64.0
	Country	57.0	59.6	58.8	58.2	59.2	58.3	59.3
60 - 64	Metro	51.3	54.4	55.3	54.4	55.0	54.7	54.1
	Country	51.2	53.5	53.6	52.8	52.9	51.8	53.6
65 - 69	Metro	41.0	45.1	46.8	46.3	47.1	46.7	47.6
	Country	38.5	43.3	44.9	43.9	44.4	46.1	46.8
20 - 69	**Metro**	**63.5**	**64.7**	**64.7**	**62.5**	**62.3**	**61.5**	**61.1**
	Country	**60.6**	**62.2**	**61.5**	**59.0**	**58.6**	**58.2**	**58.3**

Note: Includes all women aged between 20 and 69 years, with an address in WA at the time of the Pap smear.

Figure 4.3 Estimated percentage of women with an intact uterus who had at least one Pap smear for the two-year period 2002-03: comparison of the Perth metropolitan area with country WA

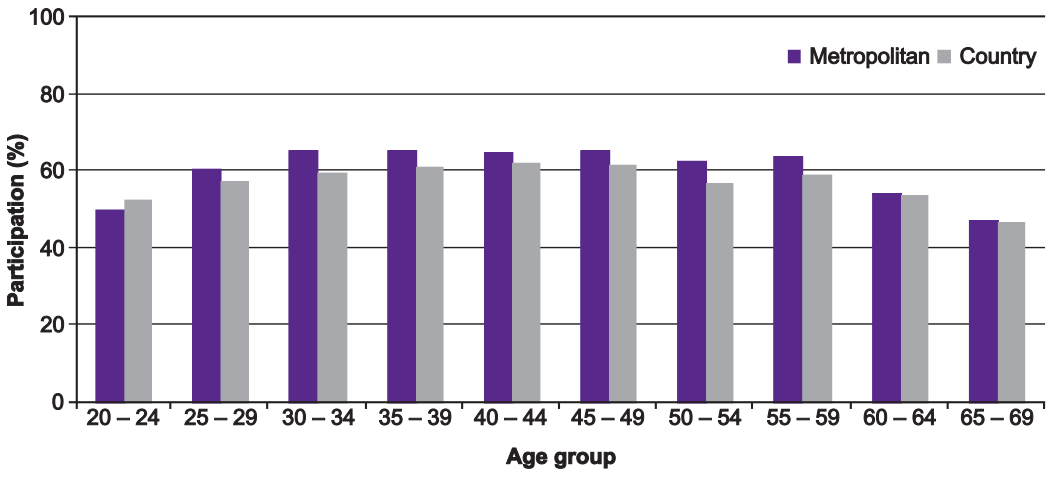
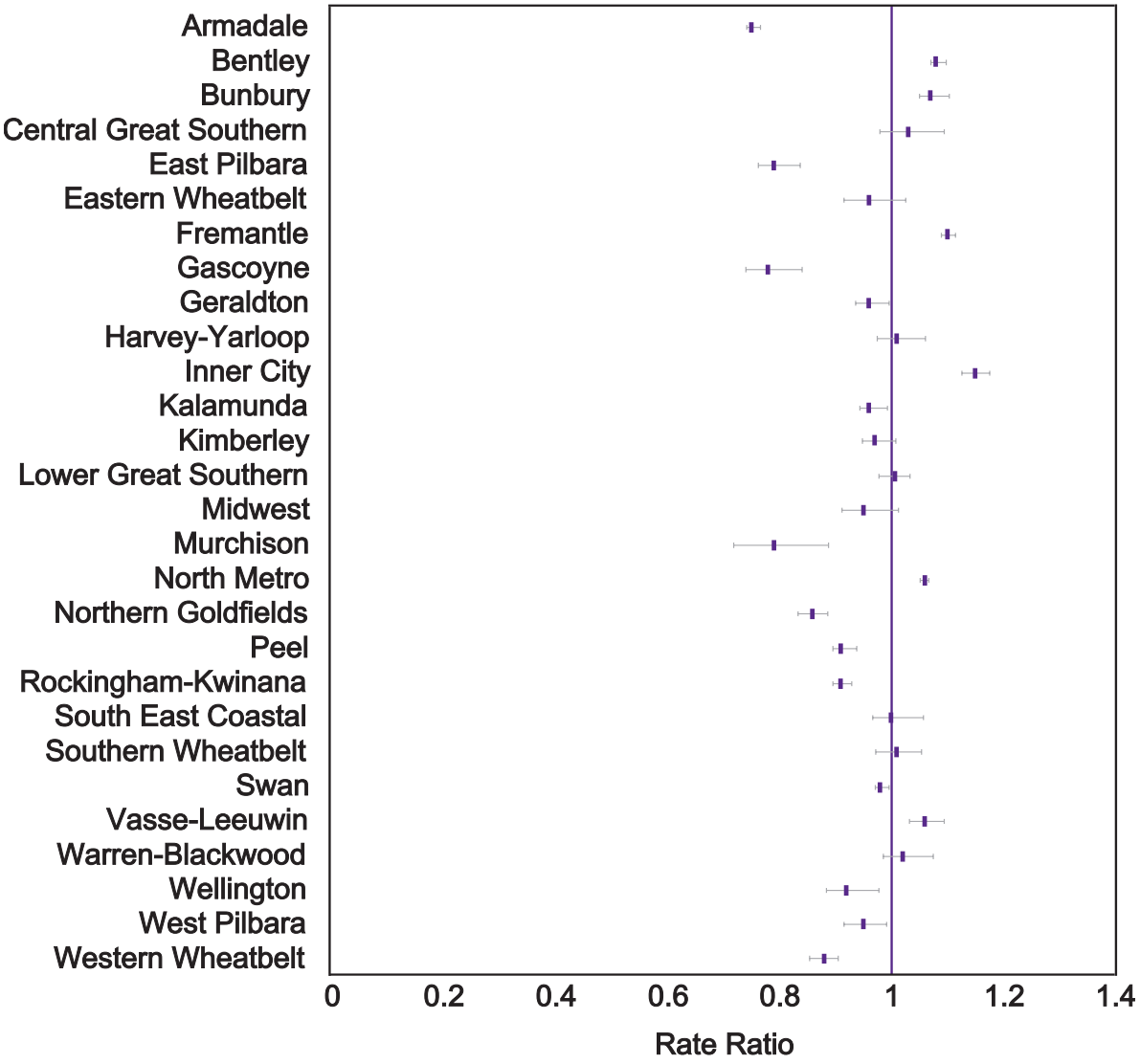


Figure 4.4 Rate ratios of cervical screening participation by Health District compared with WA 2002-03



Note: Bars on graph represent 95% confidence intervals. Those to the right of the line are significantly higher than the State rate while those to the left of the line are significantly lower than the State rate.

From Figures 4.4 and 4.5 it can be seen that Armadale, East Pilbara, Gascoyne, Kalamunda, Murchison, Northern Goldfields, Peel, Rockingham-Kwinana, Wellington, West Pilbara and Western Wheatbelt Health Districts all experienced cervical screening participation rates lower than the State rate, and that these rates were statistically significant.

It is also evident that Bentley, Bunbury, Fremantle, Inner City, North Metropolitan and Vasse-Leeuwin Health Districts experienced statistically significant higher rates than the State rate.

Figure 4.5 Geographical view of cervical screening participation by Health District compared with WA 2002-03

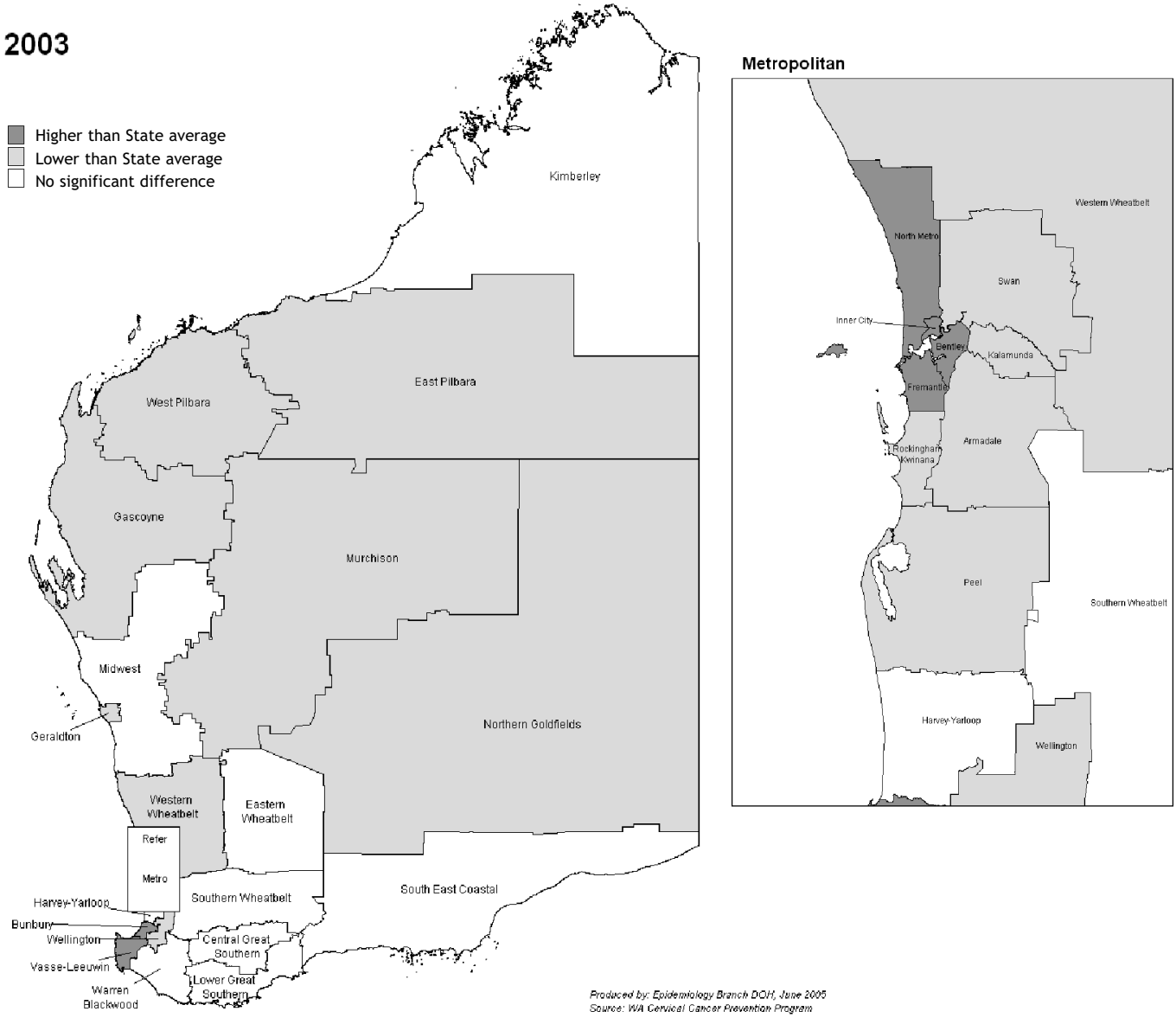


Figure 4.5 also highlights Health Districts with screening rates that were not significantly different to the State rate. In 2003 these were Central Great Southern, Eastern Wheatbelt, Southern Wheatbelt, Lower Great Southern, Midwest, Kimberley, South East Coastal, Harvey-Yarloop and Warren-Blackwood.

5. Early re-screening

To assess the level of adherence to the National Policy of two-yearly screening, figures were obtained for the proportion of women who were re-screened within a 21-month period, following a normal Pap smear result.

To comply with National standards, February was selected as the index month for all States and Territories, as it is a relatively stable month in terms of the number of women who present for screening. Table 5.1 displays the frequency of women who have had subsequent smears within 21 months (following a normal smear report taken in February 2002).

Table 5.1 Early re-screening: number and percentage of women having a repeat test within 21 months of a normal Pap smear

Number of repeat tests in a 21-month period after a normal Pap smear	Number of women	Percentage of women
0 (ie. no repeat test)	10,735	77.5
1	2,953	21.3
2	160	1.2
3	6	<0.1
4	0	0.0
5 or more	0	0.0
Total	**13,854**	**100**

Note: Includes all women with an address in WA at the time of the Pap smear. Excludes women's records after the date of hysterectomy or from the initial vault smear i.e. post-hysterectomy.

A total of 77.5% of women did not have subsequent smears performed over the selected 21-month period meaning 22.5% of women were re-screened early. The previous year's figures were 78% and 22% respectively. In both 2002 and 2003 only 1% of the early re-screened women exceeded one repeat smear.

Prior to 2001 these figures were not directly comparable due to a change in definition of 'early re-screening' by the NCSP. This redefinition partly contributed to a decrease in numbers from 1998-99 (46%) to 1999-2000 (33%).

> *Early re-screening is the repeating of a Pap smear within 21 months of a negative report, except for women who are being followed up in accordance with the NHMRC guidelines for the management of cervical abnormalities.*

It is anticipated that women with a history of abnormality may re-screen within 24 months. Recent improvements to the Register have enabled the extraction of data that provides a clearer picture of women who are re-screening outside of NHMRC guidelines. Clinical reasons and/or symptoms for subsequent Pap smears within two years are not recorded in the Register.

6. Cytology reports

Pap smear results are coded according to standard CCR report categories (see Appendix A – Cytology Codes). This code consists of a combination of results observed for a range of cell types. Table 6.1 summarises the profile of cytology reports for all laboratories combined and the range among the various laboratories. In 2003, 89.8% of smears were reported as normal, 7.3% indicated the presence of a low-grade abnormality and 1.3% reported as either possible or definite high-grade abnormalities (Table 6.1). These figures are consistent with previous years.

The wide variation between laboratories in the proportion of normal smears is partly accounted for by the fact that some laboratories primarily serve doctors investigating women with abnormalities.

Table 6.1 Cytology report categories 2003

Cytology report category	Number	All laboratories (%)	Range (%)
Unsatisfactory smear	3,310	1.6	0.9 - 3.5
Normal smear	188,486	89.8	52.6 - 94.0
Low-grade epithelial abnormality	15,388	7.3	3.2 - 41.4
Inconclusive (possible high-grade lesion)	777	0.4	0.2 - 1.1
High-grade epithelial abnormality (CIN II or higher)	1,838	0.9	0.4 - 9.3
Total	**209,799**	**100**	

6.1 Analysis of individual components

Table 6.2 shows the distribution of results for the squamous cell component of the cytology reports. The percentage of Pap smears reported as having an unsatisfactory squamous cell component was 1.6%, which is in accordance with the *Royal College of Pathologists of Australasia* (RCPA) performance standards[6]. The percentage of abnormal squamous cell categories (includes all categories from mild cellular changes up to squamous cell carcinoma) reported was 8.4%. In 2002 this figure was 8.7%. The proportion of smears with mild cellular changes had been increasing in recent years, however a marginal decline is noted from 2002 (6.3%) to 2003 (5.9%).

[6] Royal College of Pathologists of Australasia (RCPA) Performance Standards for Gynaecological Cytology.

Table 6.2 Squamous cell categories 2003

Squamous cell category	Number	All laboratories (%)	Range (%)
Unsatisfactory	3,310	1.6	0.9 - 3.5
No abnormal squamous cells	188,826	90.0	53.0 - 94.1
Mild cellular changes	12,365	5.9	2.8 - 35.4
Mild dysplasia (CIN I)	2,836	1.4	0.0 - 6.6
Inconclusive (possible high-grade lesion)	690	0.3	0.1 - 0.9
Moderate dysplasia (CIN II)	919	0.4	0.2 - 3.0
Severe dysplasia/carcinoma-in-situ (CIN III)	795	0.4	0.2 - 5.3
Suspicious of microinvasion or invasion	38	<0.1	0.0 - 0.5
Squamous cell carcinoma	20	<0.1	0.0 - 0.2
Total	**209,799**	**100**	

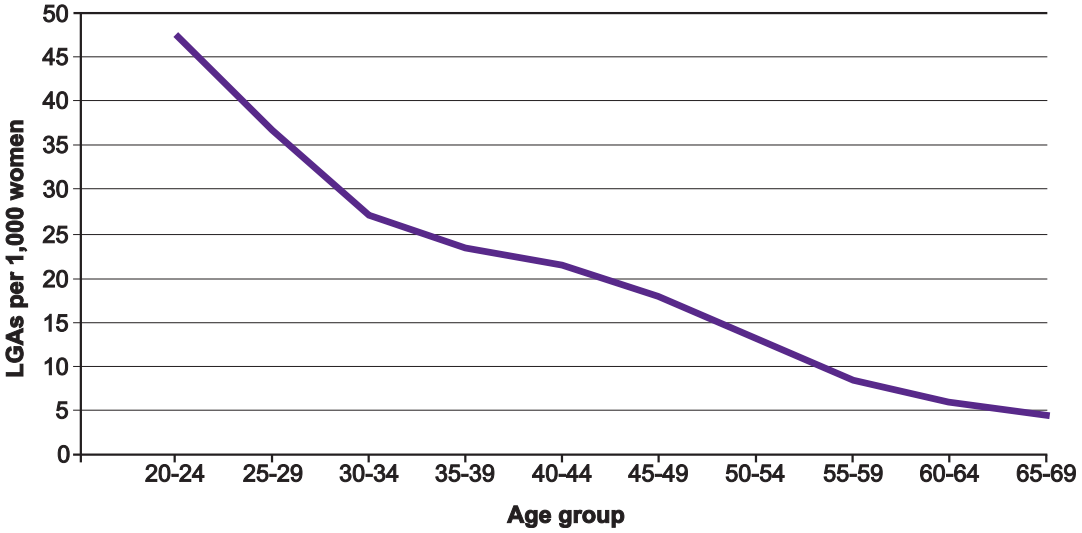
Table 6.3 Endocervical cell categories 2003

Endocervical cell category	Number	All laboratories (%)	Range (%)
Unsatisfactory	2,636	1.3	0.4 - 2.9
No endocervical cells	38,960	18.6	2.3 - 23.1
No abnormal endocervical cells	167,743	80.0	76.0 - 93.5
Atypical endocervical cells	308	0.2	0.0 - 2.2
Possible high-grade (including dysplasia)	92	<0.1	0.0 - 0.5
Adenocarcinoma-in-situ	49	<0.1	0.0 - 0.2
Suspicious of adenocarcinoma of the cervix	4	<0.1	0.0 - 0.1
Adenocarcinoma of the cervix	7	<0.1	0.0 - 0.0
Total	**209,799**	**100**	

Table 6.3 shows the distribution of results for the endocervical cell component of cytology reports. Abnormalities of endocervical cells (which include all categories from atypical up to adenocarcinoma of the cervix) were reported in 0.2% of smears and possible or definite high-grade glandular abnormalities in <0.1%.

An endocervical component was absent in 18.6% of smears – this figure was 17% for the 2002 period, which represented 35,271 smears. The absence of endocervical cells on a Pap smear may be due to a number of factors (including the adequacy of the sampling of the transformation zone).

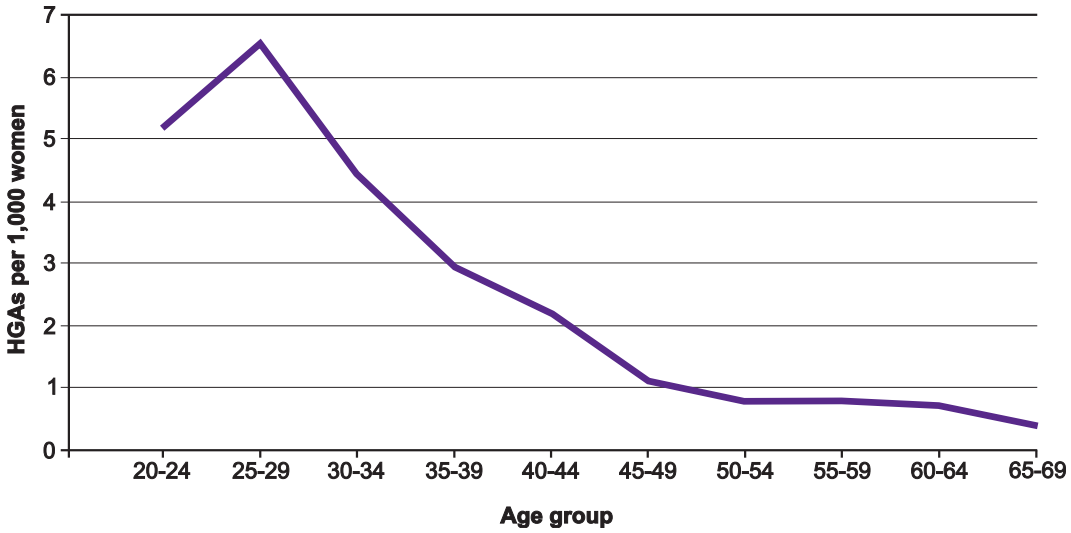
Figure 6.1 Age-specific low-grade abnormality rates in women aged 20-69 years WA 2003



Note: A low-grade abnormality is defined as: Epithelial abnormality (E2, S2 or S3 (CIN I)). Includes Human Papilloma Virus (HPV) effect alone and atypia short of dysplasia. Rates are expressed per 1,000 women.
Source: Cytology Codes, WA Cervical Cancer Prevention Program (Appendix A).

Figures 6.1 and 6.2 suggest that both low and high-grade abnormality rates decline with age. These results indicate that low-grade and high-grade abnormalities on cytology were highest for females aged between 20-29 years than any other age group.

Figure 6.2 Age-specific high-grade abnormality rates in women aged 20-69 years WA 2003



Note: A high-grade abnormality is defined as: Intraepithelial abnormality (E4, S5 (CIN II), S6 (CIN III)); Invasive/ Malignant (E5, E6, S7, S8); Inconclusive (E3, S4). Rates are expressed per 1,000 women.
Source: Cytology Codes, WA Cervical Cancer Prevention Program (Appendix A).

7. Follow-up and reminder letters to women and practitioners

An important function of the CCR is to provide a 'safety net' to help ensure that women with abnormal results are appropriately followed up. The CCR has a series of protocols for the generation of letters to practitioners and/ or women depending on the most recent Pap smear or biopsy result. Table 7.1 outlines the CCR's *Protocol of Actions*. The *Protocol of Actions* for follow-up of low-grade abnormalities on Pap smears was reviewed and amended in November 2000 to allow for appropriate clinical management of women, as recommended by the WACCPP Advisory Group. Previously, reminder letters for this category were initiated at 15 months for providers and 21 months for women. At this time, the WACCPP Advisory Group also endorsed the generation of follow-up and reminder letters to providers and women following a cervical biopsy result (Table 7.1).

The CCR is updated monthly with information from the WA Death Registry to minimise the risk of reminder letters being sent to deceased women.

The CCR allows for withholding of follow-up letters in such cases as pregnancy. The service provider advises the expected date of delivery, and a letter is normally sent six months after this date.

Table 7.1 CCR Protocol of Actions (as at December 2003)

Cytology report	Action
	If no follow-up information is received by the Registry:
Unsatisfactory	▪ Reminder letter to provider at 6 months; ▪ Reminder letter to woman at 12 months if still no follow-up information received.
Normal	▪ Reminder letter to woman at 3 years unless hysterectomy is known.
Low-grade abnormality	▪ Reminder letter to provider at 18 months; ▪ Reminder letter to woman at 24 months if still no follow-up information received.
Inconclusive or High-grade abnormality	▪ Questionnaire letter to provider at 9 months; ▪ Reminder letter to woman at 12 months if still no follow-up information received; ▪ If still no follow-up information received, reminder letter (registered post with delivery confirmation) to the woman at 15 months.
Histopathology report	**Action**
	If no follow-up information is received by the Registry:
Unsatisfactory, Normal, Low-grade abnormality or High-grade abnormality	▪ Reminder letter to provider at 12 months; ▪ Reminder letter to woman at 18 months if still no follow-up information received.

7.1 Reminders to women with normal Pap smears

A reminder letter is sent to women whose last Pap smear result was normal and for whom no further smear has been recorded within a three-year period. In the 2003 calendar year, 49,120 reminder letters were sent to women following a normal smear. This represented a 1.4% decrease from the previous year. Of these women, 17.6% had a follow-up smear within three months of the reminder letter being sent (see Table 7.2). This level of response was similar to that seen in previous years.

7.2 Follow-up letters for unsatisfactory and abnormal Pap smear results

For follow-up of unsatisfactory and low-grade abnormal Pap smears, a letter is sent to the provider according to the CCR's *Protocol of Actions*. If follow-up information is not received within six months, a letter is sent directly to the woman. For high-grade abnormal Pap smears (including inconclusive findings), if no follow-up information is received within three months of sending a letter to the provider, a letter is sent directly to the woman. Various databases are searched for a current address when locating women with high-grade abnormalities. If no follow-up information is received within three months of that letter being sent, another reminder letter is sent by registered post (with delivery confirmation) to the woman.

In 2003, a total of 4,608 follow-up letters pertaining to unsatisfactory and abnormal Pap smears were sent to providers and 2,491 letters were sent to women.

Table 7.2 displays the outcome of these reminder and follow-up letters. Letters are sent directly to the woman only if the CCR has not received follow-up information. It is important to note that Table 7.2 represents women who have not had a repeat smear or appropriate biopsy prior to activation of the *Protocol of Actions*. Also worth noting is that of the 51,611 letters sent to women in 2003, approximately 17% were returned to sender, indicating that the woman had changed address since the time of her most recent smear. In 2002, 18% of the 52,118 letters sent to women were returned to sender.

Table 7.2 Outcome of reminder and follow-up Pap smear letters sent by the CCR in 2003

Letter type	Follow-up within three months of letter		
	Number of letters sent**	Number	Percentage
'Normal' to woman	49,120	8,648	17.6
'Unsatisfactory' to provider	1,676	549	32.8
'Unsatisfactory' to woman	780	197	25.3
'Low-grade abnormality' to provider	2,770	638	23.0
'Low-grade abnormality' to woman	1,583	323	20.4
'High-grade abnormality'* to provider	162	56	34.6
'High-grade abnormality'* to woman	82	27	32.9
2nd 'high-grade abnormality' to woman	46	13	28.3

* High-grade abnormalities include results classified as 'Inconclusive – raising the possibility of a high-grade lesion'.

** This refers only to follow-up letters generated in 2003. The number of letters shown as sent to women is less than the number of women who were overdue for follow-up, as reminder letters continued to be sent into 2004.

Table 7.2 demonstrates one of the 'safety net' functions of the CCR, whereby follow-up letters are sent as a timely reminder to support both providers and women. Ninety-six women with an inconclusive/ high-grade abnormality and no initial follow-up information had either a Pap smear or biopsy within three months of the follow-up letter to their provider or themselves.

The CCR was initially unable to monitor follow-up for only 33 women with inconclusive/ high-grade abnormalities during 2003. The *Protocol of Actions* and various other methods, including requesting information from the Health Insurance Commission, were utilised in obtaining further follow-up information. According to information since received into the Register, 18 of these women have now been re-screened. Further attempts to locate the remaining 15 women who are lost to follow-up are carried out periodically.

7.3 Follow-up letters for biopsy results

For the follow-up of unsatisfactory and low-grade abnormal and high-grade abnormal cervical biopsies, a letter is sent to the provider at 12 months, according to the CCR's *Protocol of Actions* (Table 7.1). If follow-up information is not received within six months, a letter is sent directly to the woman. Various databases are searched for a current address when locating women.

In 2003, a total of 1016 follow-up letters pertaining to unsatisfactory and abnormal cervical biopsies were sent to providers and 710 letters were sent to women.

Table 7.3 displays the outcome of these reminder and follow-up letters, once again demonstrating the 'safety net' function of the CCR. There were 323 women who had either a Pap smear or biopsy within three months of the follow-up letter to their provider or themselves. This represents an increase of 49% from the previous year's figure. Although caution should be used when interpreting this dramatic increase, given biopsy follow-up letters were introduced in 2001, it does support the inclusion of biopsy follow-up letters into the CCR's plan of action in aiding the WACCPP's commitment to providing a safety net function.

Table 7.3 Outcome of reminder and follow-up biopsy letters sent by the CCR in 2003

Letter type	Follow-up within three months of letter		
	Number of letters sent**	Number	Percentage
'Unsatisfactory, Normal, Low-grade abnormality' to provider	896	190	21.2
'Unsatisfactory, Normal, Low-grade abnormality' to woman	642	107	16.7
'High-grade abnormality'* to provider	120	15	12.5
'High-grade abnormality'* to woman	68	11	16.2

* High-grade abnormalities include results classified as 'Inconclusive – raising the possibility of a high-grade lesion'.
** This refers only to follow-up letters generated in 2003. The number of letters shown as sent to women is less than the number of women who were overdue for follow-up, as reminder letters continued to be sent into 2004.

7.4 Introductory letter

In 2003, the CCR developed an introductory letter to women whose details are received for the first time. This letter is designed to educate women in the community of the CCR's role and the services it provides, thereby raising awareness of the WACCPP within the State, and raising awareness of the importance of regular cervical cancer screening.

The introductory letter was released into circulation in August 2003. Since its introduction, 1035 letters have been sent to women in WA for the 2003 calendar year. The impact of the introductory letter on the proportion of women opting off the CCR will be examined when more data is available. It should be noted that the proportion of women opting off is 1.2%.

8. Histopathology (biopsy) reports

The CCR collects information relevant to cervical biopsies. In 2003, a total of 9,576 women had at least one cervical biopsy. Corresponding figures for 2001 and 2002 were 7,923 and 9,452 respectively. Table 8.1 shows biopsies by report category for women of all ages.

Table 8.1 Biopsy report categories 2003

Biopsy report category	Number	Percentage
Unsatisfactory biopsy	86	0.8
Normal biopsy (no abnormality reported)	5,209	46.4
Low-grade intra-epithelial abnormality	3,558	31.7
High-grade intra-epithelial abnormality	2,170	19.3
Invasive malignancy	211	1.9
Total	**11,234**	**100**

Note: As some women had more than one biopsy in 2003, the number of biopsies recorded is higher than the number of women. This table includes results for women who have had a hysterectomy.

A normal result was reported for 46.4% of biopsies (compared with 46.8% in 2002), 31.7% showed the presence of a low-grade intraepithelial abnormality (30.3% in 2002) and 19.3% of biopsies revealed a high-grade intraepithelial abnormality (19.8% in 2002). Invasive malignancy was shown in 1.9% of biopsies (2.3% in 2002). Overall, these figures represent an increase in the number of biopsies performed, but a lower proportion of abnormalities found. Refer to Appendix B – Histology Codes.

9. Cytology and histopathology correlation

The CCR provides information about the correlation of cytology and histopathology results to assist with quality control in pathology laboratories. In 2003, 1,838 Pap smears were reported as having a high-grade intraepithelial lesion (CIN II, CIN III, or adenocarcinoma-in-situ) in WA. Of these cases, 1,649 (90%) had a follow-up biopsy within six months.

Table 9.1 shows that in 2003, in approximately 11.5% of cases in WA, the biopsies were negative or benign while 20.2% showed a low-grade intraepithelial abnormality. Sixty-three percent of histology reports confirmed the cytology finding of a high-grade intraepithelial abnormality. Invasive malignancy was present in 3.9% of cases. In 2002, 67% of histology reports in WA confirmed the cytology finding of a high-grade intraepithelial abnormality and invasive malignancy was present in 4.6% of cases. A comparison of WA and national figures is given in the table.

Table 9.1 Biopsy reports following high-grade intraepithelial abnormality on cytology 2003; comparison of WA and national figures

Biopsy report	WA number	WA percentage	*National (%)	*National range (%)
Unsatisfactory specimens	17	1.0	0.3	0.0 - 9.1
Negative/ benign findings	189	11.5	8.4	0.0 - 33.3
Low-grade intraepithelial abnormality	333	20.2	15.9	0.0 - 40
High-grade intraepithelial abnormality	1046	63.4	72.8	33.3 - 100
Invasive malignancy	64	3.9	2.2	0.0 - 20
Total	**1,649**	**100**		

* Includes national aggregate percentages and range taken from RCPA Cytopathology Quality Assurance Program 2004 for Performance Measure 3; Reliability of a cytological report of high-grade intraepithelial lesion (Data for January 1 to December 31, 2003).

9.1 Correlation between cytology and histopathology reports

The following data (Tables 9.2 and 9.3) refer to numbers of women rather than numbers of Pap smears or biopsies. Table 9.2 attempts to gauge the accuracy of cytological predictions of abnormality by correlating histology findings for the same woman within a six-month period. The figures in this table represent all women who had an abnormal Pap smear recorded at the CCR in 2003 with histological follow-up within six months. Proportions should be interpreted carefully, as some predictions represent small numbers. It should also be noted that Pap smears showing atypia and HPV effect are not normally followed up by biopsy.

A hierarchical ranking was used to select the most severe Pap smear for individual women and the most severe biopsy. Where both squamous and glandular abnormalities were present and at a level of at least severe dysplasia, both components are presented e.g. CIN III and adenocarcinoma-in-situ. Table 9.2 expresses the results of histology within a six-month time frame and so women followed up after that are not included in the table.

For high-grade squamous or combined squamous and glandular abnormalities on smears, the positive predictive value ([PPV] proportion of those with a predicted abnormality in whom the abnormality was confirmed on biopsy) was as follows:

- Inconclusive 32.4%
- CIN II 59.5%
- CIN III 84.5%
- CIN III + AIS 84.7%
- SCC 95.6%

The CCR does not collect information relating to colposcopy. Follow-up that may have involved this investigation alone is therefore not included in the following table. It is also recognised that women who do not appear to have had histological follow-up for high-grade predictions, may have been followed up outside of the six-month period. Histology findings with no preceding Pap smears have been excluded from the following data in Tables 9.2 and 9.3.

Table 9.2 Correlation between cytology and histopathology reports for squamous or combined squamous and glandular abnormalities on Pap smears with histology findings within six months

HISTOLOGY FINDINGS	CYTOLOGY PREDICTIONS																	
	ATYPIA		HPV		CIN I		INCONCLUSIVE Poss HSIL[1], Poss AIS[2]		CIN II		CIN III		CIN III + AIS[3]		SCC[4]		SCC[4] + AdenoCa Cx[5]	
	Total=9215[7]		Total=1278[7]		Total=2422[7]		Total=601[7]		Total=807[7]		Total=677[7]		Total=14[7]		Total=52[7]		Total=0[7]	
UNSATISFACTORY	9	0.8%	1	0.5%	9	0.6%	2	0.5%	5	0.7%	2	0.3%						
NORMAL	435	39.9%	56	27.3%	309	21.1%	140	31.9%	78	11.1%	40	6.5%	2	15.4%	1	2.3%		
ATYPIA	277	25.4%	27	13.2%	242	16.5%	81	18.5%	46	6.5%	22	3.6%						
HPV	139	12.7%	52	25.4%	161	11.0%	21	4.8%	25	3.6%	7	1.1%			1	2.3%		
CIN I	147	13.5%	55	26.8%	490	33.4%	53	12.1%	131	18.6%	25	4.0%						
CIN II	56	5.1%	9	4.4%	173	11.8%	62	14.1%	241	34.2%	104	16.8%						
CIN III	25	2.3%	5	2.4%	74	5.1%	66	15.0%	169	24.0%	387	62.5%	2	15.4%	13	29.6%		
CIN III + AIS[3]							2	0.5%	4	0.6%	10	1.6%	5	38.5%	1	2.3%		
AIS[3]					6	0.4%	5	1.1%	4	0.6%	5	0.8%	2	15.4%	1	2.3%		
SCC[4]					2	0.1%	2	0.5%	1	0.1%	13	2.1%			25	56.8%		
AdenoCa Cx[5]							2	0.5%			3	0.5%	2	15.4%	1	2.3%		
SCC[4]+AdenoCa Cx[5]																		
Other Carcinomas[6]	3	0.3%					3	0.7%			1	0.2%			1	2.3%		
Total with biopsy follow-up	1091	100.0%	205	100.0%	1466	100.0%	439	100.0%	704	100.0%	619	100.0%	13	100.0%	44	100.0%	0	0.0%
No biopsy follow-up recorded at CCR within six months of index smear	8124		1073		956		162		103		58		1		8		0	

Notes:
[1] Possible High-grade Squamous Intraepithelial Lesion
[2] Possible Adenocarcinoma-In-Situ
[3] Adenocarcinoma-In-Situ
[4] Squamous Cell Carcinoma
[5] Adenocarcinoma of cervix
[6] Endometrial, vaginal or ovarian cancer
[7] Total number of cases with and without biopsy follow-up

Table 9.3 Correlation between cytology and histopathology reports for glandular abnormalities on Pap smears with histology findings within six months

HISTOLOGY FINDINGS	CYTOLOGY PREDICTIONS							
	ATYPIA Total=193[6]		INCONCLUSIVE Possible AIS[1] Total=46[6]		AIS[2] Total=25[6]		AdenoCa Cx[4] Total=9[6]	
UNSATISFACTORY								
NORMAL	20	76.9%	12	36.4%	3	12.0%		
ATYPIA	3	11.5%	5	15.2%	2	8.0%		
HPV			3	9.1%				
CIN I	2	7.7%	3	9.1%				
CIN II								
CIN III			1	3.0%				
CIN III + AIS[2]			2	6.1%	2	8.0%	1	12.5%
AIS[2]			5	15.2%	16	64.0%		
SCC[3]								
AdenoCa Cx[4]			1	3.0%	2	8.0%	7	87.5%
SCC[3] + AdenoCa Cx[4]								
Other Carcinomas[5]	1	3.9%	1	3.0%				
Total with biopsy follow-up	26	100.0%	33	100.0%	25	100.0%	8	100.0%
No biopsy follow-up recorded at CCR within six months of index smear	167		13		0		1	

Notes:
[1] Possible Adenocarcinoma-In-Situ
[2] Adenocarcinoma-In-Situ
[3] Squamous Cell Carcinoma
[4] Adenocarcinoma of cervix
[5] Endometrial, vaginal or ovarian cancer
[6] Total number of cases with and without biopsy follow-up

Pap smears reporting glandular abnormalities are analysed in Table 9.3. As with Table 9.2, caution should be used when evaluating figures where small numbers are specified. Histological follow-up is not normally done for glandular atypia.

The positive predictive values (PPV) for diagnosis of high-grade glandular abnormalities were as follows:

- Inconclusive 30.3%
- AIS 80.0%
- AdenoCa Cx 100.0%

List of Abbreviations

ABS	Australian Bureau of Statistics
AdenoCa	Adenocarcinoma
AIHW	Australian Institute of Health and Welfare
AIS	Adenocarcinoma-In-Situ
CIN	Cervical Intraepithelial Neoplasia
CCR	Cervical Cytology Registry
Cx	Cervix
ERP	Estimated Resident Population
HPV	Human Papilloma Virus
HSIL	High-grade Squamous Intraepithelial Lesion
NCSP	National Cervical Screening Program
NHMRC	National Health and Medical Research Council
NPAAC	National Pathology Accreditation Advisory Council
PPV	Positive Predictive Value
Poss HSIL	Possible High-grade Squamous Intraepithelial Lesion
Poss AIS	Possible Adenocarcinoma-In-Situ
RCPA	Royal College of Pathologists of Australasia
SCC	Squamous Cell Carcinoma
SLA	Statistical Local Area
WA	Western Australia
WACCPP	WA Cervical Cancer Prevention Program

Glossary

Age-standardised rates: Calculated by the direct method and represent a summation of weighted age-specific rates (weighting being determined by the relative proportion of the population in each age group compared with the proportion in the Australian Standard Population).

Age-specific rates: Based on five-year age intervals and are calculated by dividing the number of cases by the population of the same sex and age group.

Atypia or minor atypia: Very slight changes in cells for which the cause is not obvious. Often these changes are due to inflammation and sometimes due to HPV effect.

CIN (Cervical intraepithelial neoplasia): Present when normal surface epithelium (tissue) is replaced by neoplastic (abnormal) cells.

CIN I (Mild dysplasia): Present when the lowest layer of tissue is replaced by abnormal cells.

CIN II (Moderate dysplasia): Present when the lowest and middle layers of tissue are replaced by abnormal cells.

CIN III (Severe dysplasia/ carcinoma-in-situ): Present when the whole thickness of tissue is affected.

Country: Rural and remote regions of WA.

High-grade abnormality - Pap smear: CIN II; CIN III; suspicious of microinvasion or invasion; squamous carcinoma; adenocarcinoma-in-situ; suspicious of adenocarcinoma of the cervix; or adenocarcinoma.

HPV effect: Cellular changes due to Human Papilloma Virus.

Incidence rate: The number of new cases of disease during a given time period in a specified population, divided by the population at risk.

Inconclusive - Pap smear: Cytological findings raising the possibility of a high-grade lesion; accurate diagnosis is not possible.

Low-grade abnormality - Pap smear: Mild cellular changes including minor squamous atypia, HPV effect alone; CIN I; or atypical endocervical cells.

Mortality rate: The number of deaths during a given time period in a specified population, divided by the population at risk. The mortality rate in this report is a 'cause-specific mortality rate', showing deaths from cancer of the cervix.

Positive Predictive Value (PPV): Percentage of cytological predictions of a given cytological category that are confirmed to be a high-grade lesion on histology. The denominator is the number of cases with biopsy follow-up.

Unsatisfactory - Pap smear: The cervical cells cannot be assessed sufficiently to give an accurate report.

Appendix A – Cytology Codes

C Report Category[1]	S Squamous Cell	W Wart Virus Changes	E Endocervical	M Endometrial	O Other
CØ Unsatisfactory.	SØ Unsatisfactory for evaluation e.g. poor cellularity, poor preservation, cell detail obscured by inflammation/ blood staining, degenerate cells.	WU Due to the unsatisfactory nature of the smear, no assessment has been made[2].	EU Due to the unsatisfactory nature of the smear, no assessment has been made[2].	MU Due to the unsatisfactory nature of the smear, no assessment has been made.	OU Due to the unsatisfactory nature of the smear, no assessment has been made.
C1 Normal.	S1 Cell numbers and preservation satisfactory. No abnormality or only reactive changes.	W1 Absent.	E- Not applicable; vault smear; previous hysterectomy. EØ No endocervical cells. E1 Endocervical cells present. No abnormality or only reactive changes.	M1 No endometrial cells. M2 Endometrial cells present (cytologically benign).	O1 No other abnormal cells.
C2 Low-grade epithelial abnormality[3].	S2 Mild cellular changes including minor squamous atypia, HPV effect alone. S3 Mild dysplasia (CIN I).	W2 Possibly present. W3 Present (Koilocytosis). See stringent criteria as outlined by NHMRC guidelines.	E2 Atypical endocervical cells.		
C3 Inconclusive[4].	S4 Cytological findings raising the possibility of a high-grade lesion: accurate diagnosis is not possible.		E3 Cytological findings raising the possibility of a high-grade lesion (including glandular dysplasia); accurate diagnosis is not possible.	M4 Atypical endometrial cells of uncertain significance.	O2 Abnormal cells present: other.
C4 High-grade epithelial abnormality.	S5 Moderate dysplasia (CIN II). S6 Severe dysplasia/ carcinoma-in-situ (CIN III). S7 Suspicious of microinvasion or invasion. S8 Squamous carcinoma.		E4 Adenocarcinoma-in-situ. E5 Suspicious of adenocarcinoma of the cervix. E6 Adenocarcinoma.	M6 Abnormal endometrial cells suggesting atypical hyperplasia or malignancy. M7 Adenocarcinoma.	O3 Malignant cells present: ovary. O4 Malignant cells present: vagina. O5 Malignant cells present: metastatic malignancy. O6 Malignant cells present: uncertain or unknown origin.

[1] The Report Category (C code) is provided by laboratories. The CCR system also assigns a report category or state code based on an algorithm of S, W, E, M and Other cell codes. The state code determines the protocol of actions.

[2] If the smear is unsatisfactory (i.e. CØ, SØ) but an assessment of warts and endocervical cells is possible, then they should be coded accordingly.

[3] "Low-grade epithelial abnormality" includes CIN I, HPV effect alone, and atypia short of dysplasia.

[4] "Inconclusive" refers to: (a) cytological findings which raise the possibility of a high-grade lesion, in squamous and endocervical cells, but where accurate diagnosis is not possible.
(b) atypical endometrial cells of uncertain significance.

Cytology Recommendation Codes

R	Recommendation Code
RØ	No recommendation.
R1	Repeat smear 2 years.
R2	Repeat smear 12 months.
R3	Repeat smear 6 months.
R4	Repeat smear 3 months.
R5	Repeat smear 4 weeks.
R6	Colposcopy/ biopsy recommended.
R7	Endometrial curettage recommended.
R8	Already under gynaecological management.
R9	Refer to specialist.

Cytology Infection Codes

I	Infection Code
IU	Due to the unsatisfactory nature of the smear, no assessment has been made.
I1	Normal flora/doderleins.
I2	Coccoid flora.
I3	Mixed bacteria.
I4	Gardnerella/clue cells.
I5	Monilia/candida.
I6	Trichomonads.
I7	Herpes virus.
I8	Leptothrix.
I9	Actinomyces.
IA	Other e.g. chlamydia, adenovirus, cytomegalovirus, Donovan bodies.

Appendix B – Histology Codes

C Report Category[1]	S Squamous Cell	W Wart Virus (HPV Effect)	E Endocervical	M Endometrial	O Other
CØ Unsatisfactory[1].	SØ Unsatisfactory for evaluation[1].	WU Due to the unsatisfactory nature of the biopsy, no assessment has been made[1].	EU Due to the unsatisfactory nature of the biopsy, no assessment has been made[1].	MU Because the endometrial specimen appears to be unsatisfactory, no CCR code has been assigned. See notes.	OU Because the vaginal specimen appears to be unsatisfactory, no CCR code has been assigned. See notes.
C1 Normal (no abnormality reported).	S- Not applicable (no squamous epithelium collected)[2]. S1 Native squamous epithelium; squamous metaplasia; immature squamous metaplasia with or without inflammatory or reactive changes; atrophy.	W- Not applicable (no squamous epithelium collected)[2]. W1 Absent.	E- Not applicable[2]. E1 Normal; inflammatory; reactive changes; endocervical polyp. E2 Mild nuclear changes (probably reactive).	M- Not applicable. M1 Normal; inflammatory; reactive; hormonal changes. M2 Endometrial hyperplasia.	O- Not applicable. O1 Normal vaginal tissues; inflammatory; reactive; hormonal changes.
C2 Low-grade intraepithelial abnormality.	S2 Atypia; atypical immature squamous metaplasia. S3 HPV effect. S4 Mild dysplasia (CIN I).	W2 Suggestive/possible. W3 Definite/consistent.		M3 Endometrial atypical hyperplasia (mild).	O2 HPV effect in vaginal tissues. O3 Vaginal intraepithelial dysplasia (VAIN I).
C3 High-grade intraepithelial abnormality.	S5 Moderate dysplasia (CIN II). S6 Severe dysplasia/ carcinoma-in-situ (CIN III).		E3 Endocervical dysplasia. E4 Adenocarcinoma-in-situ.	M4 Endometrial atypical hyperplasia (moderate to severe).	O4 Vaginal intraepithelial neoplasia (VAIN II - VAIN III).
C4 Invasive malignancy.	S7 Microinvasive squamous cell carcinoma. S8 Invasive squamous cell carcinoma.		E5 Microinvasive adenocarcinoma. E6 Invasive adenocarcinoma. E7 Adenosquamous carcinoma (cervix). E8 Carcinoma of cervix (other).	M5 Endometrial carcinoma (all types). M6 Endometrial stromal tumour. M7 Mixed mullerian tumour.	O5 Vaginal squamous cell carcinoma. O6 Vaginal adenocarcinoma. O7 Ovarian carcinoma (all types). O8 Metastatic tumour. O9 Other malignancy.

[1] Unsatisfactory cervical biopsies should be coded: CØ, SØ, WU, EU, M-, O-. If the biopsy is unsatisfactory (i.e. CØ, SØ) but an assessment of warts and endocervical cells is possible, then they can be coded accordingly.

[2] Use of S-, W-, E- codes applies to specimens other than cervical biopsies (e.g. endometrial curettage).

Endometrial codes: MU should only be used if the type of specimen was T5 (endometrial curettage), T6 (hysterectomy) or TS (subtotal hysterectomy) and it was not possible to assign a CCR endometrial code, because the specimen appeared to be unsatisfactory or the findings of the endometrial histology were not evident from the report.

Other Codes: OU should only be used if the type of specimen was T7 (vaginal biopsy) and it was not possible to assign a CCR "other" code because the specimen appeared to be unsatisfactory.

Histology Specimen Types

T	Specimen Type
TA	Amputated cervix.
TP	Cervical polyp.
TS	Subtotal hysterectomy.
TØ	Not disclosed.
T1	Punch biopsy of cervix.
T2	Endocervical curettage.
T3	Large loop excision of TZ.
T4	Cone biopsy.
T5	Endometrial curettage.
T6	Hysterectomy.
T7	Vaginal biopsy.
T8	Other pelvic tissues.
T9	Metastatic sites.

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