Australian Government
Australian Institute of Health and Welfare

# Cervical screening in Australia 2012–2013

National Cervical Screening Program

A joint Australian, State and Territory Government initiative

CANCER SERIES NO. 93

Australian Government
Australian Institute of Health and Welfare

*Authoritative information and statistics to promote better health and wellbeing*

CANCER SERIES
Number 93

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Australian Institute of Health and Welfare
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Any enquiries about or comments on this publication should be directed to:
Digital and Media Communications Unit
Australian Institute of Health and Welfare
GPO Box 570
Canberra ACT 2601
Tel: (02) 6244 1000
Email: info@aihw.gov.au

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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

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### National Cervical Screening Program

**New South Wales**

Sarah McGill
Anna Burnham
Chehani Alles

**Victoria**

Louise Galloway
Kate Wilkinson
Genevieve Chappell
Cathryn May

**Queensland**

Alison Thompson
Nathan Dunn
Hansen Sun

**Western Australia**

Nerida Steel
Aime Munro
Chrissy Fletcher

**South Australia**

Jenny Munro

**Tasmania**

Gail Ward
Scott Marshall

**Australian Capital Territory**

Peter Couvee

**Northern Territory**

Kim Coulter
Guillermo Enciso

**Australian Government Department of Health**

Tracey Bessell
Kim Dobbie
Alison Lang

# Abbreviations

| | |
|---|---|
| ABS | Australian Bureau of Statistics |
| ACT | Australian Capital Territory |
| AIHW | Australian Institute of Health and Welfare |
| AMBS | Australian Modified Bethesda System |
| CI | confidence interval |
| CIN | cervical intraepithelial neoplasia |
| HPV | human papillomavirus |
| IRSD | Index of Relative Socio-economic Disadvantage |
| MSAC | Medical Services Advisory Committee |
| NCSP | National Cervical Screening Program |
| NHMRC | National Health and Medical Research Council |
| NSW | New South Wales |
| NT | Northern Territory |
| PPV | positive predictive value |
| Qld | Queensland |
| RA | remoteness area |
| SA | South Australia |
| SEIFA | Socio-Economic Indexes for Areas |
| Tas | Tasmania |
| Vic | Victoria |
| WA | Western Australia |

# Symbols

| | |
|---|---|
| – | nil or rounded to zero |
| . . | not applicable |
| n.a. | not available |
| n.p. | not publishable because of small numbers, confidentiality or other concerns about the quality of the data |

# 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. The target group is women aged 20–69.

This report is the latest in the *Cervical screening in Australia* series, which is published annually to provide regular monitoring of NCSP participation and performance.

The following statistics are the latest data available for women aged 20–69.

### Cervical cancer cases and deaths are low by international standards

There were 682 new cases diagnosed in 2011 and 143 women died from cervical cancer in 2012. This is equivalent to between 9 and 10 new cases of cervical cancer diagnosed per 100,000 women in 2011 and 2 deaths from cervical cancer per 100,000 women in 2012. These age-standardised rates are very similar to those for 2010 and 2011, respectively.

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

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

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

In 2012–2013, more than 3.8 million women participated in the NCSP. This was 58% of women aged 20–69. This age-standardised rate is similar to 2010–2011 and 2011–2012, for which the participation rate was 57% and 58%, respectively.

Participation differed only a little across remoteness areas, ranging between 58% and 60% in all areas except for *Very remote* areas where it was 55% (age-standardised rates).

There was a clear trend of increasing participation with increasing socioeconomic status of residence, from 52% in areas of lowest socioeconomic status to 64% in areas of highest socioeconomic status (age-standardised rates).

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, although there is evidence that this population group is under-screened.

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

Only 13% of women with a negative Pap test in 2012 rescreened earlier than recommended.

Of the women sent a 27-month reminder letter by a cervical screening register in 2012, 33% rescreened within 3 months. These figures are both very similar to those for 2011.

### High-grade abnormality detection the same, despite decreases in ages <25

In 2013, for every 1,000 women screened, between 8 and 9 women had a high-grade abnormality detected by histology, providing an opportunity for treatment before possible progression to cancer. This age-standardised rate is similar to 2012, for which the rate was 8.

While the detection of high-grade abnormalities was most common among women aged 25-29, there were historically low rates of detection for women aged under 20 and 20-24.

# Report card

| | Latest data | Is this a good finding? | Previous data | How compares | Recent trend | |
|---|---|---|---|---|---|---|
| **Participation in 2012–2013** | 58.2% | ✓ Yes (higher is better) | 57.7% | ✓ Similar | Steady at 57–58% |  |
| **Early rescreening** | 12.6% | ✓ Yes (lower is better) | 13.0% | ✓ Similar | Falling from 15 to 13% |  |
| **Rescreening after reminder letter** | 32.7% | ✓ Yes (higher is better) | 31.8% | ✓ Similar | Steady at 32–33% |  |
| **Pap tests not of satisfactory quality** | 2.2% | ✓ Yes (lower is better) | 2.2% | ✓ Similar | Steady at 2% |  |
| **Pap tests negative for abnormalities** | 91.9% | ✓ Yes | 92.1% | ✓ Similar | Steady at 92% |  |
| **Pap tests with no endocervical component** | 22.5% | X No (<20% is better) | 21.9% | ✓ Similar | Rising from 20 to 23% |  |
| **High-grade abnormality detection in 2013** | 8.5 | ✓ Yes | 8.4 | ✓ Similar | Steady at 8.4–8.5 |  |
| **PPV of high-grade squamous cytology** | 68.3% | ✓ Yes (higher is better) | 68.2% | ✓ Similar | Steady at 68–70% |  |
| **PPV of high-grade endocervical cytology** | 73.0% | ✓ Yes (higher is better) | 71.4% | ✓ Similar | Steady at 71–74% |  |
| **Incidence in 2011** | 9.5 | ✓ Yes (lower is better) | 9.6 | ✓ Similar | Steady at 9.0–9.6 |  |
| **Mortality in 2012** | 1.8 | ✓ Yes (lower is better) | 2.0 | ✓ Similar | Steady at 1.8–2.0 |  |

Report card uses age-standardised rates where available to aid in comparison of trends. All data shown are for women aged 20–69.

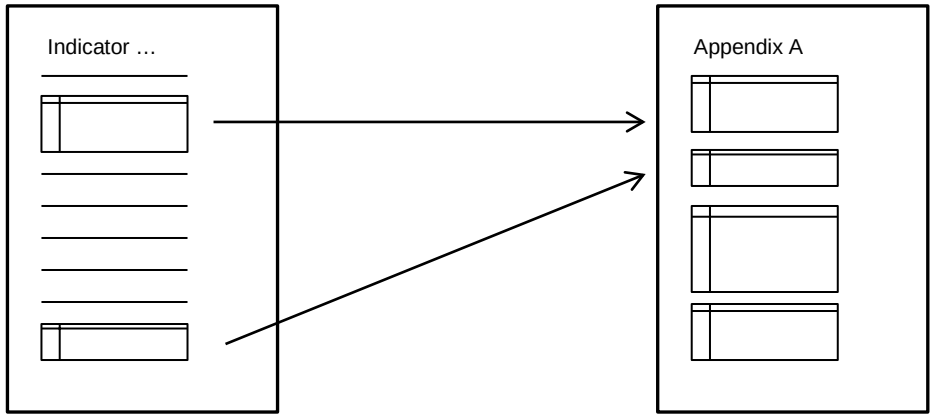
 Green light: positive trend—all is well.  Amber light: trend slipping in an unfavourable direction—keep an eye on this.  Red light: unfavourable trend—may be cause for concern.

# Navigating changes in this report

Regular users of this annual monitoring report will notice that *Cervical screening in Australia 2012–2013* looks a little different to the previous report *Cervical screening in Australia 2011–2012*. The same data have been provided, along with much of the same information, but the structure and format have changed. Therefore this 'map' has been provided to aid regular users in the navigation of this report to ensure they are still able to find the data and information they require.

### Where are all the data tables?

All the data tables that used to be interspersed amongst the text of each performance indicator chapter now appear together in Appendix A. These tables appear in the same order, and are numbered according to the performance indicator (for example, participation data tables, being indicator 1, are numbered from A1.1 to A1.7, and rescreening tables are numbered from A2.1 to A2.2), so that regular users can still access the detailed data as usual.




### Why are fewer data being reported?

Regular users will also notice that the sections that report on data are shorter and described differently. Whereas there used to be a chapter for each performance indicator, with every result for every disaggregation reported, only selected results appear in this report, with a focus on the most important findings—the 'story' of what occurred in cervical screening in 2012–2013. Further, data from different performance indicators have been incorporated into a single chapter so that data can be discussed in context, rather than isolation. This means that participation and rescreening data are reported together in a chapter called *Screening behaviour*, cytology and cytology-histology correlation data are reported together in a chapter called *Characteristics of the screening test* and selected histology data are reported in a chapter called *Detection of high-grade abnormalities*. The overall aim of these changes is to have key information easy to find whilst removing any repetition or redundancy in the text that might mask key findings.

Note that the fact that some data are not reported does not imply these are not important to monitor; all data are analysed and monitored.

### Where has the information from the introduction gone?

In response to feedback, the introductory section is now much shorter, but key information has been retained, and, rather than appearing in one solid block at the beginning of the report, is now dispersed within the relevant sections of the text, glossary and appendices.

# 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 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 inner end of the vagina. 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 (AIHW 2014a).

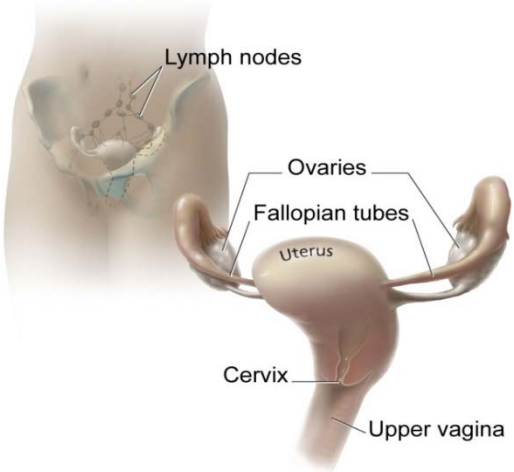



**Figure 1.1: Anatomy of the cervix and nearby organs**



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

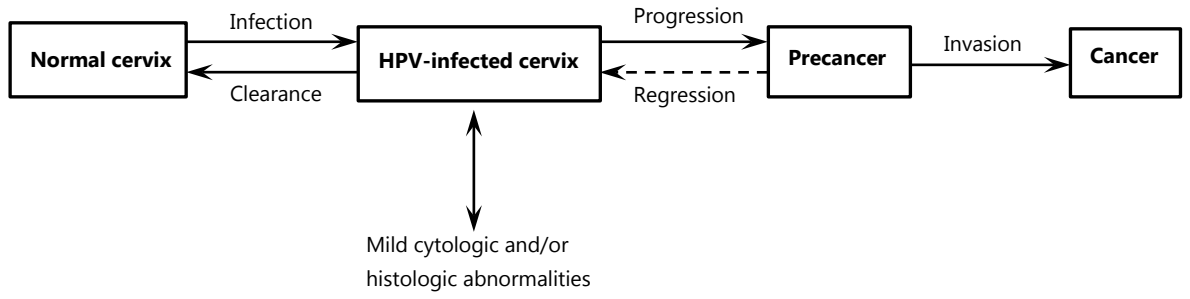


## 1.2 The primary cause of cervical cancer is HPV

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). These oncogenic types of HPV are known as 'high-risk' HPV, and infection with one or more of these is the underlying cause of almost all cases of cervical cancer. Currently 15 high-risk 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 high-risk HPV may eventually lead to cervical cancer.

The 4 major steps in cervical cancer development are infection with HPV (from sexual activity), viral persistence (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) (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 2003).

**Figure 1.2: Role of human papillomavirus infection in the development of cervical cancer**

Infection of cervical cells with high-risk 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 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 high-risk 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. As a screening tool, the aim of cervical cytology is 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. Since the 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, cervical cytology cannot accurately reveal all abnormalities that may exist in the cervical tissue in situ.

The strength of cervical screening comes from repeating the cervical cytology test at agreed rescreening intervals, which allows the 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, so high participation in cervical screening reduces both an individual's risk and the incidence and burden of cervical cancer in Australia overall.

It is also 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 being small cell neuroendocrine carcinoma and large cell neuroendocrine carcinoma, neither of which appear to possess a preinvasive stage (Necervix.com 2014).

**Box 2.1 Key messages**

**Cervical cancer is a rare outcome of persistent infection with high-risk HPV**

Oncogenic types of HPV are known as 'high-risk' HPV, and infection with one or more of these 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 a high-risk 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 to 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 high-risk 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 simply unable to be detected by cervical screening.

# 2 The current state of cervical screening in Australia: on the cusp of change

In early 2015 it seems likely that cervical screening in Australia is going to undergo a major change in the next few years.

Ever since cervical screening began, women have been screened for cervical abnormalities and cancer using the Pap test—whether on an ad hoc basis prior to the introduction of the NCSP, or every 2 years as has been recommended by the NCSP since its inception in 1991.

However, there have been many developments over the past 2 decades that mean that the environment in which the NCSP operates is 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 examination of the optimal screening age range and interval internationally; the development of methods to test for the presence of HPV, and subsequently, a vaccine against HPV and the introduction of the National HPV Vaccination Program in 2007. By protecting vaccinated women from infection with the high-risk HPV types 16 and 18, the vaccination program will reduce the number of cervical abnormalities and eventually the incidence of cervical cancer, which will affect both the effectiveness and cost-effectiveness of the current NCSP. Thus it was recognised that the NCSP would need to change to adapt to this different environment and 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 the Australian Health Ministers Advisory Council (AHMAC) endorsed a plan to renew the NCSP ('the Renewal'), which commenced in 2011, undertaken by the Standing Committee on Screening and supported by the Department of Health. The aim of the Renewal is 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 include 5-yearly cervical screening of HPV-vaccinated and unvaccinated women 25 to 69 years of age, using a primary HPV test with partial HPV genotyping and reflex liquid-based cytology (LBC) triage, followed by exit testing of women 70 to 74 years of age (MSAC 2014). This is a major change from the current program, which recommends 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.

Importantly, if these recommendations are endorsed and the NCSP changed in this way, it would mean that Australia would lead the way in the prevention of cervical cancer, being the first to introduce a national school-based HPV vaccination program and one of the first to have a national cervical screening program that uses a primary HPV test as its screening test.

So while this report monitors the NCSP as it currently exists and according to current policy and recommendations, it does so in the context of a shifting environment, and with the knowledge that these data may also serve the dual purpose of setting benchmarks prior to a major change in cervical screening in Australia.

# 3 Monitoring cervical screening in Australia using NCSP data

## 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 (currently the Pap test) through any health-care provider are considered to be part of the NCSP. For women participating in cervical screening, being part of the NCSP means that there are standards for laboratories that interpret Pap test results, evidence-driven guidelines to aid in the management of women after they receive Pap test results, and dedicated cervical screening registers that act as a 'safety net' for participating women as well as encouraging regular Pap 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 1 Pap test in a 2-year period (to align with the 2-year recommended screening interval). High participation in screening is required for the NCSP to achieve its major objective of reducing cervical cancer incidence, morbidity and mortality, as more cervical abnormalities can be detected and treated that could otherwise develop into cervical cancer.

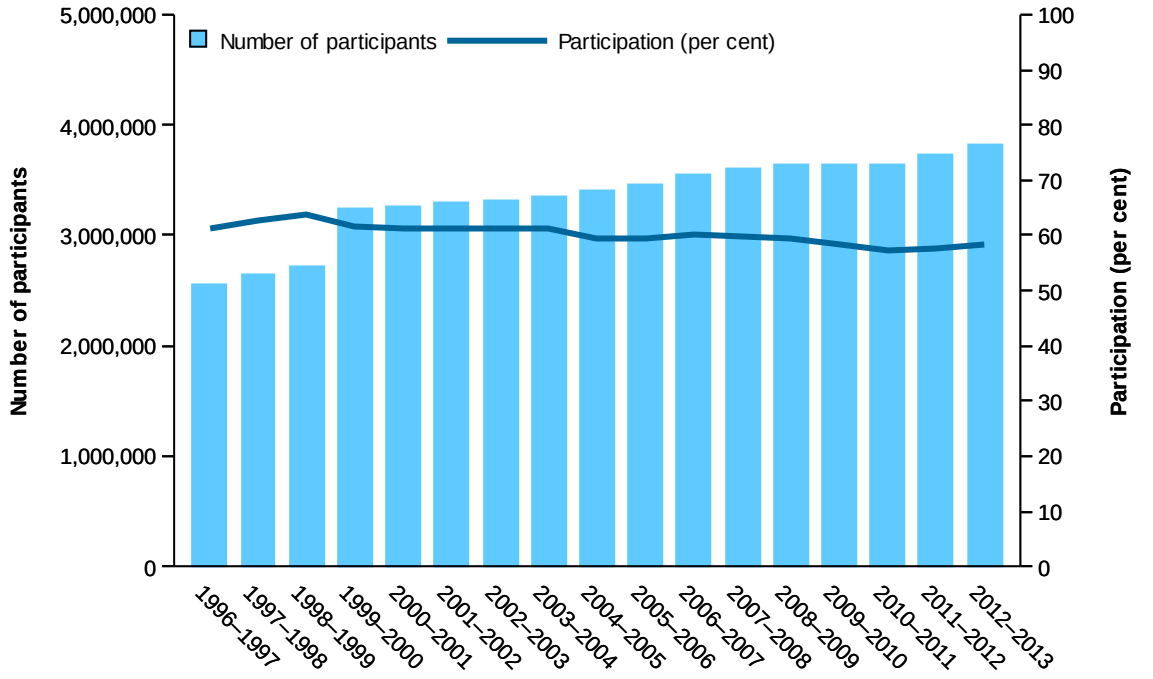
**Box 3.1 Crude versus age-standardised rates**

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 reported (for example, crude participation in 2012–2013 was 57.7%). 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 (for example, the age-standardised participation rate in 2012–2013 was 58.2%).

In 2012–2013, the latest 2-year period, 3,815,705 women aged 20–69 participated, which is 57.7% of the population who should have had a Pap test over this time.

Participation for 2012–2013 has been age-standardised to 58.2%, which is the rate used when comparing participation (and other measures of performance) over time or across population subgroups such as state and territory, remoteness areas, and socioeconomic status groups. Using the age-standardised rate allows us to see that participation in 2012–2013 is similar to the participation of previous 2-year periods, as indicated by the dark blue line in Figure 3.1.

Figure 3.1 also shows that the number of women screened in each 2-year period, indicated by the light blue columns, increases steadily from year to year.




*Note:* Rates from before 2004–2005 should not be directly compared with those after this reporting period (see 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 2012–2013**

Although not aligning with the recommended screening interval, participation in the NCSP is also measured over a 3-year and 5-year period. Three-year participation, which was 70.3% in 2011–2013, 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 their next Pap test, not before their next Pap test is due. Women who respond to being reminded to screen after more than 2 years have past by having a Pap test will then be counted in the 3-year participation data, but not the 2-year participation data.

In this way, this reminder to screen, in the form of a letter sent by a cervical screening register 27 months after a previous negative Pap test, can act as a 'prompt' for women to have their next Pap test. This is supported by rescreening data, which show that 32.7% of women who were sent this reminder letter in 2012 screened within 3 months.

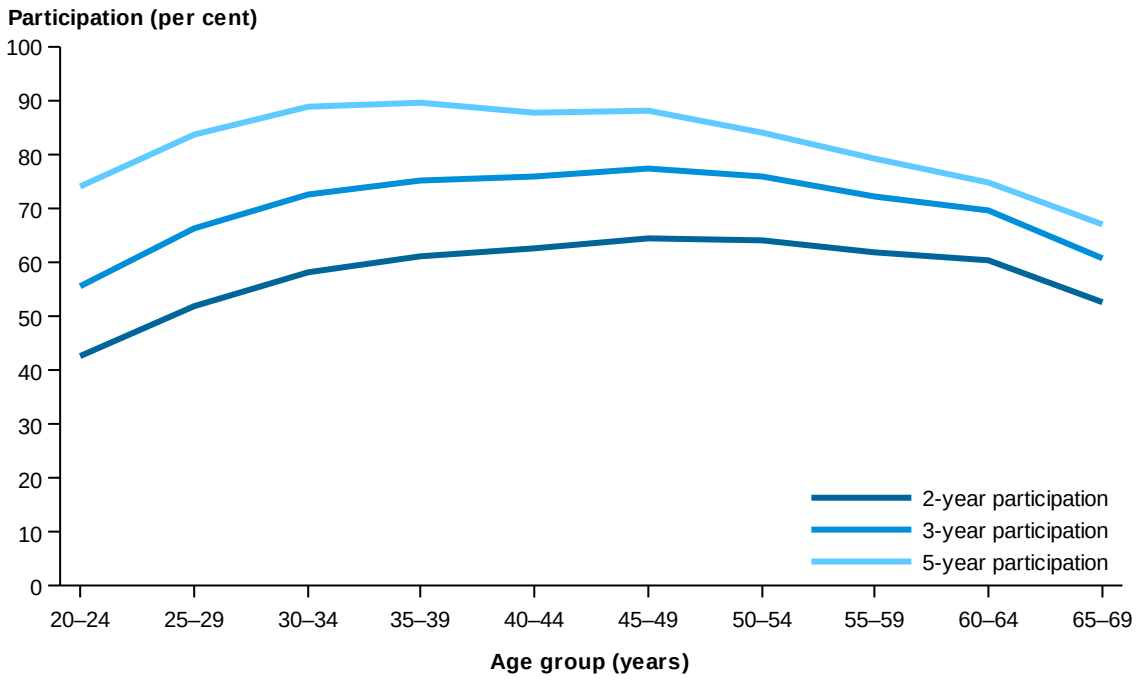
From these analyses it is clear that regular screeners comprise 58–70% of the population, but this alone does not tell us who are participating well and thus reaping the benefits of cervical screening, and who are participating less frequently, or not at all. For this, we need to look at different characteristics of women who participate in cervical screening.

## Screening behaviour across ages

The first thing that is apparent is that 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. The peak level of participation was 64.5% for 2-year participation and 77.5% for 3-year participation, in both cases seen in women aged 45–49 (Figure 3.2).

The age structure changes when participation is measured over 5 years. The age group with the highest participation shifts to women aged 30–34 and 35–39 for 5-year participation, and

the age group with the lowest participation changes from women aged 20–24 for 2-year and 3-year participation to women aged 65–69 for 5-year participation (Figure 3.2).



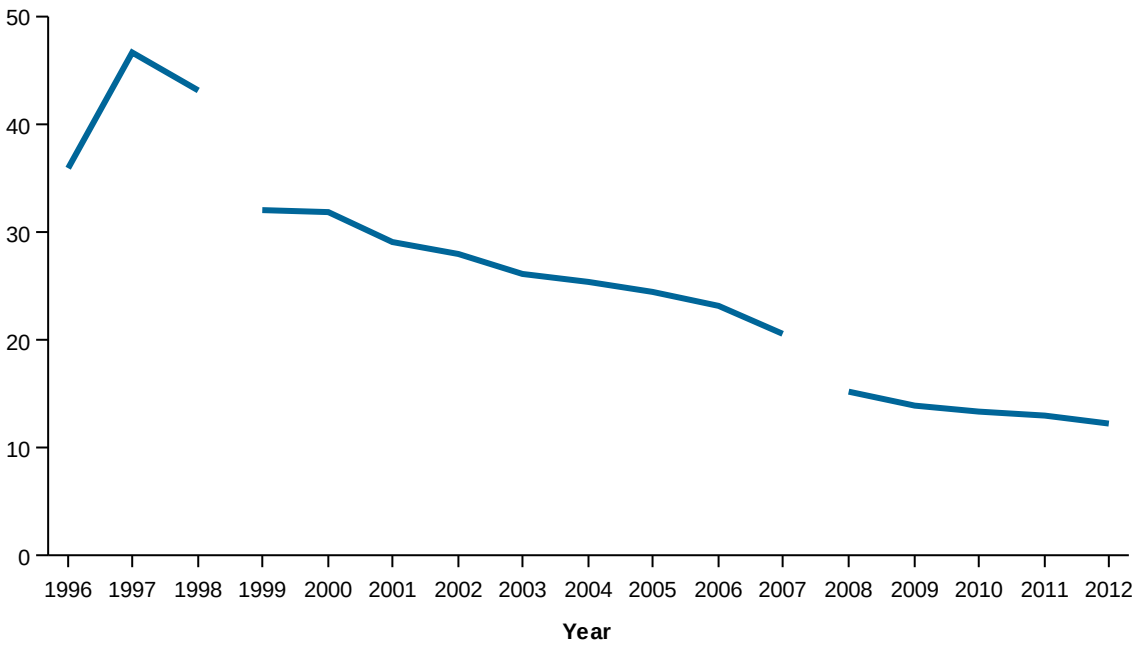

*Source:* AIHW analysis of state and territory cervical screening register data. Data for this figure are available in tables A1.2 and A1.6.

**Figure 3.2: Participation of women aged 20–69, by age, over 2 years (2012–2013), 3 years (2011–2013), and 5 years (2009–2013)**

The relatively low (and falling) level of screening in women aged 20–24 is not considered to be a cause for concern, as evidence shows screening women aged 20–24 years does not prevent any cervical cancers in women under the age of 25 years (Landy et al. 2014). Australia is one of the few countries that still screens women younger than 25, and, as outlined in the introductory material, MSAC recommendations include a starting age of 25 in Australia to be adopted as part of a renewed NCSP.

While participation data show that many women screen less often than recommended, there are some women who screen more often than required—12.6% of women with no history of disease screen fall into this category. 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).

This relatively low number continues a falling trend. While it represents a substantial decrease from 46.7 in 1997, there have been 2 changes to the definition of early rescreening that affect direct comparisons, as it is not possible to know how much of the decrease is due to the change in definition and how much is due to a true change in screening behaviour. Nonetheless, the overall trend shows a change in screening behaviour over time towards compliance with the recommended screening interval. More recently (and directly comparable since the same definition of early rescreening applied), the proportion of women rescreening early decreased from 15.1% in 2008 to 12.6% in 2012 (Figure 3.3).




*Note:* Gaps in the line indicate a change in definition; direct comparison of trends on either side of these areas 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 2012 cohorts**

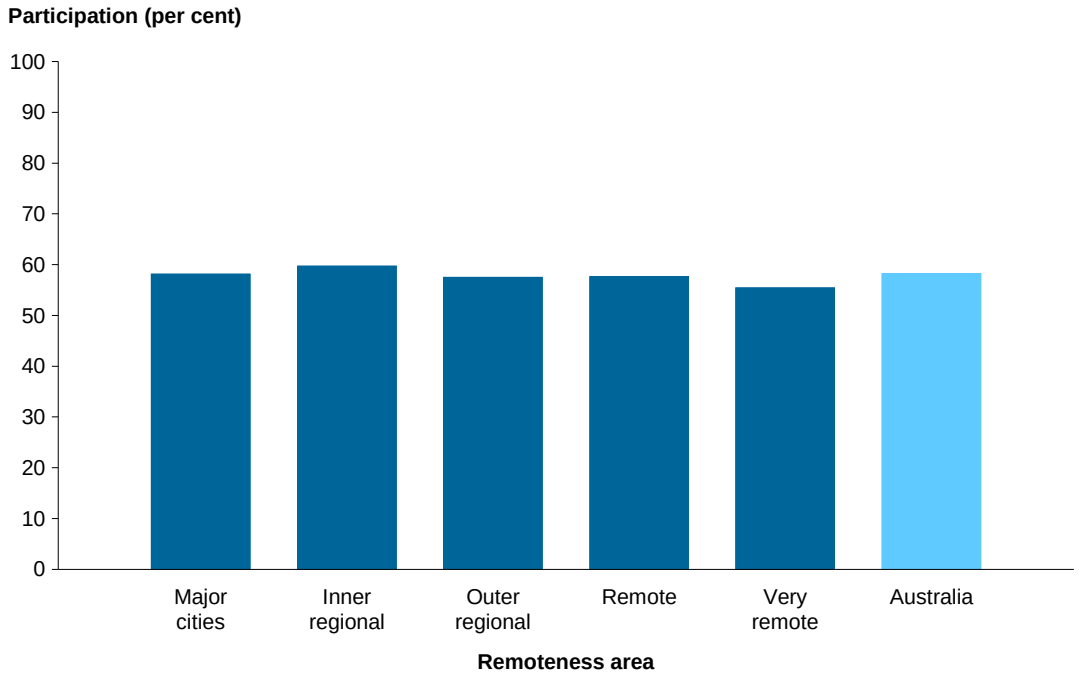
## Screening behaviour across groups

Participation in cervical screening not only lessens an individual's risk of cervical cancer, but a high proportion of women participating reduces the overall incidence and burden of the disease in Australia. However, if some population groups participate more or less than others, then the benefits from a reduced cervical cancer burden are not shared by all.

Participation is similar across remoteness areas, with the highest participation of 59.7% in *Inner regional* areas and a relatively high level of participation of 55.4% in *Very remote* locations (Figure 3.4). However, participation in cervical screening shows a clear trend of increasing participation with increasing socioeconomic status (Figure 3.5). Participation ranged from 52.0% for those of lowest socioeconomic status to 63.8% for the highest socioeconomic status group.

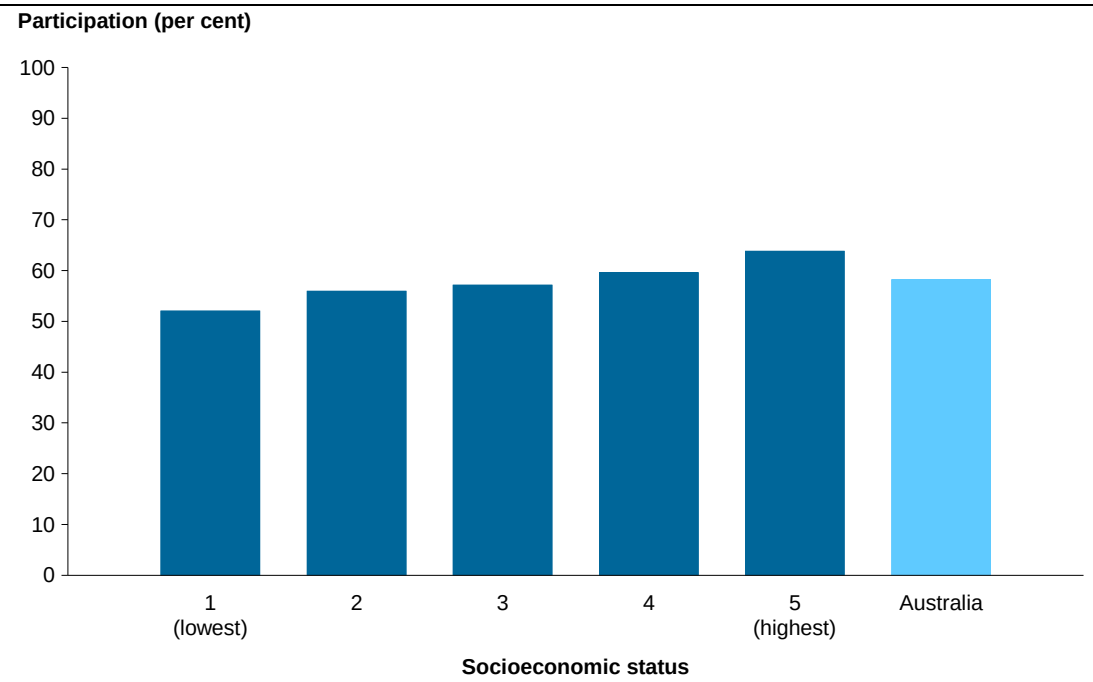
Participation in cervical screening cannot be measured nationally for Aboriginal and Torres Strait Islander women as Indigenous status is not included on all pathology forms in all states and territories, which is the only source that provides information to cervical screening registers. Evidence that is available on the participation in cervical screening by Indigenous women suggests that Aboriginal and Torres Strait Islander women are under-screened.

Coory and others (2002) and Binns and Condon (2006) estimated participation in communities with high proportions of Aboriginal and Torres Strait Islander women in Queensland and the Northern Territory, respectively. These researchers found that, on average, participation by Aboriginal and Torres Strait Islander women was close to 18 percentage points below that for the respective jurisdiction as a whole, with both studies showing considerable variation between communities or regions.




*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, 2012–2013**




*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 status, 2012–2013**

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). However, without being able to measure participation in cervical screening by Indigenous status, it is not known to what extent initiatives are reaching their desired aim.

Progress in this area is being achieved through the Indigenous primary health-care national key performance indicators (nKPIs) data collection. 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 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 (AIHW 2014c).

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 dataset matures, it will become an increasingly useful dataset for understanding the extent of participation by Indigenous women attending these services.

The nKPI data presented in a recent national report shows that 31% of regular female Indigenous clients had a cervical screening test in the 2 years prior to June 2013; 37% had a cervical screening test in the previous 3 years; and 43% had a screening test in the previous 5 years. These proportions had shown some improvements by December 2013, when the proportions of Indigenous women who had a cervical screening test increased to 32% in the previous 2 years, 40% in the previous 3 years and 46% in the previous 5 years (AIHW 2014c).

Research is also underway to look at whether linkage of cervical screening to another data source which includes Indigenous status (such as hospital data) may allow participation of Indigenous women in cervical screening to be estimated (Whop 2014).

Disparities in participation in cervical screening in women of lower socioeconomic status and Indigenous status are likely to have downstream effects on incidence. This will be explored more fully in the chapter that explores cervical cancer incidence and mortality.

## 3.2 Characteristics of the screening test

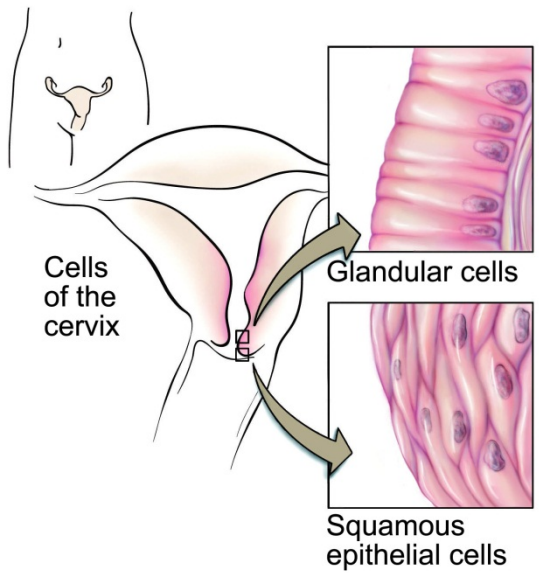



**Figure 3.6: Anatomy of the cells of the cervix**



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



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).

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 | |
| S3 Low-grade squamous intraepithelial lesion | E2 Atypical endocervical cells of uncertain significance |
| 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 2013, with 92% of the more than 2.1 million tests performed that year for women aged 20–69 being negative for abnormalities.

A certain proportion of Pap tests contain abnormal cells, this being influenced by the underlying prevalence of disease in the population. In 2013, for every 100 Pap tests there were 5.8 abnormalities detected—4.4 low-grade and 1.4 high-grade. The delivery of the HPV vaccination during school years is expected to reduce the number of abnormalities as these girls move into the screening cohort.

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 2013, the proportion of Pap tests that were unsatisfactory remained at the low level of 2.2%.

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 National Pathology Accreditation Advisory Council (NPAAC) *Performance measures for Australian laboratories reporting cervical cytology* (NPAAC 2006) include standards for unsatisfactory cytology and for the detection of abnormalities. These performance measures have been calculated as crude rates using data supplied for this report, and are shown in Table 3.2.

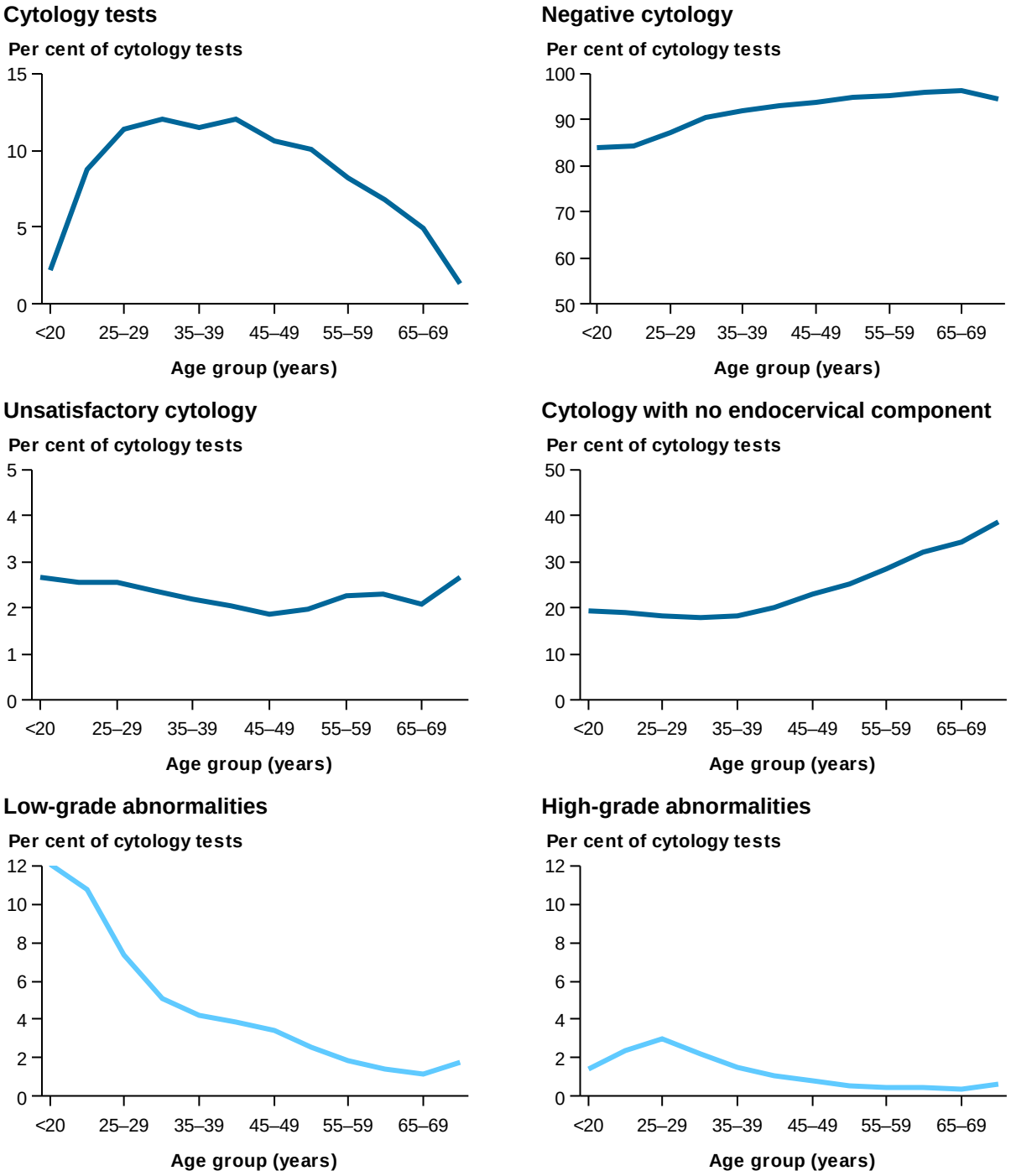
**Table 3.2: NPAAC performance measures calculated using NCSP data supplied for *Cervical screening in Australia 2012–2013***

| NPAAC Measure | Definition | Recommended standard | Calculated value |
|---|---|---|---|
| Performance measure 1 | Proportion of specimens reported as unsatisfactory | Between 0.5% and 5.0% of all specimens reported as unsatisfactory | **2.2%** |
| 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) **1.4%** |
| | (ii) Proportion of specimens reported as abnormal | (ii) Not more than 14.0% reported as abnormal | (ii) **5.8%** |
| 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%** (10,648/13,506) Endocervical cytology and histology = **90.0%** (216/240) |
| 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 = **52.6%** (4,986/9,504) Endocervical cytology and histology = **56.1%** (143/255) |

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

A trend of potential concern is the number of Pap tests for which no endocervical component was collected, which continues to increase disproportionately to the increase in the number of cytology tests. While the increase in the number of cytology tests for women aged 20–69 from 2006 to 2013 was 6.7%, there was a 25.7% increase in the number of cytology tests with no endocervical component over the same period (from 387,918 to 487,633). This is reflected in the steady increase in the proportion of cytology tests with no endocervical component,

from 19.1% in 2006 to 22.5% in 2013 for women aged 20–69. This trend holds after age-standardisation—from 19.5% in 2006 to 22.5% of cytology tests in 2013.




*Source:* AIHW analysis of state and territory cervical screening register data. Data for these figures are available in tables A3.2, A3.4, A3.7, A3.10, A3.13 and A3.14.

**Figure 3.7: Age-distribution of cervical cytology (all cytology, negative cytology, unsatisfactory cytology, cytology with no endocervical component, low-grade abnormalities detected by cytology and high-grade cytology detected by cytology), 2013.**

The 2007–2009 National Cancer Prevention Policy of 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 2013 rate of 22.5%, which indicates the presence of an endocervical component in 77.5% of cytology tests, is slightly outside this desired range.

An endocervical component is difficult to collect in 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 screening test of the NCSP 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 NHMRC *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 (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 alterations to the predictive ability of cervical cytology.

Correlation between squamous cytology reporting categories and any squamous histology that was performed within 6 months is shown in Figure 3.8 and correlation between endocervical cytology reporting categories and any endocervical histology performed within 6 months is shown in Figure 3.9. These do not include cytology tests not followed by histology, for which we cannot know the true disease state.

From Figure 3.8 it can be seen that squamous cytology is generally a good predictor of the histology finding; possible high-grade cytology is usually found to be high-grade, and high-grade cytology almost always found to be high-grade, with squamous cell carcinoma cytology usually found to be squamous cell carcinoma.

In real terms, 68.3% of high-grade squamous abnormalities predicted by cytology were found to be either a true high-grade squamous abnormality or squamous cell carcinoma. This is called 'positive predictive value'.

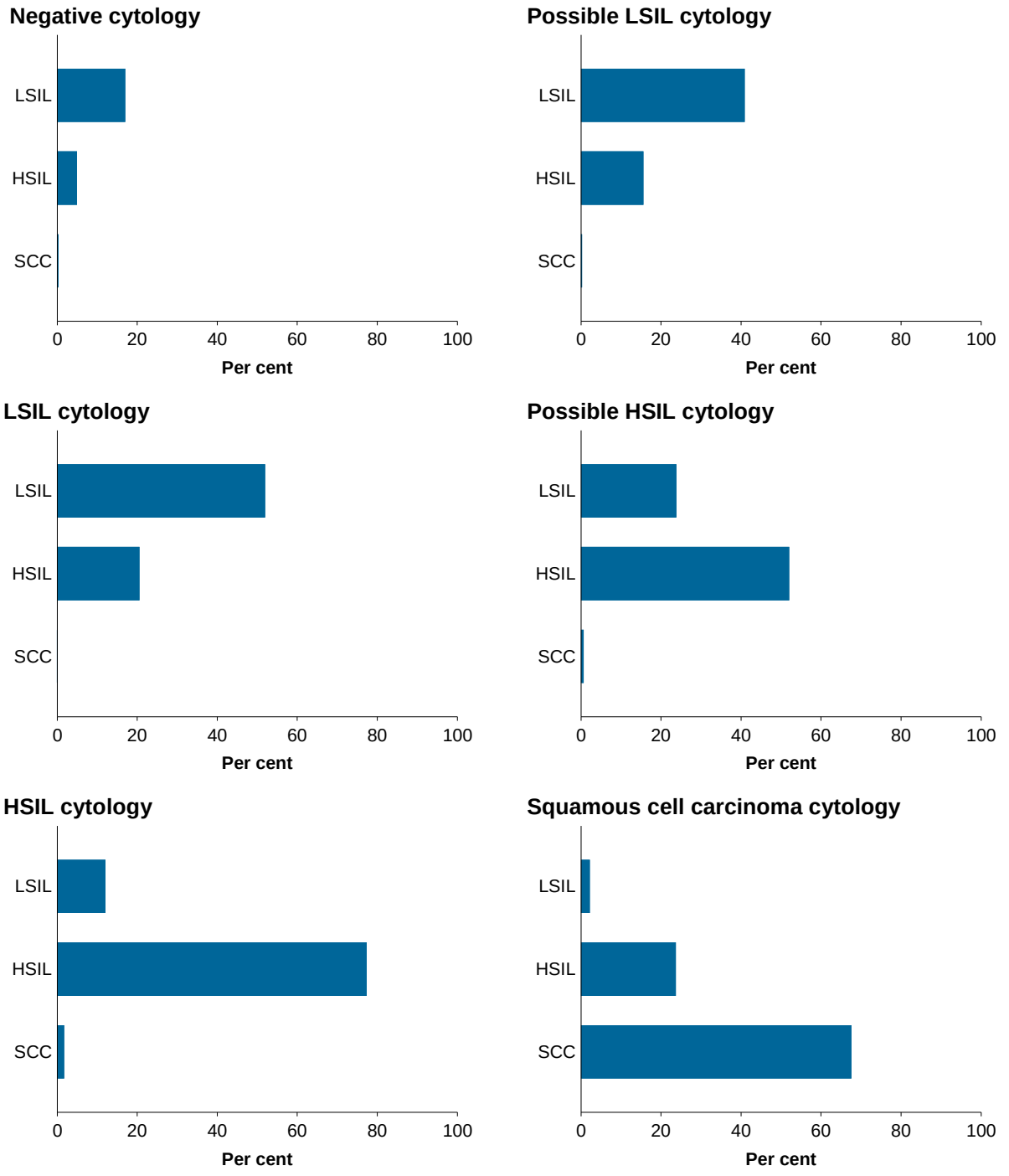
Negative and low-grade abnormalities are not usually followed up with histology, so these results should not be considered indicative of all negative and low-grade cytology. Of note, almost no predictions of possible low-grade or low-grade cytology were found to be cancer.

Figure 3.9 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 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 found to be adenocarcinoma in situ in a reasonable number of cases, with a cytology prediction of adenocarcinoma in situ or adenocarcinoma more likely to be adenocarcinoma in situ or adenocarcinoma, respectively.

In real terms, 73.0% of high-grade endocervical abnormalities predicted by cytology were found to be a true high-grade endocervical abnormality or adenocarcinoma on histology (the positive predictive value of a high-grade endocervical cytology result).

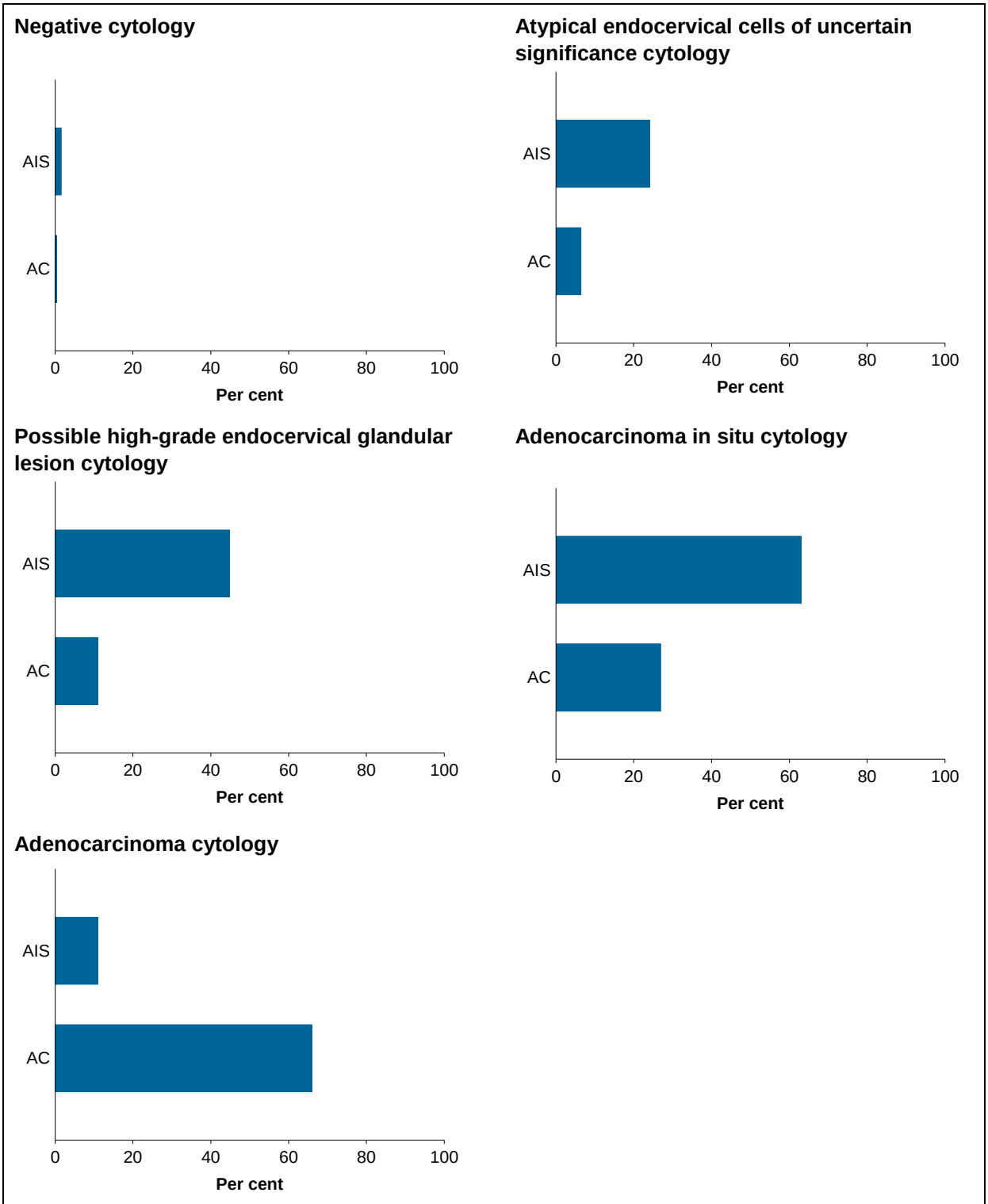
While the cytology category 'atypical endocervical cells of uncertain significance' is classified as a low-grade cytology abnormality, it is not appropriate to correlate this with any particular abnormality, since it is used to indicate that abnormal endocervical cells were identified in the sample but 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 is reflected in the correlation for this category, with these atypical cells sometimes found to be adenocarcinoma in situ, but often found to not be associated with any abnormality.




*Note:* LSIL = low-grade intraepithelial lesion (low-grade abnormality); HSIL = high-grade intraepithelial lesion (high-grade abnormality); SCC = squamous cell carcinoma.

*Source:* AIHW analysis of state and territory cervical screening register data. Data for these figures are available in Table A.5.2.

**Figure 3.8: Correlation of squamous cytology prediction with squamous histology finding for women aged 20–69, cytology performed in 2012.**




*Note:* AIS =adenocarcinoma in situ; AC = adenocarcinoma.

*Source:* AIHW analysis of state and territory cervical screening register data. Data for these figures are available in Table A.5.5.

**Figure 3.9: Correlation of endocervical cytology prediction with endocervical histology finding for women aged 20–69, cytology performed in 2012.**

## 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 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 a high-risk 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 low-risk and high-risk HPV types is that high-risk 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 low-risk HPV types are unable to integrate their DNA into the host genome and therefore can only cause low-grade changes to cells (Chhieng & Lui 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 Chapter 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 is used as part of this process, in Australia it is considered best practice to confirm high-grade disease with histology prior to treatment (NHMRC 2005).

Unlike cytology, which has nationally consistent reporting through the 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 3.3.

**Table 3.3: Histology reporting categories of the National Cervical Screening Program**

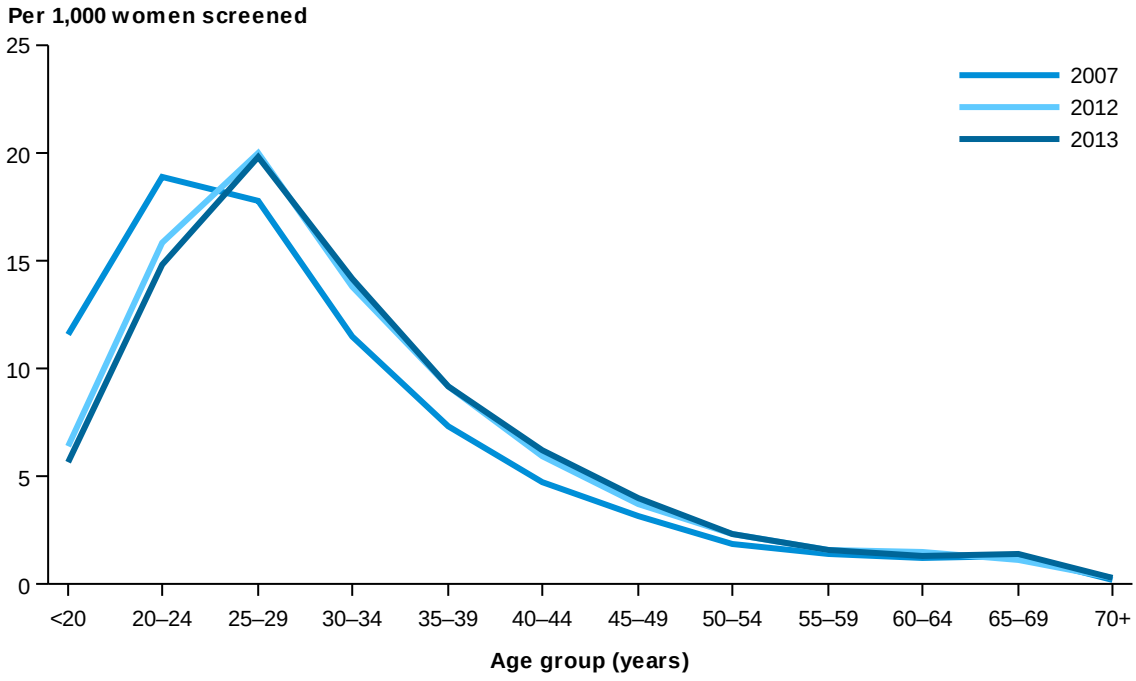
| Squamous | Endocervical |
|---|---|
| HSU Unsatisfactory | HEU Unsatisfactory |
| HS01 Negative | HE1 Negative |
| HS02 Low-grade squamous abnormality | HE02 Endocervical atypia |
| HS03.1 High-grade squamous abnormality, cervical intraepithelial neoplasia (CIN) not otherwise specified (NOS) | HE03.1 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) that 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 has 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 2013, there were 17,609 women with a high-grade abnormality detected by histology, which equates to 8.5 women with a high-grade abnormality detected by histology per 1,000 women screened for women aged 20–69. This means that, for every 1,000 women screened, between 8 and 9 had a high-grade abnormality found, providing an opportunity for treatment before possible progression to cervical cancer.

The number of women aged 20–69 with a high-grade abnormality detected by histology per 1,000 women screened, after remaining at approximately 7.7 for all years from 2005 to 2007, increased to above 8 in 2008, where it remained from 2008 to 2013. It is not entirely clear why there has been an increase in high-grade abnormality detection, (primarily due to a modest increase in women aged 25–39), 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 they may be more inclined to classify an abnormality as high-grade because these are monitored more conservatively), or the increased use of p16 immunohistochemistry which can assist in the confirmation of high-grade abnormalities, or other as-yet unidentified factors.




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

**Figure 3.10: High-grade abnormality detection rate by age, 2007, 2012 and 2013**

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 5.7 women with high-grade histology per 1,000 women screened in 2013. More recently, between 2010 and 2013, there has also been a decline for women aged 20–24, from 19.7 in 2010 to 15.0 women in 2013. This

latter trend notably changed the historical peak age of high-grade histological abnormalities from women aged 20–24, to women aged 25–29.

The decrease in high-grade abnormalities in younger women is likely to be due to younger girls vaccinated against HPV during the 'school-based' or 'catch-up' program, who are expected to experience fewer abnormalities (a trend noted by Brotherton and others (2011) and Gertig and others (2013)). Visible in the under 20 age group several years ago, this is now clearly contributing to the 20–24 age group rate in 2013.

Looking in more detail at the change in the high-grade detection rate by age, using the 3 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 just natural variation). It has become larger with each passing year, to reach a decrease of 7.9 women with a high-grade abnormality detected per 1,000 women screened by 2013, the latest data available (Table 3.4).

For women aged 20–24, this decrease begins in 2011, falling further in 2012 and 2013 to reach a decrease of 5.1 (Table 3.4). Older age groups are unaffected, as sufficient time has not yet passed for girls vaccinated from 2007 to have moved into age groups beyond 20–24.

This trend is illustrated in Figure 3.11.

**Table 3.4: Change in high-grade abnormality detection per 1,000 women screened since 2004–2006**

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

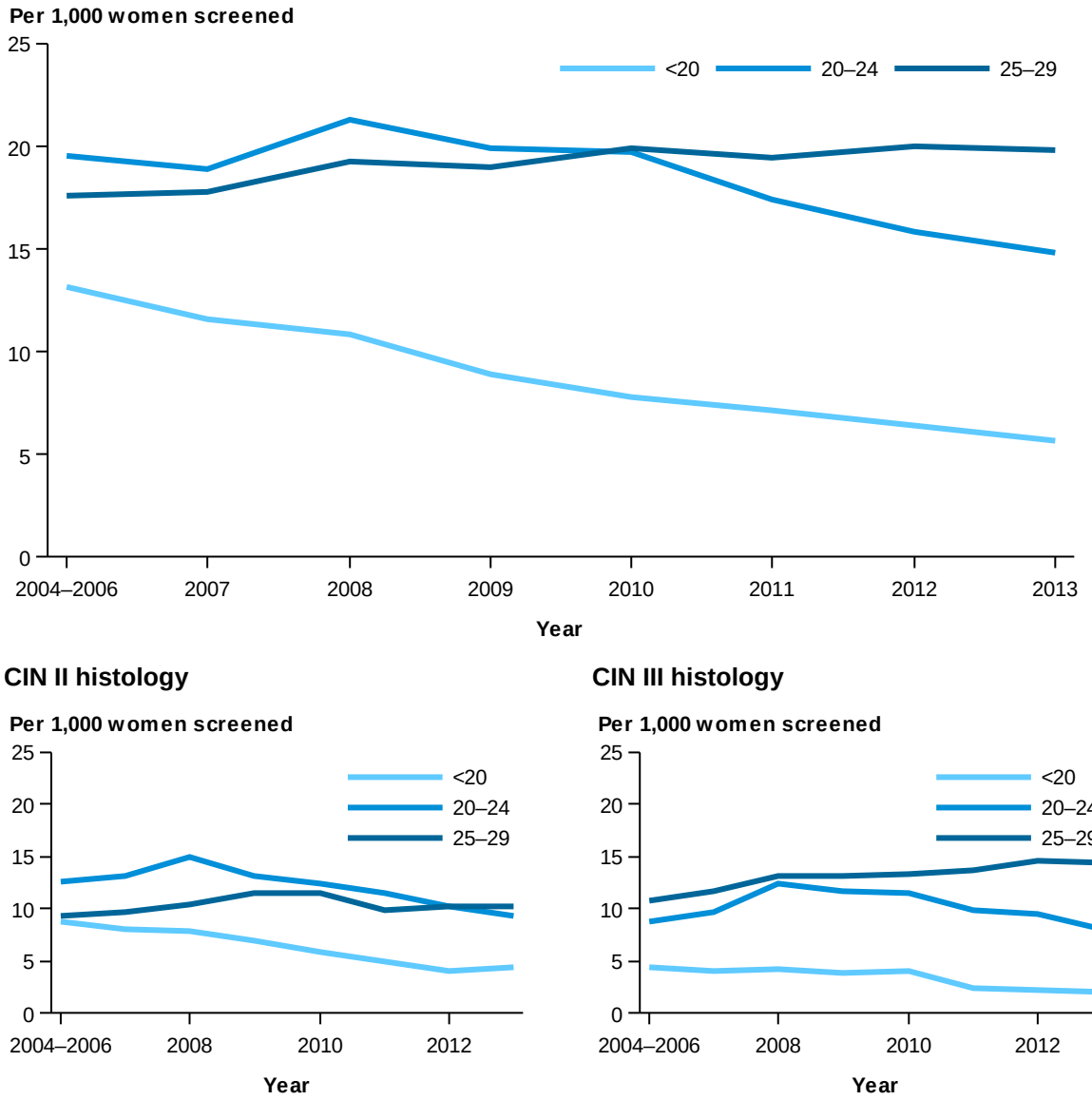
*Note:* Change from the 2004–2006 data in bold is shown for age groups <20 to 30–34 from 2007 to 2013. A negative symbol indicates that the change is a decrease; no symbol indicates that the change is an increase.

*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, cervical intraepithelial neoplasia graded as moderate (CIN II) and severe (CIN III), have been further analysed as the number of these abnormalities per 1,000 women screened, and the results shown in the smaller graphs in Figure 3.11.

From these graphs it can be seen that decreases in both CIN II and CIN III in women under the age of 20 have contributed to the overall decrease in high-grade abnormalities detected in this age group. In women aged 20–24, although CIN II decreased over all the years shown, it is only the decrease in CIN III from 2012 that mirrors the trend in high-grade detection in this age group. In women aged 25–29, who have experienced no decrease in high-grade detection, CIN II remains relatively stable over these years, while CIN II has increased (Figure 3.11).

Of particular note is that, since 2004–2006, the pattern of CIN II has changed—historically CIN II was most frequent in women aged 20–24, but in 2013, the decrease in this age group has meant that, for the first time, CIN II was most common in women aged 25–29. In contrast, CIN III has always occurred most frequently in women aged 25–29, and recent trends have not altered this (Figure 3.11).




*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 3.11: High-grade abnormality detection rate, CIN II per 1,000 women screened, and CIN III per 1,000 women screened, age groups under 30, 2004–2006 to 2013**

# 4 Monitoring cervical screening in Australia using AIHW data

## 4.1 Incidence of cervical cancer

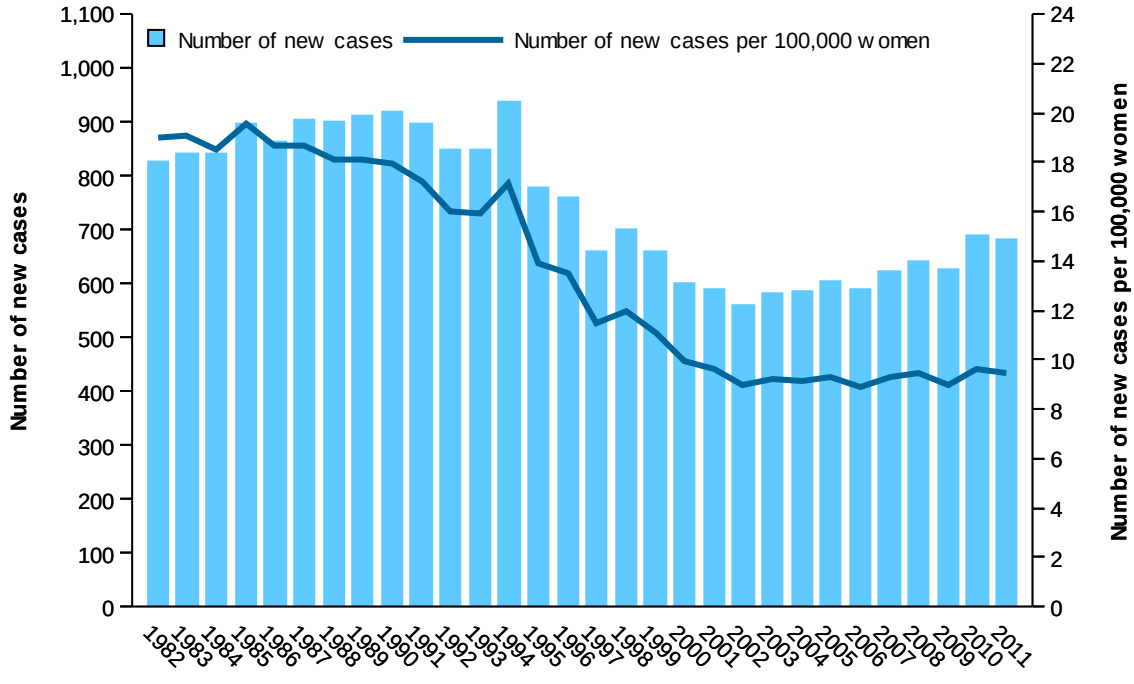
Australia has high-quality and virtually complete cancer incidence data. Collected by state and territory cancer registries, clinical and demographic data for all cancer cases are provided to the AIHW and compiled into the Australian Cancer Database. The latest national data available are for new cases diagnosed in 2011.

In 2011, there were 801 new cases of cervical cancer in Australian women. This is equivalent to 7.1 new cases for every 100,000 women in the population, which, when age-standardised to allow analysis of trends and differentials, equates to an incidence rate of 6.9 for 2011.

Of the 801 new cases, 682 were in women aged 20–69, the target population of the NCSP. These 682 new cases are equivalent to 9.4 new cases for every 100,000 women in the population, or 9.5 per 100,000 women aged 20–69 when age-standardised.

### Cervical cancer over time

This incidence rate of between 9 and 10 new cases per 100,000 women aged 20–69 (7 new cases per 100,000 women of all ages) has been steady since 2002, after falling from the previous figure of around 18 new cases per year prior to the introduction of the NCSP in 1991 (Figure 4.1).




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

*Source:* AIHW Australian Cancer Database 2011. Data for this figure are available in Table A6.1.

**Figure 4.1: Incidence of cervical cancer in women aged 20–69, 1982–2011**

This decrease is attributed to the success of the NCSP. However, it would be expected that some decreases in cervical cancer incidence would be apparent before the commencement of the NCSP in 1991, particularly from the late 1980s onwards, as opportunistic cervical screening has occurred in Australia since the 1960s, and some states trialled organised screening in the years leading up to 1991.

## Cervical cancer types

While all cervical cancers share the same site code (C53 under ICD 10), there are a number of histological subtypes within the category of cervical cancer, with clear differences in clinical behaviour (Blomfield & Saville 2008). Histology codes for cancers are collected on the ACD, 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 volume 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 unknown 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.

The table below differs slightly from that presented in *Cancer incidence in five continents volume 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 *Cancer incidence in five continents volume IX* (Curado et al. 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, 2011**

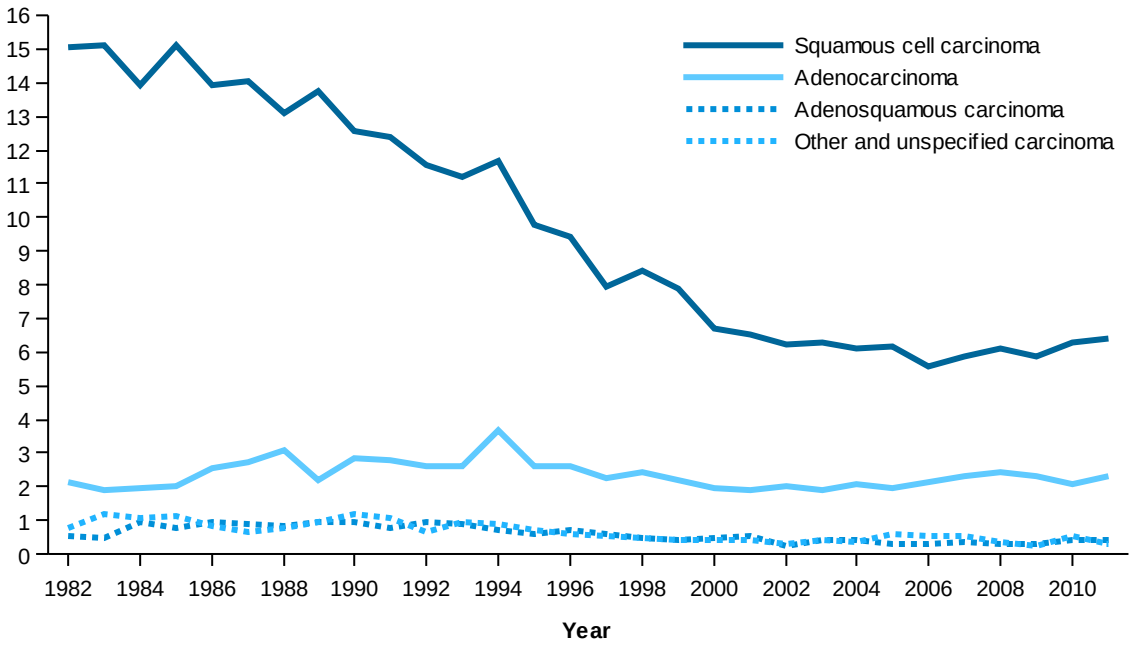
| Type of cervical cancer | New cases | AS rate | % of cervical cancers | % of carcinomas |
|---|---|---|---|---|
| 1: Carcinoma | 670 | 9.3 | 98.2 | 100.0 |
| *1.1: Squamous cell carcinoma* | *457* | *6.4* | *67.0* | 68.2 |
| *1.2: Adenocarcinoma* | *165* | *2.3* | *24.2* | 24.6 |
| *1.3: Adenosquamous carcinoma* | *26* | *0.4* | *3.8* | 3.9 |
| *1.4: Other specified and unspecified carcinoma* | *22* | *0.3* | *3.2* | 3.3 |
| 2: Sarcoma | 2 | 0.0 | 0.3 | . . |
| 3: Other specified and unspecified malignant neoplasm | 10 | 0.0 | 1.5 | . . |
| **Total** | **682** | **9.5** | **100.0** | **. .** |

*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.

*Source:* AIHW Australian Cancer Database 2011.

In 2011, of the 682 cervical cancers diagnosed in women aged 20–69, 670 (98.2%) were carcinomas, 2 (0.3%) were sarcomas, and 10 (1.5%) were classified as 'Other and unspecified malignant neoplasms' (Table 4.1). Within the carcinomas, squamous cell carcinoma comprised the greatest proportion at 68.2% of all cervical carcinomas, followed by adenocarcinomas at 24.6% of cervical carcinomas, and adenosquamous carcinomas at 3.9%, with 'Other and unspecified carcinomas' comprising 3.3% (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 4.2.




*Source:* AIHW Australian Cancer Database 2011. Data for this figure are available in Table A6.2.

**Figure 4.2: Incidence of carcinoma of the cervix (squamous cell carcinoma, adenocarcinoma, adenosquamous carcinoma and other carcinomas) in women aged 20–69, 1982–2011**

Squamous cell carcinoma has shown the most substantial change over this time, decreasing from 15.1 new cases per 100,000 women in 1982 to 12.4 in 1991, thereafter halving to 6.4 new cases per 100,000 women in 2011 (Figure 4.2).

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 4.2) (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 of adenosquamous and other carcinomas are more difficult to ascertain due to small numbers.

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 67% of

cervical cancers, much reduced from its historical proportion of 95% (Blomfield & Saville 2008).

In contrast, adenocarcinomas have not been reduced to the same degree as squamous cell carcinomas by cervical screening, with these glandular carcinomas now comprising a quarter 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 realise 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 being small cell neuroendocrine carcinoma and large cell neuroendocrine carcinoma, neither of which appear to possess a preinvasive stage (Necervix.com 2014).

### Cervical cancer across groups

Incidence for population groups is presented for 2005–2009 (or 2006–2009 in the case of socioeconomic status) rather than for 2007–2011, due to the projection of 2010 and 2011 data for NSW and the ACT in the 2011 Australian Cancer Database (ACD) (see Appendix C for further information).

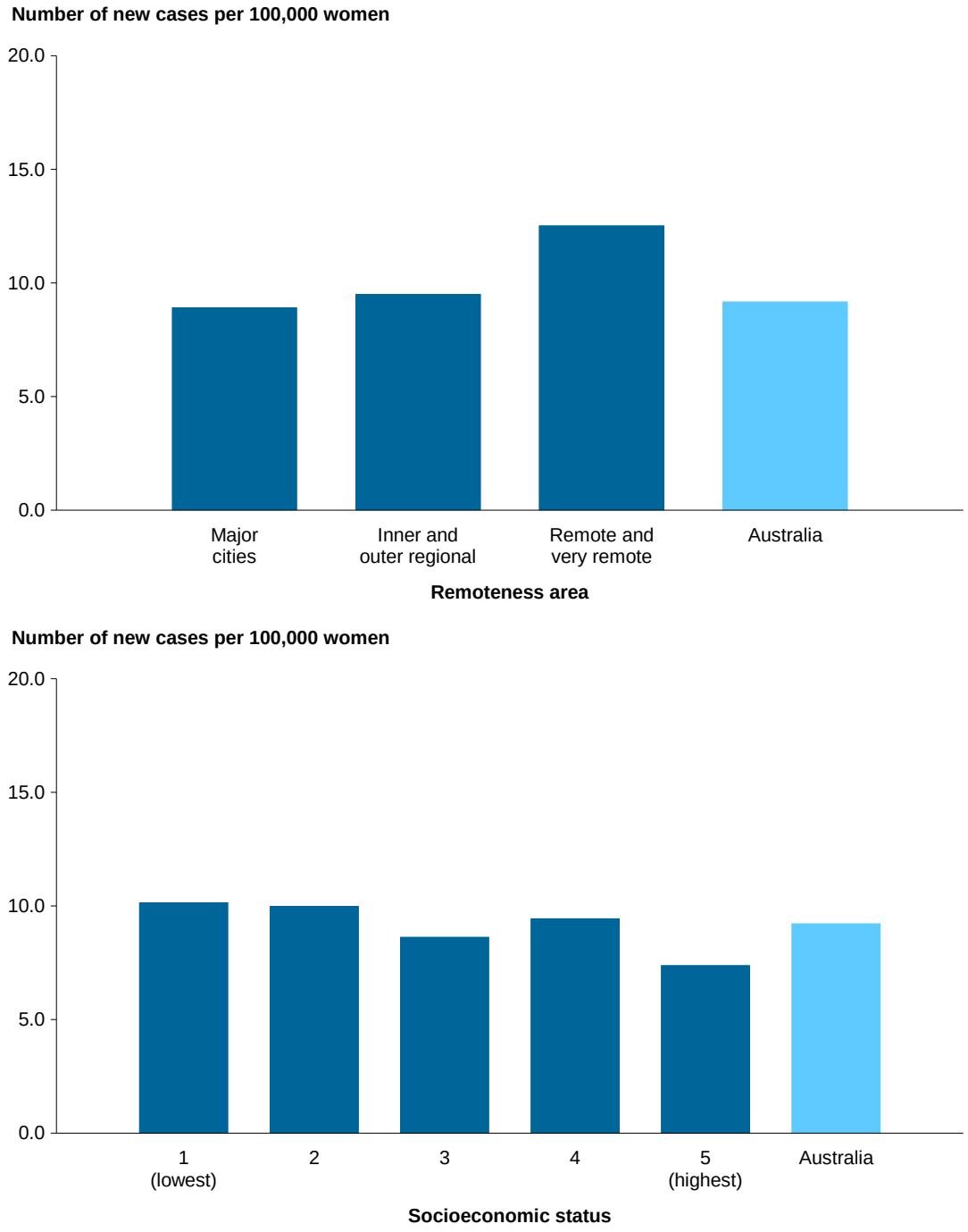
Incidence of cervical cancer in 2005–2009 did not differ between *Major cities* and *Inner and outer regional* areas, being 9.0 and 9.3 new cases per 100,000 women, respectively. Incidence in *Remote and very remote* areas, however, was significantly higher than incidence in *Major cities* and *Inner and outer regional* areas at 12.7 new cases per 100,000 women (Figure 4.3).

Higher incidence in *Remote and very remote* areas is likely to be related to the proportionately high number of Indigenous women living in these areas, since Indigenous women have more than twice the incidence of cervical cancer (see Figure 4.4).

In 2006–2009, incidence was relatively similar across the 4 groups of lowest socioeconomic status, ranging between 9 and 10 new cases per 100,000 women, but was lower for women residing in areas of highest socioeconomic status at 7.4 new cases per 100,000 women (Figure 4.3).

An estimated 50% of cervical cancers occur in women who have never been screened, with a further 28% in women who are lapsed screeners (that is, hadn't had a Pap test in the 2.5 years prior to their cancer diagnosis) (VCCR 2012). Therefore it is reasonable to expect that cervical cancer incidence patterns may to some degree follow participation patterns.

This appears to be true to some degree, with a tendency for both incidence rates to be higher in *Very remote* areas and areas of lowest socioeconomic status, identified in analyses of screening behaviour earlier in this report as having lower rates of participation in cervical screening.




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

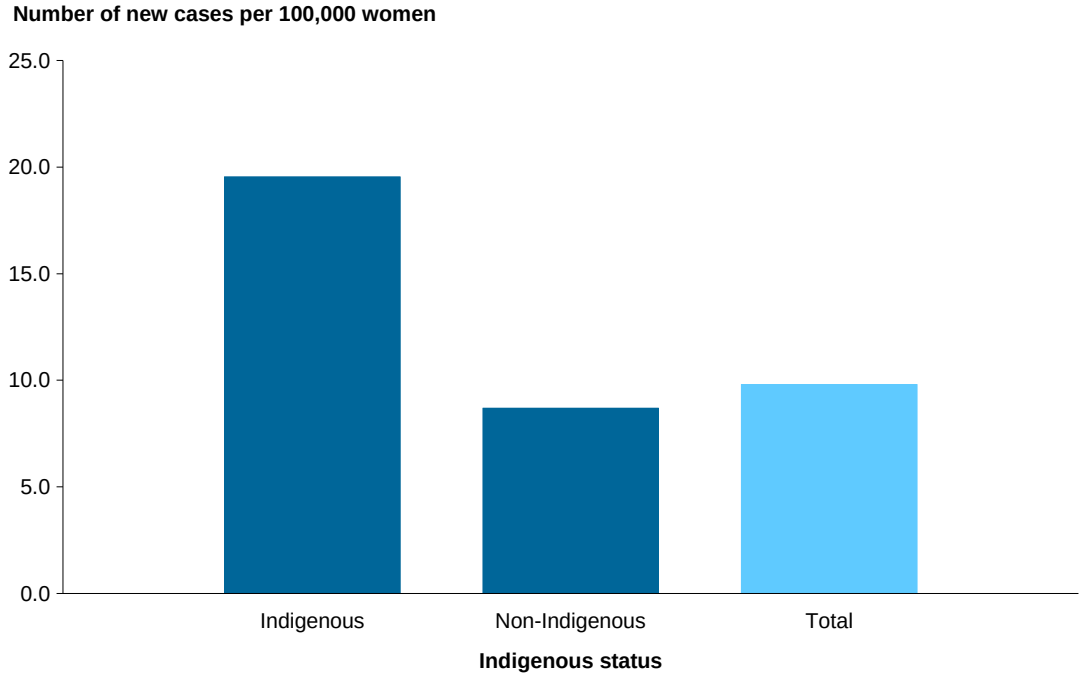
*Source:* AIHW Australian Cancer Database 2011. Data for this figure, including 95% confidence intervals, are available in tables A6.5 and A6.6.

**Figure 4.3: Incidence of cervical cancer in women aged 20–69, by remoteness area, 2005–2009 and by socioeconomic status, 2006–2009**

The collection of reliable information by the state and territory cancer registries on the Indigenous status of individuals diagnosed with cancer is problematic. This is because primary cancer diagnosis information is sourced from pathology forms which currently do not record information on Indigenous status in most states and territories. The registries therefore collect information on the Indigenous status of individuals from additional sources such as hospital records and death records, which affects the completeness of these data.

This means that reliable national data on the incidence of cancer for Aboriginal and Torres Strait Islander Australians are not available, because in some jurisdictions the level of identification of Indigenous status is not considered sufficient to enable analysis. In this report, data for 4 states and territories—New South Wales, Queensland, Western Australia and the Northern Territory—are considered of sufficient quality, and were used to examine the incidence of cervical cancer by Indigenous status. While the majority (around 85%) of Australian Aboriginal and Torres Strait Islander people reside in these 4 jurisdictions, the degree to which data for these jurisdictions are representative of all Aboriginal and Torres Strait Islander people is unknown.

It was found that, over the 5-year period 2005–2009, Aboriginal and Torres Strait Islander women aged 20–69 in New South Wales, Queensland, Western Australia and the Northern Territory had a significantly higher incidence rate of cervical cancer when compared with non-Indigenous women, at 19.5 new cases compared with 8.7 new cases per 100,000 women (Figure 4.4).




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

*Source:* AIHW Australian Cancer Database 2011. Data for this figure, including 95% confidence intervals, are available in Table A6.7.

**Figure 4.4: Incidence of cervical cancer in women aged 20–69 (New South Wales, Queensland, Western Australia, and Northern Territory), by Indigenous status, 2005–2009**

## 4.2 Mortality from cervical cancer

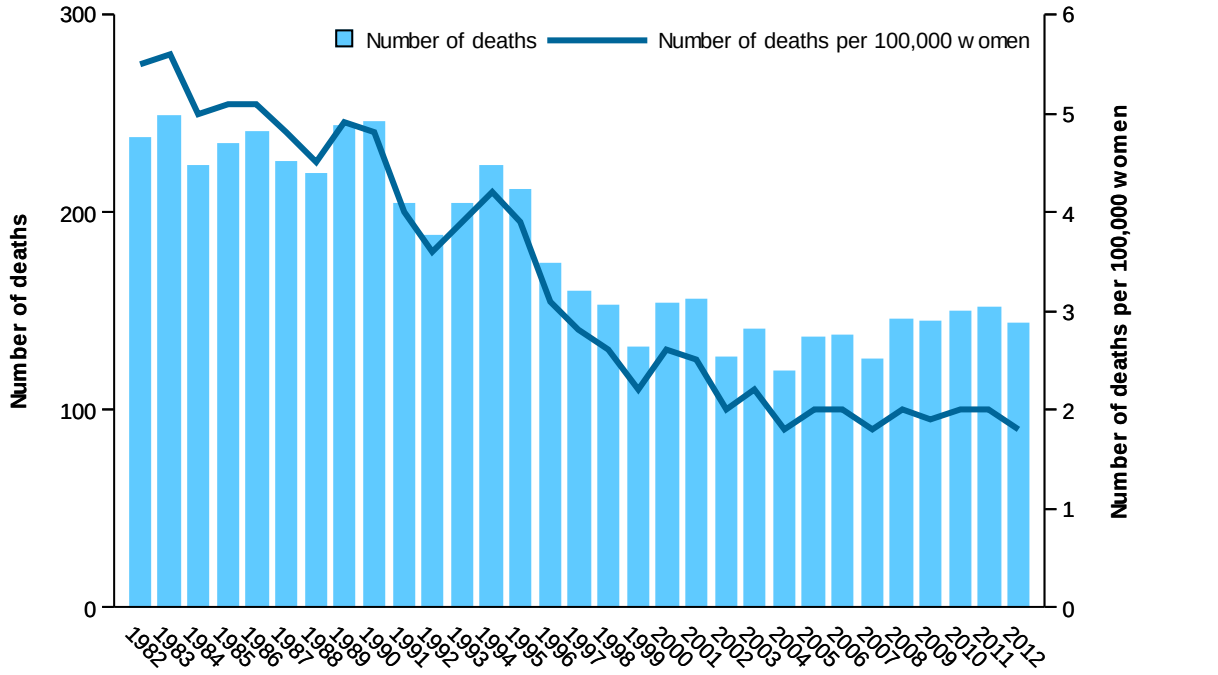
Similar to incidence data, Australia has high-quality and virtually complete mortality data. The mortality data used here were provided by the Registries of Births, Deaths and Marriages and the National Coronial Information System and coded by the Australian Bureau of Statistics (ABS). These data are maintained at the AIHW in the National Mortality Database. The latest national data available are for deaths in 2012.

In 2012, there were 226 deaths from cervical cancer in Australian women. This is equivalent to 2.0 deaths for every 100,000 women in the population, which, when age-standardised to allow analysis of trends and differentials, equates to a mortality rate of 1.8 for 2012.

Of the 226 deaths, 143 were in women aged 20–69, the target population of the NCSP. These 143 deaths are equivalent to 1.9 deaths for every 100,000 women in the population, or 1.8 per 100,000 women aged 20–69 when age-standardised.

### Cervical cancer deaths over time

Mortality from cervical cancer has decreased over time, with this decrease evident prior to the introduction of the NCSP in 1991 (from 5.5 deaths per 100,000 women in 1982 to 4.8 deaths in 1990). With opportunistic cervical screening occurring in Australia since the 1960s, some decreases in mortality are to be expected prior to the commencement of the NCSP.




*Notes*

1. Deaths from 1982–2011 were derived by year of death; deaths in 2012 were derived by year of registration of death. Deaths registered in 2009 and earlier are based on the final version of cause-of-death data; deaths registered in 2011 and 2012 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 4.5: Mortality from cervical cancer in women aged 20–69, 1982–2012**

Mortality halved between 1991 and 2012, from 4.0 to 1.8 deaths per 100,000 women for women aged 20–69 and women of all ages. This historic low of around 2 deaths per 100,000 women has been stable since 2002 (Figure 4.5).

## Cervical cancer deaths across groups

Mortality in 2008–2012 in *Major cities* was similar to that in *Inner and outer regional* areas (1.8 and 2.2 deaths per 100,000 women, respectively), whereas mortality in *Remote and very remote* areas was higher, at 3.4 deaths per 100,000 women (Figure 4.6).


*Notes*

1. Deaths from 2008–2011 were derived by year of death; deaths in 2012 were derived by year of registration of death. Deaths registered in 2010 and earlier are based on the final version of cause-of-death data; deaths registered in 2011 and 2012 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.

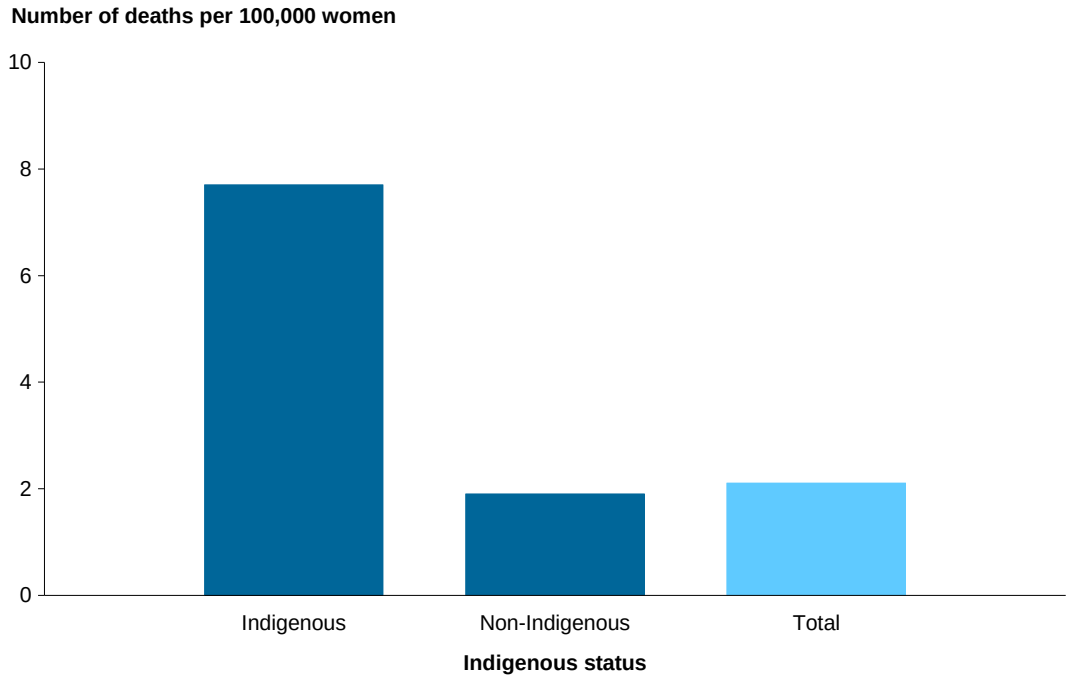
*Source:* AIHW National Mortality Database. Data for this figure, including 95% confidence intervals, are available in Table A7.4.

**Figure 4.6: Mortality from cervical cancer in women aged 20–69, by remoteness area, 2008–2012**

Similar to incidence, higher mortality in *Remote and very remote* areas is likely be related to the proportionately high number of Indigenous women living in these areas, since Indigenous women experience greater mortality from cervical cancer (see Figure 4.7).

Information on Indigenous status in the AIHW National Mortality Database is considered to be adequate for reporting for 5 jurisdictions—New South Wales, Queensland, Western Australia, South Australia and the Northern Territory. The majority (around 90%) of Aboriginal and Torres Strait Islander people reside in these 5 jurisdictions.

In 2008–2012, the mortality rate from cervical cancer was significantly higher in Aboriginal and Torres Strait Islander women aged 20–69 in New South Wales, Queensland, Western Australia, South Australia and the Northern Territory combined at 7.7 deaths per 100,000 women compared with non-Indigenous women from these states and territories of 1.9 deaths per 100,000 women (Figure 4.7). This mirrors the incidence results for Aboriginal and Torres Strait Islander women.




*Notes*

1. Deaths from 2008–2011 are derived from year of death; deaths in 2012 are derived from year of registration. Deaths registered in 2010 and earlier are based on the final version of cause-of-death data; deaths registered in 2011 and 2012 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, including 95% confidence intervals, are available in Table A7.5.

**Figure 4.7: Mortality from cervical cancer in women aged 20–69 (New South Wales, Queensland, Western Australia, South Australia and Northern Territory), by Indigenous status, 2008–2012**

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 stage of cancer at diagnosis, and treatment.

Therefore, while it is true that the population groups with the lowest rates of participation in cervical screening also have the highest mortality rates, and that this is in part because these groups experience higher cervical cancer incidence rates, these trends are confounded by the potential issues around access to medical treatment in the more remote areas of Australia, and for Aboriginal and Torres Strait Islander women.

This may explain why trends noted in the cervical cancer incidence chapter are more pronounced, with mortality in women residing in *Remote and very remote* areas being 3.4 deaths per 100,000 women, compared with 1.8 in *Major cities* (Figure 4.6). Also, mortality from cervical cancer in Aboriginal and Torres Strait Islander women was 4 times that of non-Indigenous women, at 7.7 deaths per 100,000 women compared with 1.9 deaths (Figure 4.7).

# 5 Monitoring other aspects of cervical screening in Australia

## 5.1 Monitoring the safety of cervical screening management guidelines

Guidelines enable practitioners and clinicians to manage the 110,000 abnormalities detected each year according to evidence-based information which guides best practice. The National Health and Medical 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 these 110,000 abnormalities detected each year according to evidence-based information which guides best practice.

The latest guidelines were approved in June 2005 and 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 are managed, in late 2005 a Safety Monitoring Committee (SMC) was established to monitor the safety of these recommendations and 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 complete '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, 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 the safety monitoring of the guidelines is ongoing.

The following results are based on data to 31 December 2013. Detailed methodology is described in *Report on monitoring activities of the National Cervical Screening Program Safety Monitoring Committee* (AIHW 2013b).

The proportional hazard ratio calculated between the baseline and ongoing low-grade cytology cohorts with 2 years follow-up was 0.92 (95% CI 0.74–1.16). 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 to the previous guidelines. The proportional hazard ratio was also calculated for Parameter 1 with 5 years follow-up, and found to be 1.01 (95% CI 0.83–1.23). These data are shown in Table 5.1.

**Table 5.1: Summary of low-grade cohort data, baseline and ongoing, 2 and 5 years follow-up**

| | Baseline | Ongoing | Hazard ratio |
|---|---|---|---|
| **2 years follow-up** | | | |
| Low-grade abnormalities | 512,315 | 539,390 | 0.92 |
| Total person-time in cohort (years) | 680,683 | 781,587 | (0.74–1.16) |
| Cancers in cohort | 158 | 157 | |
| **5 years follow-up** | | | |
| Low-grade abnormalities | 512,315 | 539,390 | 1.01 |
| Total person-time in cohort (years) | 1,042,976 | 1,349,246 | (0.83–1.23) |
| Cancers in cohort | 188 | 223 | |

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

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

First, a comparison of cervical cancers that occurred in the 5 years following a 12-month clinical management period, immediately following a histologically confirmed high-grade abnormality was made. The numbers were small, with 31 cancers found for the baseline period and 55 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 cervical cancer incidence after women had completed 'test of cure'. It is believed that HPV test data are incomplete, and that, coupled with possible non-compliance of general practitioners, has led to the number of women who have completed 'test of cure' being an underestimate of the true number. Nonetheless, it is encouraging that, of the more than seven thousand 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.

# 5.2 Expenditure on cervical screening

## Expenditure on Australia's cancer screening programs

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.

In addition to the funding provided by the Australian government, state and territory governments also contribute funding towards these programs.

Table 5.2 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 2012–13 financial year.

**Table 5.2: Government funding for cancer screening programs, 2012–13, $ million**

| Screening program | Expenditure 2012–13 |
|---|---|
| BreastScreen Australia[(a)] | 204.9 |
| National Cervical Screening Program[(b)] | 89.3 |
| National Bowel Cancer Screening Program[(c)] | 32.9 |
| **Total** | **327.1** |

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

(b) Excludes the proportion of the costs associated with GP, specialist and nurse attendances that would have been for Pap smears.

(c) Excludes MBS flow-on costs as well as bowel screening that occurs outside 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.

## Expenditure on cervical screening

In 2012–13 an estimated $89.3 million was spent on cervical screening in Australia.

This cannot be compared with the expenditure of $125.2 million reported for cervical screening for 2008–09, as this latter figure included an estimate for the proportion of the costs associated with GP, specialist and nurse attendances for Pap tests (AIHW 2013b)—an estimate no longer included in the expenditure data. This limits the comparability of data.

Of the $89.3 million spent on cervical screening, $35 million—more than a third—was spent on Medicare Benefit Schedule (MBS) items for cervical screening (MBS items 73053 and 73922). Other cervical screening expenditure by the Australia government included Practice Incentives Program (PIP) incentive payments totalling $4.6 million, and $8.1 million to assist Victoria in funding the Victorian Cytology Service (which processes smears taken by health professionals other than General Practitioners, such as Aboriginal health workers and nurse Pap test providers, which are not eligible for funding under the Medicare Benefits Schedule).

# Appendix A: Supporting data tables

## A.1 Participation

**Table A1.1: Number and age-standardised rate of women aged 20–69 participating in the National Cervical Screening Program, 1996–1997 to 2012–2013**

| Reporting period | Participants[(b)] | Adjusted population[(c)] | AS rate[(d)] |
|---|---|---|---|
| 1996–1997[(a)] | 2,563,107 | 4,171,326 | 61.2 |
| 1997–1998[(a)] | 2,653,504 | 4,210,148 | 62.8 |
| 1998–1999[(a)] | 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 |

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

(b) 'Participants' are 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.

(c) 'Adjusted population' is the average of the Australian Bureau of Statistics (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 use hysterectomy fractions derived from the 2001 ABS National Health Survey; reporting periods 2004–2005 to 2012–2013 use hysterectomy fractions derived from the AIHW National Hospitals Morbidity Database.

(d) '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.

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

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

### Table A1.2: Participation, by age, 2012–2013

| Age group | 20–24 | 25–29 | 30–34 | 35–39 | 40–44 | 45–49 | 50–54 | 55–59 | 60–64 | 65–69 |
|---|---|---|---|---|---|---|---|---|---|---|
| Women | 341,573 | 438,781 | 464,083 | 457,337 | 476,866 | 427,591 | 402,662 | 333,473 | 276,002 | 197,337 |
| Crude rate | 42.7 | 52.0 | 58.1 | 61.0 | 62.6 | 64.5 | 64.0 | 61.9 | 60.4 | 52.7 |

*Note:* 'Crude rate' is the number of women screened in 2012–2013 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 of women aged 20–69, by state and territory, 2012–2013

| State/territory | NSW | Vic | Qld | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|
| Women | 1,200,258 | 1,014,030 | 742,161 | 396,874 | 277,277 | 81,121 | 66,211 | 37,773 | 3,815,705 |
| Crude rate | 56.9 | 60.9 | 56.0 | 55.5 | 58.7 | 57.0 | 57.0 | 55.2 | 57.7 |
| AS rate | 57.4 | 61.6 | 56.4 | 55.9 | 59.0 | 57.4 | 58.0 | 55.1 | 58.2 |

*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, geographic structure, policies and other factors.
2. 'Age-standardised (AS) rate' is the number of women screened in 2012–2013 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 of women aged 20–69, by remoteness area, 2012–2013

| Remoteness area | Major cities | Inner regional | Outer regional | Remote | Very remote | Australia |
|---|---|---|---|---|---|---|
| Women | 2,737,914 | 677,589 | 320,224 | 49,671 | 29,089 | 3,815,705 |
| Crude rate | 57.3 | 59.7 | 57.5 | 57.4 | 54.7 | 57.7 |
| AS rate | 58.1 | 59.7 | 57.5 | 57.6 | 55.4 | 58.2 |

*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 area (see Appendix C).
2. 'Age-standardised (AS) rate' is the number of women screened in 2012–2013 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 of women aged 20–69, by socioeconomic status, 2012–2013

| Socioeconomic status | 1 (lowest) | 2 | 3 | 4 | 5 (highest) | Australia |
|---|---|---|---|---|---|---|
| Women | 643,723 | 704,554 | 761,425 | 807,028 | 874,077 | 3,815,705 |
| Crude rate | 51.6 | 55.5 | 56.6 | 59.1 | 63.3 | 57.7 |
| AS rate | 52.0 | 55.9 | 57.1 | 59.6 | 63.8 | 58.2 |

*Notes*

1. Women were allocated to a socioeconomic status 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 status (see Appendix C).
2. 'Age-standardised (AS) rate' is the number of women screened in 2012–2013 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 and 5 years

| Age group | 20–24 | 25–29 | 30–34 | 35–39 | 40–44 | 45–49 | 50–54 | 55–59 | 60–64 | 65–69 |
|---|---|---|---|---|---|---|---|---|---|---|
| **3 years 2011–2013** | | | | | | | | | | |
| Women | 442,361 | 552,717 | 570,073 | 566,856 | 571,778 | 515,251 | 471,808 | 385,094 | 317,297 | 219,645 |
| Crude rate | 55.6 | 66.3 | 72.6 | 75.2 | 76.0 | 77.5 | 75.8 | 72.3 | 69.7 | 60.6 |
| **5 years 2009–2013** | | | | | | | | | | |
| Women | 583,957 | 682,859 | 680,019 | 684,795 | 643,138 | 589,866 | 512,858 | 413,929 | 334,556 | 229,781 |
| Crude rate | 74.2 | 83.8 | 88.9 | 89.8 | 87.8 | 88.3 | 84.1 | 79.4 | 75.0 | 66.9 |

*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 of women aged 20–69, by state and territory, over 3 years and 5 years

| State/territory | NSW | Vic | Qld | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|
| **3 years 2011–2013** | | | | | | | | | |
| Crude rate | 70.1 | 73.4 | 68.3 | 67.4 | 72.3 | 69.5 | 71.0 | 69.9 | 70.3 |
| AS rate | 70.6 | 74.0 | 68.6 | 67.6 | 72.8 | 70.0 | 71.9 | 69.3 | 70.8 |
| **5 years 2009–2013** | | | | | | | | | |
| Crude rate | 82.8 | 85.1 | 81.8 | 79.6 | 84.1 | 81.0 | 87.2 | 87.9 | 83.0 |
| AS rate | 83.3 | 85.3 | 81.7 | 79.2 | 84.6 | 81.9 | 87.1 | 85.8 | 83.2 |

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, geographic structure, policies and other factors.
2. '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.

# A.2 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, 2012 cohort**

| Early rescreens | Number of women | % of women |
|---|---|---|
| 0 | 146,008 | 87.4 |
| 1 | 20,375 | 12.2 |
| 2 | 629 | 0.4 |
| 3+ | 48 | 0.0 |

*Note:* Women with a cytological or histological abnormality in the preceding 36 months are excluded 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, 2012 cohort**

| State/territory | NSW | Vic | Qld | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|
| % | 13.5 | 12.7 | 12.8 | 11.8 | 10.4 | 10.2 | 10.1 | 11.6 | 12.6 |

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

**Table A2.3: Women aged 20–69 rescreening within 3 months of 27-month cervical screening register reminder letter, by state and territory, letters sent in 2012**

| State/territory | NSW | Vic | Qld | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|
| No. sent letter | 306,730 | 232,214 | 189,871 | 91,311 | . . | 22,215 | 20,689 | 9,927 | 872,957 |
| No. rescreened | 97,335 | 78,433 | 64,343 | 28,619 | . . | 8,544 | 5,963 | 1,998 | 285,235 |
| % | 31.7 | 33.8 | 33.9 | 31.3 | . . | 38.5 | 28.8 | 20.1 | 32.7 |

*Note:* Data are not available for South Australia, which at present does not have a 27-month cervical screening register reminder letter sent to women. (These are sent to practitioners, with a 30-month reminder letter sent to women, neither of which are directly comparable.)

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

# A.3 Cytology

**Table A3.1: Number of cytology tests, by age, 2006 to 2013**

| Age group (years) | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|
| <20 | 65,189 | 67,861 | 63,668 | 60,813 | 55,511 | 56,159 | 53,323 | 51,549 |
| 20–24 | 203,531 | 215,454 | 203,540 | 202,951 | 192,175 | 195,602 | 195,502 | 196,907 |
| 25–29 | 235,385 | 249,461 | 242,116 | 249,852 | 240,510 | 247,362 | 251,896 | 257,726 |
| 30–34 | 270,412 | 268,829 | 258,449 | 259,995 | 246,489 | 253,185 | 260,357 | 271,579 |
| 35–39 | 273,274 | 283,760 | 281,047 | 281,300 | 264,471 | 260,198 | 256,294 | 259,395 |
| 40–44 | 259,880 | 259,723 | 250,963 | 252,387 | 245,041 | 252,666 | 261,413 | 270,965 |
| 45–49 | 239,884 | 248,203 | 243,146 | 246,688 | 236,829 | 235,860 | 235,597 | 238,943 |
| 50–54 | 196,236 | 201,663 | 202,073 | 206,118 | 205,915 | 211,883 | 218,708 | 225,342 |
| 55–59 | 163,546 | 166,087 | 165,893 | 168,806 | 168,579 | 172,415 | 179,296 | 184,872 |
| 60–64 | 112,240 | 122,356 | 129,177 | 134,622 | 139,035 | 144,153 | 146,935 | 151,208 |
| 65–69 | 75,700 | 77,881 | 79,390 | 83,835 | 86,816 | 92,294 | 102,229 | 109,584 |
| 70+ | 30,188 | 29,925 | 28,353 | 28,005 | 27,750 | 28,014 | 28,402 | 29,752 |
| **All ages** | **2,125,522** | **2,191,238** | **2,147,848** | **2,175,383** | **2,109,131** | **2,149,798** | **2,189,960** | **2,247,835** |
| **Ages 20–69** | **2,030,088** | **2,093,417** | **2,055,794** | **2,086,554** | **2,025,860** | **2,065,618** | **2,108,227** | **2,166,521** |

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

**Table A3.2: Proportion of cytology tests, by age, 2013**

| Age group | <20 | 20–24 | 25–29 | 30–34 | 35–39 | 40–44 | 45–49 | 50–54 | 55–59 | 60–64 | 65–69 | 70+ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Crude rate | 2.3 | 8.8 | 11.5 | 12.1 | 11.5 | 12.1 | 10.6 | 10.0 | 8.2 | 6.7 | 4.9 | 1.3 |

*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, 2006 to 2013**

| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|
| Number | 42,720 | 44,912 | 43,223 | 43,104 | 42,096 | 42,760 | 46,192 | 48,148 |
| Crude rate | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 |
| AS rate | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 |

*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, 2013**

| Age group | <20 | 20–24 | 25–29 | 30–34 | 35–39 | 40–44 | 45–49 | 50–54 | 55–59 | 60–64 | 65–69 | 70+ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number | 1,360 | 5,079 | 6,557 | 6,455 | 5,677 | 5,555 | 4,477 | 4,479 | 4,162 | 3,448 | 2,259 | 778 |
| Crude rate | 2.6 | 2.6 | 2.5 | 2.4 | 2.2 | 2.1 | 1.9 | 2.0 | 2.3 | 2.3 | 2.1 | 2.6 |

*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, 2013

| | NSW | Vic | Qld | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|
| Number | 13,217 | 15,381 | 8,677 | 4,782 | 3,616 | 1,455 | 704 | 316 | 48,148 |
| Crude rate | 1.9 | 2.7 | 2.0 | 2.1 | 2.3 | 3.2 | 1.9 | 1.4 | 2.2 |
| AS rate | 1.9 | 2.7 | 2.0 | 2.1 | 2.3 | 3.2 | 1.9 | 1.4 | 2.2 |

*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, 2006 to 2013

| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|
| Number | 1,857,552 | 1,922,592 | 1,891,705 | 1,931,682 | 1,876,881 | 1,908,291 | 1,943,563 | 1,992,544 |
| Crude rate | 91.5 | 91.8 | 92.0 | 92.6 | 92.6 | 92.4 | 92.2 | 92.0 |
| AS rate | 91.6 | 91.9 | 92.1 | 92.6 | 92.6 | 92.3 | 92.1 | 91.9 |

*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, 2013

| Age group | <20 | 20–24 | 25–29 | 30–34 | 35–39 | 40–44 | 45–49 | 50–54 | 55–59 | 60–64 | 65–69 | 70+ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number | 43,250 | 165,954 | 224,720 | 245,469 | 239,040 | 252,203 | 224,435 | 213,820 | 176,309 | 144,968 | 105,626 | 28,193 |
| Crude rate | 83.9 | 84.3 | 87.2 | 90.4 | 92.2 | 93.1 | 93.9 | 94.9 | 95.4 | 95.9 | 96.4 | 94.8 |

*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, 2013

| | NSW | Vic | Qld | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|
| Number | 632,338 | 519,289 | 395,552 | 205,049 | 144,211 | 41,699 | 34,559 | 19,847 | 1,992,544 |
| Crude rate | 93.0 | 90.4 | 92.8 | 90.2 | 93.1 | 92.1 | 93.6 | 91.1 | 92.0 |
| AS rate | 92.9 | 90.2 | 92.8 | 90.5 | 92.9 | 91.8 | 93.8 | 91.8 | 91.9 |

*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, 2006 to 2013**

| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|
| Number | 387,918 | 406,736 | 407,942 | 418,527 | 424,077 | 440,411 | 461,425 | 487,633 |
| Crude rate | 19.1 | 19.4 | 19.8 | 20.1 | 20.9 | 21.3 | 21.9 | 22.5 |
| AS rate | 19.5 | 19.8 | 20.2 | 20.3 | 21.1 | 21.4 | 21.9 | 22.5 |

*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, 2013**

| Age group | <20 | 20–24 | 25–29 | 30–34 | 35–39 | 40–44 | 45–49 | 50–54 | 55–59 | 60–64 | 65–69 | 70+ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number | 9,939 | 37,319 | 47,435 | 48,977 | 47,682 | 54,656 | 54,725 | 57,217 | 52,990 | 48,758 | 37,874 | 11,584 |
| Crude rate | 19.3 | 19.0 | 18.4 | 18.0 | 18.4 | 20.2 | 22.9 | 25.4 | 28.7 | 32.2 | 34.6 | 38.9 |

*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, 2013**

| | NSW | Vic | Qld | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|
| Number | 133,465 | 153,663 | 81,093 | 55,028 | 35,944 | 14,609 | 8,185 | 5,646 | 487,633 |
| Crude rate | 19.6 | 26.8 | 19.0 | 24.2 | 23.2 | 32.2 | 22.2 | 25.9 | 22.5 |
| AS rate | 19.6 | 26.7 | 19.1 | 24.8 | 22.9 | 31.6 | 22.5 | 27.2 | 22.5 |

*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, 2006 to 2013

| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|
| **Low-grade abnormalities** | | | | | | | | |
| Number | 103,841 | 97,916 | 92,013 | 83,933 | 78,510 | 84,540 | 88,845 | 95,804 |
| Crude rate | 5.1 | 4.7 | 4.5 | 4.0 | 3.9 | 4.1 | 4.3 | 4.4 |
| AS rate | 5.1 | 4.6 | 4.5 | 4.0 | 3.9 | 4.1 | 4.3 | 4.5 |
| **High-grade abnormalities** | | | | | | | | |
| Number | 26,165 | 28,297 | 29,176 | 28,054 | 28,491 | 30,253 | 29,875 | 30,320 |
| Crude rate | 1.3 | 1.4 | 1.4 | 1.3 | 1.4 | 1.5 | 1.4 | 1.4 |
| AS rate | 1.3 | 1.3 | 1.4 | 1.3 | 1.4 | 1.5 | 1.4 | 1.4 |
| **All abnormalities (low-grade, high-grade, and cancer)** | | | | | | | | |
| Number | 130,234 | 126,442 | 121,400 | 112,188 | 107,261 | 115,026 | 118,953 | 126,344 |
| Crude rate | 6.4 | 6.0 | 5.9 | 5.4 | 5.3 | 5.6 | 5.8 | 5.8 |
| AS rate | 6.3 | 5.9 | 5.9 | 5.4 | 5.3 | 5.6 | 5.8 | 5.9 |

*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 low-grade, high-grade, or all abnormalities detected by cytology as a proportion of the total number of cytology tests; 'age-standardised (AS) rate' is the number of low-grade, high-grade, or all abnormalities detected by cytology as a proportion of the total number of cytology tests age-standardised to the Australian population at 30 June 2001.
3. This is 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, both 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, 2013

| Age group | <20 | 20–24 | 25–29 | 30–34 | 35–39 | 40–44 | 45–49 | 50–54 | 55–59 | 60–64 | 65–69 | 70+ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number | 6,211 | 21,213 | 18,845 | 13,730 | 10,895 | 10,405 | 8,143 | 5,719 | 3,471 | 2,131 | 1,252 | 539 |
| Crude rate | 12.0 | 10.8 | 7.3 | 5.1 | 4.2 | 3.8 | 3.4 | 2.5 | 1.9 | 1.4 | 1.1 | 1.8 |

*Note:* 'Crude rate' is the number 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, 2013

| Age group | <20 | 20–24 | 25–29 | 30–34 | 35–39 | 40–44 | 45–49 | 50–54 | 55–59 | 60–64 | 65–69 | 70+ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number | 731 | 4,685 | 7,697 | 6,037 | 3,839 | 2,836 | 1,927 | 1,322 | 914 | 651 | 412 | 184 |
| Crude rate | 1.4 | 2.4 | 3.0 | 2.2 | 1.5 | 1.0 | 0.8 | 0.6 | 0.5 | 0.4 | 0.4 | 0.6 |

*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, 2006 to 2013**

| Squamous category | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|
| **S2 Possible low-grade squamous intraepithelial lesion** | | | | | | | | |
| Number | 59,788 | 55,431 | 54,262 | 51,147 | 47,290 | 43,485 | 52,007 | 57,748 |
| Per 100 cytology tests | 2.7 | 2.6 | 2.5 | 2.3 | 2.1 | 2.4 | 2.5 | 2.7 |
| % of squamous abnormalities | 43.4 | 43.6 | 42.8 | 42.8 | 41.1 | 43.6 | 44.4 | 46.4 |
| **S3 Low-grade squamous intraepithelial lesion** | | | | | | | | |
| Number | 47,038 | 42,502 | 39,846 | 35,897 | 34,311 | 34,276 | 36,047 | 37,136 |
| Per 100 cytology tests | 2.3 | 2.0 | 1.9 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 |
| % of squamous abnormalities | 36.8 | 34.2 | 33.4 | 32.5 | 32.5 | 30.2 | 30.7 | 29.8 |
| **S4 Possible high-grade squamous intraepithelial lesion** | | | | | | | | |
| Number | 9,456 | 10,727 | 11,500 | 11,494 | 12,088 | 13,020 | 12,848 | 13,334 |
| Per 100 cytology tests | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |
| % of squamous abnormalities | 7.4 | 8.6 | 9.6 | 10.4 | 11.4 | 11.5 | 11.0 | 10.7 |
| **S5 High-grade squamous intraepithelial lesion** | | | | | | | | |
| Number | 15,342 | 16,438 | 16,491 | 15,505 | 15,317 | 16,117 | 15,863 | 15,791 |
| Per 100 cytology tests | 0.8 | 0.8 | 0.8 | 0.7 | 0.8 | 0.8 | 0.8 | 0.7 |
| % of squamous abnormalities | 12.0 | 13.2 | 13.8 | 14.0 | 14.5 | 14.2 | 13.5 | 12.7 |
| **S6 High-grade squamous intraepithelial lesion with possible microinvasion/ invasion** | | | | | | | | |
| Number | 318 | 316 | 290 | 287 | 313 | 310 | 346 | 317 |
| Per 100 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 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| **S7 Squamous cell carcinoma** | | | | | | | | |
| Number | 150 | 154 | 126 | 141 | 178 | 155 | 153 | 142 |
| Per 100 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 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 |
| **All squamous abnormalities** | | | | | | | | |
| Number | 127,735 | 124,399 | 119,400 | 110,614 | 105,692 | 113,321 | 117,264 | 124,468 |
| Crude rate | 6.3 | 5.9 | 5.8 | 5.3 | 5.2 | 5.5 | 5.6 | 5.7 |
| AS rate | 6.2 | 5.8 | 5.8 | 5.3 | 5.3 | 5.5 | 5.6 | 5.8 |

*Note:* 'Crude rate' is the number of each squamous abnormality or of 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, 2006 to 2013**

| Endocervical category | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|
| **E2 Atypical endocervical cells of uncertain significance** | | | | | | | | |
| Number | 1,372 | 1,152 | 1,020 | 746 | 714 | 821 | 791 | 920 |
| % of cytology tests | 0.07 | 0.06 | 0.05 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 |
| % of endocervical abnormalities | 54.9 | 56.4 | 51.0 | 47.4 | 45.5 | 48.2 | 46.8 | 49.0 |
| **E3 Possible high-grade endocervical glandular lesion** | | | | | | | | |
| Number | 724 | 510 | 562 | 461 | 435 | 500 | 531 | 540 |
| % of cytology tests | 0.04 | 0.02 | 0.03 | 0.02 | 0.02 | 0.02 | 0.03 | 0.02 |
| % of endocervical abnormalities | 29.0 | 25.0 | 28.1 | 29.3 | 27.7 | 29.3 | 31.4 | 28.8 |
| **E4 Adenocarcinoma in situ** | | | | | | | | |
| Number | 283 | 277 | 299 | 283 | 305 | 283 | 266 | 307 |
| % of cytology tests | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 |
| % of endocervical abnormalities | 11.3 | 13.6 | 15.0 | 18.0 | 19.4 | 16.6 | 15.7 | 16.4 |
| **E5 Adenocarcinoma in situ with possible microinvasion/invasion** | | | | | | | | |
| Number | 42 | 29 | 34 | 24 | 33 | 23 | 21 | 31 |
| % of cytology tests | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| % of endocervical abnormalities | 1.7 | 1.4 | 1.7 | 1.5 | 2.1 | 1.3 | 1.2 | 1.7 |
| **E6 Adenocarcinoma** | | | | | | | | |
| Number | 78 | 75 | 85 | 60 | 82 | 78 | 80 | 78 |
| % of cytology tests | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| % of endocervical abnormalities | 3.1 | 3.7 | 4.3 | 3.8 | 5.2 | 4.6 | 4.7 | 4.2 |
| **All endocervical abnormalities** | | | | | | | | |
| Number | 2,499 | 2,043 | 2,000 | 1,574 | 1,569 | 1,705 | 1,689 | 1,876 |
| Crude rate | 0.12 | 0.10 | 0.10 | 0.08 | 0.08 | 0.08 | 0.08 | 0.09 |
| AS rate | 0.12 | 0.10 | 0.10 | 0.07 | 0.08 | 0.08 | 0.08 | 0.09 |

*Note:* 'Crude rate' is the number of each endocervical abnormality or of 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.

# A.4 Histology

**Table A4.1: Number of histology tests, by age, 2006 to 2013**

| Age group (years) | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|
| <20 | 2,909 | 2,296 | 2,089 | 1,689 | 1,454 | 1,380 | 1,257 | 1,177 |
| 20–24 | 12,655 | 11,967 | 12,136 | 11,187 | 10,519 | 10,089 | 9,636 | 9,229 |
| 25–29 | 12,490 | 12,364 | 12,621 | 12,625 | 12,690 | 12,940 | 13,517 | 14,097 |
| 30–34 | 10,448 | 9,975 | 9,989 | 10,009 | 9,839 | 10,635 | 10,908 | 11,752 |
| 35–39 | 8,716 | 8,819 | 9,037 | 8,985 | 8,753 | 9,259 | 9,703 | 9,885 |
| 40–44 | 8,671 | 8,309 | 8,249 | 8,280 | 8,265 | 9,218 | 9,920 | 10,637 |
| 45–49 | 7,878 | 8,107 | 8,202 | 8,348 | 8,584 | 8,681 | 8,985 | 9,657 |
| 50–54 | 5,043 | 5,290 | 5,382 | 5,623 | 5,742 | 6,259 | 6,637 | 7,105 |
| 55–59 | 3,318 | 3,271 | 3,374 | 3,441 | 3,562 | 3,892 | 4,041 | 4,441 |
| 60–64 | 1,953 | 2,102 | 2,324 | 2,395 | 2,600 | 2,802 | 2,964 | 3,135 |
| 65–69 | 1,347 | 1,397 | 1,478 | 1,501 | 1,680 | 1,814 | 2,018 | 2,220 |
| 70+ | 1,533 | 1,523 | 1,728 | 1,817 | 1,915 | 2,057 | 2,154 | 2,300 |
| **All ages** | **76,972** | **75,423** | **76,612** | **75,904** | **75,611** | **79,026** | **81,740** | **85,636** |
| **Ages 20–69** | **72,519** | **71,601** | **72,792** | **72,394** | **72,234** | **75,589** | **78,329** | **82,158** |

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

**Table A4.2: Proportion of histology tests, by age, 2013**

| Age group | <20 | 20–24 | 25–29 | 30–34 | 35–39 | 40–44 | 45–49 | 50–54 | 55–59 | 60–64 | 65–69 | 70+ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Crude rate | 1.4 | 10.8 | 16.5 | 13.7 | 11.5 | 12.4 | 11.3 | 8.3 | 5.2 | 3.7 | 2.6 | 2.7 |

*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, 2013**

| Age group | <20 | 20–24 | 25–29 | 30–34 | 35–39 | 40–44 | 45–49 | 50–54 | 55–59 | 60–64 | 65–69 | 70+ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Crude rate | 2.3 | 4.7 | 5.5 | 4.3 | 3.8 | 3.9 | 4.0 | 3.1 | 2.4 | 2.1 | 2.0 | 7.4 |

*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, 2013**

| Age group | <20 | 20–24 | 25–29 | 30–34 | 35–39 | 40–44 | 45–49 | 50–54 | 55–59 | 60–64 | 65–69 | 70+ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number | 331 | 2,458 | 3,719 | 3,743 | 4,449 | 6,442 | 6,850 | 5,369 | 3,391 | 2,404 | 1,714 | 1,858 |
| Crude rate | 28.1 | 26.6 | 26.4 | 31.8 | 45.0 | 60.6 | 70.9 | 75.6 | 76.4 | 76.7 | 77.2 | 80.8 |

*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, 2006 to 2013

| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|
| **Low-grade abnormalities** | | | | | | | | |
| Number | 18,003 | 16,602 | 15,347 | 14,576 | 14,018 | 14,566 | 14,856 | 15,318 |
| Crude rate | 24.8 | 23.2 | 21.1 | 20.1 | 19.4 | 19.3 | 19.0 | 18.6 |
| AS rate | 21.4 | 20.2 | 18.4 | 17.6 | 17.2 | 17.4 | 17.2 | 17.1 |
| **High-grade abnormalities** | | | | | | | | |
| Number | 20,063 | 21,067 | 22,102 | 22,031 | 22,104 | 22,676 | 23,149 | 23,734 |
| Crude rate | 27.7 | 29.4 | 30.4 | 30.4 | 30.6 | 30.0 | 29.6 | 28.9 |
| AS rate | 22.9 | 24.4 | 25.2 | 25.4 | 25.9 | 25.9 | 25.7 | 25.4 |
| **All abnormalities (low-grade, high-grade and cancer)** | | | | | | | | |
| Number | 38,825 | 38,476 | 38,325 | 37,380 | 36,940 | 38,122 | 38,984 | 40,038 |
| Crude rate | 53.5 | 53.7 | 52.7 | 51.6 | 51.1 | 50.4 | 49.8 | 48.7 |
| AS rate | 45.8 | 46.2 | 45.1 | 44.4 | 44.4 | 44.6 | 44.4 | 44.0 |

*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 3.2).
2. Crude rate is the number of low-grade, high-grade, or all abnormalities detected by histology as a proportion of the total number of histology tests; 'age-standardised (AS) rate' is the number of low-grade, high-grade, or all abnormalities detected by histology as a proportion of the total number of histology tests age-standardised to the Australian population at 30 June 2001.
3. This is 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, both 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, 2013

| Age group | <20 | 20–24 | 25–29 | 30–34 | 35–39 | 40–44 | 45–49 | 50–54 | 55–59 | 60–64 | 65–69 | 70+ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number | 454 | 2,860 | 3,392 | 2,655 | 1,945 | 1,661 | 1,265 | 752 | 397 | 265 | 126 | 70 |
| Crude rate | 38.6 | 31.0 | 24.1 | 22.6 | 19.7 | 15.6 | 13.1 | 10.6 | 8.9 | 8.5 | 5.7 | 3.0 |

*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, 2013

| Age group | <20 | 20–24 | 25–29 | 30–34 | 35–39 | 40–44 | 45–49 | 50–54 | 55–59 | 60–64 | 65–69 | 70+ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number | 373 | 3,754 | 6,787 | 5,100 | 3,227 | 2,174 | 1,219 | 678 | 366 | 240 | 189 | 91 |
| Crude rate | 31.7 | 40.7 | 48.1 | 43.4 | 32.6 | 20.4 | 12.6 | 9.5 | 8.2 | 7.7 | 8.5 | 4.0 |

*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, 2006 to 2013**

| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|
| <20 | 13.2 | 11.6 | 10.8 | 8.9 | 7.8 | 7.1 | 6.4 | 5.7 |
| 20–24 | 19.9 | 18.9 | 21.3 | 19.9 | 19.7 | 17.4 | 15.8 | 15.0 |
| 25–29 | 17.7 | 17.8 | 19.3 | 19.0 | 19.9 | 19.4 | 20.0 | 20.3 |
| 30–34 | 11.6 | 11.5 | 12.7 | 12.8 | 13.6 | 14.0 | 13.8 | 14.5 |
| 35–39 | 7.2 | 7.3 | 7.8 | 7.6 | 8.3 | 9.0 | 9.2 | 9.4 |
| 40–44 | 4.7 | 4.7 | 4.8 | 4.7 | 4.9 | 5.5 | 6.0 | 6.3 |
| 45–49 | 3.2 | 3.2 | 3.3 | 3.3 | 3.5 | 3.8 | 3.7 | 4.0 |
| 50–54 | 1.9 | 1.9 | 2.0 | 1.9 | 2.1 | 2.2 | 2.4 | 2.4 |
| 55–59 | 1.5 | 1.4 | 1.3 | 1.3 | 1.7 | 1.7 | 1.6 | 1.6 |
| 60–64 | 1.2 | 1.2 | 1.3 | 1.2 | 1.2 | 1.4 | 1.5 | 1.4 |
| 65–69 | 1.4 | 1.3 | 1.3 | 1.1 | 1.1 | 1.1 | 1.1 | 1.4 |
| 70+ | 2.8 | 2.4 | 2.6 | 2.6 | 3.4 | 2.7 | 2.8 | 2.6 |
| **Ages 20–69** | | | | | | | | |
| Number | 15,115 | 15,671 | 16,457 | 16,257 | 16,291 | 16,641 | 16,808 | 17,609 |
| Crude rate | 7.8 | 7.8 | 8.4 | 8.1 | 8.4 | 8.4 | 8.3 | 8.5 |
| AS rate | 7.8 | 7.7 | 8.3 | 8.1 | 8.5 | 8.4 | 8.4 | 8.5 |
| 95% CI | 7.6–7.9 | 7.5–7.8 | 8.2–8.5 | 8.0–8.2 | 8.3–8.6 | 8.3–8.6 | 8.2–8.5 | 8.4–8.7 |

*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.

### Confidence intervals

Confidence intervals are only presented in this report where it has been deemed important to show the degree of error due to rare events in small populations, to avoid potential misinterpretation of data, and/or to present data consistent with other publications. This includes the high-grade abnormality detection rate, incidence of cervical cancer and mortality from cervical cancer.

Where shown, 95% confidence intervals can be used to determine if a statistically significant difference exists between compared values: where the confidence intervals do not overlap, the difference between rates is greater than that which could be explained by chance and is regarded as statistically significant. Because overlapping confidence intervals do not imply that the difference between two rates is definitely due to chance, it can only be stated that no statistically significant differences were found, and not that no differences exist.

Judgment should be exercised in deciding whether or not any differences shown are of clinical significance.

### Table A4.9: High-grade abnormality detection rate in women aged 20–69, by state and territory, 2013

| | NSW | Vic | Qld | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|
| Number | 5,352 | 4,012 | 3,809 | 2,118 | 1,398 | 397 | 267 | 256 | 17,609 |
| Crude rate | 8.1 | 7.3 | 9.3 | 9.6 | 9.4 | 9.1 | 7.5 | 12.2 | 8.5 |
| AS rate | 8.3 | 7.5 | 9.2 | 9.1 | 9.8 | 9.7 | 7.1 | 10.5 | 8.5 |
| 95% CI | 8.1–8.6 | 7.3–7.8 | 9.0–9.5 | 8.7–9.5 | 9.3–10.3 | 8.8–10.6 | 6.2–8.0 | 9.0–12.1 | 8.4–8.7 |

*Note:* '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, 2006 to 2013

| | Year | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Squamous category** | **2006** | **2007** | **2008** | **2009** | **2010** | **2011** | **2012** | **2013** |
| **HS02 Low-grade squamous abnormality** | | | | | | | | |
| Number | 17,937 | 16,540 | 15,292 | 14,538 | 13,964 | 14,504 | 14,802 | 15,269 |
| Per 100 histology tests | 24.7 | 23.1 | 21.0 | 20.0 | 19.3 | 19.2 | 18.9 | 18.6 |
| % of squamous abnormalities | 47.3 | 44.1 | 41.1 | 39.9 | 38.9 | 39.2 | 39.2 | 39.3 |
| **HS03 High-grade squamous abnormality** | | | | | | | | |
| Number | 19,508 | 20,437 | 21,411 | 21,379 | 21,389 | 21,941 | 22,365 | 22,946 |
| Per 100 histology tests | 26.9 | 28.5 | 29.4 | 29.5 | 29.6 | 29.0 | 28.6 | 27.9 |
| % of squamous abnormalities | 51.5 | 54.5 | 57.5 | 58.7 | 59.6 | 59.3 | 59.2 | 59.0 |
| **HS04 Squamous cell carcinoma** | | | | | | | | |
| Number | 466 | 516 | 530 | 474 | 528 | 551 | 641 | 651 |
| Per 100 histology tests | 0.6 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.8 | 0.8 |
| % of squamous abnormalities | 1.2 | 1.4 | 1.4 | 1.3 | 1.5 | 1.5 | 1.7 | 1.7 |
| **All squamous abnormalities** | | | | | | | | |
| Number | 37,911 | 37,493 | 37,233 | 36,391 | 35,881 | 36,996 | 37,808 | 38,866 |
| Crude rate | 52.3 | 52.4 | 51.1 | 50.3 | 49.7 | 48.9 | 48.3 | 47.3 |
| AS rate | 44.5 | 44.7 | 43.5 | 43.0 | 43.0 | 43.1 | 42.9 | 42.6 |

*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 each squamous abnormality or 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, 2006 to 2013

| | Year | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Squamous category** | **2006** | **2007** | **2008** | **2009** | **2010** | **2011** | **2012** | **2013** |
| **HS03.2 CIN II** | | | | | | | | |
| Number | 3,909 | 4,104 | 4,377 | 4,574 | 4,338 | 4,157 | 4,236 | 4,293 |
| Per 100 histology tests (crude rate) | 11.5 | 12.1 | 12.5 | 12.7 | 12.2 | 11.2 | 10.8 | 10.5 |
| Per 100 histology tests (AS rate) | 9.5 | 9.8 | 10.2 | 10.4 | 10.1 | 9.6 | 9.5 | 9.3 |
| % of squamous abnormalities | 24.7 | 25.5 | 25.9 | 26.7 | 26.6 | 25.5 | 25.0 | 24.9 |
| **HS03.3 CIN III** | | | | | | | | |
| Number | 4,350 | 4,753 | 5,340 | 5,373 | 5,127 | 5,293 | 5,868 | 5,896 |
| Per 100 histology tests (crude rate) | 12.8 | 14.0 | 15.3 | 14.9 | 14.4 | 14.2 | 15.0 | 14.4 |
| Per 100 histology tests (AS rate) | 11.1 | 12.0 | 13.0 | 12.6 | 12.4 | 12.4 | 13.2 | 12.8 |
| % of squamous abnormalities | 27.5 | 29.6 | 31.6 | 31.3 | 31.5 | 32.4 | 34.7 | 34.2 |

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

## Table A4.12: CIN II and CIN III, by age, 2013

| **Age group** | **<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 | 103 | 869 | 1,244 | 789 | 502 | 429 | 220 | 131 | 44 | 40 | 25 | 9 |
| Crude rate | 20.6 | 19.4 | 18.0 | 14.0 | 10.8 | 7.9 | 4.4 | 3.5 | 1.9 | 2.6 | 2.2 | 0.7 |
| **CIN III** | | | | | | | | | | | | |
| Number | 45 | 749 | 1,752 | 1,396 | 798 | 521 | 289 | 174 | 114 | 53 | 50 | 20 |
| Crude rate | 9.0 | 16.7 | 25.4 | 24.7 | 17.1 | 9.6 | 5.8 | 4.6 | 4.9 | 3.4 | 4.3 | 1.7 |

*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 A4.13: Endocervical abnormalities detected by histology in women aged 20–69, by endocervical category, 2006 to 2013**

| | Year | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Endocervical category** | **2006** | **2007** | **2008** | **2009** | **2010** | **2011** | **2012** | **2013** |
| **HE02 Endocervical atypia** | | | | | | | | |
| Number | 66 | 62 | 55 | 38 | 54 | 62 | 54 | 49 |
| % of cytology tests | 0.09 | 0.09 | 0.08 | 0.05 | 0.07 | 0.08 | 0.07 | 0.06 |
| % of endocervical abnormalities | 7.2 | 6.3 | 5.0 | 3.8 | 5.1 | 5.5 | 4.6 | 4.2 |
| **HE03 High-grade endocervical abnormality** | | | | | | | | |
| Number | 555 | 630 | 691 | 652 | 715 | 735 | 784 | 788 |
| % of cytology tests | 0.77 | 0.88 | 0.95 | 0.90 | 0.99 | 0.97 | 1.00 | 0.96 |
| % of endocervical abnormalities | 60.7 | 64.1 | 63.3 | 65.9 | 67.5 | 65.3 | 66.7 | 67.2 |
| **HE04.1 & 4.2 Adenocarcinoma** | | | | | | | | |
| Number | 257 | 245 | 311 | 263 | 248 | 283 | 284 | 275 |
| % of cytology tests | 0.35 | 0.34 | 0.43 | 0.36 | 0.34 | 0.37 | 0.36 | 0.33 |
| % of endocervical abnormalities | 28.1 | 24.9 | 28.5 | 26.6 | 23.4 | 25.1 | 24.1 | 23.5 |
| **HE04.3 Adenosquamous carcinoma** | | | | | | | | |
| Number | 15 | 25 | 21 | 20 | 21 | 33 | 23 | 32 |
| % of cytology tests | 0.02 | 0.03 | 0.03 | 0.03 | 0.03 | 0.04 | 0.03 | 0.04 |
| % of endocervical abnormalities | 1.6 | 2.5 | 1.9 | 2.0 | 2.0 | 2.9 | 2.0 | 2.8 |
| **HE04.4 Carcinoma of the cervix (other)** | | | | | | | | |
| Number | 21 | 21 | 14 | 16 | 21 | 13 | 31 | 28 |
| % of cytology tests | 0.03 | 0.03 | 0.02 | 0.02 | 0.03 | 0.02 | 0.04 | 0.03 |
| % of endocervical abnormalities | 2.3 | 2.1 | 1.3 | 1.6 | 2.0 | 1.2 | 2.6 | 2.4 |
| **All endocervical abnormalities** | | | | | | | | |
| Number | 914 | 983 | 1,092 | 989 | 1,059 | 1,126 | 1,176 | 1,172 |
| Crude rate | 1.26 | 1.37 | 1.50 | 1.37 | 1.47 | 1.49 | 1.50 | 1.43 |
| AS rate | 1.35 | 1.46 | 1.59 | 1.41 | 1.50 | 1.48 | 1.48 | 1.41 |

*Notes*

1. 'HE03 High-grade endocervical abnormality' combines endocervical dysplasia and adenocarcinoma in situ.
2. 'Crude rate' is the number of each endocervical abnormality or of 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.

# A.5 Cytology-histology correlation

**Table A5.1: Number of squamous abnormalities detected by cytology in 2012, and proportion followed by squamous histology within 6 months, for women aged 20–69**

| Cytology prediction | Number detected by cytology | Number followed by squamous histology | Proportion followed by squamous histology (%) |
|---|---|---|---|
| S2 Possible low-grade | 52,007 | 8,427 | 16.2 |
| S3 Low-grade | 36,047 | 8,105 | 22.5 |
| S4 Possible high-grade | 12,848 | 9,504 | 74.0 |
| S5 High-grade | 15,863 | 13,506 | 85.1 |
| S6 High-grade plus | 346 | 305 | 88.2 |
| S7 Squamous cell carcinoma | 153 | 129 | 84.3 |

*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 2012**

| | Histology finding | | |
|---|---|---|---|
| Cytology prediction | HS02 Low-grade | HS03 High-grade | HS04 squamous cell carcinoma |
| S1 Negative | 3,374 (16.9%) | 930 (4.7%) | 27 (0.1%) |
| S2 Possible low-grade | 3,475 (41.2%) | 1,272 (15.1%) | 10 (0.1%) |
| S3 Low-grade | 4,203 (51.9%) | 1,632 (20.1%) | 3 (0.0%) |
| S4 Possible high-grade | 2,304 (24.2%) | 4,935 (51.9%) | 51 (0.5%) |
| S5 High-grade | 1,654 (12.2%) | 10,434 (77.3%) | 214 (1.6%) |
| S6 High-grade plus | 10 (3.3%) | 213 (69.8%) | 69 (22.6%) |
| S7 Squamous cell carcinoma | 3 (2.3%) | 31 (24.0%) | 87 (67.4%) |

*Notes*

1. Numbers and percentage of each squamous cytology result category are shown.
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 2008 to 2012**

| | Cytology prediction | | | |
|---|---|---|---|---|
| | Possible high-grade S4 | High-grade S5 | High-grade plus S6 | High-grade |
| **2008** | 53.8% (4,415/8,212) | 78.4% (11,111/14,165) | 92.2% (237/257) | **69.6% (15,763/22,634)** |
| **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)** |

*Note:* The positive predictive value 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.

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

**Table A5.4: Number of endocervical abnormalities detected by cytology in 2012, 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 | 791 | 227 | 28.7 |
| E3 Possible high-grade | 531 | 255 | 48.0 |
| E4 Adenocarcinoma in situ | 266 | 240 | 90.2 |
| E5 Adenocarcinoma in situ plus | 21 | 13 | 61.9 |
| E6 Adenocarcinoma | 80 | 44 | 55.0 |

*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 2012**

| | Histology finding | | |
|---|---|---|---|
| Cytology prediction | HE02 Endocervical atypia | HE03 High-grade | HE04.1&4.2 Adenocarcinoma |
| E1 Negative | 17 (0.1%) | 330 (1.5%) | 87 (0.4%) |
| E2 Atypical endocervical cells of uncertain significance | 3 (1.3%) | 55 (24.2%) | 14 (6.2%) |
| E3 Possible high-grade | 3 (1.2%) | 114 (44.7%) | 29 (11.4%) |
| E4 Adenocarcinoma in situ | 0 (0.0%) | 152 (63.3%) | 64 (26.7%) |
| E5 Adenocarcinoma in situ plus | 0 (0.0%) | 6 (46.2%) | 6 (46.2%) |
| E6 Adenocarcinoma | 0 (0.0%) | 5 (11.4%) | 29 (65.9%) |

*Notes*

1. Numbers and percentage of each endocervical cytology result category shown.
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 neither 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 2008 to 2012**

| | Cytology prediction | | | |
|---|---|---|---|---|
| | Possible high-grade E3 | Adenocarcinoma in situ E4 | Adenocarcinoma in situ plus E5 | High-grade |
| **2008** | 49.3% (109/221) | 92.2% (202/219) | 96.0% (24/25) | **72.0% (335/465)** |
| **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)** |

*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.)

*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 2012**

| Cytology prediction | Adenosquamous carcinoma | Carcinoma of the cervix (other) |
|---|---|---|
| S1 Negative | 2 | 13 |
| S2 Possible low-grade | 0 | 1 |
| S3 Low-grade | 0 | 0 |
| S4 Possible high-grade | 0 | 2 |
| S5 High-grade | 5 | 3 |
| S6 High-grade with possible invasion | 2 | 1 |
| S7 Squamous cell carcinoma | 2 | 4 |
| E1 Negative | 7 | 18 |
| E2 Atypical endocervical cells of uncertain significance | 0 | 0 |
| E3 Possible high-grade | 1 | 0 |
| E4 Adenocarcinoma in situ | 1 | 0 |
| E5 Adenocarcinoma with possible invasion | 0 | 0 |
| E6 Adenocarcinoma | 2 | 2 |

*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 2012**

| | Histology finding | | | |
|---|---|---|---|---|
| Cytology prediction | HS02 Low-grade | HS03.2 CIN II | HS03.3 CIN III | HS04 Squamous cell carcinoma |
| S1 Negative | 1,389 (15.1%) | 238 (2.6%) | 198 (2.1%) | 5 (0.1%) |
| S2 Possible low-grade | 1,886 (37.0%) | 423 (8.3%) | 280 (5.5%) | 4 (0.1%) |
| S3 Low-grade | 1,990 (48.9%) | 481 (11.8%) | 266 (6.5%) | 1 (0.0%) |
| S4 Possible high-grade | 1,124 (21.4%) | 1,055 (20.1%) | 1,556 (29.7%) | 26 (0.5%) |
| S5 High-grade | 759 (10.8%) | 1,490 (21.3%) | 3,886 (55.5%) | 112 (1.6%) |
| S6 High-grade plus | 6 (3.9%) | 9 (5.9%) | 92 (60.5%) | 40 (26.3%) |
| S7 Squamous cell carcinoma | 0 (0.0%) | 1 (1.6%) | 12 (19.7%) | 44 (72.1%) |

*Notes*

1. Numbers and percentage of each squamous cytology result category shown.
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.

# A.6 Incidence of cervical cancer

**Table A6.1: Incidence of cervical cancer, 1982 to 2011**

| | New cases | | AS rate | |
|---|---|---|---|---|
| Year of diagnosis | 20–69 | All ages | 20–69 | All ages |
| 1982 | 826 | 963 | 19.0 | 14.2 |
| 1983 | 842 | 995 | 19.1 | 14.4 |
| 1984 | 839 | 1,012 | 18.5 | 14.2 |
| 1985 | 898 | 1,060 | 19.6 | 14.7 |
| 1986 | 863 | 1,023 | 18.7 | 14.0 |
| 1987 | 905 | 1,099 | 18.7 | 14.4 |
| 1988 | 901 | 1,066 | 18.1 | 13.6 |
| 1989 | 910 | 1,074 | 18.1 | 13.5 |
| 1990 | 918 | 1,088 | 18.0 | 13.5 |
| 1991 | 896 | 1,095 | 17.2 | 13.3 |
| 1992 | 848 | 1,026 | 16.0 | 12.2 |
| 1993 | 848 | 1,016 | 15.9 | 12.0 |
| 1994 | 937 | 1,144 | 17.1 | 13.1 |
| 1995 | 777 | 962 | 13.9 | 10.8 |
| 1996 | 760 | 940 | 13.5 | 10.4 |
| 1997 | 658 | 810 | 11.5 | 8.8 |
| 1998 | 700 | 872 | 11.9 | 9.2 |
| 1999 | 661 | 800 | 11.1 | 8.4 |
| 2000 | 599 | 769 | 9.9 | 7.9 |
| 2001 | 589 | 743 | 9.6 | 7.5 |
| 2002 | 558 | 690 | 9.0 | 6.8 |
| 2003 | 580 | 731 | 9.2 | 7.1 |
| 2004 | 584 | 727 | 9.1 | 7.0 |
| 2005 | 605 | 736 | 9.3 | 7.0 |
| 2006 | 588 | 719 | 8.9 | 6.7 |
| 2007 | 622 | 749 | 9.3 | 6.9 |
| 2008 | 642 | 783 | 9.4 | 7.1 |
| 2009 | 625 | 754 | 9.0 | 6.7 |
| 2010 | 688 | 824 | 9.6 | 7.2 |
| 2011 | 682 | 801 | 9.5 | 6.9 |

*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 2011.

**Table A6.2: Incidence of carcinoma of the cervix (squamous cell carcinoma, adenocarcinoma, adenosquamous carcinoma and other carcinoma) in women aged 20–69, 1982 to 2011**

| Year of diagnosis | New cases | | | | AS rate | | | |
|---|---|---|---|---|---|---|---|---|
| | SCC[a] | AC[b] | ASC[c] | Other[d] | SCC[a] | AC[b] | ASC[c] | Other[d] |
| 1982 | 656 | 92 | 22 | 35 | 15.1 | 2.1 | 0.5 | 0.8 |
| 1983 | 662 | 83 | 23 | 56 | 15.1 | 1.9 | 0.5 | 1.2 |
| 1984 | 634 | 87 | 45 | 51 | 13.9 | 1.9 | 1.0 | 1.1 |
| 1985 | 689 | 95 | 35 | 55 | 15.1 | 2.0 | 0.8 | 1.1 |
| 1986 | 646 | 117 | 42 | 40 | 13.9 | 2.5 | 1.0 | 0.8 |
| 1987 | 681 | 132 | 41 | 33 | 14.0 | 2.7 | 0.9 | 0.7 |
| 1988 | 650 | 157 | 40 | 41 | 13.1 | 3.1 | 0.8 | 0.8 |
| 1989 | 692 | 111 | 50 | 48 | 13.8 | 2.2 | 1.0 | 1.0 |
| 1990 | 643 | 146 | 49 | 61 | 12.6 | 2.8 | 1.0 | 1.2 |
| 1991 | 646 | 144 | 41 | 56 | 12.4 | 2.8 | 0.8 | 1.1 |
| 1992 | 612 | 137 | 50 | 37 | 11.5 | 2.6 | 1.0 | 0.7 |
| 1993 | 595 | 143 | 48 | 52 | 11.2 | 2.6 | 0.9 | 1.0 |
| 1994 | 639 | 203 | 40 | 49 | 11.7 | 3.7 | 0.7 | 0.9 |
| 1995 | 546 | 146 | 34 | 41 | 9.8 | 2.6 | 0.6 | 0.7 |
| 1996 | 529 | 148 | 40 | 33 | 9.4 | 2.6 | 0.7 | 0.6 |
| 1997 | 454 | 130 | 33 | 31 | 7.9 | 2.3 | 0.6 | 0.5 |
| 1998 | 492 | 141 | 30 | 29 | 8.4 | 2.4 | 0.5 | 0.5 |
| 1999 | 470 | 132 | 24 | 27 | 7.9 | 2.2 | 0.4 | 0.5 |
| 2000 | 401 | 118 | 30 | 28 | 6.7 | 2.0 | 0.5 | 0.5 |
| 2001 | 400 | 115 | 32 | 28 | 6.5 | 1.9 | 0.5 | 0.5 |
| 2002 | 388 | 126 | 17 | 20 | 6.2 | 2.0 | 0.3 | 0.3 |
| 2003 | 396 | 122 | 25 | 26 | 6.3 | 1.9 | 0.4 | 0.4 |
| 2004 | 391 | 133 | 27 | 22 | 6.1 | 2.1 | 0.4 | 0.3 |
| 2005 | 399 | 128 | 21 | 39 | 6.2 | 2.0 | 0.3 | 0.6 |
| 2006 | 365 | 143 | 22 | 38 | 5.6 | 2.2 | 0.3 | 0.6 |
| 2007 | 393 | 158 | 24 | 37 | 5.9 | 2.3 | 0.4 | 0.6 |
| 2008 | 418 | 166 | 21 | 25 | 6.1 | 2.4 | 0.3 | 0.4 |
| 2009 | 406 | 162 | 23 | 19 | 5.9 | 2.3 | 0.3 | 0.3 |
| 2010 | 450 | 148 | 30 | 40 | 6.3 | 2.1 | 0.4 | 0.5 |
| 2011 | 457 | 165 | 26 | 22 | 6.4 | 2.3 | 0.4 | 0.3 |

(a) SCC = squamous cell carcinoma.

(b) AC = adenocarcinoma.

(c) ASC = adenosquamous carcinoma.

(d) Other = other and unspecified carcinoma.

*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 2011.

### Table A6.3: Incidence of cervical cancer, by age, 2011

| | 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 | 12 | 66 | 91 | 89 | 85 | 94 | 71 | 68 | 58 | 48 |
| Crude rate | 1.5 | 8.1 | 11.8 | 11.3 | 10.6 | 12.0 | 9.4 | 10.1 | 9.4 | 10.0 |

*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 2011.

### Table A6.4: Incidence of cervical cancer in women aged 20–69, by state and territory, 2005–2009

| | **NSW** | **Vic** | **Qld** | **WA** | **SA** | **Tas** | **ACT** | **NT** | **Australia** |
|---|---|---|---|---|---|---|---|---|---|
| New cases | 976 | 683 | 707 | 344 | 209 | 73 | 40 | 50 | 3,082 |
| AS rate | 8.8 | 8.1 | 10.7 | 10.3 | 8.4 | 9.2 | 7.1 | 15.3 | 9.2 |
| 95% CI | 8.3–9.4 | 7.5–8.8 | 10.0–11.6 | 9.2–11.4 | 7.3–9.6 | 7.2–11.6 | 5.1–9.7 | 11.2–20.3 | 8.9–9.5 |

*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. 95% CI are 95% confidence intervals.

*Source:* AIHW Australian Cancer Database 2011.

### Table A6.5: Incidence of cervical cancer in women aged 20–69, by remoteness area, 2005–2009

| **Remoteness area** | **Major cities** | **Inner and outer regional** | **Remote and very remote** | **Australia** |
|---|---|---|---|---|
| New cases | 2,127 | 852 | 92 | 3,082 |
| Rate | 9.0 | 9.3 | 12.7 | 9.2 |
| 95% CI | 8.6–9.4 | 8.7–10.0 | 10.2–15.6 | 8.9–9.5 |

*Notes*

1. Women were allocated to a remoteness area using residential statistical local area (SLA) according to the 2006 Australian Standard Geographic Classifications.
2. '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. 95% CI are 95% confidence intervals.

*Source:* AIHW Australian Cancer Database 2011.

### Table A6.6: Incidence of cervical cancer in women aged 20–69, by socioeconomic status, 2006–2009

| **Socioeconomic status** | **1 (lowest)** | **2** | **3** | **4** | **5 (highest)** | **Australia** |
|---|---|---|---|---|---|---|
| New cases | 531 | 530 | 469 | 517 | 420 | 2,467 |
| Rate | 10.2 | 9.9 | 8.7 | 9.5 | 7.4 | 9.1 |
| 95% CI | 9.3–11.1 | 9.1–10.8 | 7.9–9.5 | 8.7–10.4 | 6.7–8.2 | 8.8–9.5 |

*Notes*

1. Women were allocated to a socioeconomic status using residential SLA according to the Australian Bureau of Statistics Socio-Economic Indexes for Areas (SEIFA) Index of Relative Socio-Economic Disadvantage for 2006.
2. '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. 95% CI are 95% confidence intervals.
3. Australian total may not equal sum of the quintiles due to estimation of SES status variable.

*Source:* AIHW Australian Cancer Database 2011.

**Table A6.7: Incidence of cervical cancer in women aged 20–69 (New South Wales, Queensland, Western Australia, and Northern Territory), by Indigenous status, 2005–2009**

| | New South Wales, Queensland, Western Australia, and the Northern Territory[a] | | |
|---|---|---|---|
| | Aboriginal and Torres Strait Islander | Non-Indigenous | Total[b] |
| New cases | 114 | 1,802 | 2,077 |
| Crude rate | 17.4 | 8.7 | 9.7 |
| AS rate | 19.5 | 8.7 | 9.8 |
| 95% CI | 15.9–23.6 | 8.3–9.1 | 9.3–10.2 |

(a) Data shown for 'Aboriginal and Torres Strait Islander', 'Non-Indigenous' and 'Total' are for New South Wales, 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 is 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 cervical cancers detected per 100,000 women directly age-standardised to the Australian population at 30 June 2001. 95% CI are 95% confidence intervals.

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 2011.

# A.7 Mortality from cervical cancer

**Table A7.1: Mortality from cervical cancer, 1982–2012**

| | Deaths | | AS rate | |
|---|---|---|---|---|
| Year | 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 | 144 | 242 | 1.9 | 1.9 |
| 2010 | 150 | 229 | 2.0 | 1.9 |
| 2011 | 152 | 228 | 2.0 | 1.8 |
| 2012 | 143 | 226 | 1.8 | 1.8 |

*Notes*

1. Deaths from 1982 to 2011 were derived by year of death; deaths in 2012 were derived by year of registration of death. Deaths registered in 2010 and earlier are based on the final version of cause-of-death data; deaths registered in 2011 and 2012 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.

*Source:* AIHW National Mortality Database.

## Table A7.2: Mortality from cervical cancer, by age, 2012

| | 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 | 3 | 7 | 17 | 13 | 10 | 23 | 24 | 28 | 18 |
| Crude rate | 0.0 | 0.4 | 0.9 | 2.2 | 1.6 | 1.3 | 3.0 | 3.5 | 4.5 | 3.5 |

*Notes*

1. Deaths in 2012 were derived using year of registration. Deaths registered in 2012 are based on the preliminary version of cause-of-death data and are subject to further revision by the ABS.
2. 'Crude rate' is the number of deaths from cervical cancer per 100,000 women; age-specific rates based on less 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, 2008–2012

| | **NSW** | **Vic** | **Qld** | **WA** | **SA** | **Tas** | **ACT** | **NT** | **Australia** |
|---|---|---|---|---|---|---|---|---|---|
| Deaths | 254 | 154 | 165 | 74 | 51 | 19 | 7 | 10 | 734 |
| AS rate | 2.1 | 1.7 | 2.2 | 2.0 | 1.9 | 2.1 | 1.2 | 3.0 | 2.0 |
| 95% CI | 1.8–2.4 | 1.4–1.9 | 1.9–2.5 | 1.5–2.5 | 1.4–2.5 | 1.2–3.3 | 0.5–2.5 | 1.4–5.6 | 1.8–2.1 |

*Notes*

1. Deaths from 2008 to 2011 were derived by year of death; deaths in 2012 were derived by year of registration of death. Deaths registered in 2010 and earlier are based on the final version of cause-of-death data; deaths registered in 2011 and 2012 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. 95% CI are 95% confidence intervals.

*Source:* AIHW National Mortality Database.

## Table A7.4: Mortality from cervical cancer in women aged 20–69, by remoteness area, 2008–2012

| **Remoteness area** | **Major cities** | **Inner and outer regional** | **Remote and very remote** | **Australia** |
|---|---|---|---|---|
| Deaths | 467 | 238 | 25 | 734 |
| AS rate | 1.8 | 2.2 | 3.4 | 2.0 |
| 95% CI | 1.6–2.0 | 1.9–2.5 | 2.2–5.0 | 1.8–2.1 |

*Notes*

1. Women were allocated to a remoteness area using residential statistical local area (SLA) according to the Australian Standard Geographic Classification for 2008–2010 and using residential statistical area level 2 (SA2) according to the Australian Statistical Geography Standard for 2011–2012.
2. Deaths from 2008 to 2011 were derived by year of death; deaths in 2012 were derived by year of registration of death. Deaths registered in 2010 and earlier are based on the final version of cause-of-death data; deaths registered in 2011 and 2012 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 cancers per 100,000 women age-standardised to the Australian population at 30 June 2001. 95% CI are 95% confidence intervals.

*Source:* AIHW National Mortality Database.

**Table A7.5: Mortality from cervical cancer in women aged 20–69 (New South Wales, Queensland, Western Australia, South Australia and Northern Territory), by Indigenous status, 2008–2012**

| | New South Wales, Queensland, Western Australia, South Australia and the Northern Territory[a] | | |
|---|---|---|---|
| | Aboriginal and Torres Strait Islander | Non-Indigenous | Total[b] |
| Deaths | 47 | 497 | 554 |
| Crude rate | 6.2 | 2.0 | 2.2 |
| AS rate | 7.7 | 1.9 | 2.1 |
| 95% CI | 5.6–10.3 | 1.7–2.1 | 1.9–2.3 |

(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.

*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. 95% CI are 95% confidence intervals.
2. Deaths from 2008 to 2011 were derived by year of death; deaths in 2012 were derived by year of registration of death. Deaths registered in 2010 and earlier are based on the final version of cause-of-death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.

*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 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. Now known as the National Cervical Screening Program, 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 appears in the box below.

**Overview 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 smears should be carried out every two 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 smears between the ages of 18 and 20, or one or two years after first having sexual intercourse, whichever is later.
- Pap smears may cease at the age of 70 for women who have had two normal Pap smears within the past five years. Women over 70 who have never had a Pap smear, or who request a Pap smear, should be screened.

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

*Source:* Department of Health (Health 2015)

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 National Pathology Accreditation Advisory Council (NPAAC) *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*.

The table below 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 previous reports *Cervical screening in Australia 2008–2009* to *Cervical screening in Australia 2011-2012*, and in the *National cervical cancer prevention data dictionary version 1: working paper* (AIHW 2014b).

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

# 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**

| | |
|---|---|
| **NSW Cervical Screening Program** | |
| Tel: (02) 8374 5757<br>Fax: (02) 8374 5700<br>Email: cervicalscreening@cancerinstitute.org.au | <http://www.csp.nsw.gov.au/> |
| **PapScreen Victoria** | |
| Tel: (03) 9635 5000<br>Fax: (03) 9635 5360<br>Email: papscreen@cancervic.org.au | <http://www.papscreen.org.au> |
| **Qld Cervical Screening Program** | |
| Tel: (07) 3328 9467<br>Fax: (07) 3328 9487<br>Email: cssb@health.gov.au | <http://www.health.qld.gov.au/cervicalscreening/> |
| **WA Cervical Cancer Prevention Program** | |
| Tel: (08) 9323 6788<br>Fax: (08) 9323 6711<br>Email: cervicalcancer@health.wa.gov.au | <http://www.health.wa.gov.au/cervical/home/> |
| **SA Cervix Screening Program** | |
| Tel: (08) 8226 8181<br>Fax: (08) 8226 8190<br>Email: cervixscreening@health.sa.gov.au | <http://www.sahealth.sa.gov.au/wps/wcm/connect/Public+Content/SA+Health+Internet/About+us/Department+of+Health/Public+Health+and+Clinical+Systems/Public+Health+Services/SA+Cervix+Screening+Program/SA+Cervix+Screening+Program> |
| **Tasmanian Cervical Cancer Prevention Program** | |
| Tel: (03) 6216 4300<br>Fax: (03) 6216 4309<br>Email: canscreen@dhhs.tas.gov.au | <http://www.dhhs.tas.gov.au/cancerscreening/TCSR> |
| **ACT Cervical Screening Program** | |
| Tel: (02) 6205 1545<br>Fax: (02) 6205 5035<br>Email: pap.register@act.gov.au | <http://www.health.act.gov.au/paptest> |
| **Cervical Screen NT** | |
| Tel: (08) 8922 6444<br>Fax: (08) 8922 6455<br>Email: wcpp.ths@nt.gov.au | <http://www.health.nt.gov.au/Womens_Health/Well_Womens_Cancer_Screening/index.aspx> |
| **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 below.

**Table C1: Data sources for *Cervical screening in Australia 2012–2013***

| Data used to monitor cervical screening in Australia | Data source |
|---|---|
| **Monitoring cervical screening in Australia using NCSP data** | |
| 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 |
| **Monitoring cervical screening in Australia using AIHW data** | |
| Performance Indicator 6 Incidence of cervical cancer | AIHW Australian Cancer Database 2011; ABS population data |
| Performance Indicator 7 Mortality from cervical cancer | AIHW National Mortality Database; ABS population data |
| **Monitoring other aspects of cervical screening in Australia** | |
| 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 the 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* (AIHW 2014b). 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 appears in Appendix D, and can also be found on the AIHW website at <http://meteor.aihw.gov.au/content/index.phtml/itemId/569669>.

## 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 they are compiled into the Australian Cancer Database (ACD). The ACD currently contains data on all cases of cancer diagnosed from 1982 to 2009 for all states and territories, and for 2010 and 2011 for all except NSW and the ACT.

The 2010 and 2011 incidence data for NSW and the ACT were not available for inclusion in the 2011 version of the ACD. The development of the new NSW Cancer Registries system has resulted in a delay in processing incidence data for 2010 onwards and therefore the most recent NSW data available for inclusion in the ACD are for 2009. Full details about this situation are given at: <http://www.cancerinstitute.org.au/data-and-statistics/accessing-our-data/availability-of-nsw-central-cancer-registry-data>. As the coding of ACT cancer notifications is contracted to the NSW Cancer Registry, the most recent data available for the ACT are also for 2009.

The 2010 and 2011 incidence data for NSW and the ACT were estimated by the AIHW. These estimates were combined with the actual data supplied by the other 6 state and territory cancer registries to form the 2011 ACD. The detailed methodology by which data for NSW and the ACT were estimated for 2010 and 2011 is available in Appendix F of *Cancer in Australia: an overview 2014* (AIHW 2014a).

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.

Data have been analysed using the year of diagnosis of cancer. This is a more accurate reflection of incidence during a particular year than the year of registration of cancer.

The Data Quality Statement for the ACD 2011 can be found on the AIHW website at <http://meteor.aihw.gov.au/content/index.phtml/itemId/586979>.

# 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, and coded by the ABS, for deaths from 1964 to 2012. Registration of deaths is the responsibility of the state and territory registrars of births, deaths and marriages. These data are then collated and coded by the ABS and are maintained at the AIHW in the NMD.

In the NMD, the year of occurrence of the death, and the year in which the death was registered, are both provided. For the purposes of this report, actual mortality data are shown based on the year of occurrence of the death, except for the most recent year (2012) where 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 2010 and earlier are based on the final version of cause-of-death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.

A statement on data quality relating to the AIHW NMD is available at the following ABS website: Quality declaration summary, *Causes of death, 2012*, ABS cat. no. 3303.0 <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts/3303.0Quality%20Declaration02012?opendocument&tabname=Notes&prodno=3303.0&issue=2012&num=&view=>.

# 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 and adjusts it 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 2012 and 2013 for 2-year participation; the average for 2011, 2012 and 2013 for 3-year participation; and the average of the ABS estimated resident population for 2009, 2010, 2011, 2012 and 2013 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,* provided an appropriate opportunity to update the method by which hysterectomy fractions were estimated.

The National Hospital Morbidity Database (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, below.

**Table C2: National hysterectomy fractions, 2011**

| | % of women who have not had a hysterectomy | |
|---|---|---|
| **Age group (years)** | **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 to 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 groups of socioeconomic status).

## AIHW National Hospital Morbidity Database

The AIHW National Hospital Morbidity Database (NHMD) is compiled from data supplied by the 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.

The Data Quality Statement for the AIHW NHMD 2012–13 can be found at the AIHW website at <http://meteor.aihw.gov.au/content/index.phtml/itemId/568730>.

## 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/512599>.

## 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 Benefit Scheme (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: Data quality statement

## Data Quality Statement: Cervical screening data 2012–2013

### Summary of key issues

- All states and territories maintain population-based cervical screening registers (also referred to as 'Pap test registers' or 'Pap smear registers') to which all cervical cytology, histology, and human papillomavirus (HPV) DNA tests are reported.
- State and territory cervical screening registers were established to support the National Cervical Screening Program (NCSP) that commenced in 1991.
- The AIHW compiles cervical screening data using aggregate data supplied from state and territory cervical screening registers in order to monitor the NCSP annually.
- Some duplication may occur where the same test is reported to the cervical cytology data in 2 or more jurisdictions. AIHW is unable to identify or resolve these instances, and the level of duplication is unknown, but believed to be small.
- Cervical screening register databases change every day, adding new records and improving the quality of existing records as new information becomes available.

#### Description

All states and territories have legislation that requires pathology laboratories to send all cervical tests to the relevant state or territory population-based cervical screening register.

Cervical screening programs in each state and territory interrogate their own cervical screening register in accordance with detailed data specifications to supply aggregate data annually to the AIHW. These data are compiled into the only repository of national cervical screening data, although because these are aggregate and not unit record data, these data do not exist in a database *per se*, and cannot be interrogated further.

Any Pap test performed in Australia, unless the woman has opted-off, will be included in NCSP data. This means that NCSP data is a virtually complete repository of all cervical screening performed in Australia.

#### Institutional environment

The Australian Institute of Health and Welfare (AIHW) is a major national agency set up by the Australian Government under the *Australian Institute of Health and Welfare Act* 1987 to provide reliable, regular and relevant information and statistics on Australia's health and welfare. It is an independent corporate Commonwealth entity established in 1987, governed by a management Board, and accountable to the Australian Parliament through the Health portfolio.

The AIHW aims to improve the health and wellbeing of Australians through better health and welfare information and statistics. It collects and reports information on a wide range of topics and issues, ranging from health and welfare expenditure, hospitals, disease and injury, and mental health, to ageing, homelessness, disability and child protection.

The Institute also plays a role in developing and maintaining national metadata standards. This work contributes to improving the quality and consistency of national health and

welfare statistics. The Institute works closely with governments and non-government organisations to achieve greater adherence to these standards in administrative data collections to promote national consistency and comparability of data and reporting.

One of the main functions of the AIHW is to work with the states and territories to improve the quality of administrative data and, where possible, to compile national datasets based on data from each jurisdiction, to analyse these datasets and disseminate information and statistics.

The *Australian Institute of Health and Welfare Act* 1987, in conjunction with compliance to the *Privacy Act* 1988 (Cwth), ensures that the data collections managed by the AIHW are kept securely and under the strictest conditions with respect to privacy and confidentiality.

For further information see the AIHW website <www.aihw.gov.au>.

The AIHW has been receiving cervical screening data since 1989.

### Timeliness

Cervical cytology data are available within about 6 months (there can be a lag of up to 6 months in the transmission of test results from pathology laboratories to cervical screening registers), and data for the previous calendar year are supplied in July each year (rescreening and correlation data lag behind, as the specifications for these require a specified period of time to pass before this can be accurately calculated).

The current cervical screening data are for cervical cytology and histology tests performed in 2012 and 2013.

### Accessibility

Cervical screening data are published annually in the report *Cervical screening in Australia*, available on the AIHW website <http://www.aihw.gov.au/cervical-cancer-screening/> where they can be downloaded without charge. Supplementary data tables that provide more detailed data are also provided to accompany each report, and these, too, are available on the AIHW website where they can be downloaded without charge.

General enquiries about AIHW publications can be made to the Digital and Media Communications Unit on (02) 6244 1000 or via email to <info@aihw.gov.au>.

### Interpretability

While many concepts in the report *Cervical screening in Australia* are easy to interpret, other concepts and statistical calculations are more complex and may be confusing to some users. All concepts are explained within the body of the report presenting these data, along with footnotes to provide further details and caveats. Appendix C provides additional detail on the data sources and classifications, and Appendix E provides details on the statistical methods used.

### Relevance

Cervical screening data are highly relevant for monitoring trends in cervical screening participation and abnormality detection. The data are used for many purposes by policy-makers and researchers, but are supplied and analysed specifically to monitor and inform the NCSP.

### Accuracy

All data provided by state and territory cervical screening programs, once analysed, are supplied back for verification.

Further, National Pathology Accreditation Advisory Council (NPAAC) *Performance measures for Australian laboratories reporting cervical cytology* exist which allow some cervical screening data compiled and reported by the AIHW to be compared with data that are also sourced from state and territory cervical screening registers for a different purpose.

### Coherence

Cervical screening data are reported and published annually by the AIHW. Changes in reporting practices over time are clearly noted throughout the reports.

# Appendix E: 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 one jurisdiction and then screened again less than 2 years later in another jurisdiction, both screens may be included in participation. This should, however, have a negligible effect on the reported participation.

## Remoteness area

The remoteness areas (RAs) divide Australia into broad geographic 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 Australia*, *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.

### Remoteness area for participation calculations

For participation calculations, women were allocated to a remoteness area using their residential postcode supplied at the time of screening. Caution is required when examining differences across remoteness areas. First, postcodes used to allocate women may not represent their location of residence. Second, because these are based on the 2011 census, the accuracy of remoteness area classifications diminishes due to subsequent changes in demographics. Third, some postcodes (and hence some individual women) are unable to be allocated to a remoteness area.

### Remoteness area for incidence and mortality calculations

Each unit record in the ACD contains the 2006 Statistical Local Area (SLA) and 2011 Statistical Area Level 2 (SA2) but not the remoteness area. In order to calculate the cancer incidence rates by remoteness area, a correspondence was used to map the 2006 SLA to the 2006 RA. Similarly, the cancer mortality rates by remoteness area were calculated by applying a correspondence from the 2011 SA2 to the 2011 RA.

# Socioeconomic status

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 status 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).

## Socioeconomic status for participation calculations

For participation, women were allocated to a socioeconomic status using their residential postcode supplied at the time of screening. Caution is required when examining differences across socioeconomic status for several reasons. First, postcodes used to allocate women may not represent their location of residence. Second, because these are based on the 2011 census, the accuracy of socioeconomic status classifications diminishes due to subsequent changes in demographics. Third, many postcodes (and hence women) are unable to be allocated to a socioeconomic status group.

## Socioeconomics status for incidence and mortality calculations

Socioeconomic status quintiles were assigned to cancer cases according to the IRSD of the SLA of residence at the time of diagnosis, and to deaths according to the Statistical Area Level 2 (SA2) of residence at the time of death.

# Appendix F: Statistical methods

## Comparisons and tests of statistical significance

This report includes statistical tests of the significance of comparisons of rates between population groups. Any statistical comparison applied to one variable must take account of any other potentially relevant variables. For example, any comparison of participation by state must also take account of differences in the distribution of age and sex between the states. These other variables are known as 'confounding' variables.

## 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 the use of age-standardised rates (ASRs), 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 status 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 ASR for the population of interest. Finally, this is expressed per 1,000 or 100,000 as appropriate.

# Confidence intervals

Population numbers for incidence and mortality and screening have a natural level of variability for a single year above and below what might be expected in the mean over many years. The percentage variability is small for large population numbers but high for small numbers such as mortality in a young age group. One measure of the likely difference is that of standard error, which indicates the extent to which a population number might have varied by chance in only 1 year of data. In the 95% confidence interval, there are about 19 chances in 20 that the difference will be less than 2 standard errors.

There are several methods for calculating confidence intervals. The 95% confidence intervals (CIs) in this report were calculated using a method developed by Dobson and others (1991). This method calculates approximate confidence intervals for a weighted sum of Poisson parameters.

## Interpretation of confidence intervals

Some indicators have a 95% confidence interval presented along with the rates. This is because the observed value of a rate may vary due to chance, even where there is no variation in the underlying value of the rate. The 95% confidence interval represents a range (interval) over which variation in the observed rate is consistent with this chance variation. In other words, there is a 95% confidence that the true value of the rate is somewhere within this range.

These confidence intervals can be used as a guide to whether differences in a particular rate are consistent with chance variation. Where the confidence intervals do not overlap, the difference between rates is greater than that which could be explained by chance, and is regarded as statistically significant.

It is important to note that the overlapping of confidence intervals does not imply that the difference between 2 rates is definitely due to chance. Instead, an overlapping confidence interval represents a difference in rates that is too small to allow differentiation between a real difference and one that is due to chance variation. It can therefore only be stated that no statistically significant differences were found, and not that no differences exist.

The approximate comparisons presented might understate the statistical significance of some differences, but they are sufficiently accurate for the purposes of this report.

As with all statistical comparisons, care should be exercised in interpreting the results of the comparison. If 2 rates are statistically significantly different from each other, this means that the difference is unlikely to have arisen by chance. Judgment should, however, be exercised in deciding whether or not the difference is of any clinical significance.

# Glossary

**Aboriginal:** A person of Aboriginal descent who identifies as an Aboriginal and is accepted as such by the community in which he or she lives.

**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.

**endocervical abnormality (cytology):** An endocervical abnormality is defined as 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 abnormality is defined as 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.

**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 adenocarcinomain situ).

**high-risk HPV:** High-risk HPV types are those that are associated with the development of cervical cancer. Currently 15 high-risk 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).

**histology:** Histology is the examination of tissue from the cervix through a microscope, and 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 that are contracted through sexual contact. Persistent infection with high-risk HPV types can lead to cervical cancer, whereas infection with low-risk types of HPV can cause genital warts.

**negative cytology:** Negative cytology is 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.

**Pap test:** Papanicolaou smear, a procedure to detect cancer and pre-cancerous 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:** The National HPV Vaccination Program was first introduced on 1 April 2007 as a program for females.At its inception it comprised an ongoing 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:** Screening refers to 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.

It is a commonly held belief among health professionals and the community that 'early diagnosis' of cancer is beneficial and therefore screening is bound to be effective. However, it cannot be assumed that each person who has a screen-detected abnormality or cancer within a screening program will benefit from that diagnosis. For example, it is now understood that a substantial proportion of early abnormalities on Pap tests (that is, dysplastic changes) will regress without treatment. The potential benefits of organised population screening program for cancer must thus outweigh any potential harms that may result in the use of a screening test in people who are otherwise well.

**squamous abnormality (cytology):** A squamous abnormality is defined as 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 abnormality is defined as 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:** Unsatisfactory cytology is defined as 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 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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# List of tables

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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 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 80. Cat. no. CAN 77. Canberra: AIHW.

AIHW 2014. National Bowel Cancer Screening Program: monitoring report 2012–13. Cancer series 84. Cat. no. CAN 81. Canberra: AIHW.

AIHW 2014. Analysis of bowel cancer outcomes for the National Bowel Cancer Screening Program. Cat. no. CAN 87. Canberra: AIHW.

AIHW 2014. BreastScreen Australia monitoring report 2011–2012. Cancer series no. 86. Cat. no. CAN 83. Canberra: AIHW.

AIHW 2014. Cancer in Australia: an overview 2014. Cancer series 90. Cat. no. CAN 88. Canberra: AIHW.

AIHW 2014. Australian Cancer Incidence and Mortality (ACIM) books: cervical cancer. Canberra: AIHW. <http://www.aihw.gov.au/acim-books>.

# 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 2012–2013* presents the latest national statistics monitoring the National Cervical Screening Program, which aims to reduce incidence, morbidity and mortality from cervical cancer. Around 58% of women in the target age group of 20–69 took part in the program, with more than 3.8 million women screened in 2012 and 2013.

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.