Cervical screening in Australia 2014–2015

National Cervical Screening Program

A joint Australian, State and Territory Government initiative

Cervical screening in Australia 2014–2015

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Please note that there is the potential for minor revisions of data in this report. Please check the online version at <www.aihw.gov.au> for any amendments.

Contents

Acknowledgments

Abbreviations

ABS	Australian Bureau of Statistics
AC	adenocarcinoma
ACT	Australian Capital Territory
AHMAC	Australian Health Ministers Advisory Council
AIHW	Australian Institute of Health and Welfare
AIS	adenocarcinoma in situ
AMBS	Australian Modified Bethesda System
ASGS	Australian Statistical Geography Standard
CIN	cervical intraepithelial neoplasia
CST	Cervical Screening Test
DALY	disability-adjusted life year
DRF	Death Registration Form
HPV	human papillomavirus
HSIL	high-grade squamous intraepithelial lesion
IRSD	Index of Relative Socio-Economic Disadvantage
LBC	liquid-based cytology
LSIL	low-grade intraepithelial lesion
MBS	Medicare Benefits Schedule
MCDC	Medical Certificate of Cause of Death
MSAC	Medical Services Advisory Council
NCSP	National Cervical Screening Program
NHMD	National Hospital Morbidity Database
NHMRC	National Health and Medical Research Council
NHS	National Health Survey
NPAAC	National Pathology Accreditation Advisory Council
NSW	New South Wales
NT	Northern Territory

PIP	Practice Incentive Payment
PPV	positive predictive value
Qld	Queensland
QSMC	Quality and Safety Monitoring Committee
RA	remoteness area
SA	South Australia
SCC	squamous cell carcinoma
SEIFAs	Socio-Economic Indexes for Areas
SMC	Safety Monitoring Committee
Tas	Tasmania
Vic	Victoria
WA	Western Australia
YLD	years lived with disability
YLL	years of life lost

Summary

The National Cervical Screening Program (NCSP) aims to reduce cervical cancer cases, as well as illness and death from cervical cancer in Australia, through an organised approach to cervical screening aimed at detecting and treating high-grade abnormalities before possible progression to cervical cancer. This report is the latest in the *Cervical screening in Australia* series, which is published annually to provide regular monitoring of the NCSP.

The following data are for women aged 20–69.

Cervical cancer cases and deaths are low by international standards

In 2013, 692 women aged 20–69 were diagnosed with cervical cancer, and 149 women died from the disease in 2014. This is equivalent to 9 new cases of cervical cancer diagnosed per 100,000 women and 2 deaths per 100,000 women. These rates are similar to previous years.

Both incidence and mortality halved between the introduction of the NCSP in 1991 and the year 2002, and have since remained at 9 to 10 new cases, and 2 deaths, per 100,000 women.

Around 6 in 10 women participate in the National Cervical Screening Program

In 2014–2015, more than 3.8 million women participated in cervical screening. This was 56% of women aged 20–69. The age-standardised participation of 57% is similar to previous years, with age-standardised participation in 2012–2013 and 2013–2014 at 58%.

Participation varied across remoteness areas, ranging from 52% for *Very remote* areas to 58% for *Inner regional* areas. There was a clear association between participation and socioeconomic group, with participation rising from 51% for women in the lowest socioeconomic group to 63% for those in the highest socioeconomic group.

Relatively few women rescreen early, and a third respond to a reminder letter

Only 11% of women with a negative screen in 2014 rescreened earlier than the recommended 2 years, continuing a downward trend. Of women who were sent a 27-month reminder letter by a cervical screening register, 32% rescreened within 3 months—similar to previous years.

High-grade abnormality detection rate continues to decline in young women

In 2015, for every 1,000 women screened, 8 women had a high-grade abnormality detected by histology, providing an opportunity for treatment before possible progression to cancer. This is similar to previous years, for which the age-standardised rate was between 8 and 9.

There has been a decline in the rate of detection of high-grade abnormalities for women under 25, which has shifted the historical peak age of high-grade abnormalities from 20–24 to 25–29. This is likely to be due to girls being vaccinated against HPV under the National HPV Vaccination Program. It is expected that, as this vaccinated cohort continues to age, older age groups will experience a similar decline in the detection rate of high-grade abnormalities.

Indigenous women have lower screening rates and poorer outcomes

National participation rates for Aboriginal and Torres Strait Islander women are not available, due to Indigenous status information not being collected on pathology forms in all jurisdictions, but there is strong evidence that this population group is under-screened.

Incidence of cervical cancer in Aboriginal and Torres Strait Islander women is more than twice that of non-Indigenous women, and mortality is 4 times the non-Indigenous rate.

Report card

Measure	What indicates a good finding?	Previous data	Latest data	Recent trend	
Participation in 2014–2015	Higher is better	57.8%	56.9%	Steady at 57–58%	🚦
Early rescreening	Lower is better	11.8%	10.9%	Falling from 14 to 11%	🚦
Rescreening after reminder letter	Higher is better	33.2%	32.0%	Steady at 32–33%	🚦
Pap tests not of satisfactory quality	Lower is better	2.3%	2.6%	Rising from 2.1 to 2.6%	🚦
Pap tests negative for abnormalities	. .	92.0%	91.8%	Steady at 92%	🚦
Pap tests with no endocervical component	<20% is better	22.9%	23.3%	Rising from 21 to 23%	🚦
High-grade abnormality detection in 2015	. .	8.1	7.8	Steady at 8–9	🚦
PPV of high-grade squamous cytology	Higher is better	68.3%	67.5%	Steady at 68–70%	🚦
PPV of high-grade endocervical cytology	Higher is better	70.3%	72.0%	Steady at 71–73%	🚦
Incidence in 2013	Lower is better	10.0	9.4	Steady at 9–10	🚦
Mortality in 2014	Lower is better	2.0	1.8	Steady at around 2	🚦

. . = not applicable
PPV = positive predictive value.

This report card uses age-standardised rates, where available, to aid in comparison of trends. All data shown are for women aged 20–69. 'Recent trend' refers to the past 3–5 years.
Figures for 'High-grade abnormality detection' are the number of women with a high-grade abnormality per 1,000 women screened. Figures for 'Incidence' are the number of new cases per 100,000 women. Figures for 'Mortality' are the number of death per 100,000 women.

🚦 Green light: positive trend—all is well. 🚦 Amber light: trend slipping in an unfavourable direction—keep an eye on this. 🚦 Red light: unfavourable trend—may be cause for concern.

1 Introduction

1.1 Cervical cancer

Cancer is a group of several hundred diseases in which abnormal cells are not destroyed naturally by the body, but instead multiply and spread out of control. Cancers are distinguished from each other by the specific type of cell involved and by the place in the body in which the disease began.

Cervical cancer affects the cells of the uterine cervix, which is the lower part (or 'neck') of the uterus where it joins the upper end of the vagina (see Figure 1.1). Cervical cancer develops when abnormal cells in the lining of the cervix begin to multiply out of control and form precancerous lesions. If undetected, these lesions can develop into tumours and spread into the surrounding tissue.

Worldwide, cervical cancer is the fourth most common cancer affecting women and the seventh most common cancer overall; however, the burden of cervical cancer is not equal globally—around 85% of the global burden occurs in the less-developed regions, where cervical cancer accounts for almost 12% of all female cancers (IARC 2014). In contrast, in Australia cervical cancer accounts for less than 2% of all female cancers, with a relatively low incidence of 7 new cases per 100,000 women (for women of all ages) (AIHW 2017a; AIHW 2017b).

Figure 1.1: Anatomy of the cervix and nearby organs

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Source: <http://visualsonline.cancer.gov>.

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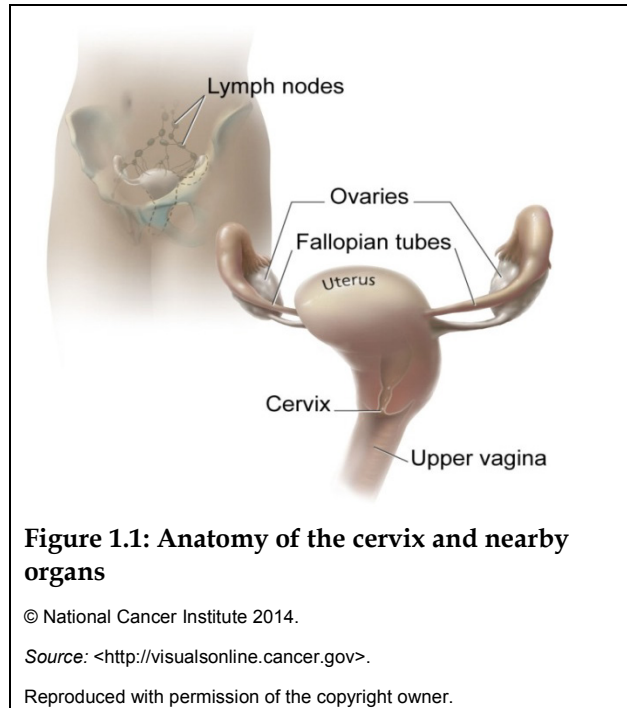
1.2 The primary cause of cervical cancer is HPV

It has been recognised for some time that cervical cancer is a rare outcome of persistent infection with one or more oncogenic (cancer-causing) types of human papillomavirus (HPV) (Bosch et al. 2002; Walboomers et al. 1999). Infection with one or more of these oncogenic HPV types is the underlying cause of almost all cases of cervical cancer; it has been demonstrated that over 99.7% of cervical cancers test positive for HPV DNA worldwide (Walboomers et al. 1999).

Currently, 15 oncogenic types of HPV are recognised. HPV types 16, 18 and 45 are most predominantly associated with cervical cancer, with HPV types 16 and 18 detected in 70%–80% of cases of cervical cancer in Australia (Brotherton 2008).

However, infection with one or more of the 40 genital HPV types is extremely common, with infection rates of this sexually transmitted infection peaking in women in young adulthood (the period following sexual debut). Most HPV infection is asymptomatic and cleared by the immune system within a year; however, in up to 10% of women, the infection can persist,

and in a very small number of women, persistent infection with oncogenic HPV may eventually lead to cervical cancer.

The four major steps in cervical cancer development are infection with HPV (from sexual activity); viral persistence (as most HPV infections clear with no treatment); progression to precancerous abnormalities (many of which will also regress with no treatment); and invasive cervical cancer (Schiffman et al. 2007; Schiffman & Kjaer 2003) (Figure 1.2). Note that this is not unidirectional, and that most HPV-infected cells return to normal and a large proportion of precancerous abnormalities do not progress to cervical cancer, even in the absence of treatment.

Source: Reproduced with permission from M Schiffman, National Cancer Institute (Schiffman and Kjaer 2003).

Figure 1.2: Role of human papillomavirus infection in the development of cervical cancer
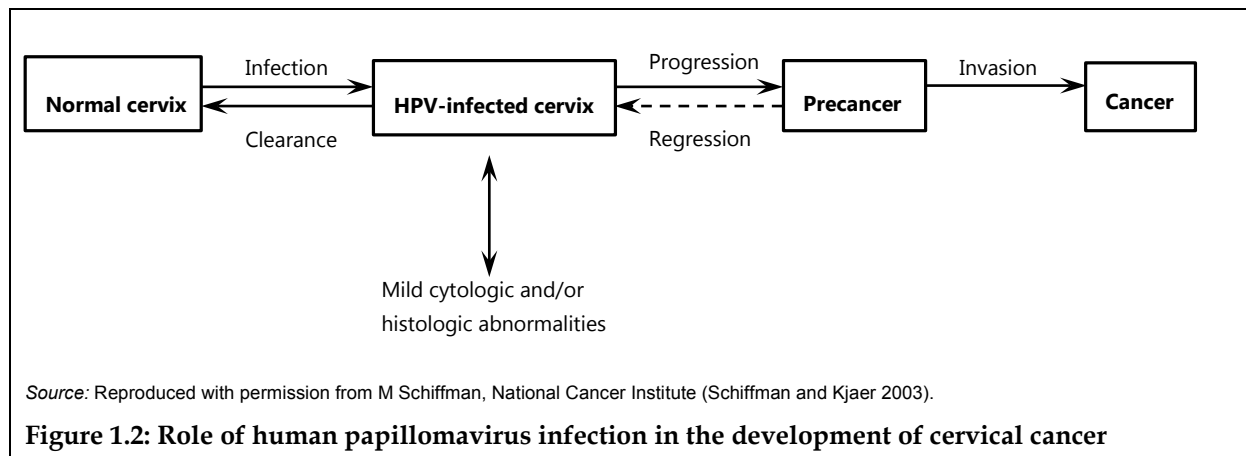
Infection of cervical cells with oncogenic HPV interferes with the normal functioning of these cells, leading to abnormalities in the cells that we recognise as precancerous changes.

However, while the cell changes caused by persistent infection with oncogenic HPV are necessary for the development of precancerous changes to the cervix, there are a range of other factors that will influence whether precancerous changes will progress to cervical cancer, including smoking, multiparity (specifically, more than 5 full-term pregnancies), a young age at first full-term pregnancy, oral contraceptive use, and immunosuppression (Cancer Council Australia 2014).

1.3 Cervical cancer is a largely preventable disease

The role HPV plays in the development of cervical cancer allows for the implementation of both primary and secondary strategies for the prevention of cervical cancer, in those countries that have available resources to make cervical cancer prevention a priority.

In Australia, primary prevention of cervical cancer is through vaccination against HPV, through the National HPV Vaccination Program, to prevent women being infected with oncogenic HPV types 16 and 18. Secondary prevention of cervical cancer is through cervical screening, through the National Cervical Screening Program (NCSP), to detect and treat abnormalities while they are in the precancerous stage, before any possible progression to cervical cancer. This is possible because cervical cancer is one of the few cancers that has a precancerous stage that lasts for many years prior to the development of invasive disease, which provides an opportunity for detection and treatment (WHO 2014).

Detection of precancerous abnormalities through cervical screening uses cytology from the Papanicolaou smear, or 'Pap test', as the screening tool. During a Pap test, cells are collected from the transformation zone of the cervix—the area of the cervix where the squamous cells

from the outer opening of the cervix and glandular cells from the endocervical canal meet. This is the site where most cervical abnormalities and cancers are detected.

While cervical cytology—the examination of the cells collected from the cervix—is a very useful tool, it is not diagnostic. A Pap test collects an arbitrary sample of cells from the surface of the cervix at an arbitrary point in time, and requires a level of judgment in the interpretation of sampled cells. Therefore cervical cytology cannot accurately reveal all abnormalities that may exist in the cervical tissue in situ. As a screening test, cervical cytology aims to identify those individuals who may have a cervical abnormality (as indicated by the presence of abnormal cells in the specimen collected) and therefore require further diagnostic testing.

The strength of cervical screening comes from repeating the cervical cytology test at agreed rescreening intervals, which allows more accurate detection of precancerous abnormalities over the long preinvasive stage of squamous cervical cancers. Recognition of cervical screening as a program of rescreening at regular intervals, rather than as a single opportunistic test, was important in the establishment of the NCSP (Dickinson 2002).

Detecting precancerous changes to cells allows for intervention before cervical cancer develops; however, it is important to recognise that some cervical cancers do not have a precancerous stage, and therefore are simply unable to be detected by cervical screening. These tend to be rare but aggressive cancers, such as neuroendocrine cancer of the cervix; the two most aggressive types are small cell neuroendocrine carcinoma and large cell neuroendocrine carcinoma, neither of which appear to have a preinvasive stage (Necervix.com 2014).

Box 1.1: Key messages

Cervical cancer is a rare outcome of persistent infection with oncogenic HPV

Infection with one or more oncogenic HPV types is the underlying cause of almost all cases of cervical cancer.

Infection with HPV is very common, and most infections will resolve spontaneously. It is only in a very small number of women that infection with oncogenic HPV persists, which may lead to precancerous abnormalities and—if not detected by cervical screening and treated—may progress to cervical cancer in around 10–20 years.

Cervical cancer is a largely preventable disease

In Australia, primary prevention of cervical cancer is through vaccination against HPV, through the National HPV Vaccination Program, to prevent women being infected with oncogenic HPV types 16 and 18. Secondary prevention of cervical cancer is through cervical screening, through the NCSP, to detect and treat abnormalities while they are in the precancerous stage, before any possible progression to cervical cancer.

Cervical screening is possible because cervical cancer is one of the few cancers that has a precancerous stage that lasts for many years prior to the development of invasive disease, which provides an opportunity for detection and treatment. Note, however, that some rare (and often aggressive) cervical cancers do not have a precancerous stage, and therefore are unable to be detected by cervical screening.

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2 Moving towards a new National Cervical Screening Program

2.1 Cervical screening from 1991 to 2017

In 1991, the Australian Health Ministers' Advisory Council (AHMAC) accepted recommendations made by the Screening Evaluation Steering Committee in the Australian Institute of Health report *Cervical cancer screening in Australia: options for change* (AIHW 1991) that saw the establishment of the 'Organised Approach to Preventing Cancer of the Cervix', Australia's cervical screening program. Soon after, this became known as the National Cervical Screening Program (NCSP), operating as a joint program of the Australian Government and state and territory governments, and recommending 2-yearly Pap tests.

The initial aim of an organised approach to screening was to further reduce the incidence and mortality of cervical cancer beyond the reductions attributable to the opportunistic cervical screening available in Australia since the mid-1960s (Dickinson 2002).

This aim was realised soon after its introduction, with an estimated 70% of squamous cell carcinomas of the cervix (around 1,200 cases) prevented in 1998 as a result of Australia's cervical screening program (Mitchell 2003), a finding supported by more recent analyses of incidence and mortality trends (Canfell 2006; Luke et al. 2007). Indeed, the relatively low incidence and mortality of cervical cancer in Australia, compared with other countries (Ferlay et al. 2010), has been largely attributed to Australia's cervical screening program and its successful implementation in 1991 (NHMRC 2005).

However, over the past two decades there have been many developments that have altered the environment in which the NCSP operates, making it very different from what existed in 1991. The main driver has been a greater understanding of the natural history of cervical cancer and the role HPV infection plays in this disease, as this has led to an international examination of the optimal screening age range and interval, the development of methods to test for the presence of HPV, and, subsequently, a vaccine against HPV.

In April 2007, Australia introduced a National HPV Vaccination Program, which included an ongoing program for girls aged 12–13 and a 'catch-up' program for girls aged 14–26. This program was extended to males from February 2013.

By protecting vaccinated women from infection with the oncogenic HPV types 16 and 18, the National HPV Vaccination Program is expected to reduce the number of cervical abnormalities and, eventually, the incidence of cervical cancer. It was recognised that this would affect both the effectiveness and cost-effectiveness of the NCSP, and it was subsequently acknowledged that the NCSP, as it currently existed, would need to change to adapt to this different environment while continuing to operate according to current evidence and best practice.

In light of this, in 2011 the former Australian Population Health Development Principal Committee of AHMAC endorsed a plan to renew the NCSP. This commenced in 2011, undertaken by the Standing Committee on Screening and supported by the Department of Health. It aimed to ensure that all Australian women, HPV-vaccinated and unvaccinated, have access to a cervical screening program that is safe, acceptable, effective, efficient and based on current evidence (MSAC 2014).

On 28 April 2014, the Medical Services Advisory Committee (MSAC) announced its recommendations for a renewed NCSP. These recommendations included 5-yearly cervical screening of HPV-vaccinated and unvaccinated women aged 25 to 69, using a primary HPV test with partial HPV genotyping and reflex liquid-based cytology (LBC) triage, followed by exit testing of women aged 70 to 74 (MSAC 2014). This is a major change from the previous program, which recommended 2-yearly cervical screening using Pap tests for HPV-vaccinated and unvaccinated women from 18 to 20 years (or 1 or 2 years after first having sexual intercourse, whichever is later) to 69 years.

These recommendations were accepted, with a new NCSP to commence on 1 December 2017.

2.2 Cervical screening from 1 December 2017

The changes to the NCSP will require new tools to support it. Some of those already developed include new policy (outlined in Box 2.1), new clinical management guidelines (Cancer Council Australia & Cervical Cancer Screening Guidelines Working Party 2016), new quality, safety and performance measures, and a new data dictionary (AIHW, 2017c).

Box 2.1: National policy for the new National Cervical Screening Program

From 1 December 2017, the new national policy will be as follows.

- All women who have ever been sexually active should start having the Cervical Screening Test at 25 years of age.
- Cervical screening may cease for women between the ages of 70 and 74 if they have had regular screening tests with negative results and have a negative exit test result.
- Routine screening with the Cervical Screening Test should be carried out every 5 years for women who have no symptoms or history suggestive of cervical cancer.

The following policy has been developed for transitioning women from Pap test to the Cervical Screening Test.

- Women in the new target age group of 25 to 74 will be due for their first Cervical Screening Test two years after their last Pap test.
- Until the new Program is implemented, all women aged between 18 and 69 who have ever been sexually active should continue to have a Pap test when due.

Source: Department of Health (2016)   <www.cancerscreening.gov.au>

New terminology has also been introduced to make the transition to the new NCSP simpler for women. The screening test of the new NCSP will be known as the 'Cervical Screening Test' that can be abbreviated to 'CST'. Results of the CST will be communicated to women in terms of their risk of significant cervical abnormality: low risk, intermediate risk, or higher risk (or 'unsatisfactory for evaluation' if the CST was not of satisfactory quality for a result and risk to be assigned). Note that the introduction of 'risk' as an outcome under the new NCSP has necessitated that HPV types previously referred to as 'high risk' are now referred to as 'oncogenic', to avoid possible confusion.

Women will follow different cervical screening pathways according to their risk category; women at low risk of significant cervical abnormality will be invited to rescreen in 5 years, women at intermediate risk will enter a pathway in which they have a follow-up test in 12 months, and women at higher risk will be referred for diagnostic testing.

These changes to policy and reporting will apply after the renewal is implemented.

3 Key qualities of the National Cervical Screening Program

3.1 Screening behaviour

Cervical screening in Australia is not provided by a dedicated service, but is part of primary health care. Therefore, all women who choose to have a cervical screening test through any health-care provider are considered to be part of the NCSP. Being part of the NCSP means that there are standards for laboratories that interpret cervical screening test results; evidence-driven guidelines to aid in the management of women after they receive cervical screening test results; and dedicated cervical screening registers that act as a 'safety net' for participating women—as well as encouraging regular cervical screening tests.

One indicator of the performance of the NCSP is the proportion of women in the population who participate in cervical screening—measured as the percentage of women in the population aged 20–69 who had at least one cervical screening test in a 2-year period, which is the recommended screening interval. High participation in screening is required for the NCSP to achieve its aim of reducing cervical cancer incidence, morbidity and mortality, through the detection (and subsequent treatment) of cervical abnormalities that could otherwise develop into cervical cancer.

Box 3.1: Crude versus age-standardised rates

This report presents crude and age-standardised rates. Crude is the 'true' proportion or rate, and is appropriate when a single year or reporting period is used. However, comparisons over time or across states/territories or population subgroups require that crude rates are age-standardised to remove the underlying differences in age structure over time or between groups. These allow analysis of trends and differentials, and are therefore preferentially reported in these situations.

In 2014–2015, the latest 2-year period, 3,839,611 women aged 20–69 participated, which is 56.4% of the population who should have had a Pap test over this time.

Participation for 2014–2015 has been age-standardised to 56.9%, which is the rate used when comparing participation over time or across population subgroups (see Box 3.1).

At 56.9%, participation for 2014–2015 was only a little lower than in recent reporting periods, which ranged between 57.3% and 58.2%. Figure 3.1 shows both the participation rate (as a line) and the number of women screened (as columns) over time.

Note: Rates from before 2004–2005 should not be directly compared with those after this reporting period (see Table A1.1). Data for this figure are available in Table A1.1.

Source: AIHW analysis of state and territory cervical screening register data.

Figure 3.1: Participation of women aged 20–69 in cervical screening, 1996–1997 to 2014–2015
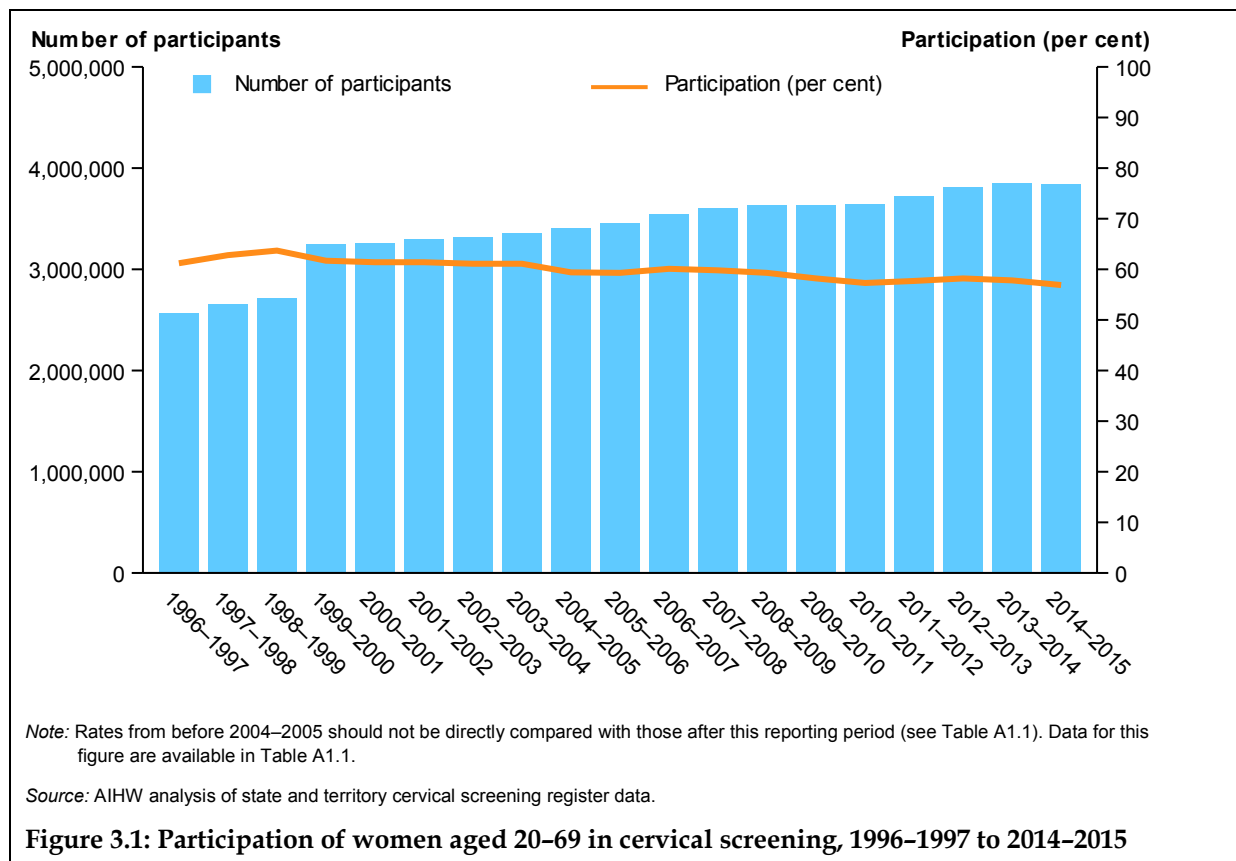
To provide further information about screening behaviour outside the recommended 2 years, participation in the NCSP is also measured over 3-year and 5-year periods.

The latest data show that participation over the 3 years 2013–2015 was 69.7%, and participation over the 5 years 2011–2015 was 82.6%, indicating that women are participating in screening, but that a considerable number are doing so less frequently than recommended.

Three-year participation is particularly relevant, as this may provide a more accurate indication of the proportion of women who participate regularly in cervical screening than 2-year data. This is because women are only reminded to screen after they have missed a Pap test, not before their next Pap test is due, which means that women who wait until they are reminded will tend to screen at approximately 3-year intervals.

This reminder to screen takes the form of a letter sent by a cervical screening register 27 months after a previous negative Pap test, and there is evidence that it does indeed act as a prompt to screen for many women, with the latest rescreening data revealing that 32% of women who were sent this reminder letter in 2014 presented for screening within 3 months.

From these analyses, it is apparent that 57%–70% of the population participate in screening regularly. But this alone does not tell us which women are participating well and thus reaping the benefits of cervical screening, and which are participating less frequently or not at all. For this, we need to look at the characteristics of women who participate in cervical screening.

Screening behaviour across ages

Age is a major determinant of screening behaviour. The effect of age on participation in cervical screening is very similar for 2-year and 3-year participation, with 2-year participation peaking (at around 63%) in women aged 45–49 and 50–54, and 3-year participation peaking (at around 77%) in women aged 45–49 (Figure 3.2).

The age structure changes when participation is measured over 5 years. Higher participation starts to be seen for younger age groups, with the highest participation (at around 87–88%) occurring between 30–34 and 45–49. The age group with the lowest participation changes from age 20–24 for 2-year and 3-year participation, to age 65–69 for 5-year participation (Figure 3.2).

Source: AIHW analysis of state and territory cervical screening register data. Data for this figure are available in tables A1.2 and A1.6.

Figure 3.2: Participation of women aged 20–69, by age, over 2 years (2014–2015), 3 years (2013–2015) and 5 years (2011–2015)
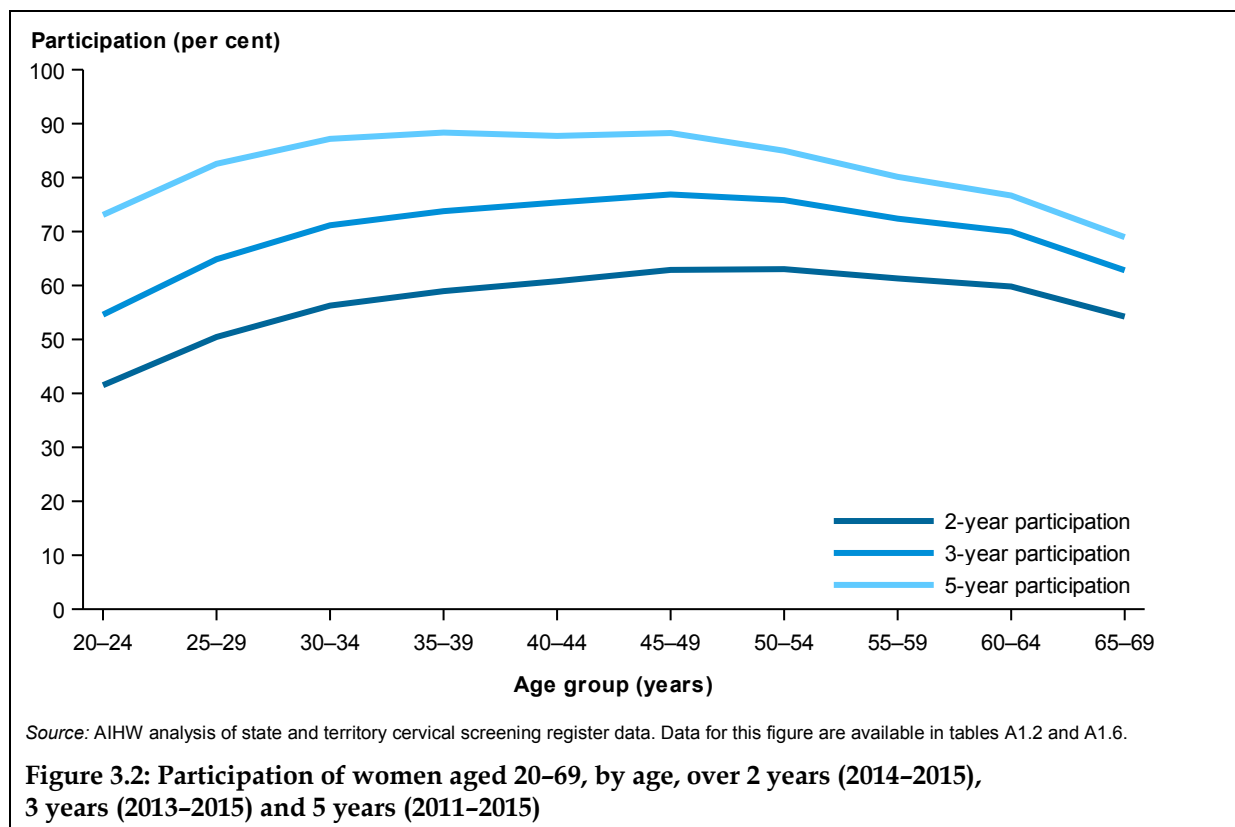
The level of screening in women aged 20–24 is relatively low, and falling (as shown in the supplementary online data tables)—but this is not considered a cause for concern, because evidence shows that screening women aged 20–24 years does not prevent any cervical cancers in women under the age of 25 years (Landy et al. 2014).

Further, Australia is one of the few countries that still screens women younger than 25 and, as outlined in the introductory material, a starting age of 25 (rather than 20 years or younger) is to be adopted as part of the new NCSP that will commence in 2017.

While participation data show that many women participate in screening less often than recommended, there are some women who participate more often than required. This is a small number, and one that continues to fall, with the latest data indicating that 10.9% of women with no history of disease in 2014 rescreened earlier than recommended.

This number represents a substantial decrease from 46.7% in 1997 (which was not long after the program commenced with a recommendation of 2-yearly rather than annual Pap tests). Although direct comparisons cannot be made (because of two changes to the definition of 'early rescreening'), the overall trend shows a change in screening behaviour over time towards compliance with the recommended screening interval.

More recent results are directly comparable, because the same definition of early rescreening has been applied: they show that the proportion of women rescreening early decreased from 15.1% in 2008 to 10.9% in 2014 (Figure 3.3), indicating a continued increase in compliance with 2-yearly screening.

A low proportion of women rescreening early is desirable, since modelling has shown that a decrease in early rescreening reduces the cost of a screening program without changing its effectiveness (Creighton et al. 2010).

Women rescreening early (per cent)

Note: Gaps in the line indicate a change in definition; direct comparison of trends on either side of these gaps is not recommended.

Source: AIHW analysis of state and territory cervical screening register data.

Figure 3.3: Proportion of women aged 20–69 rescreening early following a negative cervical cytology test, 1996 to 2014 cohorts
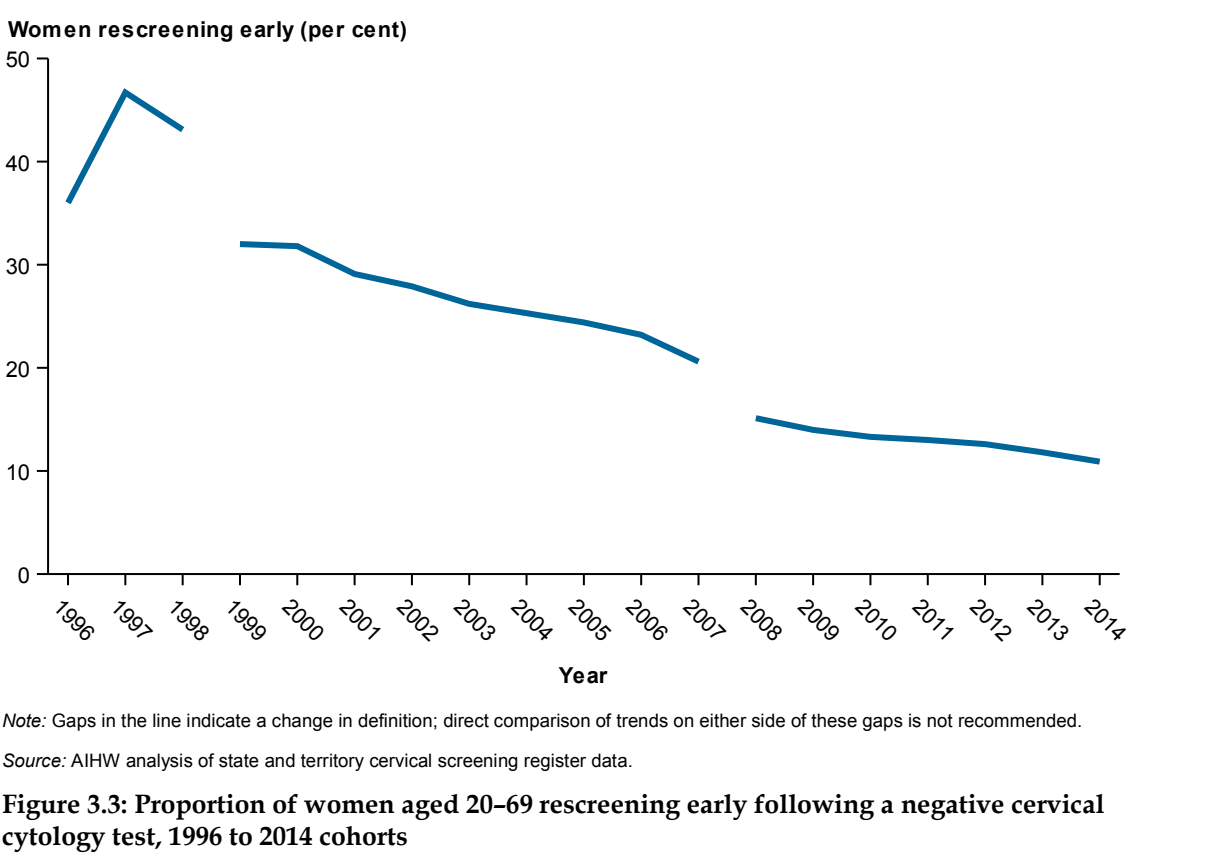
Screening behaviour across areas

Participation is similar across remoteness areas, from 57.8% in *Inner regional* areas to around 52% in *Remote* and *Very remote* areas (Figure 3.4).

There is a clear association between participation and socioeconomic group, with participation rising from 51.4% for women in areas with the lowest socioeconomic group to 62.6% for those in areas with the highest socioeconomic group (Figure 3.5).

Participation (per cent)

Source: AIHW analysis of state and territory cervical screening register data. Data for this figure are available in Table A1.4.

Figure 3.4: Participation of women aged 20–69, by remoteness area, 2014–2015

Participation (per cent)

Source: AIHW analysis of state and territory cervical screening register data. Data for this figure are available in Table A1.5.

Figure 3.5: Participation of women aged 20–69, by socioeconomic group, 2014–2015

3.2 Characteristics of the screening test
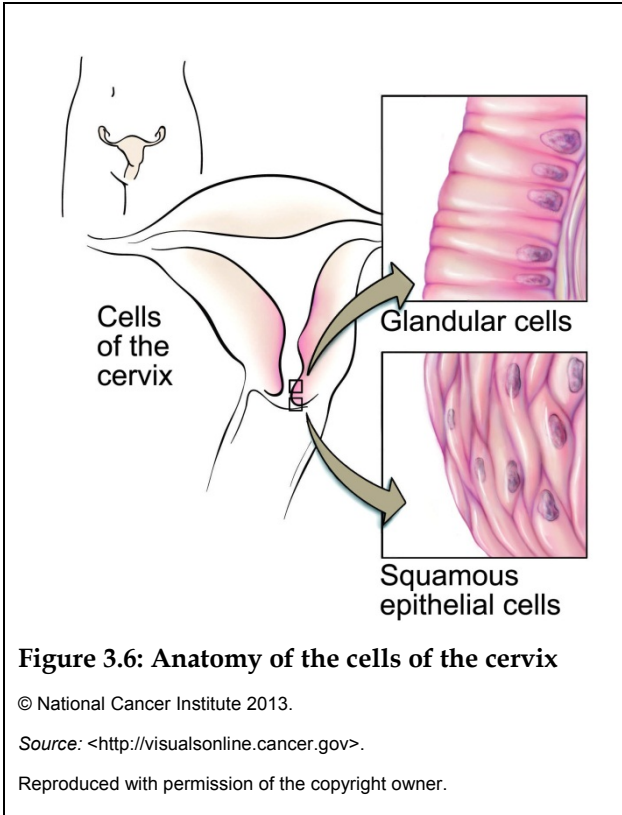
Figure 3.6: Anatomy of the cells of the cervix

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The screening test of the NCSP is currently the Pap test. The objective of a Pap test is to sample cells from the transformation zone of the cervix (CDHSH 1993) — the site where cervical abnormalities and cancer are usually found. This is the area between the 'original' and 'current' squamocolumnar junctions of the cervix, in which the squamous cells meet the endocervical cells (also known as glandular cells) (Figure 3.6).

The NCSP developed the National Cervical Cytology Coding Sheet based on the Australian Modified Bethesda System 2004 for reporting cervical cytology (NHMRC 2005). This coding sheet allows pathologists to report on both the squamous and endocervical components of the cervical cytology sample, which together give an overall cervical cytology result. This overall cytology result may indicate a squamous abnormality, an endocervical abnormality or (more rarely) concurrent squamous and endocervical abnormalities.

The squamous cell and endocervical component reporting categories of the National Cervical Cytology Coding Sheet are shown in Table 3.1.

Table 3.1: Cytology reporting categories of the National Cervical Screening Program

Squamous cell	Endocervical component
SU Unsatisfactory	EU Unsatisfactory
	E0 No endocervical component
S1 Negative	E1 Negative
S2 Possible low-grade squamous intraepithelial lesion	E2 Atypical endocervical cells of uncertain significance
S3 Low-grade squamous intraepithelial lesion	
S4 Possible high-grade squamous intraepithelial lesion	E3 Possible high-grade endocervical glandular lesion
S5 High-grade squamous intraepithelial lesion	E4 Adenocarcinoma in situ
S6 High-grade squamous intraepithelial lesion with possible microinvasion/invasion	E5 Adenocarcinoma in situ with possible microinvasion/invasion
S7 Squamous cell carcinoma	E6 Adenocarcinoma

Note: There is a further endocervical component result of E- that has been omitted, since this code indicates a vaginal vault smear, which is not included in the cervical cytology results presented.

Under the current NCSP, most Pap tests will disclose a negative cervical cytology result, meaning that no abnormality is present. This continued to be the case in 2015, with 91.9% of the more than 2.1 million tests performed that year for women aged 20–69 being negative for cervical abnormalities.

A certain proportion of Pap tests contain abnormal cells, this being influenced by the underlying prevalence of disease in the population. In 2015, for every 100 Pap tests performed, there were 5.5 abnormalities detected—4.2 low-grade and 1.3 high-grade. While overall these are similar to previous years, the number of abnormalities in women aged under 20 and 20–24 fell to 11.8% from the former level of 13%–14% where it had been from 2009 to 2013. This decline can be attributed to the delivery of the HPV vaccination during school years, which was expected to reduce the number of abnormalities detected as this cohort of girls move into the age groups at which cervical screening occurs. The decline is likely to observed for older age groups over the coming years, further reducing the overall number of abnormalities detected by cytology.

The age distribution of negative cytology results, as well as low-grade and high-grade cytology results, is shown in Figure 3.7.

Source: AIHW analysis of state and territory cervical screening register data. Data for this figure are available in tables A3.7, A3.13 and A3.14.

Figure 3.7: Age distribution of negative cytology, and of low-grade and high-grade abnormalities detected by cytology, 2015
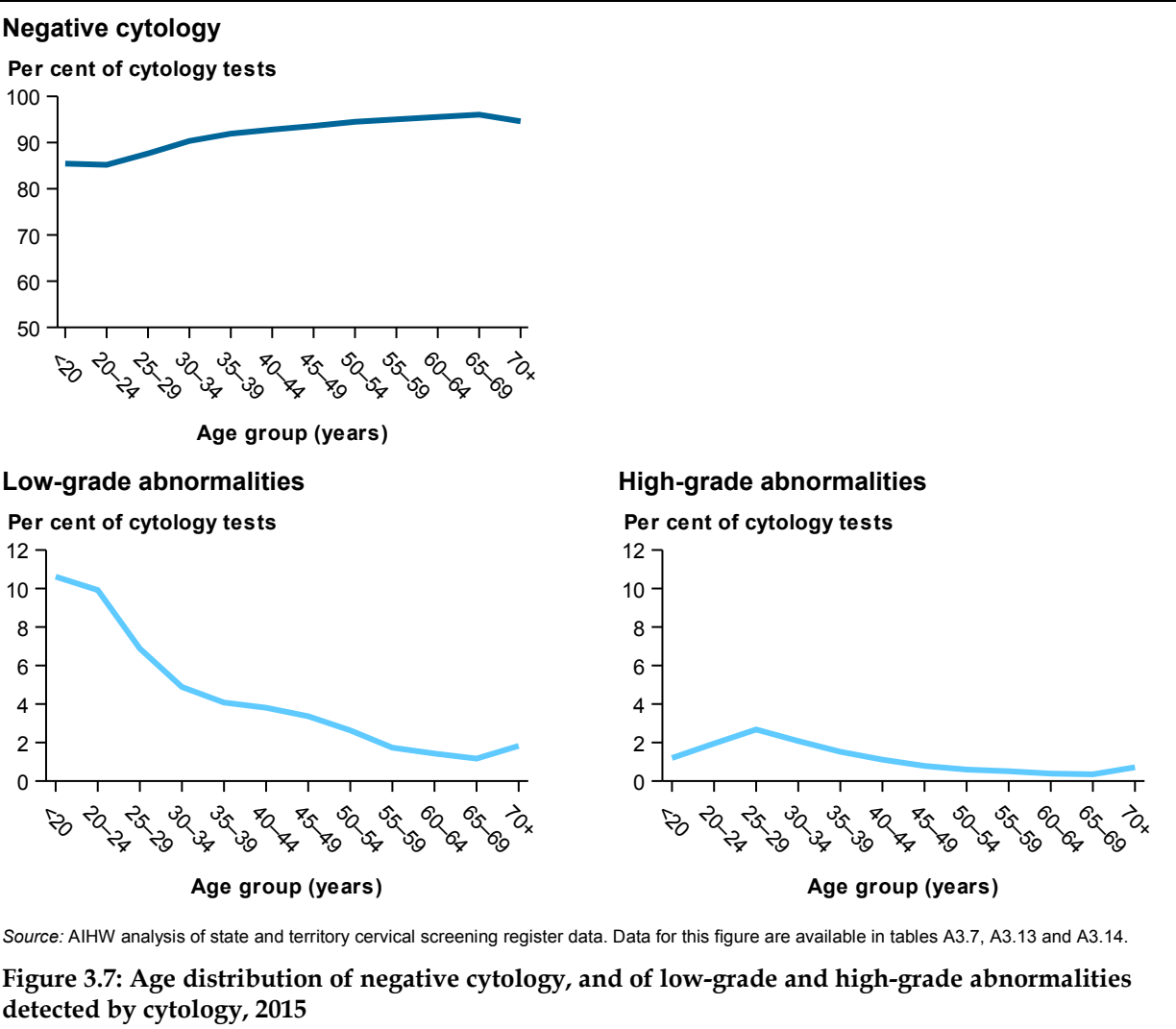
An indication of quality is the proportion of Pap tests that are unsatisfactory—those from which the pathologist is unable to determine a clear result. This may be due to too few or too many cells, or to the presence of blood or other factors obscuring the cells, or to poor staining or preservation. Note that the absence of an endocervical component is not considered sufficient grounds to deem a cervical cytology sample unsatisfactory (NPAAC 2006). An unsatisfactory Pap test needs to be repeated, so it is desirable that these be minimised. In 2015, the proportion of Pap tests that were unsatisfactory was 2.6%.

However, while low, the proportion of unsatisfactory cytology tests has increased slightly, from 2.1% where it had been for almost all years between 2004 and 2011, to 2.2% in 2012 and 2013, to 2.3 in 2014 and 2.6% in 2015, which may indicate the start of an unfavourable trend.

This increase has occurred across all age groups, which means that the pattern of unsatisfactory tests by age remains the same, with more unsatisfactory tests in both the younger and older age groups (Figure 3.8).

Source: AIHW analysis of state and territory cervical screening register data. Data for this figure are available in tables A3.4 and A3.10.

Figure 3.8: Age-distribution of unsatisfactory cytology and cytology with no endocervical component, 2015
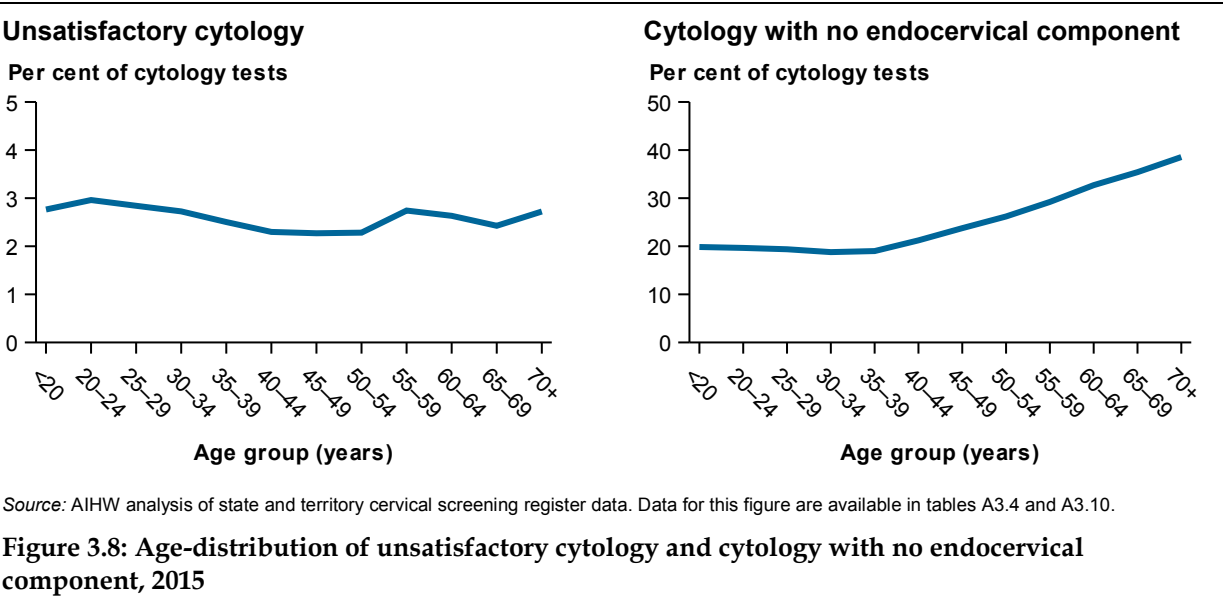
However, it should be noted that this level of 2.6% falls well within the standards set by the National Pathology Accreditation Advisory Council (NPAAC) of between 0.5% and 5% (Table 3.2). Indeed, high-quality cytology is of such importance to the NCSP that there are standards to monitor the quality of all laboratories in Australia that report cervical cytology. The NPAAC Performance measures for Australian laboratories reporting cervical cytology (NPAAC 2006) include standards for unsatisfactory cytology and for the detection of abnormalities, as well as for the correlation between cytology and subsequent histology (discussed later in Section 3.2).

The performance measures for unsatisfactory cytology and abnormalities detected by cytology are detailed in Table 3.2, alongside which are crude rates for each measure, calculated from data supplied for this report. From this table it can be seen that all data provided for this report fall within the relevant standards set by NPAAC.

Table 3.2: NPAAC performance measures 1 and 2b calculated using NCSP data supplied for *Cervical screening in Australia 2014–2015*

NPAAC measure	Definition	Recommended standard	Calculated value
Performance measure 1	Proportion of specimens reported as unsatisfactory	Between 0.5% and 5% of all specimens reported as unsatisfactory	2.6%
Performance measure 2b	(i) Proportion of specimens reported as definite and possible high-grade abnormality	(i) Not less than 0.7% reported as definite or possible high-grade abnormality	(i) 1.3%
	(ii) Proportion of specimens reported as abnormal	(ii) Not more than 14% reported as abnormal	(ii) 5.5%

Source: AIHW analysis of state and territory cervical screening register data.

One measure that is not included as an NPAAC standard is the proportion of Pap tests which do not contain an endocervical component, which means that squamous cells were collected, but there were no (or insufficient) endocervical (glandular) cells—so only squamous cells could be assessed for the presence of cervical abnormalities or cancer.

The trend for this measure is of potential concern, as the number of Pap tests for which no endocervical component was collected continues to increase, disproportionate to the increase in the number of cytology tests—between 2004 and 2015, there was a 5% increase in the number of cytology tests for women aged 20–69 but a 41.5% increase in the number of cytology tests with no endocervical component (from 350,670 to 496,146). This is reflected in the steady increase in the proportion of cytology tests with no endocervical component, from 17.4% in 2004 to 23.4% in 2015 for women aged 20–69. This trend holds after age-standardisation—from 17.9% in 2004 to 23.3% of cytology tests in 2015. (Data from 2004 to 2015 are available in the supplementary online data tables.)

While there is no NPAAC standard for this, the National Cancer Prevention Policy 2007–09 of the Cancer Council Australia (Cancer Council Australia 2007) states that 'presence of an endocervical component in 80% of Pap tests is generally considered acceptable'.

In this context, the 2015 rate of 23.4%, which indicates the presence of an endocervical component in only 76.6% of cytology tests, is outside this desired range.

It is recognised that an endocervical component can be difficult to collect in older women—just 2% of women older than 64 have a transformation zone located on the ectocervix (Autier et al. 1996), due to the movement of the transformation zone with age. As sampling of the transformation zone is required for endocervical cells to be present in a cervical cytology sample, a transformation zone high up in the endocervical canal is likely to be more difficult to sample than a transformation zone on the ectocervix.

This does not explain, however, the increase in the proportion of cytology with no endocervical component across all age groups, including younger women who are likely to have a transformation zone located on the ectocervix.

The accuracy of cytology

Much about the NCSP screening test can be learned by examining how well the cytology 'prediction' matches the histology finding or 'truth'. Cervical cytology can only be seen as a prediction, as a screening test is not intended to be diagnostic, but aims to identify people who are more likely to have a cervical abnormality or cervical cancer and therefore require further investigation from diagnostic tests. With this in mind, where cytology is followed by histology (either to confirm the presence or absence of disease as predicted by the cytology sample, or for other clinical reasons, such as to investigate symptoms even in the absence of predicted disease), correlation between the cytology prediction and the histology finding allows the accuracy of cytological predictions to be assessed. This allows a better understanding of the characteristics of the NCSP screening test.

Follow-up of cytology tests should be in accordance with the National Health and Medical Research Council's (NHMRC's) *Screening to prevent cervical cancer: guidelines for the management of asymptomatic women with screen-detected abnormalities* (NHMRC 2005), which means that most histology will occur after a cytology result of 'high-grade' or 'cancer'. There will be exceptions, however, and these guidelines do not cover management of symptomatic women.

A complete assessment of cytology would require all cytology results (including negative) to be followed up by histology, but this is neither feasible nor desirable (as it would be unethical to require all women who have a Pap test to also undergo a more invasive biopsy). Rather, this assessment is restricted to cytology and histology results available on cervical screening registers, and is intended to provide key measures that can be monitored annually to inform the NCSP of any early indications of changes to the predictive ability of cervical cytology.

Correlation data relate to cytology tests performed in 2014. Correlation between squamous cytology results and any squamous histology that was performed within 6 months is shown in Figure 3.9 and correlation between endocervical cytology results and any endocervical histology performed within 6 months is shown in Figure 3.10. These data do not include cytology tests not followed by histology, for which it is not possible to know the true disease state, or for cytology tests followed by histology more than 6 months after the cytology test.

The commentary below focuses on cytological predictions that were followed by histology within 6 months; however, in some places, data are provided as a proportion of all cytology predictions (regardless of whether or not histology was performed) to provide additional contextual information, and to aid in comparisons with other data of this type. For clarity, the text around the results will clearly state which calculation has been used.

Squamous

From Figure 3.9 it can be seen that squamous cytology is generally a good predictor of the histology finding; a cytology prediction of 'possible high-grade' is usually found to be high-grade, and a cytology prediction of 'high-grade' is almost always found to be high-grade, with 'squamous cell carcinoma' cytology usually found to be squamous cell carcinoma. This makes the positive predictive value quite high—67.5% of high-grade squamous abnormalities predicted by cytology that were biopsied within 6 months were found to be either a true high-grade squamous abnormality or squamous cell carcinoma (Table A5.3).

Negative and low-grade abnormalities are not usually followed up with histology, so these results should not be considered indicative of all negative and low-grade cytology. Of note, almost no predictions of possible low-grade or low-grade cytology, for which there was histology performed within 6 months, were found to be cancer.

Possible and definite high-grade squamous abnormalities are usually followed up by colposcopy, and often by histology—50.3% of cytology predictions of possible high-grade squamous intraepithelial lesions (HSIL) in 2014 that were biopsied within 6 months were histologically confirmed as HSIL and 0.7% were confirmed as squamous cell carcinoma (Table A5.2). This was 37.8% and 0.5% of all possible HSIL predicted by cytology in 2014, respectively (including cytology where there was no histology performed within 6 months). Definite HSIL predictions were more accurate—77.2% of cytology predictions of HSIL in 2014 that were biopsied within 6 months were histologically confirmed as HSIL and 1.6% were confirmed as squamous cell carcinoma (Table A5.2). This was 66.4% and 1.3% of all HSIL predicted by cytology in 2014, respectively (including cytology where there was no histology performed within 6 months).

Almost all predictions of squamous cell carcinoma were confirmed as such—29.7% of cytology predictions of squamous cell carcinoma in 2014 that were biopsied within 6 months were found to be HSIL on histology, and 67.6% of those biopsied within 6 months were confirmed as squamous cell carcinoma (Table A5.2). This was 23.7% and 54.0% of all squamous cell carcinoma predicted by cytology in 2014, respectively (including cytology where there was no histology performed within 6 months).

Endocervical

Figure 3.10 shows that endocervical cytology is also a reasonable predictor of the true disease state. This is despite abnormalities preceding adenocarcinoma being less well understood than are the abnormalities preceding squamous cell carcinoma, and interpretation of endocervical cells being more difficult (as can be the adequate sampling of these cells). These factors all affect the correlation between endocervical cytology and endocervical histology.

Possible high-grade glandular abnormality cytology was frequently found to be adenocarcinoma in situ (AIS), a cytology prediction of AIS was usually found to be AIS, and a cytology prediction of adenocarcinoma was usually found to be adenocarcinoma. This makes the positive predictive value also quite high—72.0% of high-grade endocervical abnormalities predicted by cytology that were biopsied within 6 months were found, on histology, to be a true high-grade endocervical abnormality or adenocarcinoma (Table A5.6).

The cytology category 'atypical endocervical cells of uncertain significance' is used to indicate that abnormal endocervical cells were identified in the sample but that the significance of these is uncertain (meaning that these could be indicative of a serious abnormality, or could be associated with a benign change such as inflammation). This means that biopsy will not be the outcome for many women with this result. In the correlation for cases that were followed by histology, these atypical cells were sometimes found to be a serious abnormality, but often found to not be associated with any abnormality. For example, 21.6% of cases of atypical endocervical cells of uncertain significance predicted by cytology in 2014 that were biopsied within 6 months were histologically confirmed as AIS and 2.6% were confirmed as adenocarcinoma (Table A5.5). This was 6.6% and 0.8% of all cases of atypical endocervical cells of uncertain significance predicted by cytology in 2014, respectively (including cytology where there was no histology performed within 6 months).

A cytology prediction of possible high-grade endocervical abnormality was frequently found to be AIS or worse—45.1% of cytology predictions of possible high-grade endocervical glandular lesion in 2014 that were biopsied within 6 months were histologically confirmed as AIS and 10.1% were confirmed as adenocarcinoma (Table A5.5). This was 22.3% and 5% of all possible high-grade endocervical glandular lesions predicted by cytology in 2014, respectively (including cytology where there was no histology performed within 6 months).

Predictions of AIS were often found to be AIS or adenocarcinoma—64.9% of cytology predictions of AIS in 2014 that were biopsied within 6 months were histologically confirmed as AIS and 24% were confirmed as adenocarcinoma (Table A5.5). This was 54.3% and 20.1% of all possible high-grade endocervical glandular lesions predicted by cytology in 2014, respectively (including cytology where there was no histology performed within 6 months).

Almost all predictions of adenocarcinoma were confirmed as such—14.5% of cytology predictions of adenocarcinoma in 2014 that were biopsied within 6 months were found to be AIS on histology, and 63.6% were confirmed as adenocarcinoma (Table A5.5). This was 8.9% and 38.9% of all adenocarcinoma predicted by cytology in 2014, respectively (including cytology where there was no histology performed within 6 months).

Standards

The two NPAAC standards (or measures) that relate to the correlation data analysed are detailed in Table 3.3, together with the crude rates for each measure calculated from data supplied for this report (separately for squamous and endocervical). It can be seen that all data provided for this report fall within the respective standards set by NPAAC.

Table 3.3: NPAAC performance measures 3a and 3b calculated using NCSP data supplied for *Cervical screening in Australia 2014–2015*

NPAAC measure	Definition	Recommended standard	Calculated value
Performance measure 3a	Proportion of cytology specimens reported as a definite high-grade intraepithelial abnormality where cervical histology, taken within 6 months, confirms the abnormality as high-grade intraepithelial abnormality or malignancy.	Not less than 65% of cytology specimens with a definite cytological prediction of a high-grade intraepithelial abnormality are confirmed on cervical histology, performed within 6 months, as having a high-grade intraepithelial abnormality or malignancy.	Squamous cytology and histology = 78.8% (10,361/13,150) Endocervical cytology and histology = 88.8% (215/242)
Performance measure 3b	Proportion of cytology specimens reported as a possible high-grade intraepithelial abnormality where cervical histology, taken within 6 months, confirms the abnormality as high-grade intraepithelial abnormality or malignancy.	Not less than 33% of cytology specimens with a cytological prediction of a possible high-grade intraepithelial abnormality are confirmed on cervical histology, which is performed within 6 months, as having a high-grade intraepithelial abnormality or malignancy.	Squamous cytology and histology = 51.0% (4,868/9,543) Endocervical cytology and histology = 55.2% (148/268)

Source: AIHW analysis of state and territory cervical screening register data.

Negative cytology

Possible LSIL cytology

LSIL cytology

Possible HSIL cytology

HSIL cytology

Squamous cell carcinoma cytology
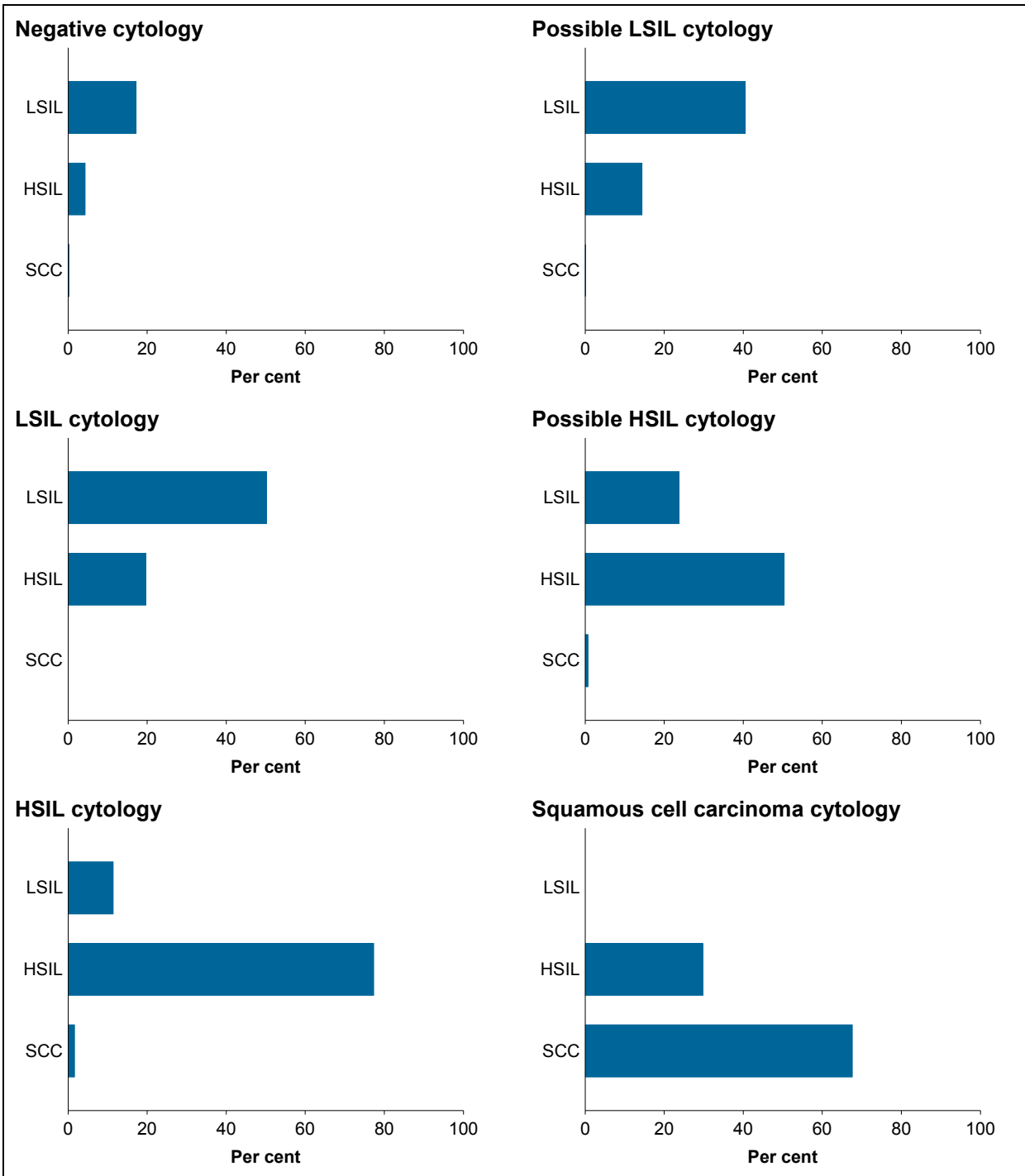
LSIL = low-grade intraepithelial lesion (low-grade abnormality); HSIL = high-grade intraepithelial lesion (high-grade abnormality); SCC = squamous cell carcinoma.

Note: Data only include cytology where histology was performed within 6 months; cytology not followed by histology or followed by histology more than 6 months after cytology are not included in the calculations.

Source: AIHW analysis of state and territory cervical screening register data. Data for this figure are available in Table A5.2.

Figure 3.9: Correlation of squamous cytology prediction with squamous histology finding for women aged 20–69, cytology performed in 2014

Negative cytology

Atypical endocervical cells of uncertain significance cytology

Possible high-grade endocervical glandular lesion cytology

Adenocarcinoma in situ cytology

Adenocarcinoma cytology
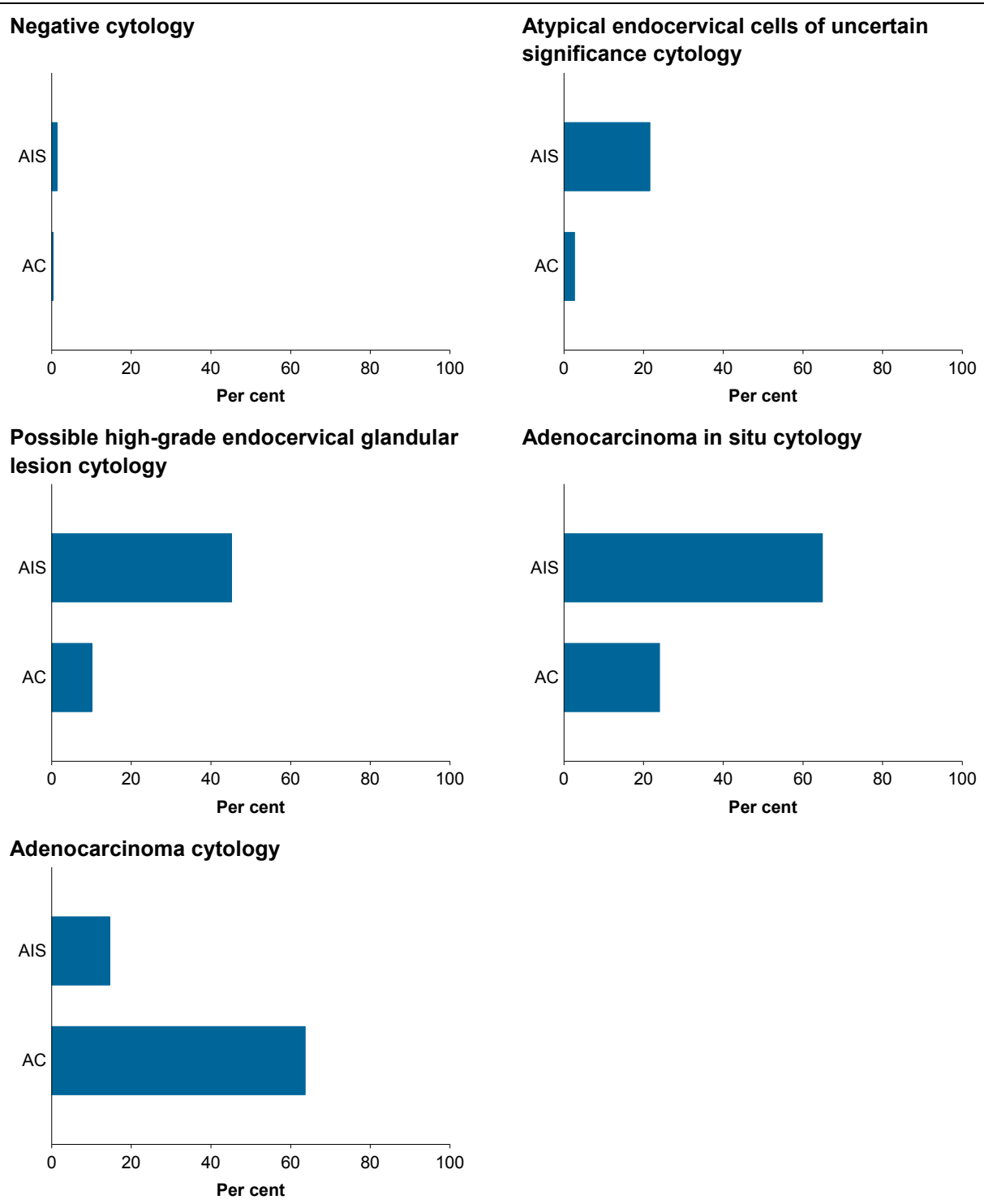
AIS = adenocarcinoma in situ; AC = adenocarcinoma.

Note: Data only include cytology where histology was performed within 6 months; cytology not followed by histology or followed by histology more than 6 months after cytology are not included in the calculations.

Source: AIHW analysis of state and territory cervical screening register data. Data for this figure are available in Table A5.5.

Figure 3.10: Correlation of endocervical cytology prediction with endocervical histology finding for women aged 20–69, cytology performed in 2014

3.3 Detection of high-grade abnormalities

It was previously thought that the development of cervical cancer involved progression from low-grade to moderate-grade to high-grade abnormalities, but it is now understood that low-grade and high-grade abnormalities represent different HPV infection processes. Low-grade abnormalities occur as a result of acute HPV infection, most of which will resolve spontaneously. High-grade abnormalities are the result of persistent infection with an oncogenic HPV type. Most high-grade abnormalities also regress over time (Raffle et al. 2003), but regression takes longer (Cancer Council Australia 2014). A major difference between non-oncogenic and oncogenic HPV types is that oncogenic HPV types integrate their DNA into the host genome, which is why these are associated with oncogenic (cancer-causing) changes to the cells of the cervix, whereas non-oncogenic HPV types are unable to integrate their DNA into the host genome and therefore can only cause low-grade changes to cells (Chhieng & Hui 2011).

As potential precursors to cervical cancer, detection of high-grade abnormalities through cervical screening provides an opportunity for treatment before cancer can develop, thus the NCSP aims to detect high-grade abnormalities in line with its broader aim to reduce the incidence of cervical cancer. Detection of high-grade abnormalities in this context is by histology, not by cytology. This is because cytology is not diagnostic, and may under-call or over-call true disease (as visible in the cytology–histology correlation data in Section 3.2).

Histology is the primary diagnostic tool of the NCSP, and confirmation of disease is required before any treatment is initiated, both to ensure treatment is appropriate and to avoid unnecessary treatment in women where the cytology has predicted disease that is not present. While colposcopy (examination of the cervix using a magnifying instrument called a colposcope) is used as part of this process, in Australia it is considered best practice to confirm high-grade disease with histology before treatment (NHMRC 2005).

Unlike cytology, which has nationally consistent reporting through the Australian Modified Bethesda System (AMBS) 2004, state and territory cervical screening registers have different coding systems for histology that have been mapped to a national histology coding system. The squamous and endocervical reporting categories of the NCSP national histology coding system are shown in Table 3.4.

Table 3.4: Histology reporting categories of the National Cervical Screening Program

Squamous	Endocervical
HSU Unsatisfactory	HEU Unsatisfactory
HS01 Negative	HE1 Negative
HS02 Low-grade squamous abnormality	HE02 Endocervical atypia
HS03.1 High-grade squamous abnormality, cervical intraepithelial neoplasia (CIN) not otherwise specified (NOS)	HE03.1 High-grade endocervical abnormality, endocervical dysplasia
HS03.2 High-grade squamous abnormality, CIN II	HE03.2 High-grade endocervical abnormality, adenocarcinoma in situ
HS03.3 High-grade squamous abnormality, CIN III	
HS04.1 Squamous cell carcinoma, microinvasive	HE04.1 Adenocarcinoma, microinvasive
HS04.2 Squamous cell carcinoma, invasive	HE04.2 Adenocarcinoma, invasive
	HE04.3 Adenosquamous carcinoma
	HE04.4 Carcinoma of the cervix (other)

Note: There is a further result of HE03.3 to allow the collection of mixed high-grade histology (carcinoma in situ/adenocarcinoma in situ) which has been omitted since this category is not included in the cervical histology results presented.

The high-grade abnormality detection rate of the NCSP is the number of women with a high-grade abnormality detected by histology per 1,000 women screened. High-grade abnormalities of the cervix include cervical intraepithelial neoplasia (CIN) that have been graded as moderate (CIN II) or severe (CIN III), or for which the grade has not been specified, as well as endocervical dysplasia and adenocarcinoma in situ.

In 2015, there were 15,838 women aged 20–69 with a high-grade abnormality detected by histology, which equates to 7.7 women with a high-grade abnormality detected by histology per 1,000 screened. This means that, for every 1,000 women screened, nearly 8 had a high-grade abnormality found, providing an opportunity for treatment before possible progression to cervical cancer.

After remaining at between 7 and 8 for all years from 2005 to 2007, the number of women aged 20–69 with a high-grade abnormality detected by histology per 1,000 women screened increased to above 8 from 2008, where it remained from 2008 to 2014. It is not clear why there was an increase in high-grade abnormality detection for those years, and there may be various contributing factors. These may include a change in classification of abnormalities as a result of the change in management guidelines in 2006 (for instance, if a pathologist is uncertain of the result, they may be more inclined to classify an abnormality as 'high-grade' because these are monitored more conservatively), or the increased use of immunohistochemistry, which can assist in the confirmation of high-grade abnormalities, or other as yet unidentified factors.

In contrast with the overall trend of increasing detection over time, there has been a steady decline in high-grade abnormality detection in younger women. In those under 20, this decrease commenced from 2007, falling from 11.6 in that year to 4.1 women with high-grade histology per 1,000 women screened in 2015. More recently, between 2010 and 2015, there has also been a decline for women aged 20–24, from 19.7 in 2010 to 11.8 in 2015. This latter trend notably changed the historical peak age of high-grade histological abnormalities from women aged 20–24 to women aged 25–29. For the first time, in 2014, there was also a decrease in high-grade abnormality detection in women aged 25–29, from 20.3 in 2013 to 18.5 in 2014—a trend which has continued in 2015, reaching a detection rate of 17.7. This is the lowest detection rate for this age group since it rose to 19–20 for all years from 2008 to 2013.

The decrease in high-grade abnormalities in younger women is likely to be due to girls being vaccinated against HPV under the National HPV Vaccination Program, during either the 'school-based' or 'catch-up' program, as these women are expected to experience fewer abnormalities—a trend noted by Brotherton et al. (2011) and Gertig et al. (2013). Visible in the under-20 age group several years ago, this is now clearly contributing to results for the 20–24 age group, and has also started contributing to results for the 25–29 age group in the past two years.

This change in age structure is illustrated in Figure 3.11, which shows the detection of high-grade abnormalities by age over the period 2004–2006 (before the introduction of the National HPV Vaccination Program) and in 2014 and 2015, which demonstrates this shift in peak age of detection from 20–24 to 25–29.

In addition, this continued decrease in rates for the younger age groups appears to be now affecting the overall high-grade abnormality detection rate, despite the other factors at play that have driven it up, as the latest age-standardised rate of 7.8 for 2015 is the first time this

has been below 8 since 2007, and may mark the beginning of an overall downward trend in high-grade abnormality detection.

Source: AIHW analysis of state and territory cervical screening register data. Data for this figure are available in Table A4.8.

Figure 3.11: High-grade abnormality detection rate by age, 2004–2006, 2014 and 2015
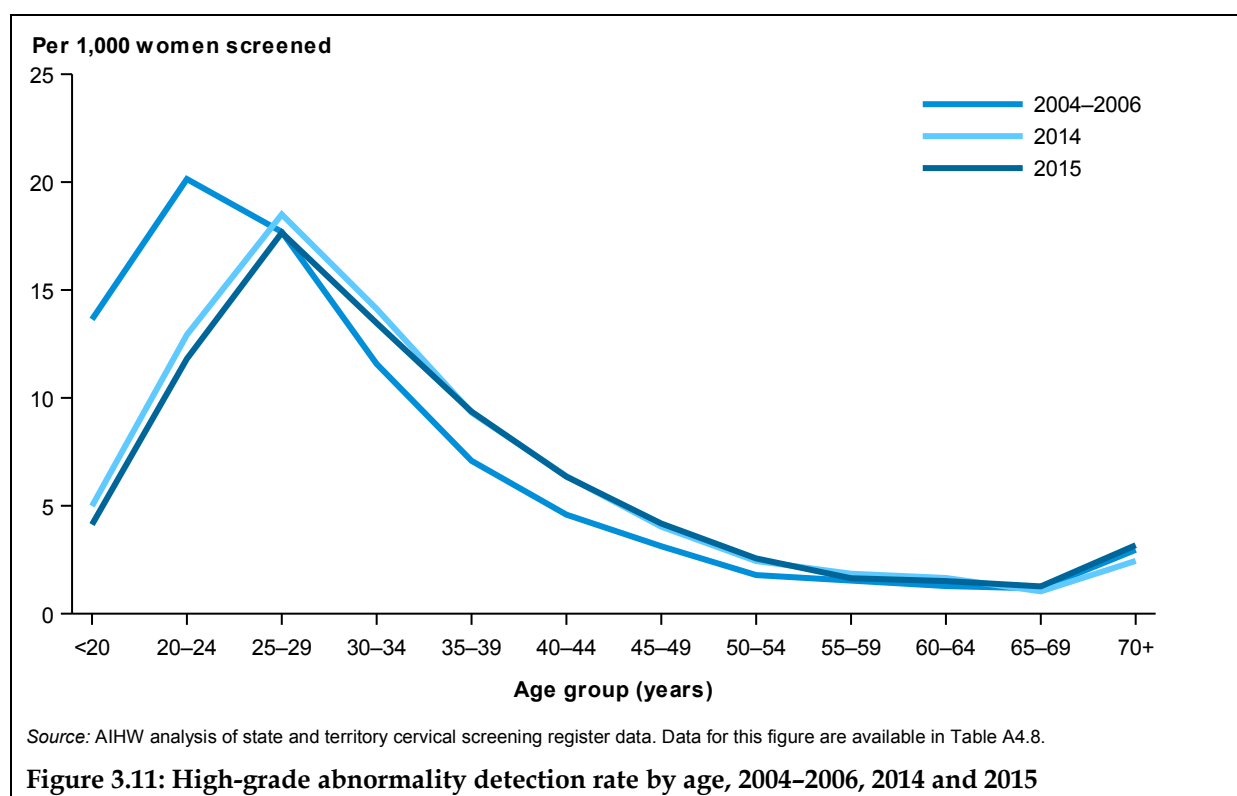
Looking in more detail at the change in the high-grade detection rate by age, using the three years 2004–2006 as the pre-vaccination comparator, the decrease in women aged under 20 was small but perceptible from 2007, the first year of the National HPV Vaccination Program (although the decrease in 2007 could be due to natural variation). It has become larger with each passing year, to reach a decrease of 9.5 women with a high-grade abnormality detected per 1,000 women screened by 2015 (Table 3.5).

For women aged 20–24, a notable decrease began in 2011, reaching a decrease of 8.3 in 2015 (Table 3.5). Older age groups are unaffected, as sufficient time has not yet passed for girls vaccinated from 2007 to have moved into age groups beyond 25–29. Women aged 25–29 show no difference in Table 3.5, as this compares 2015 data to 2004–2006 data, when this age group had a detection rate of 17.7 per 1,000 women screened.

Table 3.5: Change in high-grade abnormality detection per 1,000 women screened, 2004–2006 to 2015

Age group	2004–2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<20	13.6	-2.0	-2.8	-4.7	-5.8	-6.5	-7.3	-7.9	-8.6	-9.5
20–24	20.1	-1.2	1.2	-0.2	-0.5	-2.7	-4.3	-5.1	-7.2	-8.3
25–29	17.7	0.1	1.6	1.3	2.2	1.8	2.3	2.6	0.8	0.0
30–34	11.6	-0.1	1.1	1.2	2.1	2.4	2.2	2.9	2.6	1.9

Note: Change from the 2004–2006 data is shown for age groups <20 to 30–34 from 2007 to 2015. A negative symbol indicates that the change is a decrease; no symbol indicates that the change is an increase.

Source: AIHW analysis of state and territory cervical screening register data.

To gain further information as to which abnormalities are contributing to this trend in young women, the most common high-grade abnormalities were examined—cervical intraepithelial neoplasia graded as 'moderate' (CIN II) and 'severe' (CIN III). While not directly comparable—as CIN II and CIN III data are the *number of abnormalities* as a percentage of the number of histology tests and the high-grade abnormality detection data are the *number of women* with a high-grade abnormality per 1,000 women screened—these still allow us to understand the relative contribution of these two abnormalities.

From the two graphs in Figure 3.12, it can be seen that decreases in both CIN II and CIN III in women aged under 20 have contributed to the overall decrease in high-grade abnormalities detected in this age group, with a similar decrease in CIN II in women aged 25–29 also coinciding with the decrease in high-grade abnormality detection.

Of note, between the reference period of 2004–2006 and more recent years, there has been a clear increase in CIN III histology from ages 25–29 onwards, which coincides with the overall increase in high-grade abnormality detection noted on page 21, the reason for which remains unclear (although from Figure 3.12 it is clear that CIN II has not contributed to this trend).

Note: As some states and territories receive data in a format that does not allow them to distinguish between the histology results of CIN II and CIN III, these data are only from those states and territories where CIN II and CIN III can be distinguished.

Source: AIHW analysis of state and territory cervical screening register data.

Figure 3.12: Detection of CIN II or CIN III per 100 histology tests, 2004–2006, 2014 and 2015

3.4 Safety of clinical management guidelines

The NHMRC's *Screening to prevent cervical cancer: guidelines for the management of asymptomatic women with screen-detected abnormalities* (NHMRC 2005) provides recommendations for the management of women with an abnormal Pap test result under the current NCSP. They enable practitioners and clinicians to manage the 110,000 abnormalities detected each year.

The latest guidelines were implemented from 3 July 2006, and replaced the previous 1994 guidelines. Formulated in line with the NHMRC standards for clinical practice guidelines available at that time, these guidelines are based on epidemiological and scientific evidence and a new understanding of the role of HPV in cervical cancer.

The 2005 NHMRC guidelines included management recommendations that were significantly different to the previous 1994 guidelines. They included:

- changed recommendations for the management of women with a low-grade squamous abnormality (possible or definite low-grade squamous intraepithelial lesion) on cytology, with most women with this result recommended to have a repeat Pap test in 12 months
- a new management approach for women treated for high-grade intraepithelial disease, recommending that they now undergo a 'test of cure' process, whereby cervical cytology and HPV tests are conducted at 12-month intervals and, if both are negative on 2 consecutive occasions, the woman is returned to 2-yearly screening.

As these were significant changes to the way women were managed, in late 2005 a Safety Monitoring Committee (SMC) was established to monitor the safety of these recommendations and to provide timely review of policy as needed.

In 2013, the *Report on monitoring activities of the National Cervical Screening Program Safety Monitoring Committee* (AIHW 2013b) was published. It demonstrated that the change in management for women with a low-grade Pap test result had not led to an increase in cervical cancer and that women who completed 'test of cure' after being treated for a high-grade cervical biopsy result had a very low rate of subsequent high-grade biopsy results, and no incidents of subsequent cervical cancer. These findings, along with other evidence, led the SMC to conclude that the new guidelines had not led to an increase in cervical cancer in the 7 years since they were introduced.

The SMC was disbanded in 2014, but safety monitoring of the guidelines continued until data to 31 December 2014 had been collected and analysed. These were reviewed by the Quality and Safety Monitoring Committee (QSMC), which replaced the SMC.

Final data reviewed by the QSMC are presented here.

The proportional hazard ratio for the risk of cervical cancer in the 2 years after a low-grade squamous cytology diagnosis in women managed in the 2005 guidelines era, compared to those managed in the 1994 guidelines era, was 0.96 (95% CI 0.78–1.18). This is not statistically significantly different to 1, indicating no statistically significant change in the risk of cancer after a low-grade squamous cytology under the current guidelines, compared with the risk under the previous guidelines. These data are shown in Table 3.6.

Table 3.6: Summary of low-grade cohort data, baseline and ongoing, 2 years follow-up

	Baseline	Ongoing
Characteristics of cohort		
Low-grade abnormalities	544,120	647,353
Total person-time in cohort (years)	721,548	962,497
Cancers in cohort	172	210
Hazard ratio		**0.96**
		(95% CI 0.78–1.18)

Source: AIHW analysis of state and territory cervical screening register data.

Two additional analyses were undertaken to look at the incidence of cervical cancer after a histologically confirmed high-grade abnormality.

First, a comparison was made of cervical cancers that occurred in the 5 years following a 12-month clinical management period, immediately following a histologically confirmed high-grade abnormality. The numbers were small, with 39 cancers found for the baseline period and 84 following introduction of the new guidelines. Proportional hazards regression did not reveal this to be a statistically significant increase and, as there are no management changes between the previous guidelines and the new guidelines, this analysis does not address the safety of new management practices.

The second analysis assessed subsequent high-grade abnormalities and cervical cancer incidence after women had completed 'test of cure' after a high-grade abnormality detected from 2007 onwards (noting that this will not include women who completed 'test of cure' after a high-grade abnormality detected before this time).

High-grade histology outcomes are very rare in women who have been deemed to have completed test of cure ('both negative' for first co-test and second co-test), with just 8 high-grade abnormalities from the 12,087 who completed test of cure—equivalent to 0.7 high-grade abnormalities per 1,000 women (Table 3.7).

Further, of the more than 12,000 women aged 20–69 who are known to have completed test of cure after a treated, histologically confirmed high-grade abnormality, none were found to have developed cervical cancer.

These results suggest that 'test of cure' is safe when it is properly executed according to the 2005 guidelines.

Table 3.7: High-grade abnormalities following different consecutive co-test outcomes, women aged 20–69

		Second co-test			
		Both negative	Positive cytology only	Positive HPV only	Both positive
First co-test	Both negative	0.7	11.7	9.8	56.9
	Positive cytology only	1.4	33.1	0.0	75.5
	Positive HPV only	0.0	47.6	7.2	101.3
	Both positive	1.8	22.2	15.6	92.2

Note: Shown are the number of consecutive co-tests with an outcome of high-grade abnormality per 1,000 (crude rates).

Source: AIHW analysis of state and territory cervical cytology register data.

3.5 Expenditure on cervical screening

In Australia, there are three cancers for which screening is recommended—breast, cervical and bowel. Each cancer has a national screening program, with both Australian Government and state and territory government components.

The Australian Government provides funding to the states and territories for public health services through National Health Reform Payments (known as National Specific Purpose Payments prior to 1 July 2012) and National Partnership Payments. State and territory governments have full discretion over the application of National Health Reform Payments for public health funding, including the amount expended on BreastScreen Australia and the NCSP. The funding for the National Bowel Cancer Screening Program is through a specific National Partnership Payment.

Table 3.8 shows expenditure for the three national cancer screening programs (expenditure by Australian and state and territory governments combined), as well as total expenditure on cancer screening for the 2014–15 financial year.

In 2014–15, an estimated $81.5 million was spent on cervical screening in Australia.

Of this $81.5 million, $39.6 million was spent on Medicare Benefits Schedule (MBS) items for cervical screening (MBS items 73053 and 73922).

Table 3.8: Government funding for cancer screening programs, 2014–15, $ million

Screening program	Expenditure 2014–15
BreastScreen Australia	287.7[a][b]
National Cervical Screening Program	81.5[c][b]
National Bowel Cancer Screening Program	51.8[d][e]

(a)   Excludes mammography for breast cancer screening that occurs outside BreastScreen Australia.

(b)   Includes only direct expenditure on the program by the Australian Government, and not the funding provided to the states and territories through the National Healthcare Agreement.

(c)   Excludes the proportion of the costs associated with general practitioner (GP), specialist and nurse attendances that would have been for Pap tests—and therefore cannot be compared with expenditure for 2008–09, which included an estimate for these costs (AIHW 2013b); excludes GP incentives payments.

(d)   Excludes Medicare Benefits Schedule (MBS) flow-on costs; excludes GP incentives payments; excludes bowel screening that occurs outside the National Bowel Cancer Screening Program.

(e)   Includes payments from the Australian Government to the states and territories for the National Bowel Cancer Screening Program.

Note: These expenditure data only include recurrent expenditure; health infrastructure payments for cancer have been excluded, as well as any health workforce expenditure.

Sources: AIHW Health expenditure database; Medicare Australia Statistics.

4   Key cervical cancer outcomes

4.1   Incidence of cervical cancer

Australia has high-quality and virtually complete cancer incidence data. Collected by state and territory cancer registries, clinical and demographic data for all cancer cases are provided to the AIHW and compiled in the Australian Cancer Database. Data in this section are sourced from the 2013 version of the Australian Cancer Database.

The latest national data available are for new cases in 2013; in this latest year there were 813 new cases of cervical cancer diagnosed in Australia. This is equivalent to 7.0 new cases for every 100,000 women in the population, which (when age-standardised to allow analysis over time and between population groups) equates to an incidence rate of 6.8 for 2013.

Of the 813 new cases, 692 occurred in women aged 20–69 (the target population of the NCSP). This is equivalent to 9.2 new cases for every 100,000 women in the population or 9.4 new cases per 100,000 women when age-standardised.

Box 4.1 Estimated incidence to 2017

Incidence data are also estimated to the current year of reporting, based on 2004–2013 incidence data (note that actual incidence data for 2014–2017 may differ from estimated data for these years due to current and ongoing program or practice changes).

In 2017, it is projected that there will be 912 new cases of cervical cancer, equivalent to 7.3 new cases for every 100,000 women in the population (7.1 when age-standardised).

Of these 912 new cases, it is projected that 775 will occur in women aged 20–69, equivalent to 9.7 new cases per 100,000 women (9.8 when age-standardised).

In 2013, the risk of diagnosis with cervical cancer before age 75 was 1 in 200, and the risk of diagnosis before age 85 was 1 in 168. Mean age at diagnosis was 48.3, and median age at diagnosis was 44.1 (AIHW 2017a).

Cervical cancer over time

There was a modest decrease in the age-standardised incidence of cervical cancer for women aged 20–69 between 1982 and 1990, from 19.1 to 18 new cases per 100,000 women—likely to have been a result of the ad hoc cervical screening that occurred in Australia from the 1960s to 1990. However, it was with the introduction of organised cervical screening through the NCSP in 1991 that the greatest decreases in incidence have been witnessed, with a rapid decrease, to 9 new cases per 100,000 women in 2002, just over a decade after the national program commenced (Figure 4.1). Incidence has since remained steady for this age group, at between 9 and 10 new cases per 100,000 women (7 new cases per 100,000 for all ages).

This decrease, attributed to the NCSP, has been accompanied by a decrease in the ranking of cervical cancer, from the 6th most common cancer in women in 1982, to the 12th, as well as a decrease in the risk of diagnosis by age 85 from 1 in 74 in 1982 to 1 in 168 (AIHW 2017b).

These changes are consistent with the introduction of organised cervical screening programs internationally; however, cervical cancer remains one of the most common cancers in women in countries that do not have organised cervical screening, and 4th overall, so the worldwide burden is still high (IARC 2014), even in the face of successes such as those seen in Australia.

Figure 4.1: Incidence of cervical cancer in women aged 20–69, 1982 to 2013
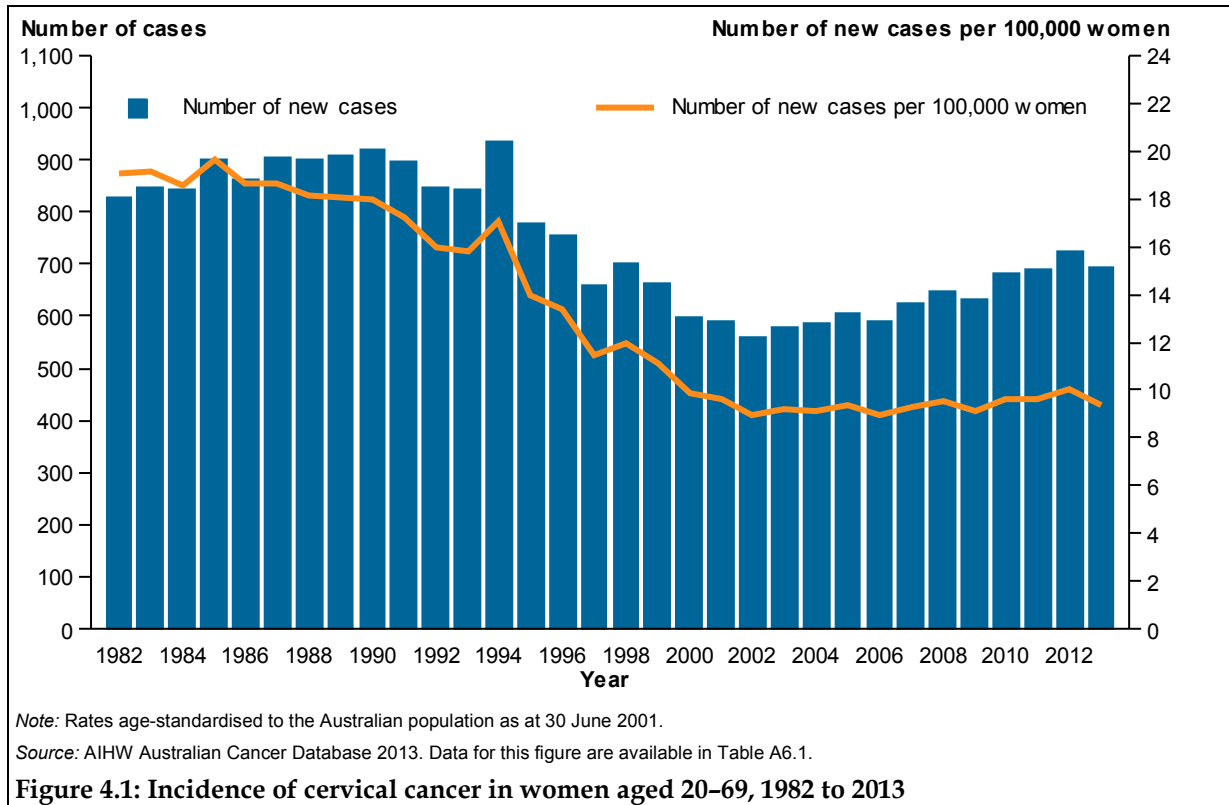
The effect of the NCSP on the age distribution of cervical cancer incidence is illustrated in Figure 4.2. In addition to decreasing incidence across all age groups, prior to the introduction of the NCSP (between 1982 and 1991), there was a clear second (and higher) peak in incidence in women aged 60 and over. This has decreased substantially over time, due to cervical screening either detecting these cervical cancers earlier or preventing their occurrence altogether.

Figure 4.2: Incidence of cervical cancer by 5-year age group, 1982–1991, 1992–2001 and 2002–2011
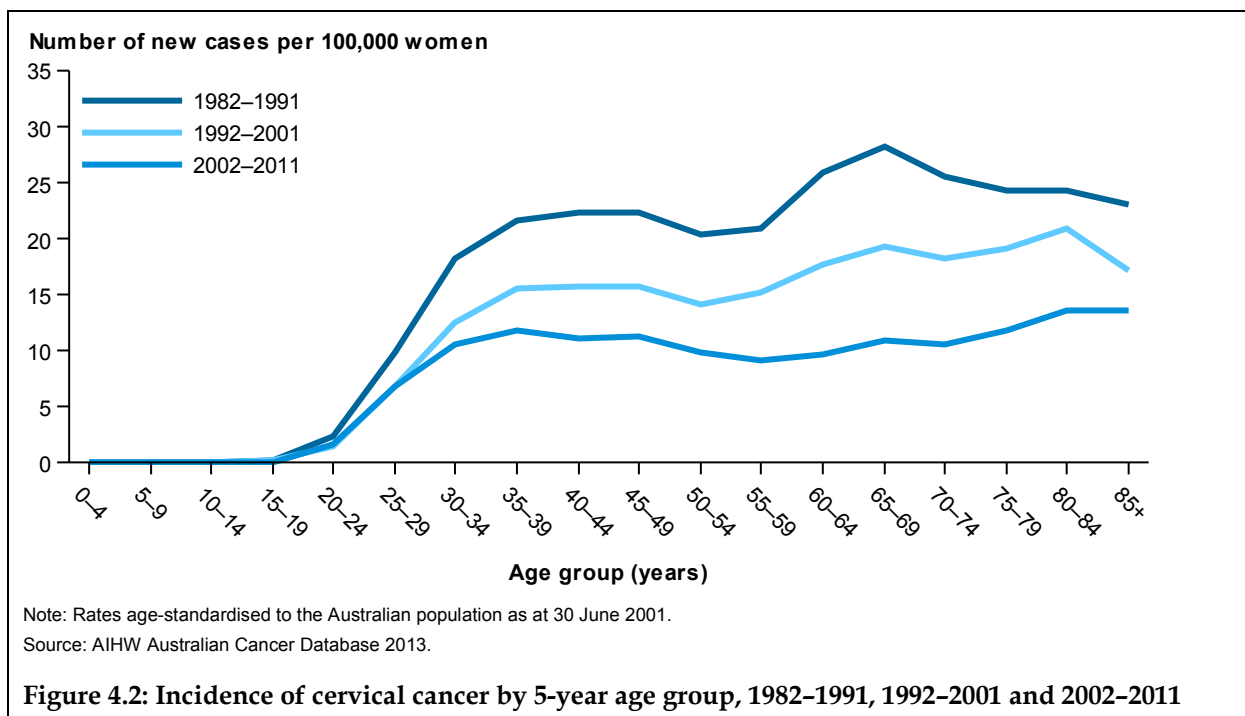
Cervical cancer types

While all cervical cancers share the same site code—C53 under the International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10), there are several histological subtypes within the category of cervical cancer, with clear differences in clinical behaviour (Blomfield & Saville 2008). Histology codes for cancers are collected in the Australian Cancer Database, which allows the analysis of trends in cervical cancer incidence for different histological types. The histological types presented are based on the histological groupings for cervical cancer set out in Chapter 4 of *Cancer incidence in five continents vol. IX* (Curado et al. 2007), with histological types characterised by the type of cell in which the cancer originates. Thus, cervical cancer has been disaggregated into the broad histological types of carcinoma (cancers of epithelial origin), sarcoma (cancers originating in connective tissue such as bone, muscle and fat), and other specified and unspecified malignant neoplasms (unusual cancers and cancers too poorly differentiated to be classified). Carcinoma has been further split into squamous cell carcinoma (which arises from the squamous cells that cover the outer surface of the cervix), adenocarcinoma (which arises from the glandular (columnar) cells in the endocervical canal), adenosquamous carcinoma (which contains malignant squamous and glandular cells), and other carcinoma.

Table 4.1 differs slightly from that presented in *Cancer incidence in five continents vol. IX* (Curado et al. 2007), with other specified and unspecified carcinomas grouped together, as are other specified and unspecified malignant neoplasms. Further, adenosquamous carcinoma has been listed as a separate group under 'Carcinoma,' rather than included in 'Other specified carcinoma' as specified in Curado and others (2007). The latter change is to allow the carcinoma histological groupings to match the cervical cancer types collected by the cervical cytology registries and reported under the 'Histology' performance indicator.

Table 4.1: Incidence of cervical cancer in women aged 20–69, by histological type, 2013

Type of cervical cancer	New cases	AS rate	% of cervical cancers	% of carcinomas
1: Carcinoma	674	9.1	97.4	100.0
1.1: Squamous cell carcinoma	446	6.0	64.5	66.2
1.2: Adenocarcinoma	179	2.4	25.9	26.6
1.3: Adenosquamous carcinoma	19	0.3	2.7	2.8
1.4: Other specified and unspecified carcinoma	31	0.4	4.5	4.6
2: Sarcoma	4	0.1	0.6	. .
3: Other specified and unspecified malignant neoplasm	13	0.2	1.9	. .
Total	**692**	**9.9**	**100.0**	**. .**

'Carcinoma' = ICD-O-3 codes 8010–8380, 8382–8576.

'Squamous cell carcinoma' = ICD-O-3 codes 8050–8078, 8083–8084.

'Adenocarcinoma' = ICD-O-3 codes 8140–8141, 8190–8211, 8230–8231, 8260–8263, 8382–8384, 8440–8490, 8570–8574, 8310, 8380, 8576.

'Adenosquamous carcinoma' = ICD-O-3 code 8560.

'Other specified and unspecified carcinoma' = ICD-O-3 codes for carcinoma excluding those for squamous cell carcinoma, adenocarcinoma and adenosquamous carcinoma.

'Sarcoma' = ICD-O-3 codes 8800–8811, 8840–8921, 8990–8991, 9040–9044, 9120–9133, 9540–9581, 8830, 9150.

'Other specified and unspecified malignant neoplasm' = ICD-O-3 codes for cervical cancer excluding those for carcinoma and sarcoma.

Note: Age-standardised (AS) rate is the number of new cases per 100,000 women, age-standardised to the Australian population at 30 June 2001. Rates based on less than 20 new cases should be interpreted with caution. Numbers may not add to total due to rounding.

Source: AIHW Australian Cancer Database 2013.

In 2013, of the 692 cervical cancers diagnosed in women aged 20–69, 674 (97.4%) were carcinomas, 4 (0.6%) were sarcomas and 13 (1.9%) were classified as 'Other specified and unspecified malignant neoplasms' (Table 4.1). Within the carcinomas, squamous cell carcinoma comprised the greatest proportion at 66.2% of all cervical carcinomas, followed by adenocarcinomas (26.6% of cervical carcinomas) and adenosquamous carcinomas (2.8%), with 'Other specified and unspecified carcinomas' comprising 4.6% (Table 4.1).

Trends in age-standardised incidence for women aged 20–69 for squamous cell carcinoma, adenocarcinoma, adenosquamous carcinoma and other carcinomas are shown in Figure 4.3.

Number of new cases per 100,000 women
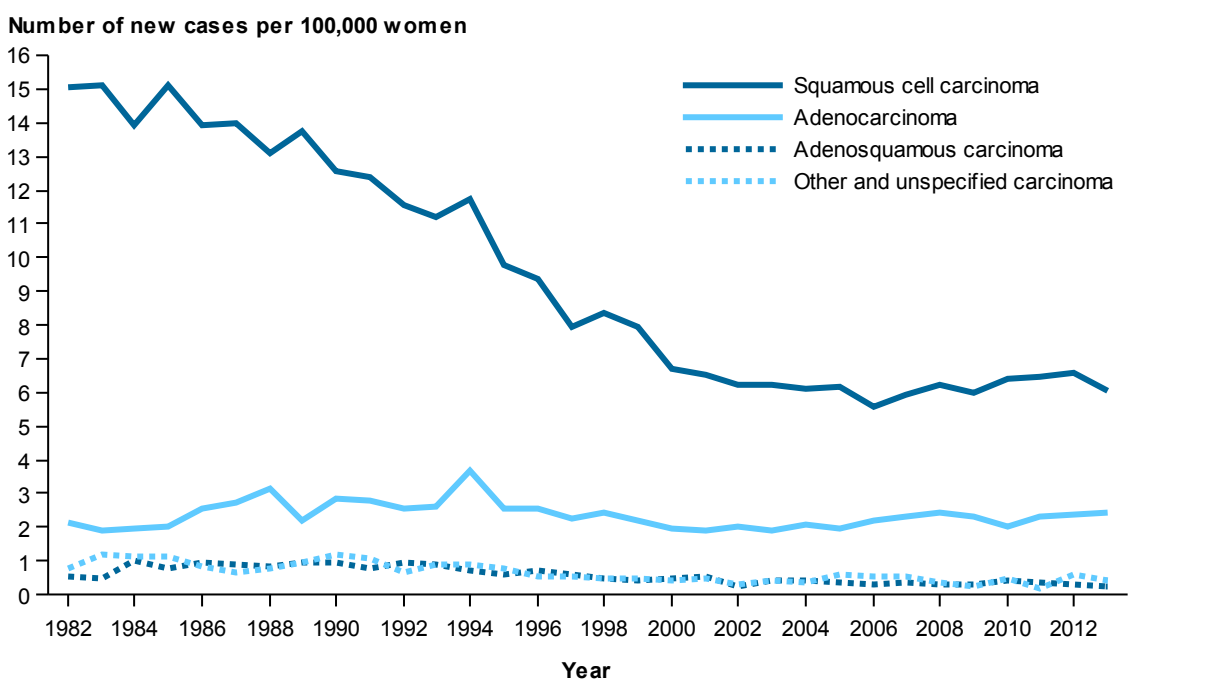
Source: AIHW Australian Cancer Database 2012. Data for this figure are available in Table A6.3.

Figure 4.3: Incidence of carcinoma of the cervix (squamous cell carcinoma, adenocarcinoma, adenosquamous carcinoma and other and unspecified carcinomas) in women aged 20–69, 1982 to 2013

Squamous cell carcinoma has shown the most substantial change over this time, decreasing from 15.0 new cases per 100,000 women aged 20–69 in 1982 to 12.4 in 1991, thereafter halving to 6 new cases per 100,000 women in 2002, where it remained until 2012, when it rose slightly to 6.6 new cases per 100,000 women, before falling again to 6.0 in 2013 (Figure 4.3).

In contrast, after an initial decrease from 2.8 new cases per 100,000 women in 1991, the incidence of adenocarcinoma has remained at around 2 new cases per 100,000 women thereafter (Figure 4.3). The peak of 3.7 new cases per 100,000 women in 1994 is consistent with documented trends in Canada, the United States and the United Kingdom, and is thought to represent a cohort effect as a result of increased risk of adenocarcinoma for women born in the early 1960s (Blomfield & Saville 2008).

Incidence trends for adenosquamous and other carcinomas are more difficult to ascertain due to small numbers, both having an incidence of less than 1 new case per 100,000 women.

From these data, it is clear that the observed decrease in cervical cancer incidence since the introduction of the NCSP in 1991 does not apply equally to all histological types of cervical cancer. The trend in squamous cell carcinomas illustrates the success of the NCSP in

preventing these histological subtypes of cervical cancer through the detection of high-grade squamous abnormalities, with these readily identified by repeated cervical cytology (Blomfield & Saville 2008). As a result, squamous cell carcinomas now comprise 64.5% of cervical cancers, much reduced from its historical proportion of 95% (Blomfield & Saville 2008).

In contrast, adenocarcinomas have not been reduced by cervical screening to the same degree as squamous cell carcinomas, with these glandular carcinomas now comprising 25.9% of all cervical cancers; previously this was proportionately a rarer disease. The inability of cervical screening to reduce glandular cancers below the level reached a decade ago is recognised as a reflection of the difficulties in sampling glandular cells (Sasieni et al. 2009), with cervical cytology less effective at identifying glandular abnormalities (Blomfield & Saville 2008). Further, the cytological interpretation of abnormal glandular cells that are sampled (which occur much more infrequently than squamous abnormalities) is more difficult, and the progression from glandular abnormality to adenocarcinoma is not well characterised (Sasieni et al. 2009; Wang et al. 2006).

It is also important to recognise that some cervical cancers do not have a precancerous stage, and therefore are simply unable to be detected—so their incidence is not affected by cervical screening. These tend to be rare but aggressive cancers, such as neuroendocrine carcinoma of the cervix; the two most aggressive types are small cell neuroendocrine carcinoma and large cell neuroendocrine carcinoma, neither of which appear to possess a preinvasive stage (Necervix.com 2014).

Cervical cancer across areas

Incidence for population groups is presented for 2008–2012 as these are the most recent years for which actual data are available for all states and territories (see Appendix C for further information).

Incidence of cervical cancer in 2008–2012 was similar for *Major cities* and *Inner regional* areas, being 9.3 and 9.2 new cases per 100,000 women, respectively. Incidence was a little higher in *Outer regional* and *Remote* areas, at 11.6 and 13.3 new cases per 100,000 women aged 20–69, respectively (Figure 4.4).

These data indicate that incidence was lower in *Very remote* areas at 9.0 new cases per 100,000 women, which is different to last year's report, for which incidence in *Very remote* areas was highest at 15.1% (AIHW 2016c). However, as the difference between the two time periods is just 12 cases (23 compared with 35 new cases), caution should be used when interpreting these results, as low numbers can lead to highly variable rates.

In 2008–2012, incidence increased with increasing disadvantage, being highest for women living in the lowest socioeconomic areas (11.5 new cases per 100,000 women aged 20–69), and lowest for women living in the highest socioeconomic areas (8.0 new cases per 100,000 women aged 20–69) (Figure 4.4).

Cervical cancer incidence in 2006–2010, reported by small geographic areas, can be found on the AIHW website at <http://www.aihw.gov.au/cancer-data/cancer-screening/> and in the Cancer Incidence and Mortality Across Regions (CIMAR) books at <http://www.aihw.gov.au/cancer-data/cimar-books/>.

Number of new cases per 100,000 women

Number of new cases per 100,000 women

Note: Rates age-standardised to the Australian population as at 30 June 2001.

Source: AIHW Australian Cancer Database 2013. Data for this figure are available in tables A6.5 and A6.6.

Figure 4.4: Incidence of cervical cancer in women aged 20–69, by remoteness area, and by socioeconomic group, 2008–2012
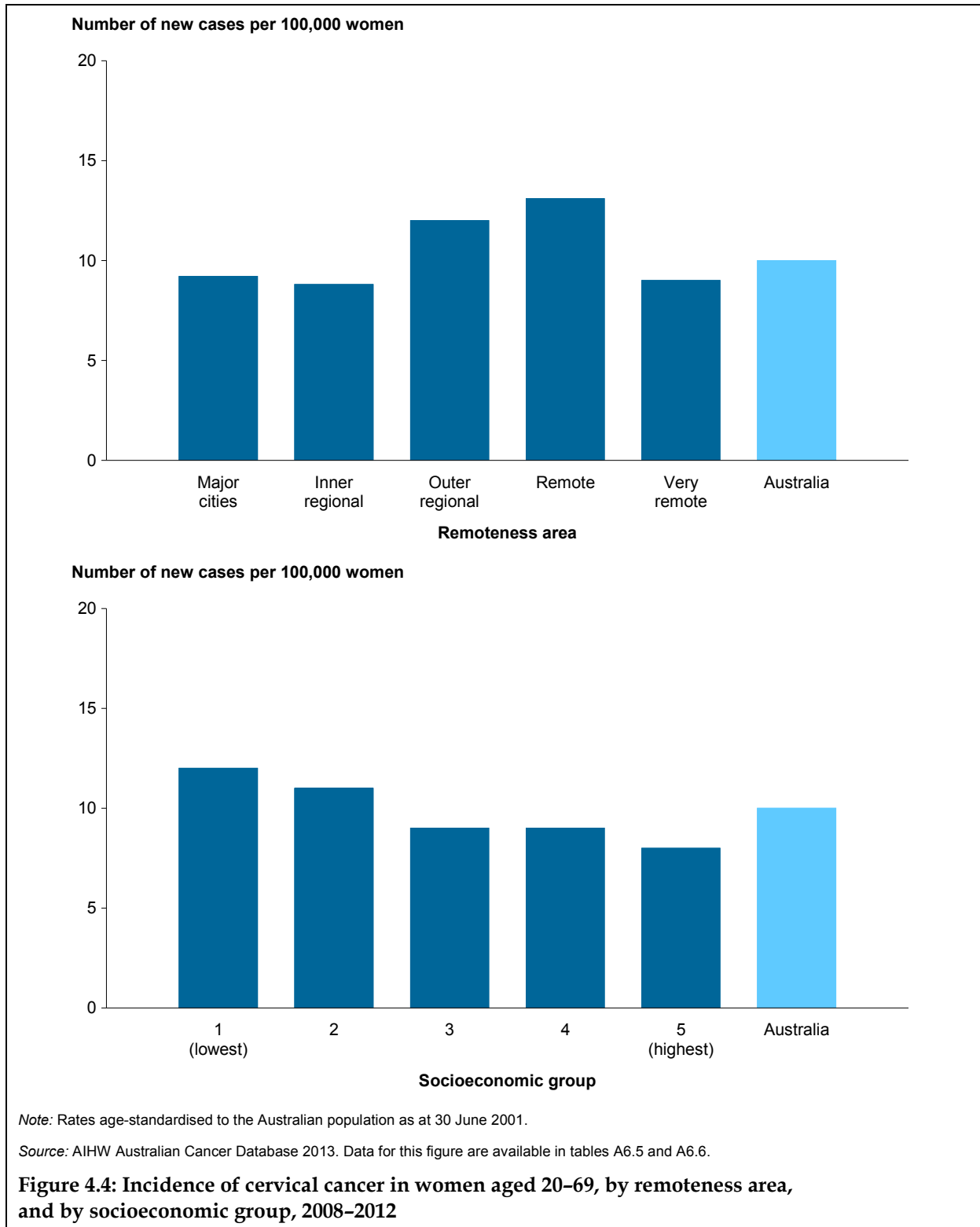
4.2 Survival after a diagnosis of cervical cancer

Survival in this report refers to 'relative survival', which means that the survival figures presented are the probability of being alive for a given amount of time after diagnosis compared with the general population, and reflects the impact of a cancer diagnosis.

The source of survival data is the 2013 Australian Cancer Database which includes data from the National Death Index on deaths (from any cause) that occurred up to 31 December 2013, which were used to determine which people with cancer had died and when this occurred.

In 2009–2013, women diagnosed with cervical cancer in Australia had a 72.1% chance of surviving for 5 years compared with their counterparts in the general population. For the target age group (20–69), 5-year relative survival was 77.4%.

In 2009–2013, 5-year survival from cervical cancer decreased with age; women aged 25–29 had the highest survival at 91.2%, whereas women aged 75 years and over diagnosed with cervical cancer had less than a 50% chance of surviving for 5 years (Figure 4.5).

Source: AIHW Australian Cancer Database 2013. Data for this figure are available in Table A6.9

Figure 4.5: Five-year relative survival from cervical cancer, by age group, 2009–2013
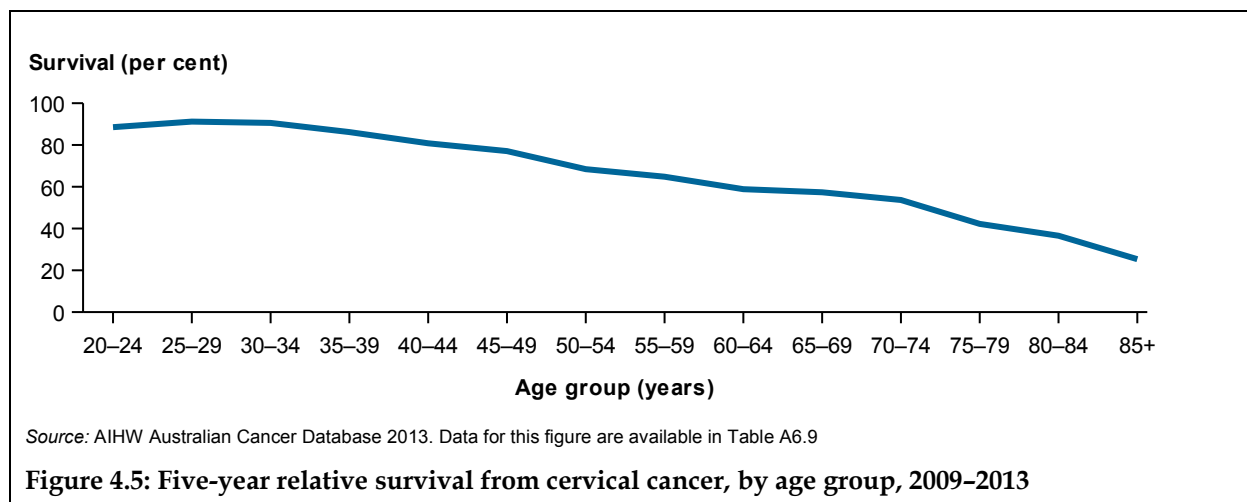
Survival from cervical cancer has improved over time; between 1984–1988 and 2009–2013, the 5-year relative survival rate increased from 73.5% to 77.4% (Figure 4.6).

Source: AIHW Australian Cancer Database 2013. Data for this figure are available in Table A6.10

Figure 4.6: Trends in 5-year relative survival from cervical cancer in women aged 20–69, 1984–1988 to 2009–2013
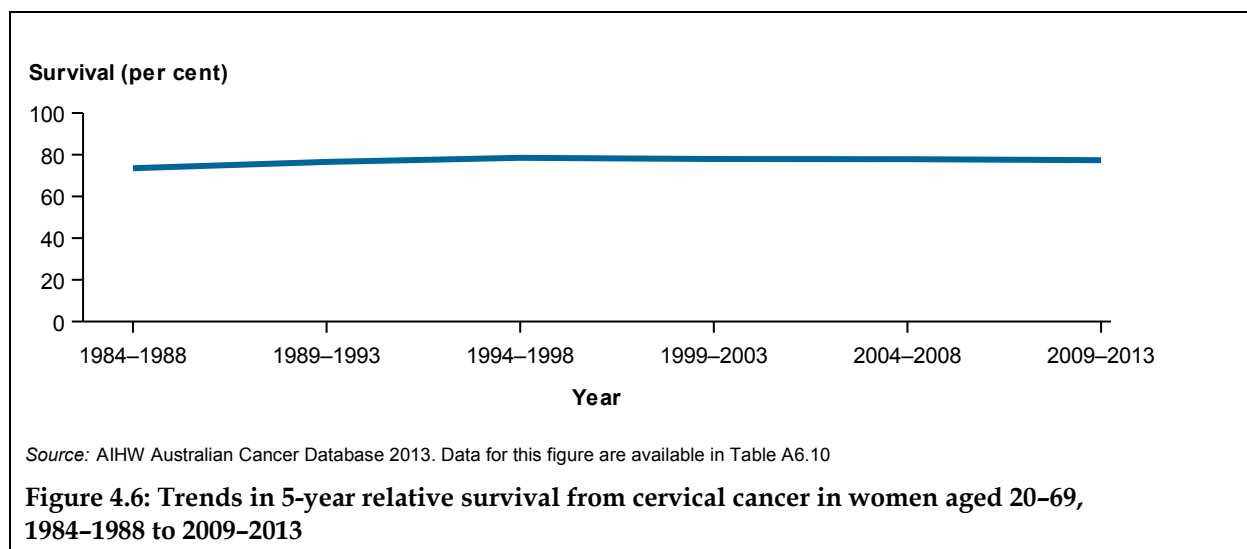
Conditional survival is the probability of surviving a given number of years provided that an individual has already survived a specified amount of time after diagnosis.

Conditional survival for cervical cancer for women aged 20–69 is illustrated in Figure 4.7. In this graph, the darker blue line shows relative survival for each year after diagnosis (as shown by the numbers in black on the x-axis), whereas the lighter blue line shows relative survival for each year once an individual has already survived a certain number of years (as shown by the numbers in grey on the x-axis).

For cervical cancer, the prospect of surviving for at least 5 more years after having already survived for 5, 10 or 15 years was much higher than relative survival, at around 96% or 97% (Figure 4.7), indicating that if an individual survives for at least 5 years after diagnosis, their survival is almost the same as an individual not diagnosed with cervical cancer.
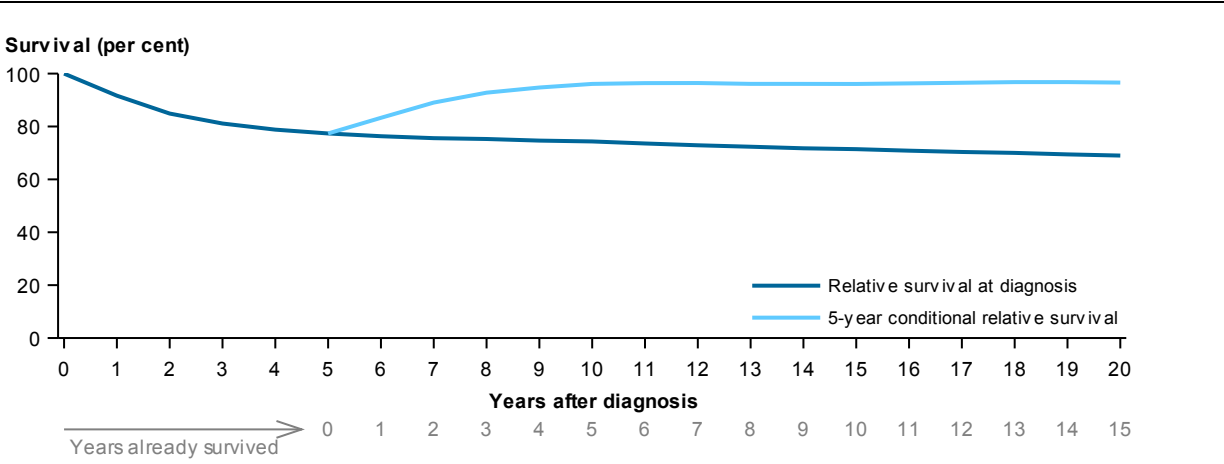
Source: AIHW Australian Cancer Database 2013. Data for this figure are available in Table A6.11.

Figure 4.7: Relative survival at diagnosis and 5-year conditional survival from cervical cancer in women aged 20–69, 2009–2013

4.3 Prevalence of cervical cancer

Prevalence is the number of people alive after a diagnosis of cancer. It is related to incidence and survival—if incidence and survival are both high, prevalence will be high, whereas if incidence and survival are both low, prevalence will be low.

The source of prevalence data is the 2013 Australian Cancer Database which includes data from the National Death Index on deaths (from any cause) that occurred up to 31 December 2013, which were used to determine which people with cancer had died and when this occurred. Individuals who have been diagnosed with cancer and are still alive contribute to prevalence data.

At the end of 2012, there were 2,844 women aged 20–69 alive who had been diagnosed with cervical cancer in the previous 5 years and 4,915 who had been diagnosed in the previous 10 years (Table 4.2).

Table 4.2: Prevalence of cervical cancer, by age group, Australia, end of 2012

Age group	5-year prevalence	10-year prevalence
<20	6	6
20–24	79	81
25–29	271	316
30–34	412	579
35–39	452	789
40–44	400	748
45–49	369	721
50–54	266	566
55–59	248	483
60–64	200	377
65–69	147	276
70–74	120	251
75–79	85	146
80–84	71	120
85+	39	80
All ages	**3,165**	**5,539**
Ages 20–69 years	**2,844**	**4,915**

Note: 'Prevalence' refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.
Source: AIHW Australian Cancer Database 2013.

4.4 Mortality from cervical cancer

Australia has high-quality and virtually complete mortality data. The mortality data used here were provided by the registries of births, deaths and marriages and the National Coronial Information System, and coded by the Australian Bureau of Statistics (ABS). These data are maintained at the AIHW in the National Mortality Database.

The latest national data available at the time of publication are for deaths in 2014; in this latest year, there were 223 deaths from cervical cancer in Australia. This is equivalent to 1.9 deaths for every 100,000 women in the population, which, when age-standardised to allow analysis over time and between population groups, equates to a mortality rate of 1.7 for 2014.

Of the 223 deaths, 149 occurred in women aged 20–69 (the target population of the NCSP). This is equivalent to 2.0 deaths for every 100,000 women in the population, or 1.8 deaths per 100,000 women when age-standardised.

Box 4.2 Estimated mortality to 2017

Mortality data are also estimated to the current year of reporting. These estimates are based on joinpoint analysis of 2004–2013 mortality data. Note that actual mortality data for 2015–2017 may differ from estimated data for these years, due to current and ongoing program or practice changes.

In 2017, it is projected that there will be 254 deaths from cervical cancer, equivalent to 2.0 deaths for every 100,000 women in the population (1.8 when age-standardised).

Of these 254 new cases, it is projected that 165 will occur in women aged 20–69, equivalent to 2.1 deaths per 100,000 women (1.9 when age-standardised).

In 2014, the risk of death from cervical cancer before age 75 was 1 in 764, and the risk of death before age 85 was 1 in 535. Mean age at death was 61.3 and median age at death was 61.0 (AIHW 2017a).

Cervical cancer deaths over time

Similar to cervical cancer incidence, there was a modest decrease between 1982 and 1990 in age-standardised mortality from cervical cancer for women aged 20–69, from 5.5 to 4.8 deaths per 100,000 women, with the greatest decrease following the introduction of the NCSP in 1991. Mortality reached 2 new cases per 100,000 in the year 2002—the same year that incidence plateaued—and mortality has since remained steady at this historic low of around 2 deaths per 100,000 women aged 20–69 (Figure 4.8).

This decrease in mortality has been accompanied by a decrease in the risk of death by age 85, from 1 in 165 to 1 in 535, since 1982 (AIHW 2017b).
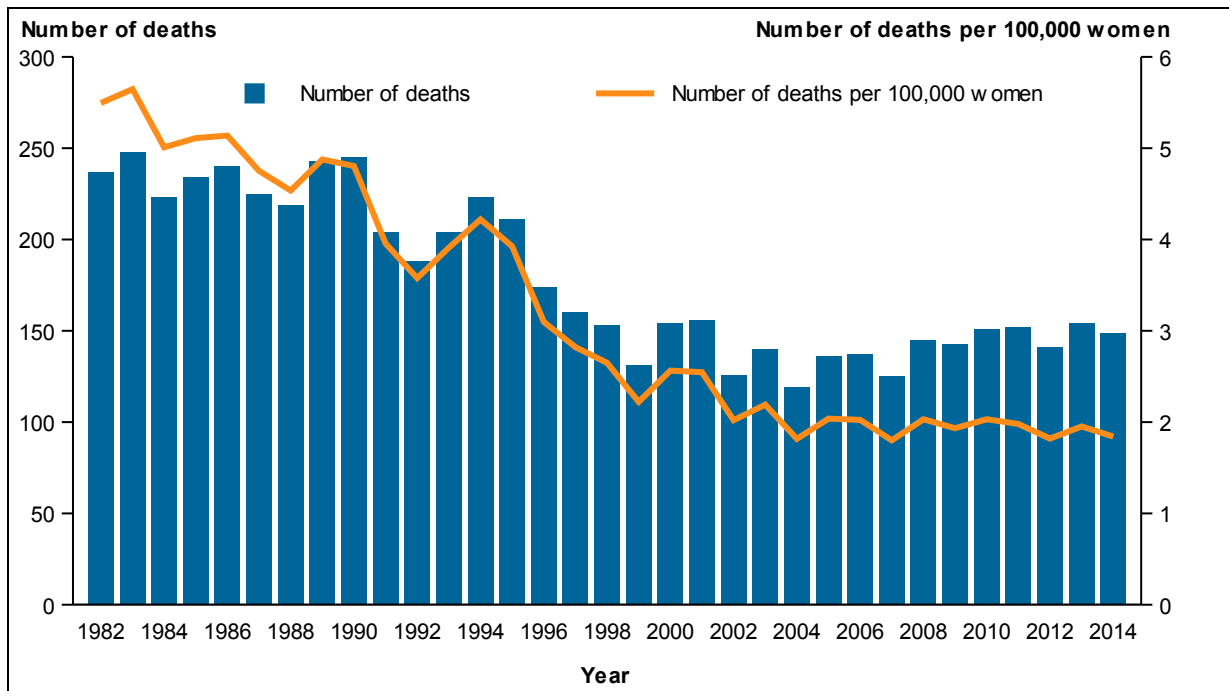
Number of deaths   **Number of deaths per 100,000 women**

Notes

1. Deaths from 1982 to 2013 were derived by year of death; deaths in 2014 were derived by year of registration of death. Deaths registered in 2012 and earlier are based on the final version of cause-of-death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
2. Rates age-standardised to the Australian population as at 30 June 2001.

Source: AIHW National Mortality Database. Data for this figure are available in Table A7.1.

Figure 4.8: Mortality from cervical cancer in women aged 20–69, 1982 to 2014

The major reduction in mortality occurred after the introduction of organised cervical screening in 1991, with the greatest reduction occurring in older women. This is most notable in the period 2002–2011, which does not have the small rise in mortality for women around the age of 65–69 that is apparent in both 1982–1991 and 1992–2001 (Figure 4.9).
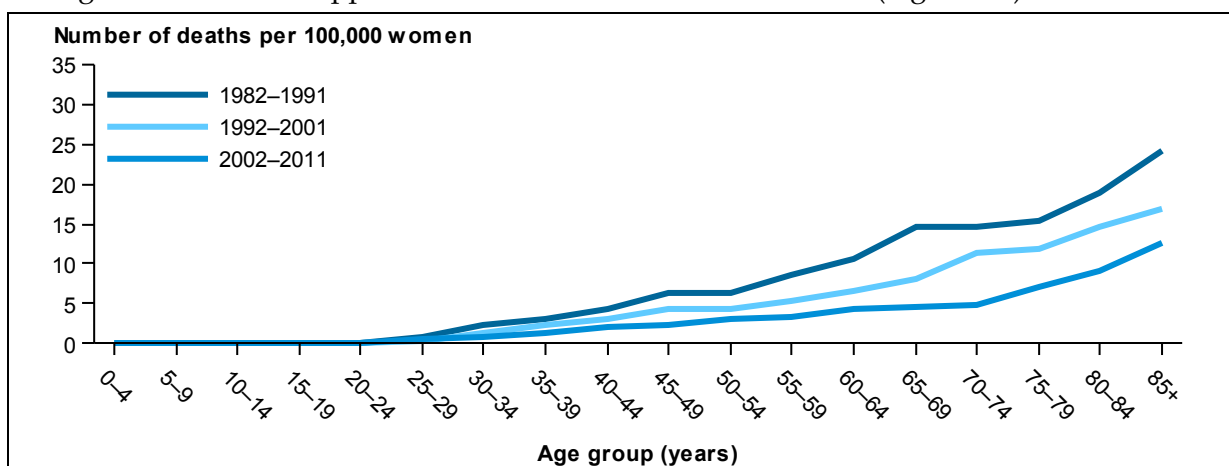
Notes

1. Deaths from 1982–2011 were derived by year of death, and are based on the final version of cause-of-death data.
2. Rates age-standardised to the Australian population as at 30 June 2001.

Source: AIHW National Mortality Database.

Figure 4.9: Mortality from cervical cancer by 5-year age group, 1982–1991, 1992–2001 and 2002–2011

Cervical cancer deaths across areas

Mortality in 2010–2014 was around 2 deaths per 100,000 women aged 20–69 in *Major cities* (1.8), *Inner regional* (2.0), *Outer regional* (2.6) and *Remote* areas (2.2), but higher, at 5.3 deaths per 100,000 women, in *Very remote* areas (Figure 4.10). In 2010–2014, mortality increased with increasing disadvantage, being highest for women living in the lowest socioeconomic areas, at 3.0 deaths per 100,000 women, and lowest for women living in the highest socioeconomic areas, at 1.0 deaths per 100,000 women aged 20–69 (Figure 4.10).
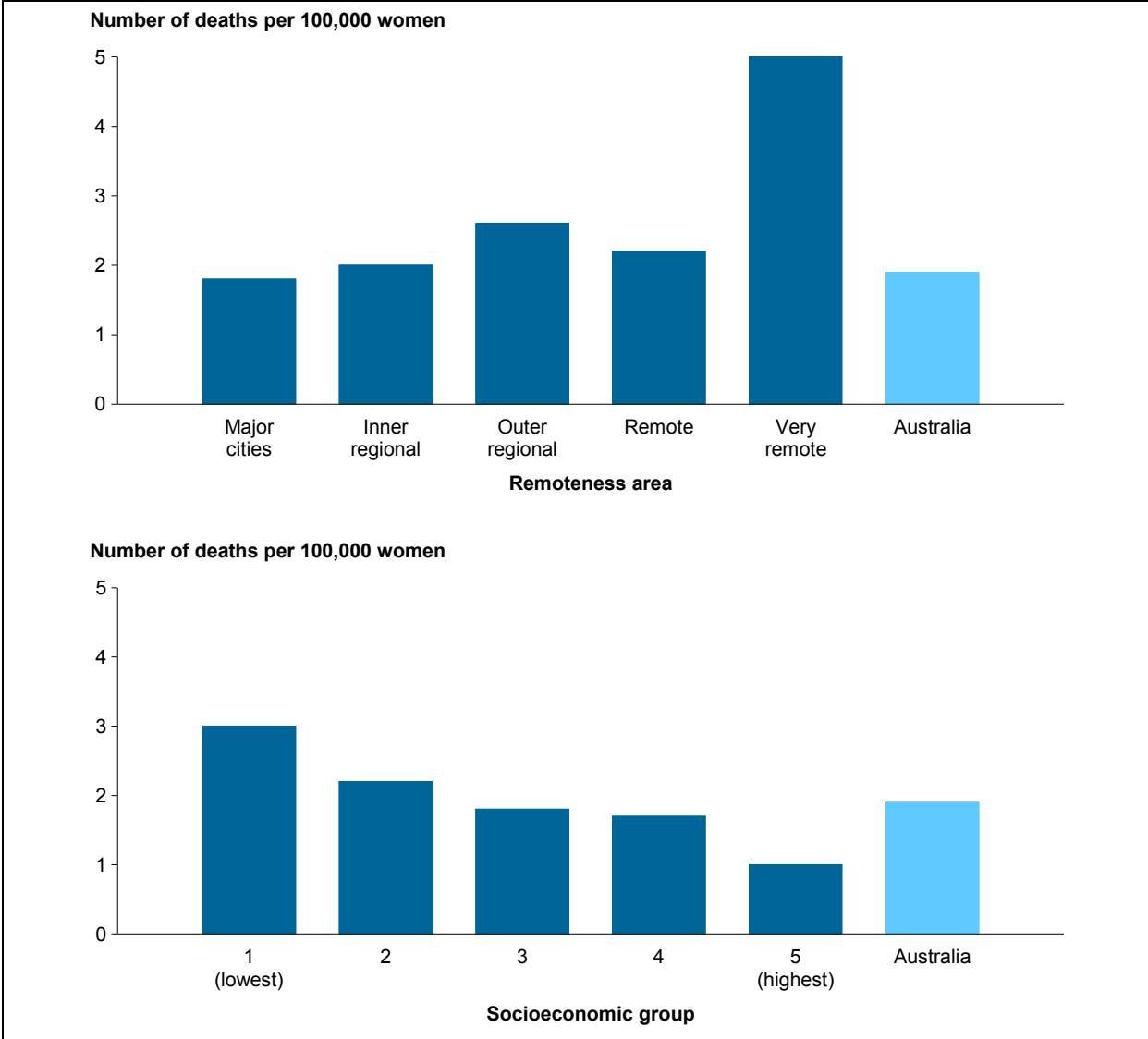
Notes

1. Deaths from 2010–2013 were derived by year of death; deaths in 2014 were derived by year of registration of death. Deaths registered in 2012 and earlier are based on the final version of cause-of-death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
2. Rates age-standardised to the Australian population as at 30 June 2001.

Source: AIHW National Mortality Database. Data for this figure are available in Table A7.4 and Table A7.5.

Figure 4.10: Mortality from cervical cancer in women aged 20–69, by remoteness area, and by socioeconomic group, 2010–2014

Cervical cancer mortality in 2009–2013, reported by small geographic areas, can be found on the AIHW website at <http://www.aihw.gov.au/cancer-data/cancer-screening/> and in the Cancer Incidence and Mortality Across Regions (CIMAR) books at <http://www.aihw.gov.au/cancer-data/cimar-books/>.

4.5 Burden of cervical cancer

'Burden of disease' refers to the quantified impact of a disease or injury on a population, using the disability-adjusted life year (DALY) measure. DALY is a measure (in years) of healthy life lost, either through premature death—defined as 'dying before the ideal life span' (YLL)—or, equivalently, through 'living with ill health due to illness or injury' (YLD).

Cancer is a major cause of illness in Australia: in 2011, cancer was the disease group accounting for the highest disease burden—19% of the total disease burden (AIHW 2016a). This section focuses on the burden of cervical cancer.

Cervical cancer is the 15th leading cause of cancer burden for females in 2011, with a DALY of 6,555, accounting for 1.8% of the total cancer burden for females (and the 25th leading cause for persons, at 0.8%) (AIHW, forthcoming 2017a).
Further, because it is a cancer experienced by relatively young women, cervical cancer causes considerable burden in these women (specifically among the age groups 15–24 and 25–64) (AIHW, forthcoming 2017a).

The rankings for cervical cancer according to the three measures that comprise burden of disease are shown in Table 4.3.

Table 4.3: Leading causes of cancer burden (DALY), leading causes of fatal cancer burden (YLL), and leading causes of non-fatal cancer burden (YLD), females, 2011

	Rank	Cancer	Measure	%	ASR
Leading causes of cancer burden (DALY)	15	Cervical cancer	6,555	1.8	0.6
	..	*All cancers*	*363,140*	*100.0*	*28.8*
Leading causes of fatal cancer burden (YLL)	15	Cervical cancer	6,293	1.9	0.5
	..	*All cancers*	*340,121*	*100.0*	*27.0*
Leading causes of non-fatal cancer burden (YLD)	21	Cervical cancer	263	1.1	<0.1
	..	*All cancers*	*23,019*	*100.0*	*1.8*

Source: Adapted from *Burden of cancer in Australia: Australian Burden of Disease Study 2011* (AIHW, forthcoming 2017a).

5 Cervical screening and cervical cancer outcomes in Indigenous women

Aboriginal and Torres Strait Islander women of Australia, hereafter respectfully referred to as Indigenous women, experience a high burden from cervical cancer compared with non-Indigenous women.

The Indigenous/non-Indigenous rate ratio for cervical cancer is the 3rd highest rate ratio of all the cancer types for all persons (AIHW 2016b). Among Indigenous women, cervical cancer ranks 4th highest in the leading causes of cancer burden (DALY), behind lung cancer, breast cancer and bowel cancer (AIHW, forthcoming 2017a). It is also the 5th most common cancer in Indigenous women (behind breast, lung, colorectal and uterus).

Aspects of cervical cancer and cervical screening in Indigenous women are reported by the AIHW and others in various reports and publications, but considering these data individually is not as valuable as considering all available data collectively. This chapter therefore aims to bring together the cervical screening participation, incidence and mortality data that would usually appear in several places in this report, and supplements these with additional analyses on incidence, survival and mortality data, as well as incorporating data and findings from other published sources, which add a valuable dimension.

5.1 Cervical screening in Indigenous women

It has been recognised that Indigenous women face cultural, linguistic and physical barriers to cervical screening (DoHA 2004), and state and territory cervical screening programs have developed initiatives to increase participation in cervical screening by Indigenous women. These include the employment of Aboriginal and Torres Strait Islander Health Workers, with the Australian Government component of the NCSP supporting these through funding the development of principles, standards and guidelines for screening Aboriginal and Torres Strait Islander women (DoHA 2004).

In order to determine to what extent initiatives are achieving their desired aims, it is important that participation in cervical screening be measured by Indigenous status to provide an evidence base, both to benchmark current rates and to monitor ongoing rates. At the time of reporting, participation in cervical screening cannot be measured nationally for Indigenous women because Indigenous status is not included on all pathology forms in all states and territories—the only source of information for cervical screening registers. However, there are some published data upon which we can draw, with a growing body of evidence indicating that Indigenous women are under-screened.

A decade ago, Coory et al. (2002) and Binns & Condon (2006) estimated participation in cervical screening in communities with high proportions of Indigenous women in Queensland and the Northern Territory, respectively. Coory and others (2002) found that participation in 13 rural and remote Indigenous communities in Queensland was 41.1% (ranging between 19.9% and 63.5%), compared with a participation rate of 59.1% in the rest of Queensland (Coory et al. 2002). Binns & Condon (2006) reported that, in 2003–2004, Indigenous participation in the Northern Territory was 42.2% (ranging between 22.3% and 69.4%) (with overall participation in the Northern Territory at 58.5% over those 2 years).

Progress in this area is also being achieved through the Indigenous primary health-care national key performance indicators (nKPIs) data collection (see Box 5.1), with the latest nKPI data indicating that 31% of regular female Indigenous clients had a cervical screening test in the 2 years prior to December 2014; 40% had a cervical screening test in the previous 3 years; and 48% had a screening test in the previous 5 years (AIHW 2015).

Box 5.1 National key performance indicators (nKPIs)

The purpose of the nKPIs is to improve the delivery of primary health-care services by supporting continuous quality improvement activity among service providers. The nKPIs also support policy and planning at the national and state and territory level by monitoring progress and highlighting areas for improvement. Data for this collection are provided to the AIHW by primary health-care organisations who receive funding from the Department of Health to provide services to Aboriginal and Torres Strait Islander people.

The nKPI data collection includes an indicator on women having a cervical screening test at 2-, 3- and 5-year intervals from primary health-care services providing care for Indigenous women. As this data set matures, it will become increasingly useful for understanding the extent of participation by Indigenous women attending these services.

With identification of Indigenous women on cervical screening data the major impediment to the reporting of participation by Indigenous status, recent research using data linkage to transfer Indigenous status from the Queensland Health Admitted Patient Data Collection to data from the Queensland Health Pap Smear Register, has provided new insights into participation of Indigenous women in cervical screening in Queensland.

It was found that 2-year participation was more than 20 percentage points lower for Indigenous women compared with non-Indigenous women for all reporting periods examined from 2000–2001 to 2010–2011—in 2010–2011, 2-year participation was 33.5% for Indigenous women and 55.7% for non-Indigenous women (Whop et al. 2016).

Disparities such as this in participation in cervical screening are likely to have downstream effects on cancer incidence and mortality in Indigenous women. This is because cervical screening is able to detect precancerous abnormalities, thereby preventing cancers from developing, and reducing the incidence of malignant disease. Cancers that are detected are also more likely to be at an earlier stage, which tends to be associated with better survival, if treated. The cervical cancer outcomes of incidence, survival and mortality in Indigenous women are explored in the next section.

5.2 Cervical cancer outcomes in Indigenous women

The source of national cancer incidence data in Australia is the Australian Cancer Database, which is compiled from data supplied by state and territory cancer registries. Like the state and territory cervical screening registers, the cancer registers also rely on pathology forms as their primary source of information—which, as established earlier, do not include Indigenous status in all states and territories. Unlike the cervical screening registers, however, the cancer registers collect information from additional sources, such as hospital records and death records, which allows information on Indigenous status to be collected.

The level of identification of Indigenous status is considered sufficient to enable analysis in 5 jurisdictions, with data from New South Wales, Victoria, Queensland, Western Australia and the Northern Territory considered to be of sufficient quality.

While the majority (83%) of Australian Indigenous people live in these five jurisdictions, the degree to which data for these jurisdictions are representative of data for all Indigenous people is unknown (ABS 2012). For the five jurisdictions analysed, 7% of the ACD had records with unknown Indigenous status for bowel cancer diagnoses between 2008 and 2012. It is unclear how many Indigenous Australians are misclassified as non-Indigenous.

Analysis of data from these jurisdictions showed that, in 2008–2012, Indigenous women aged 20–69 had a higher incidence of cervical cancer, at 19.3 new cases per 100,000 women, compared with 8.6 new cases for non-Indigenous women—with a similar trend for all ages (14.6 compared with 6.5) (Figure 5.1).

Note: Rates age-standardised to the Australian population as at 30 June 2001.

Source: AIHW Australian Cancer Database 2013. Data for this figure are available in Table A6.7.

Figure 5.1: Incidence of cervical cancer in women aged 20–69 (New South Wales, Victoria, Queensland, Western Australia and the Northern Territory), by Indigenous status, 2008–2012
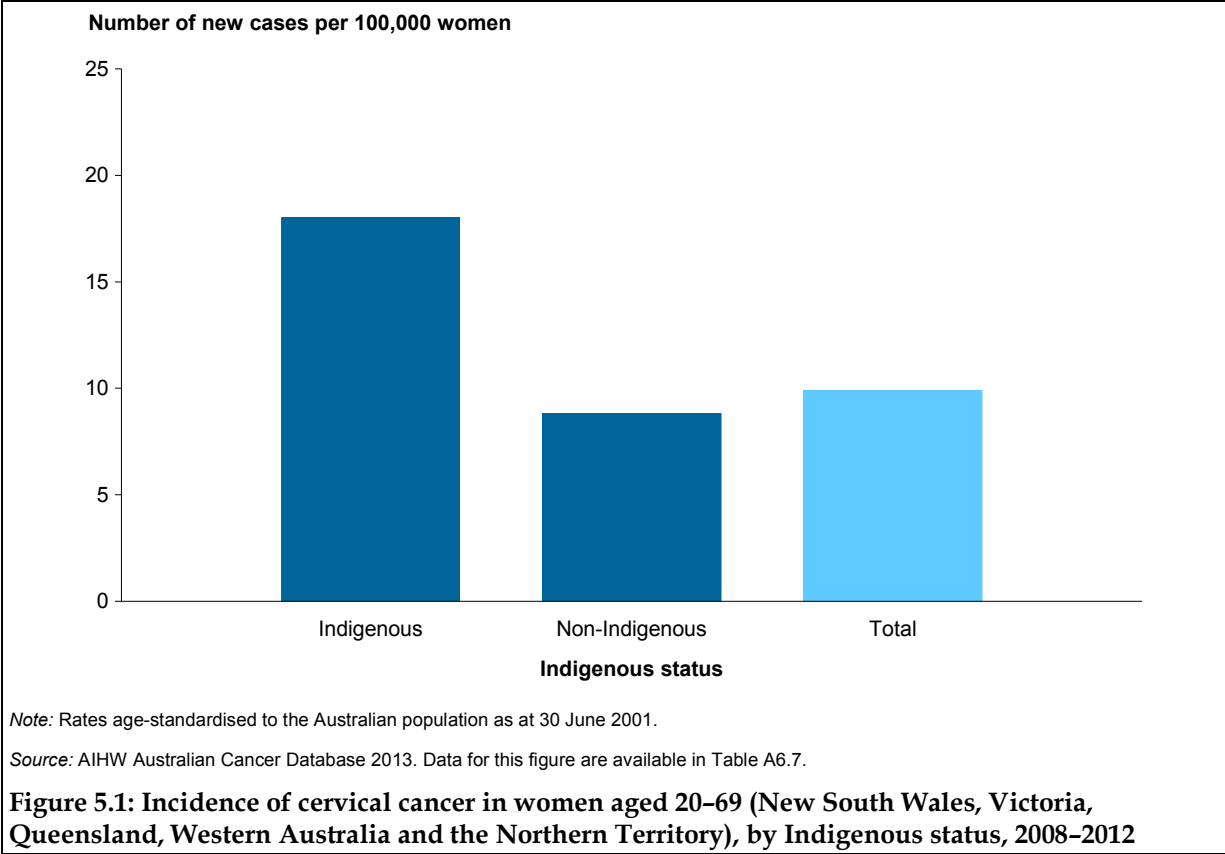
Time trends in cervical cancer incidence by Indigenous status were also examined. This is not straightforward; states and territories were considered to have data of sufficient quality for inclusion from different years—so to maximise the data available for use in this analysis, data for each jurisdiction were included for each year that this occurred to maximise the data available for use in this analysis.

A second consideration is comparability of populations, since, after the 2011 Census, Indigenous populations were rebased and recast back to 2001, resulting in higher population estimates for Indigenous women. This means that, to cover the range of cancer incidence data, two sources of population data need to be used—historical populations available from 1986 to 2001, and current populations available from 2001 to 2011—which, due to the recasting, no longer form a series.

The most appropriate methodology was to use 5-year periods that aligned with Census years, with the 5-year periods 1986–1990, 1991–1995, 1996–2000 and 2001–2005 using historical Indigenous populations, and the 5-year periods 2001–2005 and 2006–2010 using

current populations. This allowed for a duplication of rates for 2001–2005, which would provide a level of transparency, and some information as to the effect of the population on the rates produced.

The resulting time trend is illustrated in Figure 5.2. In considering this time trend, note that the first two points include data only from Western Australia and the Northern Territory, with Queensland being introduced from 1997, New South Wales from 1999, and Victoria from 2008. The combined data from these 5 states and territories are shown as the unbroken line in Figure 5.2, while the trends of individual states and territories are shown as the broken lines (note that, due to small numbers, data from Western Australia and the Northern Territory are combined into a single trend).

Notes

1. Data for 1986–1990 and 1991–1995 are for Western Australia and the Northern Territory; data for 1996–2000 are for New South Wales (from 1999 only), Queensland (from 1997 only), Western Australia and the Northern Territory; data for 2001–2005 are for New South Wales, Queensland, Western Australia and the Northern Territory; data for 2006–2010 are for New South Wales, Victoria (from 2008 only), Queensland, Western Australia and the Northern Territory.

2. Broken lines show trends for individual states and territories (New South Wales, Queensland and Western Australia/Northern Territory); unbroken lines show trends for all states and territories combined.

3. Historic populations are for 1986–1990 to 2001–2005; current populations are for 2001–2005 to 2006–2010 (this results in an overlap of rates for the period 2001–2005, with all rates shown using both historic and current populations to illustrate change in rate resulting from population source alone).

4. Rates age-standardised to the Australian population as at 30 June 2001.

Source: AIHW Australian Cancer Database 2013.

Figure 5.2: Trends in incidence of cervical cancer in women aged 20–69 by Indigenous status

Nonetheless, it does appear that there was some decrease in cervical cancer incidence in Indigenous women, and while it is difficult to determine how much this trend is influenced by the introduction of additional data (in 1997 and 1999 in particular), this does align with a similar trend noted in the Northern Territory, for which cervical cancer incidence fell from 44.4 new cases per 100,000 women in 1991–1996 to 15.6 in 2007–2012 (Condon et al. 2016).

It is of note that there was no decrease in cervical cancer incidence in Indigenous women between 2001–2005 and 2006–2010 (Figure 5.2).

Crude survival was also calculated, and found to be lower for Indigenous women, compared with non-Indigenous women—crude survival was 51.4% for Indigenous women of all ages compared with 68.9% for non-indigenous women of all ages during the period 2009–2013. Similarly, crude survival was lower in Indigenous women when restricted to women aged 20–69 (51.9% compared with 69.2% for non-Indigenous women).

The source of mortality data is the AIHW National Mortality Database, in which information on Indigenous status is considered to be adequate for reporting for 5 jurisdictions—New South Wales, Queensland, Western Australia, South Australia and the Northern Territory.

In 2010–2014, the mortality rate from cervical cancer was higher in Indigenous women aged 20–69, at 7.4 deaths per 100,000 women compared with 1.9 deaths for non-Indigenous women (Figure 5.3), with a similar trend for all ages (6.8 compared with 1.8 deaths per 100,000 women). While participation in cervical screening has a direct effect on the incidence of cervical cancer, additional factors come into play for mortality from cervical cancer, such as the stage of cancer at diagnosis, and access to treatment.

Number of deaths per 100,000 women

Notes

1. Deaths from 2010–2013 are derived from year of death; deaths in 2014 are derived from year of registration of death.
    Deaths registered in 2012 and earlier are based on the final version of cause-of-death data; deaths registered in 2013 and 2014
    are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
2. Rates age-standardised to the Australian population as at 30 June 2001.

Source: AIHW National Mortality Database. Data for this figure are available in Table A7.6.

Figure 5.3: Mortality from cervical cancer in women aged 20–69 (New South Wales, Queensland, Western Australia, South Australia and the Northern Territory), by Indigenous status, 2010–2014

Time trends were also examined for cervical cancer mortality—using the same methodology as used for incidence, all 5-year periods had data available for 4 or 5 jurisdictions, with Queensland data being introduced from 1997 onwards (Figure 5.4). (Small numbers meant it was not possible to show any further detail for states and territories, as was done in the figure for incidence trends). Again, there is evidence that there has been a decrease in cervical cancer mortality in Indigenous women.

Notes

1. Data for 1986–1990 and 1991–1995 are for New South Wales, Western Australia, South Australia and the Northern Territory; data for 1996–2000 are for New South Wales, Queensland (from 1997 only), Western Australia, South Australia and the Northern Territory; data for 2001–2005 and 2006–2010 are for New South Wales, Queensland, Western Australia and the Northern Territory.

2. Historic populations are for 1986–1990 to 2001–2005; current populations are for 2001–2005 to 2006–2010 (which results in an overlap of rates for the period 2001–2005, with all rates shown using both historic and current populations to illustrate changes in rate resulting from population source alone).

3. Rates age-standardised to the Australian population as at 30 June 2001.

Source: AIHW Australian Cancer Database 2013.

Figure 5.4: Trends in mortality from cervical cancer in women aged 20–69, by Indigenous status

Appendix A: Supporting data tables

A1 Participation

Table A1.1: Number and age-standardised rate of women aged 20–69 participating in the National Cervical Screening Program, 1996–1997 to 2014–2015

Reporting period	Participants[a]	Adjusted population[b]	AS rate[c]
1996–1997[d]	2,563,107	4,171,326	61.2
1997–1998[d]	2,653,504	4,210,148	62.8
1998–1999[d]	2,716,364	4,246,280	63.7
1999–2000	3,244,329	5,245,032	61.7
2000–2001	3,262,931	5,302,865	61.4
2001–2002	3,296,409	5,365,549	61.4
2002–2003	3,318,354	5,432,781	61.1
2003–2004	3,354,519	5,501,337	61.1
2004–2005	3,407,219	5,738,149	59.4
2005–2006	3,452,093	5,822,719	59.3
2006–2007	3,549,524	5,920,032	60.1
2007–2008	3,599,919	6,035,760	59.8
2008–2009	3,638,941	6,167,170	59.3
2009–2010	3,635,929	6,291,062	58.2
2010–2011	3,641,198	6,396,134	57.3
2011–2012	3,723,738	6,499,742	57.7
2012–2013	3,815,705	6,614,886	58.2
2013–2014	3,853,170	6,722,326	57.8
2014–2015	3,839,611	6,805,458	56.9

(a) 'Participants' is the number of women aged 20–69 screened in each 2-year reporting period. 'Number of women screened' includes all women screened in each jurisdiction, not just those women resident in each jurisdiction—with the exception of Victoria and the Australian Capital Territory, for which only residents of the jurisdiction (and immediate border residents) are included.

(b) 'Adjusted population' is the average of the ABS estimated resident population for women aged 20–69 for the 2 years, adjusted to include only women with an intact cervix using age-specific hysterectomy fractions. Reporting periods 1996–1997 to 2003–2004 used hysterectomy fractions derived from the 2001 ABS National Health Survey, while reporting periods 2004–2005 to 2014–2015 used hysterectomy fractions derived from the AIHW National Hospitals Morbidity Database.

(c) 'Age-standardised (AS) rate' is the number of women aged 20–69 screened in each 2-year reporting period, as a percentage of the ABS estimated resident population for women aged 20–69, adjusted to include only women with an intact cervix (as described above), age-standardised to the Australian population at 30 June 2001.

(d) Because the Queensland Health Pap Smear Register began operations in February 1999, Queensland data are excluded from both participant and population data for the 1996–1997, 1997–1998 and 1998–1999 reporting periods.

Note: Rates from 1996–1997 to 2003–2004 cannot be directly compared with rates from 2004–2005 onwards, because a different source of hysterectomy fractions was used to adjust the population.

Source: AIHW analysis of state and territory cervical screening register data.

Table A1.2: Participation, by age, 2014–2015

	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69
Number	334,755	437,679	479,190	445,802	466,651	423,422	402,598	345,140	284,744	219,630
Crude rate	41.5	50.5	56.3	59.0	60.8	62.9	63.0	61.3	59.8	54.2

Note: 'Crude rate' is the number of women screened in 2014–2015 as a percentage of the ABS estimated resident population for women aged 20–69, adjusted to include only women with an intact cervix, using age-specific hysterectomy fractions derived from the AIHW National Hospitals Morbidity Database.

Source: AIHW analysis of state and territory cervical screening register data.

Table A1.3: Participation by state and territory, women aged 20–69, 2014–2015

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Number	1,199,469	1,020,926	741,037	413,146	280,903	80,933	65,337	37,860	3,839,611
Crude rate	55.3	59.2	54.5	55.7	58.6	57.0	55.4	54.4	56.4
AS rate	55.8	59.9	54.8	56.1	58.9	57.3	56.2	54.3	56.9

Notes

1. Direct comparisons between the states and territories of Australia are not advised, due to the substantial differences that exist between the jurisdictions, including population, area, geographical structure, policies and other factors.

2. 'Crude rate' is the number of women screened in 2014–2015 as a percentage of the ABS estimated resident population for women aged 20–69; 'age-standardised (AS) rate' is the number of women screened in 2014–2015 as a percentage of the ABS estimated resident population for women aged 20–69, adjusted to include only women with an intact cervix, using age-specific hysterectomy fractions derived from the AIHW National Hospitals Morbidity Database, age-standardised to the Australian population at 30 June 2001.

Source: AIHW analysis of state and territory cervical screening register data.

Table A1.4: Participation by remoteness area, women aged 20–69, 2014–2015

	Major cities	Inner regional	Outer regional	Remote	Very remote	Australia
Number	2,784,896	668,620	312,994	44,723	27,027	3,839,611
Crude rate	56.3	57.8	55.8	52.1	51.5	56.4
AS rate	57.1	57.8	55.8	52.1	51.8	56.9

Notes

1. Women were allocated to a remoteness area, using their residential postcode, according to the Australian Statistical Geography Standard (ASGS) for 2011. Caution is required when examining differences across remoteness areas (see Appendix D).

2. 'Australia' does not match the total, due to some women not being allocated to a remoteness area.

3. 'Crude rate' is the number of women screened in 2014–2015 as a percentage of the ABS estimated resident population for women aged 20–69; 'age-standardised (AS) rate' is the number of women screened in 2014–2015 as a percentage of the ABS estimated resident population for women aged 20–69, adjusted to include only women with an intact cervix, using age-specific hysterectomy fractions derived from the AIHW National Hospitals Morbidity Database, age-standardised to the Australian population at 30 June 2001.

Source: AIHW analysis of state and territory cervical screening register data.

Table A1.5: Participation by socioeconomic group, women aged 20–69, 2014–2015

	1 (lowest)	2	3	4	5 (highest)	Australia
Number	647,735	703,418	772,689	812,442	884,985	3,839,611
Crude rate	50.9	53.9	55.5	57.7	62.1	56.4
AS rate	51.4	54.3	56.0	58.2	62.6	56.9

Notes

1. Women were allocated to a socioeconomic group, using their residential postcode, according to the Socio-Economic Indexes for Areas (SEIFA) Index of Relative Socio-Economic Disadvantage for 2011. Caution is required when examining differences across socioeconomic groups (see Appendix D).

2. 'Australia' does not match the total, due to some women not being allocated to a socioeconomic group.

3. 'Crude rate' is the number of women screened in 2014–2015 as a percentage of the ABS estimated resident population for women aged 20–69; 'age-standardised (AS) rate' is the number of women screened in 2014–2015 as a percentage of the ABS estimated resident population for women aged 20–69, adjusted to include only women with an intact cervix, using age-specific hysterectomy fractions derived from the AIHW National Hospitals Morbidity Database, age-standardised to the Australian population at 30 June 2001.

Source: AIHW analysis of state and territory cervical screening register data.

Table A1.6: Participation by age over 3 years (2013–2015) and 5 years (2011–2015)

	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69
3 years, 2013–2015										
Number	439,197	559,078	596,917	556,163	578,879	514,927	482,978	403,188	329,778	250,130
Crude rate	54.6	64.9	71.2	73.8	75.4	76.9	75.8	72.4	70.0	62.8
5 years, 2011–2015										
Number	584,188	699,303	707,417	667,013	665,453	589,915	534,568	436,623	355,653	261,708
Crude rate	73.1	82.6	87.2	88.3	87.7	88.3	85.0	80.1	76.7	69.0

Note: 'Crude rate' is the number of women screened as a percentage of the ABS estimated resident population for women aged 20–69, adjusted to include only women with an intact cervix, using age-specific hysterectomy fractions derived from the AIHW National Hospitals Morbidity Database.

Source: AIHW analysis of state and territory cervical screening register data.

Table A1.7: Participation by state and territory over 3 years (2013–2015) and 5 years (2011–2015), women aged 20–69

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
3 years, 2013–2015									
Crude rate	69.0	72.3	67.8	67.7	71.5	70.1	70.5	70.3	69.7
AS rate	69.5	73.0	68.2	67.9	72.0	70.8	71.3	69.7	70.2
5 years, 2011–2015									
Crude rate	82.5	84.6	81.3	79.7	83.4	81.6	86.6	88.4	82.6
AS rate	82.9	85.0	81.4	79.5	84.0	82.7	86.7	86.7	83.0

Notes

1. Direct comparisons between the states and territories of Australia are not advised, due to the substantial differences that exist between the jurisdictions, including population, area, geographical structure, policies and other factors.

2. 'Crude rate' is the number of women screened as a percentage of the ABS estimated resident population for women aged 20–69; 'age-standardised (AS) rate' is the number of women screened as a percentage of the ABS estimated resident population for women aged 20–69, adjusted to include only women with an intact cervix, using age-specific hysterectomy fractions derived from the AIHW National Hospitals Morbidity Database, age-standardised to the Australian population at 30 June 2001.

Source: AIHW analysis of state and territory cervical screening register data.

A2   Rescreening

Table A2.1: Number and proportion of women aged 20–69 rescreening early following a negative cervical cytology test, by number of early rescreens, 2014 cohort

Number of early rescreens	Number of women	% of women
0	147,389	89.1
1	17,332	10.5
2	584	0.4
3+	59	0.0

Note: Women with a cytological or histological abnormality in the preceding 36 months are excluded from the cohort; repeat cytology tests that are a valid repeat of an unsatisfactory cytology test are excluded from this count.

Source: AIHW analysis of state and territory cervical screening register data.

Table A2.2: Proportion of women aged 20–69 rescreening early following a negative cervical cytology test, by state and territory, 2014 cohort

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
%	11.4	10.7	11.5	10.2	9.7	8.7	7.9	10.5	10.9

Source: AIHW analysis of state and territory cervical screening register data.

Table A2.3: Women aged 20–69 rescreening within 3 months of receiving a 27-month cervical screening register reminder letter, by state and territory, letters sent in 2014

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
No. sent letter	323,787	248,979	207,728	97,247	55,522	22,533	19,685	10,814	986,295
No. rescreened	104,526	80,258	68,974	29,469	15,945	8,784	5,847	2,086	315,889
%	32.3	32.2	33.2	30.3	28.7	39.0	29.7	19.3	32.0

Source: AIHW analysis of state and territory cervical screening register data.

A3   Cytology

Table A3.1: Number of cytology tests, by age, 2008 to 2015

	2008	2009	2010	2011	2012	2013	2014	2015
<20	63,668	60,813	55,511	56,159	53,323	51,549	46,619	42,980
20–24	203,540	202,951	192,175	195,602	195,502	196,907	193,395	188,629
25–29	242,116	249,852	240,510	247,362	251,896	257,726	253,606	249,201
30–34	258,449	259,995	246,489	253,185	260,357	271,579	273,033	271,906
35–39	281,047	281,300	264,471	260,198	256,294	259,395	251,497	247,411
40–44	250,963	252,387	245,041	252,666	261,413	270,965	261,565	254,969
45–49	243,146	246,688	236,829	235,860	235,597	238,943	233,683	231,916
50–54	202,073	206,118	205,915	211,883	218,708	225,342	221,968	217,630
55–59	165,893	168,806	168,579	172,415	179,296	184,872	186,502	186,786
60–64	129,177	134,622	139,035	144,153	146,935	151,208	151,721	152,538
65–69	79,390	83,835	86,816	92,294	102,229	109,584	114,728	118,724
70+	28,353	28,005	27,750	28,014	28,402	29,752	29,898	31,075
All ages	**2,147,848**	**2,175,383**	**2,109,131**	**2,149,798**	**2,189,960**	**2,247,835**	**2,218,227**	**2,193,768**
Ages 20–69	**2,055,794**	**2,086,554**	**2,025,860**	**2,065,618**	**2,108,227**	**2,166,521**	**2,141,698**	**2,119,710**

Note: 'All ages' may not equal the sum of the age groups, due to the inclusion of women for whom the age group was not stated.

Source: AIHW analysis of state and territory cervical screening register data.

Table A3.2: Proportion of cytology tests, by age, 2015

	<20	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70+
Crude rate	2.0	8.6	11.4	12.4	11.3	11.6	10.6	9.9	8.5	7.0	5.4	1.4

Note: 'Crude rate' is the number of cytology tests as a proportion of the total number of cytology tests.

Source: AIHW analysis of state and territory cervical screening register data.

Table A3.3: Unsatisfactory cytology tests in women aged 20–69, 2008 to 2015

	2008	2009	2010	2011	2012	2013	2014	2015
Number	43,223	43,104	42,096	42,760	46,192	48,148	49,422	54,379
Crude rate	2.1	2.1	2.1	2.1	2.2	2.2	2.3	2.6
AS rate	2.1	2.1	2.1	2.1	2.2	2.2	2.3	2.6

Note: 'Crude rate' is the number of unsatisfactory cytology tests as a proportion of the total number of cytology tests; 'age-standardised (AS) rate' is the number of unsatisfactory cytology tests as a proportion of the total number of cytology tests, age-standardised to the Australian population at 30 June 2001.

Source: AIHW analysis of state and territory cervical screening register data.

Table A3.4: Unsatisfactory cytology tests, by age, 2015

	<20	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70+
Number	1,188	5,585	7,081	7,409	6,194	5,859	5,265	4,968	5,122	4,016	2,880	846
Crude rate	2.8	3.0	2.8	2.7	2.5	2.3	2.3	2.3	2.7	2.6	2.4	2.7

Note: 'Crude rate' is the number of unsatisfactory cytology tests as a proportion of the total number of cytology tests.

Source: AIHW analysis of state and territory cervical screening register data.

Table A3.5: Unsatisfactory cytology tests in women aged 20–69, by state and territory, 2015

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Number	15,988	16,216	9,397	7,024	3,214	1,536	706	298	54,379
Crude rate	2.4	2.9	2.3	3.0	2.1	3.4	2.0	1.4	2.6
AS rate	2.4	2.9	2.3	3.0	2.1	3.4	2.0	1.5	2.6

Note: 'Crude rate' is the number of unsatisfactory cytology tests as a proportion of the total number of cytology tests; 'age-standardised (AS) rate' is the number of unsatisfactory cytology tests as a proportion of the total number of cytology tests, age-standardised to the Australian population at 30 June 2001.

Source: AIHW analysis of state and territory cervical screening register data.

Table A3.6: Negative cytology tests in women aged 20–69, 2008 to 2015

	2008	2009	2010	2011	2012	2013	2014	2015
Number	1,891,705	1,931,682	1,876,881	1,908,291	1,943,563	1,992,544	1,970,963	1,948,641
Crude rate	92.0	92.6	92.6	92.4	92.2	92.0	92.0	91.9
AS rate	92.1	92.6	92.6	92.3	92.1	91.9	91.9	91.8

Note: 'Crude rate' is the number of negative cytology tests as a proportion of the total number of cytology tests; 'age-standardised (AS) rate' is the number of negative cytology tests as a proportion of the total number of cytology tests, age-standardised to the Australian population at 30 June 2001.

Source: AIHW analysis of state and territory cervical screening register data.

Table A3.7: Negative cytology tests, by age, 2015

	<20	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70+
Number	36,721	160,672	218,377	245,639	227,421	236,617	217,050	205,639	177,476	145,730	114,020	29,396
Crude rate	85.4	85.2	87.6	90.3	91.9	92.8	93.6	94.5	95.0	95.5	96.0	94.6

Note: 'Crude rate' is the number of negative cytology tests as a proportion of the total number of cytology tests.

Source: AIHW analysis of state and territory cervical screening register data.

Table A3.8: Negative cytology tests in women aged 20–69, by state and territory, 2015

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Number	614,832	509,347	380,787	206,960	144,217	40,905	32,749	18,844	1,948,641
Crude rate	92.2	91.1	93.2	89.3	94.3	91.8	92.9	90.0	91.9
AS rate	92.0	90.9	93.2	89.5	94.2	91.5	93.0	90.6	91.8

Note: 'Crude rate' is the number of negative cytology tests as a proportion of the total number of cytology tests; 'age-standardised (AS) rate' is the number of negative cytology tests as a proportion of the total number of cytology tests, age-standardised to the Australian population at 30 June 2001.

Source: AIHW analysis of state and territory cervical screening register data.

Table A3.9: Cytology tests with no endocervical component in women aged 20–69, 2008 to 2015

	2008	2009	2010	2011	2012	2013	2014	2015
Number	407,942	418,527	424,077	440,411	461,425	487,633	492,683	496,146
Crude rate	19.8	20.1	20.9	21.3	21.9	22.5	23.0	23.4
AS rate	20.2	20.3	21.1	21.4	21.9	22.5	22.9	23.3

Note: 'Crude rate' is the number of cytology tests with no endocervical component as a proportion of the total number of cytology tests; 'age-standardised (AS) rate' is the number of cytology tests with no endocervical component as a proportion of the total number of cytology tests, age-standardised to the Australian population at 30 June 2001.

Source: AIHW analysis of state and territory cervical screening register data.

Table A3.10: Cytology tests with no endocervical component, by age, 2015

	<20	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70+
Number	8,529	37,073	48,283	51,067	47,006	54,114	55,107	57,003	54,571	49,886	42,036	11,979
Crude rate	19.8	19.7	19.4	18.8	19.0	21.2	23.8	26.2	29.2	32.7	35.4	38.5

Note: 'Crude rate' is the number of cytology tests with no endocervical component as a proportion of the total number of cytology tests.

Source: AIHW analysis of state and territory cervical screening register data.

Table A3.11: Cytology tests with no endocervical component in women aged 20–69, by state and territory, 2015

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Number	132,935	159,334	82,237	57,568	36,416	14,134	8,048	5,474	496,146
Crude rate	19.9	28.5	20.1	24.8	23.8	31.7	22.8	26.1	23.4
AS rate	19.8	28.3	20.1	25.2	23.3	31.1	23.0	27.2	23.3

Note: 'Crude rate' is the number of cytology tests with no endocervical component as a proportion of the total number of cytology tests; 'age-standardised (AS) rate' is the number of cytology tests with no endocervical component as a proportion of the total number of cytology tests, age-standardised to the Australian population at 30 June 2001.

Source: AIHW analysis of state and territory cervical screening register data.

Table A3.12: Abnormalities detected by cytology in women aged 20–69, 2008 to 2015

	2008	2009	2010	2011	2012	2013	2014	2015
Low-grade abnormalities								
Number	92,013	83,933	78,510	84,540	88,845	95,804	92,439	89,254
Crude rate	4.5	4.0	3.9	4.1	4.3	4.4	4.3	4.2
AS rate	4.5	4.0	3.9	4.1	4.3	4.5	4.4	4.3
High-grade abnormalities								
Number	29,176	28,054	28,491	30,253	29,875	30,320	29,187	27,653
Crude rate	1.4	1.3	1.4	1.5	1.4	1.4	1.4	1.3
AS rate	1.4	1.3	1.4	1.5	1.4	1.4	1.4	1.3
All abnormalities (low-grade, high-grade and cancer)								
Number	121,400	112,188	107,261	115,026	118,953	126,344	121,855	117,115
Crude rate	5.9	5.4	5.3	5.6	5.8	5.8	5.7	5.5
AS rate	5.9	5.4	5.3	5.6	5.8	5.9	5.8	5.6

Notes

1. 'Low-grade abnormalities' are cytology test results S2, S3 and E2; 'high-grade abnormalities' are cytology results S4, S5, S6, E3, E4 and E5. 'All abnormalities' are cytology results S2, S3, S4, S5, S6, S7, E2, E3, E4, E5 and E6 (see Table 3.1).

2. 'Crude rate' is the number of abnormalities (low-grade, high-grade or all) detected by cytology as a proportion of the total number of cytology tests; 'age-standardised (AS) rate' is the number of abnormalities (low-grade, high-grade or all) detected by cytology as a proportion of the total number of cytology tests, age-standardised to the Australian population at 30 June 2001.

3. 'Abnormalities' refers to the number of abnormalities detected, not the number of abnormal cytology tests; in a small proportion of cytology tests there may be more than one abnormality detected, each of which will be counted.

Source: AIHW analysis of state and territory cervical screening register data.

Table A3.13: Low-grade abnormalities detected by cytology, by age, 2015

	<20	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70+
Number	4,562	18,711	17,146	13,284	10,083	9,706	7,802	5,726	3,236	2,176	1,384	567
Crude rate	10.6	9.9	6.9	4.9	4.1	3.8	3.4	2.6	1.7	1.4	1.2	1.8

Note: 'Crude rate' is the number of low-grade abnormalities detected by cytology as a proportion of the total number of cytology tests.

Source: AIHW analysis of state and territory cervical screening register data.

Table A3.14: High-grade abnormalities detected by cytology, by age, 2015

	<20	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70+
Number	514	3,674	6,670	5,650	3,761	2,829	1,820	1,295	950	590	414	222
Crude rate	1.2	1.9	2.7	2.1	1.5	1.1	0.8	0.6	0.5	0.4	0.3	0.7

Note: 'Crude rate' is the number of high-grade abnormalities detected by cytology as a proportion of the total number of cytology tests.

Source: AIHW analysis of state and territory cervical screening register data.

Table A3.15: Squamous abnormalities detected by cytology in women aged 20–69, by squamous category, 2008 to 2015

	2008	2009	2010	2011	2012	2013	2014	2015
S2 Possible low-grade squamous intraepithelial lesion								
Number	51,147	47,290	43,485	49,443	52,007	57,748	54,672	53,544
% of cytology tests	2.5	2.3	2.1	2.4	2.5	2.7	2.6	2.5
% of squamous abnormalities	42.8	42.8	41.1	43.6	44.4	46.4	45.5	46.3
S3 Low-grade squamous intraepithelial lesion								
Number	39,846	35,897	34,311	34,276	36,047	37,136	36,889	34,979
% of cytology tests	1.9	1.7	1.7	1.7	1.7	1.7	1.7	1.7
% of squamous abnormalities	33.4	32.5	32.5	30.2	30.7	29.8	30.7	30.3
S4 Possible high-grade squamous intraepithelial lesion								
Number	11,500	11,494	12,088	13,020	12,848	13,334	12,705	12,927
% of cytology tests	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
% of squamous abnormalities	9.6	10.4	11.4	11.5	11.0	10.7	10.6	11.2
S5 High-grade squamous intraepithelial lesion								
Number	16,491	15,505	15,317	16,117	15,863	15,791	15,292	13,644
% of cytology tests	0.8	0.7	0.8	0.8	0.8	0.7	0.7	0.6
% of squamous abnormalities	13.8	14.0	14.5	14.2	13.5	12.7	12.7	11.8
S6 High-grade squamous intraepithelial lesion with possible microinvasion/invasion								
Number	290	287	313	310	346	317	335	325
% of cytology tests	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
% of squamous abnormalities	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3
S7 Squamous cell carcinoma								
Number	126	141	178	155	153	142	139	135
% of cytology tests	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
% of squamous abnormalities	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1
All squamous abnormalities								
Number	119,400	110,614	105,692	113,321	117,264	124,468	120,032	115,554
Crude rate	5.8	5.3	5.2	5.5	5.6	5.7	5.6	5.5
AS rate	5.8	5.3	5.3	5.5	5.6	5.8	5.7	5.6

Note: 'Crude rate' is the number of abnormalities—for each category of squamous abnormality or for all squamous abnormalities combined—detected by cytology, as a proportion of the total number of cytology tests; 'age-standardised (AS) rate' is the number of all squamous abnormalities combined, detected by cytology, as a proportion of the total number of cytology tests, age-standardised to the Australian population at 30 June 2001.

Source: AIHW analysis of state and territory cervical screening register data.

Table A3.16: Endocervical abnormalities detected by cytology in women aged 20–69, by endocervical category, 2008 to 2015

	2008	2009	2010	2011	2012	2013	2014	2015
E2 Atypical endocervical cells of uncertain significance								
Number	1,020	746	714	821	791	920	878	731
% of cytology tests	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.03
% of endocervical abnormalities	51.0	47.4	45.5	48.2	46.8	49.0	48.2	46.8
E3 Possible high-grade endocervical glandular lesion								
Number	562	461	435	500	531	540	542	470
% of cytology tests	0.03	0.02	0.02	0.02	0.03	0.02	0.03	0.02
% of endocervical abnormalities	28.1	29.3	27.7	29.3	31.4	28.8	29.7	30.1
E4 Adenocarcinoma in situ								
Number	299	283	305	283	266	307	289	269
% of cytology tests	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01
% of endocervical abnormalities	15.0	18.0	19.4	16.6	15.7	16.4	15.9	17.2
E5 Adenocarcinoma in situ with possible microinvasion/invasion								
Number	34	24	33	23	21	31	24	18
% of cytology tests	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% of endocervical abnormalities	1.7	1.5	2.1	1.3	1.2	1.7	1.3	1.2
E6 Adenocarcinoma								
Number	85	60	82	78	80	78	90	73
% of cytology tests	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% of endocervical abnormalities	4.3	3.8	5.2	4.6	4.7	4.2	4.9	4.7
All endocervical abnormalities								
Number	2,000	1,574	1,569	1,705	1,689	1,876	1,823	1,561
Crude rate	0.10	0.08	0.08	0.08	0.08	0.09	0.09	0.07
AS rate	0.10	0.07	0.08	0.08	0.08	0.09	0.08	0.07

Note: 'Crude rate' is the number of abnormalities—for each category of endocervical abnormality or for all endocervical abnormalities combined—detected by cytology, as a proportion of the total number of cytology tests; 'age-standardised (AS) rate' is the number of all endocervical abnormalities combined, detected by cytology, as a proportion of the total number of cytology tests, age-standardised to the Australian population at 30 June 2001.

Source: AIHW analysis of state and territory cervical screening register data.

A4 Histology

Table A4.1: Number of histology tests, by age, 2008 to 2015

	2008	2009	2010	2011	2012	2013	2014	2015
<20	2,089	1,689	1,454	1,380	1,257	1,177	991	842
20–24	12,136	11,187	10,519	10,089	9,636	9,229	8,631	7,936
25–29	12,621	12,625	12,690	12,940	13,517	14,097	13,380	12,963
30–34	9,989	10,009	9,839	10,635	10,908	11,752	12,117	11,867
35–39	9,037	8,985	8,753	9,259	9,703	9,885	9,937	9,912
40–44	8,249	8,280	8,265	9,218	9,920	10,637	10,954	10,781
45–49	8,202	8,348	8,584	8,681	8,985	9,657	9,758	9,934
50–54	5,382	5,623	5,742	6,259	6,637	7,105	7,471	7,317
55–59	3,374	3,441	3,562	3,892	4,041	4,441	4,654	4,550
60–64	2,324	2,395	2,600	2,802	2,964	3,135	3,313	3,191
65–69	1,478	1,501	1,680	1,814	2,018	2,220	2,417	2,503
70+	1,728	1,817	1,915	2,057	2,154	2,300	2,200	2,417
All ages	**76,612**	**75,904**	**75,611**	**79,026**	**81,740**	**85,636**	**85,823**	**84,214**
Ages 20–69	**72,792**	**72,394**	**72,234**	**75,589**	**78,329**	**82,158**	**82,632**	**80,954**

Note: 'All ages' may not equal the sum of the age groups, due to the inclusion of women for whom the age group was not stated.

Source: AIHW analysis of state and territory cervical screening register data.

Table A4.2: Proportion of histology tests, by age, 2015

	<20	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70+
Crude rate	1.0	9.4	15.4	14.1	11.8	12.8	11.8	8.7	5.4	3.8	3.0	2.9

Note: 'Crude rate' is the number of histology tests as a proportion of the total number of histology tests.

Source: AIHW analysis of state and territory cervical screening register data.

Table A4.3: Histology tests as a proportion of cytology tests, by age, 2015

	<20	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70+
Crude rate	2.0	4.2	5.2	4.4	4.0	4.2	4.3	3.4	2.4	2.1	2.1	7.8

Note: 'Crude rate' is the number of histology tests as a proportion of the number of cytology tests.

Source: AIHW analysis of state and territory cervical screening register data.

Table A4.4: Negative histology tests, by age, 2015

	<20	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70+
Number	281	2,302	3,623	4,094	4,560	6,500	6,973	5,505	3,480	2,396	1,938	1,961
Crude rate	33.4	29.0	27.9	34.5	46.0	60.3	70.2	75.2	76.5	75.1	77.4	81.1

Note: 'Crude rate' is the number of negative histology tests as a proportion of the total number of histology tests.

Source: AIHW analysis of state and territory cervical screening register data.

Table A4.5: Abnormalities detected by histology in women aged 20–69, 2008 to 2015

	2008	2009	2010	2011	2012	2013	2014	2015
Low-grade abnormalities								
Number	15,347	14,576	14,018	14,566	14,856	15,318	15,165	15,049
Crude rate	21.1	20.1	19.4	19.3	19.0	18.6	18.4	18.6
AS rate	18.4	17.6	17.2	17.4	17.2	17.1	17.2	17.6
High-grade abnormalities								
Number	22,102	22,031	22,104	22,676	23,149	23,734	22,947	22,021
Crude rate	30.4	30.4	30.6	30.0	29.6	28.9	27.8	27.2
AS rate	25.2	25.4	25.9	25.9	25.7	25.4	24.8	24.5
All abnormalities (low-grade, high-grade and cancer)								
Number	38,325	37,380	36,940	38,122	38,984	40,038	39,109	37,968
Crude rate	52.7	51.6	51.1	50.4	49.8	48.7	47.3	46.9
AS rate	45.1	44.4	44.4	44.6	44.4	44.0	43.3	43.3

Notes

1. 'Low-grade abnormalities' are histology test results HS02 and HE02; 'high-grade abnormalities' are histology results HS03 and HE03. 'All abnormalities' are histology test results HS02, HS03, HS04, HE02, HE03 and HE04 (see Table 3.3).

2. 'Crude rate' is the number of abnormalities (low-grade, high-grade or all), detected by histology, as a proportion of the total number of histology tests; 'age-standardised (AS) rate' is the number of abnormalities (low-grade, high-grade or all), detected by histology, as a proportion of the total number of histology tests, age-standardised to the Australian population at 30 June 2001.

3. 'Abnormalities' refers to the number of abnormalities detected, not the number of abnormal histology tests; in a small proportion of histology tests there may be more than one abnormality detected, each of which will be counted.

Source: AIHW analysis of state and territory cervical screening register data.

Table A4.6: Low-grade abnormalities detected by histology, by age, 2015

	<20	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70+
Number	326	2,639	3,209	2,491	1,900	1,779	1,307	838	437	277	172	70
Crude rate	38.7	33.3	24.8	21.0	19.2	16.5	13.2	11.5	9.6	8.7	6.9	2.9

Note: 'Crude rate' is the number low-grade abnormalities detected by histology as a proportion of the total number of histology tests.

Source: AIHW analysis of state and territory cervical screening register data.

Table A4.7: High-grade abnormalities detected by histology, by age, 2015

	<20	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70+
Number	225	2,858	5,978	5,046	3,152	2,196	1,281	677	376	277	180	114
Crude rate	26.7	36.0	46.1	42.5	31.8	20.4	12.9	9.3	8.3	8.7	7.2	4.7

Note: 'Crude rate' is the number of high-grade abnormalities detected by histology as a proportion of the total number of histology tests.

Source: AIHW analysis of state and territory cervical screening register data.

Table A4.8: High-grade abnormality detection rate, by age, 2004–2006 to 2015

	2004–2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<20	13.6	11.6	10.8	8.9	7.8	7.1	6.4	5.7	5.0	4.1
20–24	20.1	18.9	21.3	19.9	19.7	17.4	15.8	15.0	12.9	11.8
25–29	17.7	17.8	19.3	19.0	19.9	19.4	20.0	20.3	18.5	17.7
30–34	11.6	11.5	12.7	12.8	13.6	14.0	13.8	14.5	14.1	13.5
35–39	7.1	7.3	7.8	7.6	8.3	9.0	9.2	9.4	9.3	9.4
40–44	4.6	4.7	4.8	4.7	4.9	5.5	6.0	6.3	6.4	6.3
45–49	3.1	3.2	3.3	3.3	3.5	3.8	3.7	4.0	4.0	4.2
50–54	1.8	1.9	2.0	1.9	2.1	2.2	2.4	2.4	2.4	2.6
55–59	1.5	1.4	1.3	1.3	1.7	1.7	1.6	1.6	1.9	1.6
60–64	1.3	1.2	1.3	1.2	1.2	1.4	1.5	1.4	1.7	1.5
65–69	1.2	1.3	1.3	1.1	1.1	1.1	1.1	1.4	1.0	1.3
70+	3.0	2.4	2.6	2.6	3.4	2.7	2.8	2.6	2.4	3.2
Ages 20–69										
Number	. .	15,671	16,457	16,257	16,291	16,641	16,808	17,609	16,505	15,838
Crude rate	7.9	7.8	8.4	8.1	8.4	8.4	8.3	8.5	8.0	7.7
AS rate	7.7	7.7	8.3	8.1	8.5	8.4	8.4	8.5	8.1	7.8

Note: 'Crude rate' is the number of women with a high-grade abnormality detected by histology per 1,000 women screened; 'age-standardised (AS) rate' is the number of women with a high-grade abnormality detected by histology per 1,000 women screened, age-standardised to the Australian population at 30 June 2001.

Source: AIHW analysis of state and territory cervical screening register data.

Table A4.9: High-grade abnormality detection rate in women aged 20–69, by state and territory, 2015

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Number	4,878	3,601	3,517	2,132	803	377	262	268	15,838
Crude rate	7.6	6.5	8.9	9.6	5.4	8.9	7.7	13.3	7.7
AS rate	7.8	6.7	8.9	9.1	5.7	9.5	7.4	11.7	7.8

Note: 'Crude rate' is the number of women with a high-grade abnormality detected by histology per 1,000 women screened; 'age-standardised (AS) rate' is the number of women with a high-grade abnormality detected by histology per 1,000 women screened, age-standardised to the Australian population at 30 June 2001.

Source: AIHW analysis of state and territory cervical screening register data.

Table A4.10: Squamous abnormalities detected by histology in women aged 20–69, by squamous category, 2008 to 2015

	Year							
	2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
HS02 Low-grade squamous abnormality								
Number	15,292	14,538	13,964	14,504	14,802	15,269	15,127	15,017
% of histology tests	21.0	20.0	19.3	19.2	18.9	18.6	18.3	18.6
% of squamous abnormalities	41.1	39.9	38.9	39.2	39.2	39.3	39.9	40.7
HS03 High-grade squamous abnormality								
Number	21,411	21,379	21,389	21,941	22,365	22,946	22,139	21,296
% of histology tests	29.4	29.5	29.6	29.0	28.6	27.9	26.8	26.3
% of squamous abnormalities	57.5	58.7	59.6	59.3	59.2	59.0	58.4	57.7
HS04 Squamous cell carcinoma								
Number	530	474	528	551	641	651	631	597
% of histology tests	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7
% of squamous abnormalities	1.4	1.3	1.5	1.5	1.7	1.7	1.7	1.6
All squamous abnormalities								
Number	37,233	36,391	35,881	36,996	37,808	38,866	37,897	36,910
Crude rate	51.1	50.3	49.7	48.9	48.3	47.3	45.9	45.6
AS rate	43.5	43.0	43.0	43.1	42.9	42.6	41.9	42.0

Notes

1. 'HS03 High-grade squamous abnormality' combines cervical intraepithelial neoplasia (CIN) not otherwise specified (NOS), CIN II and CIN III.

2. 'Crude rate' is the number of squamous abnormalities—for each category of squamous abnormality or for all squamous abnormalities combined—detected by histology, as a proportion of the total number of histology tests; 'age-standardised (AS) rate' is the number of all squamous abnormalities combined, detected by histology, as a proportion of the total number of histology tests, age-standardised to the Australian population at 30 June 2001.

Source: AIHW analysis of state and territory cervical screening register data.

Table A4.11: CIN II and CIN III in women aged 20–69, 2008 to 2015

	Year							
	2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
HS03.2 CIN II								
Number	4,377	4,574	4,338	4,157	4,236	4,293	3,951	3,856
% of histology tests (crude rate)	12.5	12.7	12.2	11.2	10.8	10.5	9.6	9.4
% of histology tests (AS rate)	10.2	10.4	10.1	9.6	9.5	9.3	8.7	8.6
% of squamous abnormalities	25.9	26.7	26.6	25.5	25.0	24.9	23.8	23.4
HS03.3 CIN III								
Number	5,340	5,373	5,127	5,293	5,868	5,896	5,806	5,680
% of histology tests (crude rate)	15.3	14.9	14.4	14.2	15.0	14.4	14.0	13.8
% of histology tests (AS rate)	13.0	12.6	12.4	12.4	13.2	12.8	12.7	12.6
% of squamous abnormalities	31.6	31.3	31.5	32.4	34.7	34.2	34.9	34.4

Source: AIHW analysis of state and territory cervical screening register data.

Table A4.12: CIN II and CIN III, by age, 2015

	<20	**20–24**	**25–29**	**30–34**	**35–39**	**40–44**	**45–49**	**50–54**	**55–59**	**60–64**	**65–69**	**70+**
CIN II												
Number	67	666	1,051	823	464	380	229	116	66	37	24	9
Crude rate	17.8	17.3	16.2	14.2	9.6	6.9	4.3	3.0	2.8	2.1	1.9	0.7
CIN III												
Number	27	569	1,564	1,380	861	589	323	172	98	90	34	29
Crude rate	7.2	14.8	24.1	23.8	17.8	10.7	6.1	4.5	4.1	5.2	2.6	2.2

Note: 'Crude rate' is the number of high-grade abnormalities detected by histology as a proportion of the total number of histology tests.

Source: AIHW analysis of state and territory cervical screening register data.

Table A4.13: Endocervical abnormalities detected by histology in women aged 20–69, by endocervical category, 2008 to 2015

Endocervical category	2008	2009	2010	2011	2012	2013	2014	2015
					Year			
HE02 Endocervical atypia								
Number	55	38	54	62	54	49	38	32
% of histology tests	0.08	0.05	0.07	0.08	0.07	0.06	0.05	0.04
% of endocervical abnormalities	5.0	3.8	5.1	5.5	4.6	4.2	3.1	3.0
HE03 High-grade endocervical abnormality								
Number	691	652	715	735	784	788	808	725
% of histology tests	0.95	0.90	0.99	0.97	1.00	0.96	0.98	0.90
% of endocervical abnormalities	63.3	65.9	67.5	65.3	66.7	67.2	66.7	68.5
HE04.1 & HE04.2 Adenocarcinoma								
Number	311	263	248	283	284	275	296	257
% of histology tests	0.43	0.36	0.34	0.37	0.36	0.33	0.36	0.32
% of endocervical abnormalities	28.5	26.6	23.4	25.1	24.1	23.5	24.4	24.3
HE04.3 Adenosquamous carcinoma								
Number	21	20	21	33	23	32	42	25
% of histology tests	0.03	0.03	0.03	0.04	0.03	0.04	0.05	0.03
% of endocervical abnormalities	1.9	2.0	2.0	2.9	2.0	2.8	3.5	2.4
HE04.4 Carcinoma of the cervix (other)								
Number	14	16	21	13	31	28	28	19
% of histology tests	0.02	0.02	0.03	0.02	0.04	0.03	0.03	0.02
% of endocervical abnormalities	1.3	1.6	2.0	1.2	2.6	2.4	2.3	1.8
All endocervical abnormalities								
Number	1,092	989	1,059	1,126	1,176	1,172	1,212	1,058
Crude rate	1.50	1.37	1.47	1.49	1.50	1.43	1.47	1.31
AS rate	1.59	1.41	1.50	1.48	1.48	1.41	1.40	1.27

Notes

1. 'HE03 High-grade endocervical abnormality' combines endocervical dysplasia and adenocarcinoma in situ.

2. 'Crude rate' is the number of endocervical abnormalities—for each category of endocervical abnormality or for all endocervical abnormalities combined—detected by histology, as a proportion of the total number of histology tests; 'age-standardised (AS) rate' is the number of all endocervical abnormalities combined, detected by histology, as a proportion of the total number of histology tests age-standardised to the Australian population at 30 June 2001.

Source: AIHW analysis of state and territory cervical screening register data.

A5 Cytology–histology correlation

Table A5.1: Number of squamous abnormalities detected by cytology in 2014, and proportion followed by squamous histology within 6 months, women aged 20–69

Cytology prediction	Number detected by cytology	Number followed by squamous histology	Proportion followed by squamous histology (%)
S2 Possible low-grade	54,672	9,046	16.5
S3 Low-grade	36,889	8,720	23.6
S4 Possible high-grade	12,705	9,543	75.1
S5 High-grade	15,292	13,150	86.0
S6 High-grade plus	335	299	89.3
S7 Squamous cell carcinoma	139	111	79.9

Source: AIHW analysis of state and territory cervical screening register data.

Table A5.2: Correlation between squamous cytology and the most serious squamous histology within 6 months, in women aged 20–69, cytology tests performed in 2014

	Histology finding		
Cytology prediction	HS02 Low-grade	HS03 High-grade	HS04 Squamous cell carcinoma
S1 Negative	3,765 (17.2%)	922 (4.2%)	32 (0.1%)
S2 Possible low-grade	3,660 (40.5%)	1,296 (14.3%)	10 (0.1%)
S3 Low-grade	4,374 (50.2%)	1,711 (19.6%)	0 (0.0%)
S4 Possible high-grade	2,262 (23.7%)	4,801 (50.3%)	67 (0.7%)
S5 High-grade	1,493 (11.4%)	10,156 (77.2%)	205 (1.6%)
S6 High-grade plus	4 (1.3%)	201 (67.2%)	88 (29.4%)
S7 Squamous cell carcinoma	0 (0.0%)	33 (29.7%)	75 (67.6%)

Notes

1. Numbers and percentage of each squamous cytology result category are shown. Cytology data were included only where histology was performed within 6 months; cytology data not followed by histology, or followed by histology more than 6 months after cytology, are not included in the calculations.

2. For national consistency, the histology results of cervical intraepithelial (CIN) not otherwise specified (NOS), CIN II and CIN III are grouped together to form a broad high-grade abnormality category, and those of microinvasive and invasive squamous cell carcinoma are grouped together to form a broad squamous cell carcinoma category.

Source: AIHW analysis of state and territory cervical screening register data.

Table A5.3: Positive predictive value (PPV) of high-grade squamous cytological abnormalities in women aged 20–69, most serious histology within 6 months of cytology performed in 2009 to 2014

Year	Possible high-grade S4	High-grade S5	High-grade plus S6	High-grade
		Cytology prediction		
2009	55.2% (4,748/8,607)	78.9% (10,935/13,859)	90.5% (228/252)	70.0% (15,911/22,718)
2010	54.8% (4,810/8,782)	79.2% (10,517/13,279)	92.4% (255/276)	69.8% (15,582/22,337)
2011	51.6% (4,999/9,688)	79.3% (11,129/14,033)	90.3% (250/277)	68.2% (16,378/23,998)
2012	52.5% (4,986/9,504)	78.8% (10,648/13,506)	92.5% (282/305)	68.3% (15,916/23,315)
2013	51.6% (5,149/9,975)	80.0% (10,865/13,586)	93.9% (260/277)	68.3% (16,274/23,838)
2014	51.0% (4,868/9,543)	78.8% (10,361/13,150)	96.7% (289/299)	67.5% (15,518/22,992)

Note: The PPV is calculated as the proportion of squamous cytology results of possible or definite high-grade abnormality that were confirmed on histology to be a high-grade squamous abnormality or squamous cell carcinoma. Cytology data were included only where histology was performed within 6 months; cytology data not followed by histology, or followed by histology more than 6 months after cytology, are not included in the calculations.

Source: AIHW analysis of state and territory cervical screening register data.

Table A5.4: Number of endocervical abnormalities detected by cytology in 2014, and proportion followed by endocervical histology within 6 months, for women aged 20–69

Cytology prediction	Number detected by cytology	Number followed by histology	Proportion followed by histology (%)
E2 Atypical endocervical cells of uncertain significance	878	269	30.6
E3 Possible high-grade	542	268	49.4
E4 Adenocarcinoma in situ	289	242	83.7
E5 Adenocarcinoma in situ plus	24	15	62.5
E6 Adenocarcinoma	90	55	61.1

Source: AIHW analysis of state and territory cervical screening register data.

Table A5.5: Correlation between endocervical cytology and the most serious endocervical histology within 6 months, for women aged 20–69, cytology tests performed in 2014

Cytology prediction	HE02 Endocervical atypia	HE03 High-grade	HE04.1 & HE04.2 Adenocarcinoma
		Histology finding	
E1 Negative	11 (0.0%)	312 (1.3%)	77 (0.3%)
E2 Atypical endocervical cells of uncertain significance	1 (0.4%)	58 (21.6%)	7 (2.6%)
E3 Possible high-grade	0 (0.0%)	121 (45.1%)	27 (10.1%)
E4 Adenocarcinoma in situ	1 (0.4%)	157 (64.9%)	58 (24.0%)
E5 Adenocarcinoma in situ plus	0 (0.0%)	9 (60.0%)	6 (40.0%)
E6 Adenocarcinoma	0 (0.0%)	8 (14.5%)	35 (63.6%)

Notes

1. Numbers and percentage of each endocervical cytology result category shown. Cytology data were included only where histology was performed within 6 months; cytology data not followed by histology, or followed by histology more than 6 months after cytology, are not included in the calculations.

2. For national consistency, the histology results of endocervical dysplasia and adenocarcinoma in situ are grouped together to form a broad high-grade abnormality category, and microinvasive and invasive adenocarcinoma are grouped to form a broad adenocarcinoma category.

3. The histology results of adenosquamous carcinoma and carcinoma of the cervix (other) are excluded, since these are not solely squamous or endocervical in origin, and thus would not necessarily be expected to correlate with cytology results of either cell type.

Source: AIHW analysis of state and territory cervical screening register data.

Table A5.6: Positive predictive value (PPV) of high-grade endocervical cytological abnormalities in women aged 20–69, most serious histology within 6 months of cytology performed in 2009 to 2014

| Year | Cytology prediction | | | |
	Possible high-grade E3	Adenocarcinoma in situ E4	Adenocarcinoma in situ plus E5	High-grade
2009	54.1% (139/257)	89.2% (214/240)	78.6% (11/14)	71.2% (364/511)
2010	56.3% (120/213)	88.7% (212/239)	73.9% (17/23)	73.5% (349/475)
2011	55.6% (154/277)	86.0% (228/265)	100.0% (17/17)	71.4% (399/559)
2012	56.1% (143/255)	90.0% (216/240)	92.3% (12/13)	73.0% (371/508)
2013	55.2% (159/288)	85.4% (228/267)	88.2% (15/17)	70.3% (402/572)
2014	55.2% (148/268)	88.8% (215/242)	100.0% (15/15)	72.0% (378/525)

Note: The positive predictive value is calculated as the proportion of endocervical cytology results of 'possible' or 'definite' high-grade that were confirmed on histology to be a high-grade endocervical abnormality or adenocarcinoma. These are prone to variability due to small numbers. Cytology data were included only where histology was performed within 6 months; cytology data not followed by histology, or followed by histology more than 6 months after cytology, are not included in the calculations.

Source: AIHW analysis of state and territory cervical screening register data.

Table A5.7: Cytology prediction preceding a histology finding of 'adenosquamous carcinoma' or 'other carcinoma of the cervix' in women aged 20–69, cytology performed in 2014

Cytology prediction	Adenosquamous carcinoma	Carcinoma of the cervix (other)
S1 Negative	16	11
S2 Possible low-grade	2	0
S3 Low-grade	0	0
S4 Possible high-grade	4	0
S5 High-grade	1	2
S6 High-grade with possible invasion	2	2
S7 Squamous cell carcinoma	5	1
E1 Negative	12	10
E2 Atypical endocervical cells of uncertain significance	0	0
E3 Possible high-grade	3	1
E4 Adenocarcinoma in situ	2	0
E5 Adenocarcinoma with possible invasion	0	0
E6 Adenocarcinoma	6	0

Source: AIHW analysis of state and territory cervical screening register data.

Table A5.8: Correlation between squamous cytology and the most serious squamous histology within 6 months in women aged 20–69 showing CIN II and CIN III, cytology tests performed in 2014

Cytology prediction	HS02 Low-grade		HS03.2 CIN II		HS03.3 CIN III		HS04 Squamous cell carcinoma	
S1 Negative	1,528	(14.9%)	189	(1.8%)	228	(2.2%)	17	(0.2%)
S2 Possible low-grade	1,831	(36.4%)	360	(7.1%)	302	(6.0%)	4	(0.1%)
S3 Low-grade	2,066	(47.6%)	490	(11.3%)	296	(6.8%)	0	(0.0%)
S4 Possible high-grade	1,070	(22.2%)	922	(19.1 %)	1,368	(28.4%)	36	(0.7%)
S5 High-grade	769	(11.2%)	1,335	(19.5%)	3,788	(55.3%)	105	(1.5%)
S6 High-grade plus	1	(0.6%)	8	(5.1%)	96	(61.5%)	48	(30.8%)
S7 Squamous cell carcinoma	0	(0.0%)	0	(0.0%)	17	(33.3%)	31	(60.8%)

Notes

1. Numbers and percentage of each squamous cytology result category are shown. Cytology data were included only where histology was performed within 6 months; cytology data not followed by histology, or followed by histology more than 6 months after cytology, are not included in the calculations.

2. States and territories unable to distinguish between CIN II and CIN III were excluded from all data and calculations in this table.

3. The high-grade category CIN NOS has been excluded from this table, but is a rare histology finding.

Source: AIHW analysis of state and territory cervical screening register data.

A6   Incidence of cervical cancer

Table A6.1: Incidence of cervical cancer, 1982 to 2013 (with estimates to 2017)

Year of diagnosis	New cases		AS rate	
	20–69	All ages	20–69	All ages
1982	828	965	19.1	14.2
1983	847	1,000	19.2	14.4
1984	843	1,016	18.6	14.3
1985	901	1,063	19.6	14.7
1986	861	1,021	18.6	14.0
1987	906	1,100	18.7	14.4
1988	902	1,067	18.1	13.6
1989	909	1,073	18.1	13.5
1990	921	1,091	18.0	13.5
1991	896	1,094	17.2	13.3
1992	847	1,025	16.0	12.2
1993	844	1,012	15.8	11.9
1994	936	1,143	17.1	13.1
1995	778	964	14.0	10.8
1996	756	936	13.4	10.3
1997	659	811	11.5	8.8
1998	700	873	11.9	9.3
1999	663	803	11.1	8.4
2000	597	767	9.9	7.9
2001	589	742	9.6	7.5
2002	559	691	9.0	6.8
2003	580	730	9.2	7.1
2004	585	728	9.1	7.0
2005	606	738	9.3	7.0
2006	591	722	9.0	6.8
2007	625	754	9.3	7.0
2008	646	789	9.5	7.1
2009	634	764	9.1	6.8
2010	684	821	9.6	7.2
2011	689	801	9.6	7.0
2012	726	860	10.0	7.4
2013	692	813	9.4	6.8
2014	727	858	9.7	7.0
2015	739	872	9.7	7.1
2016	760	894	9.8	7.1
2017	775	912	9.8	7.1

Notes

1.   'Age-standardised (AS) rate' is the number of new cases of cervical cancer per 100,000 women, age-standardised to the Australian population at 30 June 2001.

2.   Estimated incidence data for 2014–2017 are based on 2004–2013 incidence data (including NSW estimates for 2013). Actual incidence data for 2014–2017 may differ from estimated data, due to current and ongoing program or practice changes.

Source: AIHW Australian Cancer Database 2013.

Table A6.2: Incidence of cervical cancer, by age, 2013

	Age group (years)									
	20–24	**25–29**	**30–34**	**35–39**	**40–44**	**45–49**	**50–54**	**55–59**	**60–64**	**65–69**
New cases	11	66	95	103	111	76	71	61	47	51
Crude rate	1.4	7.7	11.5	13.2	13.2	9.8	9.1	8.6	7.5	9.4

Note: 'Crude rate' is the number of new cases of cervical cancer per 100,000 women; rates based on fewer than 20 new cases should be interpreted with caution.

Source: AIHW Australian Cancer Database 2013.

Table A6.3: Incidence of carcinoma of the cervix (squamous cell carcinoma, adenocarcinoma, adenosquamous carcinoma and other carcinoma) in women aged 20–69, 1982 to 2013

Year of diagnosis	New cases				AS rate			
	SCC	AC	ASC	Other	SCC	AC	ASC	Other
1982	655	92	22	35	15.0	2.1	0.5	0.8
1983	662	83	23	56	15.1	1.9	0.5	1.2
1984	634	87	45	52	13.9	1.9	1.0	1.1
1985	690	95	35	55	15.1	2.0	0.8	1.1
1986	645	117	42	39	13.9	2.5	1.0	0.8
1987	681	132	41	33	14.0	2.7	0.9	0.7
1988	649	157	40	41	13.1	3.1	0.8	0.8
1989	691	111	50	48	13.8	2.2	1.0	1.0
1990	642	146	49	61	12.6	2.8	1.0	1.2
1991	645	145	41	56	12.4	2.8	0.8	1.1
1992	613	136	50	37	11.6	2.6	1.0	0.7
1993	594	143	48	50	11.2	2.6	0.9	0.9
1994	640	202	40	48	11.7	3.7	0.7	0.9
1995	545	145	34	42	9.8	2.6	0.6	0.8
1996	526	147	40	32	9.4	2.6	0.7	0.6
1997	455	131	33	30	7.9	2.3	0.6	0.5
1998	490	143	30	29	8.4	2.4	0.5	0.5
1999	471	131	24	27	7.9	2.2	0.4	0.5
2000	402	117	30	27	6.7	1.9	0.5	0.4
2001	400	115	32	29	6.5	1.9	0.5	0.5
2002	388	126	17	20	6.2	2.0	0.3	0.3
2003	395	121	25	27	6.3	1.9	0.4	0.4
2004	391	133	27	22	6.1	2.1	0.4	0.3
2005	400	127	22	39	6.2	2.0	0.3	0.6
2006	367	144	22	37	5.6	2.2	0.3	0.6
2007	396	158	25	37	5.9	2.3	0.4	0.6
2008	425	166	20	25	6.2	2.4	0.3	0.4
2009	415	162	23	19	6.0	2.3	0.3	0.3
2010	456	145	29	36	6.4	2.0	0.4	0.5
2011	464	164	28	16	6.5	2.3	0.4	0.2
2012	475	171	23	43	6.6	2.4	0.3	0.6
2013	446	179	19	31	6.0	2.4	0.3	0.4

SCC = squamous cell carcinoma (ICD-O-3 codes 8050–8078, 8083–8084).

AC = adenocarcinoma (ICD-O-3 codes 8140–8141, 8190–8211, 8230–8231, 8260–8263, 8382–8384, 8440–8490, 8570–8574, 8310, 8380, 8576).

ASC = adenosquamous carcinoma (ICD-O-3 code 8560).

Other = other and unspecified carcinoma (ICD-O-3 codes 8010–8380, 8382–8576, excluding those in SCC, AC and ASC).

Note: 'Age-standardised (AS) rate' is the number of new cases of squamous cell carcinoma, adenocarcinoma, adenosquamous carcinoma and other carcinomas per 100,000 women, age-standardised to the Australian population at 30 June 2001; rates based on fewer than 20 new cases should be interpreted with caution.

Source: AIHW Australian Cancer Database 2013.

Table A6.4: Incidence of cervical cancer in women aged 20–69, by state and territory, 2008–2012

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
New cases	1,059	779	757	381	237	79	36	51	3,379
AS rate	9.2	8.8	10.8	10.5	9.3	10.1	6.1	14.6	9.6

Note: 'Age-standardised (AS) rate' is the number of new cases of cervical cancer per 100,000 women, age-standardised to the Australian population at 30 June 2001.

Source: AIHW Australian Cancer Database 2013.

Table A6.5: Incidence of cervical cancer in women aged 20–69, by remoteness, 2008–2012

	Major cities	Inner regional	Outer regional	Remote	Very remote	Australia
New cases	2,346	584	358	63	23	3,379
AS rate	9.3	9.2	11.6	13.3	9.0	9.6

Notes

1. Remoteness classification is based on area of usual residence (Statistical Local Area Level 2) at the time of diagnosis.

2. 'Australia' does not match the total because some women were not allocated to a remoteness area.

3. 'Age-standardised (AS) rate' is the number of new cases of cervical cancer per 100,000 women, age-standardised to the Australian population at 30 June 2001.

Source: AIHW Australian Cancer Database 2013.

Table A6.6: Incidence of cervical cancer in women aged 20–69, by socioeconomic group, 2008–2012

	1 (lowest)	2	3	4	5 (highest)	Australia
New cases	767	742	623	656	586	3,379
AS rate	11.5	10.8	8.7	9.1	8.0	9.6

Notes

1. Socioeconomic group was allocated using the ABS Index of Relative Socio-Economic Disadvantage.

2. 'Australia' does not match the total because some women were not allocated to a socioeconomic group.

3. 'Age-standardised (AS) rate' is the number of new cases of cervical cancers per 100,000 women, age-standardised to the Australian population at 30 June 2001.

Source: AIHW Australian Cancer Database 2013.

Table A6.7: Incidence of cervical cancer in women aged 20–69 (New South Wales, Victoria, Queensland, Western Australia and the Northern Territory), by Indigenous status, 2008–2012

	New South Wales, Victoria, Queensland, Western Australia, and the Northern Territory[a]		
	Aboriginal and Torres Strait Islander	Non-Indigenous	Total[b]
New cases	133	2,651	3,027
Crude rate	17.4	8.6	9.6
AS rate	19.3	8.6	9.7

(a) Data shown for 'Aboriginal and Torres Strait Islander', 'Non-Indigenous' and 'Total' are for New South Wales, Victoria, Queensland, Western Australia and the Northern Territory only; data from these jurisdictions were considered to have adequate levels of Indigenous identification in cancer registration data at the time this report was prepared.

(b) 'Total' includes those whose Indigenous status was not stated.

Notes

1. 'Crude rate' is the number of new cases of cervical cancer per 100,000 women; 'age-standardised (AS) rates' are the number of new cases of cervical cancer per 100,000 women, directly age-standardised to the Australian population at 30 June 2001.

2. Some states and territories use an imputation method for determining Indigenous cancers, which may lead to differences between these data and those shown in jurisdictional cancer incidence reports.

Source: AIHW Australian Cancer Database 2013.

Table A6.8: Trends in incidence of cervical cancer in women aged 20–69 by Indigenous status, 1986–1990 to 2006–2010

	1986–1990[a]	1991–1995[a]	1996–2000[b]	2001–2005[c]	2006–2010[d]
Indigenous (using historical populations)					
New cases	68	42	84	104	. .
Crude rate	64.5	33.4	25.5	20.3	. .
AS rate	90.5	52.1	29.9	22.9	. .
Non-Indigenous (using historical populations)					
New cases	456	440	1,164	1,683	. .
Crude rate	18.6	16.1	10.4	8.7	. .
AS rate	19.8	16.8	10.5	8.6	. .
Indigenous (using current populations)					
New cases	. .	. .	. .	104	132
Crude rate	. .	. .	. .	17.7	18.7
AS rate	. .	. .	. .	20.1	21.2
Non-Indigenous (using current populations)					
New cases	. .	. .	. .	1,683	2,274
Crude rate	. .	. .	. .	8.7	8.6
AS rate	. .	. .	. .	8.7	8.6

(a) Data for 1986–1990 and 1991–1995 are for Western Australia and the Northern Territory.

(b) Data for 1996–2000 are for New South Wales (from 1999 only), Queensland (from 1997 only), Western Australia and the Northern Territory.

(c) Data for 2001–2005 are for New South Wales, Queensland, Western Australia and the Northern Territory.

(d) Data for 2006–2010 are for New South Wales, Victoria (from 2008 only), Queensland, Western Australia and the Northern Territory.

Notes

1. 'Crude rate' is the number of new cases of cervical cancer per 100,000 women; 'age-standardised (AS) rates' are the number of new cases of cervical cancer per 100,000 women, directly age-standardised to the Australian population at 30 June 2001.

2. Historic populations are for 1986–1990 to 2001–2005; current populations are for 2001–2005 to 2006–2010 (this results in an overlap of rates for the period 2001–2005, with all rates shown using both historic and current populations to illustrate change in rate resulting from population source alone).

3. Data from these jurisdictions for these years were considered to have adequate levels of Indigenous identification in cancer registration data at the time this report was prepared. Some states and territories use an imputation method for determining Indigenous cancers, which may lead to differences between these data and those shown in jurisdictional cancer incidence reports.

Source: AIHW Australian Cancer Database 2013.

Survival after a diagnosis of cervical cancer

Table A6.9: Five-year relative survival from cervical cancer, by age, 2009–2013

Age group	5-year relative survival (%)
<20	n.p.
20–24	88.5
25–29	91.2
30–34	90.6
35–39	86.2
40–44	80.8
45–49	77.1
50–54	68.4
55–59	64.8
60–64	58.8
65–69	57.3
70–74	53.7
75+	35.8
All ages	**72.1**
Ages 20–69 years	**77.4**

n.p. not published

Note: Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW.

Source: AIHW Australian Cancer Database 2013.

Table A6.10: Trend in 5-year relative survival from cervical cancer, in women aged 20–69, 1984–1988 to 2009–2013

Year	5-year relative survival (%)
1984–1988	73.5
1989–1993	76.5
1994–1998	78.5
1999–2003	77.9
2004–2008	77.8
2009–2013	77.4

Note: 'Relative survival' was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW.

Source: AIHW Australian Cancer Database 2013.

Table A6.11: Relative survival at diagnosis and 5-year conditional survival from cervical cancer, in women aged 20–69, 2009–2013

	Relative survival	Conditional survival	
Years after diagnosis	Relative survival (%)	Years already survived	5-year conditional relative survival (%)
1	91.6	. .	. .
2	84.9	. .	. .
3	81.1	. .	. .
4	78.8	. .	. .
5	77.4	0	77.4
6	75.8	1	83.3
7	75.6	2	89.0
8	75.3	3	92.8
9	74.7	4	94.7
10	74.3	5	96.1
11	73.6	6	96.4
12	72.9	7	96.4
13	72.3	8	96.1
14	71.8	9	96.1
15	71.4	10	96.1
16	70.8	11	96.3
17	70.4	12	96.5
18	70.0	13	96.8
19	69.4	14	96.8
20	69.0	15	96.6

Note: Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW.

Source: AIHW Australian Cancer Database 2013.

A7 Mortality from cervical cancer

Table A7.1: Mortality from cervical cancer, 1982 to 2014 (with estimates to 2017)

Year	Deaths		AS rate	
	20–69	All ages	20–69	All ages
1982	237	346	5.5	5.2
1983	248	343	5.6	5.0
1984	223	339	5.0	4.9
1985	234	363	5.1	5.1
1986	240	341	5.1	4.6
1987	225	348	4.8	4.6
1988	219	345	4.5	4.5
1989	243	369	4.9	4.7
1990	245	339	4.8	4.2
1991	204	331	4.0	4.0
1992	188	322	3.6	3.8
1993	204	318	3.9	3.7
1994	223	341	4.2	4.0
1995	211	334	3.9	3.8
1996	174	301	3.1	3.3
1997	160	285	2.8	3.0
1998	153	260	2.6	2.7
1999	131	227	2.2	2.3
2000	154	265	2.6	2.6
2001	156	271	2.5	2.6
2002	126	217	2.0	2.1
2003	140	239	2.2	2.2
2004	119	210	1.8	1.9
2005	136	221	2.0	2.0
2006	137	228	2.0	2.0
2007	125	201	1.8	1.7
2008	145	237	2.0	2.0
2009	143	242	1.9	1.9
2010	151	230	2.0	1.9
2011	152	228	2.0	1.8
2012	141	225	1.8	1.7
2013	154	229	2.0	1.8
2014	149	223	1.8	1.7
2015	159	245	1.9	1.8
2016	163	250	1.9	1.8
2017	165	254	1.9	1.8

Notes

1. Deaths from 1982 to 2013 were derived by year of death; deaths in 2014 were derived by year of registration of death. Deaths registered in 2012 and earlier are based on the final version of cause-of-death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.

2. 'Age-standardised (AS) rate' is number of deaths from cervical cancer per 100,000 women, age-standardised to the Australian population at 30 June 2001.

3. Estimated mortality data for 2015–2017 are based on 2004–2013 mortality data. Actual mortality data for 2015–2017 may differ from estimated data for 2015–2017, due to current and ongoing program or practice changes.

Source: AIHW National Mortality Database.

Table A7.2: Mortality from cervical cancer, by age, 2014

	Age group (years)									
	20–24	**25–29**	**30–34**	**35–39**	**40–44**	**45–49**	**50–54**	**55–59**	**60–64**	**65–69**
Deaths	0	4	12	8	17	16	18	28	29	17
Crude rate	0.0	0.5	1.4	1.0	2.0	2.1	2.3	3.9	4.5	3.0

Note: 'Crude rate' is the number of deaths from cervical cancer per 100,000 women; rates based on fewer than 20 deaths should be interpreted with caution.

Source: AIHW National Mortality Database.

Table A7.3: Mortality from cervical cancer in women aged 20–69, by state and territory, 2010–2014

	NSW	**Vic**	**Qld**	**WA**	**SA**	**Tas**	**ACT**	**NT**	**Australia**
Deaths	241	156	167	81	62	25	7	8	747
AS rate	1.9	1.6	2.2	2.0	2.2	2.8	1.1	2.3	1.9

Notes

1. Deaths from 2010 to 2013 were derived by year of death; deaths in 2014 were derived by year of registration of death. Deaths registered in 2012 and earlier are based on the final version of cause-of-death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.

2. 'Age-standardised (AS) rate' is the number of deaths from cervical cancer per 100,000 women, age-standardised to the Australian population at 30 June 2001; rates based on less than 20 deaths should be interpreted with caution.

Source: AIHW National Mortality Database.

Table A7.4: Mortality from cervical cancer in women aged 20–69, by remoteness area, 2010–2014

	Major cities	**Inner regional**	**Outer regional**	**Remote**	**Very remote**	**Australia**
Deaths	481	146	93	11	14	747
AS rate	1.8	2.0	2.6	2.2	5.3	1.9

Notes

1. Remoteness classification is based on area of usual residence (Statistical Local Area Level 2) at time of death.

2. Deaths from 2010 to 2013 were derived by year of death; deaths in 2014 were derived by year of registration of death. Deaths registered in 2012 and earlier are based on the final version of cause-of-death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.

3. 'Age-standardised (AS) rate' is the number of deaths from cervical cancer per 100,000 women, age-standardised to the Australian population at 30 June 2001; rates based on less than 20 deaths should be interpreted with caution.

Source: AIHW National Mortality Database.

Table A7.5: Mortality from cervical cancer in women aged 20–69, by socioeconomic group, 2010–2014

	1 (lowest)	2	3	4	5 (highest)	Australia
Deaths	221	172	141	132	80	747
AS rate	3.0	2.2	1.8	1.7	1.0	1.9

Notes

1. Socioeconomic group was allocated using the ABS Index of Relative Socio-Economic Disadvantage.

2. 'Australia' does not match the total, because some women were not allocated to a remoteness area.

3. Deaths from 2010 to 2013 were derived by year of death; deaths in 2014 were derived by year of registration of death. Deaths registered in 2012 and earlier are based on the final version of cause-of-death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.

4. 'Age-standardised (AS) rate' is the number of deaths from cervical cancer per 100,000 women, age-standardised to the Australian population at 30 June 2001; rates based on less than 20 deaths should be interpreted with caution.

Source: AIHW National Mortality Database.

Table A7.6: Mortality from cervical cancer in women aged 20–69 (New South Wales, Queensland, Western Australia, South Australia and the Northern Territory), by Indigenous status, 2010–2014

	New South Wales, Queensland, Western Australia, South Australia and the Northern Territory[a]		
	Aboriginal and Torres Strait Islander	Non-Indigenous	Total[b]
Deaths	48	504	559
Crude rate	6.0	2.0	2.1
AS rate	7.4	1.9	2.0

(a) Data shown for 'Aboriginal and Torres Strait Islander', 'Non-Indigenous' and 'Total' are for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory only; data from these jurisdictions were considered to have adequate levels of Indigenous identification in cancer mortality data at the time this report was prepared.

(b) 'Total' includes those whose Indigenous status is not stated. This means that 'Total' is not equal to the sum of 'Aboriginal and Torres Strait Islander' and 'Non-Indigenous'.

Notes

1. 'Crude rate' is the number of deaths from cervical cancer per 100,000 women; 'age-standardised (AS) rate' is the number of deaths from cervical cancer per 100,000 women, directly age-standardised to the Australian population at 30 June 2001.

2. Deaths from 2010 to 2013 were derived by year of death; deaths in 2014 were derived by year of registration of death. Deaths registered in 2012 and earlier are based on the final version of cause-of-death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.

Source: AIHW National Mortality Database.

Table A7.7: Trends in mortality from cervical cancer in women aged 20–69 by Indigenous status, 1986–1990 to 2006–2010

	1986–1990[a]	1991–1995[a]	1996–2000[b]	2001–2005[c]	2006–2010[c]
Indigenous (using historical populations)					
New cases	39	27	34	39	. .
Crude rate	15.9	9.3	7.5	7.1	. .
AS rate	26.1	14.4	10.7	9.0	. .
Non-Indigenous (using historical populations)					
New cases	635	519	511	468	. .
Crude rate	4.8	3.6	2.6	2.1	. .
AS rate	4.9	3.8	2.7	2.1	. .
Indigenous (using current populations)					
New cases	. .	. .	. .	39	51
Crude rate	. .	. .	. .	6.2	7.1
AS rate	. .	. .	. .	7.9	9.1
Non-Indigenous (using current populations)					
New cases	. .	. .	. .	468	464
Crude rate	. .	. .	. .	2.2	2.0
AS rate	. .	. .	. .	2.1	1.9

(a)   Data for 1986–1990 and 1991–1995 are for New South Wales, Western Australia, South Australia and the Northern Territory.

(b)   Data for 1996–2000 are for New South Wales, Queensland (from 1997 only), Western Australia, South Australia and the Northern Territory.

(c)   Data for 2001–2005 and 2006–2010 are for New South Wales, Queensland, Western Australia and the Northern Territory.

Notes

1.   'Crude rate' is the number of deaths from cervical cancer per 100,000 women; 'age-standardised (AS) rates' are the number of deaths from cervical cancer per 100,000 women, directly age-standardised to the Australian population at 30 June 2001.

2.   Historic populations are for 1986–1990 to 2001–2005; current populations are for 2001–2005 to 2006–2010 (this results in an overlap of rates for the period 2001–2005, with all rates shown using both historic and current populations to illustrate change in rate resulting from population source alone).

3.   Data from these jurisdictions for these years were considered to have adequate levels of Indigenous identification in cancer mortality data at the time this report was prepared.

Source: AIHW National Mortality Database.

Appendix B: National Cervical Screening Program information

In 1991, the Australian Health Ministers' Advisory Council (AHMAC) accepted recommendations made by the Screening Evaluation Steering Committee in the then named Australian Institute of Health (now the AIHW) report *Cervical cancer screening in Australia: options for change* (AIHW 1991) that saw the establishment of the Organised Approach to Preventing Cancer of the Cervix, Australia's cervical screening program. Now known as the National Cervical Screening Program (NCSP), it operates as a joint program of the Australian Government and state and territory governments, targeting women aged 20–69. A statement of the current national policy for cervical screening in Australia is provided in Box B1.

Box B1: National policy for Australia's National Cervical Screening Program

The national policy has been in place since 1991 and states:

- Routine screening with Pap test should be carried out every 2 years for women who have no symptoms or history suggestive of cervical cancer.
- All women who have ever been sexually active should start having Pap tests between the ages of 18 and 20, or 1 or 2 years after first having sexual intercourse, whichever is later.
- Pap tests may cease at the age of 70 for women who have had 2 normal Pap tests within the past 5 years. Women over 70 who have never had a Pap test, or who request a Pap test, should be screened.

Women with abnormal test results should be managed in accordance with the National Health and Medical Research Council's guidelines.

Source: Department of Health (2015)   <www.cancerscreening.gov.au>

The National Health and Research Council's (NHMRC) *Screening to prevent cervical cancer: guidelines for the management of asymptomatic women with screen-detected abnormalities* (NHMRC 2005) provides recommendations for the management of women with an abnormal Pap test result. They enable practitioners and clinicians to manage the abnormalities detected by Pap tests according to evidence-based information which guides best practice.

A cervical screening register or 'Pap test register' operates in every state and territory of Australia. Cervical screening registers fulfil many important roles, including sending reminder letters to women overdue for screening, providing a safety net for women who have not had follow-up of an abnormal result, and providing cytology laboratories and cervical cytology providers with previous results for a woman, to allow a more detailed evaluation of present findings. State and territory cervical cytology registries also provide data on the epidemiology and natural history of precancerous lesions, as well as providing data for national monitoring of the NCSP. These registers are key to the NCSP and were established along with the program in 1991.

High-quality cervical cytology in Australian pathology laboratories has also been a key component of the screening program, facilitated through the development of the National Pathology Accreditation Advisory Council's (NPAAC's) *Performance measures for Australian laboratories reporting cervical cytology* (NPAAC 2006).

Performance indicators

The effectiveness of the NCSP has been monitored since 1996–1997 using performance indicators developed to monitor what were originally defined as essential aspects of the program. Full definitions of the original performance indicators can be found in *Breast and cervical cancer screening in Australia 1996–1997* (AIHW 1998). New performance indicators were developed following a review that considered changes to both the NCSP and the cervical screening environment to ensure the NCSP continued to be monitored optimally. These new performance indicators were officially endorsed in September 2009 by the Screening Subcommittee of the Australian Population Health Development Principal Committee for use by the NCSP, and appeared for the first time in *Cervical screening in Australia 2008–2009* (AIHW 2011).

Table B1 lists the current performance indicators for the NCSP.

Table B1: Performance indicators for the National Cervical Screening Program

Performance indicator	Definition
1 Participation	The percentage of women aged 20–69 who have a Papanicolaou smear or 'Pap test' in a 2-year period
2 Rescreening	
2.1 Early rescreening	The proportion of women who have another Pap test within 21 months of a negative Pap test result
2.2 Rescreening after 27-month cervical screening register reminder letter	The proportion of women who have a Pap test within 3 months of being sent a 27-month reminder letter
3 Cytology	The number of Pap test results in each result category
4 Histology	The number of histology results in each result category (including the number of women with a high-grade histology for every 1,000 women screened)
5 Cytology–histology correlation	A measure of how well cytology correlates with histology performed not more than 6 months after the cytology test
6 Incidence	The number of new cases of cervical cancer
7 Mortality	The number of deaths from cervical cancer

Note: Further details and definitions of performance indicators are available in the report series *Cervical screening in Australia 2008–2009* to *Cervical screening in Australia 2011–2012* (see <www.aihw.gov.au/publications/cervical-screening/>), and in the *National cervical cancer prevention data dictionary version 1: working paper* (AIHW 2014).

Source: National cervical cancer prevention data dictionary version 1: working paper (AIHW 2014).

Standards

While there are no official standards for NCSP performance indicators, NPAAC standards in *Performance measures for Australian laboratories reporting cervical cytology* (NPAAC 2006) have been used in this report to provide a benchmark for the data presented. These are used as a guide to interpretation only, since this is a different purpose to that for which these standards were developed, and differences in definitions and data may exist.

NPAAC standards that relate to these data, along with data analysed by the AIHW, appear in Table 3.2 in this report.

Table B2: Contacts and links for the state and territory and Australian Government components of the National Cervical Screening Program

Cervical Screening NSW

Tel: (02) 8374 5757   <http://www.csp.nsw.gov.au>
Fax: (02) 8374 5700
Email: <cervicalscreening@cancerinstitute.org.au>

PapScreen Victoria

Tel: (03) 9635 5000   <http://www.papscreen.org.au>
Fax: (03) 9635 5360
Email: <papscreen@cancervic.org.au>

Queensland Cervical Screening Program

Tel: (07) 3328 9467   <http://www.health.qld.gov.au/cervicalscreening>
Fax: (07) 3328 9487
Email: <cssb@health.gov.au>

WA Cervical Cancer Prevention Program

Tel: (08) 9323 6788   <http://www.health.wa.gov.au/cervical/home>
Fax: (08) 9323 6711
Email: <cervicalcancer@health.wa.gov.au>

SA Cervix Screening Program

Tel: (08) 8226 8181   <http://www.sahealth.sa.gov.au/wps/wcm/connect/Public+Content
Fax: (08) 8226 8190   /SA+Health+Internet/About+us/Department+of+Health/Public+
Email: <cervixscreening@health.sa.gov.au>   Health+and+Clinical+Systems/Public+Health+Services/SA+Cervix
                                                             +Screening+Program/SA+Cervix+Screening+Program>

Tasmanian Cervical Cancer Prevention Program

Tel: (03) 6216 4300   <http://www.dhhs.tas.gov.au/cancerscreening/TCSR>
Fax: (03) 6216 4309
Email: <canscreen@dhhs.tas.gov.au>

ACT Cervical Screening Program

Tel: (02) 6205 1545   <http://www.health.act.gov.au/paptest>
Fax: (02) 6205 5035
Email: <pap.register@act.gov.au>

Well Women's Cancer Screening (Cervical Screen NT)

Tel: (08) 8922 6444   <https://nt.gov.au/wellbeing/health-conditions-treatments/womens-
Fax: (08) 8922 6455   health/cervical-screening>
Email: <wcpp.ths@nt.gov.au>

Australian Government Department of Health

<cancerscreening@health.gov.au>   <http://www.cancerscreening.gov.au/internet/screening/publishing
                                                            .nsf/Content/cervical-screening-1>

Australian Institute of Health and Welfare

<screening@aihw.gov.au>   <http://www.aihw.gov.au/cancer/screening/cervical/>

Appendix C: Data sources

Data used in this report are derived from multiple sources and are summarised in Table C1.

Table C1: Data sources for *Cervical screening in Australia 2014–2015*

Data used to monitor cervical screening in Australia	Data source
Performance Indicator 1 Participation	State and territory cervical screening registers; ABS population data; AIHW National Hospital Morbidity Database
Performance Indicator 2 Rescreening	State and territory cervical screening registers
Performance Indicator 3 Cytology	State and territory cervical screening registers
Performance Indicator 4 Histology	State and territory cervical screening registers
Performance Indicator 5 Cytology–histology correlation	State and territory cervical screening registers
Performance Indicator 6 Incidence of cervical cancer	AIHW Australian Cancer Database; ABS population data
Performance Indicator 7 Mortality from cervical cancer	AIHW National Mortality Database; ABS population data
Burden of cervical cancer	Australian Burden of Disease Study 2011
Monitoring the safety of cervical screening management guidelines	State and territory cervical screening registers
Expenditure on cervical screening	AIHW Health Expenditure Database; Medicare Australia Statistics

State and territory cervical screening registers

Data for the performance indicators 'Participation', 'Rescreening', 'Cytology', 'Histology' and 'Cytology–histology correlation' are provided by the cervical screening register in each state and territory, according to definitions and data specifications in the *National cervical cancer prevention data dictionary version 1: working paper* (AIHW 2014). These data are compiled into national figures by the AIHW to allow national monitoring of the NCSP.

The Data Quality Statement for cervical screening data can be found on the AIHW website at <http://meteor.aihw.gov.au/content/index.phtml/itemId/638442>.

AIHW Australian Cancer Database

All forms of cancer, except basal and squamous cell carcinomas of the skin, are notifiable diseases in each Australian state and territory. This means there is legislation in each jurisdiction that requires hospitals, pathology laboratories and various other institutions to report all cases of cancer to their central cancer registry. An agreed subset of the data collected by these cancer registries is supplied annually to the AIHW, where it is compiled into the Australian Cancer Database (ACD). The ACD currently contains data on all cases of cancer diagnosed from 1982 to 2012 for all states and territories, and for 2013 cases for all jurisdictions except NSW. Cancer reporting and registration is a dynamic process, and records in the state and territory cancer registries may be modified if new information is received. As a result, the number of cancer cases reported by the AIHW for any particular year may change slightly over time, and may not always align with state and territory reporting for that same year.

The Data Quality Statement for the ACD 2013 can be found at
<http://meteor.aihw.gov.au/content/index.phtml/itemId/658607>.

AIHW National Mortality Database

The AIHW National Mortality Database (NMD) contains information provided by the registries of births, deaths and marriages and the National Coronial Information System (coded by the ABS), for deaths from 1964 to 2014. Registration of deaths is the responsibility of each state and territory's registry of births, deaths and marriages. These data are then collated and coded by the ABS and maintained at the AIHW in the NMD.

In the NMD, both the year in which death occurred and the year in which it was registered are provided. For the purposes of this report, actual mortality data are based on the year the death occurred, except for the most recent year (2014), for which the number of people whose death was registered is used. Previous investigation has shown that the year of death and its registration coincide for the most part. However, in some instances, deaths at the end of each calendar year may not be registered until the following year. Thus, year-of-death information for the latest available year is generally an underestimate of the actual number of deaths that occurred in that year.

In this report, deaths registered in 2012 and earlier are based on the final version of cause-of-death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.

The data quality statements underpinning the AIHW NMD can be found on the following ABS internet pages:

- ABS quality declaration summary for Deaths, Australia (ABS cat. no. 3302.0) <http://www.abs.gov.au/ausstats/abs%40.nsf/mf/3302.0/>
- ABS quality declaration summary for Causes of death, Australia (ABS cat. no. 3303.0) <http://www.abs.gov.au/ausstats/abs%40.nsf/mf/3303.0/>.

For more information on the AIHW NMD, see 'Deaths data at AIHW' <http://www.aihw.gov.au/deaths/aihw-deaths-data/>.

Aboriginal and Torres Strait Islander deaths

The ABS Death Registrations collection identifies a death as Aboriginal and Torres Strait Islander where the deceased is recorded as Aboriginal, Torres Strait islander, or both, on the Death Registration Form (DRF). The Indigenous status is also derived from the Medical Certificate of Cause of Death (MCCD) for South Australia, Western Australia, Tasmania, the Northern Territory and the Australian Capital Territory from 2007. For New South Wales and Victoria, the Indigenous status of the deceased is derived from the DRF only. If the Indigenous status reported in the DRF does not agree with that in the MCCD, an identification from either source that the deceased was an Aboriginal and/or Torres Strait Islander person is given preference over identifying them as non-Indigenous.

ABS Population data

Throughout this report, population data were used to derive rates of participation in cervical screening, cervical cancer incidence and cervical cancer mortality. The population data were sourced from the ABS using the most up-to-date estimates available at the time of analysis.

To derive their estimates of the resident populations, the ABS uses the 5-yearly Census of Population and Housing data, adjusted as follows:

- All respondents in the Census are placed in their state or territory, Statistical Local Area (SLA) and postcode of usual residence; overseas visitors are excluded.

- An adjustment is made for persons missed in the Census.

- Australians temporarily overseas on Census night are added to the usual residence Census count.

Estimated resident populations are then updated each year from the Census data, using indicators of population change, such as births, deaths and net migration. More information is available from the ABS website at <www.abs.gov.au>.

For the Indigenous comparisons in this report, the most recently released Indigenous experimental estimated resident populations, as released by the ABS, were used. Those estimates were based on the 2011 Census of Population and Housing.

ABS population data for participation calculations

Participation rates were calculated using the average of the estimated resident female population for the 2-year, 3-year or 5-year reporting period. Denominators for participation rates were calculated using the average of the ABS estimated resident population for 2014 and 2015 for 2-year participation; the average for 2013, 2014 and 2015 for 3-year participation; and the average of the ABS estimated resident population for 2011, 2012, 2013, 2014 and 2015 for 5-year participation. These average populations were then adjusted for the estimated proportion of women who have had a hysterectomy using national hysterectomy fractions derived from the AIHW National Hospital Morbidity Database (NHMD).

Note that there is the potential for variation in published participation rates between the AIHW and state and territory reports because of different sources of estimated resident population data and/or different hysterectomy fractions used in calculations.

Hysterectomy fractions

Hysterectomy fractions represent the proportion of women with an intact uterus (and cervix) at a particular age, and are the tool used to adjust the population for participation calculations. This is because women who have had a hysterectomy with their cervix removed are not at risk of cervical cancer and thus do not require screening—and since substantial proportions (20–30%) of middle-aged and older women in Australia do not have an intact cervix, the population is adjusted to remove these women, so that true participation in cervical screening can be more accurately estimated.

Previously, the AIHW used hysterectomy fractions derived from self-reported information on hysterectomies collected in the 2001 National Health Survey (NHS) conducted by the ABS. However, hysterectomy incidence has fallen since 2001, which means the 2001 NHS hysterectomy fractions no longer allow accurate estimates. Thus, the introduction of new performance indicators in the AIHW annual monitoring report, *Cervical screening in Australia*

2008–2009 (AIHW 2011), provided an appropriate opportunity to update the method by which hysterectomy fractions were estimated.

The NHMD is based on summary records of patient separations, referring to episodes of care in public and private hospitals, and allows us to view relatively complete hysterectomy numbers and rates for financial years from the mid-1990s. These data were used, with projections forward and backward where required, to generate estimates of current hysterectomy prevalence for women aged 20–69. Published hysterectomy incidence trends, as well as data from the 1995, 2001 and 2004–05 NHS, were drawn on to ensure accuracy in assumptions.

The results of these combined approaches are robust hysterectomy fractions that reflect both historical and current hysterectomy trends, which can be used in the calculation of participation in cervical screening for the most recent participation data.

The fractions themselves are similar to previous estimates taken from population health surveys, with the proportion of women with an intact cervix remaining comparatively higher in most age groups—a reflection of the national trend of decreasing incidence of hysterectomies over time. These are shown next to the previously adopted hysterectomy fractions based on the 2001 NHS in Table C2.

Table C2: National hysterectomy fractions

Age group (years)	% of women who have not had a hysterectomy	
	Derived from NHS 2001	Modelled on NHMD
20–24	100.0	100.0
25–29	100.0	99.7
30–34	98.9	98.8
35–39	95.6	96.2
40–44	90.6	91.6
45–49	82.5	85.9
50–54	76.5	81.0
55–59	66.2	77.2
60–64	68.9	73.6
65–69	66.8	70.6

Source: AIHW analysis of the National Hospital Morbidity Database.

The incorporation of these new hysterectomy fractions, based on lower prevalence of hysterectomy procedures, into cervical screening participation calculations results in a slight decrease in the participation rate compared with calculations using the previous hysterectomy fractions—as would be expected, since the population at risk (and therefore the population eligible for cervical screening) is larger.

ABS population data for incidence and mortality calculations

Incidence and mortality rates were calculated using the estimated resident population for single-year calculations, and the aggregate of the estimated resident populations for the 5 relevant years for 5-year calculations (or 4 years in the case of incidence for different socioeconomic groups).

AIHW National Hospital Morbidity Database

The AIHW National Hospital Morbidity Database (NHMD) is compiled from data supplied by state and territory health authorities. It is a collection of electronic confidentialised summary records for episodes of admitted patient care (separations or hospitalisations) in essentially all public and private hospitals in Australia. The data include demographic, administrative and clinical information, including patient diagnoses and other procedures.

In this report, the NHMD is only used as the source of data for hysterectomy fractions, which are used to adjust ABS population data for the estimated proportion of women who have had a hysterectomy, for participation calculations.

AIHW Disease Expenditure Database

The AIHW Disease Expenditure Database contains estimates of expenditure by disease category, age group and sex for each of the following areas of expenditure: admitted patient hospital services, out-of-hospital medical services, prescription pharmaceuticals, optometrical and dental services, community mental health services and public health cancer screening.

For more information on the AIHW Disease Expenditure Database, see *Health system expenditures on cancer and other neoplasms in Australia: 2008–09* (AIHW 2013a).

The Data Quality Statement for the Disease Expenditure Database can be found on the AIHW website at <http://meteor.aihw.gov.au/content/index.phtml/itemId/640407>.

Medicare Australia Statistics

Medicare Australia Statistics is an online resource of the Department of Human Services, available at <http://medicarestatistics.humanservices.gov.au/statistics/mbs_item.jsp>.

The resource was used to source Australian Government expenditure data for Medicare Benefits Schedule (MBS) items for cervical screening (including MBS items for cervical cytology tests and Practice Incentive Program (PIP) incentive payments). These expenditure data were then combined with expenditure data sourced from the AIHW Disease Expenditure Database to produce estimates of expenditure on cervical screening in Australia.

Appendix D: Classifications

Age

The data in this report are stratified by the age of the woman at the time of the specified test (for screening data); at the time of diagnosis (for cancer incidence data); or at the time of death (for cancer mortality data).

State or territory

The state or territory reported is the one where screening took place (for the screening data); where the diagnosis was made (for the cancer incidence data); or the place of usual residence (for the cancer mortality data).

This means that it is possible for a woman to be double-counted in the screening data. If she was screened in 1 jurisdiction and then screened again less than 2 years later in another jurisdiction, both screens may be included in participation. This should, however, have only a small effect on the reported participation.

Remoteness area

The remoteness areas (RAs) divide Australia into broad geographical regions that share common characteristics of remoteness for statistical purposes. The remoteness structure divides each state and territory into several regions on the basis of their relative access to services. There are 6 classes of RA in the remoteness structure: *Major cities*, *Inner regional*, *Outer regional*, *Remote*, *Very remote* and *Migratory*. The category *Major cities* includes Australia's capital cities, except for Hobart and Darwin, which are classified as *Inner regional*. RAs are based on the Accessibility and Remoteness Index of Australia, produced by the Australian Population and Migration Research Centre at the University of Adelaide.

For participation calculations, women were allocated to an RA using their residential postcode, as supplied at the time of screening. Caution is required when examining differences across RAs for the following reasons: firstly, postcodes used to allocate women may not represent their location of usual residence; secondly, because these are based on the 2011 Census, the accuracy of RA classifications diminishes, due to subsequent changes in demographics; thirdly, some postcodes (and hence some individual women) are unable to be allocated to an RA.

Socioeconomic group

The Index of Relative Socio-Economic Disadvantage (IRSD) is one of four Socio-Economic Indexes for Areas (SEIFAs) developed by the ABS. This index is based on factors such as average household income, education levels and unemployment rates. The IRSD is not a person-based measure; rather, it is an area-based measure of socioeconomic disadvantage in which small areas of Australia are classified on a continuum from disadvantaged to affluent. This information is used as a proxy for the socioeconomic disadvantage of people living in those areas and may not be correct for each person in that area.

In this report, the first socioeconomic group (quintile 1) corresponds to geographical areas containing the 20% of the population with the greatest socioeconomic disadvantage according to the IRSD (that is, the lowest socioeconomic group), and the fifth group (quintile 5) corresponds to the 20% of the population with the least socioeconomic disadvantage (that is, the highest socioeconomic group).

For participation, women were allocated to a socioeconomic group using their residential postcode, as supplied at the time of screening. Caution is required when examining differences across socioeconomic groups for the following reasons: firstly, postcodes used to allocate women may not represent their location of residence; secondly, because these are based on the 2011 Census, the accuracy of socioeconomic group classifications diminishes due to subsequent changes in demographics; thirdly, many postcodes (and hence women) are unable to be allocated to a socioeconomic group.

Classification of cervical cancer by histology

Histology codes to classify cervical cancer into histological groups are listed in Table D1.

Table D1: Cervical cancer by histological type

Type of cervical cancer	ICD-O-3 codes
1: Carcinoma	8010–8380, 8382–8576
1.1: Squamous cell carcinoma	8050–8078, 8083–8084
1.2: Adenocarcinoma	8140–8141, 8190–8211, 8230–8231, 8260–8263, 8382–8384, 8440–8490, 8570–8574, 8310, 8380, 8576
1.3: Adenosquamous carcinoma	8560
1.4: Other specified and unspecified carcinoma	ICD-O-3 codes for carcinoma excluding those for squamous cell carcinoma, adenocarcinoma and adenosquamous carcinoma
2: Sarcoma	8800–8811, 8840–8921, 8990–8991, 9040–9044, 9120–9133, 9540–9581, 8830, 9150
3: Other specified and unspecified malignant neoplasm	ICD-O-3 codes for cervical cancer, excluding those for carcinoma and sarcoma

Appendix E: Statistical methods

Crude rates

A 'crude rate' is defined as the number of events over a specified period of time (for example, a year), divided by the total population. For example, a crude cancer incidence rate is similarly defined as the number of new cases of cancer in a specified period of time divided by the population at risk. Crude mortality rates and cancer incidence rates are expressed in this report as number of deaths or new cases per 100,000 population. 'Crude participation rate' is expressed as a percentage.

Age-specific rates

Age-specific rates provide information on the incidence of a particular event in an age group, relative to the total number of people at risk of that event in the same age group. It is calculated by dividing the number of events occurring in each specified age group by the corresponding 'at-risk' population in the same age group, and then multiplying the result by a constant (for example, 100,000) to derive the rate. Age-specific rates are often expressed per 100,000 population.

Age-standardised rates

A crude rate provides information on the number of, for example, new cases of cancer or deaths from cancer in the population at risk in a specified period. No age adjustments are made when calculating a crude rate. Since the risk of cancer is heavily dependent on age, crude rates are not suitable for looking at trends or making comparisons across groups in cancer incidence and mortality.

More meaningful comparisons can be made by using age-standardised rates, with such rates adjusted for age in order to facilitate comparisons between populations that have different age structures—for example, between Indigenous people and other Australians. This standardisation process effectively removes the influence of age structure on the summary rate.

There are 2 methods commonly used to adjust for age: direct and indirect standardisation. In this report, the direct standardisation approach presented by Jensen and colleagues (1991) is used. To age-standardise using the direct method, the first step is to obtain population numbers and numbers of cases (or deaths) in age ranges, typically 5-year age ranges. The next step is to multiply the age-specific population numbers for the standard population (in this case, the Australian population as at 30 June 2001) by the age-specific incidence rates (or death rates) for the population of interest (such as those in a certain socioeconomic group or those who lived in *Major cities*). The next step is to sum across the age groups and divide this sum by the total of the standard population, to give an age-standardised rate for the population of interest. Finally, this is expressed per 1,000 or 100,000, as appropriate.

Glossary

Aboriginal or Torres Strait Islander: A person of Aboriginal and/or Torres Strait Islander descent who identifies as an Aboriginal and/or Torres Strait Islander. See also **Indigenous**.

age-specific rate: A rate for a specific age group. The numerator and denominator relate to the same age group.

age-standardised rate: A method of removing the influence of age when comparing populations with different age structures. This is usually necessary because the rates of many diseases vary strongly (usually increasing) with age. The age structures of the different populations are converted to the same 'standard' structure, which allows comparison of disease rates.

Australian Statistical Geography Standard (ASGS): Common framework defined by the Australian Bureau of Statistics for collection and dissemination of geographically classified statistics. The ASGS replaced the Australian Standard Geographical Classification (ASGC) in July 2011.

biopsy: Small sample of tissue that is taken to obtain a definitive diagnosis of an abnormality.

burden of disease: The quantified impact of a disease or injury on a population.

cancer (malignant neoplasm): A large range of diseases in which some of the body's cells become defective, and begin to multiply out of control. These cells can invade and damage the area around them, and can also spread to other parts of the body to cause further damage.

cancer death: A death where the **underlying cause of death** is indicated as cancer. People with cancer who die of other causes are not counted in the **mortality** statistics in this publication.

cytology: Cytology means 'study of cells' and, in the context of cervical screening, refers to cells from the cervix that are collected and examined for abnormalities. Cervical cytology using the Pap test is the primary screening tool of the NCSP.

Disability-adjusted life years: A measure (in years) of healthy life lost, either through premature death—defined as 'dying before the ideal life span'.

endocervical abnormality (cytology): An endocervical result of 'E2 Atypical endocervical cells of uncertain significance', 'E3 Possible high-grade endocervical glandular lesion', 'E4 Adenocarcinoma in situ', 'E5 Adenocarcinoma in situ with possible microinvasion/invasion' or 'E6 Adenocarcinoma', regardless of the corresponding squamous result for that cytology test.

endocervical abnormality (histology): An endocervical result of 'HE02 Endocervical atypia', 'HE03.1 Endocervical dysplasia', 'HE03.2 Adenocarcinoma in situ', 'HE04.1 Microinvasive adenocarcinoma', 'HE04.2 Invasive adenocarcinoma', 'HE04.3 Adenosquamous carcinoma' or 'HE04.4 Carcinoma of the cervix (other)' regardless of any squamous result. Note that HE04.3 Adenosquamous carcinoma and HE04.4 Carcinoma of the cervix (other) are included as endocervical abnormalities for data reporting purposes, but that the former is not solely of endocervical origin, and the latter category comprises rarer carcinomas of other epithelial origin.

false negative: A test that has incorrectly indicated that the disease is not present.

false positive: A test that has incorrectly indicated that the disease is present.

high-grade abnormality detection rate: The number of women per 1,000 screened with a histologically confirmed high-grade abnormality (cervical intraepithelial neoplasia (CIN) that has been graded as 'moderate' (CIN II) or 'severe' (CIN III), or for which the grade has not been specified; endocervical dysplasia; or adenocarcinoma in situ).

oncogenic HPV: Oncogenic HPV types are those that are associated with the development of cervical cancer. Currently, 15 oncogenic types of HPV are recognised. HPV types 16, 18, and 45 are most commonly associated with cervical cancer, with HPV types 16 and 18 detected in 70–80% of cases of cervical cancer in Australia (Brotherton 2008).

histology: Examination of tissue from the cervix through a microscope, which is the primary diagnostic tool of the NCSP.

HPV: Human papillomavirus, a virus that affects both males and females. There are around 100 types of HPV, with around 40 types known as 'genital HPV', which are contracted through sexual contact. Persistent infection with oncogenic HPV types can lead to cervical cancer, whereas infection with non-oncogenic types of HPV can cause genital warts.

Indigenous: A person of Aboriginal and/or Torres Strait Islander descent who identifies as an Aboriginal and/or Torres Strait Islander. See also **Aboriginal or Torres Strait Islander**.

in situ: A Latin term meaning 'in place or position'; undisturbed.

incidence: The number of new cases (for example, of an illness or event) occurring during a given period, usually 1 year.

morbidity: Illness.

mortality: The number of deaths occurring during a given period.

new cancer case: A person who has a new cancer diagnosed for the first time. One person may have more than once cancer and therefore may be counted twice in **incidence** statistics if it is decided that the 2 cancers are not of the same origin. This decision is based on a series of principles—set out in more detail in a publication by Jensen et al. (1991).

negative cytology: Defined as a cervical cytology test where the squamous result is 'S1 Negative' and the endocervical result is either 'E0 No endocervical component' or 'E1 Negative'.

no endocervical component: A cytology test with 'no endocervical component' is defined as—a cervical cytology test with any squamous result and an endocervical result of 'E0 No endocervical component'—meaning that no endocervical cells are present in the sample, and thus only the squamous cells in the sample can be assessed for the presence of abnormalities or cancer.

oncogenic: Cancer-causing.

Pap test: Papanicolaou smear, a procedure to detect cancer and precancerous conditions of the female genital tract, which is the screening test of the National Cervical Screening Program. During a Pap test, cells are collected from the transformation zone of the cervix—the area of the cervix where the squamous cells from the outer opening of the cervix and glandular cells from the endocervical canal meet. This is the site where most cervical abnormalities and cancers are detected. For conventional cytology, these cells are transferred

onto a slide, and sent to a pathology laboratory for assessment. Collected cells are then examined under a microscope to look for abnormalities.

National HPV Vaccination Program: This program was first introduced on 1 April 2007 as a program for females. At its inception, it comprised an ongoing vaccination program for females aged 12–13, administered through schools, as well as a catch-up program for females aged 13–26 between 2007 and 2009—with females aged 13–17 vaccinated through schools and females aged 18–26 vaccinated through the community. From February 2013, the current school-based program for females aged 12–13 was extended to males aged 12–13, with a catch-up program in 2013 and 2014 for males aged 14–15.

screening: The application of a test to a population which has no overt signs or symptoms of the disease in question, to detect disease at a stage when treatment is more effective. The screening test is used to identify people who require further investigation to determine the presence or absence of disease, and is not primarily a diagnostic test.

The purpose of screening an asymptomatic individual is to detect early evidence of an abnormality or abnormalities, such as pre-malignant changes (for example, by Pap test) or early invasive malignancy (for example, by mammography), in order to recommend preventive strategies or treatment that will provide a better health outcome than if the disease were diagnosed at a later stage.

squamous abnormality (cytology): A squamous result of 'S2 Possible low-grade squamous intraepithelial lesion', 'S3 Low-grade squamous intraepithelial lesion', 'S4 Possible high-grade squamous intraepithelial lesion', 'S5 High-grade squamous intraepithelial lesion', 'S6 High-grade intraepithelial lesion with possible microinvasion/invasion' or 'S7 Squamous cell carcinoma', regardless of the corresponding endocervical result for that cytology test.

squamous abnormality (histology): A squamous result of 'HS02 Low-grade squamous abnormality', 'HS03.1 Cervical intraepithelial neoplasia (CIN) not otherwise specified (NOS)', 'HS03.2 CIN II', 'HS03.3 CIN III', 'HS04.1 Microinvasive squamous cell carcinoma' or 'HS04.2 Invasive squamous cell carcinoma', regardless of any endocervical result.

unsatisfactory cytology: A cervical cytology test where the squamous result is 'SU Unsatisfactory' and the endocervical result is 'EU Unsatisfactory', or where the squamous result is 'SU Unsatisfactory' and the endocervical result is either 'E0 No endocervical component' or 'E1 Negative'. While not a true result per se, 'unsatisfactory cytology' means that, due to the unsatisfactory nature of the cells sampled, the pathologist is unable to determine a clear result. This may be due to either too few or too many cells, or to the presence of blood or other factors obscuring the cells, or to poor staining or preservation. The absence of an endocervical component is not considered sufficient grounds to deem a cervical cytology sample unsatisfactory (NPAAC 2006).

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Related publications

Cervical screening in Australia is an annual report. This and previous *Cervical screening in Australia* reports and their supplementary data tables are available at <http://www.aihw.gov.au/publications/cervical-screening>.

You may also be interested in the following related publications:

AIHW (Australian Institute of Health and Welfare) 2014. Analysis of bowel cancer outcomes for the National Bowel Cancer Screening Program. Cat. no. CAN 87. Canberra: AIHW.

AIHW 2014. National cervical cancer prevention data dictionary version 1: working paper. Cancer series no. 88. Cat. no. CAN 85. Canberra: AIHW.

AIHW 2013. Report on monitoring activities of the National Cervical Screening Program Safety Monitoring Committee. Cancer series no. 80. Cat. no. CAN 77. Canberra: AIHW.

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AIHW, 2017. National Cervical Screening Program data dictionary. Version 1.0. Cancer series no. 103. Cat. no. CAN 102. Canberra: AIHW.

Supplementary online data tables

Additional tables are available as online Excel tables at <www.aihw.gov.au>, under the 'Additional material' tab for this report. These tables contain detailed statistics for many of the tables and figures presented in summary form in both the body of the report and in Appendix A. Supplementary data tables have the prefix 'S' (for example, 'Table S1.1').

There are 7 Excel files, one for each performance indicator:

- Indicator 1 Participation
- Indicator 2 Rescreening
- Indicator 3 Cytology
- Indicator 4 Histology
- Indicator 5 Cytology–histology correlation
- Indicator 6 Incidence
- Indicator 7 Mortality

Cervical screening in Australia 2014–2015 presents the latest national statistics monitoring the National Cervical Screening Program, which aims to reduce incidence, morbidity and mortality from cervical cancer. Just over half (56%) of women in the target age group of 20–69 took part in the program, with more than 3.8 million women screening in 2014 and 2015.

Cervical cancer incidence for women of all ages remains at an historical low of 7 new cases per 100,000 women, and deaths are also low, historically and by international standards, at 2 deaths per 100,000 women.