

Incidence

A major objective of the National Cervical Screening Program is to minimise the incidence of cervical cancer by detecting treatable pre-cancerous lesions before their progression to cancer. However, where these pre-cancerous lesions cannot be detected, diagnosis of cancer at its earliest stage, the micro-invasive stage, is the most desirable alternative. The next two indicators measure the incidence rates of micro-invasive and all cervical cancers in the community. Data on cervical cancer incidence are collated by the AIHW from state and territory cancer registries.

In 1994 the International Federation of Gynaecology and Obstetrics endorsed the following definition of micro-invasive carcinoma of the cervix:

Stage 1a1. Measured invasion of stroma no greater than 3 mm in depth and no wider than 7 mm.

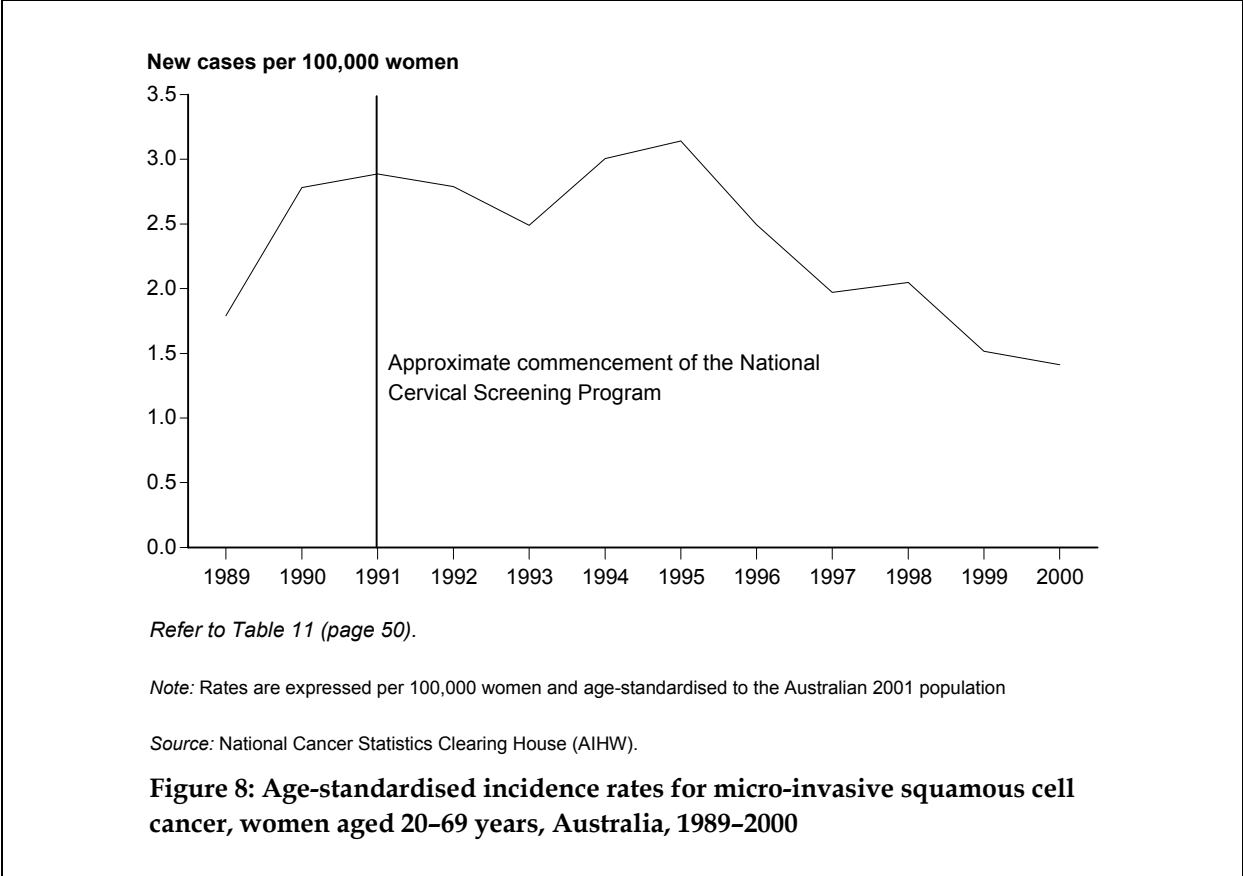
Stage 1a2. Measured invasion of stroma between 3 mm and 5 mm in depth and no wider than 7 mm. The depth of invasion should be measured from the base of the epithelium, either surface or glandular, from which it originates. Vascular space involvement, either venous or lymphatic, should not alter the staging (Ostor & Mulvany 1996).

In interpreting cervical cancer incidence statistics, note that cervical screening has been available on an ad hoc basis since the 1960s, but it is only since the late 1980s and early 1990s that there has been an organised national approach to screening at a population level. The introduction of cervical screening programs which achieve higher participation rates may result in the paradox whereby in the short term the number of new cases of micro-invasive cancer increases because cancers are found earlier than they would have been without screening, with the rate of more advanced cancers decreasing in the longer term.

For this report the most recent national data available on incidence are for 2000, in contrast to screening data which are available for 2001. This time lag in availability of incidence data is expected to reduce over the next 2 years.

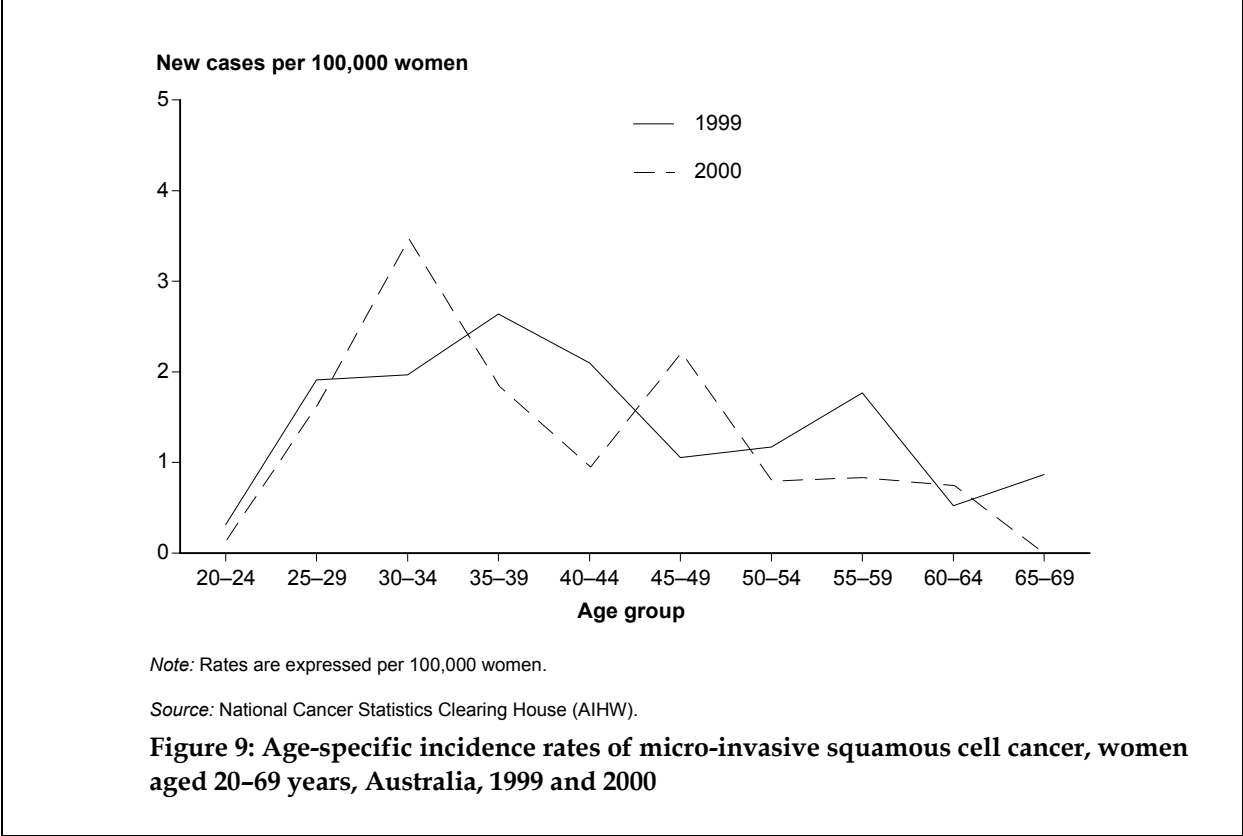
Indicator 5.1: Incidence of micro-invasive cervical cancer

Incidence rates of micro-invasive squamous cell carcinoma per 100,000 estimated resident female population in a 12-month period by 5-year age groups (20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+) and for the target age group (20-69 years, age-standardised).



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	(Number per 100,000 women)											
AS rate	1.8	2.8	2.9	2.8	2.6	3.0	3.2	2.5	2.0	2.1	1.5	1.4

- The age-standardised incidence rate of micro-invasive cervical cancer was 1.4 per 100,000 women in 2000 for women in the target age group of 20-69 years and 0.9 per 100,000 for women of all ages (Table 11, page 50). The rates have been declining since 1995.
- In 2000 there were 89 new cases of micro-invasive cervical cancers for all women and 86 new cases in women aged 20-69 years (Table 10, page 49).



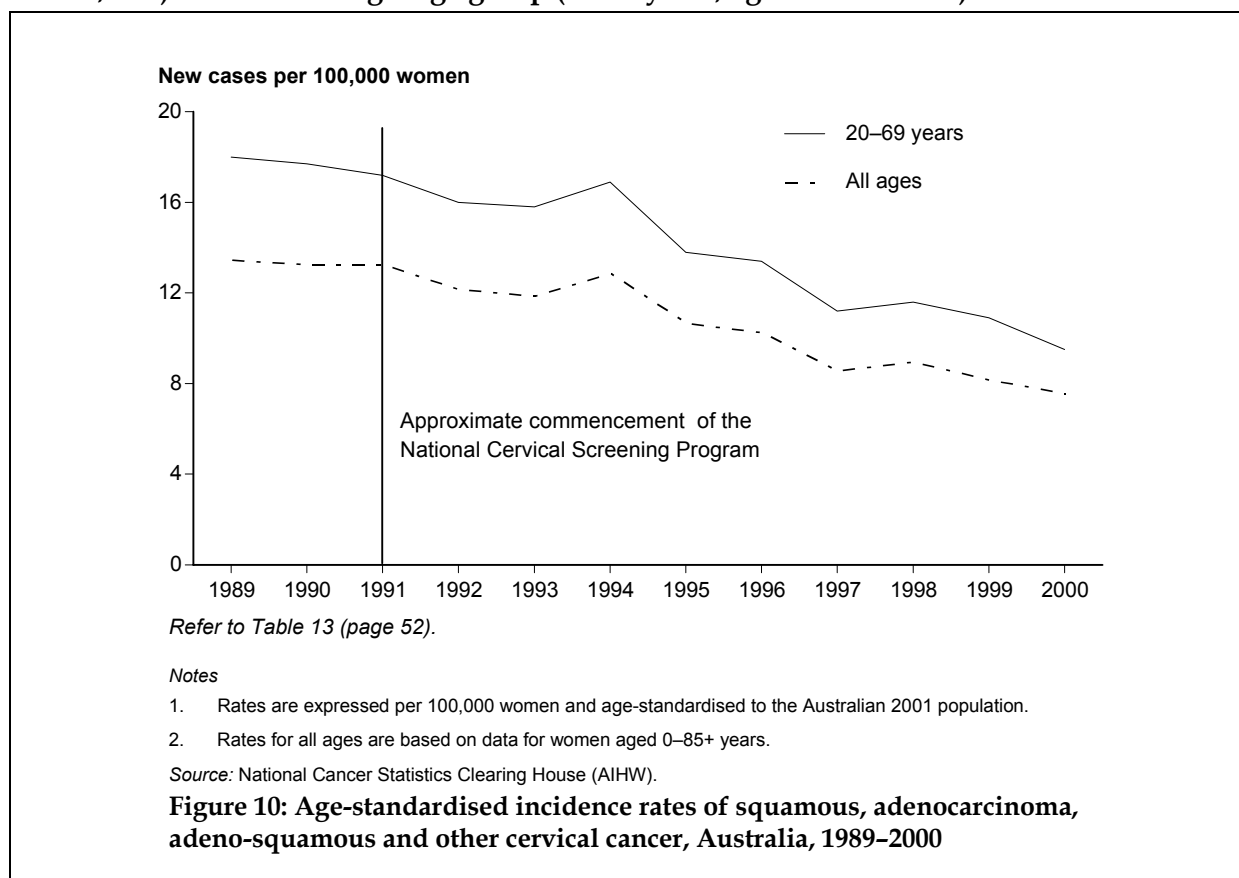
Year	Age group										20-69*
	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	
1999	0.3	1.9	2.0	2.6	2.1	1.1	1.2	1.8	0.5	0.9	1.5 (1.2-1.9)
2000	0.2	1.7	3.5	1.9	1.0	2.2	0.8	0.8	0.8	0.0	1.4 (1.1-1.7)

*Age-standardised rates (standardised to the Australian 2001 population) with 95% confidence intervals.

- The age-standardised incidence rate of micro-invasive squamous cell cancer was 1.4 per 100,000 women aged 20-69 years in 2000; this was statistically no different from the 1.5 per 100,000 in 1999 (Tables 10 and 11, pages 49 and 50). However, the decrease between 1995 and 2000 age-standardised incidence rates is statistically significant.
- The highest detection rates for micro-invasive squamous cell cancer were for women in the 30-34 to 45-49 age groups.

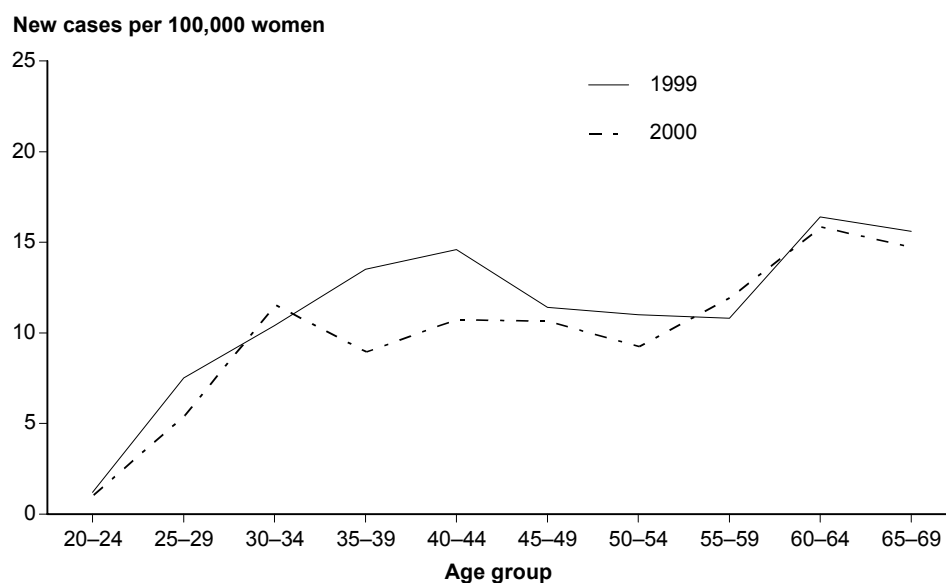
Indicator 5.2: Incidence of squamous, adenocarcinoma, adeno-squamous and other cervical cancers

Incidence rates of squamous, adenocarcinoma, adeno-squamous and other cervical cancer per 100,000 estimated resident female population in a 12-month period by 5-year age groups (20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50–54, 55–59, 60–64, 65–69, 70–74, 75–79, 80–84, 85+) and for the target age group (20–69 years, age-standardised).



Age	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	(Number per 100,000 women)											
All ages 0–85+ years	13.5	13.3	13.3	12.2	11.9	12.9	10.7	10.3	8.6	9.0	8.2	7.6
20–69 years	18.0	17.7	17.2	16.0	15.8	16.9	13.8	13.4	11.2	11.6	10.9	9.5

- In 2000, there were 745 new cases of all cervical cancer (squamous, adenocarcinoma, adeno-squamous and other cervical cancer) diagnosed in Australia compared with the peak of 1,131 new cases in 1994. Of the 745 new cases, 578 were women in the target age group 20–69 years (Table 12, page 51). All but two cases of the remaining 167 were in women aged 70 years and over.
- The age-standardised incidence rate of all cervical cancers declined to 7.6 per 100,000 women for all women in Australia in 2000, and to 9.5 per 100,000 women in the target age group. Between 1989 and 2000 the decline over all ages was 43.7%, and in the target age group was 47.2% (Table 13, page 52).



Refer to Table 13 (page 52).

Note: Rates are expressed per 100,000 women.

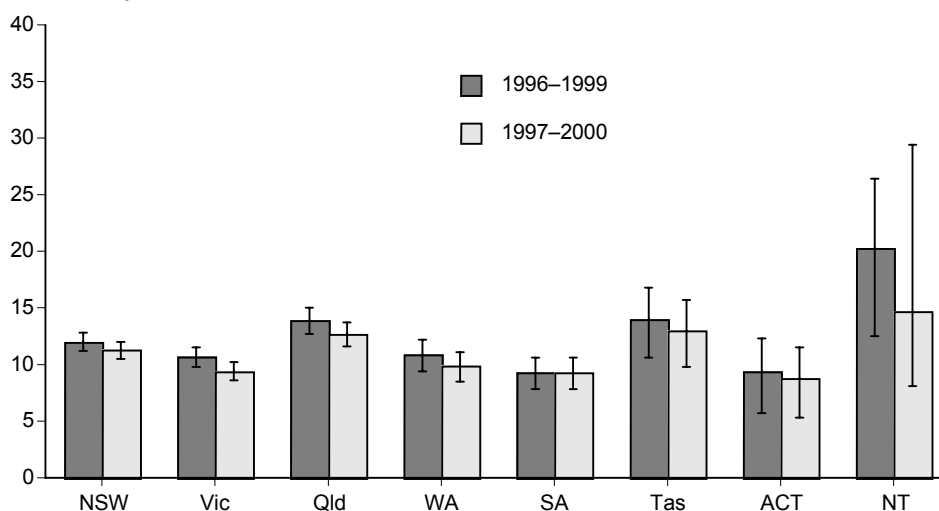
Source: National Cancer Statistics Clearing House (AIHW).

Figure 11: Age-specific incidence rates of cervical cancer, Australia, 1999 and 2000

Year	Age group										20-69
	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	
(Number per 100,000 women)											
1999	1.2	7.5	10.4	13.5	14.6	11.4	11.0	10.8	16.4	15.6	10.9
2000	1.1	5.5	11.6	9.0	10.8	10.7	9.3	12.0	15.9	14.8	9.5

- The age-specific rate of cervical cancer incidence was highest in the 60-64 and 65-69 age groups in 1999 and 2000. It was lower in 2000 than in 1999 in all 5-year age groups for women aged 20-69 years, except in the 30-34 and 55-59 age groups.

New cases per 100,000 women



Refer to Tables 14b and 15b (pages 54 and 56).

Notes

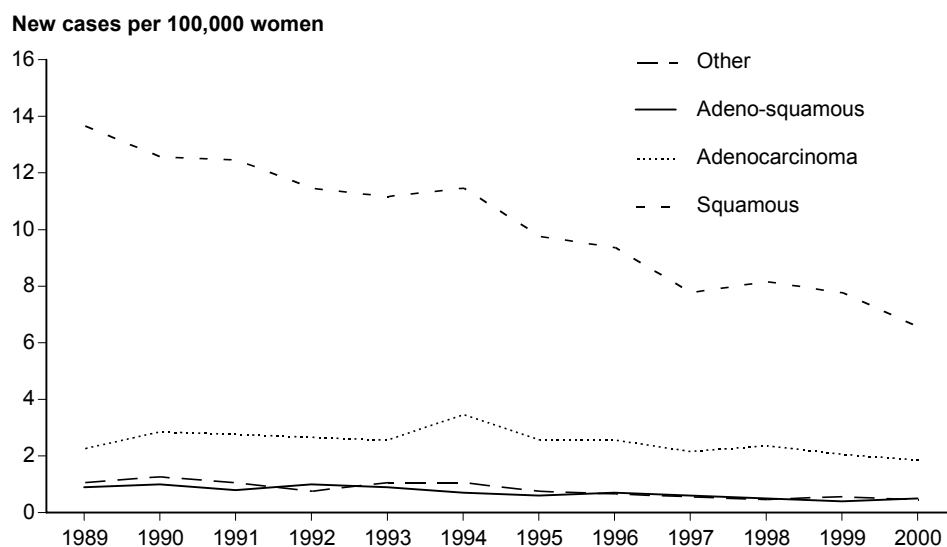
1. Rates are expressed per 100,000 women and age-standardised to the Australian 2001 population.
2. Bars on graphs represent 95% confidence intervals.

Source: National Cancer Statistics Clearing House (AIHW).

Figure 12: Age-standardised cervical cancer incidence rates by women aged 20-69 years, states and territories, 1996-1999 and 1997-2000

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
1996-1999	12.0	10.7	13.9	10.9	9.3	14.0	9.4	20.3	11.7
95% CI	11.2-12.8	9.9-11.6	12.8-15.1	9.6-12.4	8.0-10.8	11.1-17.3	6.5-13.1	14.2-28.1	11.3-12.2
1997-2000	11.3	9.4	12.7	9.9	9.3	13.0	8.8	14.7	10.8
95% CI	10.6-12.1	8.6-10.2	11.7-13.9	8.7-11.3	8.0-10.8	10.2-16.2	6.1-12.3	9.6-21.3	10.4-11.2

- In the period 1997-2000, the Australian Capital Territory had the lowest incidence at 8.8 new cases per 100,000 women and the Northern Territory had the highest rate of 14.7 per 100,000 women. Queensland (12.7) was significantly above the national average (10.8) and Victoria (9.4) was significantly below.
- The age-standardised incidence rate declined in all states and territories between the two periods 1996-1999 and 1997-2000 except in South Australia where the rate did not change (Tables 14b and 15b, pages 54 and 56.)



Refer to Table 16b (page 57).

Note: Rates are expressed per 100,000 women and age-standardised to the Australian 2001 population.

Source: National Cancer Statistics Clearing House (AIHW).

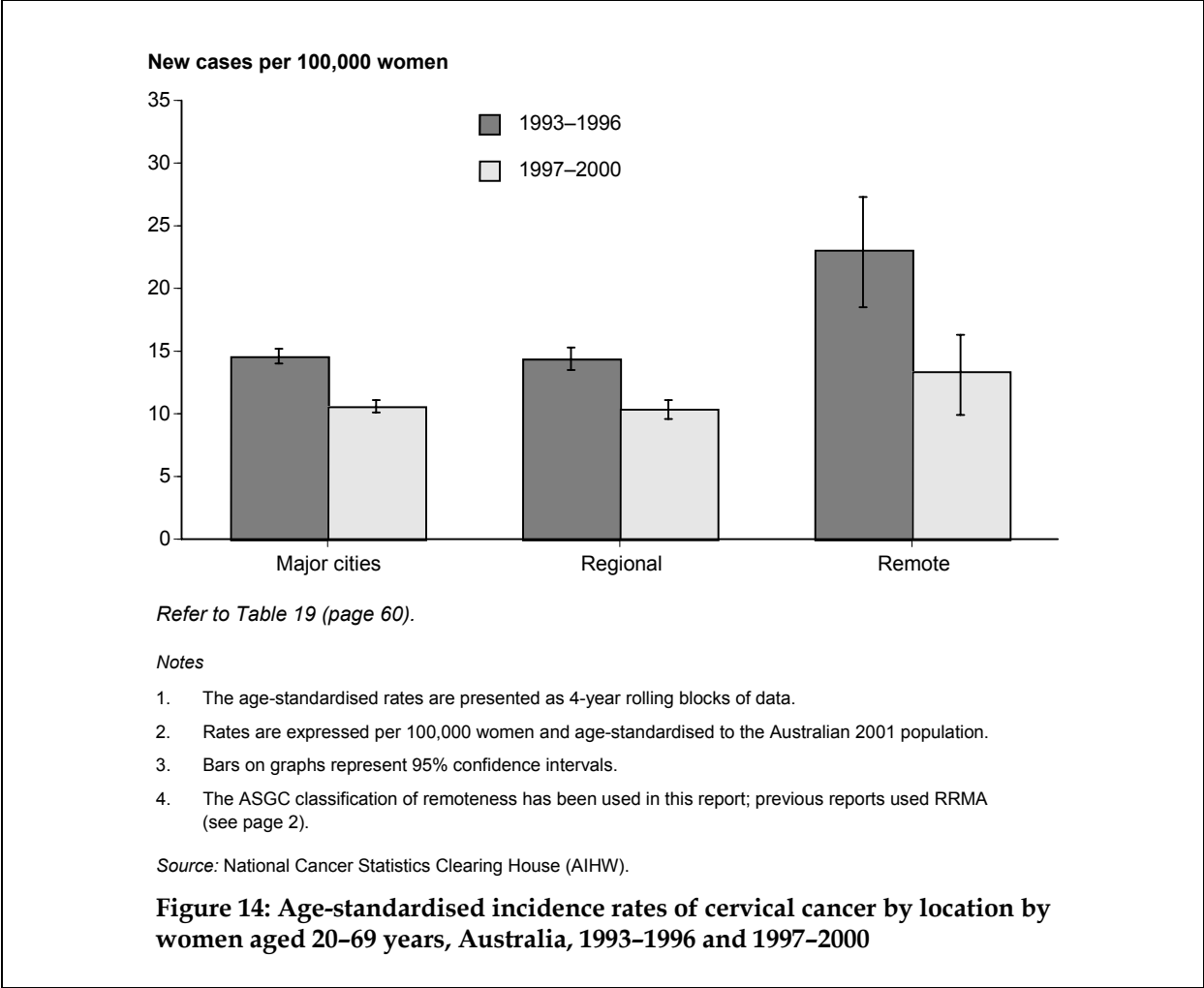
Figure 13: Age-standardised incidence rates of cervical cancer by histological type, women aged 20–69 years, Australia, 1989–2000

Histological type	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Squamous	13.7	12.6	12.5	11.5	11.2	11.5	9.8	9.4	7.8	8.2	7.8	6.6
Adenocarcinoma	2.3	2.9	2.8	2.7	2.6	3.5	2.6	2.6	2.2	2.4	2.1	1.9
Adeno-squamous	0.9	1.0	0.8	1.0	0.9	0.7	0.6	0.7	0.6	0.5	0.4	0.5
Other	1.1	1.3	1.1	0.8	1.1	1.1	0.8	0.7	0.6	0.5	0.6	0.5

- In 2001, squamous cell carcinomas of the cervix accounted for 69.2% of all new cases of cervical cancer in women aged 20–69 years, adenocarcinomas 20.3%, adeno-squamous 5.2%, and the remaining 5.2% comprised a range of other mixed and unknown histologies (Table 16a, page 57).
- The trend from 1989 to 2000 for all histological types has been a decrease in the age-standardised rates of cervical cancer per 100,000 in women aged 20–69 years. However, this trend is not statistically significant for adeno-squamous and adenocarcinoma.

Indicator 5.3: Incidence by location

Incidence rates of cervical cancer per 100,000 estimated resident female population in a 4-year period by location by 5-year age groups (20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50–54, 55–59, 60–64, 65–69, 70–74, 75–79, 80–84, 85+) and for the target age group (20–69 years, age-standardised).



	Metropolitan		Regional		Remote	
	1993–1996	1997–2000	1993–1996	1997–2000	1993–1996	1997–2000
AS rate	14.6	10.6	14.4	10.4	23.1	13.4
95% CI	13.9–15.2	10.1–11.1	13.5–15.4	9.7–11.2	18.9–27.7	10.5–16.9

- There were 2,127 new cases (67.7% of all new cases) of cervical cancer in major cities in the 4-year period 1997–2000, 933 new cases (29.7% of all new cases) in regional locations and 83 new cases (2.6% of all new cases) in remote locations (Table 18, page 59).
- Age-standardised cervical cancer incidence rates in the period 1997–2000, for women in the target age group 20–69 years, were higher in remote locations (13.4 per 100,000 women) than in regional locations (10.4) and major cities (10.6). This difference was not statistically significant (Table 19, page 60).

Mortality

Cancer of the cervix is one of the few cancers for which there is an efficacious screening test for detection of precursors of the disease. Most deaths due to cervical cancer are potentially avoidable (Marcus & Crane 1998). The objective of the National Cervical Screening Program is to reduce this mortality rate.

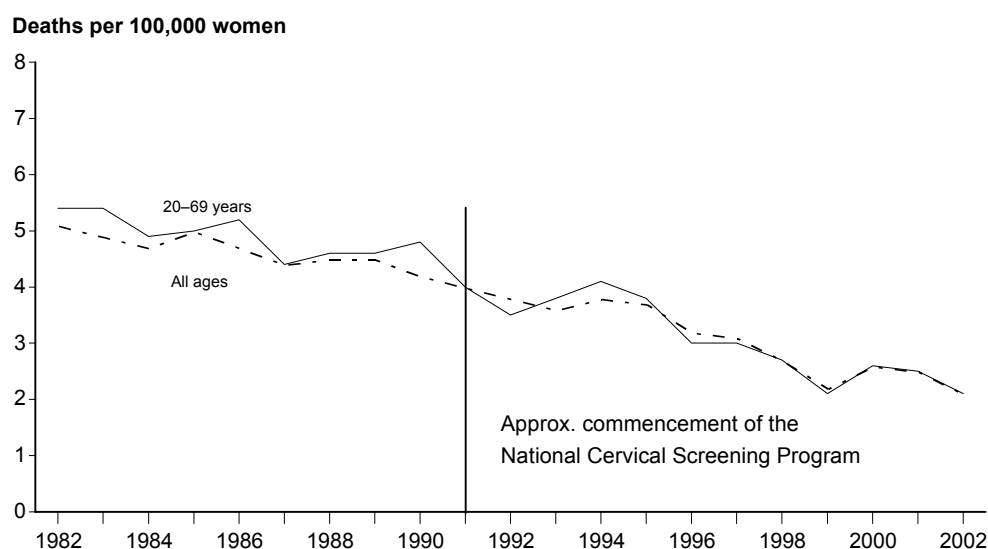
The three mortality indicators are mortality (by age and state), mortality by location (metropolitan, rural and remote), and Indigenous mortality (Indigenous and non-Indigenous). These indicators measure the level of mortality from cervical cancer in the total female population by age and other demographic characteristics. The mortality indicators are important because from them an assessment can be made of changes in mortality in different age groups and particular target groups over time. However, note that changes in the mortality rates may not be evident for a number of years following an improvement in the participation rate. Therefore, the effectiveness of this measure needs to be viewed in the longer rather than the shorter term.

Data issues

- Two major changes that have occurred in the classification and processing of Australian mortality data require some caution when interpreting mortality data over time. They are:
 1. the introduction of the tenth revision of the International Classification of Diseases (ICD-10) for classifying deaths registered from 1 January 1999; and
 2. the introduction by the Australian Bureau of Statistics (ABS) of the Automated Coding System (ACS) for processing deaths registered from 1 January 1997.
- As a result of this there is now a break in the mortality data series. In order to make mortality data coded using ICD-9 and ICD-10 comparable, the ABS has derived comparability factors to adjust data based on ICD-9. These comparability factors are derived from the movements in the underlying causes of death coded in ICD-9 compared with ICD-10 (ABS 2000).
- For cervical cancer deaths, the comparability factor is 0.98, and the pre-1997 mortality data presented in this report have been adjusted accordingly. The effect of this is that the pre-1997 number of deaths appearing in this report is different from figures in previous *Cervical Screening in Australia* reports.
- Prior to 1998, only South Australia, Western Australia and the Northern Territory had a relatively high coverage of Indigenous status identification in the deaths data. In 1998 Queensland's coverage of Indigenous deaths reached an acceptable level following the introduction of a new *Death Information Form* in 1996–97 which included a question on Indigenous status (ABS 1999). Therefore, in this report, cervical cancer deaths for Indigenous Australians include data from Queensland, South Australia, Western Australia and the Northern Territory.

Indicator 6.1: Mortality

Death rate from cervical cancer per 100,000 estimated resident female population in a 12-month period by 5-year age groups (20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+) and for the target age group (20-69 years, age-standardised).



Refer to Table 21 (page 62).

Notes

1. Rates are expressed per 100,000 women and age-standardised to the Australian 2001 population.
2. Deaths were derived by year of registration.
3. Rates for all ages are based on data for women aged 0-85+ years.

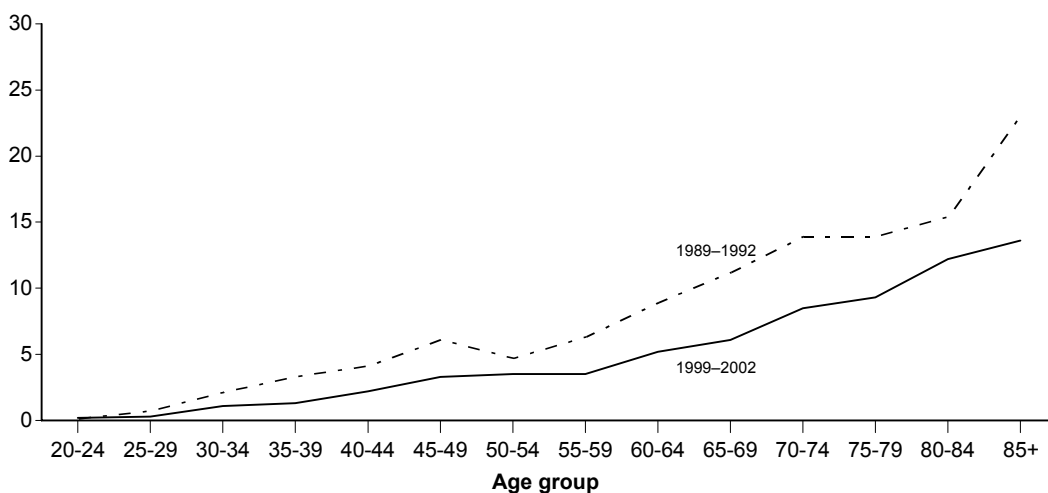
Source: AIHW Mortality Database.

Figure 15: Age-standardised death rates from cervical cancer, Australia, 1982-2002

	'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00	'01	'02
All ages																					
0-85+ years	5.1	4.9	4.7	5.0	4.7	4.4	4.5	4.5	4.2	4.0	3.8	3.6	3.8	3.7	3.2	3.1	2.7	2.2	2.6	2.5	2.1
Target age																					
20-69 years	5.4	5.4	4.9	5.0	5.2	4.4	4.6	4.6	4.8	4.0	3.5	3.8	4.1	3.8	3.0	3.0	2.7	2.1	2.6	2.5	2.1

- Cervical cancer was the 18th most common cause of cancer deaths in Australian women in 2002, accounting for 227 deaths.
- The age-standardised death rate for women of all ages fell to 2.1 per 100,000 women in 2002, much lower than the pre-screening program peaks of 5.1 per 100,000 in 1982 and 5.0 per 100,000 in 1985.

Deaths per 100,000 women



Notes

1. Rates are expressed per 100,000 women.
2. Deaths were derived by year of registration.

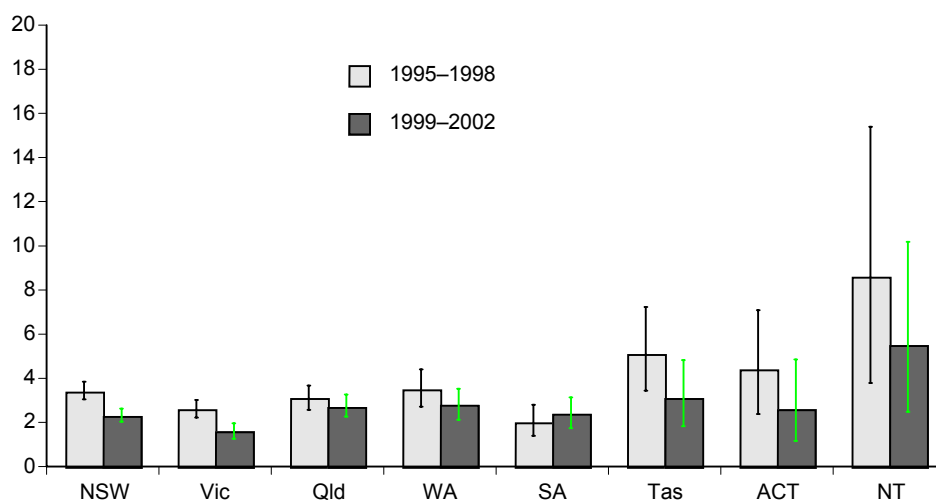
Source: AIHW Mortality Database.

Figure 16: Age-specific cervical cancer death rates by age group, Australia, 1989-1992 and 1999-2002

	Age group													
	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
1989-1992	0.2	0.8	2.2	3.4	4.2	6.2	4.8	6.4	9.0	11.3	14.0	14.0	15.5	23.2
1999-2002	0.2	0.3	1.1	1.3	2.2	3.3	3.5	3.5	5.2	6.1	8.5	9.3	12.2	13.6

- Mortality from cervical cancer between the 1989-1992 and 1999-2002 periods declined in all age groups except for the age group 20-24 years where there was no difference.
- In both 1989-1992 and 1999-2002 the age-specific rates of cervical cancer mortality increased with increasing age.

Deaths per 100,000 women



Refer to Tables 23 and 25 (pages 64 and 66).

Notes

1. The age-standardised rates were averaged over 4 years to smooth annual variations that may occur in the smaller states and territories.
2. Deaths derived by year of registration.
3. Rates are expressed per 100,000 women and age-standardised to the Australian 2001 population.
4. Bars on graphs represent 95% confidence intervals.

Source: AIHW Mortality Database.

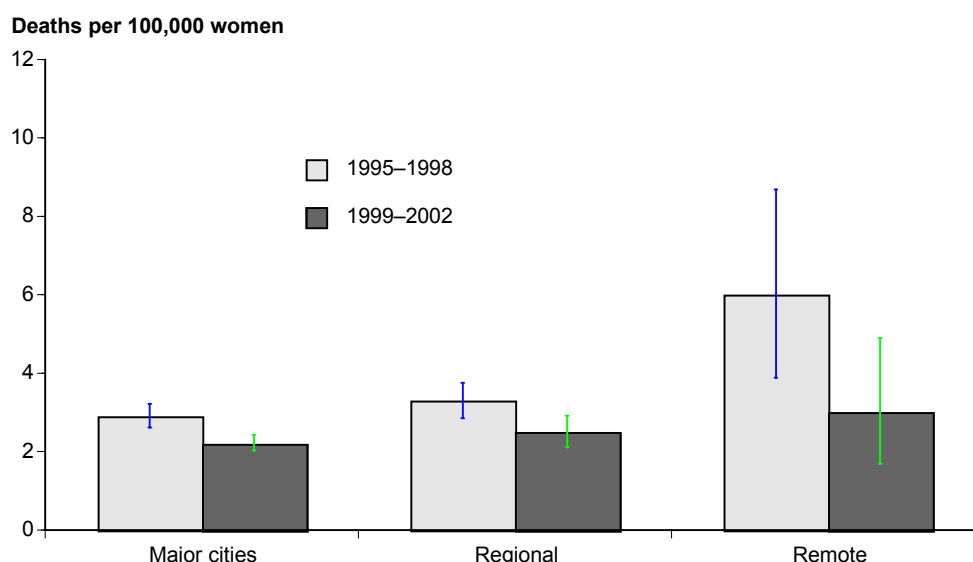
Figure 17: Age-standardised cervical cancer death rates by women aged 20-69 years, states and territories, 1995-1998 and 1999-2002

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Rate 1995-1998	3.4	2.6	3.1	3.5	2.0	5.1	4.4	8.6	3.1
95% CI	3.0-3.8	2.2-3.0	2.6-3.7	2.7-4.4	1.4-2.8	3.4-7.2	2.4-7.1	3.8-15.4	2.9-3.4
Rate 1999-2002	2.3	1.6	2.7	2.8	2.4	3.1	2.6	5.5	2.3
95% CI	2.0-2.6	1.3-2.0	2.3-3.3	2.1-3.5	1.7-3.1	1.8-4.8	1.2-4.9	2.5-10.2	2.1-2.5

- In the 4-year period 1999-2002 there were 976 deaths from cervical cancer in all states and territories compared with 1,183 in 1995-1998.
- Age-standardised mortality varied from 1.6 deaths per 100,000 women in Victoria to 5.5 per 100,000 in the Northern Territory in the 1999-2002 period.
- The age-standardised death rates decreased in all jurisdictions between the two periods except in South Australia. The declines were significant in New South Wales and Victoria. Although the Northern Territory rate decreased sharply between the two periods, the rates are based on very small numbers and are subject to considerable variation.

Indicator 6.2: Mortality by location

Death rate from cervical cancer per 100,000 estimated resident female population in a 4-year period by location and 5-year age groups (20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50–54, 55–59, 60–64, 65–69, 70–74, 75–79, 80–84, 85+) and for the target age group (20–69 years, age-standardised).



Refer to Table 27 (page 68).

Notes

1. Age-standardised rates are presented as 4-year rolling blocks of data.
2. Deaths were derived from place of usual residence and by year of registration.
3. Rates are expressed per 100,000 women and age-standardised to the Australian 2001 population.
4. Bars on graphs represent 95% confidence intervals.
5. The ASGC classification of remoteness has been used in this report; previous reports used RRMA (see page 2).

Source: AIHW Mortality Database.

Figure 18: Age-standardised cervical cancer death rates by location, women aged 20–69 years, 1995–1998 and 1999–2002

	Major cities		Regional		Remote	
	1995–1998	1999–2002	1995–1998	1999–2002	1995–1998	1999–2002
Rate	2.9	2.2	3.3	2.5	6.0	3.0
95% CI	2.6–3.2	2.0–2.4	2.9–3.8	2.1–2.9	3.9–8.7	1.7–4.9

- During the 4-year period 1999–2002, there were 621 deaths (64% of all cervical cancer deaths in that period) in major cities, 321 deaths (33% of all cervical cancer deaths) in regional areas and 26 deaths (3% of all cervical cancer deaths) in remote areas (Table 26, page 67).
- The age-standardised death rate for women in the target age group 20–69 years increased from major cities to rural areas and from rural to remote areas, though these differences were not statistically significant.

- In all three regions the age-standardised mortality rates declined between the periods 1995–1998 and 1999–2002; however, only the decline in the metropolitan area was statistically significant. The largest overall mortality reduction was in remote areas (a mortality reduction of 50% between 1995–1998 and 1999–2002), but these rates are based on small numbers and therefore the decline is not statistically significant.

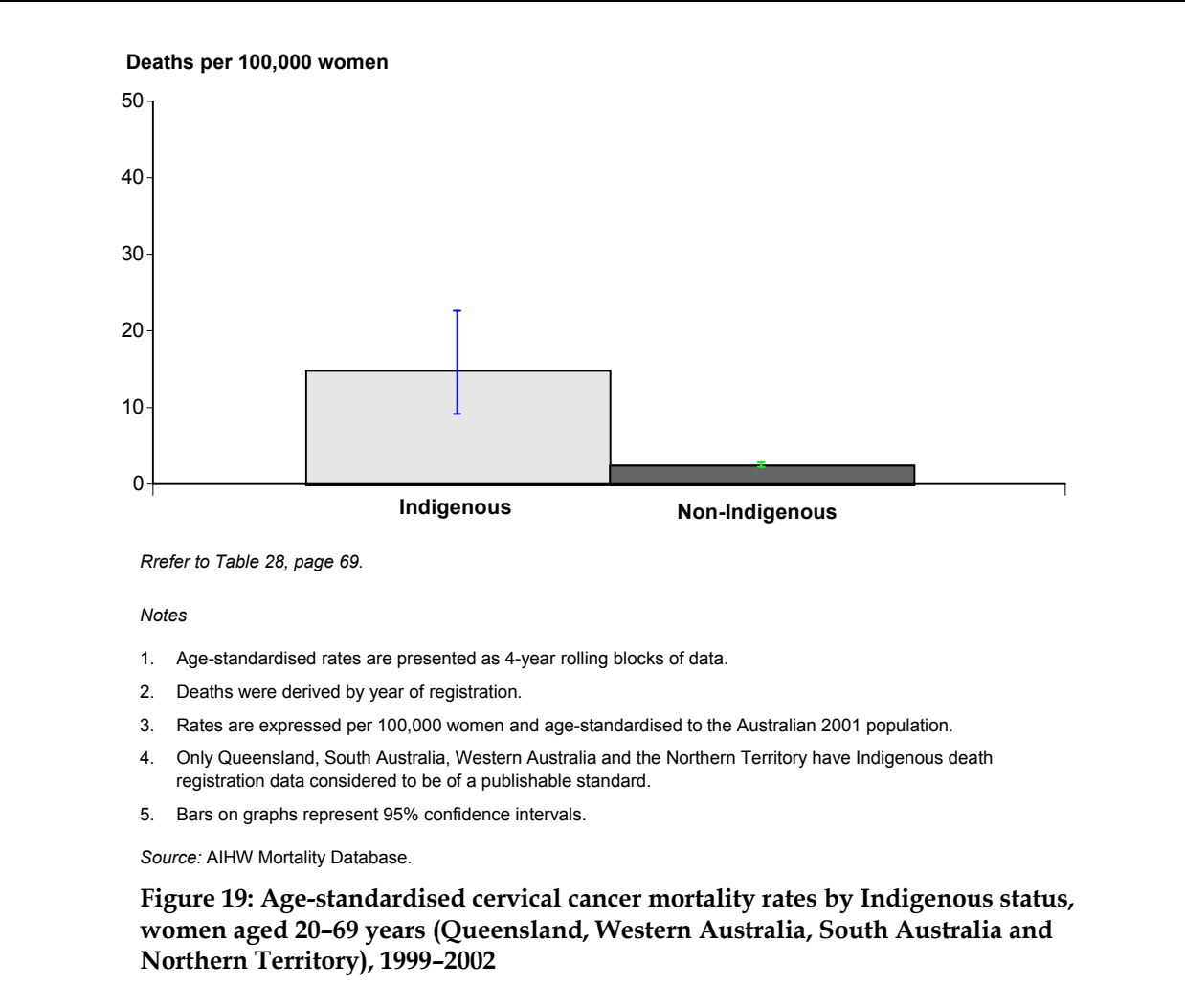
Age-specific features

(Tables 26 and 27, pages 67 and 68)

- In major cities the death rates from cervical cancer increased with age. In regional and remote locations, although there is a general trend of rising death rates with age, the specific pattern is less clear because of the small numbers involved in calculating the rates.
- In major cities, cervical cancer mortality decreased in all age groups between the periods 1995–1998 and 1999–2002. In regional locations, mortality declined in most age groups.

Indicator 6.3: Indigenous mortality

Death rate from cervical cancer per 100,000 estimated resident female population in a 4-year period by Indigenous status and 5-year age groups (20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75+) and for the target age group (20-69 years, age-standardised).



	Indigenous	Non-Indigenous
AS rate (A)	14.9	2.5
95% CI	9.1-22.6	2.2-2.8

- Due to the difficulties of Indigenous identification in mortality data, only data from Queensland, Western Australia, South Australia and the Northern Territory are considered to be of publishable standard. Therefore, all cervical cancer mortality data for both Indigenous women and non-Indigenous women used in this analysis are confined to these jurisdictions.

- The age-standardised mortality rate attributable to cervical cancer among Indigenous women in the target age group in 1999–2002 was 14.9 per 100,000 women and was considerably higher than the mortality rate for non-Indigenous women in the same age range (2.5 per 100,000 women) (Table 28, page 69).
- Compared with non-Indigenous women, Indigenous women experienced high rates of mortality in every age group (Table 28, page 69).