

- Cancer is the leading cause of disease burden in Australia, accounting for just under one-fifth of years of healthy life lost due to premature death, disease, and injury.
- In NSW in 2004, there were 34,092 new cases of cancer (56% in males), and 13,100 deaths from cancer (56% in males). Between 1995 and 2004, the incidence rate for all cancers was stable in males and rose by 8% in females but death rates fell by 16% in males and 10% in females. In both males and females the death rates from cancer in 2004 are the lowest since the NSW Cancer Registry began operation in 1972.
- In 2004 in NSW:
  - Prostate cancer was the leading cause of new cases of cancer but the fourth cause of cancer death;
  - Colorectal cancer was the second leading cause of new cases of cancer and cancer death;
  - Breast cancer was the third leading cause of new cases of cancer and cancer death;
  - Melanoma was the fourth leading cause of new cases of cancer but the tenth cause of cancer death;
  - Lung cancer was the fifth leading cause of new cases of cancer, but the leading cause of cancer death;
- A bowel screening program commenced in NSW in August 2006. In its first phase the program targets persons aged 55 to 65 years.
- Cervical cancer had been decreasing in incidence since 1972 and was the fourteenth most common female cancer in 2004. It can be prevented through the early detection of pre-cancerous lesions by two-yearly Pap tests of women aged 20–69 years. The percentage of women aged 20–69 years who had a Pap test between 2003–2004 in NSW was 56.8%.

## In this chapter

- All cancers with projections
- New cases by leading type of cancer
- Deaths by leading type of cancer
- Survival by leading type of cancer
- New cases by division of general practice
- Colorectal cancer screening
- Breast cancer screening
- Cervical cancer screening

## Introduction

Cancers are a major cause of mortality in Australia and also contribute much to morbidity and disability (AIHW, 2006). Cancer was the leading cause of disease burden in Australia in 2003, accounting for 19% of the total burden of disease, with lung, colorectal, breast, and prostate cancer responsible for half of this burden (Begg et al., in press).

Cancer is a group of diseases in which abnormal cells proliferate and spread out of control after being affected by a carcinogen or random gene mutation, and form a mass called a tumour or neoplasm. Tumours may be benign (non-invasive), but cancers are malignant (invasive) tumours, which spread to other parts of the body (metastasise) (AIHW, 2004). Cancer can develop from most types of cells in different parts of the body, each with its own pattern of growth and spread. Some invade and spread quickly, while others may remain in the body for years without showing any symptoms. Causal factors for many cancers remain unknown and most cancers have a unique set of factors responsible for their onset, but a number share risk factors. These include smoking (responsible for the greatest number of preventable cancers), dietary influences, infectious agents, radiation (including ultraviolet radiation), as well as genetic factors. Some cancers can be prevented through the avoidance of known risk factors. Risk of death for many cancers can be reduced by screening, early detection and treatment, and appropriate management and follow-up (Tracey et al., 2006). Cancer was made a state priority area in 1995 and national health priority area in 1996, as part of an initiative to reduce its impact in Australia.

Cancer registration is a fundamental tool of cancer monitoring. Australian states and territories are required by legislation to maintain a cancer registry. This requirement has resulted in cancer being the only major disease for which almost complete coverage of incidence data (that is, data on new cases) is available (AIHW, 2004). In NSW, notification of cancer is a statutory requirement for all public and private hospitals, and pathology laboratories.

The NSW Central Cancer Registry has been operating since 1972 and is based at the Cancer Institute NSW. The Registry collects and reports annually on cancer cases and deaths in NSW on behalf of the NSW Department of Health. The registry reports on notifiable cases of invasive cancer. Basal and squamous cell carcinoma of skin (non-melanocytic skin cancers), which are the most common type of cancer, are not notifiable and are not included in the Registry reports. The latest published data are for cases diagnosed in 2004. Information presented in this report on relative survival and trends over the past decade are based on results presented in the annual report *Cancer in NSW Incidence and Mortality 2004* (Tracey et al., 2006). The percentage change in trends is calculated using a generalised linear model approach (Tracey et al., 2006).

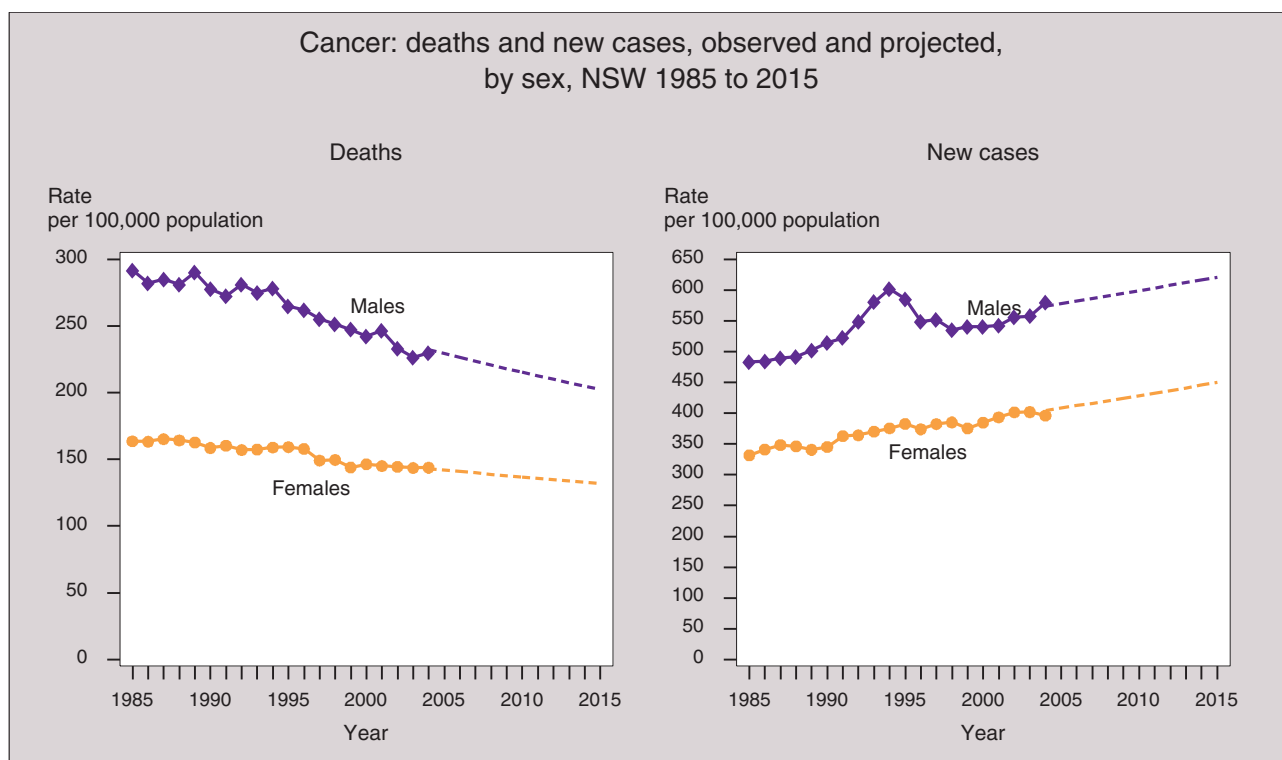
During the period covered by the Registry, there has been a large increase in the number of new cancers registered, as well as a change in the rankings of individual cancers. In 1972, the 4 most common cancers in males were lung, colorectal, prostate, and stomach; and in females were breast, colorectal, melanoma, and cervical cancers (Coates et al., 2001). By 2004, the rank order had changed to prostate, colorectal, melanoma, and lung cancers in males; and breast, colorectal, melanoma, and lung cancer in females (Tracey et al., 2006).

The NSW Government established the Cancer Institute NSW in 2003, in recognition of the importance of accelerating improvements in cancer control in NSW. In 2006, the Cancer Institute NSW prepared its second plan, the NSW Cancer Plan 2007–2010, which aims to coordinate the strategic activities for cancer control in NSW including prevention, diagnosis, treatment and rehabilitation services as well as cancer information, education and research (Cancer Institute NSW, 2006). The Cancer Institute NSW is responsible for the NSW Pap Test Registry as well as the Central Cancer Registry. In July 2005, the Cancer Institute NSW assumed responsibility for the management of the breast and cervical screening programs and is supporting the staged introduction of bowel cancer screening in NSW, which began in August 2006.

This chapter contains an analysis of the incidence and mortality of 6 cancers. These are lung; colorectal (large bowel); melanoma of the skin; prostate and breast cancers, selected because of their overall impact in terms of numbers of new cases and deaths; and cancer of the cervix because it can potentially be prevented. Additionally, oral cancer is discussed in Oral health chapter of this Report. Further detail on these and other cancers can be found in the web-based version of *The health of the people of New South Wales* report at [www.health.nsw.gov.au](http://www.health.nsw.gov.au) and in publications of the Cancer Institute NSW. The methods used for analysing and presenting data are described in more detail in the Methods section. Deaths data presented here are from the Australian Bureau of Statistics mortality collection. The ABS death data was used to maintain consistency with other chapters of the report, however, generally the CCR figures for cancer are more reliable than the ABS cancer data, because the CCR data is verified against cases' histopathological reports while the ABS data is sourced only from the information on death certificates.

All data tables for this report, and more indicators on these and other subjects, are available in the web version of “The Health of the People of NSW” at [www.health.nsw.gov.au/public-health/chorep/](http://www.health.nsw.gov.au/public-health/chorep/)

Cancer: deaths and new cases, observed and projected, by sex, NSW 1985 to 2015

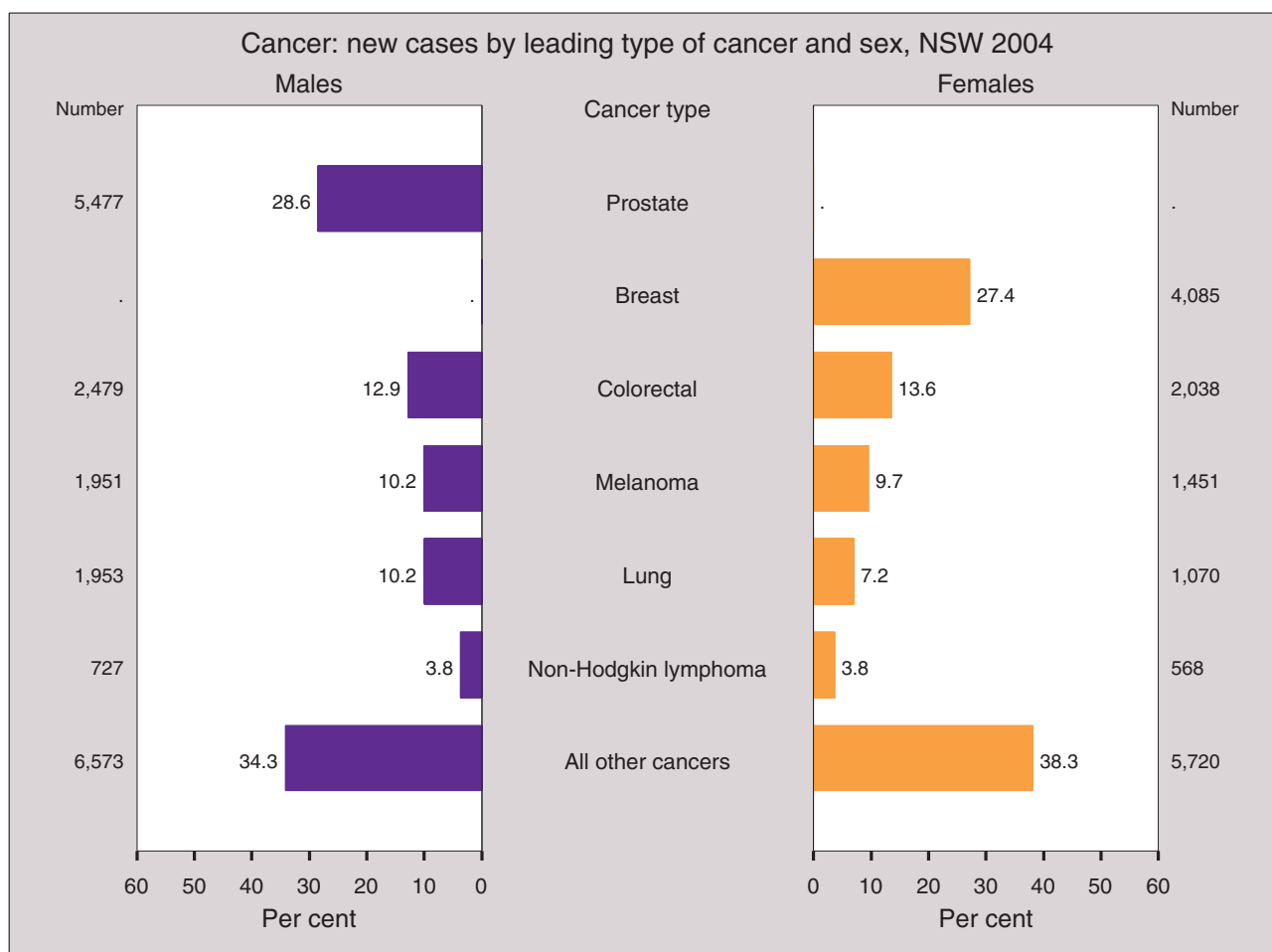


		Sex	1995	2000	2004	2005	2010	2015
Deaths	Number	Persons	11663	12275	13100	13290	14230	15320
	Rate	Persons	201.3	186.5	180.4	179	171	163
Cases	Number	Persons	27324	29526	34092	35180	40860	47650
	Rate	Persons	465.3	449.7	476.8	483	505	528

Note: Rates were age-adjusted using the Australian population as at 30 June 2001. Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, data for which were unavailable at the time of production.

Source: NSW Central Cancer Registry incidence data, ABS mortality data and population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

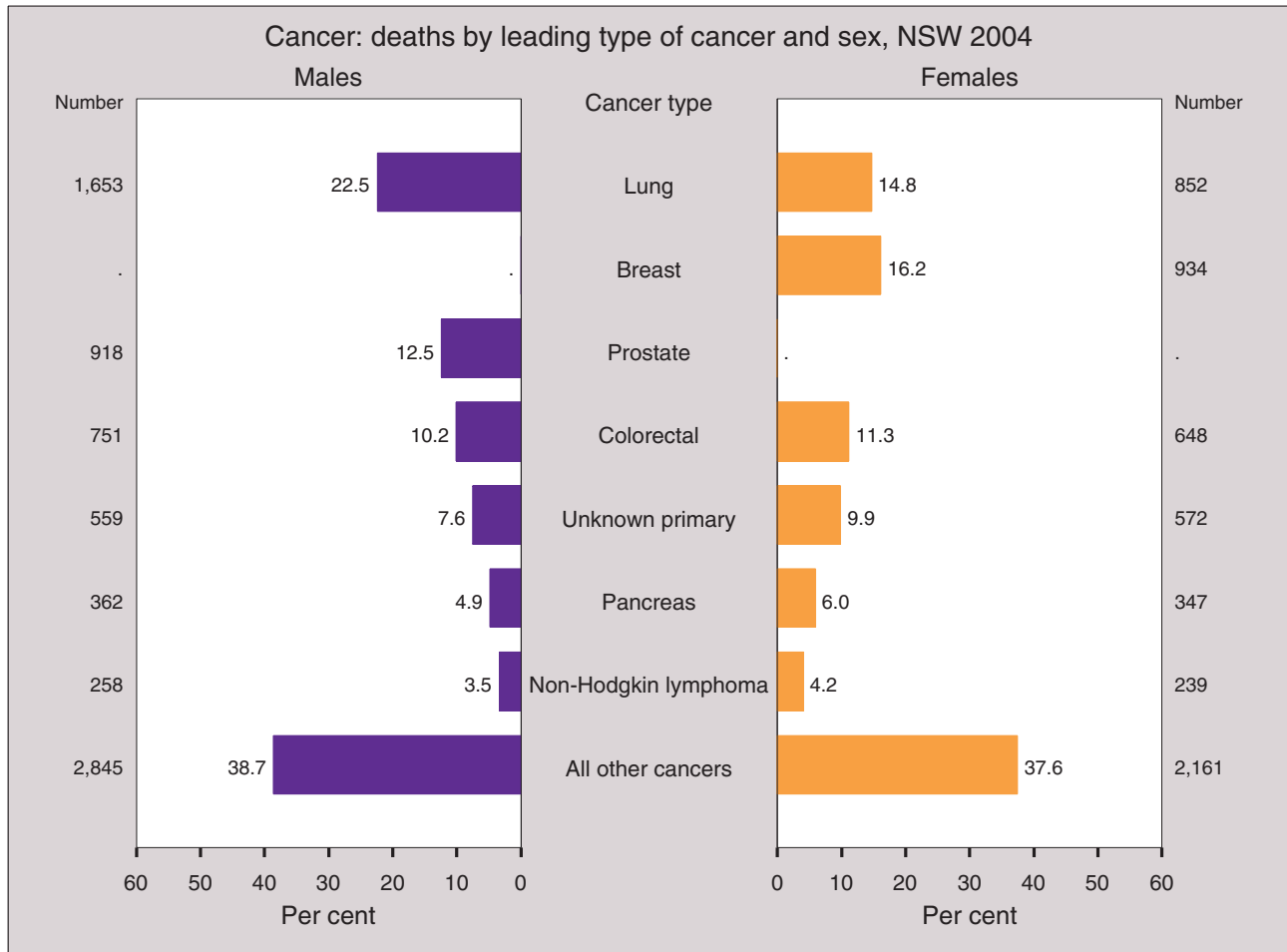
- In NSW in 2004, there were 34,092 new cases of cancer (56% in males) and 13,100 deaths from cancer (56% in males).
- In the period between 1995 and 2004, the age-standardised incidence rates of all cancers combined rose by 8% in females. There was no significant trend in males although there was a sharp increase in incidence rates in the last 2 years of data largely due to the influence of prostate cancer (Tracey et al., 2006).
- The increased incidence rate for cancers overall in NSW is believed to be due to factors including earlier diagnosis of some cancers as a result of screening; a real rise in new cases of some cancers; and improved notification of cancer cases. Reduced death rates reflect successful treatment of some cancers and the cumulative effect of small decreases in deaths for other cancers.
- Death rates fell by 16% in males and 10% in females in the period 1995 to 2004 (Tracey et al., 2006). In both males and females the mortality rate in 2004 is similar to the rates in 2003, which were the lowest since the NSW Cancer Registry began operation in 1972.
- Projections can be used to help set priorities for research and cancer control activities and to assist health planners in allocating resources. Projections depend on mathematical modelling of trends in the past and the assumption that these trends will continue in the future. The resulting projections will be inaccurate if new factors arise that affect cancer incidence rates, for example the introduction or change in the use of the screening test or changes in exposure to risk factors. Projections decline in certainty with time, that is, projections for 2010 are likely to be closer to the observed than those for 2015 (Tracey et al., 2005).



Note: Cases were classified by ICD-10.

Source: NSW Central Cancer Registry incidence data (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

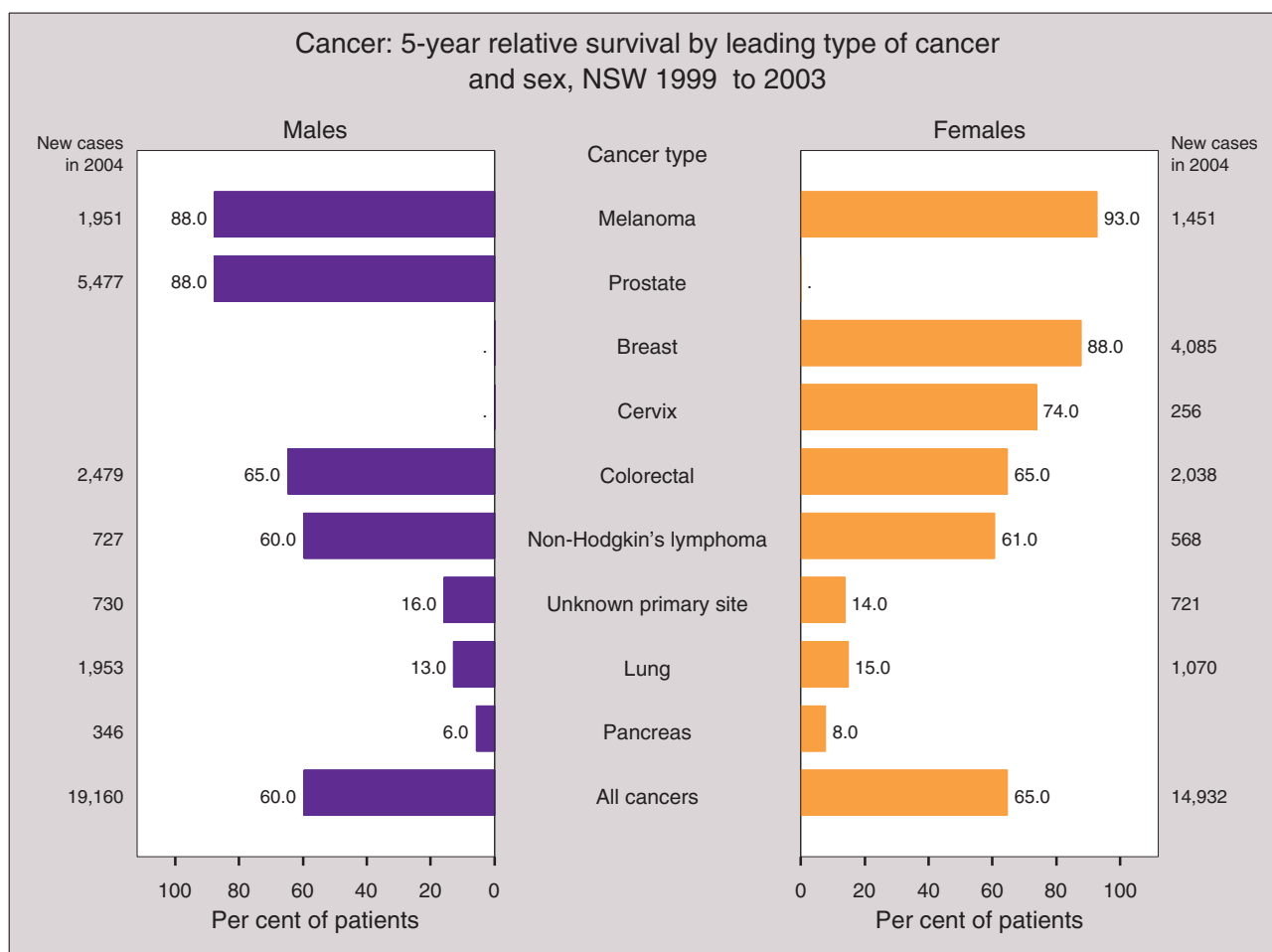
- Cancer is a diverse group of diseases in which some of the body's cells become defective, begin to multiply out of control, can invade or damage the tissue around them, and can also spread (metastasise) to other parts of the body to cause further damage. Cancers are a large cause of mortality in Australia and also contribute much to morbidity and disability (AIHW, 2006).
- Cancers are classified according to the organ in which they originate (primary site). Even when cancers spread to other organs (secondary cancers or metastases) it is usually possible to ascertain the origin of the malignant cells.
- In 2004 there were 34,092 new cancers diagnosed in NSW (19,160 in males and 14,932 in females). This number excludes the non-melanoma skin cancers (basal and squamous cell cancers), which are not notified to the registry. It is estimated that there are about 142,000 cases of non-melanoma skin cancer a year in NSW (Tracey et al., 2006).
- The graph shows the 7 most common cancers in NSW. The most frequently diagnosed cancers in NSW in 2004 were prostate cancer in males (at 28.6% of all cancers in males) and breast cancer in females (at 27.4%).
- The category 'Unknown primary site of cancer' includes cancers originating in ill-defined sites of the digestive tract, respiratory system, head and neck area and cancers where site could not be specified. A substantial variety of cancers is included there and it is not appropriate to consider them as a group for all purposes, for example a combined 5-year relative survival is not meaningful from a patient point of view.
- Non-Hodgkin lymphoma is a cancer of lymphoid cells in sites of immune system, including lymph nodes, bone marrow, spleen, liver and digestive tract.



Note: Deaths were classified using ICD-10. Numbers for 2004 include an estimate of the small numbers of deaths that were registered in 2005, data for which were unavailable at the time of production.

Source: ABS mortality data (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

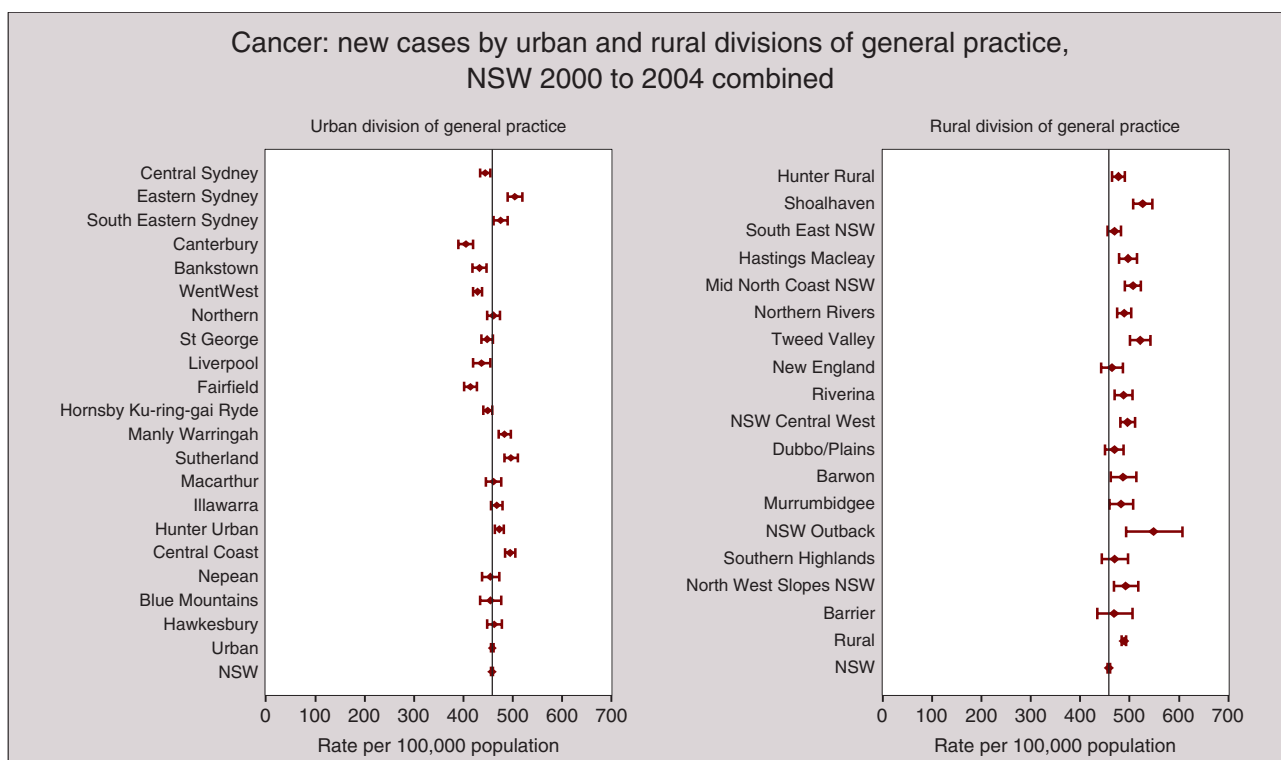
- Cancers are a large cause of mortality in Australia and also contribute much to morbidity and disability (AIHW, 2006).
- In 2004 there were 13,100 deaths from cancer (7,346 in males and 5,753 in females), according to the Australian Bureau of Statistics mortality data. The NSW Central Cancer Registry (CCR) reports different figures: 12,686 deaths (7,126 in males and 5,560 in females).
- Generally, the CCR figures for cancer are more reliable than the ABS cancer data, because the CCR data is verified against cases' histopathological reports while the ABS data is sourced only from the information on death certificates. The ABS death data was used to maintain consistency with other chapters of the report.
- The graph shows the 7 most frequent causes of cancer death in NSW in 2004. The most frequent cancer death was from lung cancer (at 22.5% in males and 14.8% in females). In females alone the most frequent cause of cancer death was breast cancer at 16.2%. Cancers that are the most common cause of cancer death are usually also the most commonly diagnosed cancers, however not in the same order.
- For example, prostate cancer, which is ranked first among new cancer cases 28.6% of new cases in males), is ranked third among causes of cancer death (12.7%). This is because the survival after diagnosis is very high with 88% of men surviving at least 5 years after diagnosis and majority of prostate cancer sufferers dying of other causes.
- The exception is cancer of pancreas, which caused 5.5% of cancer deaths in NSW in 2004 while it constituted only 2% of new cases in the same year and did not feature in the top seven new cases of cancer. The reason for this discrepancy is the exceptionally aggressive nature of pancreatic cancer—only 7% of persons diagnosed with this cancer survive 5 years after diagnosis.



Note: Relative survival is the ratio of observed survival to that which would be expected in the absence of the cancer.

Source: NSW Central Cancer Registry survival data (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

- The '5-year survival rate' is the proportion of cancer patients who have not died from their cancer five years after being diagnosed with cancer. It is an important indicator of the burden of cancer, and in particular, the variation in prognosis that exists between different cancer types (Tracey et al., 2006). The relative 5-year survival of most common cancers is presented in the graph with the addition of cancer of pancreas, for which the death rates are relatively high and cervical cancer, which is preventable.
- Among the most common cancers, melanoma has the highest survival at 90% (93% in females and 88% in males). Some less common cancers have even better 5-year survival rates: cancer of the testis 96%, thyroid 94% and lip 91% (Tracey et al., 2006).
- Lung cancer is the fifth most frequently diagnosed cancer (9.1% of all new cases) and the most frequent cause of death from cancer (22% of all cancer deaths). The 5-year survival rate from lung cancer is relatively low as only 14% of patients survive longer than 5 years after diagnosis.
- Survival rate is particularly poor for cancer of pancreas (with 7% surviving past 5 years) and mesothelioma, cancer arising from the membrane lining the chest and abdominal cavities and adjacent organs (about 5% patients survive longer than 5 years after diagnosis).
- The 5-year survival rates in NSW have improved over the years. For all cancer cases diagnosed in the period 1994–2000, the 5-year survival rate was 61% (Yu et al., 2003). This improved to 63% for cases diagnosed in the period 1999–2003. For example, breast cancer cases diagnosed in the period 1994–2000 experienced survival of 85% but the more recent figure is 88%.
- The NSW 5-year survival rate from all cancers was 63%. Together with the United States at 65%, this was at the high end of the range among developed countries (Tracey et al., 2006).

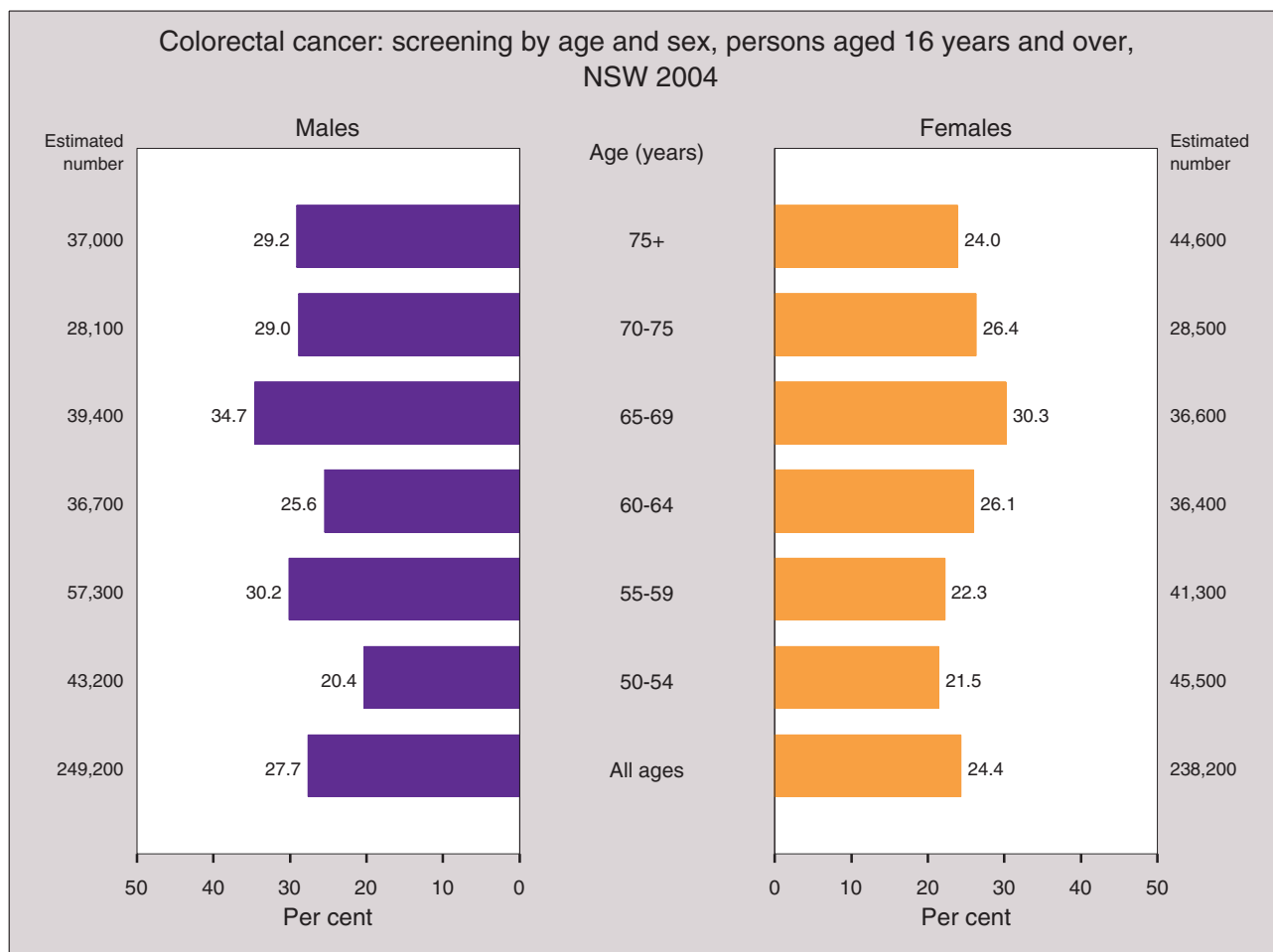


**Note:** The boundaries for divisions of general practice are determined by the Australian Government Department of Health and Ageing. There are currently 37 divisions of general practice in NSW.

**Source:** NSW Central Cancer Registry incidence data, ABS mortality data and population estimates (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

- In 2004 there were 34,092 new cancers diagnosed in NSW (19,160 in males and 14,932 in females) and 13,100 deaths from cancer (7,346 in males and 5,753 in females).
- Divisions of General Practice are the key infrastructure for integrated, quality primary health care services delivered through general practice in Australia. A division of general practice is a group of general practitioners who work together to improve health outcomes at the local level. About 95% of general practitioners are members of their local division. There are currently 37 Divisions of General Practice in NSW and the peak body for these Divisions in NSW is the Alliance of NSW Divisions. The Alliance aims to support and enhance the work of NSW Divisions of General Practice particularly in the planning and implementation of health services at a state and national level (NSW Alliance website).
- There are differences between local populations that divisions serve in terms of population size, age distribution, socioeconomic status, cultural background, and patterns of health service use. Because workloads and other resources differ, each division faces different challenges in improving health outcomes.

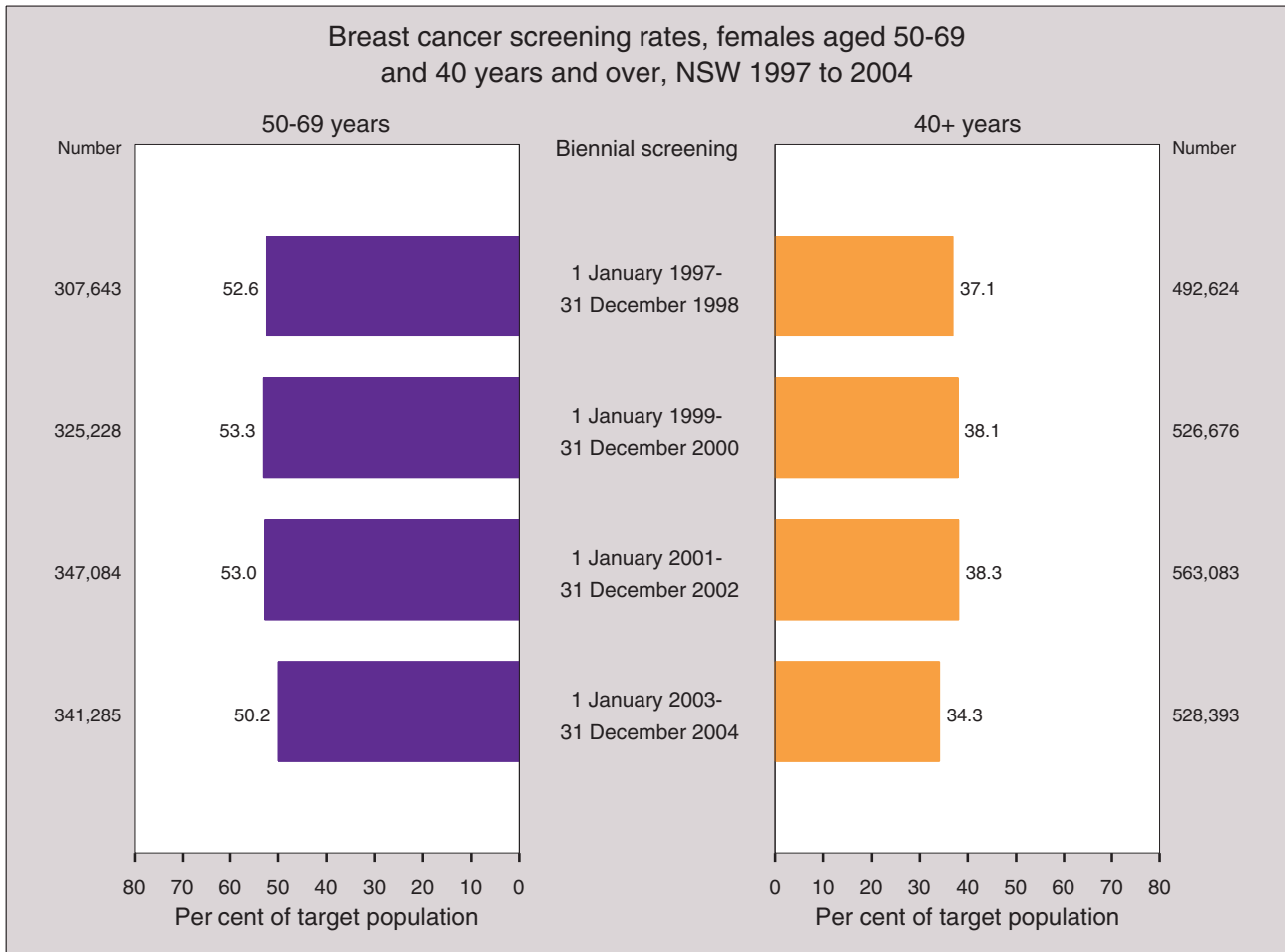
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Note: The indicator includes those people 50 years or over who have had a screening test (Faecal occult blood test, sigmoidoscopy or colonoscopy) for colorectal cancer in the last 5 years. It does not include those who had an investigation carried out for reasons other than for screening purposes. Estimates are based on 8,916 respondents. 24 (0.27%) were 'not stated' (Don't know or Refused).

Source: NSW Population Health Survey (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

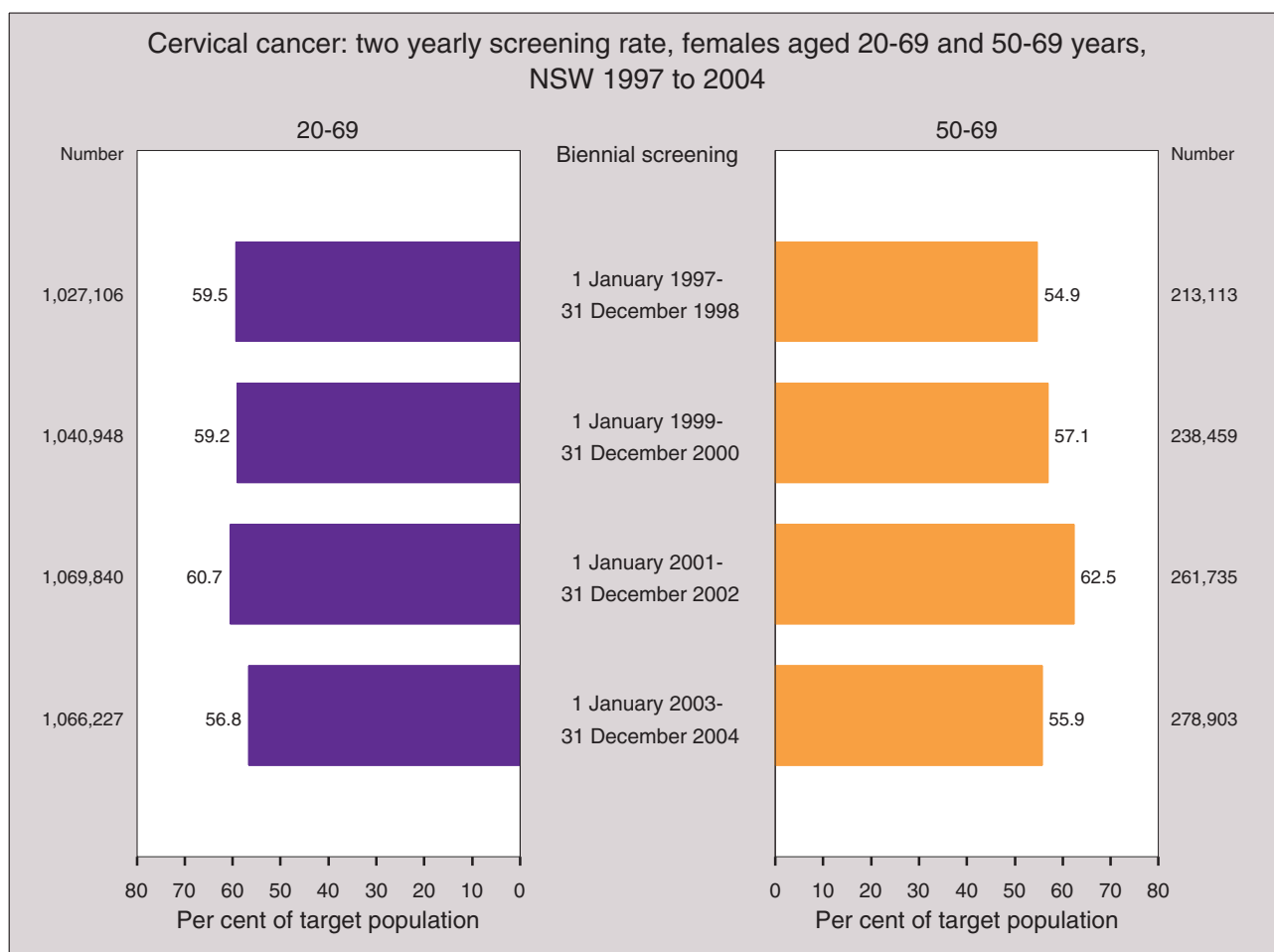
- The aim of screening for cancer is to reduce mortality and disability from the disease. Mortality, and not 5-year survival, is the outcome indicator for screening, because survival may be extended purely as a consequence of the cancers being diagnosed earlier, before symptoms are apparent.
- In 2004, 26% of respondents aged over 50 years (27.7% of males and 24.4% of females) reported having a faecal test for screening purposes in the previous 5 years. Within this group, 26.3% of respondents aged 55–59 years and 25.8% of respondents aged 60–64 reported having a test in the previous 5 years.
- Previously, in the 1997 and 1998 NSW Health Surveys, 2.9% of respondents aged 40–79 years (3.6% of males and 2.2% of females) reported having a faecal test for screening purposes in the last 12 months. Together these survey results suggest that the baseline for the introduction of a biennial screening program in NSW is very low considering that the program aims to achieve participation rates of above 50% for the target age groups of 55 and 65 year olds every two years.
- Clinical trials of bowel cancer screening suggest screening based on Faecal Occult Blood Test (FOBT), when fully implemented, will reduce mortality from bowel cancer by 15–30%, the equivalent of 240–480 lives saved each year in NSW. A bowel screening program commenced in NSW in August 2006, and the NSW Cancer Plan supports its implementation with a range of activities (CI NSW, 2006). In its first phase the program targets persons aged 55 and 65 years.



Note: Rates are expressed as the percentage of the eligible female population and age-standardised to the Australian population at 30 June 1991 for 1997–1998 and 1999–2000, at 30 June 2001 for 2001–2002 and at 30 June 2003 for 2003–2004.

Source: BreastScreen NSW and ABS population estimates.

- Mammographic screening is seen as the best population-based method to reduce mortality and morbidity attributable to breast cancer, by detecting early-stage breast cancer.
- The NSW Cancer Plan includes a target to increase participation in the age group 50–69 years by 4% per year during the four years of the NSW Cancer Plan so that over 70% of women aged 50–69 years should have 2 yearly mammograms by 2010 (CI NSW, 2006).
- The two-yearly screening rate for breast cancer in women aged 50–69 years in NSW for 2003–2004 was 50.2%. This is a decrease from around 53% reported in the three biennial periods 1997–1998, 1999–2000 and 2001–2002.
- The breast screening program in NSW was recently reorganised and rejuvenated with an aim to encourage more women to participate in routine screening (CI NSW, 2006). Also, there is some evidence that a large proportion of women in the target group underwent mammographic screening with private providers, who do not report to BreastScreen and are currently not included in the database. Under the Cancer Plan 2007–2010 the monitoring of private mammography will be improved (CI NSW, 2006).
- The latest audit of breast screening data shows that participation by women aged 50–69 years in breast cancer screening increased by nearly five percentage points over the previous twelve months. Across NSW 363,369 women participated in breast screening in the two years to January 2006 (CI NSW, 2006).
- Women over 40 can be screened upon request. When 40 to 49 year-olds are included in the data, the rate of breast screening also shows a decrease from around 38% in the previous two biennial periods 2001–2002 and 1999–2000 to 34% in 2003–2004.



**Note:** The biennial screening rate was calculated by the NSW Cervical Screening Program (CSP) from the number of women aged 20–69 years who had a Pap test at least once during a two-year reporting period, as a percentage of the target population of eligible NSW women residents aged 20–69 years. The target population was derived from the Estimated Resident Female Population of NSW by taking an average of the populations across all age groups in the 2-year period. Populations were obtained from the Australian Bureau of Statistics (ABS), and adjusted for the proportion of women estimated to have undergone a hysterectomy.

**Source:** NSW Cervical Screening Program and the NSW Pap Test Register.

- A population screening program using the Pap test results in lower incidence and mortality from cervical cancer in the population. This is because the Pap test is very effective at detecting precancerous lesions in the cervix and regular two-yearly testing with appropriate follow-up treatment can prevent cervical cancer from developing in most cases (NSW Cervical Screening Program, 2004). This results in both a reduction in cancer incidence and death rates.
- A population-based screening program was introduced nationally in 1991. Currently the target for the NSW Cervical Screening Program is to screen 75% of women at risk every two years. The rate of screening of the target population of 20–69 year-olds was 56.8% in 2003–2004. The rate of screening decreased from 60.7% in 2001–2002, an increase from 59.2% in 1999–2000.
- The Pap Test register data indicates that about 90% of women in NSW have had a Pap test in the last 5 years, 73% within the last 3 years and nearly 60% within the last two years. The NSW Cervical Screening Program has initiated a number of new programs to increase the participation rate, especially of two-yearly screening (CI NSW, 2006).
- Increased participation in Pap testing by women who seldom have or never had Pap Tests is of particular concern. The Cervical Screening Program will aim to increase participation rate in this hard to reach group by 3% per annum during the duration of the Cancer Plan 2007–2010 (CI NSW, 2006).
- The first cervical cancer vaccine is a major medical breakthrough and is now available in Australia. The vaccine is an additional method of preventing cervical cancer and will be most useful for the next generation of women. Medical authorities urge all women aged 20–69 years to continue with regular two yearly Pap test screening (CI NSW, 2006).

## For more information

Australian Divisions of General Practice at [www.adgp.com.au](http://www.adgp.com.au), includes information about the Alliance of NSW Divisions.

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