Cervical screening in Australia 2005–2006

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Abbreviations

ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AIHW	Australian Institute of Health and Welfare
AMBS 2004	Australian Modified Bethesda System 2004
ARIA	Accessibility/Remoteness Index for Australia
ASGC	Australian Standard Geographical Classification
AS rate	age-standardised rate
AS rate (A)	age-standardised rate using the Australian Standard Population
AS rate (W)	age-standardised rate using the (WHO) World Standard Population
CD	(Census) Collection District
CI	confidence interval
CIN	cervical intraepithelial neoplasia
HGA	high-grade abnormality
HPV	human papillomavirus
ICD	International Classification of Diseases
IRSD	Index of Relative Socio-economic Disadvantage
LGA	low-grade abnormality
NHMRC	National Health and Medical Research Council
NSW	New South Wales
NT	Northern Territory
Pap	Papanicolaou
Qld	Queensland
SA	South Australia
Tas	Tasmania
Vic	Victoria
WA	Western Australia
WHO	World Health Organization

Summary

The National Cervical Screening Program commenced in 1991. The main objective of the Program is to reduce the incidence, morbidity and mortality of cervical cancer through organised cervical screening of women using the Papanicolaou (Pap) test (the terms Pap test and Pap smear are often used interchangeably). The Program targets women aged 20–69 years.

Cervical screening in Australia 2005–2006 is the 10th annual report on the performance of the National Cervical Screening Program. This report combines data provided by state and territory cervical screening programs, as well as data sourced from the National Cancer Statistics Clearing House and the AIHW Mortality Database, to present the most recent information on the six Program performance indicators that cover participation in cervical screening, rate of early re-screening, low- and high-grade abnormalities detected, and incidence and mortality of cervical cancer.

For the first time, additional participation data have been compiled. These include 3-year and 5-year participation to enable comparisons with overseas cervical screening programs, and participation by geographic region and socioeconomic status to monitor the extent to which the program is achieving universal access.

The outcome data indicate that prevention, detection and treatment programs continue to be successful in reducing cervical cancer incidence and mortality. In 1991, when the Program commenced, the incidence of cervical cancer in women aged 20–69 years was 17.1 new cases per 100,000 women and mortality in women aged 20–69 years was 4.0 deaths per 100,000 women. Incidence of cervical cancer declined to 8.9 new cases per 100,000 women in 2004, and mortality to 2.0 deaths per 100,000 women in 2005. The decline in mortality began prior to introduction of the organised screening program and has continued.

Key points

Participation

Two-year participation

- In the 2-year period 2005–2006, there were 3,505,978 women who participated in the National Cervical Screening program. Women aged 20–69 years accounted for 98.5% of the women screened. The proportion of women aged 20–69 years participating in cervical screening was 60.6%.
- From 1996–1997, when reporting for the National Cervical Screening Program first commenced, to 2005–2006, there was a decline in participation among women aged less than 40 years, and an improvement in participation among women aged 55 years and over. For instance, participation of women aged 25–29 years fell from 64.5% in 1996–1997 to 56.3% in 2005–2006, and participation of women aged 55–59 years rose from 62.7% in 1996–1997 to 67.8% in 2005–2006.

Three-year participation

- In the 3-year period 2004–2006, there were 4,119,929 women who participated in the National Cervical Screening Program, 98.4% aged 20–69 years.
- The 3-year participation rate for 2004–2006 was 73.1% for women aged 20–69 years. This is comparable to the 3-year participation rates of 73% reported for New Zealand for 2003 (National Cervical Screening Programme 2005), 69.4% for England for 2007 (National Health Service 2007), 63.6% for Wales for 2007 (Cervical Screening Wales 2007), and to the previously reported average for the European Union countries of 75% (van Ballegooijen et al. 2000).

Five-year participation

- In the 5-year period 2002–2006, there were 4,824,166 women who participated in the National Cervical Screening Program, 98.1% aged 20–69 years.
- The 5-year participation rate for 2002–2006 was 85.9% for women aged 20–69 years. This is higher than the 5-year participation rates of 79.2% reported for England for 2007 (National Health Service 2007), 74.6% for Wales for 2007 (Cervical Screening Wales 2007), and 77% for the Netherlands for 2003 (Rebolj et al. 2007), but lower than a previously estimated 5-year participation rate of 90% for Finland (Antilla & Nieminen 2000).

Participation by region and socioeconomic status

- In 2005–2006, participation rates by geographic region were 62.1% for major cities, 59.3% for inner regional, 57.8% for outer regional, 56.9% for remote locations, and 53.0% for very remote locations. These differences are statistically significant.
- In 2005–2006, participation rates by socioeconomic status of area of residence were 71.5% for the first quintile, which corresponds to the highest level of socioeconomic status, 68.3% for the second quintile, 61.8% for the third quintile, 60.2% for the fourth quintile, and 57.3% for the fifth quintile, which corresponds to the lowest level of socioeconomic status. These differences are statistically significant.

Early re-screening

The recommended screening interval is 2 years following a normal (negative) Pap test. Early re-screening is defined as a repeat Pap test within 21 months of a negative test.

- Of a cohort of women screened in February 2005 who had a normal Pap test result, 24.4% had a repeat Pap test within 21 months. It is not known what proportion of this early re-screening was justified on clinical grounds.
- There was a decline in the proportion of women being re-screened early from 32.0% in 1999 to 24.4% in 2005, indicating greater compliance with the recommended screening interval over time.

Detection of abnormalities

Low-grade abnormalities include atypia, warty atypia, possible cervical intraepithelial neoplasia (CIN), equivocal CIN, CIN 1, and endocervical dysplasia not otherwise specified. High-grade abnormalities include CIN 1/2, CIN 2, CIN 3 and adenocarcinoma in situ.

- In 2006, the screening program detected 29,532 histologically verified abnormalities of which 15,118 were low-grade and 14,414 were high-grade.

- The number of high-grade abnormalities detected per 1,000 women screened aged 20–69 years increased significantly from 6.4 in 1997 (at the start of reporting) to 7.3 in 2006.
- Detection of high-grade abnormalities was highest in the younger age groups. In 2006, for women aged 20–24 years, detection of high-grade abnormalities was 18.4 per 1,000 women screened; in contrast, for women aged 65–69 years the rate was 1.1 per 1,000 women screened.

Incidence and mortality

- The numbers and rates of new cases of cervical cancer have continued to decline. There were 718 new cases in Australia in 2004 (6.9 per 100,000 women of all ages) compared with 1,090 in 1991 (13.2 per 100,000 women of all ages) when the organised screening program commenced. The number of new cases of micro-invasive cervical cancers also fell from 166 (1.9 per 100,000 women of all ages) to 107 (1.1 per 100,000 women of all ages) over the same period. These differences are statistically significant.
- Cervical cancer was the 18th most common cause of cancer mortality in Australian women in 2005, accounting for 216 deaths in 2005 compared with 329 in 1991. The age-standardised mortality rate from cervical cancer halved between 1991 and 2005 from 4.0 deaths per 100,000 women to 1.9. During the same period, for women aged 20–69 years the rate fell from 4.0 to 2.0 per 100,000 women.
- Mortality rates for cervical cancer increase with age. The highest mortality rate in the 2002–2005 period was in women aged 85 years and over, with 14.3 deaths per 100,000 women.

Aboriginal and Torres Strait Islander women

Identification of Aboriginal and Torres Strait Islander peoples in cancer registry records of new cases is not complete as Indigenous status is not yet included in pathology forms, and reporting of Indigenous status is primarily sourced from hospital records.

- In 2000–2004, despite under-reporting, cervical cancer incidence in Aboriginal and Torres Strait Islander women was 16.9 new cases per 100,000 women for New South Wales, Victoria, Queensland, Western Australia and the Northern Territory combined, more than double the non-Indigenous rate of 7.1 new cases per 100,000 women (AIHW unpublished data).

Only Queensland, Western Australia, South Australia and the Northern Territory have Indigenous mortality registration data of sufficient quality to be published.

- For these jurisdictions in the period 2002–2005, for women aged 20–69 years the age-standardised mortality rate for Indigenous women was 8.3 per 100,000 women, more than four times as high as the rate of 2.0 per 100,000 women for non-Indigenous women.

Summary trend comparison table for national data for all indicators for women in the target age group 20–69 years

	Current reporting period		Previous reporting period		Reporting commencement	
Indicator	**Year(s)**		**Year(s)**		**Year(s)**	
Participation in 2-year period (per cent)	2005–2006	60.6	2004–2005	61.0	1996–1997	61.0
Participation in 3-year period (per cent)	2004–2006	73.1	. .	. .	2004–2006	73.1
Participation in 5-year period (per cent)	2002–2006	85.9	. .	. .	2002–2006	85.9
Early re-screening within 21 months of normal Pap test[(a)] (per cent)	2005	24.4	2004	25.3	1999[(a)]	32.0
Ratio of low-grade to high-grade abnormalities	2006	1.05	2005	1.10	1997	1.47
High-grade abnormalities per 1,000 women screened (age-standardised rate)	2006	7.3	2005	7.5	1997	6.4
Incidence of cervical cancer per 100,000 women (age-standardised rate)	2004	8.9	2003	9.1	1997	11.4
Mortality from cervical cancer per 100,000 women (age-standardised rate)	2005	2.0	2004	1.8	1997	2.7

(a) From 1996–1998 the indicator reported on a 2-year period following a normal Pap test; in 1999, the indicator was changed to a 21-month interval, hence 1999 is the earliest year for which data are available for comparison.

National cervical screening monitoring indicators

The National Cervical Screening Program commenced in 1991. The main objective of the Program is to reduce the incidence, morbidity and mortality of cervical cancer through organised cervical screening of women using the Papanicolaou (Pap) test (the terms Pap test and Pap smear are often used interchangeably). The Program targets women aged 20–69 years.

This report monitors the performance of the National Cervical Screening Program using indicators which measure program activity, performance and outcome. These indicators help measure changes in disease patterns and examine the contribution of cervical screening to preventing or reducing deaths from cervical cancer.

Performance indicators for the National Cervical Screening Program cover the areas of participation, early re-screening, low- and high-grade abnormality detection, incidence and mortality. These were developed and endorsed by the former National Advisory Committee and by state and territory cervical screening programs.

State and territory cervical screening programs agreed upon the addition of four new performance indicators for the 2005–2006 report at a meeting in December 2006. Therefore, this report examines for the first time, participation over 3 years, participation over 5 years, participation by geographic location and participation by socioeconomic status.

A listing of the indicators and their definitions follows.

Indicators

Indicator 1 Participation

Indicator 1.1.1 Two-year participation rate for cervical screening

The percentage of women screened in a 2-year period for women aged 20 years and over and for the target age group 20–69 years.

Indicator 1.1.2 Three-year participation rate for cervical screening

The percentage of women screened in a 3-year period for women aged 20 years and over and for the target age group 20–69 years.

This indicator is reported for the first time in this report.

Indicator 1.1.3 Five-year participation rate for cervical screening

The percentage of women screened in a 5-year period for women aged 20 years and over and for the target age group 20–69 years.

This indicator is reported for the first time in this report.

Indicator 1.2 Participation by region

The percentage of women screened during a 2-year period by geographic region of residence for women aged 20 years and over and for the target age group 20–69 years.

This indicator is reported for the first time in this report.

Indicator 1.3 Participation by socioeconomic status

The percentage of women screened during a 2-year period by socioeconomic status of area of residence for women aged 20 years and over and for the target age group 20–69 years.

This indicator is reported for the first time in this report.

Indicator 2 Early re-screening

The proportion of women re-screened, by number of re-screens, during a 21-month period following a normal Pap test for women in the target age group 20–69 years.

Indicator 3 Low-grade abnormality detection

The ratio of the number of women with a histologically verified low-grade intraepithelial abnormality detected in a 12-month period to the number of women with a histologically verified high-grade intraepithelial abnormality detected in the same period, for women in the target age group 20–69 years.

Indicator 4 High-grade abnormality detection

Detection rate of histologically verified high-grade intraepithelial abnormalities per 1,000 women screened in a 12-month period for women aged 20 years and over and for the target age group 20–69 years.

Indicator 5.1 Incidence of micro-invasive squamous cervical cancer

Incidence rate of micro-invasive squamous cell carcinoma per 100,000 estimated resident female population in a 12-month period for women of all ages and for the target age group 20–69 years.

Indicator 5.2 Incidence of squamous, adenocarcinoma, adenosquamous and other cervical cancer

Incidence rate of squamous, adenocarcinoma, adenosquamous and other cervical cancer (micro-invasive and invasive) per 100,000 estimated resident female population in a 12-month period for women of all ages and for the target age group 20–69 years.

Indicator 5.3 Incidence by region

Incidence rate of cervical cancer per 100,000 estimated resident female population in a 4-year period by geographic region for women of all ages and for the target age group 20–69 years.

Indicator 6.1 Mortality by age group

Mortality rate for cervical cancer per 100,000 estimated resident female population in a 12-month period for women of all ages and for the target age group 20–69 years.

Indicator 6.2 Mortality by region

Mortality rate for cervical cancer per 100,000 estimated resident female population in a 4-year period by geographic region for women of all ages and for the target age group 20–69 years.

Indicator 6.3 Indigenous mortality

Mortality rate for cervical cancer per 100,000 estimated resident female population in a 4-year period by Indigenous status for women of all ages and for the target age group 20–69 years.

Important changes in cervical cancer

This *Cervical screening in Australia* report is the 10th since reporting for the National Cervical Screening Program began in 1996–1997. Recent changes to the understanding and management of cervical cancer are likely to have an impact on the Program, and will require that modifications are made to future *Cervical screening in Australia* reports to ensure that these documents continue to reflect current practices in cervical cancer.

During the last decade a greater understanding of the natural history of cervical cancer has developed, in particular the recognition of cervical cellular changes as an infective rather than a neoplastic process. It is now recognised that cervical cancer is a rare outcome of persistent infection with human papillomavirus (HPV), in particular HPV types 16 and 18, and that infection with a high-risk HPV type is necessary, though not sufficient, for the development of cancer (Walboomers et al. 1999; Bosch et al. 2002). It has also been recognised that low-grade abnormalities represent acute infection with HPV, and as such most will regress without treatment within a short period of time. High-grade abnormalities can occur after persistent infection with HPV. The probability of a high-grade abnormality progressing to cancer increases with age and extent of abnormality (NHMRC 2005), but this is still a very rare outcome, with regression rates for high-grade abnormalities estimated to be at least 80% (Raffle et al. 2003).

New NHMRC *Guidelines for the management of asymptomatic women with screen detected abnormalities* (2005), introduced in July 2006, acknowledge that the majority of cervical cell changes are a consequence of HPV infection and will resolve without medical intervention. This is reflected in the guidelines, with changes to the recommendation for the clinical management of women with low-grade squamous intraepithelial lesions favouring less intervention than the previous guidelines. The new NHMRC guidelines also recommend new management for women who have been treated for high-grade intraepithelial disease, where they return to the normal screening interval once they have fulfilled a 'test of cure' criteria.

In addition, in 2007, a vaccine against HPV types 16, 18, 6 and 11 was introduced under the National Immunisation Program, free to all women aged 12–26 years. This is likely to influence the incidence of low- and high-grade abnormalities in the future, as women who have been vaccinated move into the 20–69 year target age group. However, it is important to note that the use of HPV vaccines does not reduce the importance of regular Pap tests for all women in the target age group.

The recently introduced NHMRC management guidelines and HPV vaccine reflect a paradigm shift in the management of cervical cancer. The combined effects of these two changes on the National Cervical Screening Program are likely to be substantial, and future *Cervical screening in Australia* reports will reflect changes in cervical screening results.