



Government of **Western Australia**
Department of **Health**

Cervical Cytology Registry (CCR) of Western Australia

2005 Statistical Report

WA Cervical Cancer Prevention Program



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Suggested Citation:

WA Cervical Cancer Prevention Program 2008, *Cervical Cytology Registry: 2005 Statistical Report*, Department of Health, Government of Western Australia, Perth.

This statistical report was prepared for the Department of Health by the WA Cervical Cancer Prevention Program.

Published by the Department of Health, Government of Western Australia

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Acknowledgements

The WA Cervical Cancer Prevention Program (WACCPP) wishes to thank Health System Support, Department of Health Western Australia (WA) – in particular the contributions of Grace Yun and Samuel Smith (Analysis and Performance Reporting) and Dr Tim Threlfall (Information Collection and Management) for their advice, information and ongoing support. We would also like to thank Dr Greg Sterrett (PathWest Laboratory Medicine WA) and Dr Judy Straton for their advice and support.

We would like to acknowledge the contribution of the Cervical Cytology Registry (CCR) staff, both present and past, and the broader WACCPP team, for their roles in the continued success of the CCR.

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.

WA Cervical Cancer Prevention Program (as at June 2008)

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Summary

This report is the tenth 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. **The target population for the WA Cervical Cancer Prevention Program (WACCPP) is women aged 20 to 69 years. All data in this report is based on this age range, unless specified otherwise.** For the purposes of comparison in this report, the retrospective time period utilised is 1996-2005.

Incidence and mortality

- The number of new cases of cervical cancer in WA women aged 20-69 years has decreased from 67 new cases in 2004 to 63 detected in 2005. The number of new cases for the period 1996-2005 has been fluctuating, from the lowest point of 49 new cases in 1999 to the highest point of 80 cases in 1998.
- The number of deaths in WA women aged 20-69 years due to cervical cancer has also fluctuated for the years 1996 to 2005, from the highest point of 23 deaths in 1996 to the lowest point of 11 deaths in 2004. There were 15 deaths in 2005.
- Since 1996, age-standardised incidence and mortality numbers have fluctuated in both metropolitan and country target populations of WA.
- Incidence rates of cervical cancer were 1.9 times higher and mortality rates 3.5 times higher for Indigenous women compared with non-Indigenous women for the years 1996-2005.

Participation

- In 2005, 203,808 women in the target population of WA participated in cervical screening. This represented an increase of 10,784 from 2004 (193,024). The trend for numbers of women screening in previous years has been fluctuating, from the highest point of 209,786 in 1998 to the lowest point of 192,739 in 1996.
- The percentage of women who had been screened in a two-year period increased from 59.7% in 2003-04 to 60.4% in 2004-05. This is the first increase since the 1997-98 period.
- In the 2004-05 period, women living in metropolitan areas of WA had a cervical screening participation rate 2.3% 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 3.5% above women living in metropolitan areas of WA.
- There has been a general declining trend in cervical screening participation rates for women of all ages for the years 1996-2005, except in older women (over 55 years).

Early re-screening

- The *National Policy on Screening to Prevent Cancer of the Cervix (1991)* states that the recommended cervical screening interval is two years following a normal Pap smear result. Of a cohort of women screened in February 2004 who had a normal Pap smear result, 18.5% had a subsequent smear within 21 months. The previous year's figure was 20.9%.

Abnormalities

- In 2005, 89.9% of smears were reported as normal, 7.0% 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 high-grade abnormality rates were highest for women aged between 20-29 years than any other age group in 2005. This is consistent with figures from 2004.

Follow-up

- In 2005, 89,303 reminder letters were sent to women following a normal smear which represented an 80% increase from 2004. The increase can largely be attributed to a reduction in the follow-up interval from 36 months to 30 months. Of these women 21.9% had a follow-up smear within three months of the reminder letter being sent.
- In 2005, 4,340 follow-up letters pertaining to unsatisfactory and abnormal Pap smears were sent to providers and 2,274 letters were sent to women.

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 (NCSP).

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 cervical test 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 2005, there were approximately 2.8 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 2005.

The CCR has produced Statistical Reports since 1996. The data presented in this report refers to the 2005 calendar year unless otherwise specified. Nine two-year time periods are utilised for trend data (1996-97, 1997-98, 1998-99, 1999-2000, 2000-01, 2001-02, 2002-03, 2003-04, 2004-05).

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 cervical screening test results in order to assist pathologists and cytologists in the reporting of current test 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 NCSP.
- To assist with planning and evaluation of Health Promotion and Recruitment strategies for the WACCPP.

3. Cervical cancer in WA

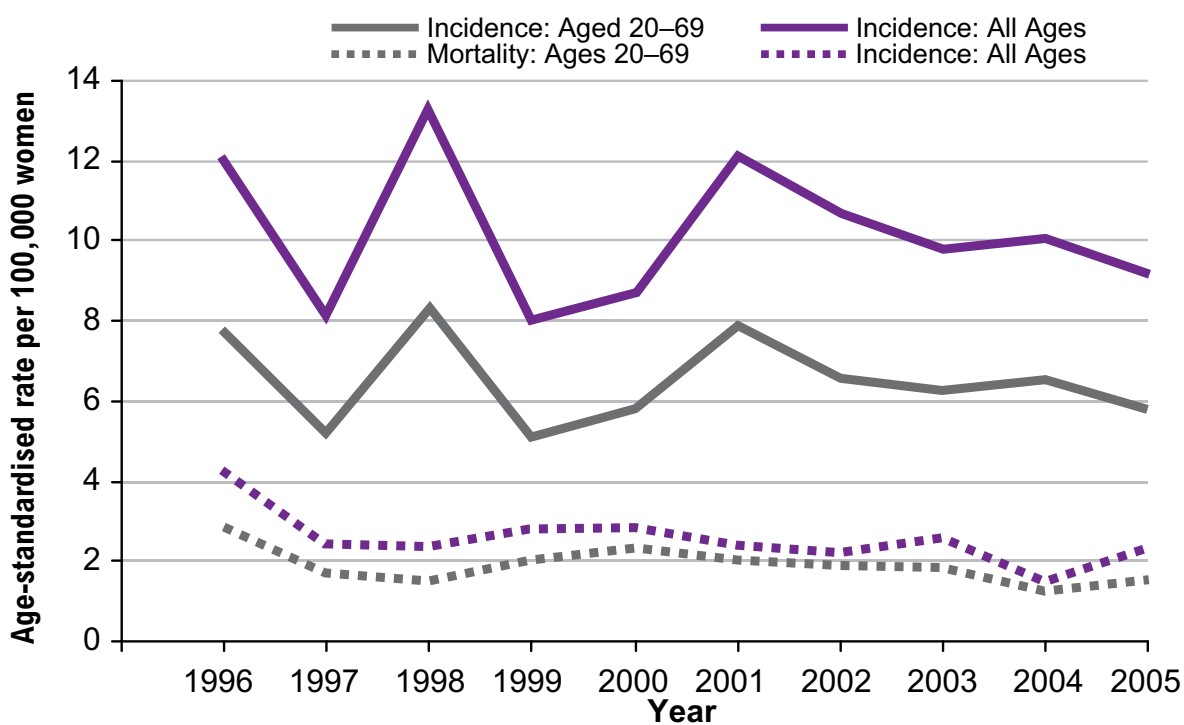
The aim of the WACCPP is to improve the health and well-being of Western Australian women by reducing incidence and mortality from cervical cancer through the implementation of population based cervical screening strategies.

Note: The number 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 age-standardised incidence rate of cervical cancer over the past ten years (1996–2005). 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 number 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 age-standardised cervical cancer mortality rate has fluctuated, but the general trend has been downwards, with a highest point of 4.2 per 100,000 (23 deaths) for women in the target age group 20-69 years and 2.7 per 100,000 women (30 deaths) for women of all ages in 1996 to the lowest point of 1.5 per 100,000 women (11 deaths) for women in the target age group 20-69 years and 1.3 per 100,000 women (22 deaths) for women of all ages in 2004.

Figure 3.1 Age-standardised cervical cancer incidence and mortality rates WA 1996-2005

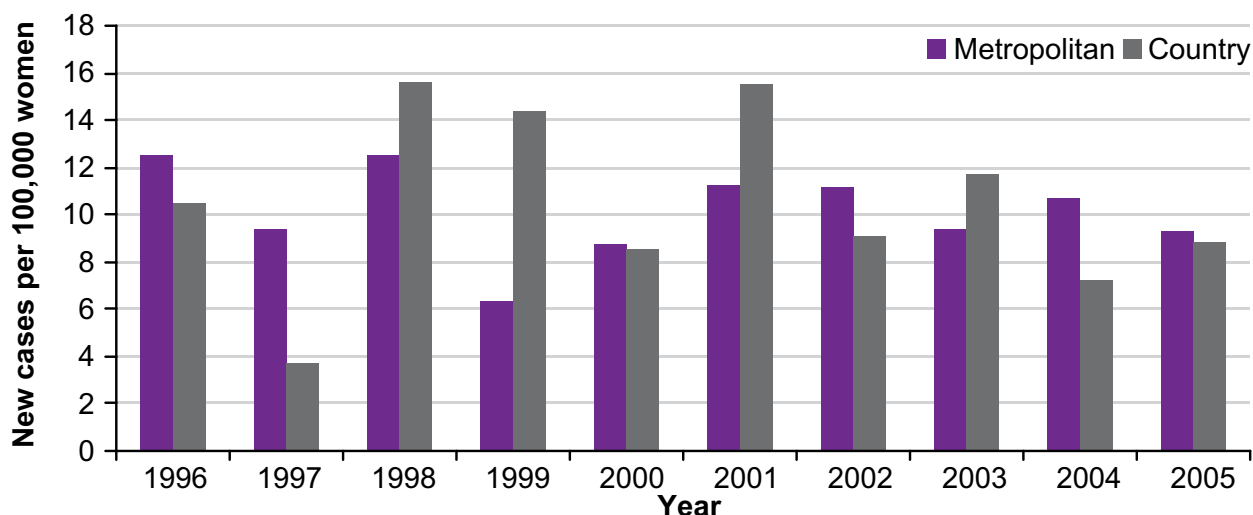


Note: Rates are expressed per 100,000 women and age-standardised to the World population (Segi 1960).

Source: WA Cancer Registry, Department of Health WA (unpublished data current as at January 2008).

Figure 3.2 indicates women from country areas experienced higher age-standardised incidence rates of cervical cancer than their metropolitan counterparts for the years 1998, 1999, 2001 and 2003. It should be noted again that the actual number of cases is small, and small changes in these numbers can lead to large fluctuations in age-standardised rates.

Figure 3.2 Age-standardised incidence rates of cervical cancer in women aged 20-69 years (metropolitan and country areas of WA) 1996–2005

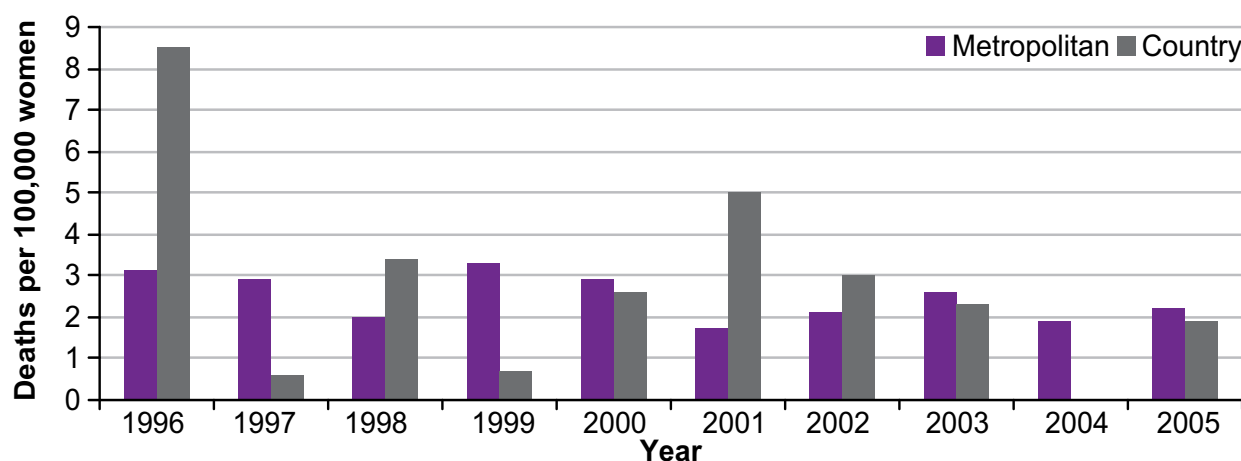


Note: Rates are expressed per 100,000 women and age-standardised to the World population (Segi 1960).

Source: WA Cancer Registry, Department of Health WA (unpublished data current as at January 2008).

Age-standardised mortality rates from cervical cancer for both metropolitan and country target populations have generally fluctuated over the past ten years (Figure 3.3). These fluctuations were particularly apparent in country areas.

Figure 3.3 Age-standardised mortality rates from cervical cancer in women aged 20-69 years (metropolitan and country areas of WA) 1996-2005

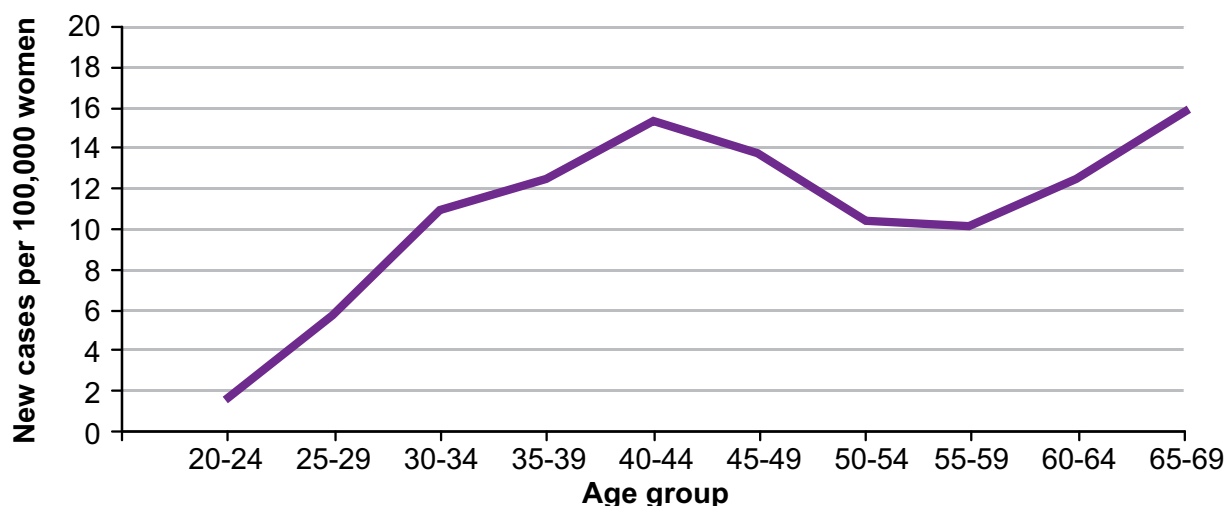


Note: Rates are expressed per 100,000 women and age-standardised to the World population (Segi 1960).

Source: WA Cancer Registry, Department of Health WA (unpublished data current as at January 2008).

Figures for the years 1996-2005 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 age-specific incidence rate of cervical cancer was higher among women aged 40-44 years and those aged 65-69 years for the years 1996-2005.

Figure 3.4 Age-specific incidence rates of cervical cancer in women aged 20-69 years WA 1996-2005

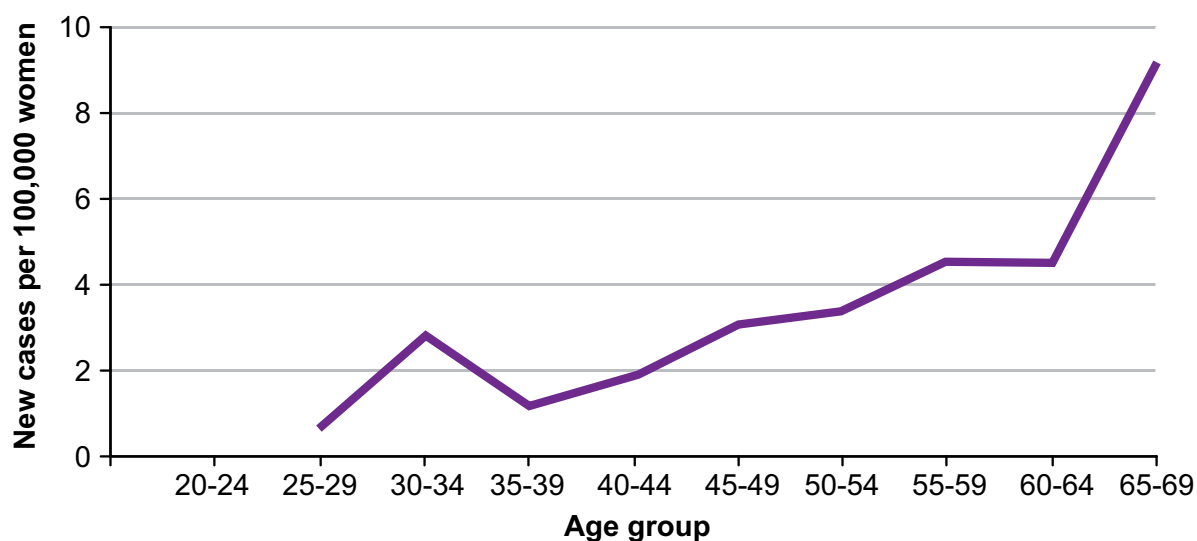


Note: Rates are expressed per 100,000 women.

Source: WA Cancer Registry, Department of Health WA (unpublished data current as at January 2008).

Figure 3.5 shows that amongst the target population of women (aged 20-69 years) the highest age-specific mortality rate was in women aged 65-69 years (9.2 per 100,000 women). This age group accounted for 29 deaths out of the total of 156 deaths in the target population for WA for the years 1996-2005.

Figure 3.5 Age-specific mortality rates from cervical cancer in women aged 20-69 years WA 1996-2005



Note: Rates are expressed per 100,000 women.

Source: WA Cancer Registry, Department of Health WA (unpublished data current as at January 2008).

In WA, cervical cancer incidence rates were 1.9 times higher and mortality rates 3.5 times higher for Indigenous women aged 20-69 years compared with non-Indigenous women, for the years 1996-2005.¹ The WACCPP has a dedicated Indigenous Programs Officer who implements culturally safe and effective strategies to improve cervical screening uptake amongst Indigenous women of WA.

¹ WA Cancer Registry, Department of Health WA (unpublished data current as at January 2008).

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) guidelines², 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 214,390 cytology (Pap smears) tests were performed in 2005 with 203,808 women screened during the year (Table 4.1).

Table 4.1 Number of tests performed and the number of individual women screened 1996-2005

Year	Number of tests performed	Number of women screened
1996	208,127	192,739
1997	209,314	194,979
1998	222,978	209,786
1999	208,211	196,311
2000	208,451	197,433
2001	204,459	193,871
2002	207,205	195,504
2003	209,784	197,649
2004	203,955	193,024
2005	214,390	203,808

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.

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

Following the increase which peaked in 1998, there was a decline in 1999 in the number of Pap smears performed and the number of women screened. A gradual improvement was then experienced in 2000. This was followed by another decrease in 2001. However, from this point onwards, a gradual increase occurred up to 2003. After a lull in 2004, the number of screenings in 2005 increased to the second highest number of screenings recorded. The variation in the numbers from year to year highlights difficulties around sustaining and increasing screening participation.

Several factors influence the number of tests performed and recorded in the Register. Women who choose not to have their results available to the CCR (opt off) are omitted from these figures and it should be noted that in 2005, the proportion of women opting off is <0.1%. 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 Postal Areas in WA by five-year age groups, adjusted for hysterectomy using ABS 2001 National Health Survey for 1996-2005 ERP*. The proportion of women screened in the two-year periods between 1996-97 and 2004-05 was calculated using an average of yearly ERP data.

WA screening participation rates are comparable with national rates. In the 2004-05 period the participation rate in WA was marginally lower (60.4%) than the national cervical screening rate of 61.0%³. 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.

³ Caution should be used when interpreting WA participation rates against national rates. WA participation rates are based on all women with an address in WA at the time of the smear. However, the majority of states and territories (except Victoria and ACT) provide participation rates to the AIHW based on all women who were screened in the particular state or territory. Hence, it is acknowledged that this may lead to an over-estimation of numbers of women screened because of double counting of some women between states.

Table 4.2 Estimated percentage of women with an intact uterus who had at least one Pap smear for the two-year periods between 1996-97 and 2004-05: comparison of WA with Australia as a whole

Year	Percentage of women screened	
	WA	Australia
1996-97	63.8	61.0
1997-98	64.2	62.6
1998-99	63.9	63.4
1999-2000	61.6	61.3
2000-01	61.4	61.0
2001-02	60.8	61.0
2002-03	60.5	60.7
2003-04	59.7	60.7
2004-05	60.4	61.0

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, 2002–03, 2003–04, 2004–05.

In keeping with the results seen in the number of women screened (Table 4.1)⁴, 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 4.3). Between the 1997-98 period and 2004-05 period cervical screening participation rates in WA have experienced a decline of 3.8%.

The overall participation rates for cervical screening have marginally increased from the two-year period 2003-04 to the period 2004-05 (Table 4.3). The participation rate among women under the age of 30 years has generally declined from 1996-97 to 2004-05. The participation rate for women aged 65-69 has increased over the same time period. Participation rates generally fluctuated in older women, with women aged 60-69 years having the lowest rate (51.2%) compared to the other age groups. Women aged 40-49 years had the highest rate (64.6%).

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.

⁴ 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.

Table 4.3 Estimated percentage of women with an intact uterus who had at least one Pap smear for the two-year periods between 1996-97 and 2004-05

Age Group	% women screened by age									% change from 1996-97 to 2004-05
	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	
20-24	55.9	55.5	54.1	50.1	50.8	51.8	50.5	49.7	50.7	-5.2
25-29	67.0	67.8	66.6	62.1	61.8	61.4	59.9	58.6	58.1	-8.9
30-34	69.0	70.4	70.1	66.9	66.1	64.5	64.0	63.0	63.0	-6.0
35-39	68.2	69.8	69.2	66.6	66.2	64.6	64.5	63.4	64.4	-3.8
40-44	65.7	66.5	66.6	65.2	64.9	64.1	64.4	63.2	63.9	-1.8
45-49	64.3	65.6	65.6	64.4	64.4	63.9	64.8	64.3	65.3	1.0
50-54	62.6	62.4	62.8	62.8	62.1	61.4	61.5	61.0	62.2	-0.4
55-59	59.4	63.0	63.3	62.6	62.8	62.7	63.0	62.8	64.5	5.1
60-64	51.5	54.7	55.9	55.5	55.4	54.1	54.0	53.6	54.0	2.5
65-69	40.5	44.8	46.5	45.9	46.6	46.6	47.5	47.4	48.4	7.9
20-69	63.0	64.2	63.9	61.6	61.4	60.8	60.5	59.7	60.4	-2.6

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

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 4.4 Estimated percentage of women with an intact uterus who had at least one Pap smear for the two-year period 2004-05 and the three-year period 2003-05

Age group	% women screened	
	2004-05	2003-05
20-24	50.7	64.0
25-29	58.1	73.3
30-34	63.0	77.8
35-39	64.4	77.3
40-44	63.9	76.3
45-49	65.3	76.4
50-54	62.2	71.4
55-59	64.5	72.1
60-64	54.0	60.9
65-69	48.4	53.7
20-69	60.4	72.2

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 smear⁵. 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).

It can be seen from Table 4.4 that a high proportion of women aged 25 to 60 years were screened at least once in the three-year period 2003-05. 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 November 2003, a system was introduced whereby a GP could submit a PIP Data Request Form and receive from the CCR 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 directly or through the relevant GP Divisional Representative, according to 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.

The number of women identified on PIP lists for GPs in 2003, 2004 and 2005 is shown in Table 4.5. Note that the first lists were sent in November 2003. Also shown is the number and percentage of women who were followed up within three months of their name being sent to a general practitioner who was their last known care provider. The high number of women identified for PIP in 2004 can be attributed to increased awareness of this initiative at the outset of the incentive program.

Table 4.5 Outcome of PIP letters sent by the CCR in 2003, 2004 and 2005

Year	Number of women	Follow-up within three months of letter	Percentage
2003	2,188	112	5.1
2004	13,869	604	4.4
2005	1,045	51	4.9

4.3 Comparison of metropolitan and country participation

Table 4.6 and Figure 4.1 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 WA⁶.

⁵ *Guidelines for the Management of Asymptomatic Women with Screen Detected Abnormalities, National Health and Medical Research Council (NHMRC) 2005.*

⁶ *Postcode Allocation, Epidemiology, Health Information Centre, Department of Health WA.*

Table 4.6 demonstrates that for all nine two-year 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. This difference between metropolitan and country areas has reached an all time high in the 2004-05 period, where a 2.3% difference in participation rates was reported.

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

Table 4.6 Estimated percentage of women with an intact uterus who had at least one Pap smear for the two-year periods between 1996-97 and 2004-05: comparison of the Perth metropolitan area with country WA

Age group		% women screened								
		1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005
20-24	Metro	55.3	54.4	53.2	49.4	50.3	51.2	49.8	49.4	50.1
	Country	60.8	61.7	60.1	54.8	54.1	54.6	54.1	52.7	53.6
25-29	Metro	67.8	68.2	67.1	62.6	62.2	61.6	60.1	59.1	58.5
	Country	66.2	67.8	66.1	61.5	60.6	59.8	58.9	57.6	56.0
30-34	Metro	70.1	71.4	71.4	68.4	67.1	64.9	64.5	63.9	63.7
	Country	65.9	67.6	66.0	62.2	62.5	61.6	60.8	60.4	58.9
35-39	Metro	69.1	70.4	69.8	67.1	67.0	64.9	64.6	64.3	64.9
	Country	64.9	67.7	66.9	64.3	63.0	61.9	62.1	60.1	60.1
40-44	Metro	66.6	67.2	67.1	65.6	65.3	64.0	64.1	63.1	63.7
	Country	61.5	63.4	63.9	62.9	62.8	62.4	63.1	62.6	61.8
45-49	Metro	64.8	65.9	66.0	64.6	65.0	64.3	64.7	64.6	65.3
	Country	61.5	63.3	62.3	61.6	60.3	60.2	62.5	62.2	61.6
50-54	Metro	63.2	62.8	63.1	63.2	62.6	61.6	61.8	61.8	62.5
	Country	59.3	59.6	59.7	59.5	58.3	57.9	57.9	57.3	57.7
55-59	Metro	59.4	63.0	63.5	62.7	62.9	62.9	63.0	63.1	64.5
	Country	58.8	61.8	61.1	60.8	61.1	59.2	60.3	60.5	60.0
60-64	Metro	51.1	54.4	55.6	55.1	55.2	54.0	53.4	53.5	53.7
	Country	52.7	55.4	55.9	56.0	55.1	52.5	54.4	53.2	51.8
65-69	Metro	40.7	44.8	46.4	45.9	46.9	46.3	47.2	47.2	48.2
	Country	39.1	44.3	46.4	45.3	45.1	46.6	47.2	47.8	47.7
20-69	Metro	63.4	64.4	64.1	61.8	61.7	60.8	60.4	59.9	60.3
	Country	61.9	63.8	63.0	60.4	59.8	59.2	59.4	58.6	58.0

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

Figure 4.1 Estimated percentage of women with an intact uterus who had at least one Pap smear for the two-year period 2004-05: comparison of the Perth metropolitan area with country WA

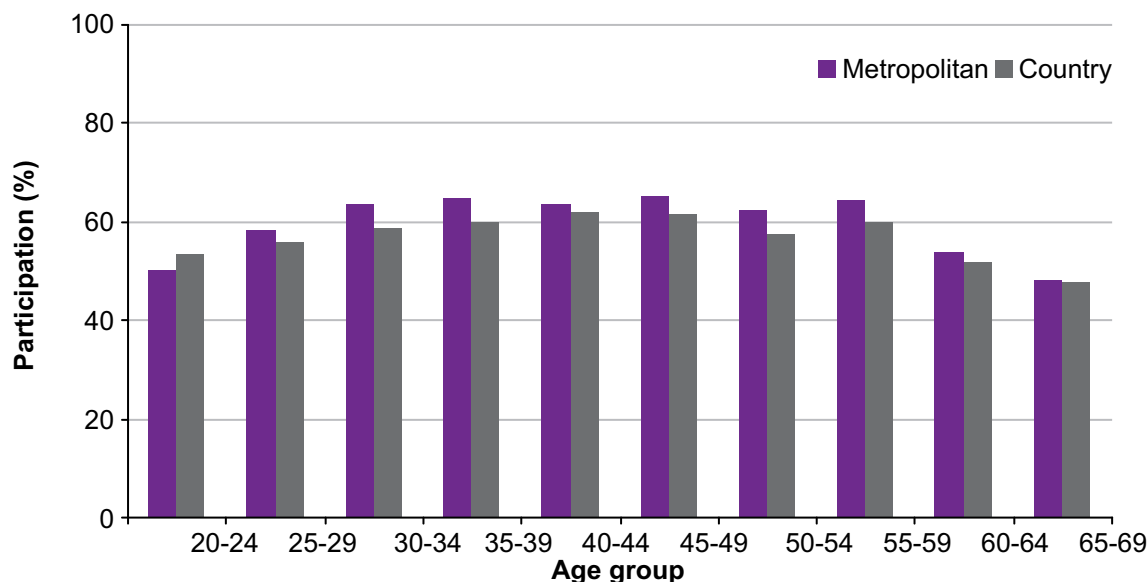
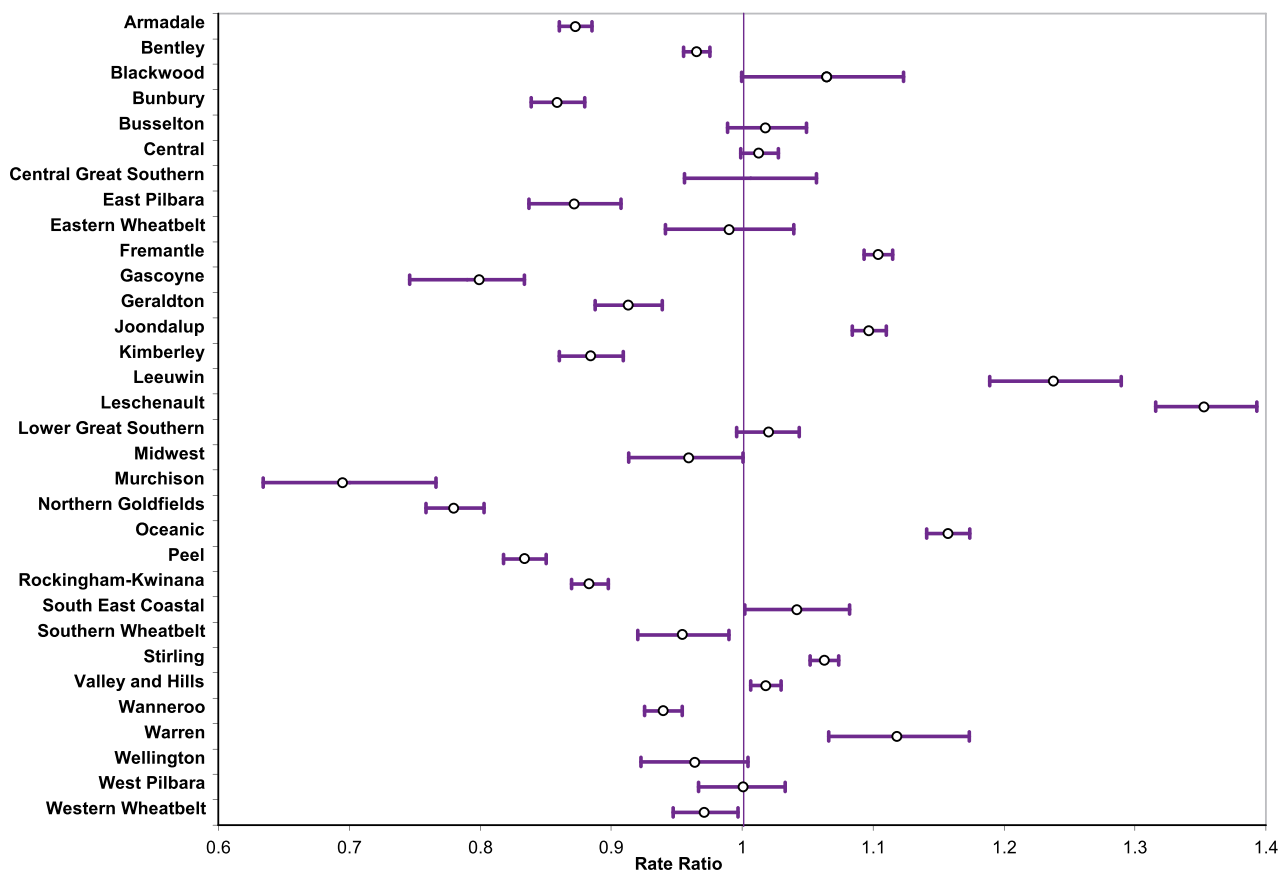
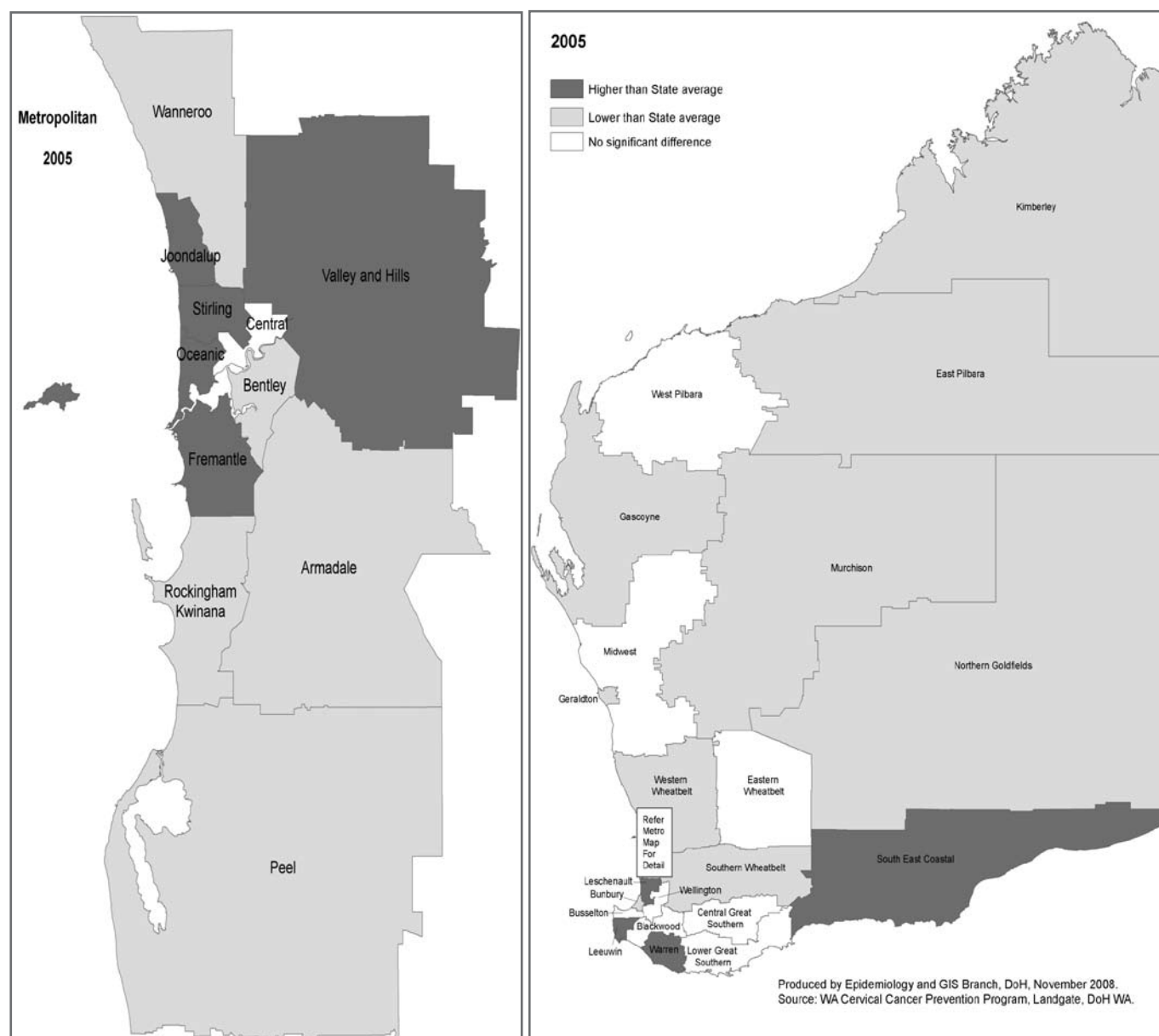


Figure 4.2 Rate ratios of cervical screening participation by Health District compared with WA 2004-05



Note: Bars on graph represent 95% confidence intervals. Bars completely to the right of the vertical line represent Health District participation rates that are significantly higher than the State rate. Bars completely to the left of the vertical line represent Health District participation rates that are significantly lower than the State rate.

Figure 4.3 Geographical view of cervical screening participation by Health District compared with WA 2004-05



From Figure 4.2 and 4.3 it can be seen that Armadale, Bentley, Bunbury, East Pilbara, Gascoyne, Geraldton, Kimberley, Murchison, Northern Goldfields, Peel, Rockingham-Kwinana, Southern Wheatbelt, Wanneroo 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 Fremantle, Joondalup, Leeuwin, Leschenault, Oceanic, South East Coastal, Stirling, Valley and Hills, and Warren Health Districts experienced statistically significant higher rates than the State rate.

Figure 4.3 also highlights Health Districts with screening rates that were not significantly different to the State rate. In 2005 these were Blackwood, Busselton, Central, Central Great Southern, Eastern Wheatbelt, Lower Great Southern, Midwest, Wellington and West Pilbara.

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 2004).

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 (i.e. no repeat test)	11,100	80.7
1	2,547	18.5
2	101	0.7
3	4	<0.1
4	1	<0.1
5 or more	0	0.0
Total	13,753	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 80.7% of women did not have subsequent smears performed over the selected 21-month period meaning 18.5% of women were re-screened early. The previous year's figures were 79.1% and 20.9% respectively. In both 2003 and 2004 approximately 1% of the early re-screened women exceeded one repeat smear. In 2005 this is 0.8%.

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. 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 (Pap smear) 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 2005, 89.9% of smears were reported as normal, 7.0% 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 clinicians investigating women with abnormalities.

Table 6.1 Cytology report categories 2005

Cytology report category	Number	All laboratories (%)	Range (%)
Unsatisfactory smear	3,863	1.8	1.2 - 3.1
Normal smear	192,782	89.9	48.0 - 92.4
Low-grade epithelial abnormality	15,053	7.0	5.3 - 43.0
Inconclusive (possible high-grade lesion)	1,027	0.5	0.3 - 1.6
High-grade epithelial abnormality (CIN II or higher)	1,665	0.8	0.5 - 6.2
Total	214,390	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 1.8%, which is in accordance with the *Royal College of Pathologists of Australasia (RCPA)* performance standards⁷. The percentage of abnormal squamous cell categories (includes all categories from mild cellular changes up to squamous cell carcinoma) reported was 8.0%. In 2004 this figure was 8.1%. The proportion of smears with mild cellular changes had been increasing in recent years, however a marginal decline is noted from 2003 (5.9%) to 2004 (5.7%) to 2005 (5.6%).

⁷ *Royal College of Pathologists of Australasia (RCPA) Performance Standards for Gynaecological Cytology.*

Table 6.2 Squamous cell categories 2005

Squamous cell category	Number	All laboratories (%)	Range (%)
Unsatisfactory	3,863	1.8	1.2 - 3.1
No abnormal squamous cells	193,145	90.1	48.2 - 92.6
Mild cellular changes	12,078	5.6	4.0 - 35.2
Mild dysplasia (CIN I)	2,780	1.3	0.7 - 7.8
Inconclusive (possible high-grade lesion)	916	0.4	0.3 - 1.4
Moderate dysplasia (CIN II)	842	0.4	0.3 - 2.2
Severe dysplasia/carcinoma-in-situ (CIN III)	715	0.3	0.1 - 3.3
Suspicious of microinvasion or invasion	30	<0.1	0.0 - 0.2
Squamous cell carcinoma	21	<0.1	0.0 - 0.4
Total	214,390	100	

Table 6.3 Endocervical cell categories 2005

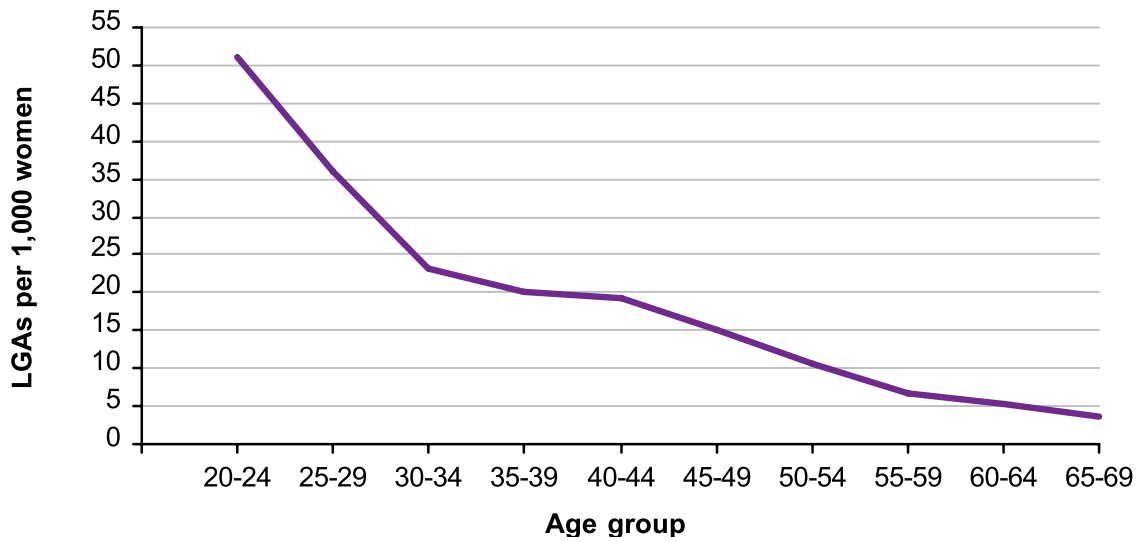
Endocervical cell category	Number	All laboratories (%)	Range (%)
Unsatisfactory	3,413	1.6	1.2 - 2.6
No endocervical cells	46,065	21.5	4.7 - 25.1
No abnormal endocervical cells	164,444	76.7	72.4 - 93.4
Atypical endocervical cells	288	0.1	0.0 - 0.5
Possible high-grade (including dysplasia)	131	0.1	0.0 - 0.3
Adenocarcinoma-in-situ	35	<0.1	0.0 - 0.1
Suspicious of adenocarcinoma of the cervix	3	<0.1	0.0 - 0.0
Adenocarcinoma of the cervix	11	<0.1	0.0 - 0.1
Total	214,390	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 less than 0.1%.

An endocervical component was absent in 21.5% of smears – this figure was 20.5% for the 2004 period, which represented 41,726 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).

The proportion of Pap smears with an endocervical component has decreased over the life of the Register by approximately 10 percentage points. Decreases have also been seen in other states and territories. The reason for the decreasing proportion of Pap smears with an endocervical component is unclear.

Figure 6.1 Age-specific low-grade abnormality rates in women aged 20-69 years WA 2005

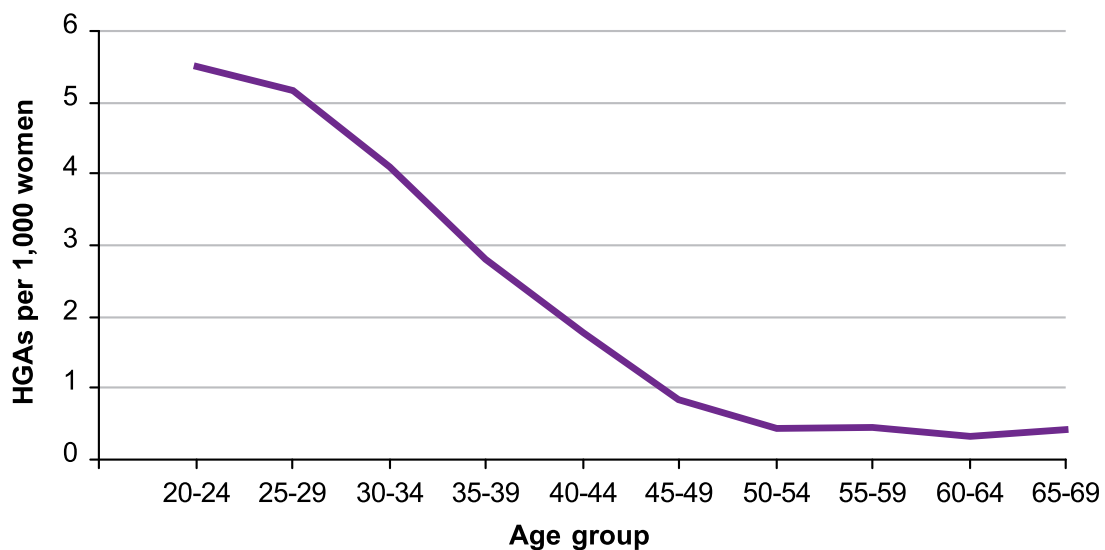


Note: A low-grade abnormality is defined as: Epithelial abnormality (E2, S2 or S3 (CIN I)). Includes Human Papilloma Virus (HPV) effect alone and atypia short of dysplasia. Rates are expressed per 1,000 women.

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 2005



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. Letters to women and practitioners

7.1 Introductory letter

Beginning in August 2003, the CCR has sent 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 letter also serves to ensure CCR records are up to date with regards to women's name and address details and to provide an opportunity to make an informed choice to not be included in the Register (opt off).

Since its introduction, 1,035 letters have been sent to women in WA for the 2003 calendar year; 5,598 letters were sent out in 2004 and 3,864 letters were sent out in 2005. Of the 16 women whose identifying information was withdrawn from the Register in 2005, at their request, three were in response to the receipt of an introductory letter. It should be noted that in 2005, the proportion of women opting off is <0.1%.

7.2 Protocol of Actions

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 are reviewed and amended regularly as recommended by the WACCPP Advisory Group. In November 2000 and September 2004, reminder letters for follow-up of low-grade abnormalities and normal Pap smears were amended respectively. Previously, reminder letters for these categories were initiated at 15 months for providers and 21 months for women (for low-grade abnormalities) and at three years for women (for normal Pap smears). In November 2000, 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). As of January 2005 the timeframes for biopsy follow-up were amended from 24 months to provider to 18 months to provider and from 30 months to woman to 24 months to woman for unsatisfactory, normal and low-grade histological abnormalities. For high-grade histological abnormalities the timeframes for biopsy follow-up were amended from 24 months to provider to 12 months to provider and from 30 months to woman to 18 months to woman.

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 on the advice of a woman's service provider. For example, when the CCR has been advised of a woman's pregnancy and her expected date of delivery, a letter is normally sent six months after this date (if no further follow-up information is received).

Table 7.1 CCR Protocol of Actions

Cytology (Pap smear) report	Action
	<i>If no follow-up information is received by the Registry:</i>
Unsatisfactory	<ul style="list-style-type: none"> Reminder letter to the provider at 6 months; Reminder letter to the woman at 12 months if no further follow-up information received.
Normal	<ul style="list-style-type: none"> Reminder letter to the woman at 30 months unless hysterectomy is known.
Low-grade abnormality	<ul style="list-style-type: none"> Reminder letter to the provider at 18 months; Reminder letter to the woman at 24 months if no further follow-up information received.
Inconclusive or High-grade abnormality	<ul style="list-style-type: none"> Questionnaire letter to the provider at 9 months; Reminder letter to the woman at 12 months if no further follow-up information received; If <u>still</u> no further follow-up information received, reminder letter (registered post with delivery confirmation) to the woman at 15 months.
Histopathology (biopsy) report	Action
	<i>If no follow-up information is received by the Registry:</i>
Unsatisfactory, Normal, Low-grade abnormality	<ul style="list-style-type: none"> Reminder letter to the provider at 18 months; Reminder letter to the woman at 24 months if no further follow-up information received.
High-grade abnormality	<ul style="list-style-type: none"> Reminder letter to the provider at 12 months; Reminder letter to the woman at 18 months if no further follow-up information received.

7.3 Reminders to women with normal Pap smears

In late February 2005 the interval for sending reminder letters to women, whose last Pap smear result is normal and for whom no further smear has been recorded, was changed from 36 months to 30 months. This resulted in 89,303 reminder letters being sent to women following a normal smear. This represented an 80% increase from the previous year. Of these women, 21.9% had a follow-up smear within three months of the reminder letter being sent (see Table 7.2). This level of response is higher than that seen in previous years.

7.4 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 2005, a total of 4,340 follow-up letters pertaining to unsatisfactory and abnormal Pap smears were sent to providers and 2,274 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 91,576 letters sent to women in 2005, approximately 15% were returned to sender, indicating that the woman had changed address since the time of her most recent smear. This is similar to 2004, where 17% of the 52,086 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 2005

Letter type	Number of letters sent**	Follow-up within three months of letter	
		Number	Percentage
'Normal' to woman	89,302	19,556	21.9
'Unsatisfactory' to provider	1,783	586	32.9
'Unsatisfactory' to woman	743	172	23.1
'Low-grade abnormality' to provider	2,372	602	25.4
'Low-grade abnormality' to woman	1,385	286	20.6
'High-grade abnormality'* to provider	185	45	24.3
'High-grade abnormality'* to woman	92	20	21.7
2nd 'high-grade abnormality' to woman	54	13	24.1

* 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 2005. 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 2006.

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. Seventy-eight 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 41 women with inconclusive/high-grade abnormalities during 2005. 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 23 women who are lost to follow-up are carried out periodically.

7.5 Follow-up letters for biopsy results

According to the CCR's *Protocol of Actions* (Table 7.1) the follow-up of unsatisfactory, normal and low-grade abnormal cervical biopsies is a letter sent to the provider at 18 months. For high-grade abnormal cervical biopsies, a letter is sent to the provider at 12 months. 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 2005, a total of 734 follow-up letters pertaining to unsatisfactory, normal, and abnormal cervical biopsies were sent to providers and 929 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 335 women who had either a Pap smear or biopsy within three months of the follow-up letter to their provider or themselves. This figure represents 20.1% and is consistent with previous years.

Table 7.3 Outcome of reminder and follow-up biopsy letters sent by the CCR in 2005

Letter type	Number of letters sent ^{**}	Follow-up within three months of letter	
		Number	Percentage
'Unsatisfactory, Normal, Low-grade abnormality' to provider	514	103	20.0
'Unsatisfactory, Normal, Low-grade abnormality' to woman	770	170	22.1
'High-grade abnormality'* to provider	220	34	15.5
'High-grade abnormality'* to woman	159	28	17.6

* 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 2005. 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 2006.

8. Histopathology (biopsy) reports

The CCR collects information relevant to cervical biopsies. In 2005, a total of 7,457 women had at least one cervical biopsy. Corresponding figures for 2003 and 2004 were 9,576 and 8,401 respectively. Table 8.1 shows biopsies by report category for women of all ages.

Table 8.1 Biopsy report categories 2005

Biopsy report category	Number	Percentage
Unsatisfactory biopsy	82	0.9
Normal biopsy (no abnormality reported)	4,148	47.3
Low-grade intraepithelial abnormality	2,220	25.3
High-grade intraepithelial abnormality	2,068	23.6
Invasive malignancy	252	2.9
Total	8,770	100

Note: As some women had more than one biopsy in 2005, 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 47.3% of biopsies (compared with 48.2% in 2004), 25.3% showed the presence of a low-grade intraepithelial abnormality (27.0% in 2004) and 23.6% of biopsies revealed a high-grade intraepithelial abnormality (21.7% in 2004). Invasive malignancy was shown in 2.9% of biopsies (2.2% in 2004). Overall, these figures represent a decrease in the number of biopsies performed, but a higher 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 2005, 1,665 Pap smears were reported as having a high-grade intraepithelial lesion (CIN II, CIN III), whilst 1,027 Pap smears were reported as a possible high-grade intraepithelial abnormality, in WA. Of the high-grade cases, 1,425 (86%) had a follow-up biopsy within six months. Of the possible high-grade reports, 718 (70%) had a follow-up biopsy within six months.

Table 9.1 shows that in 2005, in approximately 9.8% of cases in WA, the biopsies were negative or benign while 19.2% showed a low-grade intraepithelial abnormality. Histology reports confirmed the cytology finding of a high-grade intraepithelial abnormality in 68.4% of cases. Invasive malignancy was present in 2.0% of cases. In 2004, 72.0% of histology reports in WA confirmed the cytology finding of a high-grade intraepithelial abnormality and invasive malignancy was present in 1.6% of cases.

A comparison of WA and national figures is given in the Table 9.1.

Table 9.1 Biopsy reports following high-grade intraepithelial abnormality on cytology 2005: comparison of WA and national figures

Biopsy report	State number	State percentage	*National (%)	*National range (%)
Unsatisfactory specimens	9	0.6	0.4	0.0 - 4.0
Negative/benign findings	140	9.8	9.2	0.0 - 25.6
Low-grade intraepithelial abnormality	274	19.2	14.6	0.0 - 55.6
High-grade intraepithelial abnormality	974	68.4	73.8	41.2 - 100.0
Invasive malignancy	28	2.0	2.1	0.0 - 20.0
Total	1,425	100		

* Includes national aggregate percentages and range taken from RCPA Cytopathology Quality Assurance Program 2006 for Performance Measure 3a; Accuracy of reports predicting a high-grade abnormality (Data for January 1 to December 31, 2005).

Table 9.2 shows that in 2005, in approximately 31.5% of cases in WA, the biopsies were negative or benign while 27.7% showed a low-grade intraepithelial abnormality. Of the cytological findings raising the possibility of a high-grade intraepithelial abnormality, 38.7% of histology reports confirmed the suspected lesion as high-grade. Invasive malignancy was present in 1.3% of cases. In 2004, 37.4% of histology reports in WA confirmed the cytology finding of a high-grade intraepithelial abnormality and invasive malignancy was present in 1.9% of cases. Table 9.2 provides an assessment of WA and national figures.

Table 9.2 Biopsy reports following possible high-grade abnormality on cytology 2005: comparison of WA and national figures

Biopsy report	State number	State percentage	*National (%)	*National range (%)
Unsatisfactory specimens	6	0.8	0.7	0.0 - 15.4
Negative/benign findings	226	31.5	27.1	0.0 - 100.0
Low-grade intraepithelial abnormality	199	27.7	23.5	0.0 - 58.8
High-grade intraepithelial abnormality	278	38.7	46.9	0.0 - 80.0
Invasive malignancy	9	1.3	1.7	0.0 - 50.0
Total	718	100		

* Includes national aggregate percentages and range taken from RCPA Cytopathology Quality Assurance Program 2006 for Performance Measure 3b; Accuracy of reports of possible high-grade abnormality (Data for January 1 to December 31, 2005).

9.1 Correlation between cytology and histopathology reports

The following data (Tables 9.3 and 9.4) refer to numbers of Pap smears or biopsies and not numbers of women. Table 9.3 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 abnormal Pap smears recorded at the CCR in 2005 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 9.3 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 a high-grade abnormality was confirmed on biopsy) was as follows:

- Inconclusive 38.5%
- CIN II 61.2%
- CIN III 87.0%
- CIN III + AIS 85.7%
- SCC/Possible SCC 95.2%

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 9.3 and 9.4.

Table 9.3 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 HSL ¹ , Poss AIS ²	CIN II	CIN III	CIN III + AIS ³	SCC ⁴ Poss SCC ⁵	SCC ⁴ + AdenoCa Cx ⁶	
	Total=8773 ⁸	Total=1549 ⁸	Total=2401 ⁸	Total=791 ⁸	Total=736 ⁸	Total=630 ⁸	Total=7 ⁸	Total=45 ⁸	Total=2 ⁸	
UNSATISFACTORY	8 1.0%	5 3.3%	8 0.7%	4 0.7%	2 0.3%	1 0.2%		1 2.4%		
NORMAL	322 41.7%	56 36.8%	263 23.5%	165 29.6%	70 11.4%	26 4.5%		1 2.4%		
ATYPIA	182 23.6%	21 13.8%	149 13.3%	82 14.7%	43 7.0%	16 2.8%				
HPV	88 11.4%	31 20.4%	148 13.2%	22 3.9%	32 5.2%	6 1.0%				
CIN I	93 12.0%	31 20.4%	353 31.5%	70 12.5%	91 14.9%	26 4.5%	1 14.3%			
CIN II	47 6.1%	6 4.0%	129 11.5%	93 16.7%	204 33.3%	95 16.4%				
CIN III	20 2.6%	1 0.7%	67 6.0%	112 20.1%	163 26.6%	379 65.6%	1 14.3%	14 33.3%	1 50%	
CIN III + AIS ³	2 0.3%		1 0.1%	4 0.7%	3 0.5%	7 1.2%	2 28.6%			
AIS ³	2 0.3%	1 0.7%	2 0.2%	1 0.2%	3 0.5%	6 1.0%	3 42.9%			
SCC ⁴	1 0.1%		1 0.1%	4 0.7%	2 0.3%	16 2.8%		26 61.9%	1 50%	
AdenoCa Cx ⁶				1 0.2%						
SCC ⁴ + AdenoCa Cx ⁶										
Other Carcinomas ⁷	7 0.9%									
Total with biopsy follow-up	772 100.0%	152 100.0%	1121 100.0%	558 100.0%	613 100.0%	578 100.0%	7 100.0%	42 100.0%	2 100.0%	
No biopsy follow-up recorded at CCR within six months of index smear	8001	1397	1280	233	123	52	0	3	0	

Notes: ¹ Possible High-grade Squamous Intraepithelial Lesion ⁴ Squamous Cell Carcinoma ⁷ Endometrial, vaginal or ovarian cancer
² Possible Adenocarcinoma-In-Situ ⁵ Possible Squamous Cell Carcinoma ⁸ Total number of cases with and without biopsy follow-up
³ Adenocarcinoma-In-Situ ⁶ Adenocarcinoma of cervix

Table 9.4 Correlation between cytology and histopathology reports for glandular abnormalities on Pap smears with histology findings within six months

HISTOLOGY FINDINGS	CYTOLOGY PREDICTIONS							
	ATYPIA		INCONCLUSIVE Possible AIS ¹		AIS ²		AdenoCa Cx ⁴	
	Total = 188 ⁶		Total = 61 ⁶		Total = 25 ⁶		Total = 12 ⁶	
UNSATISFACTORY								
NORMAL	16	64.0%	26	60.5%	1	4.2%		
ATYPIA	3	12.0%	1	2.3%				
HPV	2	8.0%						
CIN I	2	8.0%	2	4.7%				
CIN II	1	4.0%	2	4.7%				
CIN III	1	4.0%	2	4.7%			1	9.1%
CIN III + AIS ²			2	4.7%	6	25%		
AIS ²			2	4.7%	12	50%		
SCC ³								
AdenoCa Cx ⁴			4	9.3%	4	16.7%	4	36.4%
SCC ³ + AdenoCa Cx ⁴					1	4.2%		
Other Carcinomas ⁵			2	4.7%			6	54.6%
Total with biopsy follow-up	25	100.0%	43	100.0%	24	100.0%	11	100.0%
No biopsy follow-up recorded at CCR within six months of index smear								
		163		18		1		1

Notes: ¹ Possible Adenocarcinoma-In-Situ⁴ Adenocarcinoma of cervix² Adenocarcinoma-In-Situ⁵ Endometrial, vaginal or ovarian cancer³ Squamous Cell Carcinoma⁶ Total number of cases with and without biopsy follow-up

Pap smears reporting glandular abnormalities are analysed in Table 9.4. As with Table 9.3, 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 32.6%
- AIS 95.8%
- 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
PIP	Practice Incentive Program
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	Western Australian 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 World Standard Population¹).

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.

¹ Segi M (1960) *Cancer mortality for selected sites in 24 countries (1950-1957)*. Sendai, Japan, Tohoku University Press.

Appendix A – Cytology Codes

C	Report Category ¹	S	Squamous Cell	W	Wart Virus Changes	E	Endocervical	M	Endometrial	O	Other
C0	Unsatisfactory	S0	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.	M1	No endometrial cells.	O1	No other abnormal cells.
C2	Low-grade epithelial abnormality ³ .	S2	Mild cellular changes including minor squamous atypia, HPV effect alone.	W2	Possibly present.	E0	No endocervical cells.	M2	Endometrial cells present (cytologically benign).		
		S3	Cytological findings raising the possibility of a high-grade lesion: accurate diagnosis is not possible.	W3	Present (Koilocytosis). See stringent criteria as outlined by NHMRC guidelines.	E1	Endocervical cells present. No abnormality or only reactive changes.				
C3	Inconclusive ⁴ .	S4	Mild dysplasia (CIN I).			E2	Atypical endocervical cells.				
		S5	Moderate dysplasia (CIN II).			E3	Cytological findings raising the possibility of a high-grade lesion (including glandular dysplasia); accurate diagnosis not possible.	M4	Atypical endometrial cells of uncertain significance.	O2	Abnormal cells present: other.
C4	High-grade epithelial abnormality.	S6	Severe dysplasia (CIN III).			E4	Adenocarcinoma-in-situ.	M6	Abnormal endometrial cells suggesting atypical hyperplasia or malignancy.	O3	Malignant cells present: ovary.
		S7	Suspicious of microinvasion or invasion.			E5	Suspicious of adenocarcinoma of cervix.	M7	Adenocarcinoma.	O4	Malignant cells present: vagina.
		S8	Squamous carcinoma.			E6	Adenocarcinoma.			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:

- cytological findings which raise the possibility of a high-grade lesion, in squamous and endocervical cells, but where accurate diagnosis is not possible.
- 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/ doederleins.
I2	Cocoid flora.
I3	Mixed bacteria.
I4	Gardnerella/clue cells.
I5	Monilia/ candida.
I6	Trichomonads.
I7	Herpes virus.
I8	Lepothrix.
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
C0	Unsatisfactory ¹ .	S0	Unsatisfactory for evaluation.	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 .	W-	No Applicable squamous epithelium collected ² .	E-	Not applicable ² .	M-	Not applicable.	O-	Not applicable.
		S1	Native squamous epithelium; squamous metaplasia; immature squamous metaplasia with or without inflammatory or reactive changes; atrophy.	W1	Absent.	E1	Normal; inflammatory; reactive changes; endocervical polyp.	M1	Normal; inflammatory; reactive; hormonal changes..	O1	Normal vaginal tissues; inflammatory; reactive; hormonal changes.
C2	Low-grade intraepithelial abnormality.	S2	Atypia; atypical immature squamous metaplasia.	W2	Suggestive/possible.			M2	Endometrial hyperplasia.		
		S3	HPV effect.	W3	Definite/consistent.			M3	Endometrial atypical hyperplasia (mild).	O2	HPV effect in vaginal tissues.
C3	High-grade intraepithelial abnormality.	S4	Mild dysplasia (CIN I).							O3	Vaginal intraepithelial dysplasia (VAIN I).
		S5	Moderate dysplasia (CIN II).			E3	Endocervical dysplasia.	M4	Endometrial atypical hyperplasia (moderate to severe).	O4	Vaginal intraepithelial neoplasia (VAIN II – VAIN III).
C4	Invasive malignancy.	S6	Severe dysplasia (CIN III).			E4	Adenocarcinoma-in-situ.				
		S7	Microinvasive squamous cell carcinoma.			E5	Microinvasive adenocarcinoma.	M5	Endometrial carcinoma (all types).	O5	Vaginal squamous cell carcinoma.
		S8	Invasive squamous cell carcinoma.			E6	Invasive adenocarcinoma.	M6	Endometrial stromal tumour.	O6	Vaginal adenocarcinoma.
						E7	Adenosquamous carcinoma (cervix).	M7	Mixed mullerian tumour.	O7	Metastatic tumour.
						E8	Carcinoma of cervix (other).			O8	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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