

# **Cancer in Australia: an overview, 2006**

The Australian Institute of Health and Welfare (AIHW) is Australia's national health and welfare statistics and information agency. The Institute's mission is *better information and statistics for better health and wellbeing*.

The Australasian Association of Cancer Registries (AACR) is a collaborative body representing state and territory cancer registries in Australia and the cancer registries of New Zealand and Tonga. Most are members of the International Association of Cancer Registries (IACR). The AACR was formed in November 1982 to provide a formal mechanism for promoting uniformity of collection, classification and collation of cancer data.

The objectives of the AACR are to:

- Achieve national agreement on cancer-specific data definitions and coding and to encourage compliance with such agreements. As far as possible, data definitions and coding should be consistent with existing International IACR protocols and conventions.
- Facilitate the production of Australian state and territory and national statistical publications on cancer that are comparable with each other and with international statistical publications.
- Improve the operational efficiency and data completeness and quality of member cancer registries through collaborative sharing of information.
- Contribute to national cancer control development in member countries through the regular and timely publication of local and national cancer statistics and the provision of data for cancer control research and health promotion.
- Contribute national data to international publications of the IACR.
- Contribute to international cancer coding and statistical analysis developments via members' involvement with the IACR.
- Facilitate national epidemiological research projects on cancer (given appropriate local and AIHW ethics committee approvals).

Please note that as with all statistical reports there is the potential for minor revisions of data in this report over its life. Please refer to the online version at <[www.aihw.gov.au](http://www.aihw.gov.au)>.

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# **Cancer in Australia: an overview, 2006**

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# Contributors

This report has been prepared by Mark Short, John Harding, Edith Christensen and Emily Conley of the Health Registers and Cancer Monitoring Unit of the Australian Institute of Health and Welfare (AIHW), with the assistance of Kathy Southgate in the Data and Information Technology Unit. Cancer incidence data are provided to the National Cancer Statistics Clearing House at the AIHW by all state and territory cancer registries, who with the AIHW and Oceania cancer registries are members of the Australasian Association of Cancer Registries (AACR). The AACR assists the AIHW in the production of *Cancer in Australia* through not only provision of data but also resolution of coding and tabulation issues, checking of the tabulated data and reviewing the draft.

Incidence information provided by state and territory cancer registries is sourced predominantly from hospitals, pathologists and departments of radiation oncology, with supplementary information provided by medical practitioners in private practice. The main contributors of information on cancer deaths are the state and territory Registrars of Births, Deaths and Marriages and the Australian Bureau of Statistics.

Funding and support of cancer registries in Australia is undertaken by state and territory governments and non-government bodies. We recognise the support of the state and territory governments, the Cancer Institute NSW, the Cancer Council New South Wales, the Cancer Council Victoria, the Cancer Council Queensland, the Cancer Council Western Australia, the Cancer Council Northern Territory and the Cancer Council Australia. Finally, the contributions of the staff and volunteers who work with the state and territory cancer registries are acknowledged. Contact details for the state and territory cancer registries are provided in Appendix E.

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# Summary

*Cancer in Australia: an overview, 2006* is a joint report by the Australian Institute of Health and Welfare (AIHW) and the state and territory members of the Australasian Association of Cancer Registries (AACR). It presents estimates of the numbers of new cases of cancer and cancer deaths in 2006 and includes a comprehensive analysis of incidence and mortality in 2003 with trends from 1983 to 2003. It also examines trends in cancer-related hospital admissions from 2000–01 to 2004–05, profiles prostate cancer in Australia, provides state and territory comparisons and examines regional cancer differentials.

It is accompanied by substantial cancer data online resources on the AIHW website:

- a major new online resource, the Australian Cancer Incidence and Mortality (ACIM) books. These are Excel workbooks of tables and graphs for 'all cancers' and the major cancers, for incidence from 1982 to 2003 and mortality from 1968 to 2004
- two online data cubes with incidence numbers and rates from 1982 to 2003
- the GRIM (General Record of Incidence of Mortality) books, with comprehensive long-term mortality data on selected causes of death by age and sex for each year from 1907
- the National Hospital Morbidity Database data cubes, which include information on the principal diagnoses, procedures and diagnosis-related groups of patients, including cancer patients, admitted to Australian hospitals from 1993–94 to 2005–06.

Because of the availability of this wealth of online data, a number of tables that give data by age and sex, traditionally published in *Cancer in Australia* reports, have been omitted from this edition.

## Key findings

### Cancers diagnosed in Australia in 2006

- It is estimated that in 2006 there were 106,000 new cases of cancer diagnosed in Australia (60,600 males and 45,400 females). This compares with 88,962 new cases (48,165 males, 40,797 females) in 2001 and 78,857 new cases (43,440 males, 35,417 females) in 1996.

### Deaths from cancer in Australia in 2006

- It is estimated that in 2006 there were 39,200 deaths from cancer in Australia (21,900 males and 17,300 females). This compares with 37,214 cancer deaths (20,971 males, 16,243 females) in 2001 and 34,857 deaths (19,660 males and 15,197 females) in 1996.

### Most common cancers in 2003

- Excluding non-melanocytic skin cancer (NMSC), in 2003 prostate cancer (13,526 new cases) overtook colorectal cancer (12,536 cases) as the most common cancer diagnosed in Australia, followed by breast cancer (11,889), melanoma (9,524) and lung cancer (8,249).

- The most common cancers diagnosed in males were prostate cancer (13,526 new cases), colorectal cancer (6,857), melanoma (5,535), lung cancer (5,281) and lymphoma (2,297).
- The most common cancers diagnosed in females were breast cancer (11,788 new cases), colorectal cancer (5,679), melanoma (3,989), lung cancer (2,968) and lymphoma (1,832).
- The most common cancer deaths in 2003 were from lung cancer (6,988 deaths), colorectal cancer (4,372), cancers of unknown primary site (3,115), prostate cancer (2,837) and breast cancer (2,720).
- In males the five most common cancer deaths were from lung cancer (4,506 deaths), prostate cancer (2,837), colorectal cancer (2,382), cancers of unknown primary site (1,567) and pancreatic cancer (942).
- In females the five most common cancer deaths were from breast cancer (2,710 deaths), lung cancer (2,482), colorectal cancer (1,990), cancers of unknown primary site (1,548) and pancreatic cancer (940).

### **Risk of cancer in 2003**

- In 2003 the risk of a diagnosis of cancer for males was 1 in 3 before age 75 and 1 in 2 before age 85. The highest risk was for prostate cancer, with a 1 in 9 chance before age 75 and a 1 in 5 chance before age 85.
- In females the risk was 1 in 4 before age 75 and 1 in 3 before age 85. The highest risk was for breast cancer, with a 1 in 11 chance before age 75 and a 1 in 9 chance before age 85.

### **Incidence change between 1993 and 2003**

- The total number of cancers diagnosed in 2003 was 26% higher in 2003 than in 1993 (24% for males and 29% for females), compared with a 12% increase in the Australian population during this period. However, the age-standardised incidence rate for 'all cancers' was 0.7% lower in 2003 than in 1993.
- Among the National Health Priority Area (NHPA) cancers the numbers increased for melanoma (up 41%: 49% in males, 31% in females), non-Hodgkin lymphoma (up 36%: 34% in males, 39% in females), breast cancer in females (up 34%), colorectal cancer (up 27%: 29% in males, 26% in females), prostate cancer (up 21%) and lung cancer (up 13%: 3.1% in males, 34% in females). Cervical cancer experienced a 29% reduction.
- Other cancers experiencing major increases included thyroid cancer (106% increase); myeloma (up 44% overall: 36% in males, 54% in females), kidney cancer (up 39%: 45% in males, 29% in females), uterine cancer (up 31%), pancreatic cancer (up 30%: 35% in males, 25% in females), oesophageal cancer (up 26%: 35% in males, 11% in females), leukaemia (up 23%: 24% in males, 21% in females), brain cancer (up 22%: 28% in males, 15% in females) and cancers of unknown primary site (up 18%: 15% in males, 21% in females).
- The largest increase in the age-standardised incidence rate in the NHPA cancers from 1993 to 2003 was for melanoma of the skin (up 14% overall: 19% in males, 6.8% in females), followed by non-Hodgkin lymphoma (7.2% overall: 4.4% in males, 9.9% in females) and breast cancer in females (6.1%). The largest decrease over this period was for cervical cancer (down 41%), followed by prostate cancer (12%), lung cancer (11% overall: down 20% in males but up 6.1% in females) and colorectal cancer (1.5% overall: 1.7% in males, 2.0% in females).

## **Mortality change between 1993 and 2003**

- The total number of deaths from cancer in 2003 was 15% higher than in 1993 (14% for males and 17% for females) compared with a 9.1% increase in deaths from all causes over this period. However, the age-standardised death rate for 'all cancers' was 12% lower in 2003 than in 1993.
- Among the NHPA cancers, deaths from melanoma increased by 34% (31% in males, 40% in females), from prostate cancer by 12%, from non-Hodgkin lymphoma by 10% (13% in males, 6.8% in females), from lung cancer by 10% (down 0.4% in males but up 36% in females) and from female breast cancer by 4%. Cervical cancer deaths declined by 25% and colorectal cancer deaths by 0.6% (up 2.6% in males, down 4.1% in females).
- The largest decrease in the death rate among the NHPA cancers from 1993 to 2003 was for cervical cancer (down 41%), followed by colorectal cancer (25%: 24% in males, 27% in females), prostate cancer (22%), breast cancer in females (20%), non-Hodgkin lymphoma (15%: 13% in males, 19% in females) and lung cancer (down 14%: down 24% in males but up 6.7% in females). The only increase in an NHPA cancer death rate from 1993 to 2003 was for melanoma (up 4.4% overall: 3.3% in males, 9.1% in females).

## **Cancers attributed to smoking and excessive alcohol consumption**

- In 2003 there were an estimated 10,378 new cases of cancer and 7,727 deaths from cancer attributed to smoking.
- In 2003 there were an estimated 2,844 new cases of cancer and 1,358 deaths from cancer attributed to excessive alcohol consumption.

## **State and territory comparisons**

- For all cancers, excluding NMSC, the highest age-standardised incidence rate during the period 1999–2003 occurred in Queensland (492.7 cases per 100,000 persons), followed by Tasmania (471.0), Western Australia (457.2), South Australia (453.1), New South Wales (452.2), the Australian Capital Territory (445.9), Victoria (440.4) and the Northern Territory (413.8).
- For melanoma of the skin the highest age-standardised incidence rates occurred in Queensland (65.3 cases per 100,000 persons), followed by Western Australia (54.3), New South Wales (45.4), Tasmania (43.9), the Australian Capital Territory (39.5), South Australia (39.0), Victoria (35.4) and the Northern Territory (33.0).

## **Regional comparisons**

Regional analyses were undertaken using the Australian Standard Geographical Classification.

- Preventable cancers associated with excessive sun exposure (melanoma), higher smoking rates (lung, head and neck, and lip cancers) and low Pap smear screening (cervical cancer) were among the main cancers with significantly higher incidence rates in regional and remote areas in 2001–2003 compared with Major Cities.

- The incidence of cancers of unknown primary site, which is most likely to be diagnosed as an advanced cancer, was also much higher in males in all regional and remote categories.
- The main cancers with significantly lower incidence rates in regional and remote areas were stomach cancer, liver cancer, female breast cancer and lymphoma.
- In 2003, 38.3% of all male cancer deaths and 35.1% of female cancer deaths in Australia were of residents of regional and remote areas.
- Although incidence of all cancers in 2001–2003 was about 10% lower for males and females in Very Remote areas compared with Major Cities, mortality was about 10% higher. Hence cancer survival for residents of Very Remote areas must be much lower than in Major Cities.
- In 2001–2003 lung cancer incidence and mortality were both around 36% higher in Very Remote areas than in Major Cities.
- In 2003 prostate cancer death rates were about 20% higher in Inner Regional and Outer Regional areas, and 10% higher in Remote areas, than in Major Cities.
- Melanoma death rates for males were 20% to 30% higher in 2002 and 2003 in Inner Regional and Outer Regional areas than in Major Cities. However, this did not apply to females: female melanoma death rates in Outer Regional, Remote and Very Remote areas were lower than in Major Cities.

## Hospitalisation

- In 2004–05, there were 703,576 principal diagnosis and other cancer-related separations from hospitals in Australia, 10.0% of all hospital separations in that year. From 2000–01 to 2004–05 cancer-related separations increased by an average of 4.5% per annum.
- For the eight NHPA cancers in the period 2000–01 to 2004–05, the average annual increase in separations was 15.1% for prostate cancer, 4.0% for non-Hodgkin lymphoma, 2.9% for colorectal cancer, 2.8% for skin cancers other than melanoma, 2.5% for melanoma, 1.8% for breast cancer and 1.1% for lung cancer. Separations for cancer of the cervix decreased by an average of 1.3% per annum in the same period.

## Prostate cancer

### Overview

- There has been a large increase in recent years in the number of prostate-specific antigen (PSA) tests undertaken by general practitioners as a screening test for prostate cancer. The increase in PSA testing appears to have had a flow-on effect to incidence numbers, hospital admissions and prostatectomies performed. In the early 1990s a similar sharp rise in cases diagnosed occurred when PSA testing first became available in Australia.

### Incidence

- In 2003 there were 13,526 new cases of prostate cancer diagnosed in Australia, a 12.7% increase on 2002. There was a further 16.2% increase in 2004 in state cancer registries. It is estimated that 18,700 new cases were diagnosed in 2006.

- The age-standardised incidence of prostate cancer in 2003 was 144 new cases per 100,000 males, an 8.7% increase from the previous year, but still well below the 1994 peak of 184 cases per 100,000.
- Age-specific incidence of prostate cancer increases with age. In 2003 the rate was 86 per 100,000 males for 50–54 year olds, increasing to 999 per 100,000 for males aged 85 and over.
- In 2003 the risk of a diagnosis of prostate cancer was 1 in 9 by age 75 and 1 in 5 by age 85.
- The average age at diagnosis of prostate cancer was 69.7 years in 2003, down from 72.3 years in 1993. The median age was 70 years in 2003, compared with 72 years in 1993.

### **Mortality**

- Prostate cancer is the second most common cause of cancer death in males, after lung cancer.
- There were 2,761 deaths from prostate cancer in Australia in 2004 and 2,946 deaths in 2005.
- There was a small decline in the age-standardised death rate from 35.2 per 100,000 males in 2001 to 32.0 per 100,000 in 2004 before an increase to 32.8 per 100,000 in 2005.
- In 2003 the risk of death from prostate cancer was 1 in 84 by age 75 and 1 in 22 by age 85.
- In 2003 the average age of death from prostate cancer was 78.3 years, up from 77.1 years in 1993. The median age was 79 years, up from 77 years in 1993.

### **Demographics of the ‘at risk’ population**

- The male population of Australia aged 65 and over has been increasing at around 2.8% a year.
- The highest incidence rates for prostate cancer are in the 75 years and over age group. The 75 years and over population increased by 3.7% in the year to 30 June 2006.

### **PSA tests**

- The annual number of PSA tests for prostate cancer screening increased by 42% from 492,147 in 2001–02 to 698,828 in 2005–06. The increase during 2005–06 of 12.4% was the highest annual increase in the 5-year period.
- In 2005–06, PSA tests were being provided at a rate of 20,859 per 100,000 for males aged 55–64 years, at 22,667 per 100,000 for 65–74 year olds and at 15,796 per 100,000 for 75–84 year olds. The rates in these age groups were much higher in South Australia, the Australian Capital Territory, Western Australia and Tasmania than in other jurisdictions.

### **Hospitalisation**

- Hospital admissions for a principal diagnosis of prostate cancer almost doubled from 13,715 in 2000–01 to 25,429 in 2005–06.
- Prostatectomies performed on males with a principal diagnosis of prostate cancer increased by 56% in the same period, from 6,088 in 2000–01 to 9,478 in 2005–06.