



# Statistical Report 2005

# Victorian Cervical Cytology Registry

STATISTICAL REPORT 2005

July 2006

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# Executive Summary

In 2005, more than 585,000 Pap tests were registered by VCCR, representing almost 550,000 women, and over 250,000 follow-up and reminder letters were mailed to women and practitioners.

The two year participation of women in the target age range of 20-69 years was estimated as 65.0%. Over the last three years, 77.1% of Victorian women aged between 20-69 years participated in the screening program.

The participation rate has remained relatively stable over the last few years. Women between 50-59 years of age had the highest biennial screening rates in 2004-2005 (72%) and rates were lowest among women between 20-29 years (54%) and 60-69 years (60.9%).

Substantial variation exists in screening rates between different areas of Victoria as represented by Divisions of General Practice, the lowest being 58% 95%CI (51-64%) and the highest 77% 95%CI (69-85%).

Of all Pap tests reported in 2005 from general practitioners or nurses (approximating community based smears) 6.4% were reported as abnormal. A definite high-grade abnormality was present in 0.7% of smears. Endocervical component, a measure of Pap test quality, was absent in 22% of smears taken from women with a cervix present and this has gradually increased from 17% in 2000.

The Registry recorded almost 16,000 histology or colposcopy reports relevant to the cervix in 2005. For the 1,361 women with a cytology report of CIN3, 1,155 were subsequently diagnosed with high-grade histology on biopsy within a 6 month period. This represents a positive predictive value of 85%.

Rates of cervical cancer incidence and mortality for Victoria through 2003 were provided by the Victorian Cancer Registry. Cervical cancer incidence has declined dramatically since the late 1980s when the organised screening program was introduced. There has been a plateau in incidence since 2000 with a slight upturn in cervical cancer incidence in 2003. Mortality from cervical cancer has declined in Victoria and at 1.3 per 100,000 women is now among the lowest in the world.

# 1. Introduction

## 1.1 Background

The Victorian Cervical Cytology Registry (VCCR) is one of eight such registries operating throughout Australia. Each State and Territory operates its own register. Victoria was the first State to establish such a register and commenced operation in late 1989 after amendments to the *Cancer Act 1958*.

The Pap Test Registries, as they are commonly known, were introduced progressively across Australia throughout the 1990s. The Registries are an essential component of the National Cervical Screening Program and provide the infrastructure for organised cervical screening in each State and Territory.

The Registry is a voluntary “opt-off” confidential database or register of Victorian women’s Pap test results. Laboratories provide the Registry with data on all Pap tests taken in Victoria, unless a woman chooses not to participate.

The VCCR works closely with PapScreen Victoria which is responsible for the communications and recruitment program aimed at maintaining the high rate of participation of Victorian women in the National Cervical Screening Program.

## 1.2 Functions of the Pap test Registry

The Registers facilitate regular participation of women in the National Cervical Screening Program by sending reminder letters to women for Pap tests and by acting as a safety net for the follow-up of women with abnormal Pap tests. In this endeavour, 254,206 follow-up and reminder letters were mailed to women and practitioners by VCCR in 2005.

The primary functions of the VCCR as specified in the *Cancer Act 1958* are:

- a) to follow up positive results from cancer tests; and
- b) to send reminder notices when persons whose names appear in the register are due for cancer tests; and
- c) subject to and in accordance with the regulations, to give access to the register to persons studying cancer; and
- d) to compile statistics and, if the organisation considers it appropriate, to publish those statistics that do not identify the persons to whom they relate.

Secondary functions of the Registries have developed on a more regional basis. In Victoria, the role of the Registry includes:

- making available the known screening history of a woman to the laboratory that is reporting the current Pap test;
- provision of quantitative data to laboratories to assist with their quality assurance programs;
- provision of aggregate data to the Commonwealth so the National Cervical Screening Program can be judged against an agreed set of performance indicators.

# 1. Introduction

## 1.3 Data included in the Statistical Report

This Statistical Report is one in a series of annual reports that have been published since the inception of the Victorian Registry. This Statistical Report provides timely information about screening in Victoria; in most areas, the data is additional to that published by the Commonwealth. Wherever possible, the same methodology has been adopted in this Statistical Report as is used in the Commonwealth Report.

Cytology registrations are complete for 2005. Most cytology reports are pre-coded by the pathology laboratory to the Registry's Cytology Code Schedule which is included as Appendix 1. The Cytology Code Schedule allows a Pap test report to be summarised to a five digit numeric code covering the squamous cells, evidence of human papillomavirus infection, the endocervical component, other non-cervical cells, and the recommendation made by the laboratory in regards to further testing. The full text of a Pap test report is not stored at the Registry.

Histology and colposcopy registrations in this report are as notified by March 2006. The vast majority of histology reports are registered by this time, thus the data are reasonably complete. While reasonably comprehensive registration occurs for histology reports, only a minority of colposcopy results are registered, most typically when a histology report is not available. Unlike the coding of cytology reports, coding of histology and colposcopy reports is done by the staff of the Registry. The full text of the histology and colposcopy reports is not stored at the Registry.

The Reminder and Follow-up Protocol used by the Registry in 2005 is shown in Appendix 2. As of December 2005, the Registry Reminder and Follow-up Protocol was revised and is consistent with the new NHMRC Guidelines for the Management of Asymptomatic Women with Screen Detected Abnormalities 2005.

Reminder letters are not sent to women whose Registry records indicate a past history of hysterectomy or of cervical or uterine malignancy, or to women who are over 70 years of age.

## 2. Participation in Screening

### 2.1 National Policy

Since 1991, the policy of the National Cervical Screening Program in regards to the age group and time interval for screening has been as follows:

- *Routine screening with Pap tests 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 tests between the ages of 18 to 20 years, or one to 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 tests may cease at the age of 70 years for women who have had two normal Pap tests within the last five years. Women over 70 years who have never had a Pap test, or who request a Pap test, should be screened.<sup>1</sup>*

In June 2005, new NHMRC Guidelines for the Management of Asymptomatic Women with Screen Detected Abnormalities were endorsed and will be implemented on 1 July, 2006. Data in this Statistical Report represents practices prior to the implementation of the new Guidelines. Commencing for the 2006 Statistical Report, data presented will reflect Registry statistics based upon the new NHMRC Guidelines.

### 2.2 Pap test numbers and women screened

Participation in the Registry by women is voluntary. The non-participation rate in Victoria is considered to be less than 1%. Where a woman objects to her Pap test being registered, the Registry holds no information about that test.

During 2005, a total of 585,300 Pap tests were registered. This represents a decrease of about 0.5% on the previous year. These 585,300 Pap tests originated from 549,700 women.

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<sup>1</sup> Screening for the Prevention of Cervical Cancer. Commonwealth Department of Health and Family Services. Canberra: AGPS 1998.

## 2. Participation in Screening

Table 2.1 shows data on the number of Pap tests registered and the number of women from whom these tests originated, for each year of operation of the Registry.

**Table 2.1: Number of Pap tests registered and number of women screened in Victoria, 1990-2005.**

Year	No. of Pap tests registered	No. of women screened
2005	585,300	549,700
2004	588,000	550,000
2003	571,000	532,000
2002	579,000	540,000
2001	577,000	542,000
2000	572,000	532,000
1999	603,000	558,000
1998	619,000	571,000
1997	587,000	535,000
1996	616,000	560,000
1995	590,000	530,000
1994	622,000	562,000
1993	571,000	523,000
1992	542,000	497,000
1991	545,000	498,000
1990	436,000	402,000

The number of women screened in each of these years is probably a slight over-estimate because of incomplete record linkage, there being no unique identifying number for each woman. Where possible, the Medicare number of women is used to assist with accurate record linkage. Since August 1999, the Registry has used SSA-Name3 software (Identity Systems) in the matching of incoming tests to pre-existing data on the database. This has resulted in more complete record-linkage of different episodes of care for women, compared with the previous approach to record-linkage.

In interpreting the information in the above table, it is important to realise that some women in Victoria are screened on an annual basis. Participation over a longer period of time than one year cannot be derived by adding the counts for individual years.

## 2. Participation in Screening

### 2.3 Participation by age group

The participation of women by age group in cervical screening is expressed as a percentage.

- The denominator is the Estimated Resident Female Population based on Australian Bureau of Statistics data for Victoria (ERP)<sup>2</sup>, after adjustment for the estimated proportion of women who have had a complete hysterectomy<sup>3</sup>. While the Estimated Resident Population is available on an annual basis for Victoria, information on hysterectomy fractions is collected nationally approximately every five years; specific rates for Victoria have not been available to date.
- The numerator is estimated from the Registry database. It is the number of women resident in Victoria who had at least one Pap test in the time period of interest and who appear to have a cervix (that is, they have not had a hysterectomy according to information held by the Registry).

The following table shows the estimated percentage of eligible women with a cervix from each decade of the target age range that had at least one Pap test during 2005, during the two year period 2004-2005, and the three year period 2003-2005.

**Table 2.2: Estimated proportion of women with a cervix who have had at least one Pap test for each time period, by age.**

Age group	% Screened 2005	% Screened 2004-2005	% Screened 2003-2005
20-29	30.5%	54.4%	69.1%
30-39	38.0%	67.4%	80.7%
40-49	39.5%	70.5%	82.0%
50-59	40.0%	71.9%	82.1%
60-69	33.2%	60.9%	67.9%
20-69	36.4%	65.0%	77.1%

The two year participation rates have not changed substantially since 2003-2004.

In 2004-2005 65.0% of Victorian women had a Pap test compared with 64.4% in the period 2003-2004.

As shown in Table 2.2, over the last three years, 77.1% of Victorian women aged between 20 to 69 years had had a Pap test during this time period.

The biennial participation rates in Victoria are higher than the national average. The most recently available national data showed that in 2002-2003 the two-yearly national participation rates for women aged 20-69 years were 60.7%<sup>4</sup> compared to 63.9% for the same period in Victoria.

2 Australian Bureau of Statistics. ERP June 2003, June 2004

3 National Health Survey 2001. Australian Bureau of Statistics

4 Australia's Health 2006 AIHW cat. No. AUS73. Canberra

## 2. Participation in Screening

Figure 2.1: Estimated proportion of women with a cervix who have had at least one Pap test for two year periods from 2000, by age group

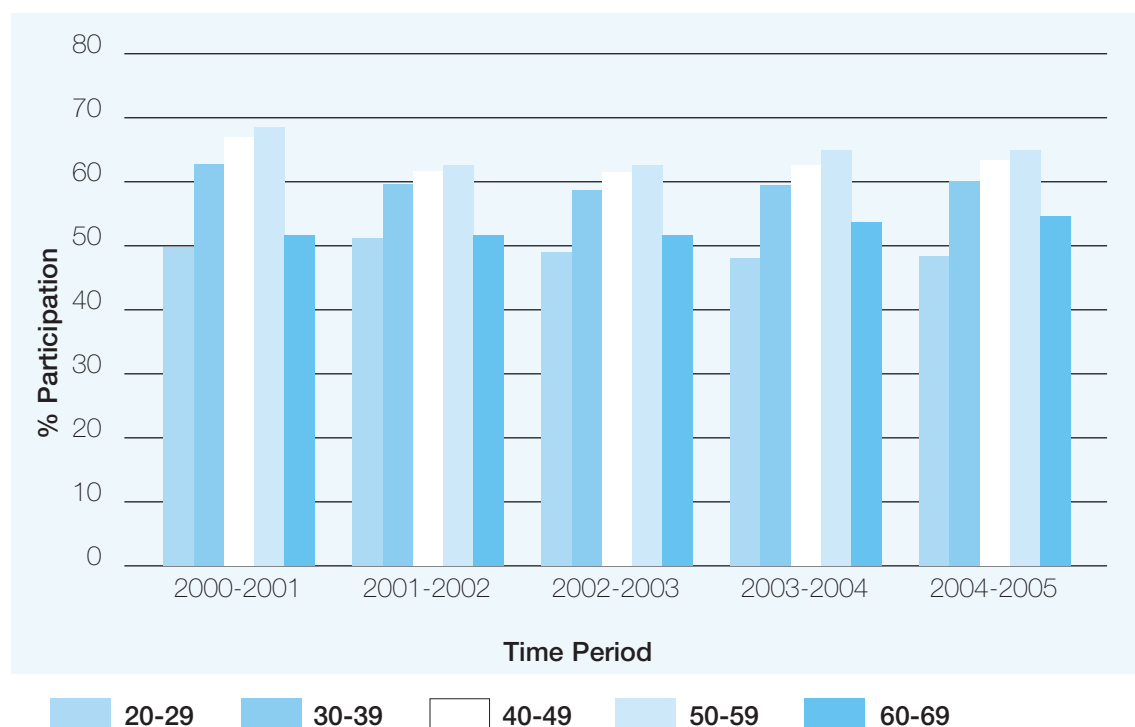


Figure 2.1 shows that participation in cervical screening has remained relatively stable over time for each age group since 2001, with a modest decline being evident after 2000. Women over 40 years of age have the highest two-year screening rates with a steady increase until age 59 and this has remained largely unchanged over the last 5 years.

Participation rates are necessarily imprecise and measurement error may affect both the denominator and the numerator. The biggest impact on denominator error comes from uncertainty about hysterectomy rates. Only women with a cervix are considered eligible for cervical screening and adjustment must be made for the proportion of women in the population who have had a hysterectomy. The applicability of national hysterectomy rates in 10 year age groups from 2001 (the most recently available data) to Victorian women is less than ideal.

Measurement error in Registry data comes from imperfect record-linkage between multiple Pap tests from the same woman (resulting in an overestimate of the number of women screened) and from inaccuracies in the Registry database in recording whether the Pap test was taken from a woman with or without a cervix.

### 2.4 Participation by Division of General Practice

The Commonwealth Department of Health and Ageing assigns almost all Victorian postcodes to a Division of General Practice. There are twenty-nine Divisions of General Practice located solely within Victoria.

For this analysis, the denominator was the estimated number of eligible women, resident in the postcodes of each Division in June 2004, adjusted for the proportion of women estimated to have had a hysterectomy. The numerator is the number of women who had at least one Pap test in the time period and who have not had a hysterectomy according to the information held by the Registry.

## 2. Participation in Screening

**Table 2.3: Biennial cervical screening rates by Division of General Practice, for the period 1 January 2004 to 31 December 2005.**

Division Number	Division name	% screened 2004-2005	95% Confidence Interval <sup>5</sup>
301	Melbourne Division of GP	65%	(59-72%)
302	North East Valley Division of GP	71%	(64-77%)
303	Inner Eastern Melbourne Division of GP	73%	(66-81%)
304	Inner South East Melbourne Division of GP	72%	(65-78%)
305	Westgate Division of GP	58%	(51-64%)
306	Western Melbourne Division of GP	63%	(57-68%)
307	North West Melbourne Division of GP	63%	(57-68%)
308	The Northern Division of GP, Melbourne	60%	(54-65%)
310	Whitehorse Division of GP	68%	(62-73%)
311	Greater South Eastern Division of GP	68%	(61-75%)
312	Monash Division of GP	64%	(57-72%)
313	Central Bayside Division of GP	77%	(69-85%)
314	Knox Division of GP	65%	(59-71%)
315	Dandenong & District Division of GP	63%	(58-68%)
316	Mornington Peninsula Division of GP	63%	(58-69%)
317	GP Association of Geelong	64%	(57-70%)
318	Central Highlands Division of GP	59%	(53-65%)
319	North East Victorian Division of GP	67%	(58-77%)
320	Eastern Ranges Division of GP	65%	(58-72%)
322	South Gippsland Division of GP	62%	(50-74%)
323	Central West Gippsland Division of GP	62%	(53-71%)
324	Otway Division of GP	65%	(56-74%)
325	Ballarat & District Division of GP	59%	(51-68%)
326	Bendigo & District Division of GP	63%	(53-73%)
327	Goulbourn Valley Division of GP	64%	(54-74%)
328	East Gippsland Division of GP	66%	(55-78%)
330	Western Victorian Division of GP	60%	(49-71%)
331	Murray Plains Division of GP	64%	(49-79%)
332	Mallee Division of GP	62%	(51-73%)

<sup>5</sup> 95% Confidence intervals were calculated using the normal approximation to the binomial distribution.

## 2. Participation in Screening

This type of information, being small-area data, is subject to greater measurement error than the data in Section 2.2 and 2.3. The main source of inaccuracy in the above table derives from applying national hysterectomy fractions to the relatively small female population resident in the postcodes of a Division of General Practice.

Other additional (but probably lesser) sources of measurement error derive from use of the service provider's postcode of practice if the woman's residential postcode is not known to the Registry, the proportion of Victorian Pap tests reported by laboratories outside of Victoria who do not report to the Registry (this will mainly affect Divisions located on the Victoria/New South Wales and Victoria/South Australia borders), and differences between the postcode assigned by the Australian Bureau of Statistics to the Estimated Resident Population data and the postcode nominated by the woman.

For these reasons, the data in the above table should always be interpreted with caution.

### 2.5 Participation by Region of the Department of Human Services

Most Victorian postcodes are assigned to a Region of the Victorian Department of Human Services. Victoria is divided into eight Regions, five in rural Victoria and three covering metropolitan Melbourne.

As in Section 2.4, the denominator for this analysis was the estimated number of eligible women with a cervix, resident in the postcodes of each Region in June 2004.

**Table 2.4: Biennial cervical screening rates by Region of the Department of Human Services, for the period 1 January 2004 to 31 December 2005.**

Region name	% Screened 2004-2005	95% Confidence interval
Barwon South Western	65%	(60-70%)
Eastern Metropolitan	68%	(65-71%)
Gippsland	64%	(58-70%)
Grampians	61%	(55-68%)
Hume	67%	(61-73%)
Loddon Mallee	63%	(58-69%)
North West Metropolitan	63%	(61-65%)
Southern Metropolitan	68%	(65-71%)

## 2. Participation in Screening

### 2.6. Pap tests taken by nurses

During 2005, a total of 14,375 Pap tests were collected by nurses. This number represents 2.5% of all Pap tests collected in Victoria during 2005. Since 1996, the number of Pap tests collected by nurses has almost tripled, as shown in Table 2.5.

**Table 2.5: Proportion of Pap tests collected by nurses in Victoria, 1996-2005**

Year	No. of Pap tests collected by nurses	% of all Victorian Pap tests
2005	14,375	2.5%
2004	13,100	2.2%
2003	11,494	2.0%
2002	10,635	1.8%
2001	11,017	1.9%
2000	9,628	1.7%
1999	9,922	1.6%
1998	9,858	1.6%
1997	7,155	1.2%
1996	5,170	0.8%

In comparison with all Pap tests collected in Victoria during 2005, Pap tests collected by nurses were more likely to have an endocervical component<sup>6</sup> and less likely to be from women who had been screened in the preceding two years.

During 2005, 37.2% of the Pap tests collected by nurses were from women over 50 years of age compared with 27.5% for all Pap tests collected in Victoria during this period.

<sup>6</sup> An indicator of smear quality, see page 14

## 3. Cytology Reports

Cytology reports received by the Registry are coded numerically according to the following five categories of information which comprise the main aspects of a Pap test report.

- Squamous cell code
- Human papillomavirus cell code
- Endocervical component code
- Other (non-cervical) cell code
- Recommendation code

The following analyses relate only to the 487,000 Pap tests collected by general practitioners and nurses in 2005. Pap tests collected by obstetricians and gynaecologists and at hospital outpatient clinics have been excluded from the analyses in Section 3 as these are more likely to be reported as abnormal. These selection criteria thus approximate 'community based Pap tests' from the general female population.

In the following tables, 'Average' refers to the frequency of use of the report codes across all Pap tests collected by general practitioners and nurses in 2005. 'Range' is the highest and lowest proportion for individual laboratories registering a minimum of 500 Pap tests during 2005; thirteen laboratories fulfilled these criteria. Five laboratories were excluded from this measurement because they reported less than 500 Pap tests in 2005 to the Victorian Cervical Cytology Registry; three of these laboratories were either located on the border of Victoria and New South Wales or were located interstate.

### 3.1 Reporting of squamous cells

The following table shows the distribution of cytology reports for the ten squamous cell codes during 2005.

**Table 3.1: Squamous cell categories for Pap tests taken by general practitioners and nurses, 2005**

Squamous cell code	Average	Range*
Unsatisfactory	1.9%	0.9% – 4.9%
No abnormal cells	87.6%	79.0% – 91.4%
Minor reactive/inflammatory changes	4.2%	1.0% – 8.5%
Mild atypia	4.0%	1.0% – 5.8%
Inconclusive	0.3%	0.2% – 1.4%
CIN 1 (incl. equivocal and possible CIN 1)	1.4%	0.5% – 4.0%
CIN 2	0.4%	0.1% – 1.0%
CIN 3	0.3%	0.2% – 0.6%
Possible invasive cancer	0.01%	0.01% – 0.04%
Invasive squamous cell carcinoma	<0.01%	0.00% – 0.01%

\*All laboratories, excluding those reporting fewer than 500 Pap tests.

The proportion of abnormal Pap tests in 2005 was 6.4% and this proportion has been stable since 2003. A definite high-grade abnormality (ie CIN 2, CIN 3, possible invasive cancer, invasive squamous cell carcinoma) was reported in 0.7% of Pap tests, compared with 0.62% in 2004.

## 3. Cytology Reports

### 3.2 Reporting of human papillomavirus change

The following table shows the distribution of cytology reports according to cytological evidence of human papillomavirus (HPV) effect. HPV effect is sometimes referred to as 'wart virus infection'.

**Table 3.2: HPV changes for Pap tests taken by general practitioners and nurses, 2005**

Human papillomavirus cell code	Average	Range*
HPV cell changes absent	97.6%	95.5% – 98.3%
HPV cell changes possible	0.3%	0.0% – 3.0%
HPV cell changes present	2.1%	1.2% – 3.6%

\*All laboratories, excluding those reporting fewer than 500 Pap tests.

### 3.3 Reporting of endocervical component

The following table shows the distribution of cytology reports for technically satisfactory Pap tests, for the codes relating to the endocervical component. Pap tests which are known to have been collected post-hysterectomy are excluded.

**Table 3.3: Endocervical component for Pap tests taken by general practitioners and nurses, 2005**

Endocervical component code	Average	Range*
No endocervical component present	22.1%	19.3% – 37.0%
Normal endocervical component	76.8%	62.9% – 79.4%
Minor reactive/inflammatory changes	1.0%	0.0% – 1.6%
Inconclusive	0.1%	<0.1% – 0.1%
Mild/moderate dysplasia	0.0%	0.0% – <0.1%
Adenocarcinoma in situ	0.0%	0.0% – <0.1%
Possible invasive cancer	0.0%	0.0% – 0.0%
Invasive adenocarcinoma	0.0%	0.0% – <0.1%

\*All laboratories, excluding those reporting fewer than 500 Pap tests.

The proportion of Pap tests lacking an endocervical component has gradually increased from 17.3% in 2000 to 22.1% during 2005. This increase has also been seen at a national level. The reason for the increasing proportion of Pap tests without an endocervical component is unclear.

## 3. Cytology Reports

### 3.4 Reporting of other cells (non-cervical)

99.9% of the cytology reports for Pap tests collected by general practitioners and nurses indicated no other (non-cervical) abnormal cells were present.

Among the Pap tests collected by general practitioners and nurses during 2005, there were 269 reports of benign change in non-cervical cells, 45 reports of malignant cells from the uterus, one report of malignant cells from the ovary, one report of malignant cells of the vagina and three reports of other malignant cells (such as metastatic malignancy).

### 3.5 Use of recommendation codes

Not all cytology reports include a recommendation by the laboratory about the next stage of care for the woman. 20,470 (4.2%) cytology reports issued during 2005 to general practitioners and nurses did not include a recommendation.

In the following table, the statistics listed under 'Average' use data relating to Pap tests with a recommendation from all laboratories; the statistics listed under 'Range' are confined to the eleven laboratories that attached recommendations to more than 80% of their general practitioner/nurse Pap tests and where a minimum of 500 such reports were made. In calculating these percentages, the number of tests with recommendations was used as the denominator.

**Table 3.4: Recommendation codes for Pap tests taken by general practitioners and nurses, 2005**

Recommendation code	Average	Range*
Repeat smear in 3 years	0.0%	0.0% – 0.1%
Repeat smear in 2 years	83.0%	73.1% – 81.6%
Repeat smear in 1 year	9.4%	7.5% – 14.5%
Repeat smear in 6 months	2.9%	1.6% – 6.3%
Repeat smear in 3 months	0.4%	<0.1% – 4.2%
Repeat smear within 4 to 6 weeks	1.7%	0.3% – 2.4%
Referral for specialist opinion	1.8%	1.2% – 4.4%
Other	0.7%	0.1% – 3.4%

\*Excluding laboratories reporting fewer than 500 Pap tests.

Among Pap tests receiving a recommendation, the proportion recommending a repeat Pap test in two years has remained stable at around 83.0% for the last three years.

## 4. Histology/Colposcopy Reports

This section describes the histology/colposcopy reports during 2005 notified to the Registry. Less than one percent of these notifications were colposcopy reports. The majority of relevant cervical biopsies are reported to the Registry; however, as reporting is voluntary there are fluctuations in numbers from year to year and reporting is therefore not complete. All cancers are notified by laboratories, hospitals and VCCR to the Cancer Registry at Cancer Council Victoria.

In 2005 there were 15,935 reports relating to the cervix, with each woman being counted only once on the basis of her most serious report for the year. In ascertaining the most serious report for each woman, histology results took precedence over colposcopy results.

The following table shows the distribution of the further investigations for 2005.

**Table 4.1: Histology and/or colposcopy findings reported to the VCCR in 2005.**

Histology/colposcopy findings	Number	%
Invasive cancer	96	0.6%
Microinvasive cancer	42	0.3%
CIN 3 with questionable microinvasion	10	0.1%
CIN 3	1,427	8.9%
CIN 2/3	311	2.0%
CIN 2	1,516	9.5%
High-grade – not otherwise defined	80	0.5%
CIN – not otherwise defined	25	0.2%
CIN 1	1,799	11.3%
HPV effect	879	5.5%
Low-grade – not otherwise defined	703	4.4%
Benign changes	6,298	39.5%
Normal	2,671	16.7%
Unsatisfactory	78	0.5%
TOTAL	15,935	100%

Among the 96 women whose further investigations resulted in a diagnosis of invasive cervical cancer, 57 were of squamous type; 24 were adenocarcinomas; four were adenosquamous carcinomas; and 11 were other types.

Among the 42 women with microinvasive carcinoma, 37 (88%) were squamous and five adeno type.

Among the 1,427 cases of CIN 3, 1,361 (95%) were squamous type, 38 were of adeno type and 28 were of adenosquamous type.

## 5. Correlation between cytology and histology/colposcopy reports

The following table shows the correlation between the histology/colposcopy findings and the prediction made on cytology immediately prior to the histology/colposcopy report. This correlation is important to laboratories in assisting with quality control and performance measures required by the National Pathology Accreditation Advisory Council (NPAAC).

The correlation is restricted to cases where the cytology was reported as abnormal in a six month period preceding the histology/colposcopy report. In cases where the histology/colposcopy report followed a negative cytology report, up to 30 months has been allowed between the cytology and the histology/colposcopy.

In interpreting this information, it is important to remember that only a minority of low-grade cytology (atypia, HPV and CIN 1) is further investigated by colposcopy or biopsy and an even smaller percentage of negative cytology reports are followed by a colposcopy or biopsy. Women who have a biopsy are likely to be an atypical subset of the whole group of women with negative or low-grade cytology reports.

**Table 5.1: Histology/colposcopy findings following a cytology report, 2005**

Histology/colposcopy findings	Cytology Prediction						
	Negative (n=6954)	Atypia (n=1565)	HPV (n=617)	CIN 1 (n=2227)	Inconcl. (n=777)	CIN 2 (n=1582)	CIN 3 (n=1361)
Cancer – invasive squamous	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	1.2%
Cancer – invasive other	0.1%	0.1%	0.2%	0.0%	0.6%	0.0%	0.3%
Cancer – microinvasive	0.0%	0.0%	0.0%	0.0%	0.4%	0.3%	1.6%
CIN 3 with questionable microinvasion	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	0.1%
CIN 3	0.6%	3.1%	1.5%	5.1%	19.0%	17.1%	53.3%
CIN 2/3	0.1%	0.5%	0.6%	1.7%	3.9%	5.6%	8.9%
CIN 2	1.1%	6.0%	6.0%	13.8%	13.8%	38.4%	18.6%
High-grade – not otherwise defined	0.2%	0.6%	0.2%	0.6%	1.4%	0.9%	0.8%
CIN 1	3.3%	16.7%	21.2%	33.6%	10.3%	15.4%	4.1%
HPV effect	2.5%	11.6%	24.0%	10.6%	5.1%	3.9%	1.4%
Low-grade – not otherwise defined	3.0%	11.2%	10.7%	7.5%	3.5%	3.4%	1.5%
Normal, benign	89.0%	50.3%	35.7%	27.1%	41.1%	14.9%	8.2%
TOTAL	100%	100%	100%	100%	100%	100%	100%

## 5. Correlation between cytology and histology/colposcopy reports

Of women with a CIN 3 cytology report, 84.9% (1,155/1,361) were subsequently diagnosed with high-grade histology (CIN 2, CIN 2/3, CIN 3, cancer, high-grade – not otherwise defined) at biopsy. This figure represents the positive predictive value of a cytology report of CIN 3 for high-grade histology. The NPAAC performance standards require that not less than 65% of cytology specimens with a definite high-grade epithelial abnormality are confirmed on histology within 6 months as having a high-grade abnormality or cancer.

For a cytology report of CIN 2, the positive predictive value for high-grade histology was 62.5% (989/1,582). For an inconclusive cytology report it was 40.0% (311/777).

## 6. Frequency of early re-screening

While the Australian screening policy is for repeated testing every two years after a negative Pap test report, a proportion of women are screened more frequently than this. While a small level of early re-screening can be justified on the basis of a past history of abnormality, the levels within Victoria and Australia are far in excess of this. The evidence is that early re-screening does not just occur in the months immediately prior to the two year anniversary, but rather is a steady continuum throughout the two year period after a negative Pap test report.

In late 2000, the National Cervical Screening Program adopted the following definition of early re-screening:

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

This definition recognises that some re-screening may occur opportunistically between 21 and 24 months after a negative Pap test report and this may be cost-effective.

The following table shows the number of further tests over a 21 month period for women who received a negative Pap test report in the February of each year. The data shows that 74% of women aged 20-69 years who were screened in February 2004 had no further tests within the next 21 months. 26% of women aged 20-69 years who were screened in February 2004 underwent early re-screening.

**Table 6.1: Subsequent Pap tests over a 21 month period for women with a negative report in February of each year**

Number of further Pap tests	2004	2003	2002	2001	2000	1999	1998	1997	1996
No further tests	74%	73%	69%	68%	65%	66%	63%	59%	57%
1	22%	23%	26%	27%	29%	28%	31%	34%	34%
2	3%	3%	3%	4%	4%	4%	5%	5%	6%
3	1%	1%	1%	1%	1%	1%	1%	1%	2%
4	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
5 or more	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%

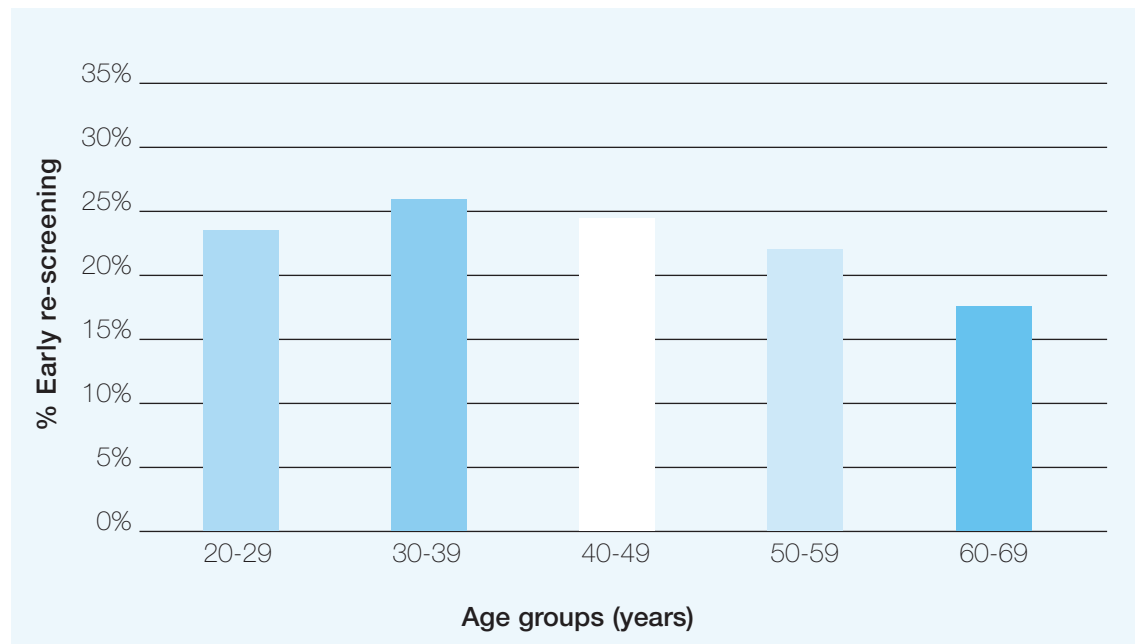
The data in the above table shows a substantial improvement in early re-screening between 1996 and 2004. Among women screened in 1996, 43% had at least one additional Pap test within 21 months. By 2004, this figure had fallen to 26%.

## 6. Frequency of early re-screening

Some variation in early re-screening occurs by age group. The following graph shows the proportion of women, by age group, who had early re-screening after a negative Pap test report in February 2004.

Early re-screening peaks in the age group 30-39 years and is least evident in the age group 60-69 years.

**Figure 6.1: Early re-screening after a negative Pap test report in February 2004 by age**



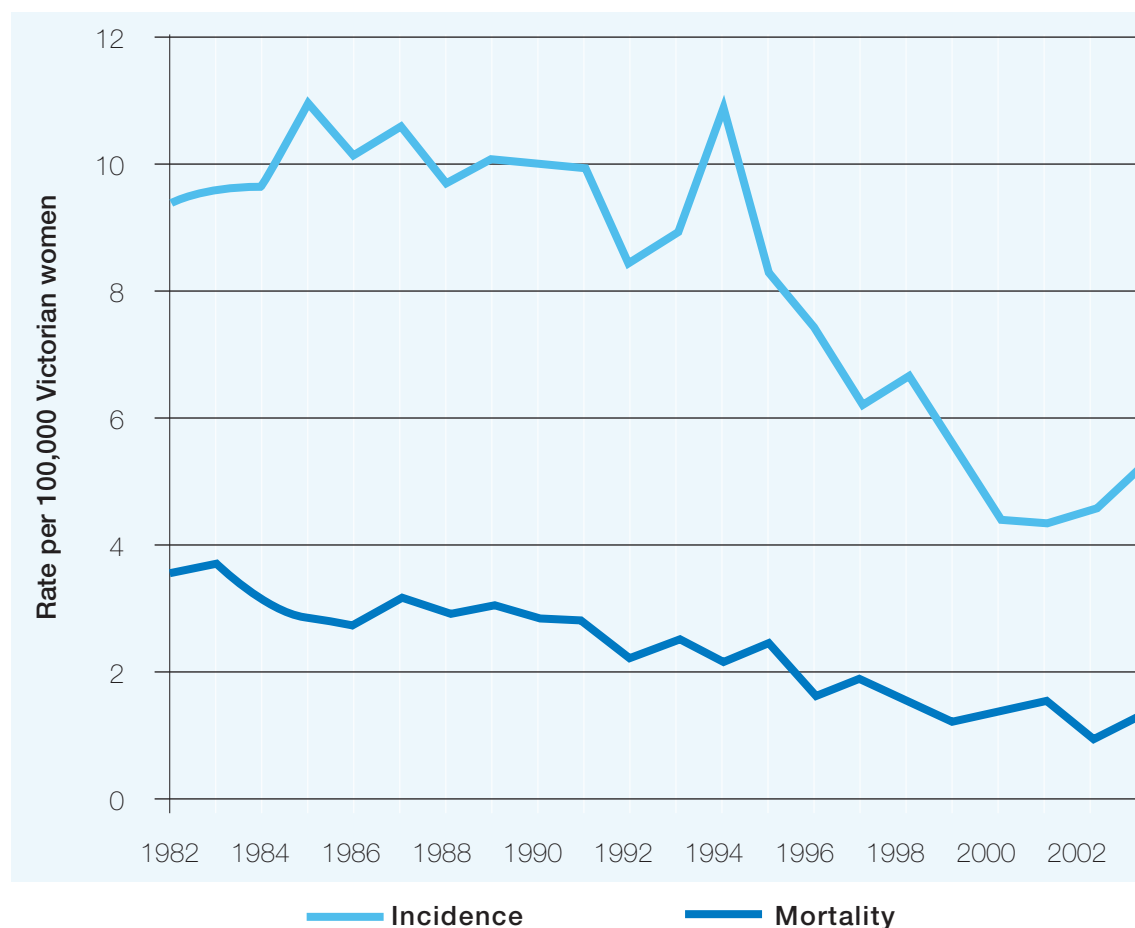
## 7. Cervical cancer incidence and mortality in Victoria

The ultimate aim of the cervical cancer screening program is to reduce the incidence and mortality from cervical cancer. Data on cancer incidence and mortality are collected by the Victorian Cancer Registry and notifications are required by laboratories, hospitals and VCCR.

Figure 7.1 shows the incidence and mortality rates from cervical cancer in Victoria since 1982. The incidence of cervical cancer has declined dramatically since the 1980s when the organised screening program was introduced. There was a plateau in incidence in 2000 and a slight increase noted since 2002. This corresponds with a slight decrease in overall biennial participation rates since 1999-2000 from 67% to 63.9% in 2002-2003; however variations in cancer incidence over time may occur for a number of reasons.

The mortality from cervical cancer in Victoria has declined gradually over time and since 2000 has been around 1.3 per 100,000 women, which is among the lowest in the world.<sup>7</sup>

**Figure 7.1: Age-standardised incidence and mortality rates for cervical cancer in Victoria, 1982-2003.**



Source: Personal communication, Victorian Cancer Registry, Cancer Council Victoria.

7 International Agency for Research on Cancer, Globocan 2002 [www.dep.iarc.fr](http://www.dep.iarc.fr) (accessed 28.6.06)

## 7. Cervical cancer incidence and mortality in Victoria

Table 7.1 shows the number of cases and incidence rates for cervical cancer by histological type over time. The greatest impact of the cervical screening program is on squamous cell carcinoma of the cervix, with incidence rates declining from 6.5 per 100,000 in 1989 to 2.6 per 100,000 in 2003. Incidence rates for microinvasive cancer have declined slightly over time. Rates for other cancers, comprising predominantly cervical adenocarcinomas, are slightly lower than in the early 1990s although it is recognised that cervical screening is less effective for the detection of adenocarcinomas.<sup>8</sup>

**Table 7.1: Number of cases and age-standardised incidence rates for cervical cancer by histological subtype in Victoria, from 1989-2003.**

Year	Squamous cell		Other		Micro-invasive	
	No.	ASR	No.	ASR	No.	ASR
1989	172	6.5	56	2.2	37	1.5
1990	136	4.8	80	3.1	56	2.1
1991	139	5.0	78	2.8	57	2.1
1992	123	4.1	59	2.0	62	2.3
1993	127	4.4	81	2.8	45	1.7
1994	133	4.4	114	4.1	67	2.5
1995	107	3.5	69	2.2	72	2.6
1996	93	2.7	71	2.4	64	2.3
1997	95	2.9	56	1.8	44	1.6
1998	108	3.3	80	2.6	22	0.8
1999	94	2.9	55	1.8	24	0.8
2000	81	2.3	52	1.7	15	0.5
2001	79	2.1	54	1.6	20	0.7
2002	95	2.7	34	1.0	24	0.8
2003	90	2.6	60	1.8	26	0.9

*Note: Other cancers are comprised primarily of cervical adenocarcinomas.*

*ASR is the age-standardised incidence rate.*

*Source: Personal communication, Victorian Cancer Registry, Cancer Council Victoria.*

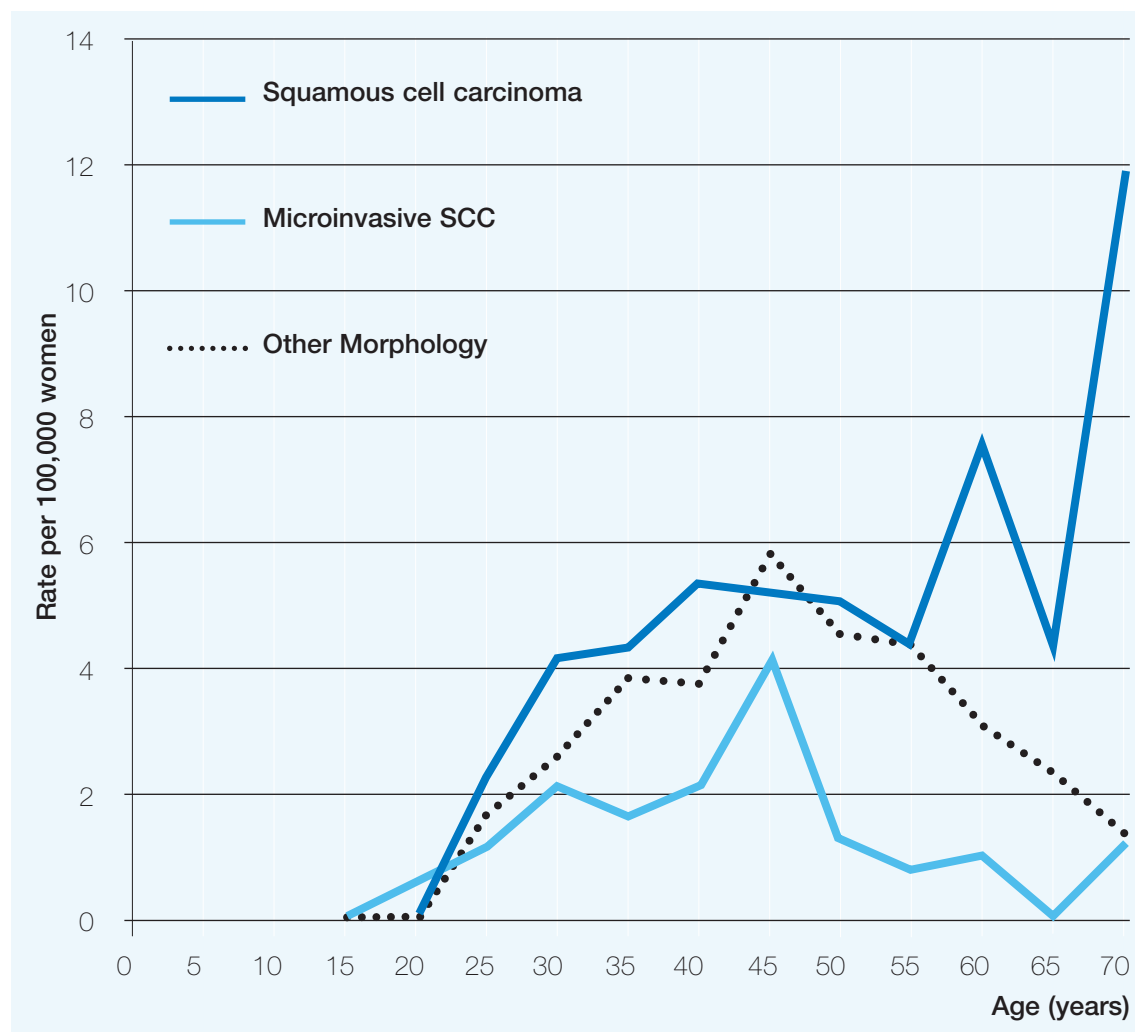
<sup>8</sup> Screening to Prevent Cervical Cancer: Guidelines for the Management of Asymptomatic women with Screen Detected Abnormalities. NHMRC 2006

## 7. Cervical cancer incidence and mortality in Victoria

The age-specific incidence of cervical cancer increases steadily after the age of 30 years with a peak in the mid-70s for squamous cell carcinoma. Microinvasive cervical cancer peaks at around 30 years of age and declines steadily thereafter. The incidence of other types of cervical cancer, predominantly adenocarcinomas, is relatively constant after age 30.

Figure 7.2 shows the age-specific incidence rates of cervical cancer by histology and age, grouped over the period 2000-2003.

**Figure 7.2: Age-specific incidence rates of cervical cancer in Victoria, by histology, 2000-2003**



Source: Personal communication, Victorian Cancer Registry, Cancer Council Victoria.

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**Andrew Trinh**

# List of Abbreviations

<b>ABS:</b>	Australian Bureau of Statistics
<b>ASR:</b>	Age-Standardised Rate (per 100,000 Victorian women standardised to World Standard Population)
<b>CIN:</b>	Cervical Intraepithelial Neoplasia
<b>ERP:</b>	Estimated Resident Population
<b>HPV:</b>	Human Papillomavirus
<b>NHMRC:</b>	National Health and Medical Research Council
<b>NPAAC:</b>	National Pathology Accreditation Advisory Council
<b>PPV:</b>	Positive Predictive Value
<b>VCCR:</b>	Victorian Cervical Cytology Registry

# Appendix 1. Cytology Code Schedule 1996 to 2006

Squamous cell code	Wart Virus code	Endocervical cell code	Other (non-cervical)	Recommendation code
0. Unsatisfactory	- Not reported	- Not reported	- Not reported	- Not reported
1. No abnormal cells	1. Absent	0. No endocervical component present 1. Normal endocervical component present	1. No other abnormal cells	0. No recommendation 1. Repeat smear – 3 years
2. Minor reactive and inflammatory changes	2. Possible	2. Minor reactive and inflammatory changes in endocervical component	2. Abnormal cells present – other (eg IUCD cells, endometrial hyperplasia)	2. Repeat smear – 2 years
3. Mild atypia	3. Present	3. Cell changes raising the possibility of a high-grade lesion but specific diagnosis not possible (ie inconclusive)	3. Malignant cells present – uterine body	3. Repeat smear – 1 year
4. Cell changes raising the possibility of a high-grade lesion but specific diagnosis not possible (ie inconclusive)		4. Abnormal endocervical cells suggesting mild/moderate dysplasia	4. Malignant cells present – ovary	4. Repeat smear – 6 months
5. Mild dysplasia (CIN 1) including equivocal or possible mild dysplasia		5. Abnormal endocervical cells suggesting severe dysplasia or adenocarcinoma in situ	5. Malignant cells present – vagina	5. Repeat smear – 3 months
6. Moderate dysplasia (CIN 2)		6. Suspicious of invasive adenocarcinoma of endocervix (ie at least adenocarcinoma in situ with the possibility of invasion)	6. Malignant cells present – other (includes metastatic malignancy)	6. Repeat smear – 4 weeks or less (including immediate repeat with or without treatment for infection, atrophy etc)
7. Severe dysplasia /carcinoma in situ (CIN 3)		7. Adenocarcinoma – invasive		7. Referral for specialist opinion (eg colposcopy)
8. Suspicious of micro-invasion or invasion (ie at least CIN 3 but possible invasion)				8. Other
9. Squamous cell carcinoma – invasive		9. Not applicable because of hysterectomy		

## Appendix 2. *Reminder and Follow-up Protocol*

Cytology Report	Time*	Action by Victorian Cervical Cytology Registry
CIN 2, CIN 3, Cancer	3 months	Contact laboratory
	4 months	Questionnaire to practitioner Questionnaire to specialist if referred
	6 months	Telephone call to practitioner Letter to woman
	12 months	Reminder to woman
HPV effect, CIN 1, Inconclusive	9 months	Courtesy list to practitioner
	10 months	Reminder to woman
Atypia	13 months	Courtesy list to practitioner
	14 months	Reminder to woman
Negative with past history of histologically confirmed CIN 2 or 3	15 months	Reminder to woman
Negative with no past history of histologically confirmed CIN 2 or 3	27 months	Reminder to woman
Unsatisfactory	3 months	Repeat smear reminder to practitioner
	4 months	Reminder to woman

\* *Time intervals are determined from the date of the cytology*

From late November 2005 the Registry began implementation of a revised Follow-up and Reminder Protocol based on the NHMRC Guidelines for the Management of Asymptomatic Women with Screen Detected Abnormalities 2005.





