

**Breast and cervical  
cancer screening  
in Australia  
1996–1997**

The Australian Institute of Health and Welfare is an independent health and welfare statistics and information agency. The Institute's mission is to inform community discussion and decision making through national leadership in the development and provision of authoritative and timely information on the health and welfare of Australians.

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# **Breast and cervical cancer screening in Australia 1996–1997**

**Australian Institute of Health and Welfare,  
BreastScreen Australia and  
the National Cervical Screening Program**

Australian Institute of Health and Welfare  
Canberra

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## Preface

This publication is the first national breast and cervical cancer screening report. It is a joint project between the Australian Institute of Health and Welfare, the Commonwealth Department of Health and Aged Care, BreastScreen Australia and the National Cervical Screening Program. The report is in concordance with the National Health Information Development Plan and has been funded under a Memorandum of Understanding with the Public Health Division of the Department of Health and Aged Care.

The project has been carried out under the guidance of the National Screening Information Advisory Group, which has had carriage of the new set of breast and cervical national indicators reported on in this publication. As part of the spirit of cooperation between agencies the Institute has endeavoured to involve State and Territory breast and cervical cancer screening programs in all steps of the report production. The task of bringing data together and reporting on the indicators has been made easier by the generous level of support given by State and Territory screening program and data managers and other interested experts in the field.

It is envisaged that the next steps in this project will be to develop a set of triennial breast and cervical cancer screening measures, and to access a broader range of data.

This publication will add significantly to the information available on cancer screening in Australia.

Richard Madden  
Director

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In addition, this report would not have been possible without the cooperation and effort of all staff from the breast and cervical cancer screening programs and Pap test registers. We also acknowledge the Australasian Association of Cancer Registries, and Institute staff responsible for the operation of the National Cancer Statistics Clearing House for providing incidence data for this report. Thanks is also extended to the New South Wales State Cancer Council, the New South Wales Breast Cancer Institute, the National Breast Cancer Centre and State and Territory Health Departments for their assistance in the production of this report.

# Summary

- This report is the first to present national data on breast and cervical cancer screening in Australia. The report presents data on a new set of indicators for the cancer screening programs – BreastScreen Australia and the National Cervical Cancer Screening Program.

## Breast cancer screening

- Breast cancer is a significant public health issue (9,846 new cases in 1996), and given current knowledge is not preventable. Therefore the greatest impact on mortality rates can be achieved through the early detection of breast cancers with mammography, and follow-up treatment.
- 1,262,584 women were screened by BreastScreen Australia in 1996–1997 with 52.2% of women aged 50–69 years (the target population) screened in the recommended 24-month period.
- It is important that breast cancers are detected early (i.e.  $\leq 10$  mm in size) to improve health outcomes. Small cancers comprised 37% of all invasive cancers detected in the target age group. The small cancer detection rate, 14.4 cancers per 10,000 women screened, is in excess of the program's target of 8 per 10,000 women screened.
- Breast cancer incidence rates for the target age group increased steadily between 1983 and 1991, increased rapidly to a peak in 1995 (287 new cases per 100,000) and have shown a small decrease in 1996. This rapid increase was in part a response due to the screening program and its ability to detect cancers that would otherwise not have been detected until a later date.
- The mortality rate for women in the target group declined by 9.4% between 1993 and 1996 to 63 deaths per 100,000 women.

## Cervical cancer screening

- Cervical cancer (947 new cases in 1995) is one of the few cancers where screening detects pre-cancerous lesions, thereby rendering a large proportion of these cancers preventable.
- 2,619,273 women were screened by the National Cervical Screening Program in 1996–1997 with 62.4% of the target group (women aged 20–69 years) screened in the recommended 24-month period.
- Sixty-four per cent of women who had a negative Pap smear did not have a further smear in the following 24 months, indicating that in general women are not seeking rescreening inside the recommended 2-yearly screening interval.
- The detection rate for high-grade abnormalities was much higher in younger age groups.
- Incidence rates for micro-invasive cervical cancer (early stage cancer) for the target age group have increased markedly between 1982 (1.6 per 100,000 women) and 1995 (3.1 per 100,000 women). This is a positive result given that the increase is mainly at the expense of later stage cancers in a period where the incidence rate for all cervical cancers is declining. Incidence rates for squamous cell carcinoma of the cervix (the most preventable type) fell by 36% for the target age group between 1983 and 1995.
- The mortality rates for women in the target age group declined from 5.2 per 100,000 women in 1983, to 3 per 100,000 women in 1996.

# Introduction

Breast and cervical cancers are two of a small group of cancers where there is evidence that morbidity and mortality can be reduced through population-based screening and effective follow-up treatment. Screening is the performance of tests on apparently well people in order to detect a medical condition at an earlier stage than would otherwise be the case. For screening to be of benefit, treatment of the screen-detected condition must result in a better prognosis than treatment of the same condition presenting clinically (AHMAC 1990).

In Australia breast cancer is the most common cancer in women (excluding the less life-threatening non-melanocytic skin cancer), and accounted for nearly 29% of new cases of cancer in women in 1996, and 17% of all female cancer-related deaths in 1996. This is equivalent to 9,846 new cases of breast cancer and 2,623 deaths in 1996. Given the current incidence the lifetime risk of a woman developing breast cancer before the age of 75 is one in 11. At present the cause(s) of breast cancer are not known, and therefore an effective preventative measure is not available. Breast cancer screening (by mammography), followed by appropriate treatment, has been shown to be the most effective population based intervention to reduce mortality from this disease (AHMAC 1990).

In 1995 cancer of the cervix accounted for 3% of new cases of cancer in women (947 new cases), and 2.3% of female cancer deaths in 1996. The lifetime risk of a woman developing cervical cancer is one in 101, and it is one of the few cancers where screening is able to detect pre-cancerous lesions, thereby rendering a large proportion of these cancers preventable.

The primary task of this report is to examine the role screening has in the detection of precursors to cervical cancer and small breast cancers, to provide background information to the screening programs, and to present national statistics on key outcome indicators for the programs.

## Background

The Commonwealth, State and Territory governments place importance on minimising the impact of breast and cervical cancer in the community. The most effective method of combating these diseases is through early detection of precursor lesions (cervical cancer) or of the disease itself, and subsequent appropriate treatment. Screening programs for breast cancer (via mammography) and cervical cancer (via Pap smears) have been set in place as part of a public health initiative to meet this objective. The programs are called BreastScreen Australia and the National Cervical Screening Program.

In order to measure the effectiveness and coverage of these programs a performance monitoring system has been developed. To focus national attention on the screening programs a set of indicators covering essential aspects of the screening programs has been defined which draws on State and Territory data. The National Screening Information Advisory Group, in conjunction with the Australian Institute of Health and Welfare, State and Territory screening program and data managers and other experts in the field, and under the umbrella of the program's National Advisory Committees have guided this process.

Both BreastScreen and the National Cervical Screening Program are complex programs to deliver and monitor. Information is collected about process quality, costs and outcomes. To summarise the performance of these programs a set of indicators is needed to monitor progress towards the objectives set by the program. For the breast and cervical cancer screening programs the key outcome objectives are to reduce mortality and minimise morbidity from these cancers, and to maximise the efficiency of program delivery and its equity. In order to measure progress towards these objectives a wide range of indicators might have been chosen, however a number of existing conditions restrict the number and diversity of indicators that would be acceptable for implementation and effective use. These conditions relate to existing data collections, funding arrangements, precision of and commitment to new data collections, the need for timely information, and program resources. The development of the data monitoring system recognises the importance of ensuring the data behind the indicators are sustainable and comparable over time and between population groups.

## **Structure of this report**

This report is divided into five major sections:

- an introduction and background to the national breast and cervical cancer screening project;
- an examination of breast cancer screening indicators for 1996 and 1997;
- an examination of cervical cancer screening indicators for 1996 and 1997;
- appendixes comprising information sources, methods and glossary; and
- references and related publications.



# **1. Breast cancer screening in Australia 1996–1997**

## Breast cancer and its management

Breast cancer is the most commonly diagnosed cancer in Australian women and in 1996 accounted for almost 29% (9,846) of new cases of cancer. Breast cancer is also the most common cause of cancer death in women in Australia accounting for 17% (2,623) of all female cancer-related deaths in 1996. Most breast cancers originate in the cells that line the lobules (small lobes of the breast that produce milk) and terminal ducts that carry the milk from the lobules. Breast cancers are classified as invasive when they have spread beyond the basement membrane of the ducts and/or lobules and non-invasive or *in situ* cancers (ductal carcinoma *in situ* or DCIS) when the cancerous cells have not extended beyond the basement membrane.

Breast cancers can often be felt as lumps. The great majority of breast lumps are not cancer. Most breast lumps are benign or fibrocystic lumps (areas of thickening and small fluid-filled cysts). Some of these benign breast diseases have been shown to be risk factors for breast cancer.

Breast cancer and other lumps are most often discovered by:

- a woman noticing or suspecting a lump or something unusual in her breast (breast self-examination)
- a clinical examination of the breasts
- a breast X-ray (mammogram).

Mammography has a distinct advantage over other methods of breast cancer detection because it can detect small tumours before they are detectable by women or the most highly trained clinician. This is an important feature as the survival of women is significantly improved by the early detection of breast cancer.

If a breast abnormality is found at screening, the woman is asked to return for further more detailed X-ray views. If cancer is still suspected, the woman is required to undergo further testing which may include:

- an ultrasound scan of the breast;
- fine needle aspiration – using a local anaesthetic, cells are drawn up through a needle that is inserted through the skin of the breast into the suspicious lump;
- core biopsy – using a local or general anaesthetic a sample of tissue is taken from the suspicious area of the breast;
- diagnostic open biopsy – a diagnostic open biopsy performed with a needle localisation technique.

Where breast cancer is confirmed, treatment involves management of the breast, the axilla and systemic therapy. Management of the breast usually involves either removal of the lump (lumpectomy) which is usually followed by about 7 weeks of radiation therapy to the breast, or removal of the entire breast (mastectomy). The axilla is usually treated by an axillary dissection or axillary radiation in older women. Some women choose to have breast reconstruction either at the time of mastectomy or later. This involves using implants or tissue taken from other parts of the body. Systemic therapy is based on several factors including the probability of relapse, the benefit of adjuvant chemotherapy or Tamoxifen (a drug used to treat breast cancer) or both, the woman's menopausal status, the tumour's oestrogen receptor status and the woman's preferences.

An important factor for prognosis is the size of the tumour at diagnosis. Mammographic screening is important in detecting small breast cancers, particularly those up to 10 mm in diameter which have a lower probability of the cancer having spread to the axillary lymph nodes and a higher probability of cure. Smaller tumours are also more likely to be of lower grade than larger tumours. For women with no lymph node involvement, prognosis is governed by tumour size, histologic grade and histological sub-type. Other prognostic factors include vessel invasion and oestrogen receptor status.

## Breast cancer screening

In 1987 the Commonwealth Government commissioned a 3-year evaluation of the feasibility and cost-effectiveness of a national mammography screening program. The evaluation was undertaken by the Screening Evaluation Steering Committee on behalf of the Australian Health Ministers' Advisory Council (AHMAC). Out of this process came the report *Breast Cancer Screening in Australia: Future Directions*, in which a number of recommendations were made to implement a national program for the early detection of breast cancer. In light of this report, breast cancer screening on a national basis began in 1991 with the introduction of the National Program for the Early Detection of Breast Cancer, later known as BreastScreen Australia (DHS 1994a).

Scientific evidence that early detection could reduce breast cancer mortality, and that mammography was an effective means for carrying out national screening, was first observed in a randomised, controlled trial known as the Health Insurance Plan of Greater New York trial, which began in 1964 (Nyström et al 1993). This resulted in international interest in breast cancer screening and particularly mammography, but there were concerns at the time about the radiation dose associated with mammography. However, these fears were allayed to some extent by improvements in mammographic technique, and the use of intensifying screens that succeeded in reducing the radiation dose by the 1970s.

A large controlled population-based study known as the Swedish Two Counties study was initiated in 1977. By 1985 results from this study showed significant reductions in cancer mortality for women aged 40–74 years of age (Nyström et al 1993). In addition, statistically significant reductions in breast cancer mortality as a result of screening using mammography had also been observed in three case control studies in Nijmegen and Utrecht, the Netherlands, and Florence (AHMAC 1990). A meta-analysis performed on data from the trials above provides an average estimate of reduction in deaths from breast cancer by 22% (AHMAC 1990).

By 1990, as a result of the above studies, national breast cancer screening programs using mammography as the sole screening method were implemented in the United Kingdom, Sweden, Finland and Iceland (AHMAC 1990). In Australia the Screening Evaluation Steering Committee recommended that a national mammography program should incorporate the following features:

- a national mammography screening policy;
- mammographic screening provided as an integrated, systematic and coordinated program;
- national and State/Territory level coordination mechanisms;
- appropriate treatment services;
- provision of adequate resources;
- specialised training for radiographers, radiologists, surgeons and pathologists;
- an appropriate balance of incentives for service providers to maximise quality of service;
- quantitative performance criteria;
- quality assurance and monitoring procedures;
- ongoing monitoring and evaluation of the screening program;
- standardised accreditation procedures; and

- ongoing research and program review (AHMAC 1990).

A national program was established in 1991 called the National Program for the Early Detection of Breast Cancer. Since 1994 it has been called BreastScreen Australia. This program is funded by the Commonwealth and each of the State and Territory Governments, and is administered through State Coordination Units. The funding arrangements require that the assessment and screening services in each State and Territory operate within a nationally integrated system.

The program commenced at a different point in time in each State and Territory, and has now been fully implemented across Australia, with the exception of some of the more remote areas.

#### **State and Territory program and register start dates**

	<b>Program</b>	<b>Register</b>
New South Wales	January 1991	July 1991
Victoria	October 1991	January 1993
Queensland	January 1991	January 1991
Western Australia	January 1989	January 1989
South Australia	January 1989	January 1991
Tasmania	February 1993	February 1993
Australian Capital Territory	February 1993	February 1993
Northern Territory	December 1994	December 1994

Generally, screening mammography through BreastScreen Australia requires an X-ray of each breast, with usually two views of each breast recorded. These X-rays are reviewed by two specially trained readers to ensure satisfactory quality, and to identify suspicious characteristics. In some circumstances where additional follow-up is required, mammography that provides additional views of the breast, and/or other tests such as ultrasound, fine needle aspiration or core biopsy may be used.

In addition to screening provided through BreastScreen Australia, Medicare provides benefits for private mammography where a woman presents to her doctor with indications of breast cancer risk (e.g. breast cancer symptoms). These women are not monitored through BreastScreen Australia and therefore the data provided in this report do not cover all breast cancer screening performed in Australia.

# BreastScreen Australia

## Aims of the program

- To ensure that the program is implemented in such a way that significant reductions can be achieved in morbidity and mortality attributable to breast cancer.
- To maximise the early detection of breast cancer in the target population.
- To ensure that screening for breast cancer in Australia is provided in dedicated, accredited screening and assessment services as part of the National Program for the Early Detection of Breast Cancer (now BreastScreen Australia).
- To ensure equitable access for women aged 50–69 years to the program.
- To ensure that services are acceptable and appropriate to the needs of the eligible population.
- To achieve high standards of program management, service delivery, monitoring and evaluation, and accountability.

(DHS 1994c)

## Major objectives of the program

- To achieve, after five years, a 70% participation rate in the national program by women in the target group (50–69 years) and access on request to the Program for women aged 40–49 years and 70 years or more.
- To rescreen all women in the program at 2-yearly intervals.
- To achieve agreed performance outcomes that minimise recall rates, retake films, invasive procedures, false negatives, and false positives, and maximise the number of cancers detected, particularly the number of small cancers.
- To refer to appropriate treatment services and collect information about the outcome of treatment.
- To collect and analyse data sufficient to monitor the implementation of the program, to evaluate its effectiveness and efficiency, and to provide the basis for future policy and program development decisions.

(DHS 1994c)

## Program delivery

The program delivers its services through specialised BreastScreen Australia mammography units, some of which are in fixed locations while others are mobile and are taken into the more remote areas of Australia. The screening units operate in association with a designated assessment centre/service.

Data related to breast cancer screening are collected centrally by a registry administered by BreastScreen Australia in each State and Territory. These registers are established to send out invitations and reminder notices for women to attend, and monitor the program's performance (Jelfs 1998).

## **Recruitment and education**

BreastScreen Australia offers screening to all women aged 50–69 years. While there is benefit in screening women in their forties, and women aged 70 or more, these women are not actively recruited to the BreastScreen program as the benefits have been shown to be greater for women aged 50–69 years (AHMAC 1990).

Women in the target age group of 50–69 years are actively recruited by direct mailouts based on the electoral roll, advertising campaigns, brochures, and through health care providers. Direct community education campaigns have been implemented to inform women about BreastScreen including working with groups of women who are likely to be under-screened. The campaigns aim to provide balanced information on the benefits and limitations of screening. The program encourages informed participation by women. Letters of invitation and recalls for subsequent screening rounds are sent to eligible women, e.g. in 1996–97 approximately 71,000 invitation letters based on electoral roll listings, and 115,000 routine recall invitation letters were sent out to Victorian women. Of the 176,000 appointments that were allocated, 88% were taken up (BreastScreen Victoria 1997).

BreastScreen does not routinely screen women who have previously had breast cancer. There is variation in State and Territory policies for screening symptomatic women.

When a woman presents at BreastScreen Australia she completes a questionnaire that captures personal, demographic and medical information which is included on the BreastScreen Australia register with her consent. This register also contains screening history, treatment and follow-up information. The information is also used to re-invite women to further screening.

## **Follow-up**

Once the results of screening are known, women are either recommended for routine two-yearly rescreening (if no cancer is detected), or for further assessment if the results are inconclusive, or if a mammographic abnormality is suspected.

Although BreastScreen Australia does not provide treatment for women who have a breast cancer or other conditions detected, it does refer women back to their GP or on to treatment services, as the woman desires. It is policy that the women are actively involved in decisions about their management and that written information is provided to the women. The women are also given the choice of being referred on to a clinic specialising in the treatment of breast cancer, or if they prefer, seeking a referral from their own GP to a surgeon (DHS 1994c). BreastScreen Australia also collects data on the outcomes of treatment (DHS 1994c).

## **Mammography outside the program**

The focus of this report is on women who have had a mammogram in the BreastScreen Australia program. However other mammography for screening and diagnosis (i.e. investigating breast symptoms) is conducted outside the program. Therefore, to some extent, the results described in this report are an underestimation of screening on a national basis. An analysis of the 1996 National Breast Health Survey shows that of the women surveyed, 8.1% had been screened outside of BreastScreen Australia in the 2 years prior to being surveyed (Barratt et al. 1997).

Medicare benefits are not usually payable for health screening services and this includes screening mammography. Medicare benefits are available for diagnostic mammography where there is reason to suspect the presence of breast cancer. This includes instances where

there are symptoms or indications of breast cancer found on examination of the patient. Unpublished Medicare data show that since 1991 the age-standardised rate for all women of diagnostic mammograms per 1,000 women has fallen from 53.2 to 38.3 in 1997. This fall corresponds to the introduction of BreastScreen Australia. There was a fall in the rate of Medicare mammograms in the corresponding target population for BreastScreen Australia (50–69 years) from 140.9 per 1,000 women in 1991 to 104.0 per 1,000 women in 1997.

**Table 1.1: Number of diagnostic mammograms, by State and Territory, 1991–1997**

State/Territory	1991	1992	1993	1994	1995	1996	1997
NSW	169,206	158,951	163,489	147,361	146,525	123,970	128,486
Vic	90,950	93,697	101,950	96,012	89,140	78,069	79,479
Qld	72,595	63,584	64,354	61,917	68,561	61,022	61,394
WA	31,661	36,371	36,641	43,263	39,475	33,461	35,008
SA	24,942	22,556	21,140	22,033	21,878	20,005	20,226
Tas	9,036	8,401	7,788	6,381	6,706	5,840	6,204
ACT	7,894	6,987	5,516	4,614	4,561	4,054	4,330
NT	2,336	2,221	2,277	2,512	1,927	1,429	1,371
<b>Australia</b>							
<b>All ages</b>	<b>408,620</b>	<b>392,768</b>	<b>403,155</b>	<b>384,093</b>	<b>378,773</b>	<b>327,850</b>	<b>336,498</b>
<b>Ages 50–69</b>	<b>158,211</b>	<b>155,416</b>	<b>165,106</b>	<b>151,217</b>	<b>147,584</b>	<b>129,812</b>	<b>136,033</b>

Source: Health Benefits Division, Commonwealth Department of Health and Family Services (DHFS)—unpublished data.

**Table 1.2: Age-standardised rate per 1,000 women of diagnostic mammograms, by State and Territory, 1991–1997**

State/Territory	1991	1992	1993	1994	1995	1996	1997
NSW	63.8	59.0	56.7	52.5	51.1	42.2	42.9
Vic	45.9	46.6	50.0	46.1	41.7	35.8	35.8
Qld	56.3	47.8	46.9	43.5	46.7	40.2	39.2
WA	45.1	50.4	49.9	57.1	50.7	41.8	42.5
SA	37.5	33.1	30.6	31.4	30.6	27.5	27.5
Tas	43.9	40.0	36.6	29.3	30.4	26.0	27.3
ACT	83.3	56.2	43.7	34.9	33.5	29.1	30.4
NT	40.8	37.9	38.5	42.2	29.7	20.9	19.4
<b>Australia</b>							
<b>All ages</b>	<b>53.2</b>	<b>50.2</b>	<b>50.6</b>	<b>46.9</b>	<b>45.1</b>	<b>38.1</b>	<b>38.3</b>
<b>Ages 50–69</b>	<b>140.9</b>	<b>135.9</b>	<b>141.7</b>	<b>126.7</b>	<b>120.4</b>	<b>103.1</b>	<b>104.0</b>

Source: Health Benefits Division, Commonwealth Department of Health and Family Services (DHFS)—Unpublished data.



# National breast cancer screening monitoring indicators

Screening indicators to monitor BreastScreen Australia cover the areas of participation, detection, sensitivity, incidence and mortality. These indicators have been endorsed by the National Screening Information Advisory Group and the BreastScreen Australia Program in each of the States and Territories. The indicators and their definitions are provided below. On the following pages is an overview of each indicator's intention, application and definition. This is supported where possible with data indicating the current status and trend in the indicator. In some circumstances in this report, additional information has been provided beyond these indicators.

## Indicator 1: Participation rate for breast cancer screening

Per cent of women screened in a 24-month period by 5-year age groups (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 (50–69 years).

## Indicator 2: Detection rate for small cancers

Rate of women with small diameter (= 10 mm) invasive breast cancers per 10,000 women screened in a 12-month period by 5-year age groups (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 (50–69 years).

## Indicator 3: Sensitivity

This indicator is yet to be finalised. It is pending completion of the National Breast Cancer Centre research project into an interval cancer definition.

## Indicator 4: Incidence of breast cancer

Incidence rate of breast cancer per 100,000 estimated resident female population in a 12-month period by 5-year age groups (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 (50–69 years – age-standardised).

## Indicator 5: Mortality from breast cancer

Death rate of breast cancer per 100,000 estimated resident female population in a 12-month period by 5-year age groups (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 (50–69 years – age-standardised).

## Participation

One of the main objectives of the program is to develop and maintain high population coverage with a 2-yearly screening interval. BreastScreen Australia aims to have a participation rate of 70% of women in the target age group (50–69 years), and access on request for women aged 40–49 years and 70–79 years in order to achieve the mortality reductions experienced in the screening trials (DHS 1994c). The participation rate of all eligible Australian women screened by BreastScreen Australia is therefore important in monitoring the program's impact.

To date, reported participation rates have been measured using different periods ranging from 24 to 36 months. This variation evolved because in practice a number of women attend their rescreen in the short period after the recommended 24-month screening period. This anomaly needs to be taken into account when comparing participation rates with previously published estimates. This report measures participation rates based on the recommended 24-month period.

The participation indicator:

- measures the proportion of the eligible population attending the screening programs within the recommended screening interval;
- is important in assessing the contribution of the screening program to changes in incidence and mortality. The indicator can also be used as a means of evaluating recruitment practices particularly if participation rates are analysed by demographic characteristics;
- when used in conjunction with other indicators, can be used to support debate relating to target groups and screening intervals.

Education of health practitioners and the general public through awareness campaigns and seminars is aimed at improving participation rates. Analysis of the 1996 National Breast Health Survey shows that awareness of the national screening program is high (90% of women surveyed). It also showed that compliance by women in the target group (50–69 years) is good (70% of women surveyed who fell into the target age group reported having had a screening mammogram). In contrast, knowledge of the purpose of screening and who the target age group is, is not as widespread (1% of women surveyed were able to correctly state that screening was for asymptomatic women, and 60% of women surveyed could state that the target age group began at 50 years of age) (Barratt et al. 1997).

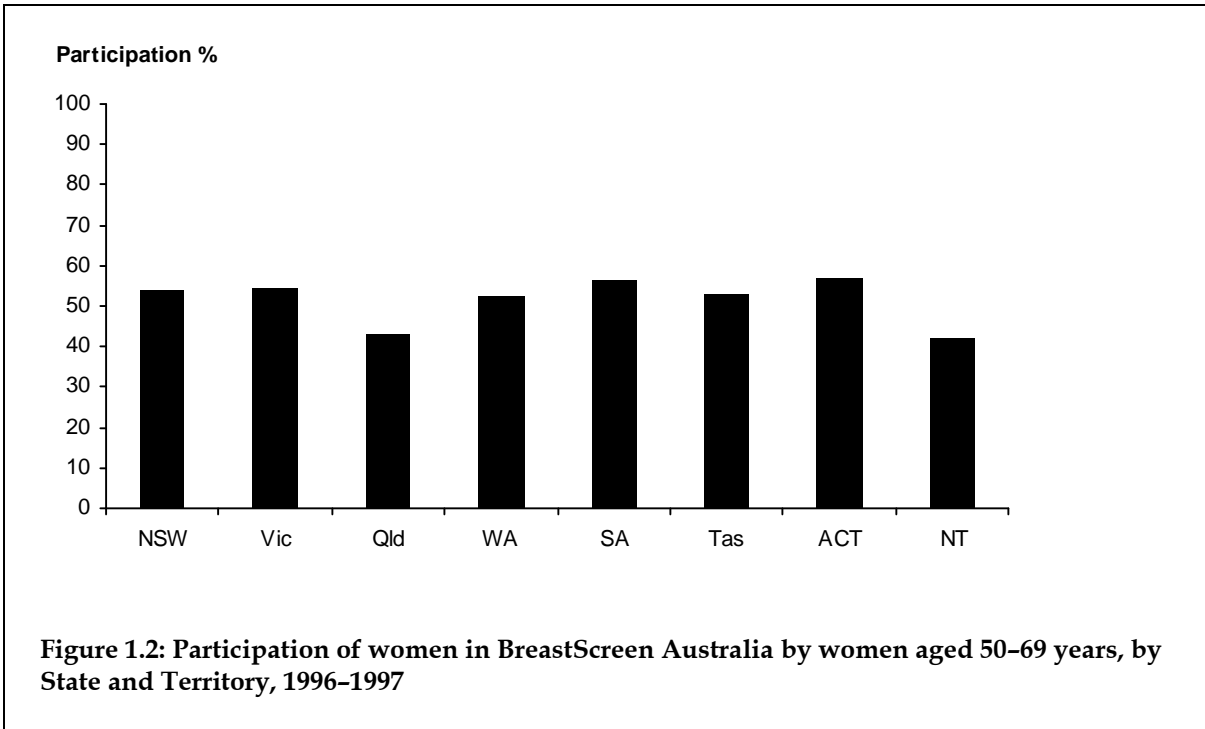
# Indicator 1: Participation

Per cent of women screened in a 24-month period by 5-year age groups (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 (50-69 years).

- The participation rate for BreastScreen Australia for the 24-month period 1996-1997 was 52.2% of the target population (women aged 50-69 years). The participation rate for the target population peaked for women aged 55-59 years, and was slightly lower for women aged 65-69 years (Figure 1.1, Table 1.3).
- In the 24-month period 1996-1997 there were 1,262,584 women screened. The target age group (women aged 50-69 years) made up 68% (858,303) of all women screened by BreastScreen Australia.



- Participation rates peaked for women in the target age group (50-69 years). Overall, participation rates increased with increasing age, reaching its peak at age 55-59 years. The rate was relatively stable in the target age group (50-69 years) but decreased rapidly in women in the older age groups (Figure 1.1, Table 1.4).
- This distribution illustrates that BreastScreen Australia has succeeded in achieving its highest participation rates in women who are 50-69 years of age. However, the program has not as yet reached its target of 70% participation to achieve the anticipated mortality reductions.



- There was some interstate variation in participation rates, with higher rates in the Australian Capital Territory (57.1%) and South Australia (56.4%), and lower participation rates in Queensland (42.9%) and the Northern Territory (42.0%) (Figure 1.2, Table 1.4).
- The participation rate for Queensland reflects, to some extent, that at the end of 1997 only 5 out of the 11 fixed BreastScreen Queensland services had been operating for 5 years or more.
- It should be noted that the ability to make screening available to all women is not equal across the country. This is due in part to specific problems such as the vast distances women or screening units need to travel, access to rural and remote locations, availability of mobile screening units and support staff, and the acceptance of the program among women of various cultural and socioeconomic backgrounds. In addition, participation rates are influenced by the length of time a program has been operating. These implementation conditions described above affect the participation rates of Queensland and the Northern Territory compared with, say, the Australian Capital Territory which is predominantly an urban environment.

## Detection of small cancers

The principal aim of the breast cancer screening program is to maximise the early detection of incident breast cancers. The early detection of breast cancer results, in most cases, in increased survival time, reductions in mortality and morbidity. Early-stage breast cancers are less expensive to manage.

BreastScreen Australia aims to have a small cancer (= 10 mm in diameter) detection rate of greater than 8 per 10,000 screened women (DHS 1994c).

The detection rate indicator:

- measures the rate of small invasive breast cancers (= 10mm) found by the screening programs and the effectiveness of screening techniques at each age;
- is important in evaluating the quality and standards of service delivered by the screening programs;
- may also be used to compare the size distribution of cancers diagnosed inside and outside BreastScreen Australia when matched with cancer registry data.

One of the factors influencing the detection rate of a screening program is the interval between each screen. If the interval is too long, and there is sufficient time for a cancer to grow to the size where it can be detected without the aid of mammography, then the advantage that mammography provides in the early detection of small cancers is lost. That is, there will be more cancers found at an advanced stage either at screening, or between screening visits (Kopans 1993).

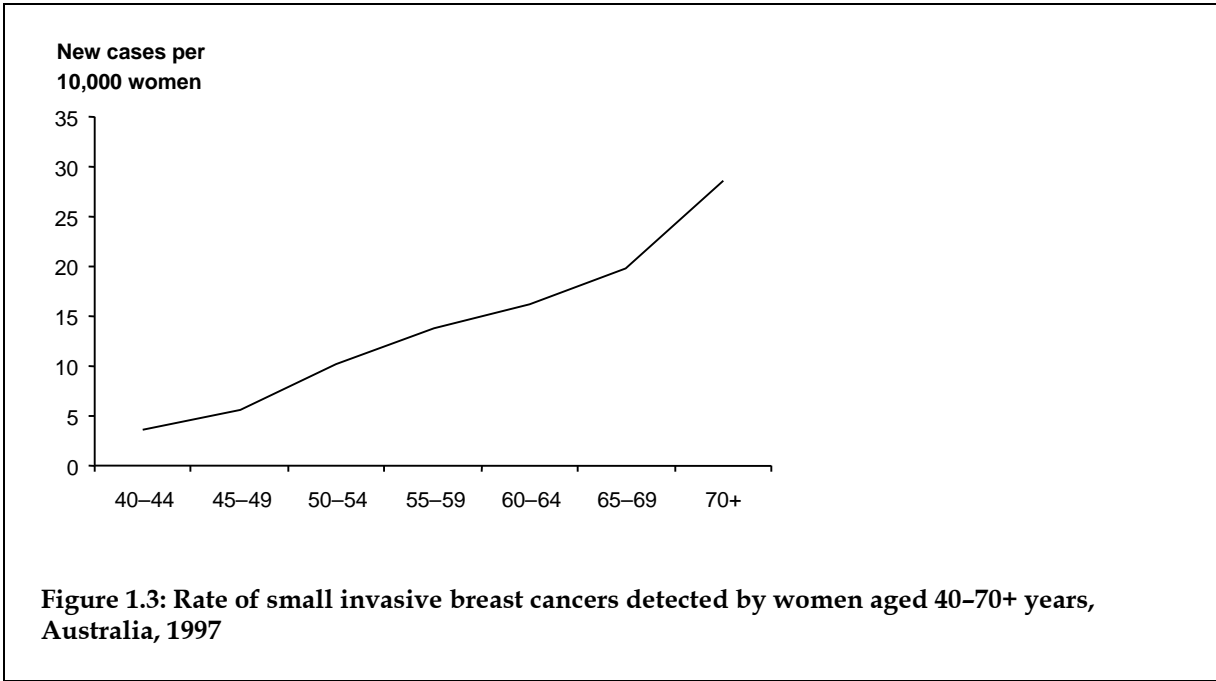
The benefits of breast cancer screening are highlighted in studies that compare women who are screened with women who are not. They show that the incidence rate of breast cancer in women who are screened is reduced in the first year after screening, and that the incidence rate then rises in the second year. By the third year the incidence rate rises towards that for women not participating in a screening program. In other words, as the interval between screenings becomes longer than 12 months, the number of cancers found in women who are screened becomes greater. It has been argued that the benefits of screening may disappear after an interval of three years (Colditz et al. 1997).

Women who are found to have small invasive cancers are less likely to undergo a mastectomy than those with larger tumours. For example, 72% of women with small breast cancers (= 10 mm in diameter) underwent a local excision compared with about 48% for women with tumours over 15 mm. Women with smaller cancers are able to have more choice in terms of breast conservation versus mastectomy with similar survival rates. Women diagnosed with these small cancers are less likely to have positive axillary nodes and less likely to have adjuvant chemotherapy compared with women who present with symptomatic disease (BreastScreen Australia 1996).

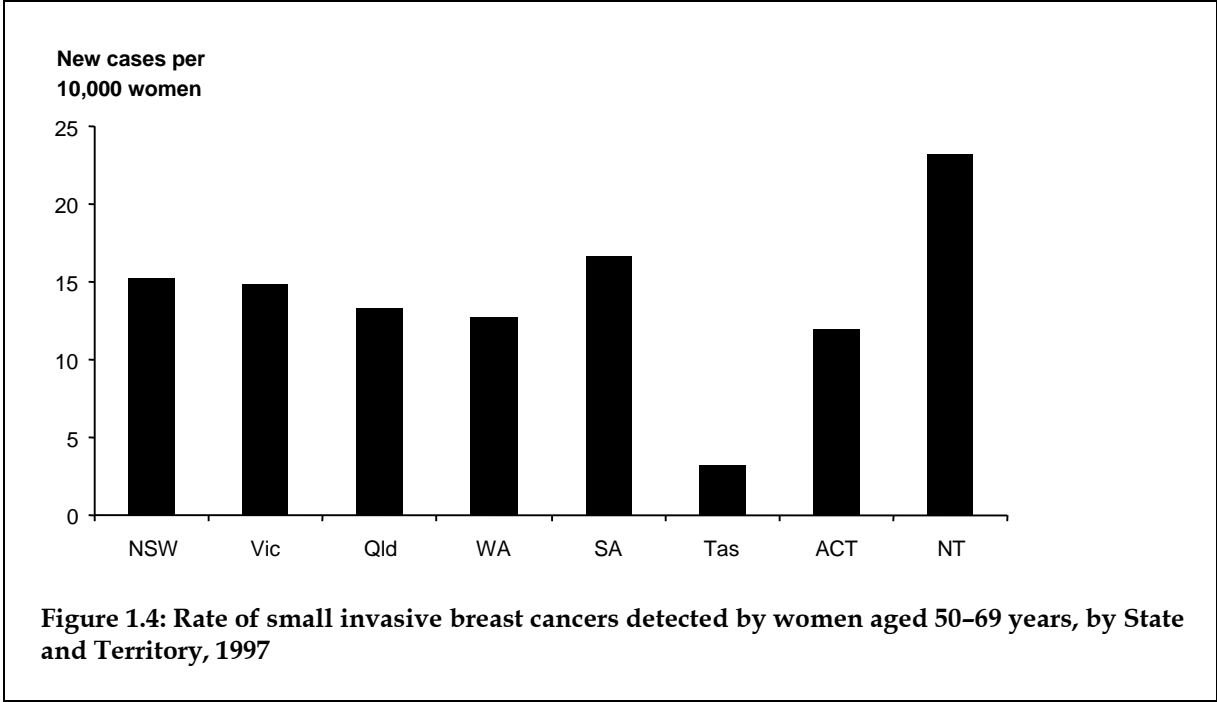
## Indicator 2: Detection rate for small cancers

Rate of women with small diameter (= 10mm) invasive breast cancers per 10,000 women screened in a 12-month period by 5-year age groups (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 (50-69 years).

- The small cancer detection rate for 1997 was 14.4 cancers per 10,000 women screened for the target population, and 14.2 for all women screened (Table 1.6). This result is far in excess of the target set for the program (greater than 8 per 10,000 women screened).
- BreastScreen Australia detected small invasive cancer in 952 women. The target age group (women aged 50-69 years) made up 69% (639) of all women screened for whom small invasive cancer was detected (Tables 1.5).
- Thirty-six per cent of all invasive breast cancers detected by BreastScreen were small diameter cancers (= 10mm). In the target age group small diameter cancers comprised 37% of all invasive cancers detected.



- The detection rate for small cancers increased with age. The detection rate was 3.6 per 10,000 for women aged 40-44 years, 10.2 for those aged 50-54 years, and 19.9 for those aged 65-69 years (Figure 1.3; Table 1.6).



- The detection rate varied across the State and Territory programs, ranging from 23.2 small cancers detected per 10,000 women screened in the Northern Territory, to 3.2 in Tasmania. This substantially lower rate for Tasmania is probably a statistical anomaly due to comparatively small numbers in a single year, and in more recent data (1997-1998) Tasmania has reported a small cancer detection rate of 9.4 per 10,000 women screened (Figure 1.4, Table 1.6). This indicator will be stabilised for the smaller States and Territories by the accumulation of several years of data and presented in future reports.

## Sensitivity

The major objective of the screening program is to reduce the level of mortality. However, as a consequence of screening women, some morbidity associated with the screening and subsequent diagnostic processes is incurred.

The sensitivity indicator is still being developed. It is expected that data will be available for this indicator for the 1997-1998 report. The sensitivity indicator will:

- measure the relationship between the screening test results and what the screen is supposed to measure, that is the presence or absence of disease;
- evaluate the validity of the screening test, or whether the test does what it is supposed to do. A high sensitivity suggests that fewer women are incorrectly classified as false negatives (a false negative is when the test is negative but the disease is really present).



## Incidence

It is important to know the burden of disease for breast cancer in the community in order to formulate policy and allocate resources to deal with the disease.

The incidence of breast cancer indicator:

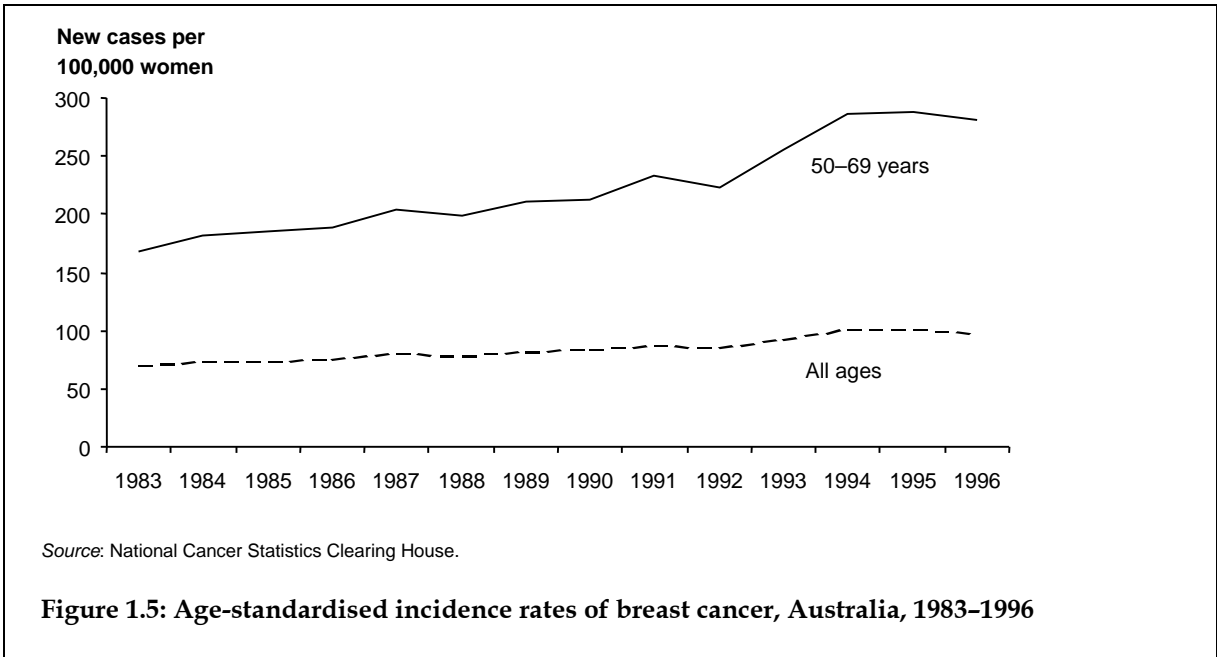
- measures the number of new cases of breast cancer in the community. This indicator does not discriminate whether these cancers were screen detected or not.
- can be used to examine trends over time, and the distribution of disease by age, State and Territory, and other demographic characteristics allowing for national and international comparisons.

Incidence rates are important in determining which groups of women should be included in the target population for BreastScreen Australia. The introduction of a breast screening program may result in the paradox whereby, in the short term, the number of new cases of cancer increases because cancers are found earlier, while at the same time the number of deaths decreases. However, in the long term the incidence rate will return to its underlying rate.

### Indicator 4: Incidence of breast cancer

Incidence rate of breast cancer per 100,000 estimated resident female population in a 12-month period by 5-year age groups (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 (50–69 years – age-standardised).

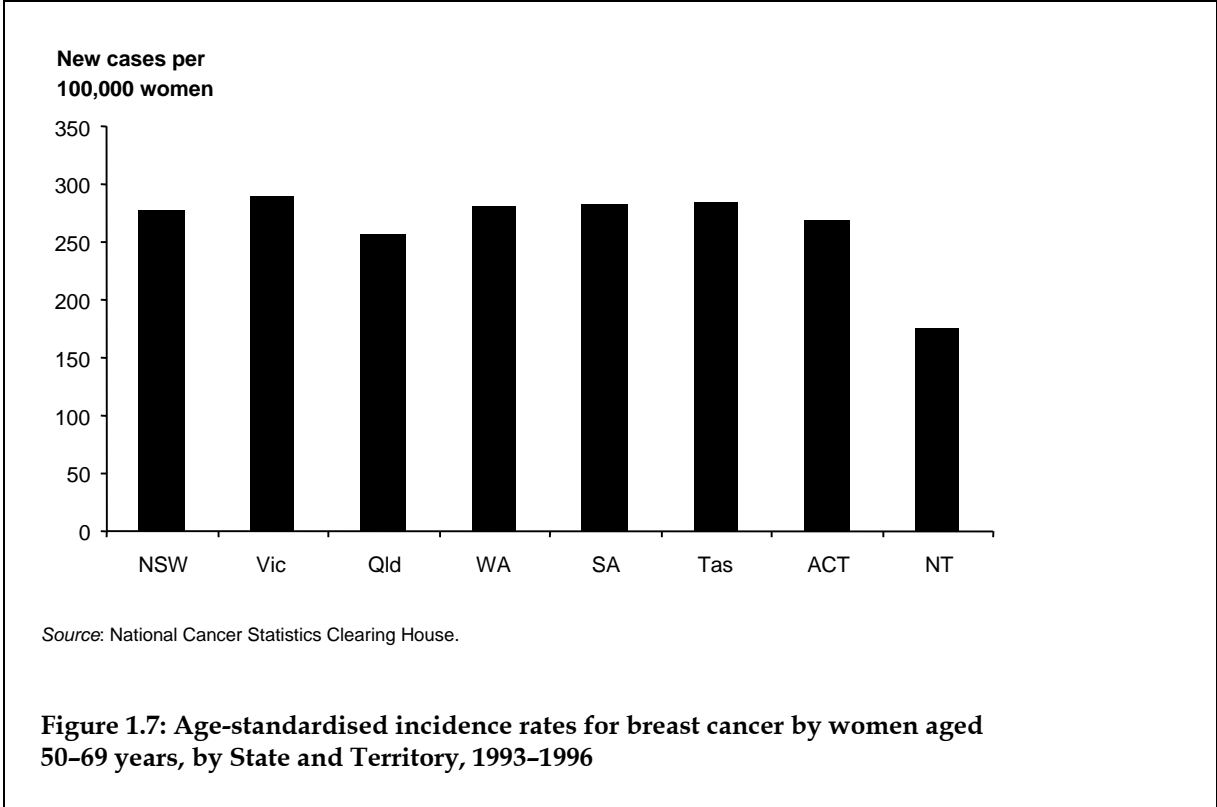
- Breast cancer is the most frequently diagnosed cancer in females (excluding non-melanocytic skin cancer). The incidence of breast cancer in females (all ages) rose from 70 cases per 100,000 in 1983 to 98 cases per 100,000 in 1996, an average annual rise of 3.4% (Table 1.9).



- In the screening target age group (50–69 years) the incidence rates rose more rapidly between 1983 and 1996 than in other age groups (Figure 1.5, Table 1.9). This increase was marked in the period 1992–1995 where the incidence rate jumped by 29% to its peak of 287 new cases per 100,000. Some of this increase may be attributed to the early detection of breast cancers that may not otherwise have been detected until a later stage. This rate subsequently fell to 281 new cases per 100,000 in 1996. It is possible that the rate may have fallen due to the reduced number of prevalent cancers now being detected by BreastScreen Australia. Despite this national trend there may be some regions where this did not occur due to the staged introduction of screening across Australia.
- Breast cancer incidence is predicted to decrease slightly by 1999. However it should be noted that this projected fall has contrasting patterns for women aged 30–59 (increase) and women aged 60 years and over (decrease) (Kricker & Jelfs 1996).



- Breast cancer incidence increased with age in 1996, peaking at 70-74 years (312.8 new cases per 100,000 women) (Figure 1.6, Table 1.9).



- The incidence rate for breast cancer for women aged 50-69 years was lower in the Northern Territory (176 new cases of breast cancer per 100,000 women) than in the other States and the Australian Capital Territory (1993-1996). Most other States and the Australian Capital Territory had similar incidence rates (Figure 1.7, Table 1.11).

## Mortality

The main objective of the breast cancer screening program is to reduce mortality due to breast cancer.

The mortality indicator:

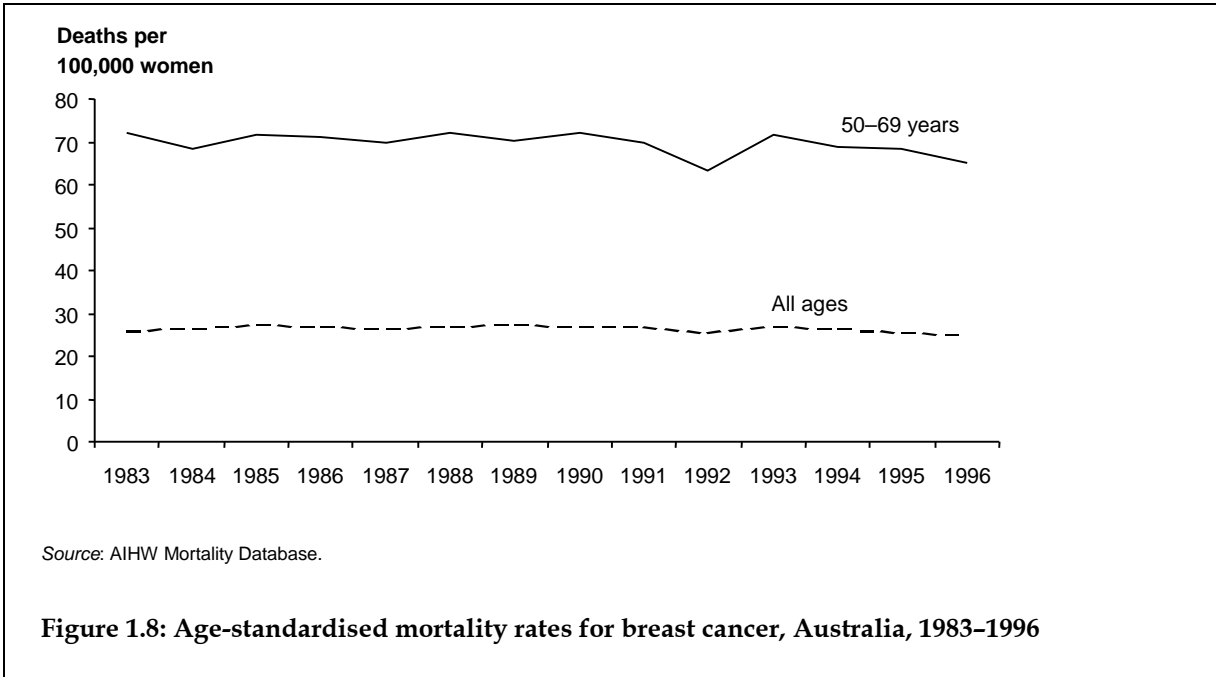
- measures the level of mortality from breast cancer in the total female population by age, and other demographic characteristics;
- can be measured for the total population or the screened population only. The former can be achieved through the national mortality database. The latter is theoretically possible and would require the combination of the National Death Index and the screened population via record linkage and appropriate data access protocols;
- is important because from it, an assessment can be made of changes in mortality in each of the age groups, and in particular the target age groups for each screening program over time. However, it should be noted that changes in the mortality rates might not be evident for a number of years following the commencement of screening. Therefore the effectiveness of this measure needs to be viewed in the longer rather than short term;
- disaggregated by age and other demographic variables, can assist policy makers in assessing programs and changing current policies.

In order for a breast cancer screening program to have an effect on mortality, the number of women being screened must be substantial. Data from the Swedish trial of mammography show that for every 4,000 woman years, every 1,460 mammographic examinations, every 13.5 biopsies and every 7.4 breast cancers detected, there is one death prevented from breast cancer (for women aged 50–69 years at entry to the trial) (Colditz et al. 1997). BreastScreen Australia aims for 70% of women aged 50–69 years to participate in the screening program. If this participation rate is achieved it is expected that there would be a reduction of approximately 25–30% in death rates from breast cancer for women aged 50 years or more undergoing screening. This mortality reduction should follow a delay of about 5 to 10 years from the start of screening (DHS 1994c).

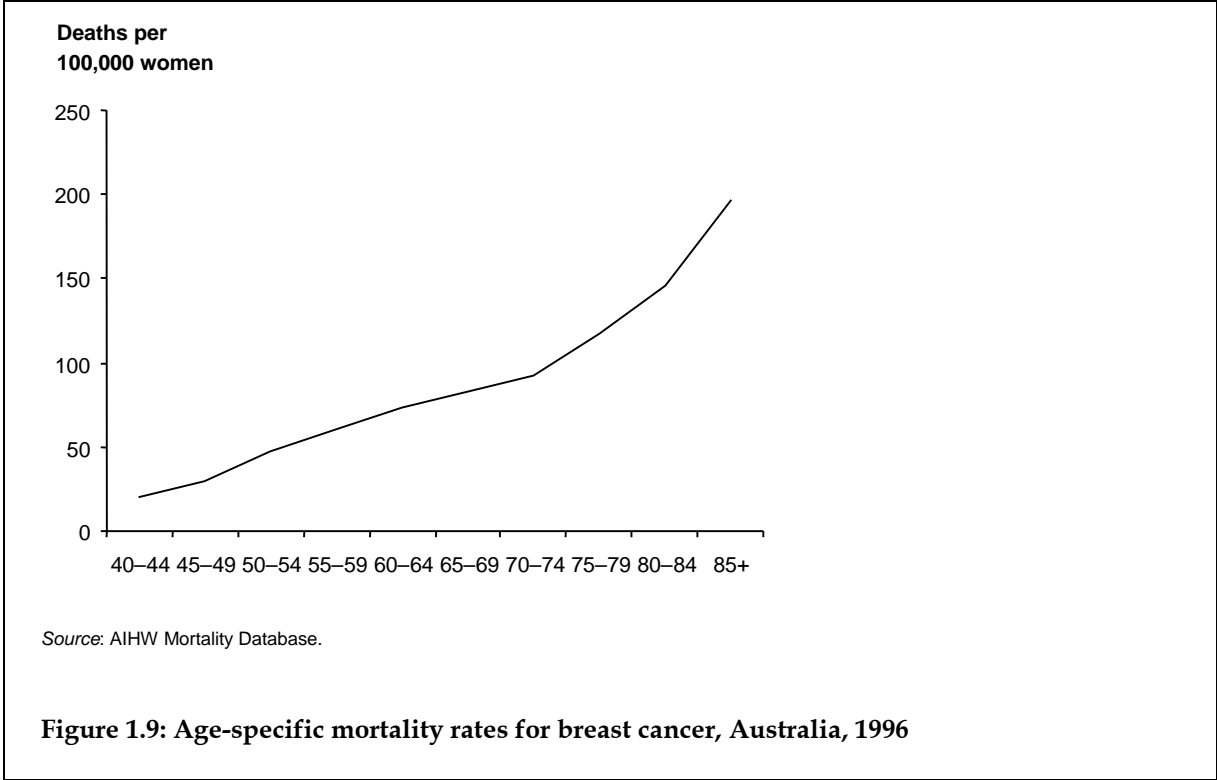
### Indicator 5: Mortality from breast cancer

Death rate of breast cancer per 100,000 estimated resident female population in a 12-month period by 5-year age groups (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 (50-69 years – age-standardised).

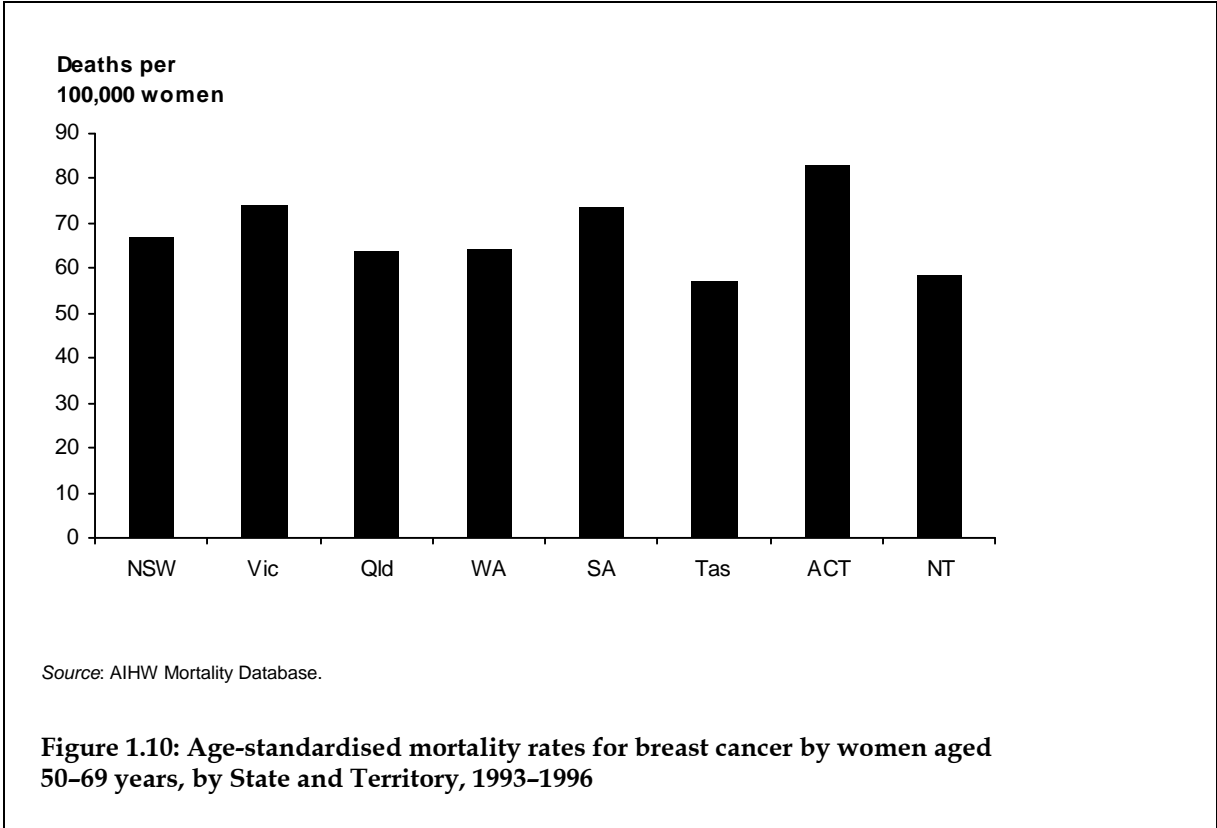
- Breast cancer is the most common cause of cancer-related death in women with approximately 2,600 deaths each year in Australia (Table 1.12). The breast cancer mortality rate for all ages (approximately 25 deaths per 100,000) has been relatively stable since 1983, with a small decline since 1993 (Table 1.13).



- The breast cancer screening target group (women aged 50-69) comprises 40% of all breast cancer deaths. The mortality rate for these women has declined by 9.1% between 1993 and 1996 to 65 deaths per 100,000 (Figure 1.8). Mortality rates for all women declined by 7.3% to 25 deaths per 100,000 women over the same period (Figure 1.8, Table 1.13).
- The median age of death from breast cancer was 66 years in 1996, and has remained at between 65 and 67 years since 1988.
- It is expected that if benefits from the BreastScreen Australia program are to occur they will become apparent in this indicator 5 to 10 years from commencement of the screening program. This period should see the benefits of early detection and management reducing the mortality rate, not only in those aged 50-69, but in older age groups as well.



- Age-specific death rates from breast cancer increased rapidly with age in 1996. The rate increased from 21 deaths per 100,000 for women aged 40-44 years to 83 for women aged 65-69 years (Figure 1.9, Table 1.13). Overall, the age-specific mortality rates have changed little since 1982 (Kricker & Jelfs 1996).



- Across the States and Territories, mortality rates for breast cancer for women aged 50-69 years ranged from 83 per 100,000 women in the Australian Capital Territory to 57 in Tasmania for the period 1993-1996 (Figure 1.10, Table 1.15).



# Tables

## Indicator 1: Participation

**Table 1.3: Number of women participating in breast screening under BreastScreen Australia by age, by State and Territory, 1996–1997**

Age group	NSW <sup>(a)</sup>	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
40–44	40,864	11,335	24,632	6,535	5,130	3,482	1,944	768	94,690
45–49	64,790	21,248	34,593	18,737	11,382	5,934	3,949	1,111	161,744
50–54	93,181	71,547	40,269	25,040	23,285	7,062	4,975	1,729	267,088
55–59	80,782	58,920	32,697	21,129	21,197	6,330	3,648	1,121	225,824
60–64	69,153	50,587	27,053	17,548	18,075	5,315	2,646	582	190,959
65–69	65,161	47,049	24,085	14,401	16,693	4,586	2,089	368	174,432
70–74	43,022	30,011	16,070	3,996	4,147	1,186	665	126	99,223
75–79	16,703	7,506	8,333	1,434	1,395	438	298	59	36,166
80–84	6,264	1,661	2,476	369	309	108	63	12	11,262
85 +	0	333	531	87	46	14	16	3	1,030
Not stated	0	0	0	1	0	0	0	0	1
<b>All ages</b>	<b>480,085</b>	<b>300,197</b>	<b>210,739</b>	<b>109,277</b>	<b>101,659</b>	<b>34,455</b>	<b>20,293</b>	<b>5,879</b>	<b>1,262,584</b>
<b>Ages 50–69</b>	<b>308,277</b>	<b>228,103</b>	<b>124,104</b>	<b>78,118</b>	<b>79,250</b>	<b>23,293</b>	<b>13,358</b>	<b>3,800</b>	<b>858,303</b>

(a) New South Wales has grouped all women aged 80 years or more, and for the purposes of this table they appear in the 80–84 age group.

**Table 1.4: Age-specific rates for women participating in breast screening under BreastScreen Australia, by State and Territory, 1996–1997**

Age group	NSW <sup>(a)</sup>	Vic	Qld	WA	SA	Tas	ACT	NT <sup>(b)</sup>	Australia
40–44	17.8	6.6	19.9	9.47	9.3	19.7	15.5	11.5	13.8
45–49	30.3	13.3	29.6	29.99	21.6	36.1	32.1	19.8	25.3
50–54	53.0	55.4	42.4	52.28	54.2	52.7	55.8	43.6	51.7
55–59	56.6	56.1	44.5	55.19	61.1	56.7	60.2	46.7	54.6
60–64	54.8	54.3	44.2	54.70	58.0	54.4	58.9	36.9	53.1
65–69	51.8	51.6	40.4	47.94	52.5	48.4	53.4	33.3	49.4
70–74	36.7	35.1	29.7	15.19	13.4	13.3	18.6	16.5	30.3
75–79	18.7	11.7	19.8	7.24	5.8	6.2	11.9	12.1	14.5
80–84	5.5	3.6	8.5	2.49	1.8	2.1	3.8	4.2	6.3
85 +	0.0	0.9	2.3	0.70	0.3	0.4	1.3	1.3	0.7
<b>All ages</b>	<b>36.0</b>	<b>30.5</b>	<b>31.0</b>	<b>30.94</b>	<b>30.4</b>	<b>33.5</b>	<b>35.5</b>	<b>25.4</b>	<b>32.6</b>
<b>Ages 50–69</b>	<b>54.0</b>	<b>54.5</b>	<b>42.9</b>	<b>52.68</b>	<b>56.4</b>	<b>53.2</b>	<b>57.1</b>	<b>42.0</b>	<b>52.2</b>

(a) New South Wales has grouped all women aged 80 years or more, and for the purposes of this report they appear in the 80–84 age group.

(b) It has been agreed that due to the difficulties faced by NT BreastScreen in reaching Indigenous women living remotely, the agreed population to be targeted is actually 10.8% lower. Using this population estimate, the participation rate for the Northern Territory rises to 48.7%.

Note: Rates are calculated using the average of the 1996 and the 1997 estimated residential populations (see Appendices, Population Data).

## Indicator 2: Detection rate for small cancers

Table 1.5: Number of cases of small diameter (= 10 mm) invasive breast cancers and all invasive cancers detected in women screened by age, by State and Territory, 1997

Age group	NSW <sup>(a)</sup>	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
<b>Small invasive cancers</b>									
40–44	7	4	3	4	0	0	0	0	18
45–49	20	6	7	8	3	1	1	1	47
50–54	44	44	27	9	22	1	1	2	150
55–59	64	39	23	12	18	0	5	3	164
60–64	70	35	26	16	11	2	0	1	161
65–69	64	51	23	17	20	1	3	0	179
70–74	52	47	29	7	7	0	0	1	143
75–79	21	15	18	2	4	1	0	0	61
80–84	12	5	3	1	2	0	1	0	24
85 +	<sup>(a)</sup>	1	1	2	1	0	0	0	5
<b>All ages</b>	<b>354</b>	<b>247</b>	<b>160</b>	<b>78</b>	<b>88</b>	<b>6</b>	<b>11</b>	<b>8</b>	<b>952</b>
<b>Ages 50–69</b>	<b>242</b>	<b>169</b>	<b>99</b>	<b>54</b>	<b>71</b>	<b>4</b>	<b>9</b>	<b>6</b>	<b>654</b>
<b>All invasive cancers</b>									
<b>All ages</b>	<b>877</b>	<b>681</b>	<b>499</b>	<b>222</b>	<b>252</b>	<b>41</b>	<b>47</b>	<b>12</b>	<b>2,631</b>
<b>Ages 50–69</b>	<b>575</b>	<b>492</b>	<b>304</b>	<b>160</b>	<b>191</b>	<b>24</b>	<b>34</b>	<b>9</b>	<b>1,789</b>

(a) New South Wales has grouped all women aged 80 years or more, and for the purposes of this table they appear in the 80–84 age group.

Table 1.6: Rate of small diameter (= 10 mm) invasive breast cancers per 10,000 screened women, by age, by State and Territory, 1997

Age group	NSW <sup>(a)</sup>	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
40–44	3.2	6.8	2.2	10.6	0.0	0.0	0.0	0.0	3.6
45–49	6.0	5.5	3.7	9.1	5.5	3.4	4.7	14.1	5.6
50–54	8.9	11.2	11.2	6.5	17.2	2.7	3.6	17.2	10.2
55–59	15.5	13.7	11.8	10.5	15.9	0.0	24.3	38.0	13.9
60–64	19.6	14.5	16.1	17.0	11.3	7.2	0.0	25.3	16.2
65–69	19.4	23.3	16.0	21.1	22.6	4.0	24.8	0.0	19.9
70–74	22.6	30.7	30.6	30.1	30.9	0.0	0.0	133.3	26.8
75–79	21.9	38.5	35.0	21.9	49.6	39.5	0.0	0.0	29.3
80–84	33.3	58.4	20.2	44.6	117.6	0.0	333.3	0.0	37.4
85 +	<sup>(a)</sup>	57.8	32.2	370.4	400.0	0.0	0.0	0.0	86.5
<b>All ages</b>	<b>14.1</b>	<b>16.4</b>	<b>13.0</b>	<b>13.3</b>	<b>16.3</b>	<b>3.4</b>	<b>9.8</b>	<b>20.7</b>	<b>14.2</b>
<b>Ages 50–69</b>	<b>15.2</b>	<b>14.9</b>	<b>13.4</b>	<b>12.6</b>	<b>16.6</b>	<b>3.2</b>	<b>12.0</b>	<b>23.2</b>	<b>14.4</b>

(a) New South Wales has grouped all women aged 80 years or more, and for the purposes of this table they appear in the 80–84 age group.

**Table 1.7: Number of women screened by BreastScreen Australia by age, by State and Territory, 1997**

Age group	NSW <sup>(a)</sup>	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
40–44	21,896	5,912	13,431	3,787	2,602	1,526	960	462	50,576
45–49	33,357	10,924	19,091	8,760	5,501	2,916	2,123	707	83,379
50–54	49,312	39,263	24,144	13,759	12,793	3,751	2,751	1,166	146,939
55–59	41,310	28,439	19,422	11,468	11,340	3,298	2,058	789	118,124
60–64	35,654	24,066	16,114	9,426	9,708	2,766	1,509	395	99,638
65–69	32,941	21,852	14,348	8,045	8,867	2,494	1,208	233	89,988
70–74	22,966	15,302	9,465	2,329	2,267	633	387	75	53,424
75–79	9,598	3,894	5,137	912	807	253	158	31	20,790
80–84	3,599	856	1,484	224	170	53	30	8	6,424
85 +	<sup>(a)</sup>	173	311	54	25	6	9	0	578
Not stated	0	0	0	1	0	0	0	0	1
<b>All ages</b>	<b>250,633</b>	<b>150,681</b>	<b>122,947</b>	<b>58,765</b>	<b>54,080</b>	<b>17,696</b>	<b>11,193</b>	<b>3,866</b>	<b>669,861</b>
<b>Ages 50–69</b>	<b>159,217</b>	<b>113,620</b>	<b>74,028</b>	<b>42,698</b>	<b>42,708</b>	<b>12,309</b>	<b>7,526</b>	<b>2,583</b>	<b>454,689</b>

(a) New South Wales has grouped all women aged 80 years or more, and for the purposes of this figure they appear in the 80–84 age group.

## Indicator 4: Incidence of breast cancer

Table 1.8: Number of new cases of breast cancer in women by age, Australia, 1983–1996

Age group	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
0–4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5–9	0	0	0	0	0	0	0	0	0	0	0	0	1	0
10–14	0	0	1	0	0	0	0	0	0	0	1	0	1	0
15–19	0	2	0	0	0	0	0	0	0	0	1	0	1	1
20–24	6	4	4	5	4	7	7	4	11	6	13	6	7	6
25–29	37	41	35	48	58	48	45	49	46	44	59	56	55	43
30–34	142	143	145	147	189	162	157	204	181	180	164	196	202	198
35–39	305	291	343	329	363	351	364	341	395	380	402	394	392	413
40–44	418	496	482	481	585	657	647	668	722	700	776	765	750	763
45–49	563	533	592	568	692	666	750	819	857	1,011	1,021	1,132	1,221	1,215
50–54	537	540	507	593	598	636	714	783	853	841	975	1,102	1,238	1,230
55–59	607	676	669	664	704	631	669	691	810	816	930	1,027	1,135	1,156
60–64	617	693	720	711	820	836	888	832	887	787	965	1,094	1,067	1,044
65–69	551	607	685	671	783	766	824	855	932	925	1,014	1,207	1,097	1,085
70–74	584	642	627	691	635	696	714	751	800	757	907	1,024	991	1,023
75–79	379	437	498	529	576	562	620	625	664	651	679	763	842	745
80–84	297	294	320	333	382	381	385	416	474	490	457	510	571	542
85+	225	233	242	280	288	280	299	323	360	355	374	366	380	382
<b>Total</b>	<b>5,268</b>	<b>5,632</b>	<b>5,870</b>	<b>6,050</b>	<b>6,677</b>	<b>6,679</b>	<b>7,083</b>	<b>7,361</b>	<b>7,992</b>	<b>7,943</b>	<b>8,738</b>	<b>9,642</b>	<b>9,951</b>	<b>9,846</b>

Source: National Cancer Statistics Clearing House.

**Table 1.9: Age-specific and age-standardised incidence rates for breast cancer in women, Australia, 1983–1996**

Age group	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
0–4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
10–14	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.0
15–19	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.2
20–24	0.9	0.6	0.6	0.8	0.6	1.1	1.1	0.6	1.6	0.9	1.8	0.8	1.0	0.9
25–29	5.9	6.4	5.4	7.2	8.5	6.9	6.4	6.9	6.6	6.4	8.7	8.2	8.0	6.1
30–34	23.1	23.1	23.2	23.3	29.2	24.5	23.2	29.4	25.4	24.8	22.4	26.7	27.6	27.4
35–39	54.6	50.2	56.9	52.7	58.1	55.3	56.4	51.9	59.5	56.1	58.4	56.5	55.0	56.6
40–44	96.4	109.7	102.0	97.1	109.2	115.3	108.6	108.0	113.0	109.1	119.9	116.4	112.3	112.4
45–49	150.5	138.1	148.6	138.5	164.1	153.0	164.5	171.1	170.5	187.7	178.2	190.0	198.0	189.9
50–54	146.2	149.2	141.6	166.0	162.5	168.5	183.5	195.3	206.5	198.2	224.7	243.2	260.1	247.3
55–59	162.2	180.5	178.9	177.5	191.7	173.6	185.3	192.4	225.8	222.7	247.5	266.3	287.0	283.7
60–64	179.6	194.4	197.9	196.7	222.6	225.9	239.6	224.5	239.7	215.5	268.4	306.5	299.1	292.7
65–69	189.2	210.2	234.2	218.5	247.7	232.6	240.3	245.3	265.3	262.1	285.3	340.5	309.7	305.9
70–74	240.9	254.4	241.9	263.8	237.6	260.2	268.6	277.5	283.4	258.8	298.8	322.7	306.8	312.8
75–79	224.3	248.0	270.7	273.5	289.6	273.0	288.7	283.2	294.5	284.2	295.2	334.9	360.8	305.6
80–84	274.2	260.4	277.3	286.2	308.6	295.2	287.7	298.6	326.0	323.5	288.7	305.1	331.1	306.9
85+	280.3	280.0	272.5	309.3	296.3	280.5	289.7	305.8	327.2	307.0	306.9	287.0	282.9	269.8
<b>All ages</b>														
AS Rate (A)	70.1	73.1	74.5	75.0	80.9	79.1	81.9	83.2	88.2	85.7	92.7	100.3	101.1	97.8
AS Rate (W)	56.5	58.9	59.8	60.1	65.2	63.7	66.3	67.4	71.5	69.7	75.9	82.2	82.9	80.5
<b>Ages 50–69</b>														
AS Rate (A)	168.0	181.7	185.5	188.2	203.7	198.4	210.6	213.1	232.6	222.8	254.7	286.4	287.4	280.6
AS Rate (W)	166.6	179.7	182.4	186.4	200.8	196.1	208.6	211.2	230.6	220.6	252.7	283.1	285.9	278.7

Note: Rates are expressed per 100,000 women and age standardised to both the Australian 1991 population (A) and the World Standard Population (W).

Source: National Cancer Statistics Clearing House.

**Table 1.10: Number of new cases of breast cancer in women by age, by State and Territory, 1993–1996**

<b>Age group</b>	<b>NSW</b>	<b>Vic</b>	<b>Qld</b>	<b>WA</b>	<b>SA</b>	<b>Tas</b>	<b>ACT</b>	<b>NT</b>	<b>Australia</b>
0–4	0	0	0	0	0	0	0	0	0
5–9	0	1	0	0	0	0	0	0	1
10–14	0	0	2	0	0	0	0	0	2
15–19	0	0	2	0	1	0	0	0	3
20–24	12	6	9	4	1	0	0	0	32
25–29	73	62	37	14	16	6	4	1	213
30–34	255	191	133	70	65	26	14	6	760
35–39	523	421	302	144	115	49	30	17	1,601
40–44	1,076	775	481	305	254	76	61	26	3,054
45–49	1,559	1,172	861	394	362	115	90	36	4,589
50–54	1,567	1,160	796	389	400	128	83	22	4,545
55–59	1,449	1,147	667	409	375	127	57	17	4,248
60–64	1,481	1,146	642	377	352	107	56	10	4,171
65–69	1,598	1,206	642	378	418	120	34	7	4,403
70–74	1,378	1,089	653	339	341	93	48	4	3,945
75–79	1,035	795	522	263	295	84	32	3	3,029
80–84	711	571	343	191	200	47	16	1	2,080
85+	480	374	294	157	152	33	11	1	1,502
<b>Total</b>	<b>13,197</b>	<b>10,116</b>	<b>6,386</b>	<b>3,434</b>	<b>3,347</b>	<b>1,011</b>	<b>536</b>	<b>151</b>	<b>38,178</b>

Source: National Cancer Statistics Clearing House.

**Table 1.11: Age-specific and age-standardised incidence rates for breast cancer in women, by State and Territory, 1993–1996**

<b>Age group</b>	<b>NSW</b>	<b>Vic</b>	<b>Qld</b>	<b>WA</b>	<b>SA</b>	<b>Tas</b>	<b>ACT</b>	<b>NT</b>	<b>Australia</b>
0–4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5–9	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.1
15–19	0.0	0.0	0.4	0.0	0.5	0.0	0.0	0.0	0.1
20–24	1.3	0.8	1.7	1.5	0.5	0.0	0.0	0.0	1.1
25–29	7.9	8.7	7.5	5.3	7.5	9.0	7.9	2.9	7.7
30–34	25.8	25.9	25.7	24.8	27.9	34.6	27.0	18.1	26.0
35–39	54.9	59.3	60.4	51.5	50.2	65.6	58.5	57.7	56.6
40–44	121.4	116.6	101.8	115.6	116.6	109.9	120.6	102.0	115.2
45–49	191.0	192.5	197.0	170.5	179.0	182.6	194.9	174.7	189.2
50–54	245.7	247.5	238.9	226.2	258.1	260.2	269.0	161.9	244.3
55–59	266.3	285.3	248.2	286.9	280.0	299.2	257.9	200.7	271.5
60–64	292.9	308.2	268.1	301.9	279.3	273.1	328.1	171.8	291.7
65–69	314.8	326.5	273.2	321.7	318.9	313.0	217.9	171.3	310.3
70–74	301.6	329.2	313.1	334.0	281.0	262.2	353.7	144.5	310.4
75–79	306.7	330.7	335.2	354.6	329.2	311.6	359.6	168.5	323.9
80–84	295.7	321.7	314.4	339.6	306.6	245.5	271.5	110.9	308.4
85+	260.4	262.6	349.0	354.3	297.4	236.2	264.9	133.7	285.9
<b>All ages</b>									
AS Rate (A)	97.5	101.3	95.1	99.3	97.3	96.9	98.9	65.2	98.0
AS Rate (W)	80.3	83.2	77.6	80.5	79.9	80.3	81.5	55.3	80.4
<b>Ages 50–69</b>									
AS Rate (A)	277.9	289.5	256.1	281.2	282.4	284.8	269.4	175.9	277.5
AS Rate (W)	275.6	286.9	254.9	278.2	280.3	283.1	271.4	175.8	275.3

*Note:* Rates are expressed per 100,000 women and age standardised to both the Australian 1991 population (A) and the World Standard Population (W).

*Source:* National Cancer Statistics Clearing House.



## Indicator 5: Mortality from breast cancer

Table 1.12: Number of deaths from breast cancer in women by age, Australia, 1983–1996

Age group	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
0–4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5–9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10–14	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15–19	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20–24	0	0	0	0	2	0	1	0	2	1	0	1	1	0
25–29	6	7	10	4	10	5	7	6	12	4	2	2	5	9
30–34	20	16	39	34	31	27	35	27	26	34	40	19	26	29
35–39	58	63	80	76	77	67	68	64	81	81	75	89	58	92
40–44	89	102	96	114	126	122	140	152	153	139	118	142	122	139
45–49	128	137	164	150	132	155	173	171	181	200	206	215	211	193
50–54	199	203	190	184	210	206	216	233	237	216	230	244	226	235
55–59	238	244	251	254	249	243	221	219	232	223	257	254	253	245
60–64	304	236	278	257	275	297	293	288	263	241	282	267	273	263
65–69	249	257	275	308	259	296	303	335	312	278	322	296	323	295
70–74	257	274	249	262	262	256	256	263	311	293	269	314	294	302
75–79	169	191	209	230	235	259	266	259	254	259	304	280	287	285
80–84	144	185	169	168	169	188	209	209	215	217	262	255	264	257
85+	172	170	197	189	221	227	243	223	234	252	273	277	286	279
<b>Total</b>	<b>2,033</b>	<b>2,085</b>	<b>2,207</b>	<b>2,230</b>	<b>2,258</b>	<b>2,348</b>	<b>2,431</b>	<b>2,449</b>	<b>2,513</b>	<b>2,438</b>	<b>2,640</b>	<b>2,655</b>	<b>2,629</b>	<b>2,623</b>

Source: AIHW Mortality Database.

**Table 1.13: Age-specific and age-standardised mortality rates for breast cancer in women, Australia, 1983–1996**

Age group	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
0–4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15–19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20–24	0.0	0.0	0.0	0.0	0.3	0.0	0.2	0.0	0.3	0.1	0.0	0.1	0.1	0.0
25–29	1.0	1.1	1.5	0.6	1.5	0.7	1.0	0.8	1.7	0.6	0.3	0.3	0.7	1.3
30–34	3.3	2.6	6.2	5.4	4.8	4.1	5.2	3.9	3.7	4.7	5.5	2.6	3.6	4.0
35–39	10.4	10.9	13.3	12.2	12.3	10.6	10.5	9.7	12.2	12.0	10.9	12.8	8.1	12.6
40–44	20.5	22.6	20.3	23.0	23.5	21.4	23.5	24.6	23.9	21.7	18.2	21.6	18.3	20.5
45–49	34.2	35.5	41.2	36.6	31.3	35.6	37.9	35.7	36.0	37.1	36.0	36.1	34.2	30.2
50–54	54.2	56.1	53.1	51.5	57.1	54.6	55.5	58.1	57.4	50.9	53.0	53.9	47.5	47.2
55–59	63.6	65.2	67.1	67.9	67.8	66.8	61.2	61.0	64.7	60.9	68.4	65.9	64.0	60.1
60–64	88.5	66.2	76.4	71.1	74.7	80.3	79.1	77.7	71.1	66.0	78.4	74.8	76.5	73.7
65–69	85.5	89.0	94.0	100.3	81.9	89.9	88.4	96.1	88.8	78.8	90.6	83.5	91.2	83.2
70–74	106.0	108.6	96.1	100.0	98.1	95.7	96.3	97.2	110.2	100.2	88.6	99.0	91.0	92.3
75–79	100.0	108.4	113.6	118.9	118.2	125.8	123.8	117.4	112.6	113.1	132.2	122.9	123.0	116.9
80–84	133.0	163.8	146.4	144.4	136.5	145.7	156.2	150.0	147.9	143.3	165.5	152.5	153.1	145.5
85+	214.3	204.3	221.8	208.7	227.4	227.4	235.4	211.2	212.7	217.9	224.1	217.2	212.9	197.0
<b>All ages</b>														
AS Rate (A)	26.2	26.3	27.3	27.0	26.5	26.9	27.2	26.9	27.0	25.4	26.9	26.5	25.6	25.0
AS Rate (W)	20.4	20.2	21.1	20.8	20.4	20.7	20.9	20.8	20.8	19.5	20.5	20.3	19.5	19.1
<b>Ages 50–69</b>														
AS Rate (A)	72.0	68.2	71.5	71.3	69.6	71.9	70.1	72.2	69.6	63.3	71.5	68.6	68.5	65.0
AS Rate (W)	71.0	67.0	70.1	69.6	68.8	70.7	69.0	70.9	68.5	62.4	70.3	67.7	67.1	63.8

Note: Rates are expressed per 100,000 women and age standardised to the Australian 1991 population (A) and the World Standard Population (W).

Source: AIHW Mortality Database.

**Table 1.14: Number of deaths from breast cancer in women by age, by State and Territory, 1993–1996**

<b>Age group</b>	<b>NSW</b>	<b>Vic</b>	<b>Qld</b>	<b>WA</b>	<b>SA</b>	<b>Tas</b>	<b>ACT</b>	<b>NT</b>	<b>Australia</b>
0–4	0	0	0	0	0	0	0	0	0
5–9	0	1	0	0	0	0	0	0	1
10–14	0	0	0	0	0	0	0	0	0
15–19	0	0	0	0	0	0	0	0	0
20–24	0	1	0	0	1	0	0	0	2
25–29	5	4	3	4	2	0	0	0	18
30–34	34	32	22	10	7	6	3	0	114
35–39	87	109	57	23	25	8	5	0	314
40–44	190	119	89	57	41	16	5	4	521
45–49	292	205	155	65	65	24	15	4	825
50–54	337	241	149	81	87	22	11	7	935
55–59	333	288	170	93	86	21	16	2	1,009
60–64	369	307	170	89	104	24	17	5	1,085
65–69	429	349	190	90	125	29	21	3	1,236
70–74	398	341	155	110	129	35	9	2	1,179
75–79	393	337	191	86	111	27	9	2	1,156
80–84	338	282	169	109	93	29	17	1	1,038
85+	363	316	182	90	118	33	13	0	1,115
<b>Total</b>	<b>3,568</b>	<b>2,932</b>	<b>1,702</b>	<b>907</b>	<b>994</b>	<b>274</b>	<b>141</b>	<b>30</b>	<b>10,548</b>

*Note:* Deaths in this table are derived from 'place of usual residence', and not 'place of death'.

*Source:* AIHW Mortality Database.

**Table 1.15: Age-specific and age-standardised mortality rates for breast cancer for women by age, by State and Territory, 1993–1996**

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
0–4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
5–9	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15–19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20–24	0.0	0.1	0.0	0.0	0.5	0.0	0.0	0.0	0.1
25–29	0.5	0.6	0.6	1.5	0.9	0.0	0.0	0.0	0.7
30–34	3.4	4.3	4.3	3.5	3.0	8.0	5.8	0.0	3.9
35–39	9.1	15.3	11.4	8.2	10.9	10.7	9.7	0.0	11.1
40–44	21.4	17.9	18.8	21.6	18.8	23.1	9.9	15.7	19.7
45–49	35.8	33.7	35.5	28.1	32.1	38.1	32.5	19.4	34.0
50–54	52.8	51.4	44.7	47.1	56.1	44.7	35.6	51.5	50.3
55–59	61.2	71.6	63.3	65.2	64.2	49.5	72.4	23.6	64.5
60–64	73.0	82.6	71.0	71.3	82.5	61.3	99.6	85.9	75.9
65–69	84.5	94.5	80.8	76.6	95.4	75.6	134.6	73.4	87.1
70–74	87.1	103.1	74.3	108.4	106.3	98.7	66.3	72.2	92.8
75–79	116.5	140.2	122.7	116.0	123.9	100.1	101.1	112.4	123.6
80–84	140.6	158.9	154.9	193.8	142.6	151.5	288.4	110.9	153.9
85+	196.9	221.9	216.0	203.1	230.9	236.2	313.1	0.0	212.3
<b>All ages</b>									
AS Rate (A)	25.1	27.9	24.7	25.6	27.0	24.6	29.0	18.5	26.0
AS Rate (W)	19.4	21.3	18.8	19.2	20.8	18.6	21.5	14.4	19.8
<b>Ages 50–69</b>									
AS Rate (A)	67.0	73.7	63.9	64.1	73.5	56.9	82.7	58.2	68.4
AS Rate (W)	65.9	72.3	62.7	63.2	72.1	55.8	79.4	57.2	67.1

Note: Rates are expressed per 100,000 women and age standardised to the Australian 1991 population (A) and the World Standard Population (W).

Source: AIHW Mortality Database.

## **2. Cervical cancer screening in Australia 1996–1997**

## Cervical cancer

Cervical cancer affects the cells lining the cervix, which is the lower part of the womb or uterus as it joins the inner end of the vagina. Like other cancers, cervical cancer is a disease where normal cells change, begin to multiply out of control, and form a growth or tumour. If not caught early enough, the tumour can invade local tissue and spread or metastasise to other parts of the body. The main symptoms of cervical cancer are unusual bleeding from the vagina, and sometimes an unusual vaginal discharge. However, these symptoms may not be due to cancer.

A cervical cancer may take 10 or more years to develop, but before this the cells may show pre-cancerous changes. These early changes can be detected by a Pap smear which is described in more detail below, and with early treatment there is an excellent chance of a full recovery. There are two levels of severity of these pre-cancerous lesions, low-grade abnormalities and high-grade abnormalities, with the higher grade lesions more likely to progress to a cancer. These are usually graded from warty atypia (HPV effect), atypia, equivocal CIN, possible CIN, endocervical dysplasia NOS, CIN1 to CIN3, and carcinoma *in situ*.

The Pap smear is the most common way to detect pre-cancerous changes, which rarely cause any symptoms. The test involves a doctor inserting a speculum into the vagina and gently scraping the surface of the cervix. This process collects cells that are transferred onto a slide or into a special liquid, which is then sent to a pathology laboratory for assessment. Pap smears are offered by general practitioners, gynaecologists, family planning clinics, hospital outpatient clinics and in some circumstances nurse practitioners.

If a pre-cancerous change is suggested by the Pap smear a doctor is able to look directly at the cervix by inserting an instrument called a colposcope into the vagina. Using a special stain the doctor can highlight any suspicious area, pre-cancerous or cancerous. The doctor will then take a tissue sample (a biopsy) of the suspicious area for further examination by the pathologist.

Pre-cancerous changes are relatively easily treated and are cured in nearly all cases. The type of treatment depends on whether the change observed is low or high grade, the woman's age and general health, whether she wants to have children, and her preferences.

There is a range of treatments for pre-cancerous changes, including cryosurgery (freezing), cauterisation (burning, also called diathermy), laser surgery, or loop or cone biopsies. In a small number of instances a hysterectomy may be necessary, especially if changed cells are found inside the opening of the uterus and the woman does not want to have children in the future.

For invasive cancer, a cone biopsy or hysterectomy is generally performed. If the cancer cells are only detected on the surface of the cervix, it may be treated by a cone biopsy. If it has invaded deeper into the cervix a hysterectomy is generally performed. In advanced cases, a radical hysterectomy is needed to remove the cervix and uterus along with a margin of tissue around the cervix and lymph nodes from the pelvis. Radiotherapy is sometimes used as well as surgery, and for more advanced cases it may be used on its own.

## Cervical cancer screening

The Pap smear used today in cervical cancer screening was first developed by Dr George Papanicolaou, who was born in Greece in 1883. He emigrated to America and it was through his research into the measurement of ovarian and uterine cycles in guinea pigs that he first observed that vaginal smears from women with uterine cancer showed abnormal cells. In 1943 Papanicolaou and Traut published 'Diagnosis of uterine cancer by the vaginal smear', which described how the precursors to invasive cervical cancer could be detected. Soon after, the Pap smear became widely accepted as a screening test for cervical cancer.

In 1949 cervical cancer screening was first trialed in British Columbia. Program evaluation between 1955 and 1985 (Anderson et al. 1988) showed that morbidity and mortality from invasive squamous cell cancer of the cervix had been considerably reduced, and was directly attributable to the screening program. Later studies have shown similar results in countries that have introduced cervical cancer screening, although it is important to note that none of these studies were randomised controlled trials (the use of a control group as a comparison within the trial). This has come about historically because no provisions were made for randomised controlled trials when the Pap smear was first introduced. With such widespread use of the Pap smear today, it is no longer seen as ethical to carry out randomised controlled trials (Marcus & Crane 1998).

In 1986 the World Health Organization and the International Agency for Research on Cancer published guidelines outlining essential features of cervical cancer screening programs. These guidelines were subsequently used as a basis for a review of existing cervical cancer screening in Australia. Between 1988 and 1990 a program evaluation was undertaken by the Screening Evaluation Steering Committee on behalf of Australian Health Ministers' Advisory Council (AHMAC) at the then Australian Institute of Health.

The evaluation found that because of the fragmented approach to the provision of cervical screening services over a 25-year period, there were deficiencies in the delivery and outcomes of the services. For instance, there was no agreement on the age group of women to be screened, or the interval between screens, no fail-safe system for women with abnormal Pap smears, and no formal system to monitor the status of treated women (AHMAC 1991). In its report to AHMAC, the committee recommended the introduction of an organised approach to cervical cancer screening including the establishment of State and Territory registries to provide the infrastructure for this process. The major recommendations were that registries should:

- remind women to attend for screening;
- provide a fail-safe system to ensure follow-up of women with significantly abnormal Pap smears;
- provide individual women's cervical screening histories to laboratories and clinicians to aid reporting and management; and
- monitor the effects of initiatives to improve participation by women in screening. (AHMAC 1991).

The current national screening program has adopted these recommendations and has been operating since 1991.

# National Cervical Screening Program

The Pap smear has the potential to reduce squamous cervical cancer by up to 90% through population screening. This potential led to the introduction of the National Cervical Screening Program in Australia in 1991. It is a joint initiative of the Commonwealth and State and Territory governments (Bell & Ward 1998). The screening recommendation under this program is for all women who have been sexually active at any stage in their lives to have a Pap smear every 2 years until age 70 years at which time screening can cease. This regime may be modified for some women who have had previous Pap smear abnormalities.

The program seeks to reduce morbidity and mortality from cervical cancer by:

- maximising participation by eligible women in routine 2-yearly screening;
- ensuring that cervical smears contain adequate samples of cervical cells;
- instituting a uniform and reliable reporting system;
- developing appropriate evaluation and management protocols for women with screen-detected abnormalities; and
- ensuring effective treatment and follow-up of women with screen-detected abnormalities of significant malignant potential (DHS 1994d).

## Recruitment

National Health and Medical Research Council guidelines state that to facilitate effective prevention of cervical cancer all women at risk aged between 18 and 70 years should be routinely screened every two years (NHMRC 1990). In a number of States and Territories the programs actively recruit women in this target age group by a range of strategies including health promotion activities and direct mailouts based on local electoral rolls. Women over 70 years of age are screened on request but are not actively targeted. Other mechanisms include providing reminder services for women who do not otherwise attend for re-screening, and providing a back-up service encouraging women with significantly abnormal smears to be followed up.

## Pap test registers

Registration on cervical screening registers is voluntary, and in all States and Territories there is an opt-off option for women. Doctors or health workers are required to advise women about information going on the Pap test register. If the woman consents, her demographic details together with a summary of the smear report are forwarded by the pathology laboratory to the cervical cytology register located in each State and Territory for inclusion on the register. If a woman has chosen to opt-off, her data are still included on the register in some States for statistical purposes but are unidentified, and by definition no follow-up is possible. It is estimated that 1-3% of women choose not to be included on the register.

Cervical cancer registers are covered by legislation in all States and Territories except Queensland to date. The Queensland register is due to begin operations in late 1998.



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**State and Territory registry start dates**

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New South Wales	July 1996
Victoria	November 1989
Queensland	No register at present
Western Australia	July 1994
South Australia	June 1993
Tasmania	May 1994
Australia Capital Territory	March 1995
Northern Territory	March 1996

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## Follow-up

If no abnormal cells are detected the national screening policy recommends a repeat smear in two years. If the Pap smear is abnormal the registries observe set protocols regarding follow-up. However, time periods vary between States and Territories for sending reminder or follow-up letters (e.g. From 27 months to 3 years for women with a normal smear report). As an example, in Western Australia an unsatisfactory cytology report prompts a reminder letter to the health care provider at six months, and a letter to the woman at 12 months; for a normal report a reminder letter is sent to the women at three years; for a low-grade abnormality a reminder letter is sent to the provider at 15 months, and to the woman at 21 months; and finally a high grade abnormality warrants a questionnaire letter to the health care provider at nine months, reminder letter to the woman at 12 months, and again at 15 months if necessary. In 1996, 18% of letters sent to women were returned to the Western Australian registry because the person was unknown at the address given (Barrett & Straton 1996).

# National cervical cancer screening monitoring indicators

Screening indicators to monitor the National Cervical Screening Program cover the areas of participation, early rescreening, low- and high-grade abnormality detection, incidence and mortality. These indicators have been endorsed by the National Screening Information Advisory Group, and by State and Territory cervical cancer screening programs. The indicators and their definitions are provided below. On the following pages is an overview of each indicator's intention, application and definition. This is supported where possible with data indicating the current status and trend of the indicator. In some circumstances in this section of the report, additional information has been provided about the indicators. This has been done to provide further background material to interpret the indicators, and to assist those not familiar with this area of public health.

## **Indicator 1: Participation rate for cervical cancer screening**

Per cent of women screened in a 24-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).

## **Indicator 2: Early rescreening**

Proportion of women rescreened by number of rescreens during a 24-month period following a negative smear.

## **Indicator 3: Low-grade abnormality detection**

Number of women with a histologically verified low-grade intraepithelial abnormality detected in a 12-month period as a ratio of the number of women with a histologically verified high-grade intraepithelial abnormality detected in the same period.

## **Indicator 4: High-grade abnormality detection**

Detection rate for histologically verified high-grade intraepithelial abnormalities per 1,000 women screened 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).

## **Indicator 5: Incidence of micro-invasive cervical cancer**

Incidence rate of micro-invasive 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).

**Indicator 6: Incidence of squamous, adenocarcinoma, adeno-squamous and other cervical cancer**

Incidence rate 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).

**Indicator 7: Mortality**

Death rate of 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).

## Participation

Increasing participation in cervical cancer screening is seen as the major challenge in reducing the number of women who present with this disease, and ultimately the number of women who die from cervical cancer. Women in the 20–69 years age group are actively targeted by a variety of recruitment initiatives determined mainly at a State or Territory level. To achieve higher population coverage it may be necessary to target particular sub-groups within our communities, such as older women, Indigenous women and women from non-English-speaking backgrounds.

There are a number of women within the target population who are ineligible for screening, such as those who have had a total hysterectomy with their cervix removed, who have never had sexual intercourse, and women with a previously diagnosed gynaecological cancer (Snider & Beauvais 1998).

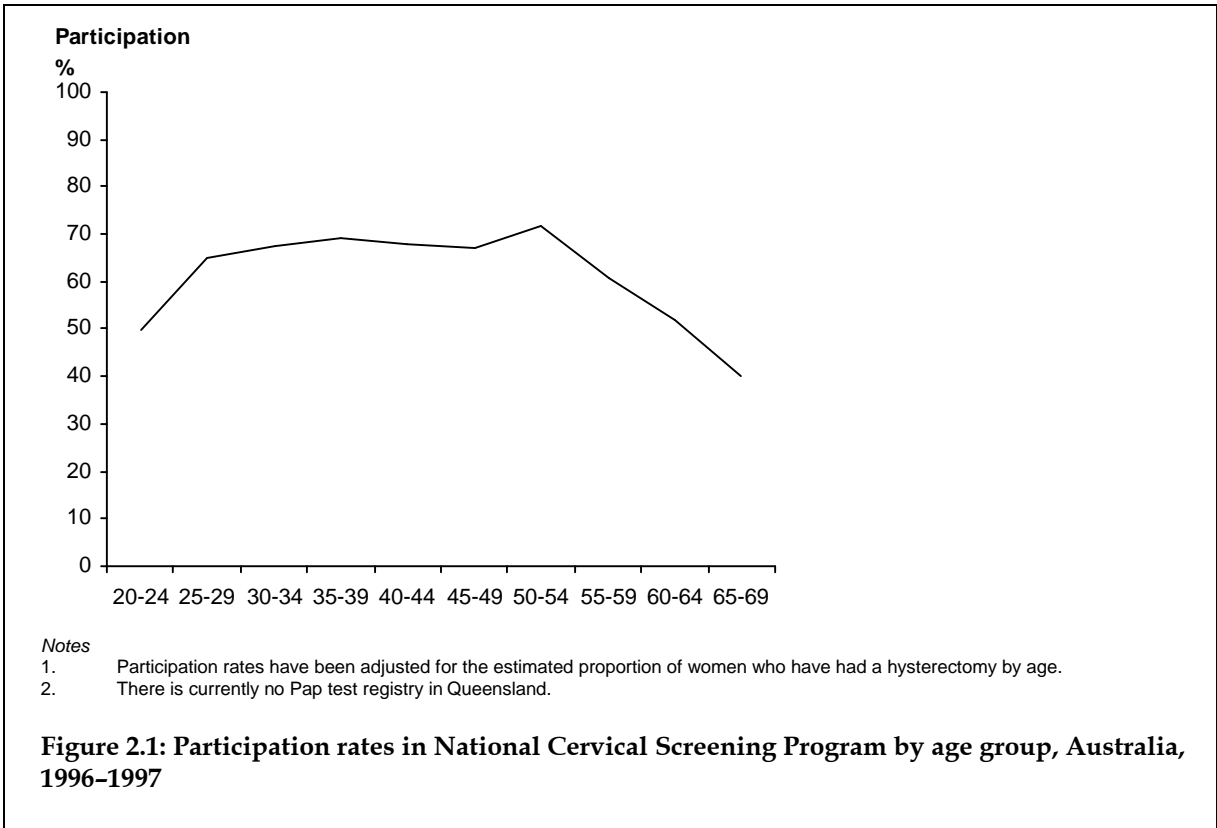
The objective, measurement and usefulness of participation as an indicator is outlined below:

- The participation indicator measures the proportion of the population covered by the screening programs.
- This indicator is important in assessing the contribution of the screening program to changes in incidence and mortality. The indicator can also be used as a means of evaluating recruitment practices particularly if participation rates are analysed by demographic characteristics.
- When this indicator is used in conjunction with others, it can be used to support debate relating to target groups and screening intervals.

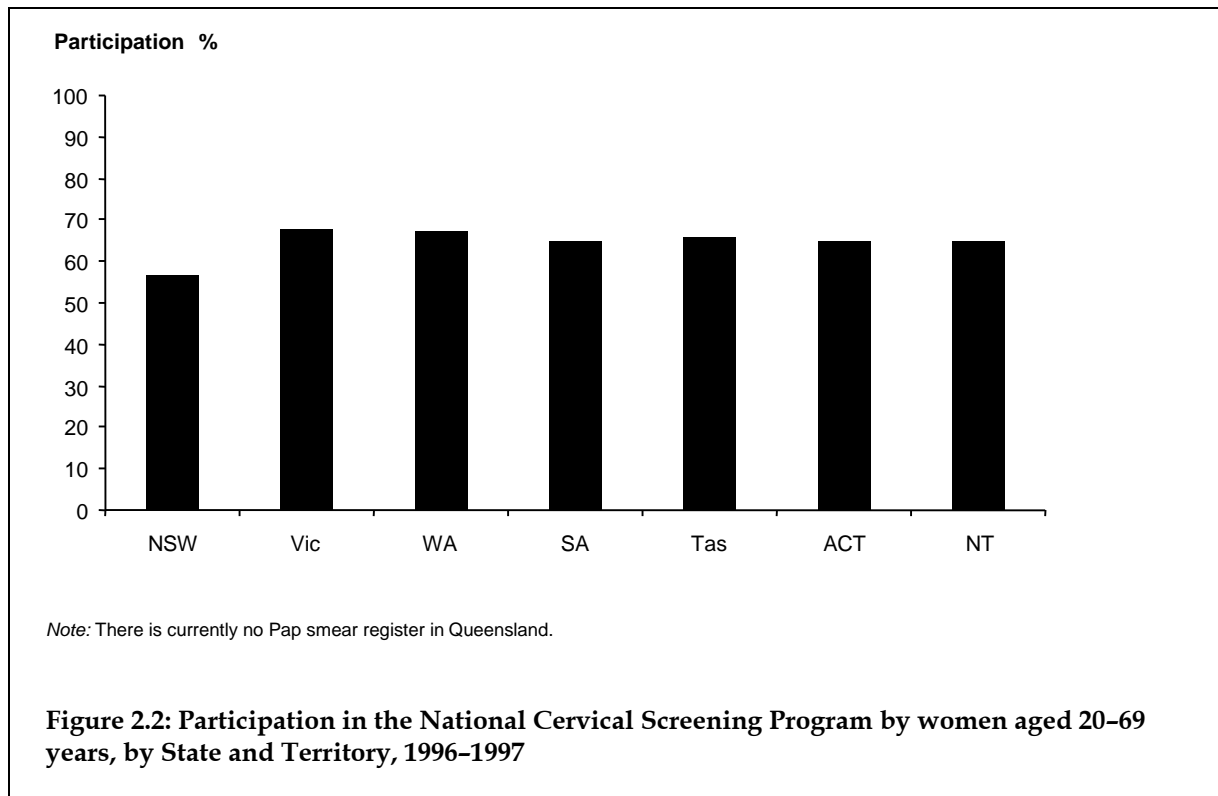
### Indicator 1: Participation rate for cervical cancer screening

Per cent of women screened in a 24-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).

- The participation rate for cervical cancer screening (excluding Queensland) for the period January 1996 to December 1997 was 62.4% for the target population of women aged 20-69 years (Table 2.2).
- During this period 2,619,273 women were screened in Australia for cervical cancer. Of these 2,563,108 (98%) were in the target age group 20-69 years of age.



- There was considerable variation in the participation rate within the target age group; the rate peaked in women aged 50-54 years at 71%. However, this was followed by a sharp decrease in the participation rate for older women, with women in the 65-69 age group having the lowest rate (40%). Within the younger age groups, 25-49 years, the rate was relatively constant.



- Participation rates display some small interstate variations (Figure 2.2, Table 2.2).
- The New South Wales participation rate was estimated (see Appendix A) for the period from January to June 1996 because the Pap test register did not begin operations until 29 July 1996. This may have contributed to its lower participation of 57%. In addition, there were a number of other factors that contributed to the lower participation including: a proportion of cases were not counted because of cross-border issues; laboratory data transfer difficulties; and where age was not stated in 1% of cases.
- The Northern Territory Pap smear register also began operations during the reporting period (11 March 1996) and, as for New South Wales, the Northern Territory participation rates for the period prior to this have been estimated.
- The participation rates are based on all women who were screened in that State or Territory. New South Wales, Victoria, Western Australia, South Australia and Tasmania record screens of a small number of women who live outside the State or Territory. Of these South Australia screens had the highest proportion of interstate residents in 1996–1997 (1.7% of all screens). The Australian Capital Territory Pap smear registry only registers women who live in that State.
- The Northern Territory Pap smear participation rates in this report may differ from those published by the Northern Territory Pap smear register. The female Aboriginal population comprises 23% of the total female population 20–69 years in the Northern Territory in 1996. The Northern Territory cervical screening program indicates that there is anecdotal evidence to suggest that Aboriginal women have lower rates of hysterectomy. Therefore the Northern Territory Pap smear register excludes Aboriginal women from the denominator when adjusting for the percentage of women who have had a hysterectomy.

## Early rescreening

The National Cervical Screening Program seeks to maximise reductions in incidence and mortality given available resources. The design of the screening program defines two key parameters to achieve these objectives – target populations and screening intervals.

Compliance with these parameters is crucial in maintaining the effectiveness of the program and important in controlling costs (where over-screening occurs) in order that resources may be transferred to under-screened populations. Where women have a positive result (e.g. CIN) from their Pap smear repeat testing is usually recommended within the 2-year interval.

The measurement and usefulness of this indicator can be summarised as:

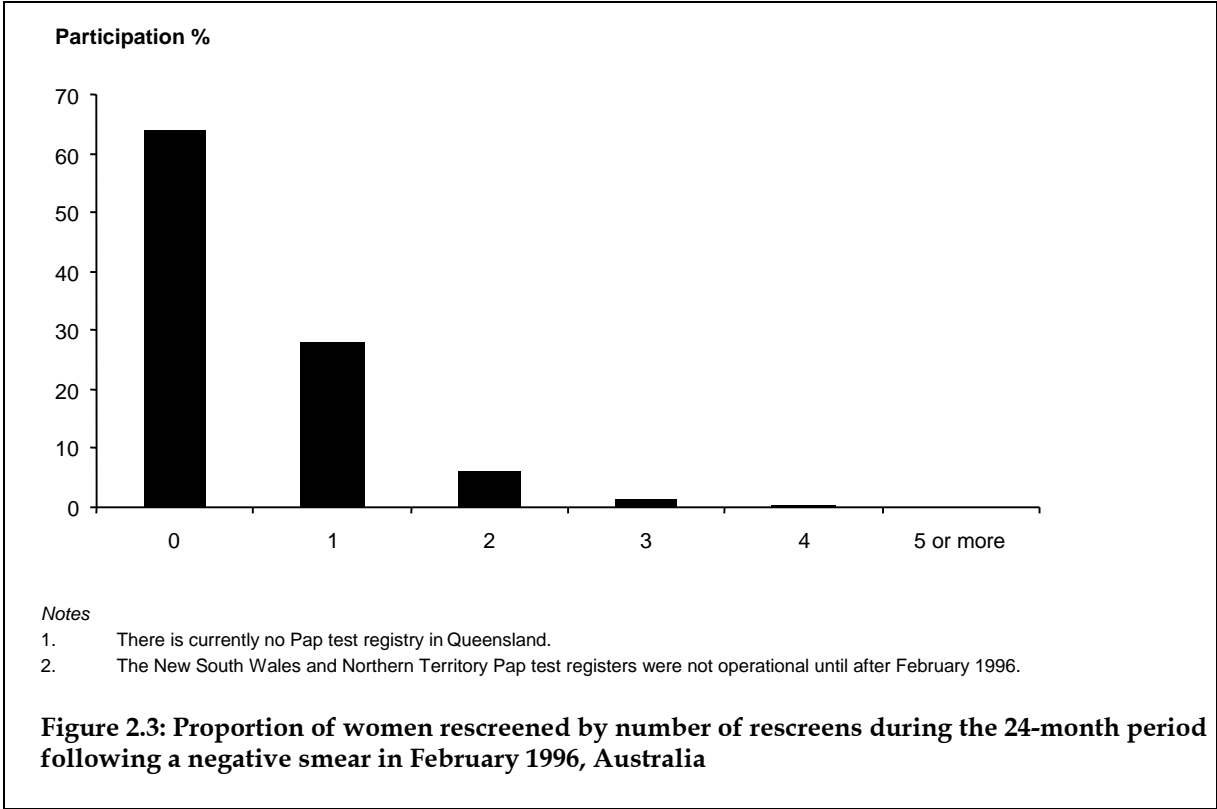
- This indicator measures the compliance with the recommended screening interval following a negative smear, and the range of screening practices around it.
- This indicator is important in assessing the spread of screening around the recommended interval, as significant differences may reduce program effectiveness.

Based on a large number of studies the International Agency for Research on Cancer estimates the percentage reduction in the cumulative incidence of cervical cancer between the ages of 35 years and 65 years at 93.5% if the screening interval is 1 year, 92.5% and 90.8% respectively if the screening intervals are between 2 and 3 years. After this, the protective effect declines by approximately 4% per year. The recommended interval for rescreening varies from one year to 5 years in different countries of the developed world. Australia has adopted a policy of 2-yearly rescreening if the Pap smear result is normal.

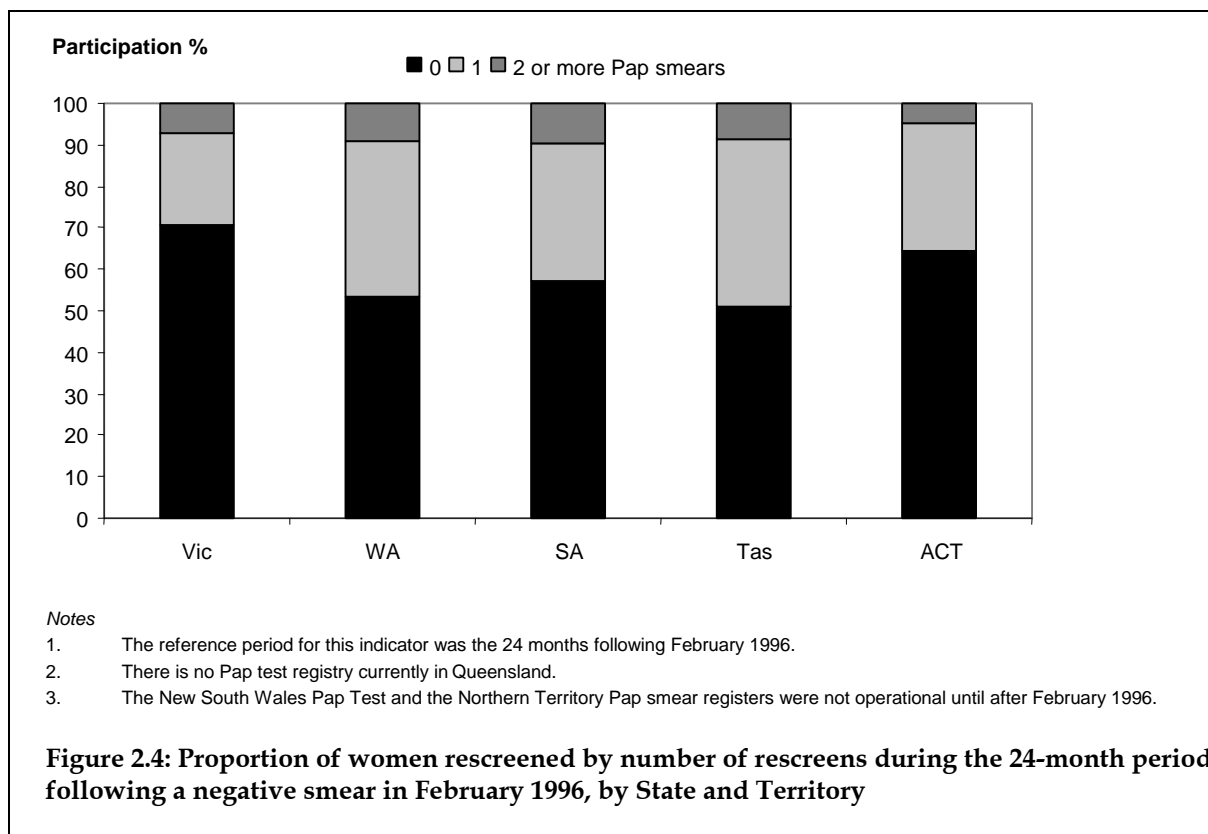
## Indicator 2: Early rescreening

Proportion of women rescreened by number of rescreens during a 24-month period following a negative smear.

- A cohort of 82,176 women was selected for follow-up for subsequent smears over the next 24 months. February was selected as the index month because it is a relatively stable month in terms of the number of women who are screened. This pattern has been consistent over a number of years possibly because less women take holidays at this time (Table 2.3).
- Approximately 64% of women who had a Pap smear in February 1996 were not rescreened in the following 2 years. Of the remaining women, 28% had one additional smear, 6% had two additional smears, and the remaining 2% had three or more additional smears. Only five States and the Australian Capital Territory were able to provide data for this indicator.







- More than 70% of Victorian women who had a negative screen in February 1996 had no more screens in the 24 months following. The percentage of women who had one repeat smear ranged from 22% (Victoria) to 41% (Tasmania). Less than 10% of women had two or more repeat screens in each of the States and the Australian Capital Territory (Table 2.4).

## Low-grade abnormalities

In this report a low-grade intraepithelial abnormality is defined as a lesion that is: warty atypia (HPV effect); atypia, equivocal CIN; possible CIN, CIN 1; or endocervical dysplasia NOS.

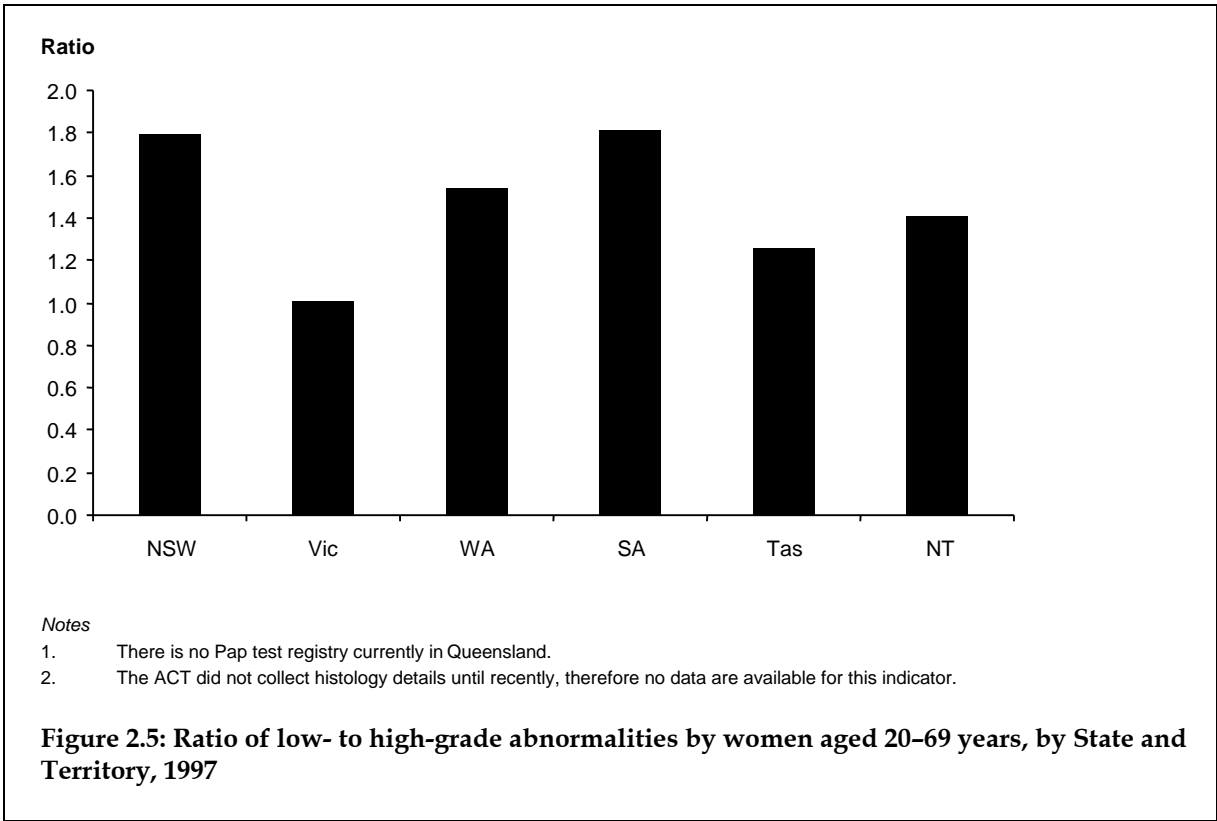
The rationale behind this indicator is to provide a broad indication about the extent of morbidity caused to women taking part in the screening program, and in particular those women who have a biopsy. A biopsy is an invasive procedure in which a piece of tissue is taken from the cervix. It represents a fairly major event for a woman compared with having a Pap smear.

The indicator is measured as the ratio of histologically verified **low-grade** intraepithelial abnormalities detected to histologically verified **high-grade** intra-epithelial abnormalities.

### Indicator 3: Low-grade abnormality detection

Number of women with a histologically verified low-grade intraepithelial abnormality detected in a 12-month period as a ratio of the number of women with a histologically verified high-grade intraepithelial abnormality detected in the same period.

- The ratio of histologically confirmed low-grade abnormalities to high-grade abnormalities was 1.5 for Australia in 1997 (excluding Queensland and the Australian Capital Territory) (Table 2.5).



- There was some variation between States with New South Wales and South Australia (1.8) followed by Western Australia (1.5) having the highest, while Victoria (1) had the lowest ratio.

## High-grade abnormalities

High-grade lesions have a greater probability of progressing to invasive cancer than low-grade lesions. Therefore one of the aims of the cervical cancer screening programs is to set a screening interval which detects these lesions before they progress and become invasive. This indicator measures the frequency of this type of abnormality in the community. A high-grade intraepithelial abnormality is defined in this report as CIN 1/2, CIN 2, CIN 3, or adenocarcinoma in situ.

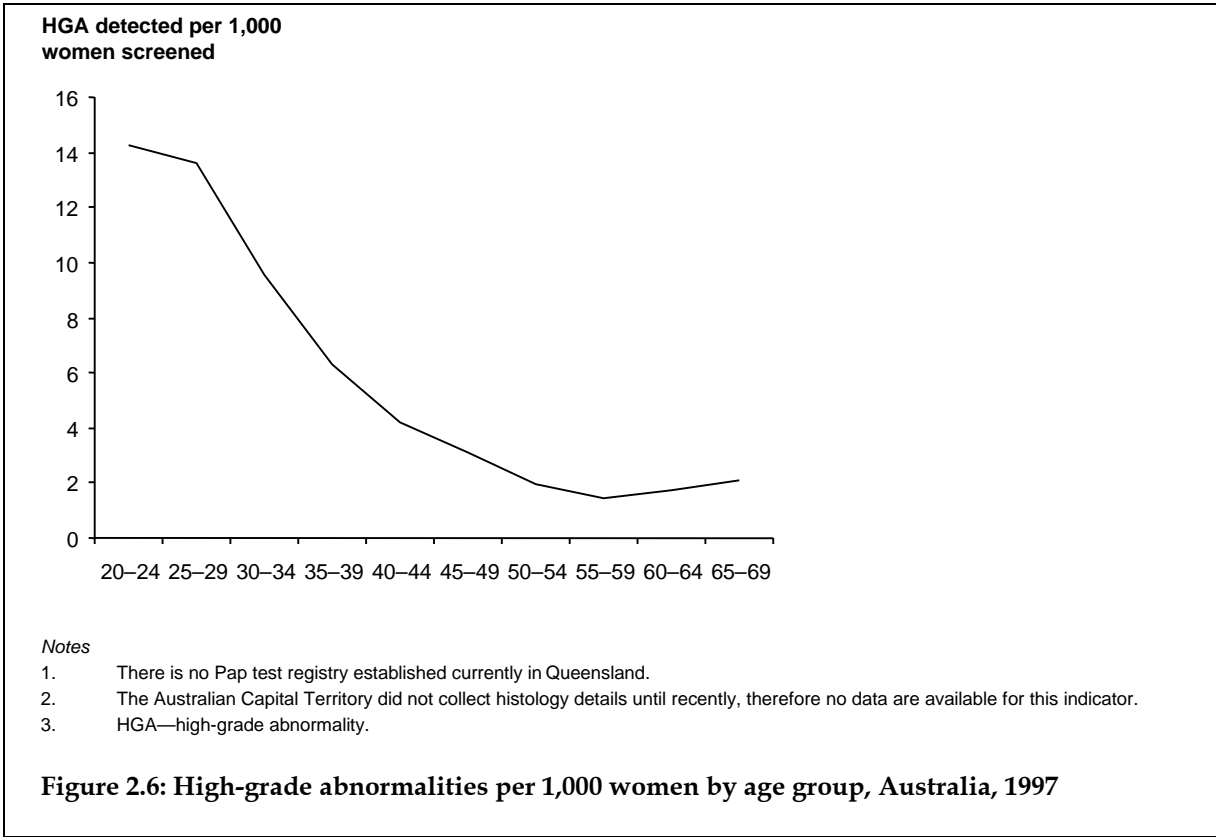
It is estimated that approximately 1% of women screened will receive a histological diagnosis of CIN 1 or higher. The National Health and Medical Research Council has produced guidelines distributed by the 'National Cervical Screening Program' to assist in the management of women who have low- and high-grade intraepithelial abnormalities. The National Health and Medical Research Council guidelines also highlight the need for follow-up after confirmation of a CIN lesion primarily because of the greater risk of developing invasive cancer (DHS 1994e).

The recommended management of CIN 2 and CIN 3 is treatment by a gynaecologist with appropriate expertise, which may include excisional treatment. Management varies if an abnormality is found during pregnancy; the recommended management is to refer for colposcopy during the first trimester to initially exclude invasive disease. If a high-grade abnormality is confirmed it is recommended that a colposcopy be repeated during mid-trimester to exclude progression, and the lesion should be reassessed 8 weeks post-partum (DHS 1994e). It is also recommended that women who have had a hysterectomy and who have a past history of CIN should continue to have smears taken at least yearly. If a lesion is completely excised at hysterectomy the women should continue to have smears taken from the vaginal vault annually for 5 years, and 2-yearly thereafter (DHS 1994e).

### Indicator 4: High-grade abnormality detection

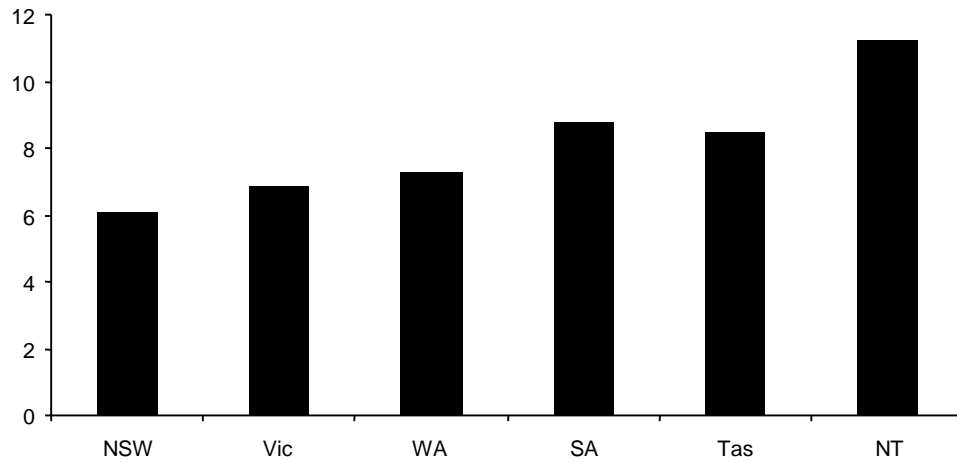
Detection rate for histologically verified high-grade intraepithelial abnormalities per 1,000 women screened in a 12-month period by 5-year age groups (20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+) and for the target age group (20-69 years – age-standardised).

- The detection rate for histologically verified high-grade intraepithelial abnormalities was 7.1 per 1,000 women in the target age group 20-69 years screened in Australia (excluding Queensland and the Australian Capital Territory) (Table 2.8). The age-standardised rate for women aged 20-69 years was 6.9 per 1,000 women screened (Table 2.9).



- Figure 2.6 shows the rate of histologically verified high-grade intraepithelial abnormalities was much higher in the younger age groups. In the 20-29 year age group the rate was more than 13.9 per 1,000 women screened compared with less than 2 per 1,000 in women aged 50-69 years. This age specific distribution contrasts with patterns of cervical cancer incidence and mortality that are the inverse of this age distribution, suggesting that the malignant potential of an intraepithelial high grade abnormality is greater with increasing age. It is unethical to research this issue, but data from the National Women’s Hospital, New Zealand found evidence of this (McInroe 1984).

**HGA detected per 1,000 women screened**



*Notes*

1. There is no Pap test registry currently in Queensland.
2. The Australian Capital Territory did not collect histology details until recently, therefore no data are available for this indicator.
3. HGA —high-grade abnormality.

**Figure 2.7: Age-standardised rate of high-grade abnormalities per 1,000 women screened aged 20–69 years, by State and Territory, 1997**

- There was considerable variation in the State and Territory age-standardised rate of high-grade abnormalities per 1,000 women screened. The Northern Territory had the highest rate at 11.2 per 1,000 women screened, and New South Wales the lowest at 6.1 (Figure 2.7).

## Incidence

A major objective of the cervical cancer screening program is to minimise the incidence of cervical cancer by detecting treatable pre-cancerous lesions prior to their progression to cancer. However, where these pre-cancerous lesions cannot be detected then diagnosis of cancer at its earliest stage, the micro-invasive stage, is the best alternative. The next two indicators measure the incidence rates of micro-invasive and all cervical cancers in the community. These indicators provide information for the formulation of policy and the allocation of resources to deal with the disease. The indicators also provide information on the impact of screening on the disease.

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 greater than 3 mm and no greater than 5 mm in depth and no wider than 7 mm. The depth of invasion should not be more than 5 mm taken from the base of the epithelium, either surface or glandular, from which it originates.

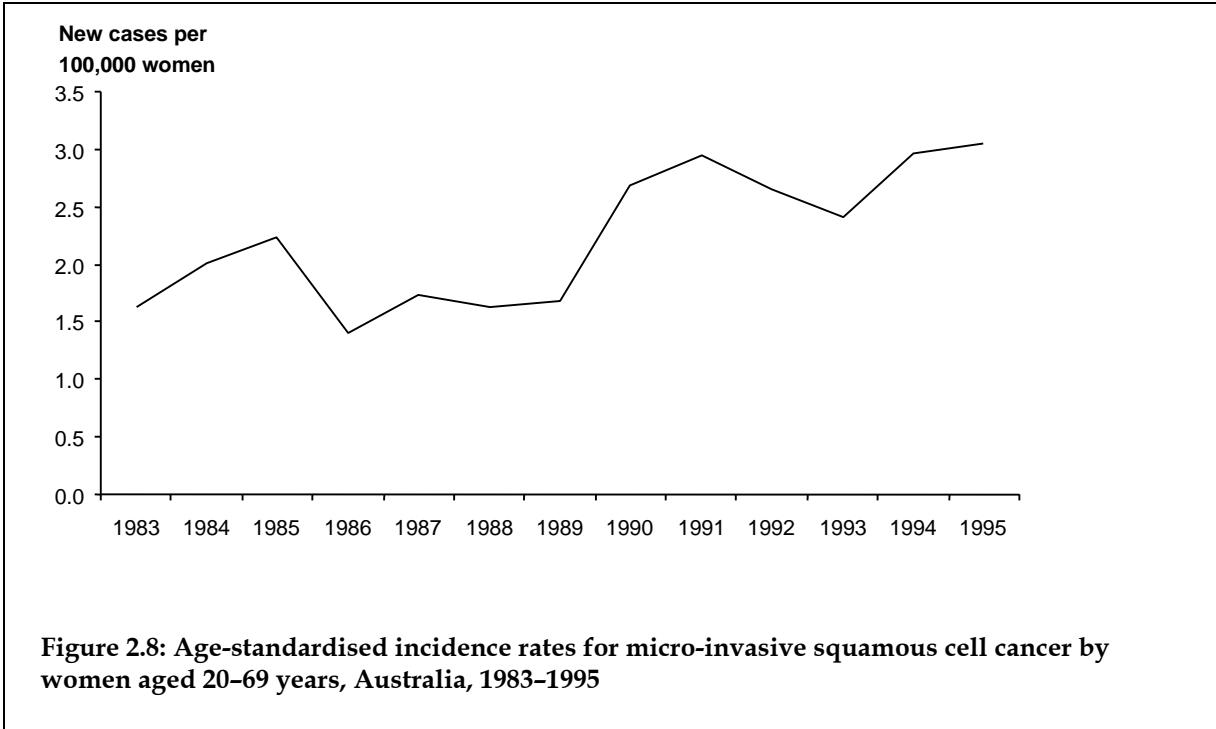
Vascular space involvement, either venous or lymphatic, should not alter the staging.' (Ostor & Mulvany 1996)

Cervical cancer 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 cancer screening programs may result in the paradox whereby in the short term, the number of new cases of cancer increases because cancers are found earlier than they would have been without screening, with the rate decreasing in the longer term. Other factors can also temporarily influence the incidence rate, for example, in 1994 there was a sudden upturn in the incidence rate of cervical cancer. This upturn is generally credited to a substantial increase in the numbers of women being screened and consequently being diagnosed with cancer because of a well-publicised litigation case involving cancer of the cervix at the time.

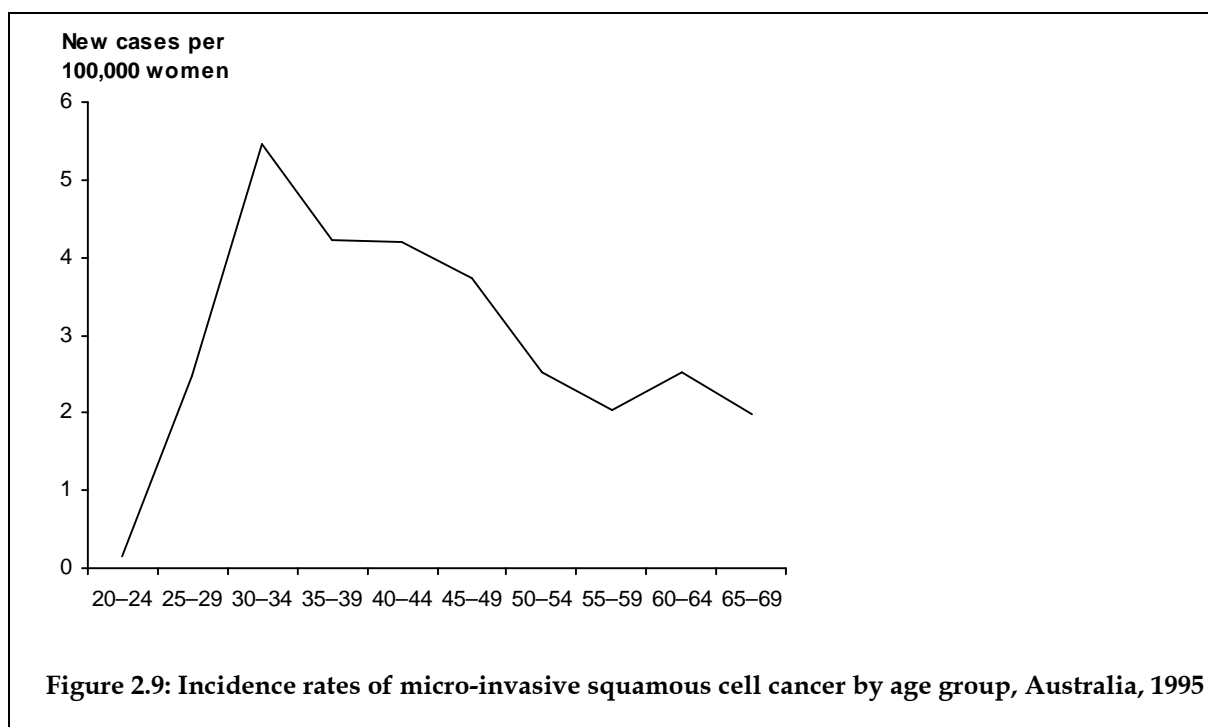
### Indicator 5: Incidence of micro-invasive cervical cancer

Incidence rate of micro-invasive 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).

- The age-standardised incidence rate of micro-invasive cervical cancer was 2 per 100,000 for all women in 1995, and 3.1 per 100,000 for the target age group 20–69 years (Table 2.11).
- In 1995 there were 187 new cases of micro-invasive cervical cancer among women of all ages, and for the target age group 20–69 years there were 175 new cases (Table 2.10).
- The age-standardised incidence rate for micro-invasive squamous cell carcinoma of the cervix varied quite markedly between 1982 and 1995. As explained on the previous page the increase in the incidence rate in the 1989–1990 period is a positive one as long as it is offset by a decline in later stage cancers. It should be noted that the definition and coding of micro-invasive cancer has changed over time among pathologists and cancer registries, and this will have impacted on the stability of this trend.





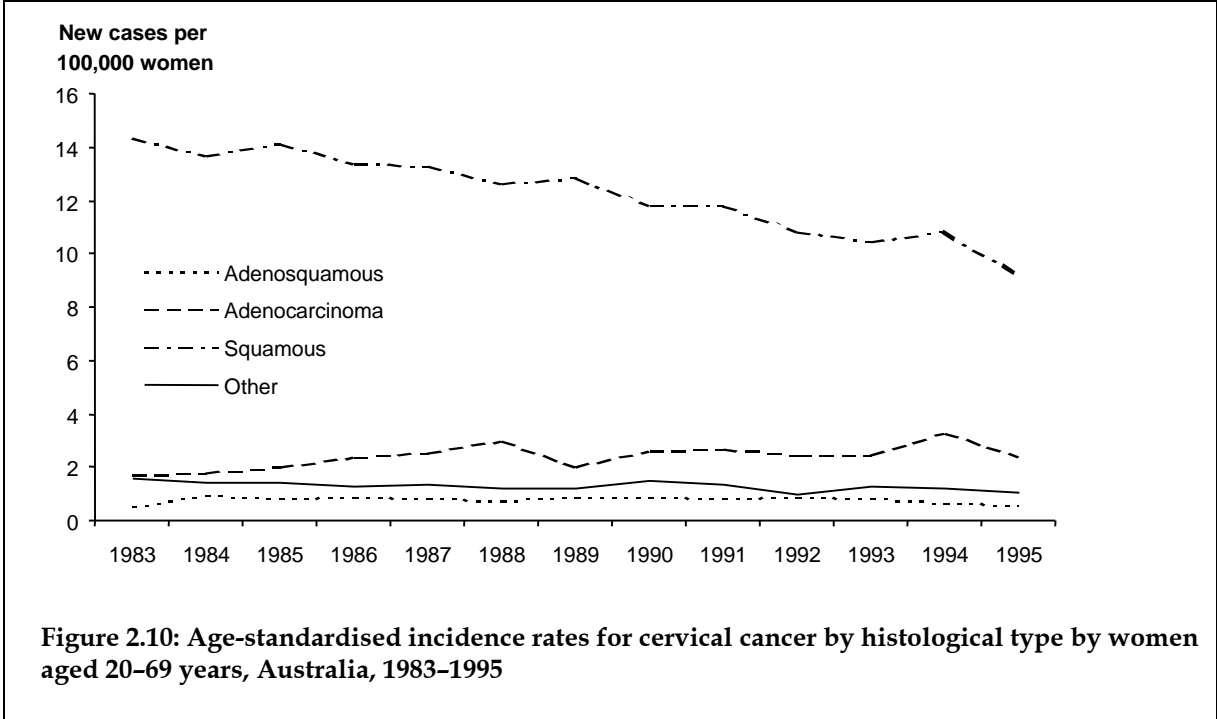


- In 1995, women in the 30–34 years age group had the highest rate of micro-invasive squamous cell cervical cancer (5.5 per 100,000) (Figure 2.9). The rate declined with age to rates of 2.5 per 100,000 and below for women aged 50 years or more. This pattern was evident throughout the 1990s (Table 2.11).
- In 1995, there were 40 cases of micro-invasive squamous cell cervical cancer in women aged 30–34 years. The numbers of cancers declined with age to less than 10 for women aged 55–69 years (Table 2.10).

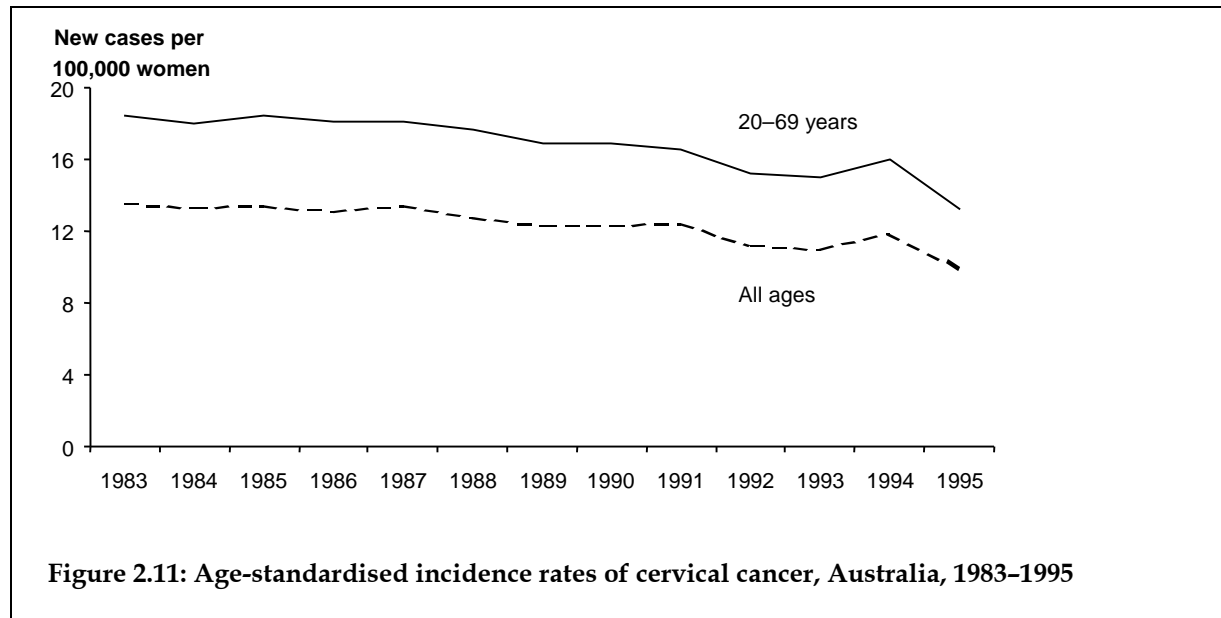
### Indicator 6: Incidence of squamous, adenocarcinoma, adeno-squamous and other cervical cancer

Incidence rate 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).

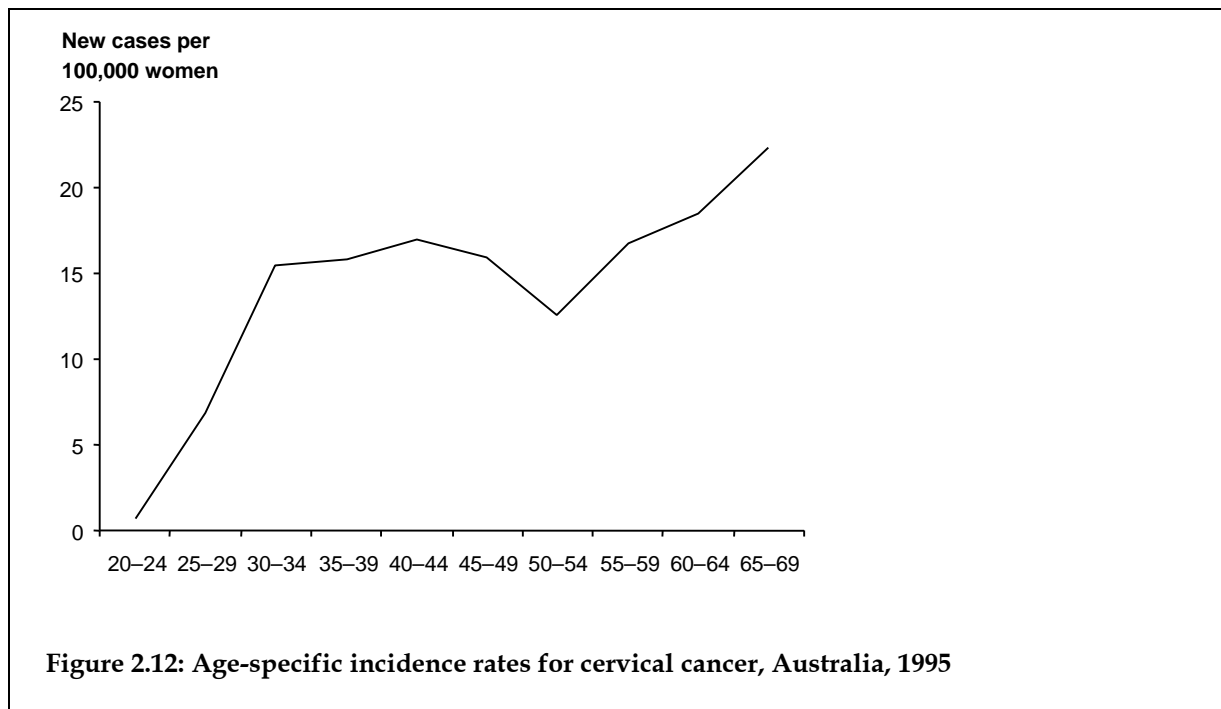
- In 1995, squamous cell carcinomas of the cervix accounted for approximately 69.5% of all cervical cancers, adenocarcinomas 17.9%, adeno-squamous 4.6% while a range of other mixed and unknown histologies comprised the remainder (8%).
- Between 1983 and 1995 the age-standardised incidence rate for squamous cell carcinomas of the cervix fell by 36% for all age groups, and the target age group 20-69 years (Figure 2.10, Table 2.12).



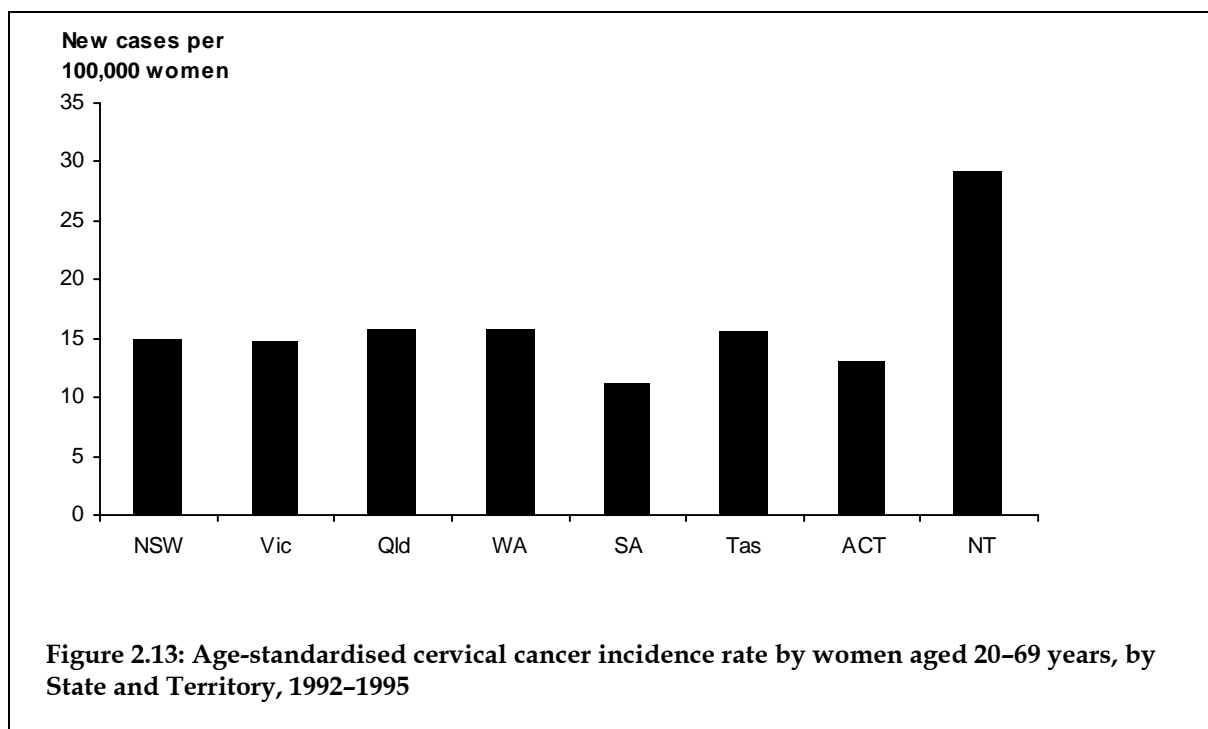
- In 1995, the incidence rate of cervical cancer was 9.9 per 100,000 for all women in Australia, and 13.2 per 100,000 for the target age group (Table 2.15).
- Cervical cancer was the eighth most frequently diagnosed new cancer, accounting for 947 new cases in Australia. There were 760 new cases of cervical cancer diagnosed in women in the target age group of 20–69 years.



- Between 1983 and 1995 the age-standardised incidence rate for cervical cancer (all ages) declined by 27%. The rate of decline increased marginally from approximately 1990, however, between 1993 and 1994 a rise in incidence occurred (Table 2.15). This increase is possibly related to the wide media coverage of a New South Wales woman who undertook legal action related to her cervical cancer. This media coverage prompted many women to undergo screening, and consequently a number of previously undiagnosed cancers may not have been detected.
- The incidence rate patterns for cervical cancer screening target population (aged 20–69) reflected most of the patterns described above. However, the decline in rates from 1990 and the upswing in 1994 were more pronounced in the target age group.



- The age-specific pattern of new cases of cervical cancer differs from most other cancers in that it rises rapidly in the relatively young age group; in 1995, the rate was 15.5 per 100,000 women at ages 30–34 years. The rates were relatively constant to the 50–54 year age group, but increased through ages 60–69 years (Table 2.15).



- There was a considerable range in cervical cancer incidence between States and Territories for women aged 20-69 years. South Australia had the lowest incidence at 11.2 per 100,000 women compared with the Northern Territory which had the highest rate of 29.2 per 100,000 women. The remaining States and Territory had similar rates of 14 to 16 new cases per 100,000 women (Table 2.16).

## **Mortality**

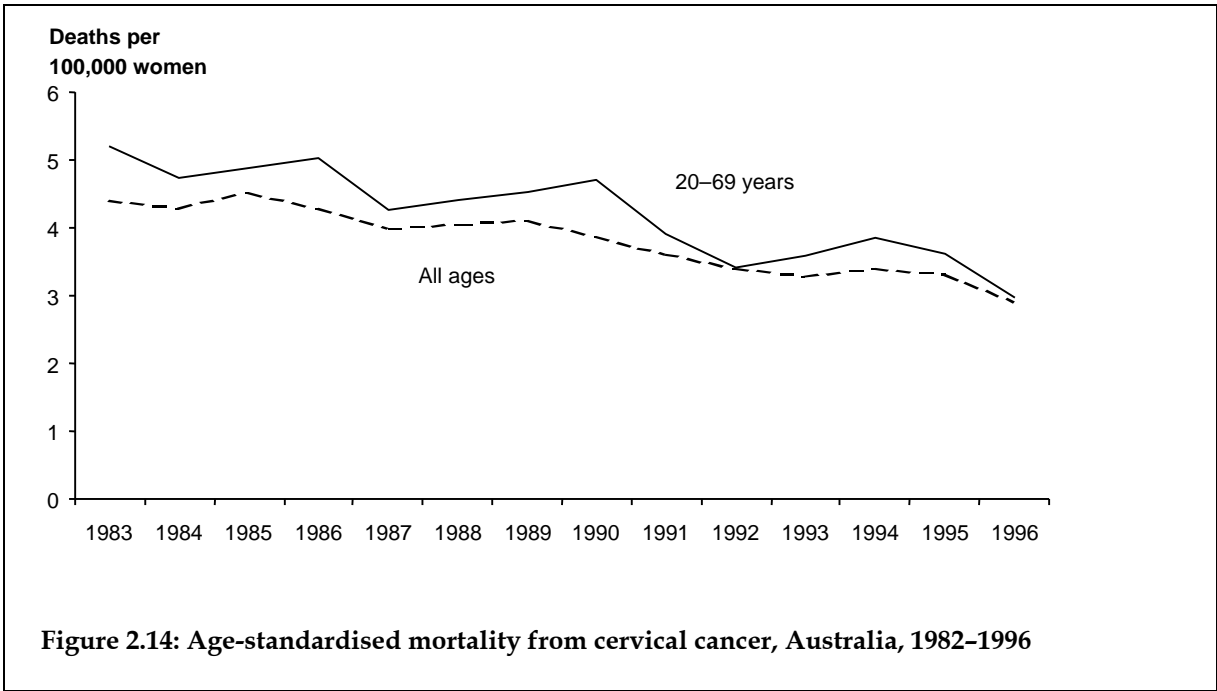
Cancer of the cervix is one of the few cancers for which there is an efficacious screening test for detection of the disease at an early stage, and in theory most deaths due to cervical cancer are potentially avoidable (Marcus & Crane 1998). However, some deaths do occur and the objective of the National Cervical Screening Program is to reduce this mortality rate.

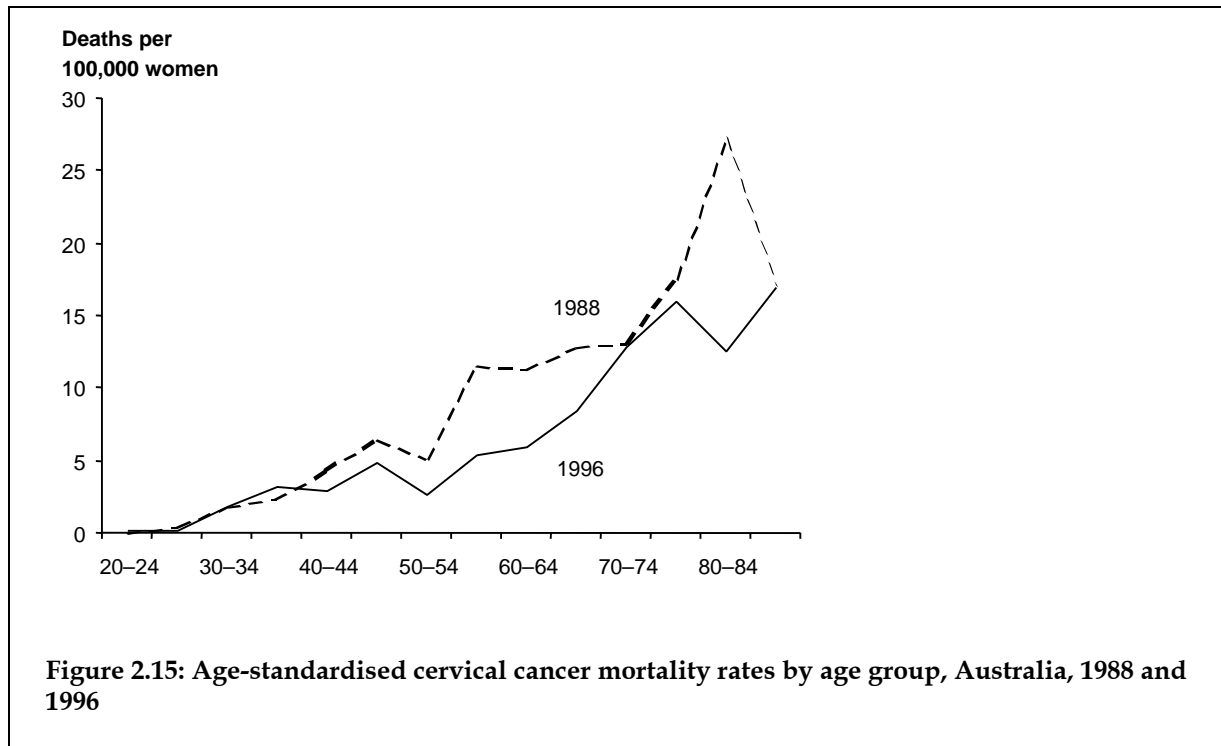
The mortality indicator measures the level of mortality from cervical cancer in the total female population by age and other demographic characteristics. This indicator is important because from it, an assessment can be made of changes in mortality in different age groups, and in particular the target age groups over time. However, it should be noted that changes in the mortality rates may not be evident for a number of years following the commencement of screening. Therefore the effectiveness of this measure needs to be viewed in the longer rather than the shorter term.

### Indicator 7: Mortality

Death rate of 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).

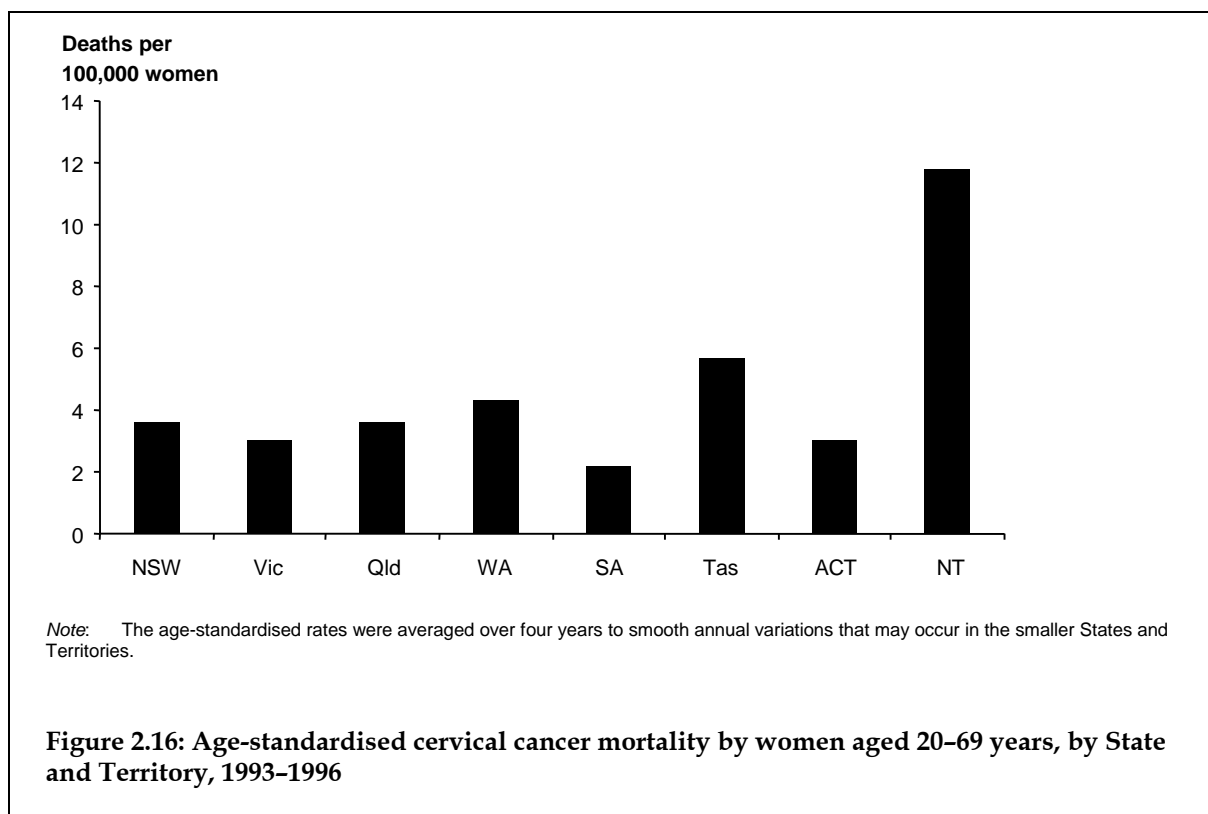
- Cervical cancer is the eighth most common cause of cancer death in women, accounting for 302 deaths in 1996. The age-standardised mortality rates for all ages was 2.9 per 100,000 women in 1996. This rate fell by 34% between 1983 and 1996 with almost all of this decline attributable to the National Cervical Cancer Screening Program (Tables 2.18 and 2.19).
- In the cervical cancer screening target group (women aged 20-69), mortality rates have declined at approximately the same rate as those for all ages. Mortality rates for this group were at their lowest in 1996 at 3 deaths per 100,000 women. Some declines have also been apparent in the older age groups, although these have been less consistent.





- Death from cancer of the cervix, like many cancers, is very much an age-related event— in both 1988 and 1996 there were no deaths reported in women under the age of 20 years. There was a gradual increase in the number of deaths in the middle age groups and higher numbers in age groups over 65 years.
- The median age at death was approximately 64 years for the years 1995 and 1996.





- There was considerable variation in the age-standardised rates of cervical cancer mortality between States and Territories. The Northern Territory rate (11.8 per 100,000 women) was more than double that of the next highest State, Tasmania (5.7 per 100,000 women). There was slightly more variation in mortality rates between States and Territories than in the incidence of cervical cancer (Table 2.21).

# Tables

## Indicator 1: Participation rate for cervical cancer screening

**Table 2.1: Number of women participating in Pap smear programs by age, by all women screened in the State or Territory, 1996–1997.**

Age group	NSW <sup>(a)</sup>	Vic	WA	SA	Tas	ACT <sup>(c)</sup>	NT <sup>(d)</sup>	Australia
20–24	100,579	84,743	38,551	28,157	10,458	7,354	4,958	274,800
25–29	142,392	123,651	48,584	36,478	11,786	8,716	6,184	377,791
30–34	148,690	127,168	50,173	37,889	12,293	8,571	5,511	390,296
35–39	144,884	125,992	48,770	37,991	12,242	8,217	4,722	382,818
40–44	121,267	107,973	42,240	32,341	10,358	7,409	3,802	325,390
45–49	102,807	93,757	34,555	28,267	8,757	6,841	3,094	278,078
50–54	77,168	72,536	23,546	20,925	6,201	4,621	1,827	206,824
55–59	52,031	50,217	16,292	14,740	4,441	2,744	1,028	141,493
60–64	37,832	37,706	11,973	11,506	3,336	1,830	518	104,701
65–69	28,365	30,597	8,693	9,298	2,498	1,182	284	80,917
70–74	19,105 <sup>(b)</sup>	14,576	3,416	7,022 <sup>(b)</sup>	929	477	116	45,640
75–79	n.a.	5,292	1,153	n.a.	332	155	49	6,981
80–84	n.a.	1,869	414	n.a.	122	51	22	2,478
85+	n.a.	997	15	n.a.	39	9	6	1,066
<b>Not stated</b>	9750	n.a.	n.a.	1,029	10	77	96	10,962
<b>Total</b>	984870	877,074	328,375	265,643	83,802	58,254	32,217	2,619,273
<b>20–69 years</b>	956015	854,340	323,377	257,592	82,370	57,485	31,929	2,563,108

(a) The New South Wales Pap Test register commenced in July 1996, therefore data has been estimated for the period January to July 1996.

(b) New South Wales and South Australia have grouped all women aged 70 years or more, and for the purposes of this table they appear in the 70–74 age group.

(c) The ACT register only registers women with an ACT address.

(d) The Northern Territory Pap Smear register commenced in March 1996, therefore data has been estimated for the period January to March 1996.

### Notes

1. There is currently no Pap smear register in Queensland.
2. Data on participation for women aged over 69 years is not routinely collected by the programs. Therefore participation data are not available for some States or Territories for the older age groups.

**Table 2.2: Participation rates in the Pap smear program by age, by all women screened in the State or Territory, 1996–1997.**

Age group	NSW <sup>(a)</sup>	Vic	WA	SA	Tas	ACT <sup>(c)</sup>	NT <sup>(d)</sup>	Australia
20–24	44.6	49.8	58.1	55.5	66.3	52.1	60.1	49.9
25–29	59.8	67.8	70.9	68.7	71.7	66.0	67.1	65.0
30–34	62.4	71.5	73.1	69.5	71.4	68.3	67.1	67.6
35–39	63.4	75.0	73.4	70.7	69.6	68.6	67.0	69.2
40–44	62.0	74.1	71.8	68.8	68.6	69.2	66.6	68.0
45–49	60.9	74.2	70.0	67.8	67.5	70.3	69.8	67.3
50–54	64.1	82.0	71.8	71.1	67.6	75.7	67.2	71.5
55–59	53.2	69.8	62.1	62.0	58.0	66.1	62.5	60.7
60–64	44.2	59.7	55.0	54.5	50.3	60.1	48.4	51.7
65–69	32.8	48.8	42.1	42.5	38.3	43.9	37.4	40.1
70–74	24.4 <sup>(b)</sup>	25.5	19.5	33.9 <sup>(b)</sup>	15.6	19.9	22.7	25.0
75–79	n.a.	12.3	8.7	n.a.	7.1	9.2	14.9	5.0
80–84	n.a.	6.6	4.6	n.a.	3.9	5.0	12.3	2.7
85+	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total</b>	<b>50.9</b>	<b>61.1</b>	<b>61.7</b>	<b>56.9</b>	<b>57.8</b>	<b>62.5</b>	<b>67.1</b>	<b>56.3</b>
<b>20–69 years</b>	<b>56.7</b>	<b>68.0</b>	<b>67.4</b>	<b>64.9</b>	<b>65.9</b>	<b>65.1</b>	<b>65.1</b>	<b>62.4</b>

(a) The New South Wales Pap Test register commenced in July 1996, therefore data has been estimated for the period January to July 1996.

(b) New South Wales and South Australia have grouped all women aged 70 years or more, and for the purposes of this table they appear in the 70–74 age group.

(c) The ACT register only registers women with an ACT address.

(d) The Northern Territory Pap Smear register commenced in March 1996, therefore data has been estimated for the period January to March 1996.

*Notes*

1. There is currently no Pap smear register in Queensland.

2. Data on participation for women aged over 69 years is not routinely collected by the programs. Therefore participation data are not available for some States or Territories for the older age groups.

## Indicator 2: Early rescreening

**Table 2.3: Number of women with repeat screenings in the 24 months following a negative Pap smear in February 1996, Australia**

No. of tests	Vic	WA	SA	Tas	ACT <sup>(a)</sup>	Australia
<b>Number of women</b>						
0	32,866	8,396	7,927	2,008	1,420	52,617
1	10,307	5,843	4,558	1,608	682	22,998
2	2,556	1,164	1,010	272	86	5,088
3	576	212	228	47	15	1,078
4	165	55	60	13	3	296
5 or more	71	5	20	3	0	99

(a) The ACT register only registers women with an ACT address.

### Notes

1. There is currently no Pap smear register in Queensland.
2. The NSW Pap Test Register began operations on 29 August 1996, and The NT Pap Smear Register began operations on 10 March 1996, therefore data was not available for this indicator from either jurisdiction.
3. Data on participation for women aged over 69 years is not routinely collected by the programs, therefore participation data are not available for some States or Territories for the older age groups.

**Table 2.4: Percentage of women with repeat screenings in the 24 months following a negative Pap smear in February 1996, Australia**

No. of tests	Vic	WA	SA	Tas	ACT <sup>(a)</sup>	Australia
<b>Per cent of women</b>						
0	70.6	53.6	57.4	50.8	64.4	64.0
1	22.1	37.3	33.0	40.7	30.9	28.0
2	5.5	7.4	7.3	6.9	3.9	6.2
3	1.2	1.4	1.6	1.2	0.7	1.3
4	0.4	0.4	0.4	0.3	0.1	0.4
5 or more	0.2	0.1	0.1	0.1	0.0	0.1

(a) The ACT register only registers women with an ACT address.

### Notes

4. There is currently no Pap smear register in Queensland.
5. The NSW Pap Test Register began operations on 29 August 1996, and The NT Pap Smear Register began operations on 10 March 1996, therefore data was not available for this indicator from either jurisdiction.
1. Data on participation for women aged over 69 years is not routinely collected by the programs, therefore participation data are not available for some States or Territories for the older age groups.

## Indicator 3: Low-grade abnormality detection

**Table 2.5: Number of low- and high-grade abnormalities by women aged 20–69 years, by State and Territory, 1997**

Abnormalities	NSW	Vic	WA	SA	Tas	NT	Australia
Low-grade	6,447	3,419	2,209	2,370	543	326	15,314
High-grade	3,601	3,388	1,432	1,310	430	231	10,392
<b>Ratio</b>	<b>1.79</b>	<b>1.01</b>	<b>1.54</b>	<b>1.81</b>	<b>1.26</b>	<b>1.41</b>	<b>1.47</b>

### Notes

1. There is currently no Pap test registry established in Queensland.
2. The ACT did not collect histology details until recently, therefore no data are available for this indicator.

## Indicator 4: High-grade abnormality detection

Table 2.6: Number of high-grade abnormalities by age, by State and Territory, 1997

Age group	NSW	Vic	WA	SA <sup>(a)</sup>	Tas	NT	Australia
20–24	788	670	320	184	115	46	2,123
25–29	1,022	1,015	370	335	109	62	2,913
30–34	753	696	286	265	74	41	2,115
35–39	453	429	193	216	61	32	1,384
40–44	267	277	110	90	32	19	795
45–49	154	139	82	89	17	15	496
50–54	64	80	28	50	9	9	240
55–59	34	35	16	27	5	5	122
60–64	31	23	15	33	2	2	106
65–69	35	24	12	21	6	0	98
70–74	20	16	1	35	n.a.	n.a.	72
75–79	7	8	2	n.a.	n.a.	n.a.	17
80–84	2	3	4	n.a.	n.a.	n.a.	9
85+	3	n.a.	n.a.	n.a.	n.a.	n.a.	3
Age not stated	5	n.a.	n.a.	1	n.a.	n.a.	6
<b>Total</b>	<b>3,638</b>	<b>3,415</b>	<b>1,439</b>	<b>1,346</b>	<b>430</b>	<b>231</b>	<b>10,499</b>
<b>20–69 years</b>	<b>3,601</b>	<b>3,388</b>	<b>1,432</b>	<b>1,310</b>	<b>430</b>	<b>231</b>	<b>10,392</b>

(a) South Australia has grouped all women aged 70 years or more, and for the purposes of this table they appear in the 70–74 age group.

*Notes*

1. There is currently no Pap test registry in Queensland.
2. The ACT did not collect histology details until recently, therefore no data are available for this indicator.

Table 2.7: Number of women screened by age, by State and Territory, 1997

Age group	NSW	Vic	WA	SA <sup>(a)</sup>	Tas	NT	Australia
20–24	58,842	45,403	21,222	15,231	5,705	2,738	149,141
25–29	85,421	70,504	27,798	20,617	7,121	3,452	214,199
30–34	89,016	72,728	28,423	21,266	7,173	3,035	222,058
35–39	87,766	72,287	28,506	21,413	7,377	2,652	220,384
40–44	73,682	62,536	24,720	18,245	6,277	2,124	188,112
45–49	62,596	54,917	20,078	16,097	5,352	1,816	161,164
50–54	48,045	43,848	14,270	12,215	3,997	1,093	124,191
55–59	32,031	29,632	9,554	8,494	2,706	606	83,510
60–64	23,277	21,639	6,902	6,681	2,057	297	61,162
65–69	17,239	16,715	4,897	5,211	1,551	179	45,910
70–74	11,439	7,989	n.a.	3,887	488	70	23,982
75–79	n.a.	2,957	n.a.	n.a.	161	31	3,188
80–84	n.a.	996	n.a.	n.a.	64	13	1,091
85+	n.a.	n.a.	n.a.	n.a.	19	3	32
Age not stated	0	0	0	333	4	59	396
<b>Total</b>	<b>589,354</b>	<b>502,151</b>	<b>186,370</b>	<b>149,690</b>	<b>50,052</b>	<b>18,168</b>	<b>1,498,520</b>
<b>20–69 years</b>	<b>577,915</b>	<b>490,209</b>	<b>186,370</b>	<b>145,470</b>	<b>49,316</b>	<b>17,992</b>	<b>1,469,831</b>

(a) South Australia has grouped all women aged 70 years or more, and for the purposes of this table they appear in the 70–74 age group.

**Table 2.8: Rate of high-grade abnormalities per 1,000 screens, by State and Territory, 1997**

Age group	NSW	Vic	WA	SA <sup>(a)</sup>	Tas	NT	Australia
20–24	13.4	14.8	15.1	12.1	20.2	16.8	14.2
25–29	12.0	14.4	13.3	16.3	15.3	18.0	13.6
30–34	8.5	9.6	10.1	12.5	10.3	13.5	9.5
35–39	5.2	5.9	6.8	10.1	8.3	12.1	6.3
40–44	3.6	4.4	4.5	4.9	5.1	9.0	4.2
45–49	2.5	2.5	4.1	5.5	3.2	8.3	3.1
50–54	1.3	1.8	1.9	4.1	2.3	8.2	1.9
55–59	1.1	1.2	1.7	3.2	1.8	8.3	1.5
60–64	1.3	1.1	2.2	4.9	1.0	6.7	1.7
65–69	2.0	1.4	2.5	4.0	3.9	n.a.	2.1
70–74	1.8	2.0	n.a.	9.0	n.a.	n.a.	3.0
75–79	n.a.	2.7	n.a.	n.a.	n.a.	n.a.	5.3
80–84	n.a.	3.0	n.a.	n.a.	n.a.	n.a.	8.2
85+	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	93.8
<b>Total</b>	<b>6.2</b>	<b>6.8</b>	<b>7.7</b>	<b>9.0</b>	<b>8.6</b>	<b>12.7</b>	<b>7.0</b>
<b>20–69 years</b>	<b>6.2</b>	<b>6.9</b>	<b>7.7</b>	<b>9.0</b>	<b>8.7</b>	<b>12.8</b>	<b>7.1</b>

(a) South Australia has grouped all women aged 70 years or more, and for the purposes of this table they appear in the 70–74 age group.

*Notes*

1. There is currently no Pap test registry in Queensland.
2. The ACT did not collect histology details until recently, therefore no data are available for this indicator.

**Table 2.9: Age-standardised high-grade abnormality rate, by State and Territory, 1997**

	NSW	Vic	WA	SA	Tas	NT	Australia
Standardised rate	6.1	6.9	7.3	8.8	8.5	11.2	6.9

(a) South Australia has grouped all women aged 70 years or more, and for the purposes of this table they appear in the 70–74 age group.

*Notes*

1. There is currently no Pap test registry in Queensland.
2. The ACT did not collect histology details until recently, therefore no data are available for this indicator.
3. Standardised to the 1991 Australian total population.

## Indicator 5: Incidence of micro-invasive cervical cancer

Table 2.10: New cases of micro-invasive cervical cancer by age, Australia, 1983–1995

Age groups	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
0–4	0	0	0	0	0	0	0	0	0	0	0	0	0
5–9	0	0	0	0	0	0	0	0	0	0	0	0	0
10–14	0	0		0	0	0	0	0	0	0	0	0	0
15–19	1	0	1	0	0	0	0	0	1	0	0	0	0
20–24	2	1	9	1	3	4	1	4	0	5	0	6	1
25–29	10	12	12	10	8	13	12	15	14	12	7	18	17
30–34	10	26	22	15	18	19	26	30	31	32	32	31	40
35–39	24	24	19	16	23	12	11	24	37	22	25	31	30
40–44	9	11	13	7	13	12	16	22	35	24	17	26	28
45–49	7	6	12	8	9	9	4	18	10	12	15	27	23
50–54	3	5	5	4	3	6	4	4	11	12	17	8	12
55–59	2	3	2	3	4	5	6	9	6	12	5	5	8
60–64	4	3	8	1	3	1	6	7	7	5	7	10	9
65–69	1	3	3	2	1	2	2	6	7	9	10	6	7
70–74	2	3	2	3	0	0	0	2	4	2	4	6	5
75–79	0	0	0	1	0	1	1	3	3	2	1	3	5
80–84	0	0	0	0	0	0	0	0	2	0	0	0	1
85+	0	0	0	0	0	0	0	0	0	0	1	2	1
<b>Total</b>	<b>75</b>	<b>97</b>	<b>108</b>	<b>71</b>	<b>86</b>	<b>84</b>	<b>89</b>	<b>144</b>	<b>168</b>	<b>149</b>	<b>141</b>	<b>179</b>	<b>187</b>

Source: National Cancer Statistics Clearing House.

**Table 2.11: Age-specific and age-standardised rates of micro-invasive cervical cancer by age, Australia, 1983–1995**

Age groups	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
0–4	0	0	0	0	0	0	0	0	0	0	0	0	0
5–9	0	0	0	0	0	0	0	0	0	0	0	0	0
10–14	0	0	0	0	0	0	0	0	0	0	0	0	0
15–19	0.2	0	0.2	0	0	0	0	0	0.2	0	0	0	0
20–24	0.3	0.2	1.4	0.2	0.5	0.6	0.2	0.6	0	0.7	0	0.8	0.1
25–29	1.6	1.9	1.8	1.5	1.2	1.9	1.7	2.1	2.0	1.7	1.0	2.6	2.5
30–34	1.6	4.2	3.5	2.4	2.8	2.9	3.8	4.3	4.4	4.4	4.4	4.2	5.5
35–39	4.3	4.1	3.2	2.6	3.7	1.9	1.7	3.7	5.6	3.2	3.6	4.4	4.2
40–44	2.1	2.4	2.8	1.4	2.4	2.1	2.7	3.6	5.5	3.7	2.6	4.0	4.2
45–49	1.9	1.6	3.0	2.0	2.1	2.1	0.9	3.8	2.0	2.2	2.6	4.5	3.7
50–54	0.8	1.4	1.4	1.1	0.8	1.6	1.0	1.0	2.7	2.8	3.9	1.8	2.5
55–59	0.5	0.8	0.5	0.8	1.1	1.4	1.7	2.5	1.7	3.3	1.3	1.3	2.0
60–64	1.2	0.8	2.2	0.3	0.8	0.3	1.6	1.9	1.9	1.4	1.9	2.8	2.5
65–69	0.3	1.0	1.0	0.7	0.3	0.6	0.6	1.7	2.0	2.5	2.8	1.7	2.0
70–74	0.8	1.2	0.8	1.1	0	0	0	0.7	1.4	0.7	1.3	1.9	1.5
75–79	0	0	0	0.5	0.5	0.5	0.5	1.4	1.3	0.9	0.4	1.3	2.1
80–84	0	0	0	0	0	0	0	0	1.4	0	0	0	0.6
85+	0	0	0	0	0	0	0	0	0	0	0.8	1.6	0.7
<b>All ages</b>													
AS Rate (A)	1.0	1.3	1.4	0.9	1.1	1.0	1.1	1.7	1.9	1.7	1.6	2.0	2.0
AS Rate (W)	0.9	1.1	1.2	0.8	0.9	0.9	0.9	1.4	1.6	1.4	1.3	1.7	1.7
<b>Ages 20–69</b>													
AS Rate (A)	1.6	2.0	2.2	1.4	1.7	1.6	1.7	2.6	2.9	2.6	2.4	3.0	3.1
AS Rate (W)	1.5	1.9	2.2	1.3	1.6	1.6	1.6	2.5	2.7	2.5	2.3	2.9	2.9

Note: Rates are expressed per 100,000 women and age standardised to the Australian 1991 population (A) and the World Standard Population (W).

Source: National Cancer Statistics Clearing House.



## Indicator 6: Incidence of squamous, adenocarcinoma, adeno-squamous and other cervical cancer

**Table 2.12: Number of new cases of cervical cancer by histology for women aged 20–69 years, Australia, 1983–1995**

Histological type	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Squamous	653	636	671	644	662	643	670	625	639	597	586	615	528
Adenocarcinoma	80	83	96	116	125	151	104	140	144	137	136	185	136
Adeno-squamous	23	44	37	43	39	39	45	49	44	50	47	39	35
Other	72	67	67	62	68	63	61	80	71	55	72	68	61
<b>Total</b>	<b>828</b>	<b>830</b>	<b>871</b>	<b>865</b>	<b>894</b>	<b>896</b>	<b>880</b>	<b>894</b>	<b>898</b>	<b>839</b>	<b>841</b>	<b>907</b>	<b>760</b>

Source: National Cancer Statistics Clearing House.

**Table 2.13: Age-standardised incidence rates for cervical cancer by histology for women aged 20–69 years, Australia, 1983–1995**

Histological type	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Squamous	14.4	13.7	14.1	13.4	13.3	12.6	12.9	11.8	11.8	10.9	10.5	10.8	9.2
Adenocarcinoma	1.8	1.8	2.0	2.4	2.5	3.0	2.0	2.7	2.7	2.5	2.4	3.3	2.4
Adeno-squamous	0.5	0.9	0.8	0.9	0.8	0.8	0.9	0.9	0.8	0.9	0.8	0.7	0.6
Other	1.5	1.4	1.4	1.3	1.4	1.2	1.2	1.5	1.3	1.0	1.3	1.2	1.1

Source: National Cancer Statistics Clearing House.

Note: Rates are expressed per 100,000 women and age-standardised to the Australian 1991 population (A).

**Table 2.14: New cases of cervical cancer by age, Australia, 1983–1995**

Age groups	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
0–4	0	0	0	0	0	1	0	0	0	0	0	0	0
5–9	0	0	0	0	0	0	0	0	0	0	0	1	0
10–14	0	0	1	0	0	0	0	0	0	0	0	0	0
15–19	1	1	1	3	1	4	1	1	1	0	1	1	2
20–24	14	10	22	12	17	17	16	13	11	10	9	15	5
25–29	56	61	73	59	68	74	64	60	49	51	35	46	47
30–34	101	108	106	121	134	127	126	108	115	103	104	118	113
35–39	122	135	128	127	151	136	121	155	144	128	126	131	113
40–44	101	104	102	115	113	127	124	136	156	128	129	128	113
45–49	85	79	86	113	93	92	86	122	103	97	100	131	98
50–54	75	65	92	80	65	64	82	66	90	80	90	85	60
55–59	82	76	82	79	62	67	84	81	56	76	81	72	66
60–64	110	107	102	82	106	91	81	80	84	78	74	87	66
65–69	95	93	85	82	89	103	97	73	90	88	93	94	79
70–74	72	68	71	64	78	56	69	67	78	70	65	78	72
75–79	42	60	42	42	55	51	48	50	48	51	48	65	51
80–84	31	25	28	26	29	31	25	29	40	34	36	39	29
85+	14	18	20	23	24	20	17	24	36	22	22	25	33
<b>Total</b>	<b>1,001</b>	<b>1,010</b>	<b>1,041</b>	<b>1,028</b>	<b>1,085</b>	<b>1,061</b>	<b>1,041</b>	<b>1,065</b>	<b>1,101</b>	<b>1,016</b>	<b>1,013</b>	<b>1,116</b>	<b>947</b>

Source: National Cancer Statistics Clearing House.

**Table 2.15: Age-specific and age-standardised incidence rates for cervical cancer by age, Australia, 1983–1995**

<b>Rates</b>	<b>1983</b>	<b>1984</b>	<b>1985</b>	<b>1986</b>	<b>1987</b>	<b>1988</b>	<b>1989</b>	<b>1990</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>
0–4	0	0	0	0	0	0.2	0	0	0	0	0	0	0
5–9	0	0	0	0	0	0	0	0	0	0	0	0.2	0
10–14	0	0	0.2	0	0	0	0	0	0	0	0	0	0
15–19	0	0.2	0.2	0.5	0.1	0.6	0.1	0.1	0.2	0	0.2	0.2	0.3
20–24	2.0	1.4	3.3	1.8	2.6	2.6	2.4	1.9	1.6	1.4	1.3	2.1	0.7
25–29	8.6	9.7	11.2	9.0	1	10.6	9.1	8.6	7.0	7.4	5.1	6.8	7.0
30–34	16.3	17.1	17.0	19.1	20.7	19.2	18.6	15.8	16.3	14.5	14.2	16.1	15.7
35–39	22.4	23.6	21.4	20.5	24.2	21.8	18.7	23.8	22.0	18.9	18.5	18.8	16.0
40–44	23.3	22.8	21.6	23.2	21.3	22.6	20.8	22.0	24.6	20.1	19.9	19.5	17.2
45–49	23.5	22.0	21.6	27.6	22.1	21.1	19.1	25.7	20.7	18.4	17.5	22.0	15.9
50–54	18.8	18.0	25.7	23.0	17.7	17.0	21.1	17.0	21.8	18.9	20.7	18.8	12.8
55–59	23.3	19.2	21.9	21.1	17.2	18.7	23.3	22.6	15.9	21.3	21.6	18.7	16.9
60–64	30.9	30.6	28.0	23.0	28.8	24.6	22.1	21.9	23.0	21.4	20.6	24.7	18.5
65–69	33.3	32.2	29.1	26.7	28.5	31.3	28.3	21.2	25.6	24.9	26.2	26.5	22.3
70–74	30.5	26.1	27.8	25.2	29.2	20.9	26.0	24.8	28.0	23.9	21.4	24.6	22.3
75–79	25.5	36.3	22.8	21.7	27.7	24.8	22.3	22.7	21.3	22.7	21.7	28.5	22.3
80–84	27.7	21.3	24.3	22.3	23.4	24.0	18.7	21.5	27.5	22.5	22.7	23.3	16.8
85+	19.9	24.0	22.5	25.4	24.7	20.0	16.5	22.7	33.6	19.0	18.1	20.4	24.6
<b>All ages</b>													
AS Rate (A)	13.6	13.4	13.5	13.1	13.4	12.8	12.3	12.3	12.4	11.2	11.0	11.9	9.9
AS Rate (W)	11.2	10.9	11.2	10.9	11.0	10.6	10.2	10.2	10.1	9.3	9.1	9.8	8.1
<b>Ages 20–69</b>													
AS Rate (A)	18.4	18.0	18.5	18.1	18.1	17.7	16.9	16.9	16.6	15.3	15.0	16.0	13.2
AS Rate (W)	18.0	17.5	18.2	17.8	17.6	17.2	16.5	16.5	16.2	14.9	14.7	15.6	12.8

*Note:* Rates are expressed per 100,000 women and age standardised to the Australian 1991 population (A) and the World Standard Population (W).

*Source:* National Cancer Statistics Clearing House.

**Table 2.16: Number of new cases of cervical cancer by age, by State and Territory, 1992–1995**

<b>Rates</b>	<b>NSW</b>	<b>Vic</b>	<b>Qld</b>	<b>WA</b>	<b>SA</b>	<b>Tas</b>	<b>ACT</b>	<b>NT</b>	<b>Australia</b>
0–4	0	0	0	0	0	0	0	0	0
5–9	0	0	0	0	1	0	0	0	1
10–14	0	0	0	0	0	0	0	0	0
15–19	3	0	1	0	0	0	0	0	4
20–24	9	17	11	2	0	0	0	0	39
25–29	56	37	40	18	16	6	4	2	179
30–34	150	119	77	41	32	13	4	2	438
35–39	180	116	105	42	33	7	6	9	498
40–44	148	133	88	62	34	15	10	8	498
45–49	152	108	79	37	27	11	6	6	426
50–54	110	71	59	37	21	4	6	7	315
55–59	122	64	48	31	10	12	5	3	295
60–64	107	87	52	26	16	11	4	2	305
65–69	124	93	58	35	22	14	3	5	354
70–74	110	62	55	19	25	10	3	1	285
75–79	75	65	38	16	14	7	0	0	215
80–84	46	35	27	11	11	4	3	1	138
85+	34	27	18	9	11	3	0	0	102
<b>Total</b>	<b>1,426</b>	<b>1,034</b>	<b>756</b>	<b>386</b>	<b>273</b>	<b>117</b>	<b>54</b>	<b>46</b>	<b>4,092</b>

Source: National Cancer Statistics Clearing House.

**Table 2.17: Age-specific and age-standardised incidence rates for cervical cancer, by State and Territory, 1992–1995**

<b>Rates</b>	<b>NSW</b>	<b>Vic</b>	<b>Qld</b>	<b>WA</b>	<b>SA</b>	<b>Tas</b>	<b>ACT</b>	<b>NT</b>	<b>Australia</b>
0–4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15–19	0.4	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2
20–24	1.0	2.3	2.1	0.7	0.0	0.0	0.0	0.0	1.4
25–29	6.1	5.2	8.4	6.9	7.4	8.9	7.9	5.8	6.5
30–34	15.1	16.1	15.1	14.6	13.5	17.0	7.7	6.1	15.0
35–39	19.3	16.5	21.7	15.3	14.5	9.5	11.8	31.1	17.9
40–44	16.9	20.2	19.1	24.0	15.7	21.9	19.8	32.0	19.1
45–49	19.3	18.5	19.0	16.9	13.9	18.1	13.7	30.8	18.3
50–54	17.9	15.7	18.7	22.4	14.1	8.4	20.6	55.3	17.6
55–59	22.9	16.3	18.6	22.5	7.6	29.0	23.8	37.5	19.4
60–64	20.9	23.3	21.7	21.0	12.5	27.9	23.8	35.5	21.2
65–69	24.4	25.1	25.0	30.2	16.6	36.2	19.3	127.7	25.0
70–74	24.7	19.3	27.2	19.3	21.1	28.7	23.3	37.6	23.1
75–79	22.6	27.4	25.1	21.8	15.9	26.2	0.0	0.0	23.4
80–84	19.8	20.4	25.9	20.3	17.5	21.8	54.6	121.4	21.3
85+	19.4	19.8	22.6	21.5	22.7	22.6	0.0	0.0	20.4
<b>All ages</b>									
AS Rate (A)	11.1	10.9	11.8	11.4	8.5	11.7	9.7	21.1	11.0
AS Rate (W)	9.1	8.9	9.7	9.4	6.9	9.5	8.1	17.3	9.0
<b>Ages 20–69</b>									
AS Rate (A)	15.0	14.7	15.8	15.8	11.2	15.6	13.2	29.2	14.8
AS Rate (W)	14.6	14.3	15.4	15.4	10.8	15.2	13.1	28.5	14.5

*Note:* Rates are expressed per 100,000 women and age standardised to the Australian 1991 population (A) and the World Standard Population (W).

*Source:* National Cancer Statistics Clearing House.

## Indicator 7: Mortality

Table 2.18: Number of deaths from cervical cancer by age, Australia, 1983–1996

New cases	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
0–4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5–9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10–14	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15–19	0	0	0	0	0	0	1	1	0	0	0	0	1	0
20–24	1	0	0	2	2	0	1	1	3	0	0	0	0	1
25–29	8	10	6	6	5	3	3	10	5	5	2	6	3	1
30–34	12	13	20	12	15	12	21	14	13	15	11	11	7	13
35–39	18	19	17	16	20	15	18	31	25	19	25	11	16	23
40–44	20	20	18	27	20	24	24	37	19	28	33	29	21	20
45–49	29	27	21	24	19	28	32	37	30	27	23	36	33	31
50–54	27	26	26	25	24	19	28	17	21	13	30	38	27	13
55–59	41	21	32	42	33	42	20	25	26	23	20	27	35	22
60–64	37	42	42	42	29	42	34	35	34	32	26	24	31	21
65–69	50	44	53	51	47	42	55	44	36	26	31	38	38	30
70–74	31	34	44	33	56	35	49	26	38	46	39	34	44	42
75–79	20	30	30	23	30	36	30	33	31	33	29	31	31	39
80–84	22	27	27	23	20	35	24	8	22	36	24	27	28	22
85+	21	21	30	24	16	17	22	25	33	23	24	24	20	24
<b>Total</b>	<b>337</b>	<b>334</b>	<b>366</b>	<b>350</b>	<b>336</b>	<b>350</b>	<b>362</b>	<b>344</b>	<b>336</b>	<b>326</b>	<b>317</b>	<b>336</b>	<b>335</b>	<b>302</b>

Source: AIHW Mortality Database.

**Table 2.19: Age-specific and age-standardised mortality rates for cervical cancer by age, Australia, 1983–1996**

<b>Rates</b>	<b>1983</b>	<b>1984</b>	<b>1985</b>	<b>1986</b>	<b>1987</b>	<b>1988</b>	<b>1989</b>	<b>1990</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>
0–4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5–9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10–14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15–19	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.0
20–24	0.2	0.0	0.0	0.3	0.3	0.0	0.2	0.1	0.4	0.0	0.0	0.0	0.0	0.1
25–29	1.3	1.6	0.9	0.9	0.7	0.4	0.4	1.4	0.7	0.7	0.3	0.9	0.4	0.1
30–34	2.0	2.1	3.2	1.9	2.3	1.8	3.1	2.0	1.8	2.1	1.5	1.5	1.0	1.8
35–39	3.2	3.3	2.8	2.6	3.2	2.4	2.8	4.7	3.8	2.8	3.6	1.6	2.2	3.2
40–44	4.6	4.4	3.8	5.5	3.7	4.2	4.0	6.0	3.0	4.4	5.1	4.4	3.1	2.9
45–49	7.8	7.0	5.3	5.9	4.5	6.4	7.0	7.7	6.0	5.0	4.0	6.0	5.4	4.8
50–54	7.4	7.2	7.3	7.0	6.5	5.0	7.2	4.2	5.1	3.1	6.9	8.4	5.7	2.6
55–59	11.0	5.6	8.6	11.2	9.0	11.6	5.5	7.0	7.2	6.3	5.3	7.0	8.8	5.4
60–64	10.8	11.8	11.5	11.6	7.9	11.3	9.2	9.4	9.2	8.8	7.2	6.7	8.7	5.9
65–69	17.2	15.2	18.1	16.6	14.9	12.8	16.0	12.6	10.2	7.4	8.7	10.7	10.7	8.5
70–74	12.8	13.5	17.0	12.6	21.0	13.1	18.4	9.6	13.5	15.7	12.8	10.7	13.6	12.8
75–79	11.8	17.0	16.3	11.9	15.1	17.5	14.0	15.0	13.7	14.4	12.6	13.6	13.3	16.0
80–84	20.3	23.9	23.4	19.8	16.2	27.1	17.9	5.7	15.1	23.8	15.2	16.2	16.2	12.5
85+	26.2	25.2	33.8	26.5	16.5	17.0	21.3	23.7	30.0	19.9	19.7	18.8	14.9	16.9
<b>All ages</b>														
AS Rate (A)	4.4	4.3	4.5	4.3	4.0	4.1	4.1	3.9	3.6	3.4	3.3	3.4	3.3	2.9
AS Rate (W)	3.5	3.3	3.5	3.4	3.1	3.1	3.2	3.1	2.8	2.6	2.5	2.7	2.6	2.2
<b>Ages 20–69</b>														
AS Rate (A)	5.2	4.7	4.9	5.0	4.3	4.4	4.5	4.7	3.9	3.4	3.6	3.8	3.6	3.0
AS Rate (W)	5.2	4.7	4.8	5.0	4.2	4.4	4.4	4.6	3.9	3.4	3.6	3.9	3.6	2.9

*Note:* Rates are expressed per 100,000 women and age standardised to the Australian 1991 population (A) and the World Standard Population (W).

*Source:* AIHW Mortality Database.

**Table 2.20: Number of deaths from cervical cancer by age, State and Territory, 1993–1996**

<b>Rates</b>	<b>NSW</b>	<b>Vic</b>	<b>Qld</b>	<b>WA</b>	<b>SA</b>	<b>Tas</b>	<b>ACT</b>	<b>NT</b>	<b>Australia</b>
0–4	0	0	0	0	0	0	0	0	0
5–9	0	0	0	0	0	0	0	0	0
10–14	0	0	0	0	0	0	0	0	0
15–19	1	0	0	0	0	0	0	0	1
20–24	0	0	1	0	0	0	0	0	1
25–29	2	3	5	0	0	0	2	0	12
30–34	14	11	9	6	1	1	0	0	42
35–39	25	16	17	8	6	1	0	2	75
40–44	38	25	18	11	4	4	2	1	103
45–49	54	21	16	16	4	7	1	4	123
50–54	41	18	24	11	4	4	3	3	108
55–59	32	23	18	13	8	7	1	2	104
60–64	37	19	15	12	9	6	2	2	102
65–69	46	40	22	15	7	5	0	2	137
70–74	58	42	25	14	12	7	1	0	159
75–79	43	29	33	7	10	4	2	2	130
80–84	33	27	16	9	12	2	1	1	101
85+	32	27	9	10	9	4	1	0	92
<b>Total</b>	<b>456</b>	<b>301</b>	<b>228</b>	<b>132</b>	<b>86</b>	<b>52</b>	<b>16</b>	<b>19</b>	<b>1,290</b>

*Note:* Rates are expressed per 100,000 women and age standardised to the Australian 1991 population (A) and the World Standard Population (W).

*Source:* AIHW Mortality Database.

**Table 2.21: Age-specific and age-standardised mortality rates for cervical cancer by age, by State and Territory, 1996**

<b>Rates</b>	<b>NSW</b>	<b>Vic</b>	<b>Qld</b>	<b>WA</b>	<b>SA</b>	<b>Tas</b>	<b>ACT</b>	<b>NT</b>	<b>Australia</b>
0-4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10-14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15-19	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20-24	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
25-29	0.2	0.4	1.0	0.0	0.0	0.0	3.9	0.0	0.4
30-34	1.4	1.5	1.7	2.1	0.4	1.3	0.0	0.0	1.4
35-39	2.6	2.3	3.4	2.9	2.6	1.3	0.0	6.8	2.7
40-44	4.3	3.8	3.8	4.2	1.8	5.8	4.0	3.9	3.9
45-49	6.6	3.4	3.7	6.9	2.0	11.1	2.2	19.4	5.1
50-54	6.4	3.8	7.2	6.4	2.6	8.1	9.7	22.1	5.8
55-59	5.9	5.7	6.7	9.1	6.0	16.5	4.5	23.6	6.6
60-64	7.3	5.1	6.3	9.6	7.1	15.3	11.7	34.4	7.1
65-69	9.1	10.8	9.4	12.8	5.3	13.0	0.0	48.9	9.7
70-74	12.7	12.7	12.0	13.8	9.9	19.7	7.4	0.0	12.5
75-79	12.7	12.1	21.2	9.4	11.2	14.8	22.5	112.4	13.9
80-84	13.7	15.2	14.7	16.0	18.4	10.4	17.0	110.9	15.0
85+	17.4	19.0	10.7	22.6	17.6	28.6	24.1	0.0	17.5
<b>All ages</b>									
AS Rate (A)	3.3	2.9	3.4	3.8	2.3	4.9	3.1	11.4	3.2
AS Rate (W)	2.6	2.2	2.6	3.0	1.7	4.0	2.4	8.4	2.5
<b>Ages 20-69</b>									
AS Rate (A)	3.6	3.0	3.6	4.3	2.2	5.7	3.0	11.8	3.5
AS Rate (W)	3.6	2.9	3.6	4.3	2.2	5.8	3.2	12.0	3.5

*Notes*

1. Deaths in this table are derived from 'place of usual residence', and not 'place of death'.
2. Rates are expressed per 100,000 women and age standardised to the Australian 1991 population (A) and the World Standard Population (W).

Source: AIHW Mortality Database.



# Appendixes

## Appendix A: Data sources and limitations

All data used in this report are based on calendar years. Data are derived from multiple sources and are summarised below.

**Table A1: Breast cancer screening indicators data sources**

Indicator	Description	Data source
1	Participation rate for breast cancer screening	BreastScreen programs
2	Detection rate for small cancers	BreastScreen programs
4	Incidence of breast cancer (ICD 174)	National Cancer Statistics Clearing House, AIHW
5	Mortality from breast cancer (ICD 174)	AIHW Mortality Database, ABS, Registrars of Births, Deaths and Marriages

**Table A2: Cervical cancer screening indicators data sources**

Indicator	Description	Data source
1	Participation rate for cervical cancer screening	National Cervical Screening Program
2	Early rescreening	National Cervical Screening Program
3	Low-grade abnormality detection	National Cervical Screening Program
4	High-grade abnormality detection	National Cervical Screening Program
5	Incidence of micro-invasive cervical cancer (ICD 180)	National Cancer Statistics Clearing House
6	Incidence of squamous, adenocarcinoma, adeno-squamous and other cervical cancer (ICD 180)	National Cancer Statistics Clearing House
7	Mortality from cervical cancer (ICD 180)	AIHW Mortality Database

### Population data

The Australian Bureau of Statistics estimated resident female population has been used to calculate incidence and mortality rates. Participation rates were calculated using the average of the 1996 and 1997 estimated resident female population (see Appendix C for tables). There may be some variation in published participation rates because national rates use estimated resident population data in the denominator whereas local data analysis may use census counts. The denominator population used to calculate cervical screening participation rates has been adjusted by the estimated proportion of women who have had a hysterectomy by age. These data were derived from the 1995 National Health Survey, and are tabled in Appendix C.

The National Health Data Committee has advocated the use of the 1991 Australian total estimated resident population as the standard population until the year 2001. The Australian age-standardised rates in this publication are calculated using this standard population. Both the Australian and World Standard Populations are in Appendix C.

### Breast cancer screening

BreastScreen Australia does not routinely screen symptomatic women, however, policies vary between States and Territories. Given the variation in policies the participation data in

this report include all women whether symptomatic or not. There are also varying practices across the State and Territory programs with regard to screening interstate women and how they are reported. For the purposes of this report, Victoria, Western Australia and the Australian Capital Territory have only reported women screened with a residential address within the program State or Territory. All other States and Territories have included women screened from their own jurisdiction as well as those from interstate.

## **Cervical cancer screening**

Indicators 1–4 do not include data from Queensland because the cervical cancer screening register in Queensland is not yet operational. The incidence and mortality data used in Indicators 5 to 7 include Queensland.

The New South Wales Pap Test register began operations in July 1996 leaving it almost 7 months short of data compared with the other States and Territories. New South Wales advised us that the best way of overcoming this problem was to use a conversion factor of 1.27, which is based on their modelling of screening data and extrapolating back. The Northern Territory Pap smear register began operations in March 1996, and participation rates have been estimated for the period January to March 1996 using a factor of 1.08.

Other data limitations:

- All States and Territories were able to provide data for the target age group 20–69 years, however not all programs were able to supply data for women beyond this age group.
- Hysterectomy fractions are calculated using national data derived from the National Health Survey using aggregate data that does not necessarily reflect variation at the State or Territory level.
- Participation rates will be under-estimates to the extent that a small percentage of women choose to opt-off local registers.
- Participation rates published by State and Territory programs may differ from those in this publication because of variation in denominators used.

# Appendix B: Methods

This section describes the methods employed to calculate the estimates presented in the tables in the body of this publication.

## Age-specific rates

Age-specific rates are calculated by dividing the number of cases occurring in each specified age group by the corresponding population in the same age group expressed as a rate per 100,000 population. This rate may be calculated for particular age and sex groupings, e.g.

$$\begin{aligned}
 \text{Age-specific breast cancer incidence rates in females aged 50-54} &= \frac{\text{New cases 1995 aged 50-54 years}}{\text{1995 female population aged 50-54 years}} \times 100,000 \\
 &= \frac{1240}{475,987} \times 100,000 \\
 &= 260.5 \text{ per } 100,000
 \end{aligned}$$

## Age-standardised rates (AS Rate)

Rates are adjusted for age to facilitate comparisons between populations that have different age structures, e.g. between youthful and ageing communities. There are two different methods commonly used to adjust for age. In this publication we use direct standardisation in which age-specific rates are multiplied against a constant population (the Australian 1991 Population Standard unless otherwise specified). This effectively removes the influence of age structure on the summary rate that is described as the age-standardised rate. The method may be used for both incidence and mortality calculations. The method used for this calculation comprises three steps.

- Step 1* Calculate the age-specific rate (as shown above) for each age group.
- Step 2* Calculate the expected number of cases in each 5-year age group by multiplying the age-specific rates by the corresponding standard population and dividing by 100,000, giving you the expected number of cases.
- Step 3* Sum the expected number of cases in each age group to give the age-standardised rate. Divide this sum by the total of the standard population and multiply by 100,000.

$$\text{CI approximation} = \text{AS Rate} \pm 1.96 \times \frac{\text{AS Rate}}{\sqrt{\text{Number of cases}}}$$

## Appendix C: Population data

Table C1: Australian Standard Population<sup>(1)</sup> and World Standard Population<sup>(2)</sup>

Age group	World Standard Population (W)	Australian 1991 Population Standard (A)
0-4	12,000	1,271,703
5-9	10,000	1,272,208
10-14	9,000	1,241,619
15-19	9,000	1,364,074
20-24	8,000	1,396,764
25-29	8,000	1,399,663
30-34	6,000	1,425,735
35-39	6,000	1,328,387
40-44	6,000	1,294,271
45-49	6,000	1,029,145
50-54	5,000	846,934
55-59	4,000	725,950
60-64	4,000	736,868
65-69	3,000	671,390
70-74	2,000	510,755
75-79	1,000	384,495
80-84	500	229,828
85+	500	154,247
<b>Total</b>	<b>100,000</b>	<b>17,284,036</b>

Source: (1) Australian Bureau of Statistics (1993); (2) Doll and Smith (1982).

Table C2: Hysterectomy fractions for women aged 15-80+ years, Australia, 1995

Age group	% of women who have not had a hysterectomy
15-19	98.4
20-24	99.8
25-29	99.3
30-34	98.0
35-39	91.9
40-44	85.2
45-49	79.1
50-54	68.5
55-59	68.5
60-64	67.8
65-69	68.8
70-74	66.8
75-79	66.8
80+	61.5
<b>Total</b>	<b>84.3</b>

Source: Australian Bureau of Statistics.

**Table C3: Estimated resident female populations, by State and Territory, June 1996**

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
0-4	214,002	153,660	118,321	61,548	47,539	16,647	10,889	8,675	631,438
5-9	213,920	155,188	118,289	64,688	48,315	17,243	11,147	7,842	636,798
10-14	212,007	153,472	121,161	64,848	49,927	17,864	11,195	7,363	637,990
15-19	206,369	153,115	118,529	62,414	47,910	16,574	12,314	6,491	623,774
20-24	228,714	172,247	130,572	66,419	51,370	16,244	14,160	8,142	687,960
25-29	236,664	181,545	128,986	68,056	53,347	16,611	13,096	9,115	707,561
30-34	245,083	182,462	130,170	70,315	56,376	17,901	12,966	8,345	723,796
35-39	246,612	181,594	131,332	71,556	58,317	19,122	13,042	7,614	729,327
40-44	227,153	169,291	122,373	68,309	54,851	17,585	12,657	6,596	678,946
45-49	213,602	159,970	116,625	62,164	52,968	16,457	12,341	5,506	639,704
50-54	169,624	124,297	90,977	45,873	41,390	12,942	8,449	3,799	497,412
55-59	140,822	103,750	71,747	37,489	34,394	11,050	5,952	2,306	407,540
60-64	125,398	92,727	60,171	31,680	30,966	9,724	4,428	1,546	356,656
65-69	126,433	91,908	59,638	30,052	32,210	9,484	3,901	1,099	354,740
70-74	117,234	85,347	53,966	26,158	31,030	8,965	3,563	751	327,017
75-79	87,561	62,641	41,102	19,230	23,430	6,915	2,432	484	243,799
80-84	62,680	46,305	28,862	14,815	16,996	5,046	1,620	273	176,603
85+	49,806	37,987	22,829	12,065	13,768	3,767	1,146	228	141,598
<b>Total</b>	<b>3,123,684</b>	<b>2,307,506</b>	<b>1,665,650</b>	<b>877,679</b>	<b>745,104</b>	<b>240,141</b>	<b>155,298</b>	<b>86,175</b>	<b>9,202,659</b>

Source: Australian Bureau of Statistics 1997.

**Table C4: Estimated resident female populations, by State and Territory, June 1997**

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
0-4	213,602	153,004	117,741	61,641	47,117	16,167	10,805	8,754	628,975
5-9	215,452	155,910	120,659	64,705	48,050	17,118	10,981	8,052	641,103
10-14	212,957	153,621	122,265	65,724	49,787	17,717	11,007	7,267	640,506
15-19	208,613	154,677	120,201	63,526	48,055	16,633	12,200	6,573	630,537
20-24	222,995	168,887	128,552	66,530	50,239	15,359	14,108	8,402	675,157
25-29	243,236	185,747	133,382	70,032	53,699	16,493	13,501	9,460	725,686
30-34	241,527	180,658	129,315	69,898	54,861	17,239	12,652	8,419	714,742
35-39	250,552	183,985	135,043	73,076	58,587	19,143	13,021	7,723	741,273
40-44	231,972	172,446	125,622	69,750	55,418	17,846	12,457	6,796	692,443
45-49	213,725	159,502	117,362	62,781	52,430	16,375	12,263	5,713	640,228
50-54	182,009	133,847	98,769	49,912	44,573	13,841	9,382	4,135	536,531
55-59	144,389	106,269	75,098	39,083	34,991	11,294	6,170	2,497	419,831
60-64	127,041	93,703	62,228	32,483	31,324	9,820	4,551	1,611	362,779
65-69	125,247	90,505	59,640	30,029	31,355	9,473	3,923	1,111	351,299
70-74	117,239	85,779	54,277	26,452	31,035	8,838	3,599	774	327,997
75-79	91,554	65,723	43,003	20,398	24,558	7,169	2,596	494	255,497
80-84	63,698	46,473	29,632	14,781	17,125	5,130	1,682	297	178,825
85+	53,221	40,121	24,362	12,919	14,683	4,041	1,235	238	150,822
<b>Total</b>	<b>3,159,029</b>	<b>2,330,857</b>	<b>1,697,151</b>	<b>893,720</b>	<b>747,887</b>	<b>239,696</b>	<b>156,133</b>	<b>88,316</b>	<b>9,314,231</b>

Source: Australian Bureau of Statistics 1998.

# Glossary

**ABS:** Australian Bureau of Statistics

**ACT:** Australian Capital Territory – a land-locked Territory of Australia situated within the State of New South Wales on the eastern seaboard with a population of 309,794 (1997). Its capital city is Canberra, which is also Australia's capital city.

**Adjuvant:** enhancing or administered to enhance the effectiveness of a treatment or substance.

**AIHW:** Australian Institute of Health and Welfare

**AS rate:** age-standardised rate

**Axilla:** the region between the arm and the chest wall – the armpit.

**Basement membrane:** the delicate, noncellular layer on which an epithelium is seated. The epithelium forms the surface portion of the skin and lines hollow organs and all passages of the respiratory, digestive and genito-urinary systems.

**Benign:** not malignant

**Cancer (malignant neoplasm):** a term used to describe one of several diseases which result when the process of cell division, by which tissues normally grow and renew themselves, becomes uncontrolled and leads to the development of malignant cells. These cancer cells multiply in an uncoordinated way, independently of normal growth control mechanisms, to form a tumour. This tumour may expand locally by invasion or systemically by metastasis via the lymphatic or vascular systems. If left untreated most malignant tumours will eventually result in death.

**Cancer death:** a death where the underlying cause is indicated as cancer. Persons with cancer dying of other causes are not counted in the death statistics in this publication.

**CIN:** cervical intra-epithelial neoplasia

**DHFS:** Commonwealth Department of Health and Family Services (to October 1998)

**Ductal carcinoma *in situ*:** a non-invasive tumour of the mammary gland (breast), arising from cells lining the ducts.

**Epidemiology:** the quantitative study of the distribution and determinants of health-related states and events in populations, and the application of this study to the control of health problems.

**Fibrocystic lumps:** pertaining to fibrocystic disease or cystic disease of the breast. A benign condition affecting women usually in their thirties or forties, characterised by the rapid development of one or more fairly large cysts.

**Hysterectomy:** refers to the surgical procedure whereby all or part of the uterus is removed.

**Hysterectomy fractions:** the proportion of women who have had their uterus removed by hysterectomy.

**HPV:** Human papilloma virus

**ICD-9:** International Classification of Disease – a coding system used to identify the primary site of the malignancy. This classification is in its ninth revision.

**Incidence:** see new cancer case

**Invasive cancer:** a tumour whose cells have a tendency to invade healthy or normal tissues.

**Lymph node:** masses of lymphatic tissue, often bean shaped that produce lymphocytes and through which lymph filters. These are located throughout the body.

**Mammogram:** a radiographic depiction of the breast.

**Metastasis:** the process by which a disease is transferred from one part of the body to another, for example, via the lymphatic system or the bloodstream.

**Mortality:** see cancer death

**NBCC:** the National Breast Cancer Centre

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

**NSW:** New South Wales – a State of Australia on the eastern seaboard which has the largest capital city in Australia, Sydney, and a population of 6,274,370 (1997).

**NT:** Northern Territory – a Territory in the north of Australia with a population of 187,132 (1997) and Darwin as its capital city.

**Oestrogen receptor:** a protein on breast cancer cells that binds oestrogens. It indicates that the tumour may respond to hormonal therapies. Tumours with a high oestrogen receptor status have a better prognosis than those which do not.

**Pap smear:** a test prepared for the study of exfoliated cells from the cervix.

**Post partum:** following childbirth.

**Radiation therapy:** the treatment of disease with any type of radiation, most commonly with ionizing radiation, such as x-rays, beta rays, and gamma rays.

**Screening:** the performance of tests on apparently well people in order to detect a medical condition at an earlier stage than would otherwise be the case.

**Sensitivity:** the proportion of individuals with the disease whom the screening test labels positive.

**Stroma:** the supporting framework of an organ.

**Qld:** Queensland – a State in the north-east of Australia with a population of 3,401,232 (1997) and Brisbane as its capital city.

**SA:** South Australia – a State in the southern part of Australia with a population of 1,479,806 (1997) and Adelaide as its capital city.

**Ablative therapy:** the destruction of cells on the surface of the cervix using laser therapy, chemicals or diathermy.

**Tas:** Tasmania – an island State in the south-east of Australia with a population of 473,501 (1997) and Hobart as its capital city.

**The Institute:** The Australian Institute of Health and Welfare

**Vic:** Victoria – a State in the south-east of Australia with a population of 4,605,148 (1997) and Melbourne as its capital city.

**WA:** Western Australia – the largest State in Australia, located in the west with a population of 1,798,129 (1997) and Perth as its capital city.

**WHO:** World Health Organization



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