

# **Cancer in Australia 2001**

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

The Australasian Association of Cancer Registries (AACR) is a collaborative body representing state and territory cancer registries in Australia and New Zealand. Most are members of the International Association of Cancer Registries. 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 Association of Cancer Registries (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 the state and territory and New Zealand cancer registries through collaborative sharing of information.
- Contribute to national cancer control development in Australia and New Zealand 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 IACR.
- Facilitate national epidemiological research projects on cancer (given appropriate local and AIHW ethics committee approvals).

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# **Cancer in Australia 2001**

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## Preface

The Australian Institute of Health and Welfare (AIHW) and the Australasian Association of Cancer Registries (AACR) are pleased to present *Cancer in Australia 2001*, the most recent report generated from the National Cancer Statistics Clearing House.

This report contains updates of the national cancer incidence and mortality data found in previous editions, and presents summary cancer statistics for several other national data sources held by the AIHW. These include statistics on multiple cause of death, mortality by remoteness, cancer screening, expenditure on cancer, the cancer workforce and general practice management of cancer.

National monitoring of cancer is particularly important as it is a National Health Priority Area and one in three men and one in four women can expect to be diagnosed with a cancer before the age of 75 years. As cancer is a disease that largely emerges in later life, ageing of the population means that numbers of cancer patients and the demand for cancer services are increasing faster than population growth. This report shows that the number of new cases of cancers increased by 34% from 65,966 in 1991 to 88,398 in 2001, compared with population growth of 12.3%.

Reflecting this increase in demand, AIHW health expenditure analysis has found that expenditure on cancer now accounts for 5.7% of national health expenditure, and that there was a 31% increase in inflation-adjusted cancer expenditure from 1993–94 to 2000–01. There have also been substantial increases in the numbers of oncology medical specialists and nurses.

This report also provides some international data on cancer incidence and mortality. It is pleasing to note that, while Australia has relatively high age-standardised incidence, our mortality rates are relatively low when compared with similar countries. This suggests that the Australian health system is performing comparatively well in the areas of early detection and treatment of cancer.

The statistics in this report are supplemented by additional tables, a national cancer data cube and further reports on the AIHW web site at <[www.aihw.gov.au](http://www.aihw.gov.au)>. There is a wealth of state and territory cancer data and many cancer research reports found on the state and territory cancer registry web sites listed in Appendix E. 'Related publications' lists many of the published reports available from state and territory registries.

The AACR and the AIHW wish to acknowledge the efforts of all the cancer registries in compiling and providing data to the National Cancer Statistics Clearing House so that this report could be published.

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## Contributors

This report has been prepared mainly by Edith Christensen, Susan Colwell and Ian McDermid of the Health Registers and Cancer Monitoring Unit of the Australian Institute of Health and Welfare.

The section on management of cancer in general practice was authored by Jan Charles, Ying Pan and Stephanie Knox of the AIHW General Practice Statistics and Classification Unit while Serge Chrisopolous provided workforce data and Nick Mann expenditure data. Suraiya Nargis prepared sections on cancer expenditure and international comparisons. However, this joint report between the Institute and the Australasian Association of Cancer Registries would not have been possible without the cooperation and effort of those who direct the operation, promotion and development of the state and territory cancer registries. These people, identified below, have all worked to produce the national cancer incidence statistics in this publication.

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 major contributors of information on cancer deaths are the state and territory Registrars of Births, Deaths and Marriages and the Australian Bureau of Statistics. We thank them for their contribution.

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 New South Wales Cancer Council, the Cancer Council of Victoria, the Queensland Cancer Fund, the Cancer Foundation of Western Australia, the Northern Territory Anti-Cancer Foundation and the Australian Cancer Society. Finally, the contributions of the staff and volunteers who work with the state and territory cancer registries are acknowledged.

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Contact details for the state and territory cancer registries are provided in Appendix E.

## Executive summary

This report presents national cancer incidence and mortality statistics for 2001 and information on multiple causes of death, mortality by remoteness, cancer screening, expenditure on cancer, the cancer workforce and general practice cancer management. It also provides international comparative data on incidence and mortality. It is part of a series of publications concerning cancer patterns in Australia. The state and territory cancer registries provide the incidence data for this report whereas the mortality data are provided by the state and territory Registrars of Births, Deaths and Marriages and coded by the Australian Bureau of Statistics. Other data sources include the AIHW National Hospital Morbidity Database and the 2001 National Health Survey conducted by the Australian Bureau of Statistics.

Mesothelioma, currently a subject of national interest as an asbestos-related disease, features in this report.

The main findings are as follows.

### *New cases of cancer and mortality*

- Excluding non-melanoma skin cancers, there were 88,398 new cancer cases and 36,319 deaths due to cancer in Australia in 2001. At the incidence rates prevailing in 2001 (541.4 per 100,000 males and 393.3 per 100,000 females), it would be expected that 1 in 3 men and 1 in 4 women would be diagnosed with a cancer in the first 75 years of life. Further, an estimated 257,458 potential years of life would be lost to the community as a result of people dying of cancer in 2001 before the age of 75. Cancer currently accounts for 31% of male deaths and 26% of female deaths (29% of all deaths, compared with 26% in 1991).

### *New cases of cancer in males and females*

- In males, prostate cancer (11,191 new cases diagnosed in 2001) is the most common registrable cancer, followed by colorectal cancer (6,961), lung cancer (5,384) and melanoma (5,024). These four cancers account for 60% of all registrable cancers in males.
- In females, breast cancer (11,791) is the most common registrable cancer, followed by colorectal cancer (5,883), melanoma (3,861) and lung cancer (2,891). These four cancers account for 60% of all registrable cancers in females.

### *Cancer deaths*

- The most common cancers causing death are lung (4,657 deaths in 2001), prostate (2,718) and colorectal (2,601) cancers in males, and breast (2,594), lung (2,382) and colorectal (2,153) cancers in females.
- In Australia there were 36,750 deaths registered in 2001 where the underlying cause was cancer and 4,519 additional deaths where cancer was an associated cause reported on the death certificate.
- Among the 4,519 cases where cancer was an additional cause of death, the most common underlying cause of death were ischaemic heart disease, chronic obstructive pulmonary disease and stroke.

### *Remoteness*

- Lung cancer, cervical cancer and cancer of the uterus as a proportion of the cancer deaths in the population all increase with remoteness from the major cities in Australia.
- Breast cancer, leukaemias, ovarian cancer and stomach cancer as a proportion of the cancer deaths in the population all decrease with remoteness.
- The age-standardised average annual cancer death rate for all cancers from 1998–2002 was lowest for Major Cities at 187.0 per 100,000 population. This was significantly below the national average.
- The median age of death from cancer in 1998–2002 was 73 years for Major Cities and Inner Regional areas and 72 for Outer Regional Areas. This fell to 69 for Remote Areas and 65 for Very Remote Areas.

### *Age distribution*

- The risk of cancer increases with age, with four times as many cancers diagnosed in those over the age of 60 years as in those under 60 years.
- The median age of first diagnosis for males was 69 years and for females was 65 years in 2001.

### *Mesothelioma*

Because of a high fatality rate and relatively short survival after diagnosis, incidence and mortality numbers of cases and rates are similar. Trends are as follows:

- The age-standardised incidence per 100,000 population increased from 1.2 in 1982 to 2.9 in 2001.
- The numbers of new cases per year has increased from around 150 in the early 1980s to 567 in 2001, while the peak number of recorded deaths to date was 519 in 2001.
- Although female incidence is substantially lower than male incidence, the age-standardised rate for females has greatly increased since the early 1980s to 1.0 per 100,000 women, while the male rate has more than doubled during the same period to 5.3 per 100,000 males.

Other features of mesothelioma are:

- The median age at diagnosis for men is 70.0 years and the median age at death is also 70.0 years.
- For women, the median age at diagnosis is 71.0 years and median age at death 72.0 years.

### *Screening*

- The proportion of women in the target age group (50 to 69 years) who were screened under the BreastScreen Australia program in a 2-year period rose from 52% in 1996–1997 to 57% in 2001–2002.
- The proportion of women in the target age group who were screened under the National Cervical Cancer Screening Program in a 2-year period rose from 61% in 1996–1997 to 63% in 1998–1999 and then declined to 61% in 2000–2001. The decline is unexplained but may be due to improvements in the linking of records to identify women previously screened and to lack of media campaigning in most states.

### *Cancer expenditure*

- Allocatable expenditure on cancer in 2000–01, excluding public health expenditure, was \$2.7 billion, representing 5.7% of total allocatable health expenditure.
- 71% of cancer expenditure was in hospital care (\$1,988m) and 9% of all expenditure in hospitals was on cancer.
- Out-of-hospital medical services accounted for 12% of cancer expenditure (\$343m) and pharmaceuticals 6.6% (\$183m).
- \$215m was spent on cancer research in 2000–01, 18% of all health research expenditure in Australia.
- There was a 31% increase in inflation-adjusted cancer expenditure from 1993–94 to 2000–01.
- Average cancer expenditure per person was \$146 for males and \$135 for females in 2000–01. This was much higher in the older age groups. In the 65–74 year age group, average expenditure per person in 2000–01 was \$641 for males and \$389 for females, while in the 75 years and over age groups, the averages were \$984 for males and \$480 for females.

### *Cancer workforce*

- Although to 2001 there were increases in the numbers of most of the medical disciplines providing cancer services, medical oncologist numbers fell from 187 in 1999 to 171 in that year. The numbers of radiation oncologists increased from 117 in 1995 to 182 in 2001.
- 87% of registered nurses and 78% of enrolled nurses working in oncology as their main work setting were employed in hospitals.
- There were 1,062 nurses working in hospices in 2001, almost the same as the number in 1995.
- At the 2001 population census, there were 808 radiation therapists, a 15% increase on the 700 in 1996.

### *Management of cancer in general practice*

- Skin cancers, including basal and squamous cell carcinomas and melanomas, are by far the most common cancers managed by general practitioners. The next most common are prostate cancer, female breast cancer and lung cancer.
- There was a significant decrease in prescribing of medications between 1998–2000 and 2002–2004, from 31 to 25 per 100 patient contacts.
- Opioids (synthetic narcotics that have opiate-like activities but are not derived from opium) were the most commonly prescribed medications for cancer, accounting for approximately one quarter of all prescriptions. They were prescribed by GPs at a rate of 7 per 100 cancer contacts in 2002–2004.
- There was a significant increase in the overall rate of other treatments provided between 1998–2000 and 2002–2004. GPs provided these treatments at a rate of 39 per 100 cancer contacts in 1998–2000 and at a rate of 46 per 100 in 2002–2004.
- A significant increase was found in the rate at which GPs undertook administrative procedures between 1998–2000 (0.8 per 100 cancer contacts) and the two later periods when the rates were 1.5 and 1.9 per 100 respectively.

- There were 20 referrals per 100 cancer patient contacts in 2002–2004. Of the ten most common individual referrals, only referrals to hospitals showed a significant change over time, decreasing from 1.4 per 100 cancer contacts in 1998–2000 to 0.6 per 100 in 2000–2002 and 0.6 per 100 in 2002–2004. As a percentage of all referrals, hospital referrals halved between the first and third time periods, from 6.8% to 2.9%.

### *International comparisons*

- In comparison to other developed countries, Australia has relatively high incidence rates but comparatively low mortality rates, indicating that cancer survival in Australia is relatively very good. This suggests that the health system in Australia is performing well in lengthening survival through early detection and in treatment of cancer.
- Australia's incidence rates for males and females are much higher than for the United Kingdom and Canada, but are slightly lower than for the United States, and are around 20 persons per 100,000 population lower than for New Zealand. Australia's mortality rates are lower than for all four of these countries.
- Colorectal cancer is a disease besetting affluent countries. The age-standardised incidence per 100,000 population is an average of 37 for more developed countries and 10 for less developed countries for males, with Australia having a very high rate by world standards of 50.
- Breast cancer is another disease particularly high in affluent countries. Australian age-standardised incidence per 100,000 population is much higher than the average for the more developed countries of the world, but is almost the same as for Canada and New Zealand and below that of the United States.
- The age-standardised incidence of prostate cancer in Australia is much higher than in the United Kingdom and other European countries, but is well below the very high rates found in the United States and New Zealand.
- Because of excessive sun exposure, Australia and New Zealand have by far the highest rates of both incidence and mortality of melanoma in the world. However, mortality rates for melanoma in Australia are quite low compared with others cancers.
- Australia's male lung cancer incidence and mortality rates are both well below the averages for the more developed countries of the world, especially compared with very high incidence rates in Canada, the United States and most European countries.
- Australian age-standardised incidence and mortality rates for non-Hodgkin's lymphoma are the same as those for New Zealand and Canada, but above the rates for the United Kingdom and below those for the United States.
- Because of the success of the national cervical cancer screening program in detecting and following up pre-cancerous abnormalities, Australia's cervical cancer incidence and mortality rates have been declining steadily for many years. They are both well below the averages for the more developed countries of the world, and also below those of the United Kingdom, Canada, the United States and New Zealand.



# 1 Introduction

Cancer is a notifiable disease in all states and territories and is the only major disease category for which an almost complete coverage of incidence data is available. Cancer is also a major cause of death in Australia. Good information on the occurrence of different types of cancer, the characteristics of patients, and survival and mortality facilitates the monitoring of trends and the impact of interventions, and provides a sound basis for epidemiological studies and the initiation of prevention and treatment programs.

## What is cancer?

Cancer describes a range of diseases in which abnormal cells proliferate and spread out of control. Other terms for cancer are tumours and neoplasms, although these terms can also be used for non-cancerous growths.

Normally, cells grow and multiply in an orderly way to form organs that have a specific function in the body. Occasionally, however, cells multiply in an uncontrolled way after being affected by a carcinogen, or after developing from a random genetic mutation, and form a mass which is called a tumour or neoplasm. Tumours can be benign (not a cancer) or malignant (a cancer). Benign tumours do not invade other tissues or spread to other parts of the body, although they can expand to interfere with healthy structures. In 2001 there were 126 registered deaths from benign tumours.

The main features of a malignant tumour (cancer) are its ability to grow in an uncontrolled way and to invade and spread to other parts of the body (metastasise). Invasion occurs when cancer cells push between and break through other surrounding cells and structures. Spread to other parts of the body occurs when some cancer cells are carried by the bloodstream or the lymphatic system and lodge some distance away. They can then start a new tumour (a secondary cancer) and begin invading again.

Cancer can develop from most types of cells in different parts of the body, and each cancer has its own pattern of growth and spread. Some cancers remain in the body for years without showing any symptoms. Others can grow, invade and spread rapidly, and are fatal in a short period of time. Apart from the cancer's natural behaviour, its effects can also depend on how much room it has before it damages nearby structures, and whether it starts in a vital organ or is close to other vital organs.

Although a number of cancers share risk factors, most cancers have a unique set of risk factors that are responsible for their onset. Some cancers occur as a direct result of smoking, dietary influences, infectious agents or exposure to radiation (for example, ultraviolet radiation), while others may be a result of inherited genetic faults. It should be noted that for many cancers the causes are unknown. While some of the causes are modifiable through lifestyle changes, some others are inherited and cannot be avoided through personal action. However, the risk of death due to particular cancers may be reduced through intensive monitoring of individuals at high risk, reducing external risk factors, detecting and treating cancers early in their development, and treating them in accordance with the best available evidence.

Many cancers can be serious and fatal. However, medical treatment is often successful if the cancer is detected early. The aim is to destroy the cancer cells and stop them from returning. This can be done by surgery to remove the growth or by other methods such as cancer-destroying drugs (chemotherapy) or ray treatment (radiation therapy). The growth of some cancers can also be controlled through hormone therapy.

The treatment approach often combines a number of these methods and uses them in stages. The first line of treatment aims to remove as many cancer cells as possible; the second line, which may go on for a long time, aims to ensure the cancer does not recur.

## **Cancer surveillance in Australia**

National data on cancer deaths have been available since the early 1900s, based on information in medical certificates of cause of death, as provided to the Registrar of Births, Deaths and Marriages in each state and territory. The Australian Institute of Health and Welfare (AIHW) and the Australian Bureau of Statistics (ABS) use these data to report national cause of death statistics. Information concerning cancer deaths and non-cancer deaths of cancer cases is also collected by state and territory cancer registries, based on death certificates and other diagnostic information.

The only effective method of obtaining cancer incidence data is through universal registration of cancer diagnoses. In Australia, cancer registration is required under state and territory legislation. The cancer registrations are collated by cancer registries that are supported by a mix of state and territory government and non-government organisations. Some state and territory cancer registries have been operating for nearly 30 years and obtain their information from hospital, pathology, radiotherapy and physician records (Appendix D). It was not until 1982, however, that cancer registration was universal in Australia for all states and territories excluding the Australian Capital Territory (data were published in *Cancer in Australia 1982* (Giles, Armstrong & Smith 1987). Before then, there was no registration in some states and in some others registries covered only particular areas, hospitals or cancer sites. Cancer notification in the Australian Capital Territory was not legislated until 1994 so pre-1994 cancer data for this territory are not considered to be complete.

## **The National Cancer Statistics Clearing House**

In June 1984 the National Health and Medical Research Council endorsed the concept of a national collection of cancer statistics. In April 1985 the National Committee on Health and Vital Statistics agreed that the National Cancer Statistics Clearing House (NCSCH) should be operated by the then Australian Institute of Health under the supervision of the Australasian Association of Cancer Registries (AACR).

Following the enactment of Commonwealth legislation establishing the then Australian Institute of Health as a statutory body in 1987, and subsequent legislation providing for the protection of confidentiality of records supplied to it, the Institute and the AACR established the NCSCH. This provides a facility for compiling data produced by individual state and territory registries on a continuing basis.

The aim of the NCSCH is to foster the development and dissemination of national cancer statistics for Australia and specifically to:

- enable computation and publication of national statistics on cancer;
- allow tracking of interstate movement of cancer cases via record linkage so that the same cancer case is not counted more than once;
- facilitate exchange of scientific and technical information between cancer registries and promote standardisation in the collection and classification of cancer data; and
- facilitate cancer research both nationally and internationally.

The NCSCH receives data from individual state and territory cancer registries on cancers diagnosed in residents of Australia. This commenced with cases first diagnosed in 1982. The data items provided to the NCSCH by the state and territory cancer registries enable record linkage to be performed to identify possible duplicate records and the analysis of cancer by site and behaviour.

The NCSCH produces reports of national incidence and mortality data. Periodically, analyses of specific cancer sites, cancer histology, differentials in cancer rates by country of birth, geographical variation, trends over time and survival are undertaken on an accumulation of data which permits examination of the data in greater depth. The section 'Related publications' sets out the range of publications based on these data.

The NCSCH is able to make available a broad range of statistical data. Data identifying individuals may only be released to bona fide researchers after a strict scientific and ethical review process which involves the AACR executive, the AIHW Ethics Committee and the state and territory cancer registries. General database enquiries and enquiries about the release of statistical data should be addressed to:

Australian Institute of Health and Welfare  
National Cancer Statistics Clearing House  
GPO Box 570  
Canberra ACT 2601  
Phone: (02) 6244 1230  
E-mail: cancer@aihw.gov.au

## **Other sources of data on cancer**

In addition to the NCSCH, the AIHW holds several other national databases containing cancer-related data. Many factors determine and influence health. Indeed, the dominant view presently is a 'multicausal' one, in which disease, disability and (ultimately) death are to be seen as the result of the interaction of human biology, lifestyle and environmental (including social) factors, modified by healthcare interventions. Therefore, while the main focus of this report is the presentation of cancer incidence and mortality data, it also includes summary data from these other databases which contribute to a more complete picture of cancer in Australia.

## Structure of this report

This report is divided into six major components:

- an introduction and overview of cancer in Australia in 2001;
- summary tables of incidence and mortality for all cancer sites for 2001;
- a series of incidence and mortality data tables for the most common cancer sites, and some less common but topical cancer sites, for 2001;
- an overview of some additional sources of data on cancer in Australia covering multiple causes of death, mortality by remoteness, cancer screening, expenditure on cancer, the cancer workforce, general practice management of cancer and international comparisons;
- glossary and reference sections; and
- appendixes comprising the cancer coding system and methods used in this report and state and territory registration features.

In addition, a full set of statistical tables is published separately on the AIHW's web site at <[www.aihw.gov.au](http://www.aihw.gov.au)>. Also on the web site are two interactive data cubes with cancer incidence data for Australia for 1983–2001. An interactive data cube is a multidimensional representation of data. It contains information organised into dimensions to provide fast retrieval of data and cross-tabulation facilities. Historical cancer mortality data is available from the AIHW's General Record of Incidence of Mortality (GRIM) books. For more information go to <<http://www.aihw.gov.au/mortality/whatsnew.html>>.

### Introduction and overview

The overview of cancer in Australia provides a selection of highlights from the data tables. It describes the patterns of cancer incidence and mortality by site, age, sex, and state and territory. Trends in cancer incidence and mortality are discussed and a series of graphs are provided presenting the most common cancers by sex and age group, and trends in national cancer incidence (1983–2001) and mortality (1983–2002).

### Summary tables

Summary tables of incidence and mortality for 2001 for all cancer sites are provided. These tables list numbers of new cases and deaths, and crude and age-standardised incidence and mortality rates for Australia. Cumulative rates are given for incidence, while the mortality tables provide estimates of the person-years of life lost. Sex ratios are presented in both the incidence and mortality tables.

### Series of data tables

The series of data tables for the most common or topical cancers in 2001 contain age-specific, crude, and age-standardised incidence and mortality rates for males, females and persons for each cancer site. The order of the tables is based on AACR agreed site and site groupings of the International Classification of Diseases 10th Revision (World Health Organization 1992) (Appendix A). All rates are expressed per 100,000 population and, at the Australian level, are directly age-standardised (Appendix B) to both the total estimated resident population of Australia at 30 June 2001 and the WHO 2000 World Standard Population (Appendix C).

These tables include estimates of the lifetime risk of contracting each cancer, the person-years of life lost and the numbers of each cancer as a proportion of the total (excluding non-melanoma skin cancers).

The data tables also include 5-year average annual numbers of new cancer cases and deaths, and age-standardised incidence and mortality rates for each state and territory. It should be noted that the incidence and mortality rates have been directly age-standardised to the total estimated resident population of Australia at 30 June 2001. Particular care should be taken not to compare these rates with previous Cancer Series publications where age standardisation used the 1991 Australian standard population.

Care should also be taken when comparing state and territory rates with previous Cancer Series publications – *Cancer in Australia 1989–1990 (with Projections to 1995)*, *Cancer in Australia 1986–1988* or *Cancer in Australia 1983–1985* – where age standardisation used the 1960 Segi World Standard Population instead of the current WHO 2000 Standard Population.

## **Appendixes**

The appendixes include a listing of the International Classification of Diseases 10th Revision codes used in this report; a methods section providing formulae, explanations and examples of the techniques used to present the data in the report; population data for Australia for 2001; and a summary table of state and territory cancer registry characteristics.

This report, together with a comprehensive set of Excel tables for all cancer sites, is available on the AIHW's web site at <[www.aihw.gov.au/publications](http://www.aihw.gov.au/publications)>.

# 2 Cancer in Australia

## General

Excluding non-melanoma skin cancers, there were 88,398 new cancer cases and 36,319 deaths due to cancer in Australia in 2001. This compares with 65,966 new cases and 30,928 deaths in 1991. Even allowing for the fact that a person may have more than one cancer, at the incidence rates prevailing in 2001, it would be expected that 1 in 3 men and 1 in 4 women will be diagnosed with a cancer in the first 75 years of life. Further, an estimated 257,458 potential years of life would be lost to the community each year as a result of people dying of cancer before the age of 75. Cancer currently accounts for 31% of male deaths and 26% of female deaths.

In this publication the term 'cancer site' is used to represent cancers located in specific organs or tissues as well as systemic cancers such as leukaemia and lymphoma.

## Non-melanoma skin cancers

Complete incidence data on non-melanoma skin cancer are not routinely collected by state and territory cancer registries. Two common non-melanoma skin cancers, basal cell carcinoma and squamous cell carcinoma, are not legally notifiable and therefore not routinely reported. Estimates of the frequency of treated basal cell carcinoma and squamous cell carcinoma are derived from data that have been collected in national household surveys in 1985, 1990, 1995 and 2002 (NCCI 2003).

The 2002 survey report (NCCI 2003) indicates that approximately 256,000 people were diagnosed with basal cell carcinoma and 118,000 with squamous cell carcinoma in Australia during 2002, a total of 374,000 people. Males accounted for 56% of basal cell carcinoma and 61% of squamous cell carcinoma. Persons aged 40 years and over accounted for 96% of basal cell carcinoma and almost 100% of squamous cell carcinoma, with persons aged 70 years and over accounting for 37% of basal cell carcinoma and 45% of squamous cell carcinoma.

For details of the age-specific incidence rates for the 2002 survey, please see the survey report (NCCI 2003). Age-standardised incidence estimates in the survey report are not directly comparable to incidence rates for other cancers published elsewhere in this report as survey estimates are standardised to an earlier World Standard Population.

The age-standardised incidence estimates, recalculated using the 2000 World Standard Population were, for basal cell carcinoma 1,150 per 100,000 population in males and 820 per 100,000 in females and for squamous cell carcinoma 560 per 100,000 in males and 320 per 100,000 in females. These incidence rates are considerably higher than the equivalent age-standardised rates for the next most common male cancer, prostate (88.1 per 100,000) and the next most common female cancer, breast (93.1 per 100,000).

Despite the high incidence rate of non-melanoma skin cancer, mortality rates are relatively low at 2.0 per 100,000 population for males and 0.6 per 100,000 for females, compared with the high mortality rates of male lung cancer at 36.4 per 100,000 population, male colorectal cancer (20.4 per 100,000), prostate cancer (20.2 per 100,000) and female breast cancer (18.2 per 100,000) (2001 data standardised to the 2000 World Standard Population).

Non-melanoma skin cancers are excluded from further incidence and mortality comparisons in this publication. Further data on the management of basal cell and squamous cell carcinoma in general practice are included in chapter 5.

## Most common cancers

### Persons

- Among all persons, the combination of cancers of the colon and rectum (12,844 new cases), often referred to as bowel or colorectal cancer, is the most common registrable cancer in 2001 (Table 1). Colorectal cancer, breast cancer (11,886), prostate cancer (11,191), melanoma (8,885) and lung cancer (8,275) together account for 60% of all registrable cancers in 2001.

### Males

- In males, the most common registrable cancers after prostate cancer are colorectal cancer (6,961 new cases diagnosed in 2001), lung cancer (5,384) and melanoma (5,024) (Table 1, Figure 1). These four cancers account for 60% of all registrable cancers in males.

### Females

- In females, breast cancer (11,791) is the most common registrable cancer, followed by colorectal cancer (5,883), melanoma (3,861) and lung cancer (2,891), which in total account for 60% of all registrable cancers in females.

### Cancers causing death

- The cancers most commonly causing death are lung (4,657), prostate (2,718) and colorectal (2,601) in males, and breast (2,594), lung (2,382) and colorectal (2,153) in females (Table 1).

## PYLL—person-years of life lost

The number of person-years of life lost due to cancer is generally dominated by the most common cancers due to the large numbers of cases diagnosed, rather than by those less common cancers that occur earlier in life. Lung cancer is responsible for the highest number of person-years of life lost before 75 years of age (44,978 in 2001), followed by colorectal cancer (29,768) and breast cancer (28,733) (Table 1). Cancer of the brain and nervous system is responsible for the fourth highest number of person-years of life lost (16,968). This contrasts with its ranking as the fourteenth most common cancer (1,421 new cases diagnosed in 2001). Further, the ratio of person-years life lost to new cases for cancer of the brain and nervous system (11.9) is much higher than that for lung cancer (5.4), breast (2.4) or colorectal cancer (2.3). This is a direct result of the relatively large number of younger people dying from cancer of the brain and nervous system.

## **The most common cancers by age**

The most common cancers vary depending on age (Figure 2). In people aged less than 15 years, the most common cancers diagnosed are leukaemia and cancers of the brain and central nervous system. These two cancer sites account for 37% of all cancers in this age group. In those aged 15–44 years, melanoma and breast cancer are the most common cancers, while breast, colorectal, melanoma, prostate and lung cancers are predominant in people aged over 45 years.

The ranking of the most frequently occurring cancers by age group (Figure 2) is based on the number of new cases, and for those cancers the number of deaths is also shown. However, some cancers that would be ranked in the top five cancers based on number of deaths (rather than new cases) are not presented in Figure 2. Cancers that have a substantial number of deaths in each age group that are not presented in Figure 2 are cancer of the adrenal gland (10 deaths) in the 0–14 years age group and cancer of the brain and nervous system (140) and cancer of the lung (124) in the 15–44 year age group. In the age group 45–64 years, cancers of unknown primary site (424 deaths), cancer of the brain and nervous system (391), pancreatic cancer (406), and non-Hodgkin's lymphoma (335) are responsible for a substantial number of deaths. Cancers of unknown primary site (1,930 deaths), cancer of the pancreas (1,382) and non-Hodgkin's lymphoma (1,097) are also significant causes of death in the 65 years and over age group.

## **Onset of cancer**

In 2001 the average age of first diagnosis of a cancer for males was 66 years and the median age was 69 years. The average age of first diagnosis for females was 64 years and the median age was 65 years. For the overall population, the average age of first diagnosis was 65 years and the median age was 68 years.

The population in the age groups from 50–59 years and above is increasing rapidly as the generation born during the baby boom (1946 to 1961) reaches these ages. This is leading to an increase in new cases of cancer much greater than overall population growth, despite a small decline in age-standardised incidence in recent years.



**Table 1: Most frequently occurring cancers, Australia, 2001<sup>(a), (b)</sup>**

Cancer site	New cases					Deaths				
	Number	% of all new cancer cases	ASR (A)	ASR (W)	Lifetime risk <sup>(c)</sup>	Number	% of all cancer deaths	ASR (A)	ASR (W)	PYLL <sup>(c)</sup>
<b>Males</b>										
Prostate	11,191	23.4	128.5	88.1	1 in 11	2,718	13.3	35.2	20.2	5,665
Colorectal	6,961	14.6	79.0	55.4	1 in 17	2,601	12.7	30.5	20.4	17,183
Lung	5,384	11.3	61.4	42.3	1 in 22	4,657	22.8	53.7	36.4	28,948
Melanoma	5,024	10.5	55.2	42.4	1 in 25	684	3.4	7.8	5.5	7,568
Bladder	2,258	4.7	26.6	17.5	1 in 60	633	3.1	8.0	4.8	2,155
NHL	1,923	4.0	21.4	16.1	1 in 64	787	3.9	9.2	6.3	6,628
Unknown site	1,736	3.6	20.5	13.6	1 in 80	1,213	5.9	14.7	9.4	7,173
Kidney	1,514	3.2	16.9	12.3	1 in 78	540	2.6	6.3	4.3	4,425
Stomach	1,202	2.5	13.8	9.5	1 in 104	753	3.7	8.9	5.9	5,140
Pancreas	958	2.0	11.0	7.6	1 in 133	946	4.6	11.0	7.4	6,465
<i>All cancers</i>	<i>47,820</i>	<i>100.0</i>	<i>541.4</i>	<i>387.6</i>	<i>1 in 3</i>	<i>20,417</i>	<i>100.0</i>	<i>241.2</i>	<i>160.0</i>	<i>139,913</i>
<b>Females</b>										
Breast	11,791	29.1	117.2	93.1	1 in 11	2,594	16.3	24.8	18.2	28,540
Colorectal	5,883	14.5	55.4	38.9	1 in 26	2,153	13.5	19.7	13.1	12,585
Melanoma	3,861	9.5	38.3	31.6	1 in 34	390	2.5	3.7	2.7	4,300
Lung	2,891	7.1	27.7	20.0	1 in 46	2,382	15.0	22.6	15.9	16,030
NHL	1,576	3.9	15.1	11.3	1 in 88	715	4.5	6.5	4.4	3,935
Unknown site	1,568	3.9	14.3	9.5	1 in 117	1,217	7.7	10.9	6.9	5,640
Uterus	1,537	3.8	15.1	11.7	1 in 77	299	1.9	2.8	2.0	2,225
Ovary	1,295	3.2	12.6	9.8	1 in 104	857	5.4	8.1	5.7	6,598
Kidney	944	2.3	9.1	6.8	1 in 142	386	2.4	3.6	2.4	1,923
Pancreas	900	2.2	8.2	5.5	1 in 207	865	5.4	7.8	5.1	3,908
<i>All cancers</i>	<i>40,578</i>	<i>100.0</i>	<i>393.3</i>	<i>300.3</i>	<i>1 in 4</i>	<i>15,902</i>	<i>100.0</i>	<i>147.8</i>	<i>102.2</i>	<i>117,545</i>
<b>Persons</b>										
Colorectal	12,844	14.5	66.2	46.6	1 in 21	4,754	13.1	24.5	16.5	29,768
Breast	11,886	13.4	61.2	48.0	1 in 20	2,620	7.2	13.5	9.7	28,733
Prostate	11,191	12.7	57.6	40.6	1 in 22	2,718	7.5	14.0	8.3	5,665
Melanoma	8,885	10.1	45.8	36.5	1 in 29	1,074	3.0	5.5	4.0	11,868
Lung	8,275	9.4	42.6	30.1	1 in 30	7,039	19.4	36.3	25.1	44,978
NHL	3,499	4.0	18.0	13.6	1 in 74	1,502	4.1	7.7	5.3	10,563
Unknown site	3,304	3.7	17.0	11.4	1 in 96	2,430	6.7	12.5	8.0	12,813
Bladder	2,954	3.3	15.2	10.3	1 in 96	908	2.5	4.7	2.9	2,930
Kidney	2,458	2.8	12.7	9.3	1 in 101	926	2.5	4.8	3.2	6,348
Stomach	1,902	2.2	9.8	6.8	1 in 143	1,209	3.3	6.2	4.2	8,133
<i>All cancers</i>	<i>88,398</i>	<i>100.0</i>	<i>455.3</i>	<i>337.6</i>	<i>1 in 3</i>	<i>36,319</i>	<i>100.0</i>	<i>187.1</i>	<i>127.3</i>	<i>257,458</i>

(a) Rates are expressed per 100,000 population and age-standardised to the Australian 2001 Standard Population (ASR (A)) and to the WHO 2000 World Standard Population (ASR (W)). The rates age-standardised to the two populations (World 2000 and Australia 2001) differ due to the age distributions of these populations. For example, the world population gives more weight to younger age groups where there are fewer cancers, and consequently the rate is lower compared with the Australian 2001 population. A greater weight is given to the older age groups in the Australian 2001 population where there are more cancers, and consequently these rates tend to be higher.

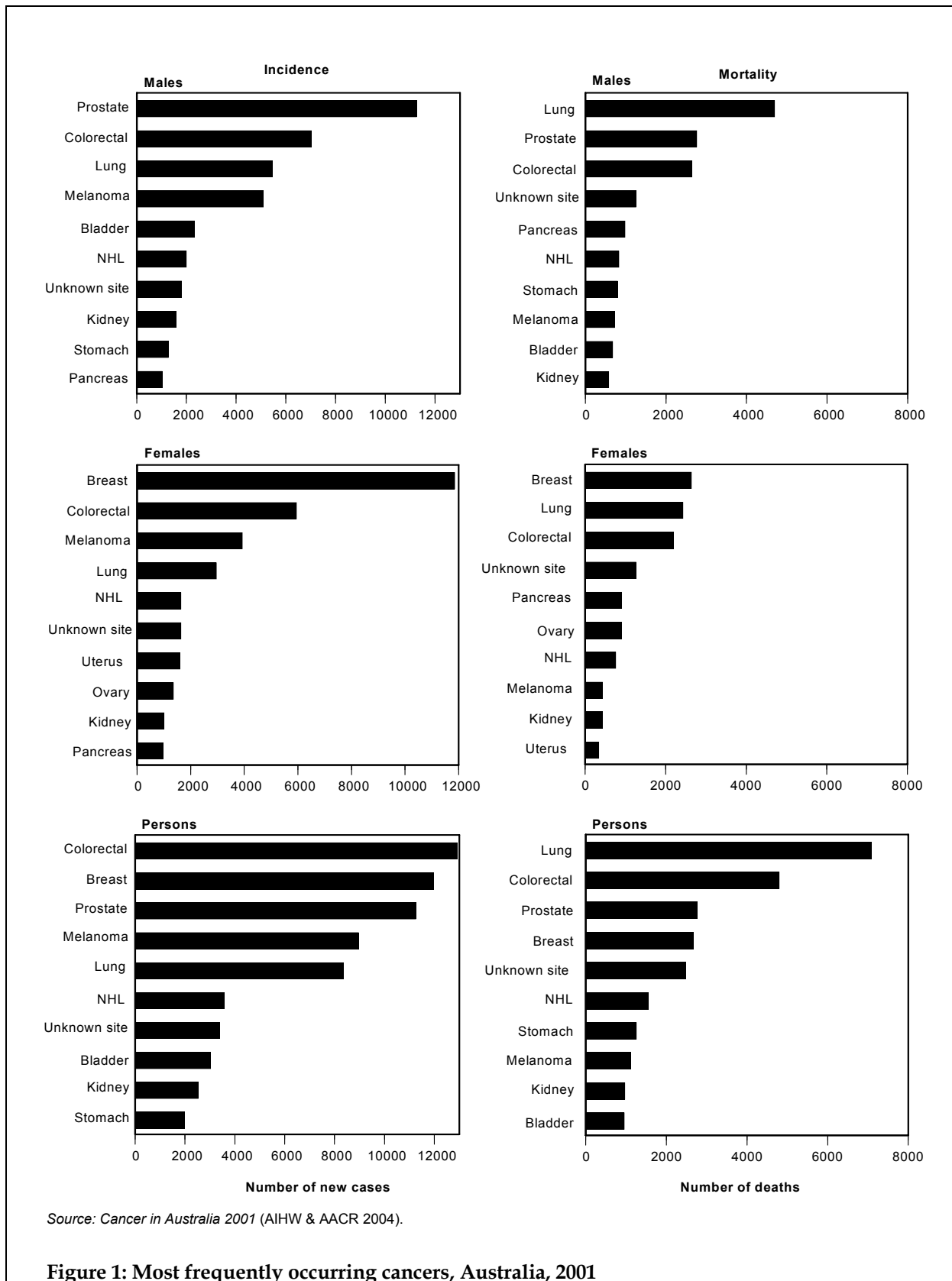
(b) Non-melanoma skin cancers, known to be the most common cancer type, are excluded from this list as basal cell carcinoma and squamous cell carcinoma, the two most common types of non-melanoma skin cancer, are not notifiable cancers.

(c) These measures are calculated for ages 0–74 years; PYLL refers to person-years of life lost. Methods for the calculation of these measures are presented in Appendix B.

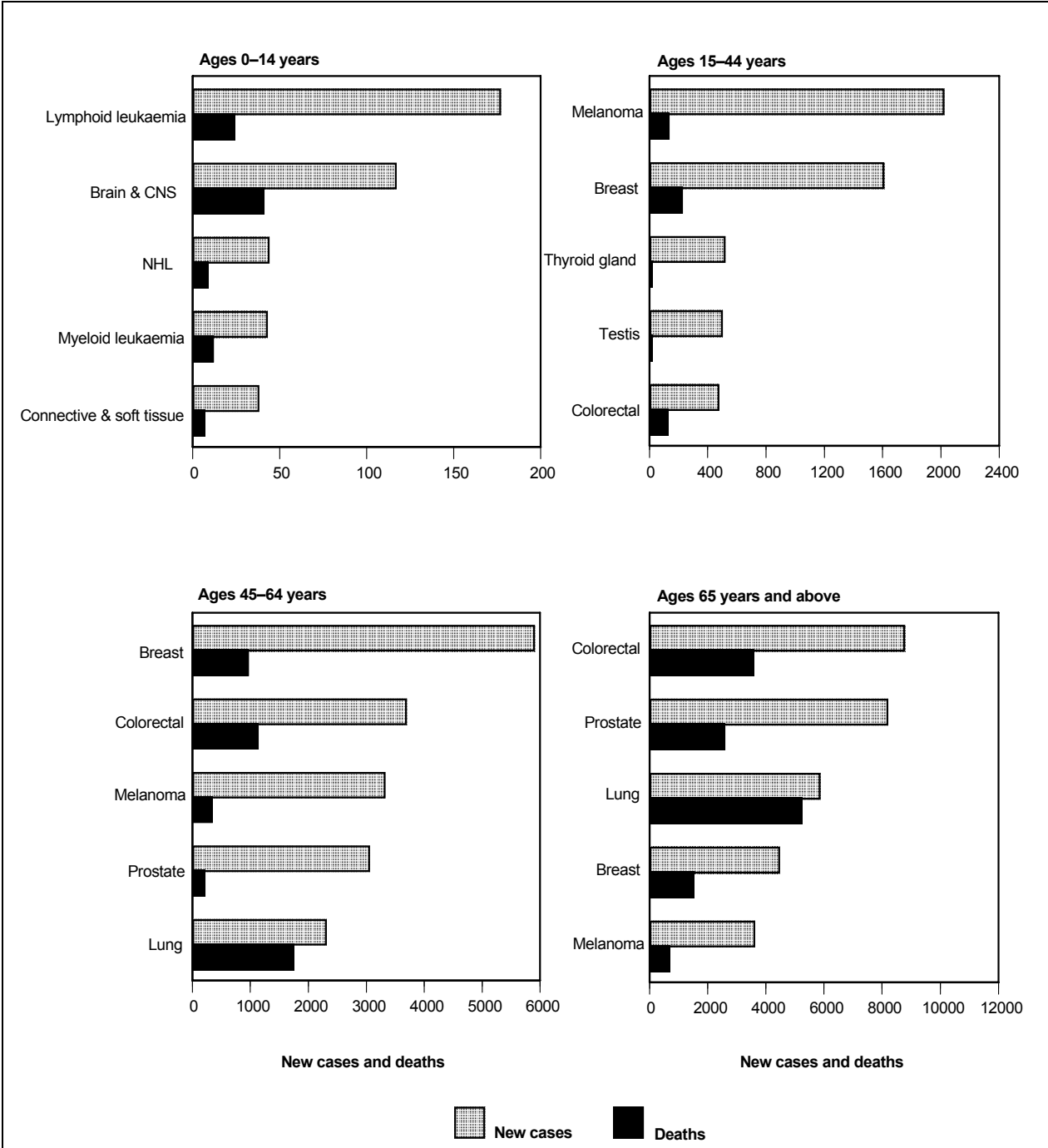
Note: NHL refers to non-Hodgkin's lymphoma. In this table colorectal cancer includes anus; kidney includes ureter and urethra; ovary includes other and unspecified female organs. Methods for calculation of these measures are presented in Appendix B.

Source: *Cancer in Australia 2001* (AIHW & AACR 2004).

## Most frequently occurring cancers



# Most frequently occurring cancers by age group



Notes  
 1. NHL refers to non-Hodgkin's lymphoma. CNS refers to central nervous system.  
 2. Each age group is graphed on a different scale.  
 Source: *Cancer in Australia 2001* (AIHW & AACR 2004).

**Figure 2: Most frequently occurring cancers by age group, ranked by number of new cases (persons), Australia, 2001**

## Age and sex differences

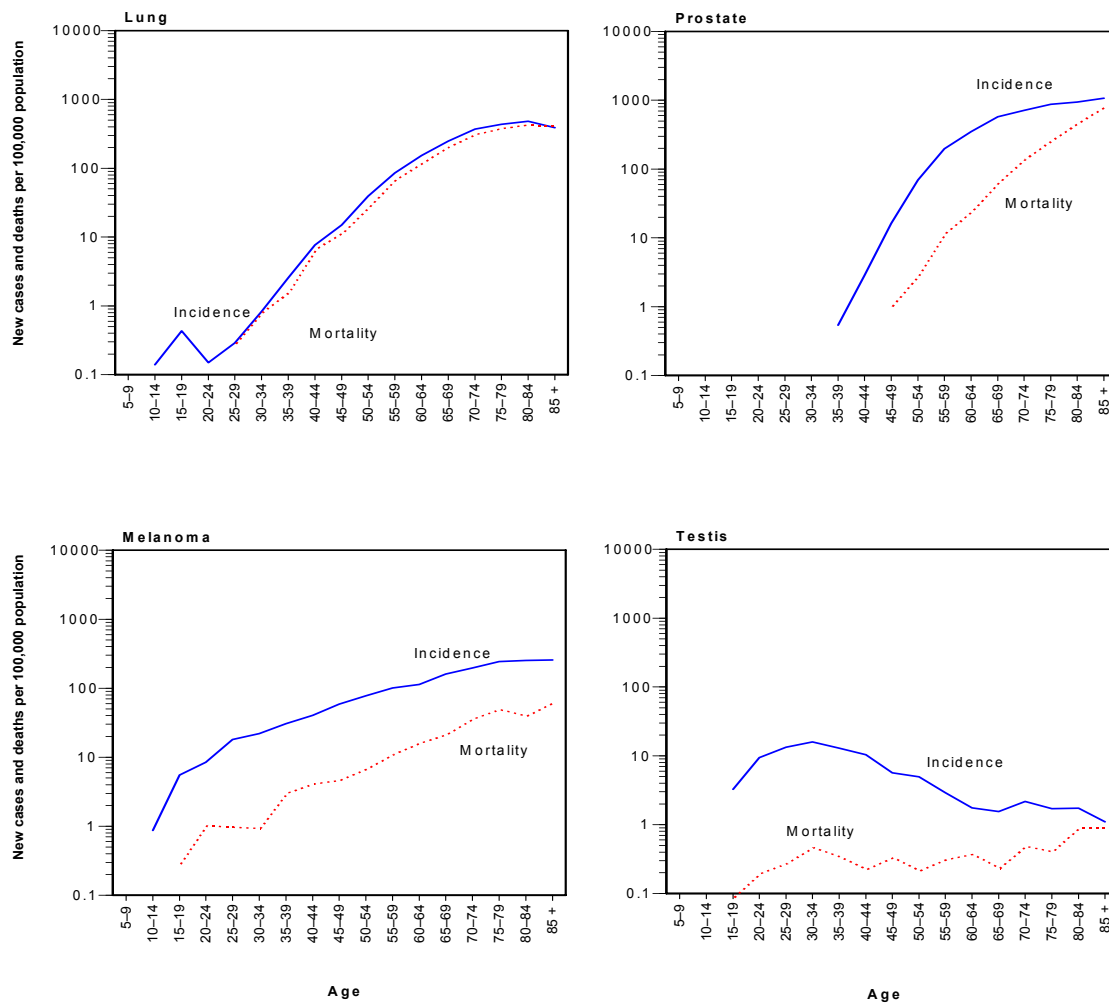
Cancer occurs more commonly in males than females. The age-standardised incidence rate in 2001 for all cancers combined (excluding non-melanoma skin cancers) was 541.4 new cases per 100,000 for males and 393.3 per 100,000 for females, resulting in an age-adjusted sex ratio of 1.4. Males have a higher incidence rate for every cancer site, except for breast, thyroid, anus, bone, and connective and soft tissue.

Of people diagnosed with cancer, 0.7% of all cancers (excluding non-melanoma skin cancers) occur in those aged less than 15 years, 9.4% in the 15–44 year age group, 32.6% in the 45–64 year age group, and 57.2% in those aged 65 years and over. While the pattern of deaths across age groups is similar to that of incidence, a larger proportion (72.5%) of cancer deaths occurs in those aged 65 years and over. Peripheral nerves and autonomic nervous system cancers are exceptions to the age pattern, with the number of cases in the 15–44 year age group exceeding that in the 45 years and over age groups.

The risk of cancer increases with age. The age-specific incidence rate in 2001 for all cancers combined (excluding non-melanoma skin cancers) was 15.2 per 100,000 population for people aged less than 15 years; 95.6 per 100,000 population for 15–44 year olds; 700.5 per 100,000 population for 45–64 year olds; and 2,190.2 per 100,000 population for people aged 65 years and over.

Age-specific incidence and mortality rates vary depending upon the cancer site (Figures 3–6). For example, because of relatively low survival lung cancer incidence and mortality rates parallel each other closely from age group 30–34 years, rising from ages 20–24 years through to 80–84 years (men) and from ages 20–24 years through to 75–79 years (women) before falling slightly in the oldest age groups. The age-specific incidence rates for melanoma of the skin, on the other hand, rise much more steadily across the whole age range. Some cancers, however, have their highest rates in early or middle life and remain fairly constant in the higher age groups (for example, cancers of the breast and cervix) or even decline with age (for example, cancer of the testis).

## Age-specific incidence and mortality rates – males

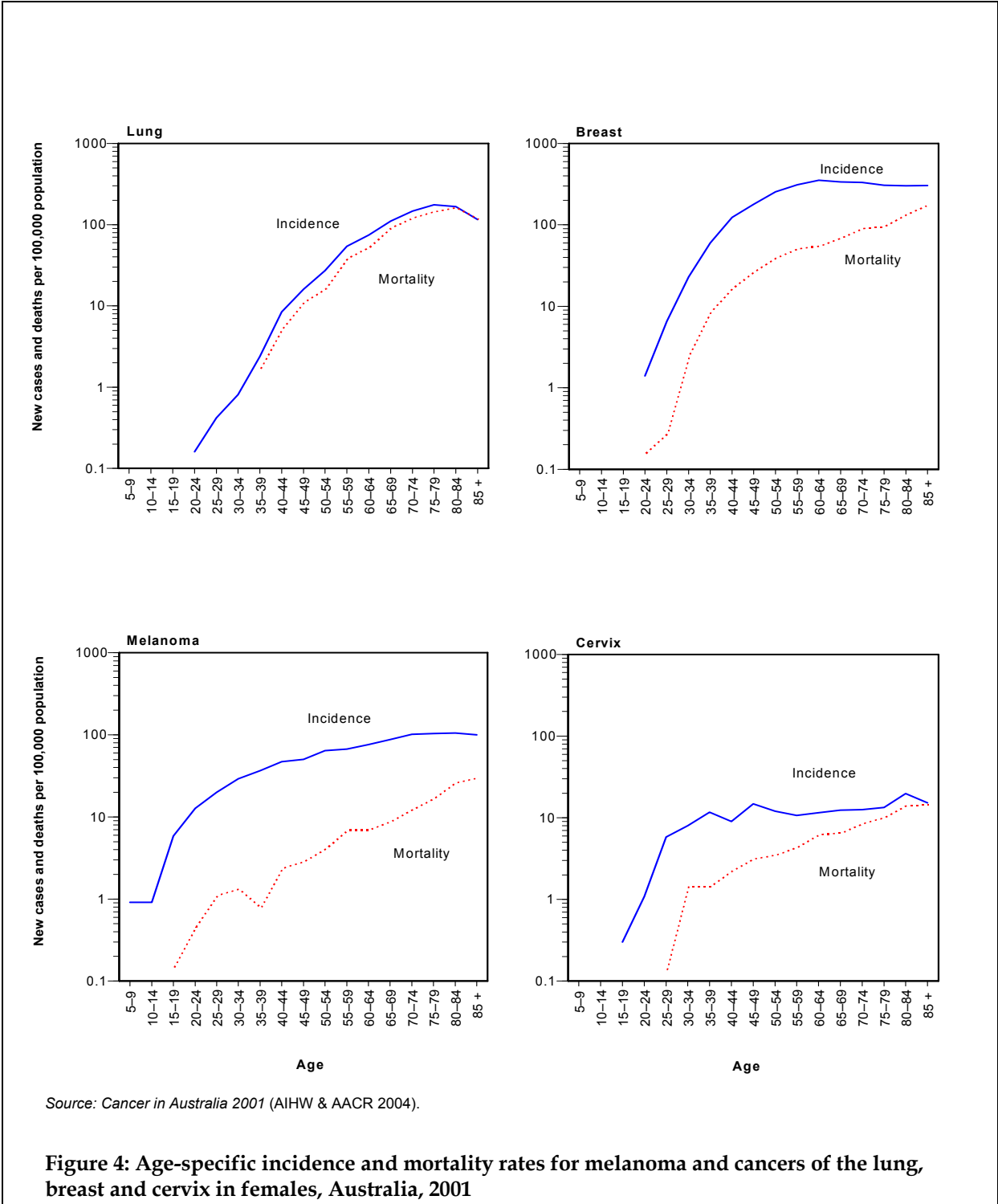


Note: Data for cancer of the testis have been averaged over 1997–2001 to provide more stable estimates.

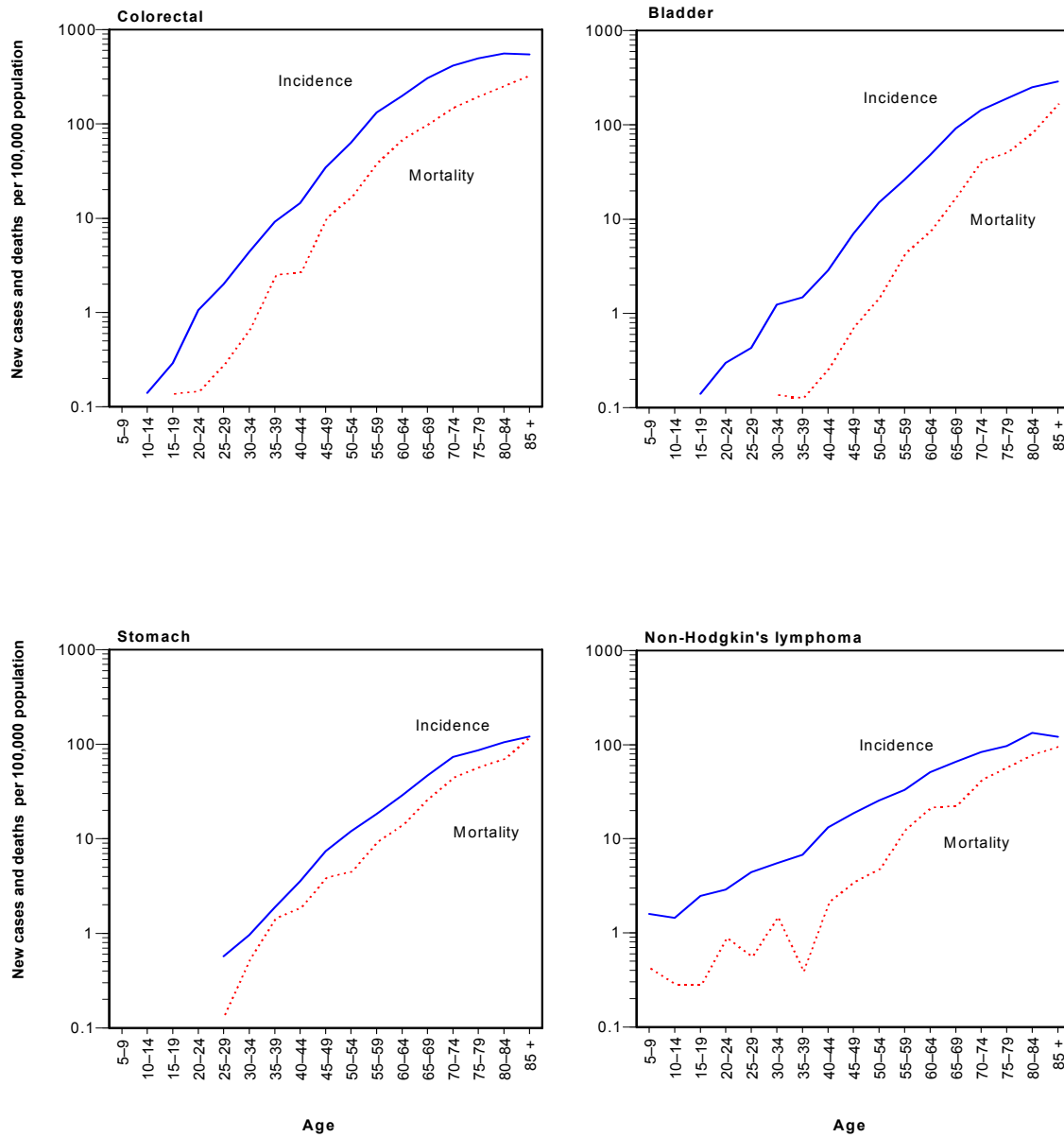
Source: *Cancer in Australia 2001* (AIHW & AACR 2004).

**Figure 3: Age-specific incidence and mortality rates for melanoma and cancers of the lung, prostate and testis in males, Australia, 2001**

### Age-specific incidence and mortality rates – females



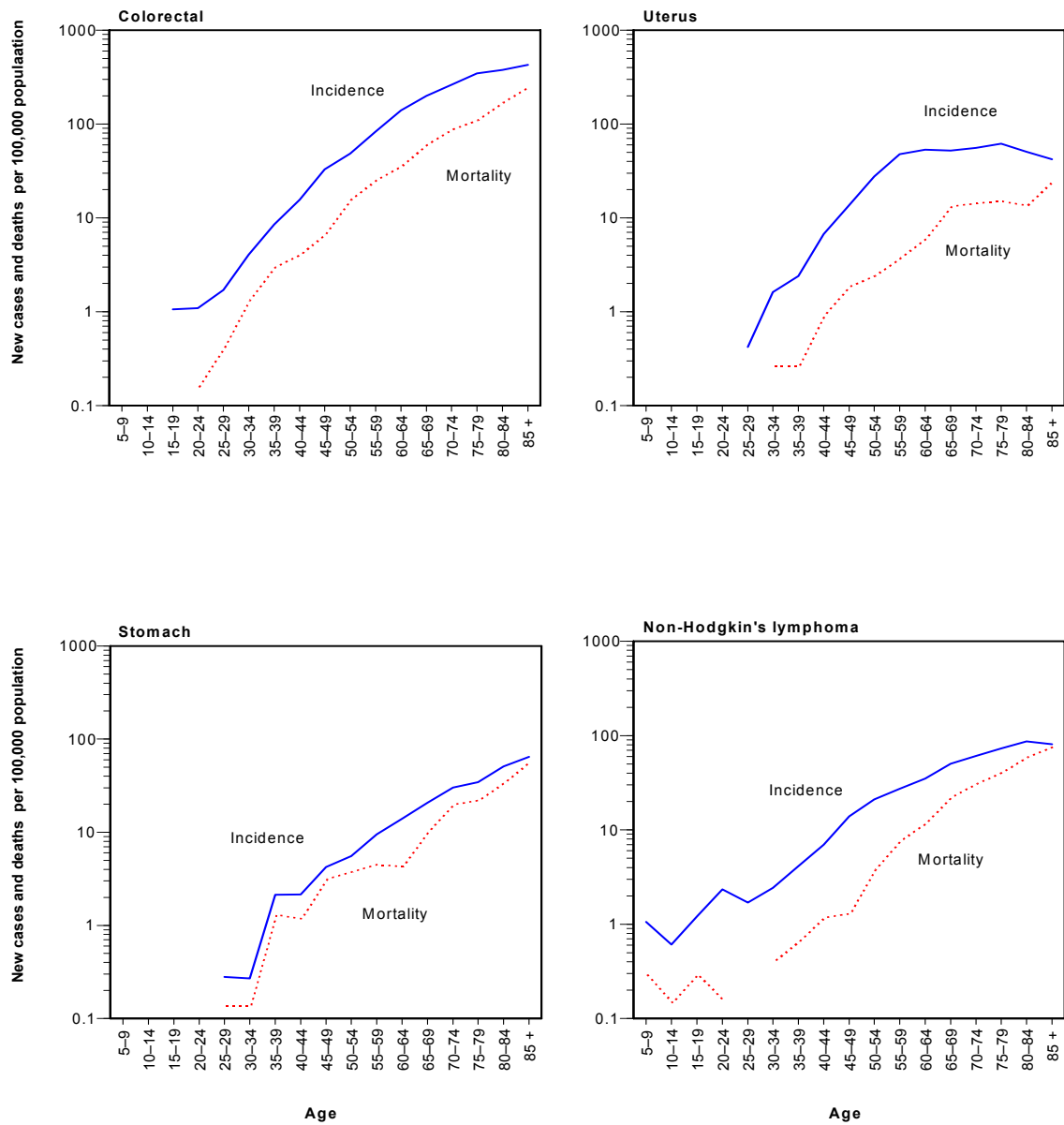
## Age-specific incidence and mortality rates – males



Source: Cancer in Australia 2001 (AIHW & AACR 2004).

**Figure 5: Age-specific incidence and mortality rates for colorectal cancer, cancers of the bladder and stomach, and non-Hodgkin's lymphoma in males, Australia, 2001**

## Age-specific incidence and mortality rates – females



Source: Cancer in Australia 2001 (AIHW & AACR 2004).

**Figure 6: Age-specific incidence and mortality rates for colorectal cancer, cancers of the uterus and stomach, and non-Hodgkin's lymphoma in females, Australia, 2001**



## Cancers attributed to smoking and alcohol consumption

Alcohol and smoking are risk factors for many cancers. In 2001, cancers attributed to excessive alcohol consumption accounted for 3.2% of all new cases of cancer, while those cases attributed to smoking accounted for 12.0% of all new cases of cancer. Cancers attributed to smoking also accounted for a large proportion of deaths from cancer in 2001 (21.5% of all cancer deaths). These data and those in Tables 54 and 55 are derived from a series of age- and sex-specific aetiological fractions developed by Ridolfo and Stevenson (2001) and from cancer incidence estimates for specific cancer sites for 2001. These fractions are based on an analysis of international and Australian studies and estimate the probability that a specific agent (alcohol or tobacco) causes a specific disease (cancer). The cancers thought to be directly attributable to smoking (excluding passive smoking) and alcohol are listed in Table 2.

**Table 2: Cancer site and percentage of new cancers attributed to excessive alcohol consumption and to smoking, Australia, 2001**

Cancer site	Males (%)	Females (%)
<b>Cancers attributable to excessive alcohol consumption</b>		
Oral cancers <sup>(a)</sup>	38	28
Oesophagus	45	36
Liver	37	29
Larynx	50	41
Female breast cancer	—	11
<b>Cancers attributable to smoking</b>		
Oral cancers <sup>(a)</sup>	52	42
Oesophagus	50	41
Stomach	12	8
Anus	39	29
Pancreas	23	16
Larynx	69	60
Lung	89	70
Vulva	—	32
Penis	21	—
Kidney	17	12
Renal pelvis	51	43
Bladder	38	28

(a) Oral cancers include C01–C06, C09–C10 and C12–C14.

Note: In editions prior to *Cancer in Australia 1999*, cancers of the uterus and cervix were included among cancers attributable to smoking. However, more recent research has shown that this is not the case.

Source: Aetiological fractions from Ridolfo & Stevenson 2001 applied to 2001 cancer incidence data.

While tobacco and alcohol have each been associated with cancer in their own right, they often occur together and may interact to produce higher or lower risks. To the extent possible, the estimates of the aetiological fractions have been derived to represent the independent contribution of each risk factor. However, it is not possible to allow for all the complexities of the interactions between risk factors using this methodology. Hence the

fractions for tobacco and alcohol cannot be summed to give a combined effect of the two risk factors.

It is estimated that 2,791 new cases of cancer were directly attributable to alcohol consumption in 2001 at a rate of 14.4 cases per 100,000 population, as were 1,291 deaths at a rate of 6.6 per 100,000 population. While other cancers may be indirectly caused by alcohol consumption in combination with other risk factors, alcohol is believed to be the primary causative agent for differing proportions of specific cancers. The mechanism by which alcohol causes cancer has not been fully determined, but the major metabolite of ethanol has been shown to be carcinogenic in animal experiments (English et al. 1995). The lifetime risk of cancers attributable to alcohol consumption is 1 in 95 for males and 1 in 75 for females. Between 1991 and 2001, the incidence rate for cancers attributable to alcohol consumption in females increased by an average of 1.2% per annum, while the male rate decreased by an average of 0.3% per annum.

Cancers attributable to smoking account for 16.5% of all new cases of cancer in males and 7.8% of all new cases of cancer in females. This large difference is attributable to the higher rates of smoking among men than women in the past 30 years. Twenty-five years ago smoking rates in men were almost double those in women. This is no longer the case. In 2001, 26% of men and 21% of women aged over 14 years were current smokers (AIHW 2003). Organs associated with the respiratory system are the ones most affected by cigarette smoke, as a result of the known carcinogens in cigarette smoke such as polycyclic aromatic hydrocarbons (Table 2). Epidemiological evidence indicates that other cancers, including cancers of the upper digestive tract, bladder, renal pelvis (kidneys) and pancreas are also associated with cigarette smoking (English et al. 1995).

Cigarette smoking is estimated to have directly caused 10,592 new cases of cancer (54.6 new cases per 100,000 population) and 7,820 deaths (40.3 per 100,000 population) in 2001. Between 1991 and 2001, the male incidence rate for cancers attributable to smoking fell by an average of 1.4% per year, while the rate for females rose by 0.7% per year. Over the same period, mortality rates fell by 1.9% per annum for males and rose by less than 0.1% per annum for females (Figure 10).

The following illustrates the improvements in the male mortality rate for cancers from the decline in smoking among men. If the 1991 age-specific rates attributable to smoking were applied to the 2001 male population there would be an additional 1,253 male deaths due to smoking in 2001. In contrast, the female mortality rate for cancers attributable to smoking has increased slightly since 1991 because of the lag effect on cancer incidence of rising rates of smoking among women in the 1960s and 1970s. There would be 33 fewer female deaths in 2001 if the 1991 rates were applied to the 2001 female population.

## **Cancer rates in the states and territories, 1997–2001**

Cancer incidence and mortality are reported here for the combined period 1997–2001 for all states and territories. Cancer registration is based on state and territory of residency of the patient at the time of diagnosis.

### **Melanoma rates**

Cancer incidence is generally similar among states and territories. However, variation in the incidence of melanoma among states creates some differences in the overall incidence rates.

An analysis of all cancers combined (excluding non-melanoma skin cancers) showed that Queensland had the highest incidence in both males (576.1 per 100,000 population in 1997–2001) and females (418.7 per 100,000 population), while the Northern Territory reported the lowest incidence with 489.6 cases per 100,000 for males and 365.2 per 100,000 for females (Table 36) because of lower incidence among Aboriginal and Torres Strait Islander people.

Melanoma risk is generally highest in the northern areas and lower in the more southerly areas, showing a correlation to exposure to ultraviolet radiation (Jelfs et al. 1994). Age-standardised mortality ranges from 3.6 deaths per 100,000 population for the Australian Capital Territory to 6.5 deaths per 100,000 population for Queensland (Table 41).

## **Incidence rates excluding skin cancers**

When the impact of melanoma and non-melanoma skin cancers are removed from the comparison, the order of states and territories with the highest and lowest cancer incidence rate for males changed with South Australia reporting the highest incidence rate for all cancers combined (excluding melanoma and non-melanoma skin cancers) among males (509.3 per 100,000 population in 1997–2001), closely followed by Victoria (500.5 per 100,000 population). The Northern Territory reported the lowest, with 452.4 cases per 100,000 population. The remaining states and territories reported the following rates for males: Queensland 498.2, the Australian Capital Territory 496.0, Tasmania 480.8, New South Wales 482.0 and Western Australia 456.0. For females the Australian Capital Territory reported the highest rate (382.1 per 100,000 population), closely followed by New South Wales (381.6 per 100,000 population). Western Australia reported the lowest (330.2 per 100,000 population). The remaining states and territories reported the following rates for females: Queensland 365.6, Victoria 359.1, South Australia 358.2, Tasmania 354.3 and the Northern Territory 330.2 per 100,000 population.

## **Mortality rates by state of usual residence**

The 1997–2001 cancer mortality rates reported for males across the states and territories range from 219.6 per 100,000 population in the Australian Capital Territory to 262.7 per 100,000 population in Tasmania. For females, the mortality rates vary from 146.7 per 100,000 population in New South Wales to 187.9 in the Northern Territory (Table 36).

These rates are in respect of deaths for which cancer was the underlying cause of death as coded by the Australian Bureau of Statistics (ABS) from death certificates. Some, but not all of the state and territory cancer registries undertake their own detailed analysis of cancer mortality and there may be differences between the figures published by the cancer registries and the ABS figures published in this report.

These differences are minimised where state privacy legislation permits the cancer registry to provide details of specific cancer type to the ABS. For states such as New South Wales, where privacy legislation prohibits such data exchange, if death data are required for the purposes of planning services they should be requested from the NSW Cancer Registry.

## **Mortality by state of registration and state of usual residence**

State and territory mortality rates in this publication refer to the state and territory **of usual residence**. However, it is not uncommon for persons diagnosed with cancer to travel interstate for treatment and end of life care, so state of usual residence at diagnosis may differ from the state of usual residence at time of death, which may affect the comparison of incidence and mortality rates in this report, especially for the Australian Capital Territory.

Even larger differences occur between the state of registration and the state of usual residence at death, especially for the Australian Capital Territory and the Northern Territory.

Of cancer deaths registered in the Australian Capital Territory during the period 1997–2001, 16.3% usually resided in another state or territory, the majority (15.1%) coming from New South Wales (Table 3).

During the same period, 6.9% of cancer deaths of usual residents of the Northern Territory were registered outside the Territory, the majority in South Australia (3.7%).

**Table 3: Cancer deaths by state of usual residence and state of registration, 1997–2001**

State of registration	State of usual residence									Total
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Other	
NSW	59,735	197	263	11	23	8	34	9	1	60,281
VIC	323	45,499	57	10	33	21	7	6	0	45,956
QLD	573	65	30,862	9	15	10	7	8	0	31,549
WA	19	14	15	15,382	6	3	1	4	5	15,449
SA	58	45	8	5	15,685	0	0	31	0	15,832
TAS	4	11	2	2	2	5,079	1	0	0	5,101
ACT	350	10	9	3	5	1	1,938	0	0	2,316
NT	5	2	6	4	8	1	0	782	0	808
<i>Total</i>	<i>61,067</i>	<i>45,843</i>	<i>31,222</i>	<i>15,426</i>	<i>15,777</i>	<i>5,123</i>	<i>1,988</i>	<i>840</i>	<i>6</i>	<i>177,292</i>
<b>Per cent of deaths registered in each state by state of usual residence</b>										
NSW	99.1	0.3	0.4	0.0	0.0	0.0	0.1	0.0	0.0	100.0
VIC	0.7	99.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	100.0
QLD	1.8	0.2	97.8	0.0	0.0	0.0	0.0	0.0	0.0	100.0
WA	0.1	0.1	0.1	99.6	0.0	0.0	0.0	0.0	0.0	100.0
SA	0.4	0.3	0.1	0.0	99.1	0.0	0.0	0.2	0.0	100.0
TAS	0.1	0.2	0.0	0.0	0.0	99.6	0.0	0.0	0.0	100.0
ACT	15.1	0.4	0.4	0.1	0.2	0.0	83.7	0.0	0.0	100.0
NT	0.6	0.2	0.7	0.5	1.0	0.1	0.0	96.8	0.0	100.0
<i>Total</i>	<i>34.4</i>	<i>25.9</i>	<i>17.6</i>	<i>8.7</i>	<i>8.9</i>	<i>2.9</i>	<i>1.1</i>	<i>0.5</i>	<i>0.0</i>	<i>100.0</i>
<b>Per cent of deaths in state of usual residence by state of registration</b>										
NSW	97.8	0.4	0.8	0.1	0.1	0.2	1.7	1.1	16.7	34.0
VIC	0.5	99.2	0.2	0.1	0.2	0.4	0.4	0.7	0.0	25.9
QLD	0.9	0.1	98.8	0.1	0.1	0.2	0.4	1.0	0.0	17.8
WA	0.0	0.0	0.0	99.7	0.0	0.1	0.1	0.5	83.3	8.7
SA	0.1	0.1	0.0	0.0	99.4	0.0	0.0	3.7	0.0	8.9
TAS	0.0	0.0	0.0	0.0	0.0	99.1	0.1	0.0	0.0	2.9
ACT	0.6	0.0	0.0	0.0	0.0	0.0	97.5	0.0	0.0	1.3
NT	0.0	0.0	0.0	0.0	0.1	0.0	0.0	93.1	0.0	0.5
<i>Total</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>

Note: All deaths during the 5-year period with year of death 1997 to 2001.

Source: AIHW mortality database.

## **Cancers attributed to smoking**

Lung cancer incidence rates (including the trachea and bronchus) are highest in the Northern Territory (for males 77.9 cases per 100,000 population, for females 40.3) (Table 40). The lowest lung cancer incidence rates are reported for males in the Australian Capital Territory (69.7 per 100,000 population) and for females in South Australia (26.7).

State and territory variations in cancers attributed to smoking generally reflect those observed for lung cancer (Table 55). The Northern Territory reported the highest incidence rates for males and females (116.5 and 41.2 per 100,000 population respectively). The Australian Capital Territory reported the lowest smoking-related cancer incidence rates for males and females (69.7 and 26.7 per 100,000 population respectively). Death rates from cancers attributed to smoking were highest in the Northern Territory for both males and females (89.7 and 32.1 per 100,000 population respectively).

These patterns of incidence probably reflect smoking behaviour approximately 10–25 years ago, due to the time lag between exposure to carcinogens in the tobacco smoke and the diagnosis of cancer. Differentials in smoking rates between the states and territories reported in the 2001 National Health Survey (ABS 2002) are likely to affect smoking-related cancer incidence rates in the future. Queensland (52.9%) reported the highest proportion of current and ex-smokers, and the Australian Capital Territory the lowest at 49.3%, with the national average 51.5%.

## **Breast cancer and prostate cancer**

The Australian Capital Territory reported the highest incidence rates for female breast cancer (122.1 per 100,000), followed by South Australia (117.4 per 100,000), Queensland (117.2 per 100,000), Victoria (114.9 per 100,000), Western Australia (112.9 per 100,000), New South Wales (112.3 per 100,000) and Tasmania (104.1 per 100,000). The Northern Territory reported the lowest incidence rate (97.9 cases per 100,000 population) (Table 42).

The Australian Capital Territory reported high incidence rates of prostate cancer (162.4 per 100,000 population), while considerably lower rates were reported in the Northern Territory (103.5 per 100,000 population) (Table 46), a rate influenced by the low Indigenous population incidence rates (d'Espaignet et al. 1996). These interstate variations in prostate cancer incidence might also be explained by differences in the time and rate of uptake of prostate-specific antigen (PSA) testing in the states and territories (Smith et al. 1998; Threlfall et al. 1998).

## **Cervical cancer**

The Northern Territory reported the highest incidence rates for cervical cancer (14.6 per 100,000 population). A major contributor to this incidence rate is the high rate of cervical cancer among the Indigenous population, which d'Espaignet et al. (1996) indicated was up to three times the rate of the non-Indigenous population. This situation is also reflected in a high mortality rate (6.7 deaths per 100,000 population). This high mortality rate may be an indicator of late-stage detection of these cancers.

The remaining states and territories reported the following incidence rates: 6.5 for the Australian Capital Territory, 6.9 for South Australia, 7.2 for Victoria, 8.5 for New South Wales, 8.6 for both Western Australia and Tasmania and 9.3 for Queensland per 100,000

population. Mortality rates for the states and territories, with the exception of the Northern Territory, ranged from 2.0–3.2 deaths per 100,000 population.

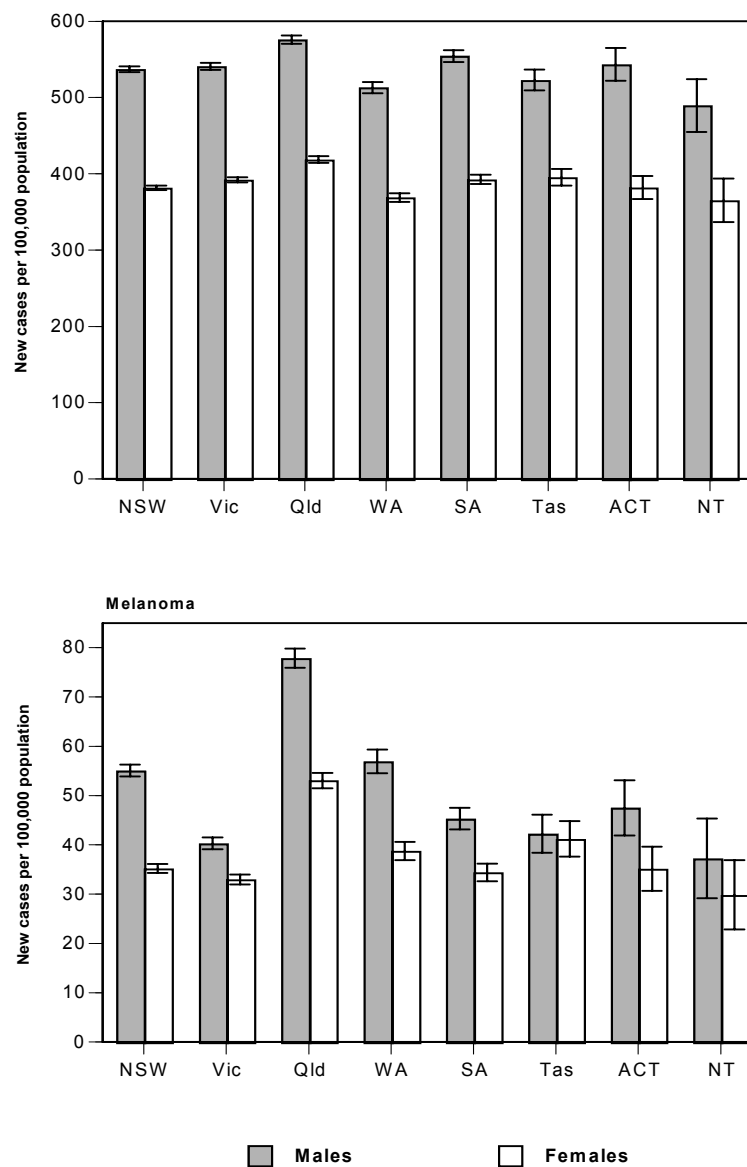
## **Explanations for variations**

Differences in state and territory cancer incidence rates may be explained by variations in underlying cancer risk, the availability and utilisation of diagnostic procedures, reporting and coding inconsistencies, and normal incidence rate fluctuations. A case in point is bladder cancer (Table 48), where state and territory comparisons vary by more than 100%. In the Northern Territory the incidence rate is 7.3 new cases per 100,000 population compared to 20.3 in Queensland and 19.8 in Victoria. This is largely due to differences in local coding practices, particularly in regard to the inclusion or exclusion of tumours of uncertain behaviour. One of the main functions of the AACR is to identify such differences in coding practice and agree on strategies to standardise coding and produce comparable state and territory data that are also comparable to published international statistics.

Incidence rates for several types of cancer published in this report are considerably lower for the Northern Territory than for other states. These differences are predominantly due to low incidence of these cancers in Indigenous Australians, who comprise 29% of the Northern Territory population (Condon et al. 2001).

Care should be taken when interpreting incidence rates, especially for less common cancers and for states and territories with small populations. To reduce the problems of statistical variation due to a small number of cases, the numbers and rates presented for the states and territories in Tables 36 to 55 in this publication are annual averages of the 5-year period 1997–2001. For annual sex- and cancer-specific data, or data cross-classified by other variables (for example, age, geographic area), the state and territory cancer registries should be contacted directly.

## All cancers and melanoma incidence rates by sex, states and territories



Source: *Cancer in Australia 2001* (AIHW & AACR 2003).

**Figure 7: Age-standardised incidence rates (95% confidence intervals) for all cancers (excluding non-melanoma skin cancers) and for melanoma, states and territories, 1997-2001**



# Mesothelioma data in the National Cancer Statistics Clearing House

## Introduction

Mesothelioma is a usually fatal cancer that is characterized by the extremely long time between exposure to the known carcinogen, asbestos, and the eventual diagnosis of the disease. The latent interval between exposure and the development of mesothelioma is often about 30 years (Underwood 1996). It has a poor survival record, with people not usually surviving more than 2 years following diagnosis.

The Australian Mesothelioma Register was set up in 1986 by the National Occupational Health and Safety Commission (NOHSC) which has been publishing annual monitoring reports ever since ([www.nohsc.gov.au](http://www.nohsc.gov.au)). The Register includes occupational, industry and household exposure to asbestos. In 2004 NOHSC was abolished and its functions absorbed within the Department of Employment and Workplace Relations (DEWR). Negotiations are being held between NOHSC and AIHW to transfer the Register to the Institute in 2005.

## Incidence and mortality

The National Cancer Statistics Clearing House at AIHW includes complete incidence and mortality data for mesothelioma because it is a cancer and therefore notifiable to all state and territory cancer registries.

While national incidence data are available back to the commencement of records in the NCSCH in 1982, mesothelioma mortality data are only available from 1997 from the commencement of ICD-10 coding of mortality by the Australian Bureau of Statistics. It was not included as a separate cancer in ICD-9.

## Incidence and mortality trends

Because of the high fatality rate and relatively short survival after diagnosis, incidence and mortality numbers of cases and rates are similar. Trends are as follows:

- The age-standardised incidence per 100,000 population increased from 1.2 in 1982 to 2.9 in 2001.
- The numbers of new cases per year has increased from around 150 in the early 1980s to 567 in 2001, while the peak number of recorded deaths to date was 519 in 2001.
- Although female incidence is substantially lower than male incidence, the age-standardised rate for females has more than tripled since the early 1980s to 1.0 per 100,000 women, while the male rate has more than doubled during the same period to 5.3 per 100,000 males.

Other features of mesothelioma are:

- The median age at diagnosis for men is 70.0 years and median age at death is also 70.0 years.
- For women, the median age at diagnosis is 71.0 years and median age at death 72.0 years.

**Table 4: New cases and deaths for mesothelioma ICD-10 C45, all ages (0–85+), Australia, 1982–2002**

Year of diagnosis	New cases			Year of death	Deaths		
	Males	Females	Persons		Males	Females	Persons
1982	134	22	156	1982	n.a	n.a	n.a
1983	130	14	144	1983	n.a	n.a	n.a
1984	149	18	167	1984	n.a	n.a	n.a
1985	177	24	201	1985	n.a	n.a	n.a
1986	196	30	226	1986	n.a	n.a	n.a
1987	176	29	205	1987	n.a	n.a	n.a
1988	243	32	275	1988	n.a	n.a	n.a
1989	229	38	267	1989	n.a	n.a	n.a
1990	258	35	293	1990	n.a	n.a	n.a
1991	260	46	306	1991	n.a	n.a	n.a
1992	287	38	325	1992	n.a	n.a	n.a
1993	318	51	369	1993	n.a	n.a	n.a
1994	372	47	419	1994	n.a	n.a	n.a
1995	332	58	390	1995	n.a	n.a	n.a
1996	361	53	414	1996	n.a	n.a	n.a
1997	391	75	466	1997	353	63	416
1998	412	59	471	1998	360	43	403
1999	397	76	473	1999	333	57	390
2000	399	78	477	2000	375	61	436
2001	460	107	567	2001	434	85	519
				2002*	400	80	480

\* Refers to year of registration.

n.a. refers to not available.

Sources: National Cancer Statistics Clearing House and AIHW National Mortality Database.

**Table 5: Age-standardised incidence and mortality rates for mesothelioma ICD-10 C45, all ages (0–85+), Australia, 1982–2002**

Age-standardised rates for all ages (0-85+)							
Year of diagnosis	Males	Females	Persons	Year of death	Males	Females	Persons
1982	2.3	0.3	1.2	1982	n.a	n.a	n.a
1983	2.1	0.2	1.1	1983	n.a	n.a	n.a
1984	2.4	0.3	1.2	1984	n.a	n.a	n.a
1985	3.0	0.3	1.5	1985	n.a	n.a	n.a
1986	3.1	0.4	1.6	1986	n.a	n.a	n.a
1987	2.6	0.4	1.4	1987	n.a	n.a	n.a
1988	3.8	0.4	1.9	1988	n.a	n.a	n.a
1989	3.5	0.5	1.8	1989	n.a	n.a	n.a
1990	3.9	0.4	1.9	1990	n.a	n.a	n.a
1991	3.7	0.6	2.0	1991	n.a	n.a	n.a
1992	4.0	0.4	2.1	1992	n.a	n.a	n.a
1993	4.4	0.6	2.3	1993	n.a	n.a	n.a
1994	5.0	0.5	2.6	1994	n.a	n.a	n.a
1995	4.4	0.7	2.3	1995	n.a	n.a	n.a
1996	4.7	0.6	2.4	1996	n.a	n.a	n.a
1997	4.9	0.8	2.7	1997	4.5	0.7	2.4
1998	5.1	0.6	2.6	1998	4.5	0.5	2.2
1999	4.8	0.8	2.6	1999	4.1	0.6	2.1
2000	4.7	0.8	2.5	2000	4.4	0.6	2.3
2001	5.3	1.0	2.9	2001	5.0	0.8	2.7
				2002*	4.4	0.7	2.4

Note: Rates are age-standardised to the 2001 Australian Population Standard.

\* Refers to year of registration.

n.a. refers to not available.

Sources: National Cancer Statistics Clearing House and National Mortality Database, AIHW 2004.

**Table 6: New cases and deaths for mesothelioma ICD10 C45 by age group and sex, Australia, 2001**

Age group	New cases			Deaths		
	Males	Females	Persons	Males	Females	Persons
Less than 55 years	36	13	49	21	3	24
55–59	38	15	53	35	3	38
60–64	57	8	65	46	4	50
65–69	76	11	87	60	3	63
70–74	84	23	107	72	16	88
75–79	78	18	96	64	15	79
80–84	59	12	71	41	6	47
85+	32	7	39	28	6	34
Total	460	107	567	375	61	436
Mean age at diagnosis/death:	70.0	68.7	69.8	69.9	70.2	70.0
Median age at diagnosis/death:	70.0	71.0	71.0	70.0	72.0	71.0

Sources: National Cancer Statistics Clearing House and AIHW National Mortality Database.

# 3 Cancer trends

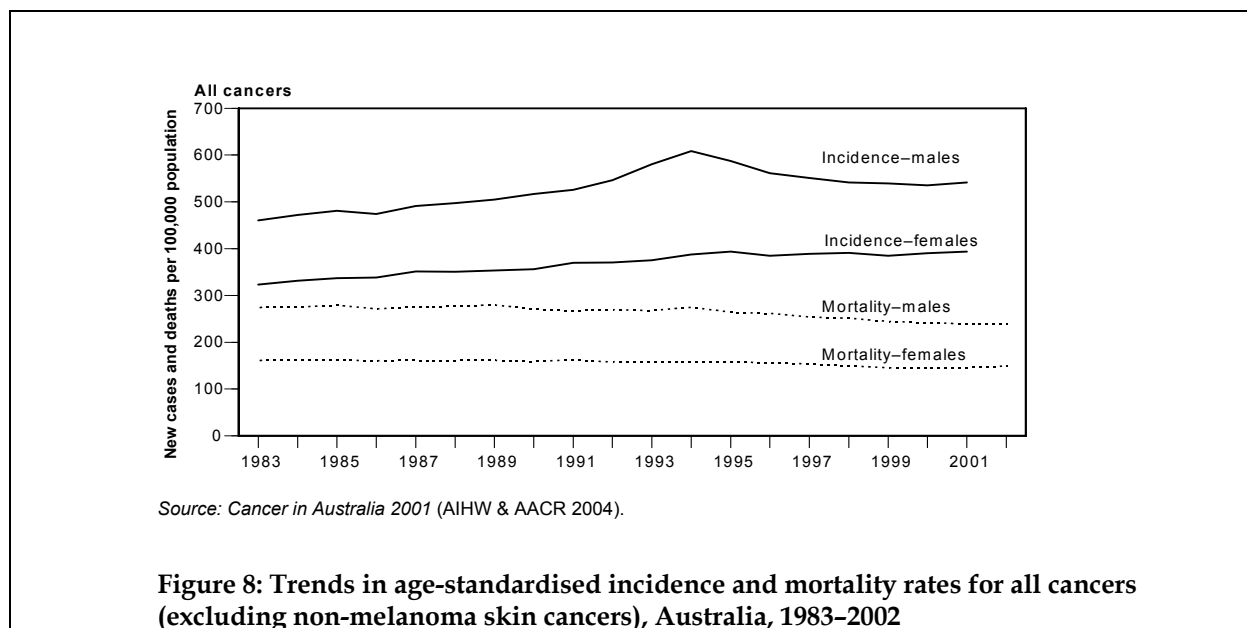
## National trends in cancer incidence and mortality

National cancer incidence and mortality rates for the most common cancer sites are presented in Figures 8–14. Incidence data are presented for the period 1983–2001 while mortality data are presented for the period 1983–2002.

The trends in incidence and mortality rates vary with the type of cancer. Some rates have shown an increase since 1983 while others have remained relatively stable or decreased. In assessing these trends it is important to recognise that small changes in the trend in the most common cancers (for example, breast, prostate) can mean a substantial shift in the numbers of new cases or deaths, whereas the same shift in less common cancers can have a relatively small impact. For example, a 1% increase in the breast cancer incidence rate results in an increase of approximately 118 new cases, whereas the same percentage increase in cervical cancer incidence would result in approximately seven new cases.

Between 1991 and 2001, age-standardised incidence rates for all cancers combined (except non-melanoma skin cancers) increased for males by an average of 4.4% per annum until 1995 and then declined by an average of 1.3% per annum until 2001. For females, age-standardised rates increased by an average of 1.5% until 1995 and then fluctuated around this level through to 2001 (Figure 8). These incidence rates have been strongly influenced by the steady rise in breast cancer incidence and the rise and fall of prostate cancer incidence during this period.

Between 1991 and 2001, age-standardised mortality rates for all cancers combined (except non-melanoma skin cancers) hovered around 270 cases per 100,000 for males until 1995 and then decreased by an average of 1.8% through to 2001. For females the age-standardised rates remained close to 160 cases per 100,000 until 1997 and then declined by an average of 1.4% through to 2001.



The number of new cases of cancer increased by 34.0% from 65,966 in 1991 to 88,398 in 2001 while the number of deaths increased by 17.4% from 30,928 in 1991 to 36,319 in 2001.

### **Prostate cancer**

Prostate cancer incidence rates were relatively stable up until 1989 but between 1990 and 1994 there was a dramatic rise in the number of new cases of prostate cancer registered (Figure 9). This upward trend has been attributed to increased detection of the disease through increased investigations, particularly the introduction of PSA testing (introduced around 1990). However, from 1994 to 1997 the age-standardised prostate cancer incidence rate fell by 30%. There has been little change between the 1998 and 2001 rate. PSA tests are specifically designed to identify cancers before the onset of clinical symptoms. Many of these prevalent cancers may not show any symptoms, and therefore would not be detected except for PSA testing. Much of the rise in the incidence rate of prostate cancer can be attributed to detection of these prevalent cancers. The recent decline in the incidence rate, indicates a return towards the underlying rate, removing the effect of these previously undetected cases. The death rate from prostate cancer, which is significantly lower than the incidence rate, decreased by 1.8% per annum between 1991 and 2001.

### **Breast cancer**

Among females, breast cancer is the most frequently diagnosed cancer and it is the most common cause of cancer-related death. The incidence of breast cancer in females rose from 100.4 cases per 100,000 population in 1991 to 117.2 cases per 100,000 population in 2001. The breast cancer incidence rate increased on average 1.4% per annum between 1991 and 2001 (Figure 9). From 1991 to 2001 the breast cancer mortality rates declined by an average of 2.2% per year.

### **Colorectal cancer**

For colorectal cancer, both the male and female incidence rates have increased since 1991 by an average of 0.3% and 0.1% respectively per year. Mortality rates have fallen steadily – the male rate decreased 1.2% per annum between 1991 and 2001 and the female rate decreased 1.6% (Figure 9).

### **Lung cancer**

Between 1991 and 2001, the incidence and mortality of lung cancer among males fell by an average of 2.1% per year (Figure 10). These declining rates are attributed to decreased tobacco smoking among men 10 to 20 years earlier, and represent the lowest incidence rate (61.4 new cases per 100,000 population) recorded since national data collection began in 1982. In contrast, lung cancer incidence among females increased by 1.2% per annum between 1991 and 2001. The death rate from lung cancer among females also increased on average by 1.1% per annum between 1991 and 2001.

### **Melanoma**

The incidence rate for melanoma among males and females increased between 1991 and 2001 on average by 2.1% and 1.2% per year respectively, some of this increase due to improved registration of this cancer. Mortality rates for males increased by 0.5% per annum between 1996 and 2001 while the female rates increased by 0.2% per annum between 1991 and 2001 (Figure 10).

## **Non-Hodgkin's lymphoma**

The incidence of non-Hodgkin's lymphoma increased by an average of 0.7% per year in males and 1.2% in females between 1991 and 2001 (Figure 11). During the same period the annual mortality rate in males decreased by 0.4% while for females there was an increase of 0.2% during the same period.

## **Cancer of the bladder**

The incidence of bladder cancer for males increased between 1991 and 2001 by an average of 0.1% per annum (Figure 11). Some of the increase in male incidence may be a result of the increased use of screening for prostate cancer leading to a diagnosis of bladder cancer as part of the diagnostic assessment. The female incidence rate increased by an average of 0.7% per annum over the same period. Mortality rates decreased for both males and females between 1991 and 2001 – 0.2% per annum and 0.5% per annum respectively.

## **Cancer of the stomach**

Stomach cancer incidence fell by an average of 2.3% and 1.6% per year for males and females respectively over the period 1991–2001 (Figure 11). Mortality rates decreased substantially for both sexes over the 1991 to 2001 period, by 3.4% in males and 3.6% in females on average per annum.

## **Leukaemias**

The incidence rate for leukaemias in males and females decreased between 1991 and 2001 by an average of 0.5% and 0.3% respectively per year (Figure 12). During the same time the mortality rates increased by 0.1% per annum for males and decreased by 0.7% per annum for females.

## **Brain cancer**

Incidence of brain cancer between 1991 and 2001 increased by an average of 0.1% per annum in males and decreased by an average of 0.8% per annum in females (Figure 12). The mortality rate over the same period remained stable for males and decreased on average for females by 0.4% per year.

## **Cancer of the pancreas**

Between 1991 and 2001, the male incidence and mortality rates for cancer of the pancreas fell annually by an average of 0.3% and 0.2% respectively. In contrast, over the same period, the female incidence rate remained stable while the mortality rate increased by an average of 0.2% per year (Figure 12).

## **Cervical cancer**

The age-standardised incidence rate for cervical cancer declined by an average of 6.2% per annum between 1991 and 2001 (Figure 13). Mortality rates have fallen by an average of 5.2% per year since 1991. These gains are due, in part, to the success of the National Cervical Screening Program in both detecting pre-cancerous abnormalities and in detecting cervical cancer at an early stage.

## **Cancer of the uterus**

The incidence rate for cancer of the uterus increased on average by 0.3% per year between 1991 and 2001. The mortality rate decreased 1.6% per annum in the same period (Figure 13).

### **Cancer of the ovary**

The incidence and mortality rates for cancer of the ovary declined on average by 0.4% and 0.7% per year between 1991 and 2001 respectively (Figure 13).

### **Cancer of the kidney**

Between 1991 and 2001, male and female incidence rates for cancer of the kidney increased by an average of 1.6% and 0.9% per annum respectively. Mortality rates increased by 0.7% per annum for males and decreased by 1.1% for females (Figure 14).

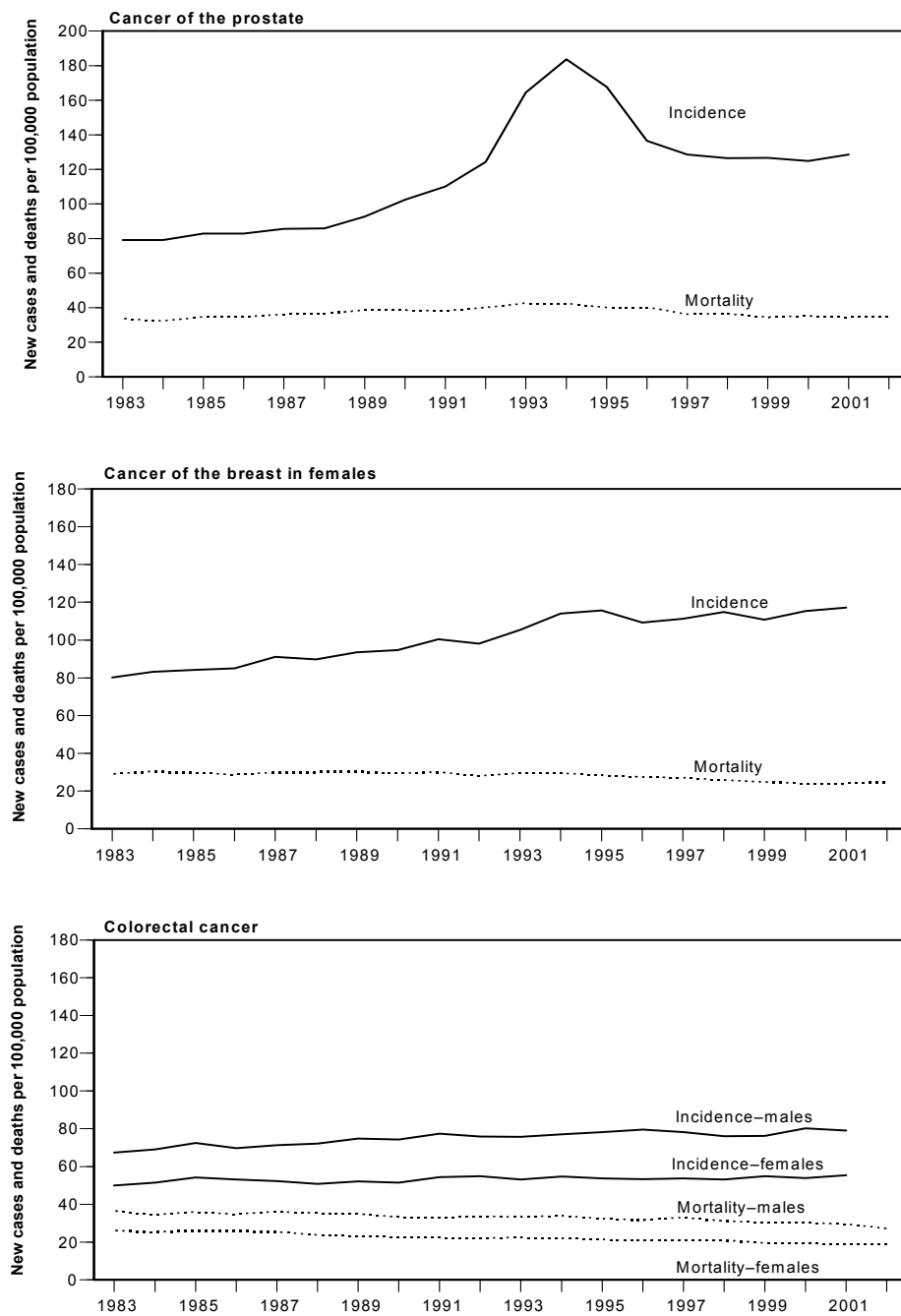
### **Cancer of the testis**

The incidence rate for testicular cancer increased on average by 1.8% per annum between 1991 and 2001. The mortality rate declined on average by 3.7% per annum over the same period (Figure 14).

### **Cancers of unknown primary site**

'Cancers of unknown primary site' is a category that captures cancer diagnoses which cannot be attributed to a particular body site. While some of these cancers have common features, at least in terms of aetiology, behaviour and outcome, others are a mixed collection. This makes it difficult to interpret with certainty the patterns of these cancers, particularly for mortality where often little histological evidence is available to identify a cancer site. Although there are many cancers in this category, it is important to know the current trends, given that this cancer group represents about 3.7% of new cases and 6.7% of deaths. Between 1991 and 2001 mortality rates decreased on average for both males and females by 3.4% and 2.5% per annum respectively. Incidence rates declined for both males and females on average by 1.9% and 1.4% per annum respectively (Figure 14). This may reflect a tendency for clinicians to investigate cancer cases more extensively, or for patients to present earlier with symptoms, before further investigation becomes unfruitful, resulting in fewer cases being classified as cancers of unknown primary site.

## Prostate, breast and colorectal cancer

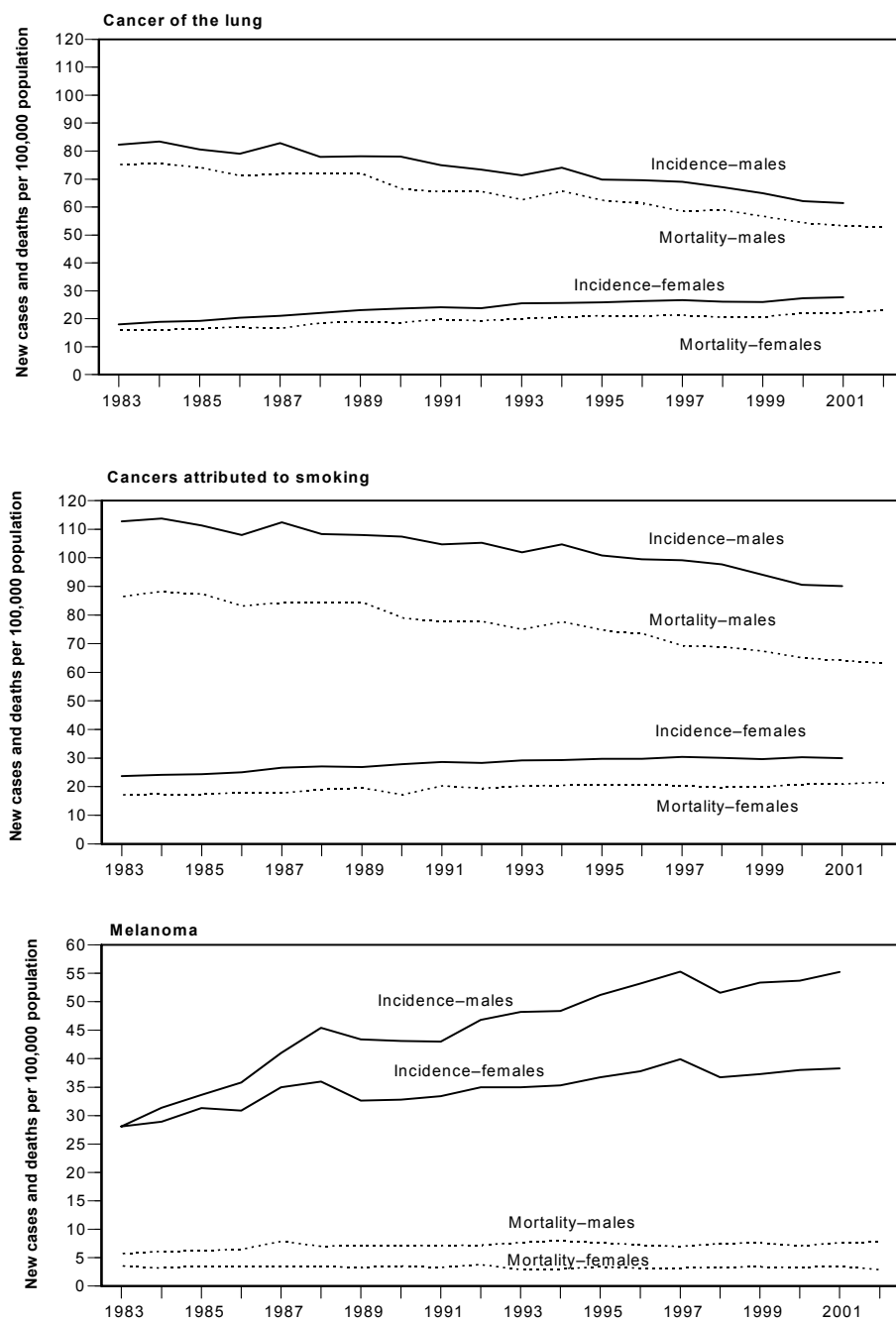


Source: *Cancer in Australia 2001* (AIHW & AACR 2004).

**Figure 9: Trends in age-standardised incidence and mortality rates for prostate, breast and colorectal cancer, Australia, 1983–2002**



## Cancer of the lung, smoking-related cancers and melanoma

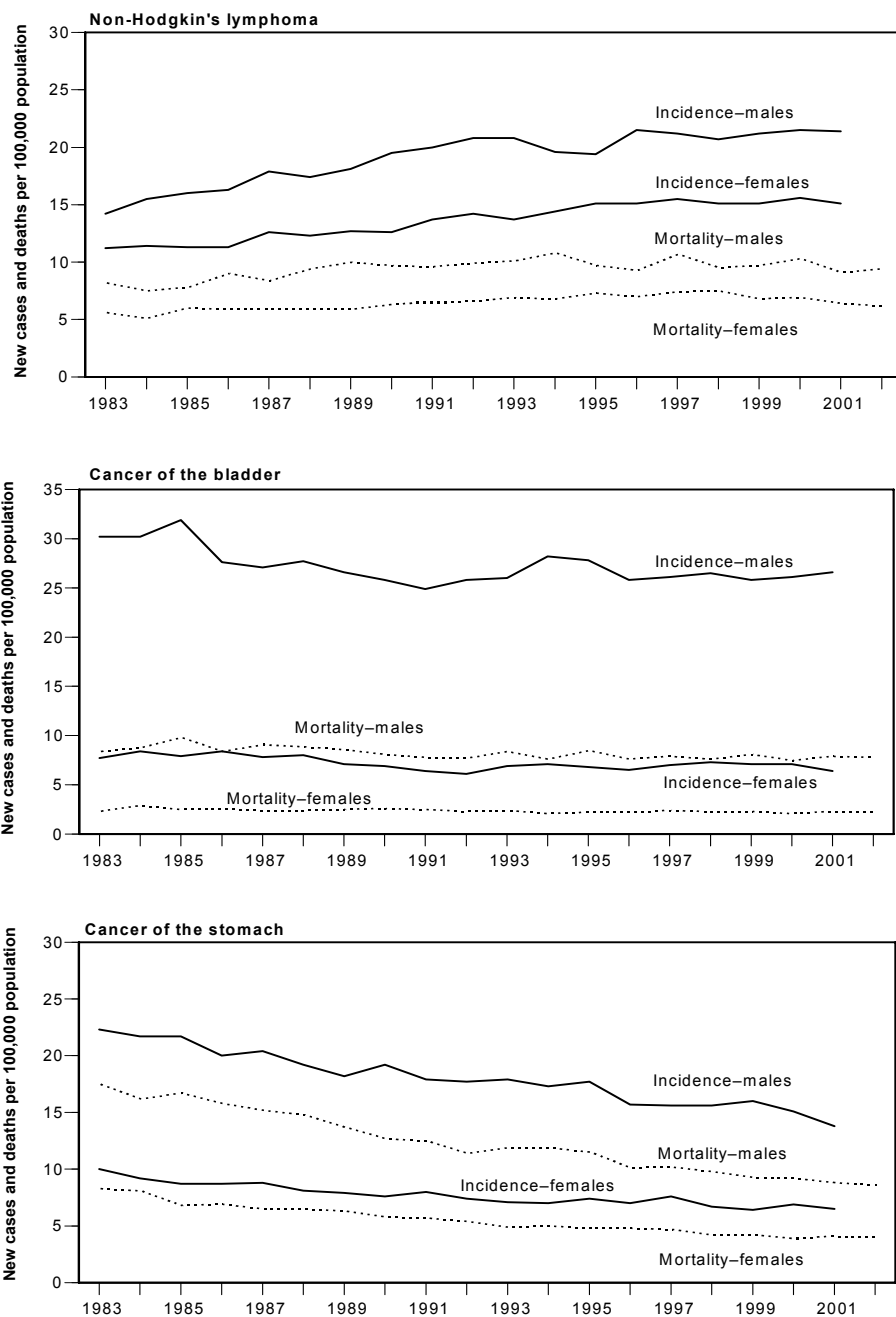


Note: Melanoma is graphed on a different scale from cancer of the lung and smoking-related cancers.

Source: *Cancer in Australia 2001* (AIHW & AACR 2004).

**Figure 10: Trends in age-standardised incidence and mortality rates for cancers of the lung, smoking-related cancers and melanoma, Australia, 1983–2002**

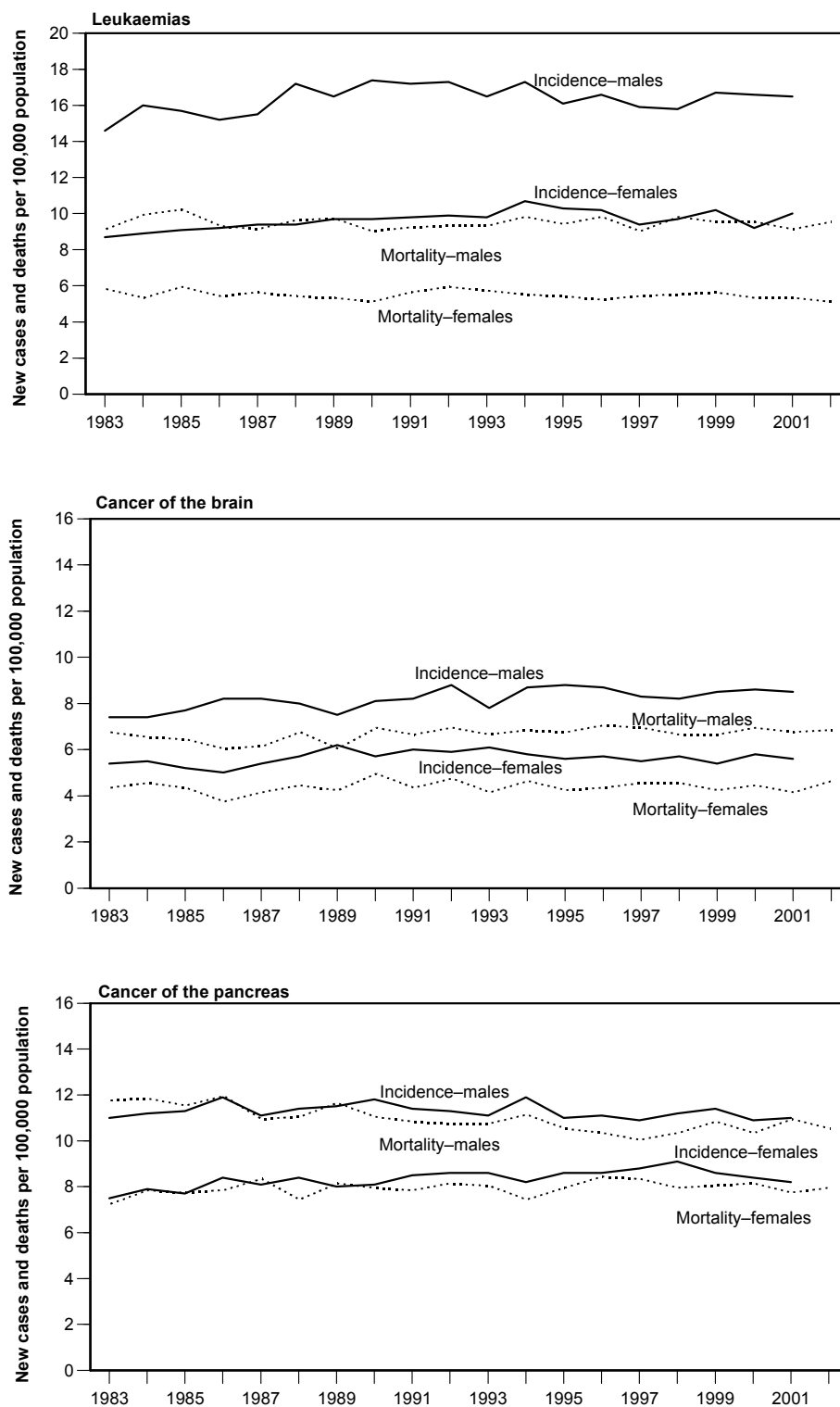
## Non-Hodgkin's lymphoma, and cancers of the bladder and stomach



Source: *Cancer in Australia 2001* (AIHW & AACR 2004).

**Figure 11: Trends in age-standardised incidence and mortality rates for non-Hodgkin's lymphoma, and cancers of the bladder and stomach, Australia, 1983-2002**

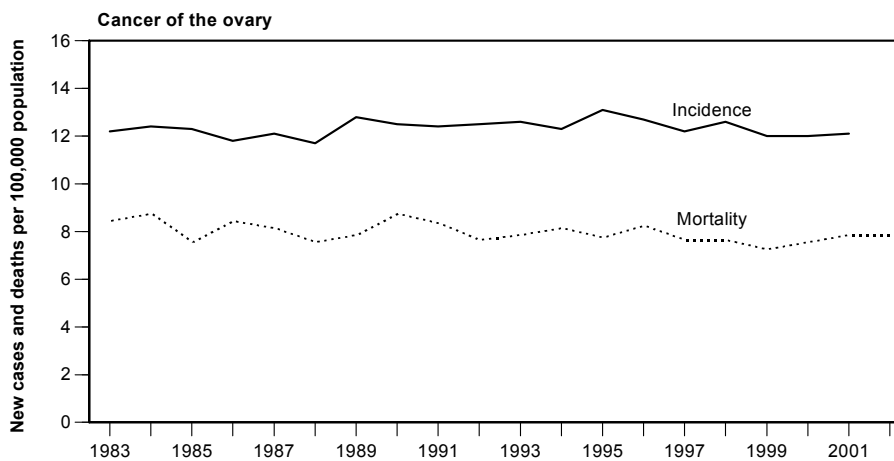
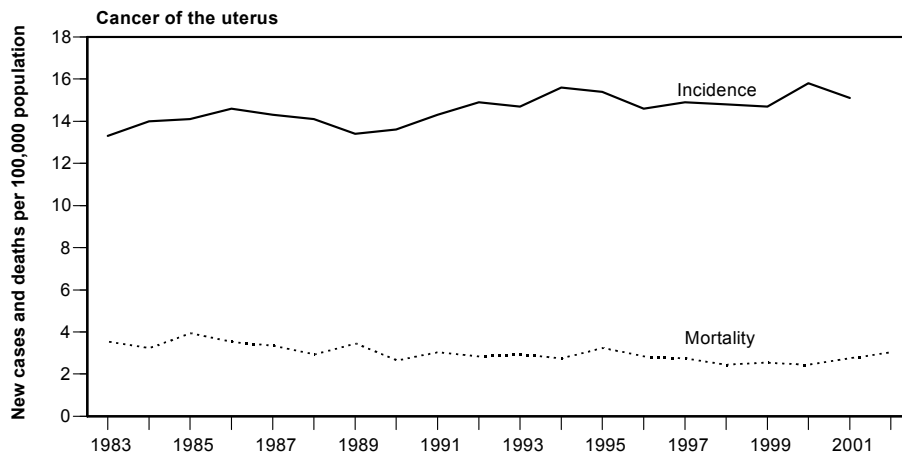
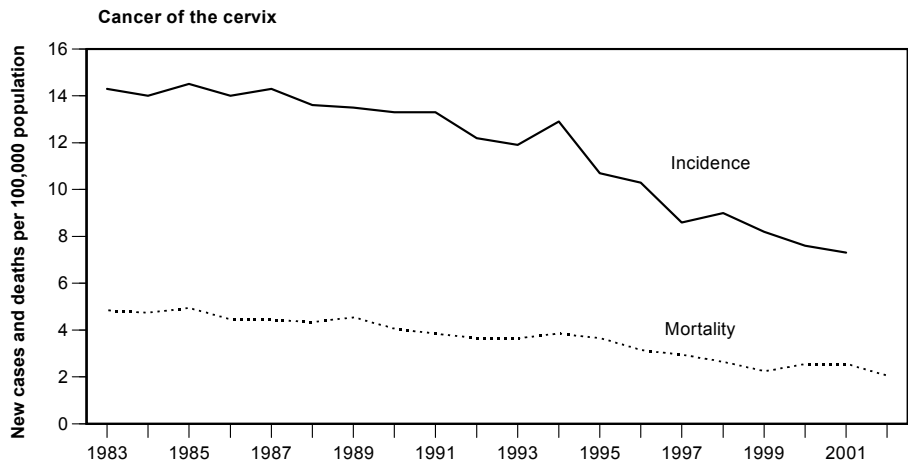
## Leukaemias, and cancers of the brain and pancreas



Source: Cancer in Australia 2001 (AIHW & AACR 2004).

**Figure 12: Trends in age-standardised incidence and mortality rates for leukaemia and cancers of the brain and pancreas, Australia, 1983–2002**

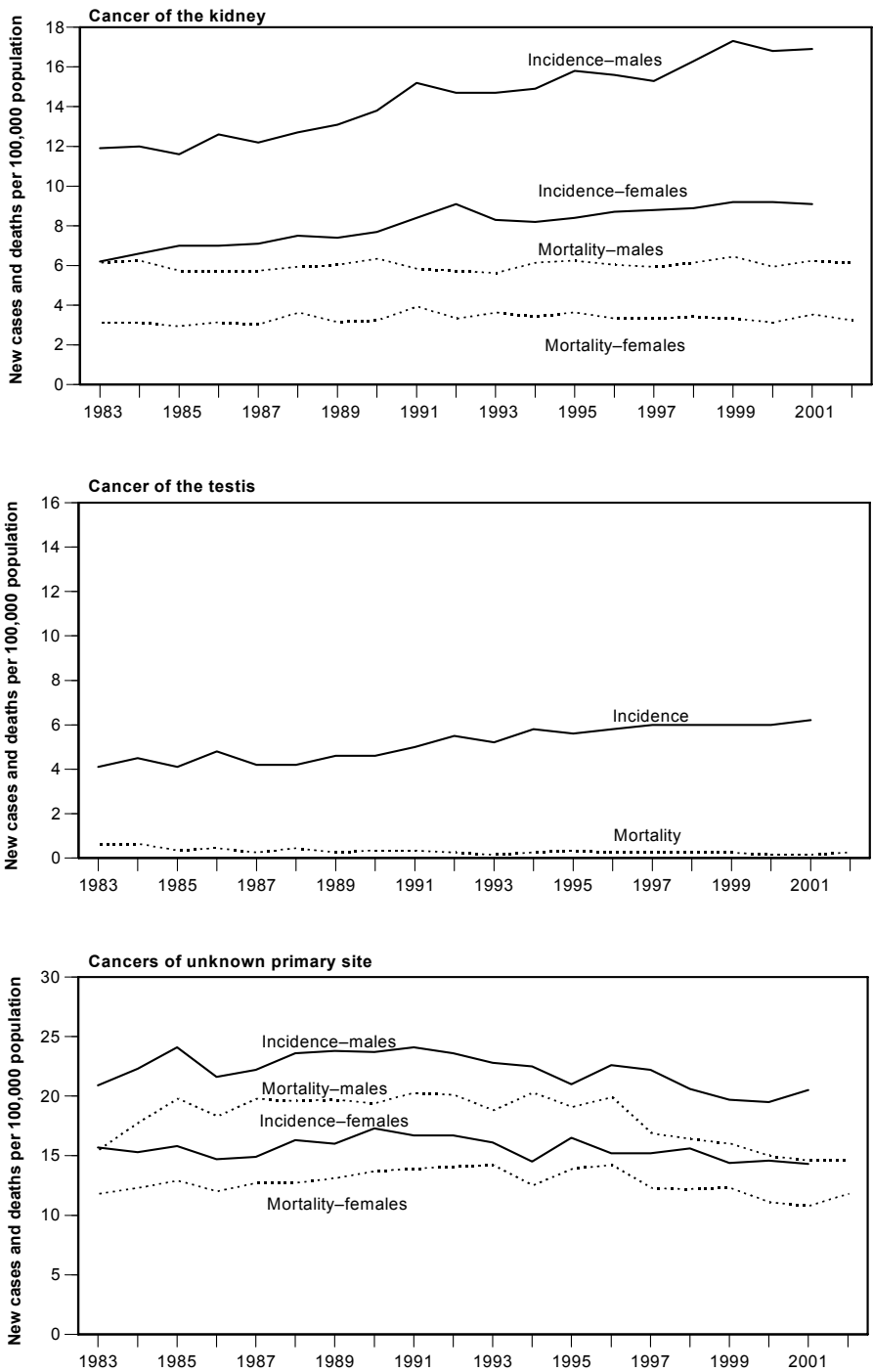
## Cancers of the cervix, uterus and ovary



Source: *Cancer in Australia 2001* (AIHW & AACR 2004).

**Figure 13: Trends in age-standardised incidence and mortality rates for cancers of the cervix, uterus and ovary, Australia, 1983–2002**

**Cancers of the kidney and testis, and cancers of unknown primary site**



Note: Cancers of unknown primary site are graphed on a different scale from cancers of the kidney and testis.  
 Source: Cancer in Australia 2001 (AIHW & AACR 2004).

**Figure 14: Trends in age-standardised incidence and mortality rates for cancers of the kidney and testis, and cancers of unknown primary site, Australia, 1983-2002**

# 4 Incidence and mortality tables

## Guide to interpreting incidence and mortality tables

This section provides information to assist in the interpretation of the tables in this report. More detailed information on methods is given in Appendix B.

### Table features

- Tables are ordered according to AACR agreed site and site groupings of the International Classification of Diseases, 10th Revision. Some groupings are guided by multiple primary rules (WHO 2000).
- All rates are presented per 100,000 population.
- Age-standardised rates are calculated by the 'direct method' (see definition in Appendix B). Age-standardised rates for Australia use both the total 2001 Australian population and the new WHO World Standard Population as the standard populations. Previous Cancer Series publications have used the 1991 Australian Standard Population, thus special care needs to be taken when comparing the age-standardised rates from the current publication with those published in previous years. Age-standardised rates for the States and Territories use only the total 2001 Australian Population as the standard population. Particular care should also be taken not to compare these state and territory rates with previous Cancer Series publications – *Cancer in Australia 1989–1990 (with Projections to 1995)*, *Cancer in Australia 1986–1988* or *Cancer in Australia 1983–1985* – where age standardisation used the old World Standard Population.
- The person-years of life lost (PYLL) and lifetime risk estimates are for the ages 0–74 years.
- The confidence intervals used for crude and age-standardised rates are at the 95% level.
- The 'all cancers' incidence and mortality estimates exclude non-melanoma skin cancers.
- In this publication the term 'cancer site' is used to represent cancers located in specific organs or tissues as well as systemic cancers such as leukaemia and lymphoma.
- In this publication the term 'melanoma' refers to melanoma of the skin only. Melanomas generally occur on the skin, but may also occur on the eye and mucous membranes (such as the vaginal and nasal cavities).

## Comparison of rates

Care should be exercised when interpreting a comparison between incidence or mortality rates—for example, when comparing different cancers or when comparing the same cancer in different years. The confidence intervals indicate the likely range of fluctuation of each rate. Some fluctuations may be within expectations, while others may indicate a change in the patterns of cancer incidence or mortality. Where small annual numbers of cancer cases or deaths are presented in a table, a direct comparison may produce a false perception of dramatic changes over time and, in these instances, averages over a period of time should be used. In general, cancer incidence and mortality rates change relatively slowly over time, although from year to year there may be marked fluctuations due to significant changes in diagnostic procedures. Changes over the longer term may also reflect changing exposures to risk factors.

## Combining rates

- Age-specific rates may be summed over cancer sites for a particular age and sex.
- Age-specific rates may not be summed across different ages or sexes, but should be recalculated from the raw data. However, if populations are similar, the crude rates for a 10-year age group will be approximated by the average of the two 5-year age-specific rates. For comparison within broader age groups, summary rates should be age-standardised.

## State and territory data

In July 2004 cancer incidence data were available to 2001 for all states and territories.

The Australian data are presented as annual numbers and rates, while the data for each state and territory are presented as average annual rates and numbers of cases and deaths based on the 5-year average 1997–2001. By presenting the data in this manner, natural statistical variation due to small numbers of cases or deaths within each state and territory and cancer site are averaged across the period and provide a more stable and representative rate of incidence or mortality. Nonetheless, care should be taken in the interpretation of these rates, especially for less common cancers or for states and territories with small populations.

All average numbers of cases or deaths per year in the state and territory tables are rounded to the nearest integer. Occasionally, the number of cases or deaths will be zero but a small corresponding rate will appear. This indicates that there were, on average, fewer than 0.5 cases or deaths per year over the 5-year period and, although the rounding process has made the entry zero, a rate can still be presented at one decimal point.

The data in this report will not correspond exactly to data published by the individual state and territory cancer registries due to the 5-year annual averaging, the use of different standard populations for age standardisation and the continual updating of data sets by the cancer registries. Mortality data may also differ for the reasons discussed on page 19 of this report.

State and territory mortality rates in this publication refer to the state and territory of **usual residence** for persons who died. Care should be taken when making comparisons with rates in previous Cancer Series publications as numbers were based on state or territory of registration of death.

In this report, state and territory incidence and mortality rates have been directly age-standardised to the total estimated resident population of Australia at 30 June 2001. Care should be taken not to compare these state and territory age-standardised rates with previous Cancer Series publications – *Cancer in Australia 1989–1990 (with Projections to 1995)*, *Cancer in Australia 1986–1988* or *Cancer in Australia 1983–1985* – where age standardisation was done using the old World Standard Population. However, the NCSCCH is able to provide state and territory rates that have been age-standardised to the new WHO World Standard Population on request or the registries can be contacted directly.

Cancer incidence estimates provided in this publication were made at October 2004. These estimates may be updated at any time as case details are added, modified or deleted in the national database. These modifications may occur several years after the initial diagnosis as additional case details are received by the state and territory cancer registries from data suppliers and then passed to the NCSCCH. This may have the impact of making incidence estimates for the same year incompatible between publications, but for the most part these changes are very small.



# 5 Other sources of cancer data

## Cancer mortality—multiple causes of death

The mortality data reported in the summary tables in this report relate to deaths where cancer was recorded as the underlying cause of death. However, a diagnosis of cancer can raise a person's risk of death from a number of associated causes and these deaths may not be coded as having cancer as their underlying cause. Since 1997, national deaths data in Australia have been coded by the Australian Bureau of Statistics for all causes of death recorded on the death certificate (both underlying and associated). The following table shows the number of deaths where cancer was the underlying cause as well as the number of deaths where cancer was an associated cause appearing on the death certificate for deaths registered in 2001.

**Table 7: Number of persons dying with cancer (underlying cause and from another cause of death), Australia, 2001 (year of registration)**

Cancer	Additional persons who died		Total
	Underlying cause	with this cancer	
Breast (C50)	2,612	609	3,221
Cervix (C53)	262	43	305
Colorectal cancer (C18–C21)	4,745	659	5,404
Lung (C33–C34)	7,038	512	7,550
Melanoma (C43)	1,069	130	1,199
Non-Hodgkin's lymphoma (C82–C85, C96)	1,514	307	1,821
Skin cancer—non-melanoma (C44)	389	198	587
Prostate cancer (C61)	2,711	1,218	3,929
<i>All cancers (C00–C97)</i>	<i>36,750</i>	<i>4,519</i>	<i>41,269</i>

Sources: ABS 2001; AIHW Mortality Database.

In 2001, 41,269 deaths were registered where the person had cancer. Of these, cancer was the underlying cause in 36,750 deaths. There were 4,519 further deaths registered where the person had cancer but this was not the underlying cause. The most common underlying causes of death where cancer was listed as an additional cause of death were ischaemic heart disease, chronic obstructive pulmonary disease and stroke.

# Cancer mortality by remoteness category

## Introduction

The following tables examine cancer mortality using remoteness index in the ABS Australian Standard Geographic Classification (ASGC). This classification allocates a category of remoteness to areas based on an average of the road distance to the closest of five classes of service centre. Areas are classified as Major Cities, Inner Regional, Outer Regional, Remote, or Very Remote. The bulk (66%) of the Australian population lives in Major Cities, 31% in regional areas, and 3% in remote areas. Indigenous people live most commonly in Major Cities (30%); 20% live in Inner Regional areas, 23% in Outer Regional, 9% in Remote and 18% in Very Remote, where they represent 45% of the total population, compared to only 1% of the population in Major Cities.

Cancer mortality outcomes by remoteness are likely to be affected by a complex range of factors including:

- the age structure of the population and of families;
- socioeconomic status;
- diet and lifestyle risk factors including tobacco smoking;
- ethnicity and Indigenous status;
- environmental, industry and occupational exposures to carcinogens;
- access to cancer screening and treatment services, and the extent to which cancers diagnosed are detected early; and
- level of co-morbidities with other diseases such as cardiovascular diseases and diabetes.

## Findings

### *Mortality distribution of cancers by remoteness*

- Lung cancer, cervical cancer and cancer of the uterus as a proportion of the cancer deaths in the population all increase with remoteness.
- Breast cancer, leukaemias, ovarian cancer and stomach cancer as a proportion of the cancer deaths in the population all decrease with remoteness.

### *Age-standardised cancer death rates by remoteness*

- The age-standardised average annual cancer death rate for all cancers from 1998–2002 was lowest for Major Cities at 187.0 per 100,000 population. This was significantly below the national average.
- In Major Cities, cancers with a death rate significantly below the national average were colorectal, prostate, and lung, while the melanoma rate also verged on being significantly below. No cancers in Major Cities had death rates significantly above the national average.
- In Very Remote Areas, age-standardised death rates for colorectal and brain cancers and leukaemias were all significantly below the national average, and the lung cancer death rate was significantly above the national average.

- The highest age-standardised annual death rate (203 per 100,000 population in 1998–2002) was found in Outer Regional areas. Cancers significantly above the national average in this regional category include colorectal, prostate, lung, and unknown site, while there were none of the common cancers with death rates below the national average. There are similar findings for Remote areas.
- Inner Regional areas tend to have greater access to health and other services than more remote areas, but its age-standardised annual death rate of 194, although next lowest after Major Cities, was also significantly above the national average. This may be partly due to older people diagnosed with cancer moving to Inner Regional areas from more remote areas to access treatment.

### *Age of cancer deaths by remoteness*

- The median age of death from cancer in 1998–2002 was 73 for Major Cities and Inner Regional areas and 72 for Outer Regional Areas. This fell to 69 for Remote Areas and 65 for Very Remote Areas.
- Consequently only 24% of cancer deaths in Very Remote areas were of people aged 75 years and over, in contrast to 46% of cancer deaths in Major Cities, 44% in Inner Regional areas, 41% in Outer Regional areas and 34% in Remote Areas. This may be partly due to older people diagnosed with cancer moving from more remote areas to access treatment.

**Table 8: Average annual cancer deaths by remoteness category, selected cancers, persons, 1998–2002**

Cancer site	Major cities	Inner regional	Outer regional	Remote	Very remote	Australia
	<b>Number</b>					
Colon & rectum	2,951	1,105	530	57	14	4,664
Breast	1,717	570	262	28	12	2,592
Prostate	1,604	668	336	36	11	2,656
Lung	4,414	1,581	802	98	46	6,953
Melanoma	628	254	113	12	4	1,012
Non-Hodgkins lymphoma	1,004	338	156	17	7	1,525
Cervix	158	47	34	5	2	248
Unknown site	1,587	575	286	34	16	2,501
Leukaemias	899	304	137	14	5	1,368
Pancreas	1,118	408	182	20	9	1,742
Uterus	185	64	28	3	2	284
Brain	693	237	111	14	3	1,060
Ovary	525	173	76	8	3	786
Stomach	811	248	124	13	5	1,203
Other cancers	4,772	1,656	810	101	50	7,405
<b>All cancers</b>	<b>23,064</b>	<b>8,229</b>	<b>3,988</b>	<b>462</b>	<b>189</b>	<b>36,001</b>
	<b>Percent</b>					
Colon & rectum	12.8	13.4	13.3	12.4	7.7	13.0
Breast	7.4	6.9	6.6	6.1	6.2	7.2
Prostate	7.0	8.1	8.4	7.7	5.9	7.4
Lung	19.1	19.2	20.1	21.3	24.2	19.3
Melanoma	2.7	3.1	2.8	2.5	2.1	2.8
Non-Hodgkin's lymphoma	4.4	4.1	3.9	3.7	3.5	4.2
Cervix	0.7	0.6	0.8	1.1	1.2	0.7
Unknown site	6.9	7.0	7.2	7.4	8.4	6.9
Leukaemias	3.9	3.7	3.4	3.1	2.7	3.8
Pancreas	4.8	5.0	4.6	4.4	4.7	4.8
Uterus	0.8	0.8	0.7	0.7	1.3	0.8
Brain	3.0	2.9	2.8	3.1	1.5	2.9
Ovary	2.3	2.1	1.9	1.8	1.7	2.2
Stomach	3.5	3.0	3.1	2.9	2.7	3.3
Other cancers	20.7	20.1	20.3	21.9	26.3	20.6
<b>All cancers</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: AIHW National Mortality Database.

**Table 9: Age-standardised average annual cancer death rates by remoteness category, selected cancers, persons, 1998–2002**

Cancer site	Major cities	Inner regional	Outer regional	Remote	Very remote	Australia
<b>Age-standardised number per 100,000 population</b>						
Colon & rectum	24.0	26.0	26.9	24.6	16.5	24.7
Breast	13.9	13.7	13.3	11.2	10.6	13.7
Prostate	13.0	15.7	17.6	17.5	14.8	14.1
Lung	35.8	36.8	40.2	41.4	47.2	36.7
Melanoma	5.1	6.1	5.7	4.7	4.1	5.3
Non-Hodgkins lymphoma	8.1	8.0	7.9	6.9	6.2	8.1
Cervix	1.3	1.1	1.7	1.9	2.2	1.3
Unknown site	12.9	13.6	14.7	15.6	17.5	13.3
Leukaemias	7.3	7.2	7.0	6.0	4.6	7.2
Pancreas	9.1	9.6	9.2	8.6	10.0	9.2
Uterus	1.5	1.5	1.4	1.4	3.0	1.5
Brain	5.6	5.7	5.5	5.5	2.2	5.6
Ovary	4.3	4.1	3.9	3.5	3.1	4.2
Stomach	6.6	5.8	6.3	6.0	5.2	6.4
Other cancers	38.7	39.0	41.2	42.6	51.1	39.2
<b>All cancers</b>	<b>187.0</b>	<b>193.8</b>	<b>202.6</b>	<b>197.5</b>	<b>198.2</b>	<b>190.8</b>
<b>Confidence interval</b>						
Colon & rectum	23.6–24.3	25.3–26.6	25.9–27.9	21.7–27.6	12.5–20.5	24.4–25.0
Breast	13.6–14.2	13.2–14.2	12.5–14.0	9.3–13.1	7.7–13.5	13.5–14.0
Prostate	12.7–13.3	15.1–16.2	16.8–18.5	14.9–20.1	10.8–18.8	13.9–14.4
Lung	35.4–36.3	36.0–37.7	38.9–41.4	37.7–45.1	40.7–53.6	36.4–37.1
Melanoma	4.9–5.2	5.7–6.4	5.2–6.2	3.4–5.9	2.1–6.0	5.2–5.5
Non-Hodgkin's lymphoma	7.9–8.4	7.6–8.3	7.4–8.5	5.4–8.4	3.9–8.5	7.9–8.3
Cervix	1.2–1.4	1.0–1.3	1.5–2.0	1.2–2.7	0.8–3.6	1.2–1.4
Unknown site	12.6–13.1	13.1–14.1	13.9–15.5	13.2–18.0	13.4–21.7	13.1–13.5
Leukaemias	7.0–7.5	6.9–7.6	6.5–7.6	4.6–7.4	2.6–6.5	7.1–7.4
Pancreas	8.8–9.3	9.2–10.0	8.6–9.8	6.9–10.3	6.9–13.1	9.0–9.4
Uterus	1.4–1.6	1.3–1.7	1.2–1.7	0.8–2.1	1.3–4.7	1.4–1.6
Brain	5.4–5.8	5.3–6.0	5.1–6.0	4.2–6.8	0.9–3.5	5.4–5.7
Ovary	4.1–4.4	3.8–4.4	3.5–4.3	2.4–4.6	1.5–4.8	4.0–4.3
Stomach	6.4–6.8	5.5–6.2	5.8–6.8	4.5–7.4	3.1–7.3	6.2–6.5
Other cancers	38.2–39.2	38.2–39.9	39.9–42.5	38.8–46.4	44.3–57.9	38.8–39.6
<b>All cancers</b>	<b>185.9–188.1</b>	<b>191.9–195.7</b>	<b>199.8–205.4</b>	<b>189.2–205.7</b>	<b>184.8–211.7</b>	<b>189.9–191.7</b>

Source: AIHW National Mortality Database.

**Table 10: Average annual cancer deaths by remoteness category, age, persons, 1998–2002**

Age group	Major cities	Inner regional	Outer regional	Remote	Very remote	Australia
<b>Number</b>						
0–14	80	26	13	2	1	125
15–24	78	26	14	2	2	124
25–54	2,616	894	460	68	36	4,090
55–74	9,737	3,658	1,881	232	104	15,643
75 and over	10,553	3,625	1,619	157	45	16,017
<b>Total <sup>(a)</sup></b>	<b>23,064</b>	<b>8,229</b>	<b>3,987</b>	<b>462</b>	<b>187</b>	<b>35,998</b>
<b>Percent</b>						
0–14	0.3	0.3	0.3	0.4	0.5	0.3
15–24	0.3	0.3	0.4	0.5	1.0	0.3
25–54	11.3	10.9	11.5	14.8	19.0	11.4
55–74	42.2	44.5	47.2	50.3	55.6	43.5
75 and over	45.8	44.1	40.6	34.0	23.9	44.5
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

(a) Totals exclude records with unknown age.

Source: AIHW National Mortality Database.

**Table 11: Median age at death by remoteness category, selected cancers, persons, 1998–2002**

Cancer site	Major cities	Inner regional	Outer regional	Remote	Very remote	Australia
Colon & rectum	74	73	72	69	70	73
Breast	67	67	65	61	58	67
Prostate	79	78	78	78	73	78
Lung	72	72	71	69	65	72
Melanoma	70	69	68	64	64	69
Non-Hodgkins lymphoma	74	73	71	67	61	73
Cervix	66	64	65	59	63	65
Unknown site	76	76	74	74	67	76
Leukaemias	74	72	73	70	59	73
Pancreas	74	74	72	68	66	74
Uterus	74	74	72	69	70	74
Brain	64	64	62	61	44	63
Ovary	72	72	70	67	60	71
Stomach	74	74	73	72	63	74
Other cancers	74	73	72	69	64	73
<b>All cancers</b>	<b>73</b>	<b>73</b>	<b>72</b>	<b>69</b>	<b>65</b>	<b>73</b>

Source: AIHW National Mortality Database.

# Cancer expenditure

## Introduction

*Health System Expenditure on Disease and Injury in Australia 2000–01* (AIHW 2004b) includes a breakdown of allocatable Australian health expenditure in 2000–01 for major diseases and injury groups. AIHW analysis of health expenditure data has found that approximately 86% of health expenditure can be allocated to disease groups.

## Main findings

- Allocatable expenditure on cancer in 2000–01, excluding public health expenditure, was \$2.7 billion, representing 5.7% of total allocatable health expenditure.
- 71.3% of cancer expenditure was in hospital care (\$1,988m) and 9.0% of all expenditure in hospitals was on cancer.
- Out-of-hospital medical services accounted for 12.3% of cancer expenditure (\$343m) and pharmaceutical 6.6% (\$183m).
- \$215m was spent on cancer research in 2000–01, 18.2% of all health research expenditure in Australia.
- There was a 31% increase in inflation-adjusted cancer expenditure from 1993–94 to 2000–01.
- Average cancer expenditure per person was \$146 for males and \$135 for females in 2000–01. This was much higher in the older age groups. In the 65–74 year age group, average expenditure per person in 2000–01 was \$641 for males and \$389 for females, while in the 75 years and over age groups, the averages were \$984 for males and \$480 for females.

**Table 12: Allocated recurrent expenditure in Australia, by broad disease group, 2000–01 (\$ million)**

	Cancer expenditure		Total expenditure	
	\$ million	% of total expenditure	\$ million	Cancer expenditure as % of total expenditure
Hospitals <sup>(a)</sup>				
Admitted patients	1,716	61.5	17,347	9.9
Non-admitted services	272	9.7	4,683	5.8
Total hospitals	1,988	71.3	22,030	9.0
Aged care homes <sup>(b)</sup>	37	1.3	3,899	0.9
Out-of hospital medical services <sup>(c)</sup>	343	12.3	8,454	0.4
Dental and other professional services	24	0.9	5,524	0.4
Pharmaceuticals <sup>(d)</sup>				
Prescription	167	6.0	5,896	2.8
Over-the-counter	16	0.6	2,189	0.7
Total pharmaceuticals	183	6.6	8,085	2.3
Research	215	7.7	1,182	18.2
<b>Total expenditure</b>	<b>2,790</b>	<b>100</b>	<b>49,174</b>	<b>5.7</b>

(a) Public and private acute hospitals and psychiatric hospitals. Includes a preliminary estimate of private medical services provided in hospital.

(b) Includes expenditure on residents that require and receive a level of care that falls within one of the four highest levels in residential aged care services.

(c) Includes services delivered outside of hospitals by paramedical professionals such as physiotherapists, chiropractors, occupational therapists, audiologists, speech therapists, hydropaths, podiatrists, therapeutic and clinical massage therapists, clinical psychologists, dietitians and osteopaths.

(d) Includes all pharmaceuticals for which a prescription is needed, including private prescriptions and under-copayment prescriptions, and includes over-the-counter medicaments such as vitamins and minerals, patent medicines, first aid and wound care products, analgesics, feminine hygiene products, cold sore preparations, and a number of complementary health products that are sold in both pharmacies and other retail outlets.

Source: AIHW 2004b.

**Table 13: Allocated cancer expenditure per person, age and sex, 2000–01**

Age (years)	Male	Female
0–4	25	19
5–14	12	18
15–24	18	26
25–34	25	45
35–44	43	90
45–54	120	185
55–64	277	248
65–74	641	389
75 +	984	480
<b>Total</b>	<b>146</b>	<b>135</b>

Note: Based on preliminary AIHW estimates published in *Health System Expenditure on Disease and Injury in Australia 2000–01*.

Source: AIHW 2004b.



## Cancer screening

For breast, cervical and bowel cancers, there is evidence that illness and death can be reduced through population-based screening and effective follow-up treatment. National screening programs for breast cancer (via mammography) and cervical cancer (via Pap smears) have been implemented in Australia with the aim of achieving this reduction. These programs are called BreastScreen Australia and the National Cervical Screening Program. Pilot tests for a population-based screening program for bowel cancer commenced in November 2002. Final invitations to screen were sent to the pilot study group in June 2004 and a pilot evaluation report is being prepared.

### BreastScreen Australia

The BreastScreen Australia Program is jointly funded by the Australian and state and territory governments. It consists of a network of dedicated screening and assessment services throughout metropolitan, rural and remote areas of all Australian states and territories. These services can be fixed or mobile and provide free 2-yearly mammographic screening and follow-up of any suspicious lesions identified at screening to the point of diagnosis of breast cancer. The program is aimed specifically at women aged 50–69 years of age without symptoms, although women aged 40–49 years and 70 years and older may attend for screening. Women may attend without a doctor's referral.

In addition, recruitment and reminder systems are used to promote screening and rescreening among women in the target group once every 2 years.

A comprehensive system of accreditation is used to ensure that all BreastScreen Australia services operate under a common set of standards. Each service is assessed regularly by an independent team to ensure that the service provided complies with national standards.

The proportion of women in the target age group who were screened under the BreastScreen Australia program in a 2-year period rose from 52.3% in 1996–1997 to 57.1% in 2001–2002 (Table 14). Age-standardised participation rates for women in the target age group in Major Cities (55.6%) and Very Remote areas (48.5%) were significantly lower than the national rate of 57.1%. Significantly higher than the national rate were Inner Regional areas at 59.7%, Outer Regional areas at 60.7% and Remote areas at 60.9% (Figure 15). Women in the target age group with the highest socioeconomic status had the lowest age-standardised participation rate (53.7%) in 2001–2002. In contrast, women with the lowest socioeconomic status had the highest participation rate (64.0%) (Figure 16).

**Table 14: Women screened in each 2-year period, 1996 to 2002**

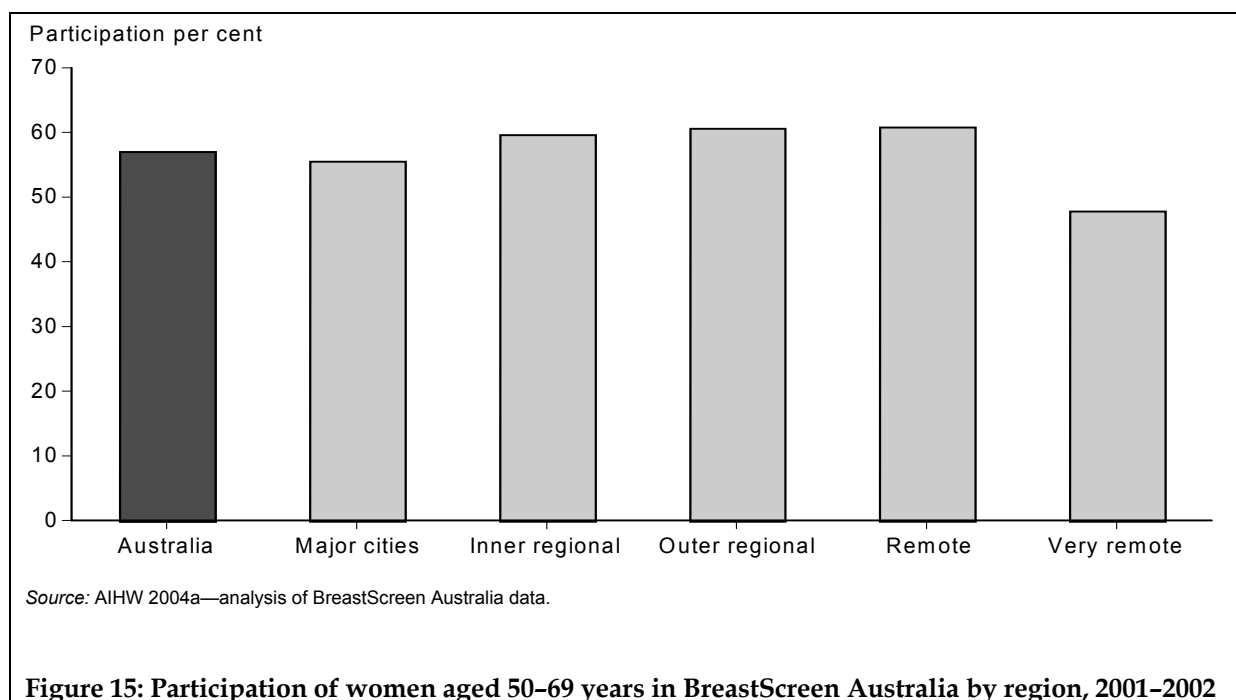
	1996 & 1997	1997 & 1998	1998 & 1999	1999 & 2000	2000 & 2001	2001 & 2002
<b>BreastScreen Australia</b>						
All ages 40 years and over	1,240,885	1,367,759	1,452,263	1,496,417	1,567,544	1,611,262
Target population (ages 50–69)	844,607	921,283	975,258	1,011,394	1,063,479	1,102,227
Participation rate for target population (%) <sup>(a)</sup>	52.3	54.3	55.6	55.9	56.9	57.1
<b>National Cervical Screening Program<sup>(b)</sup></b>						
All ages 20 years and over	2,630,235	2,721,650	2,777,324	3,314,787	3,331,408	3,310,013
Target population (ages 20–69)	2,563,107	2,653,504	2,716,364	3,244,329	3,262,931	3,262,574
Participation rate for target population (%) <sup>(a)</sup>	60.8	62.4	63.4	61.3	61.0	61.0

(a) Participation rates are age-standardised to the 2001 total Australian population.

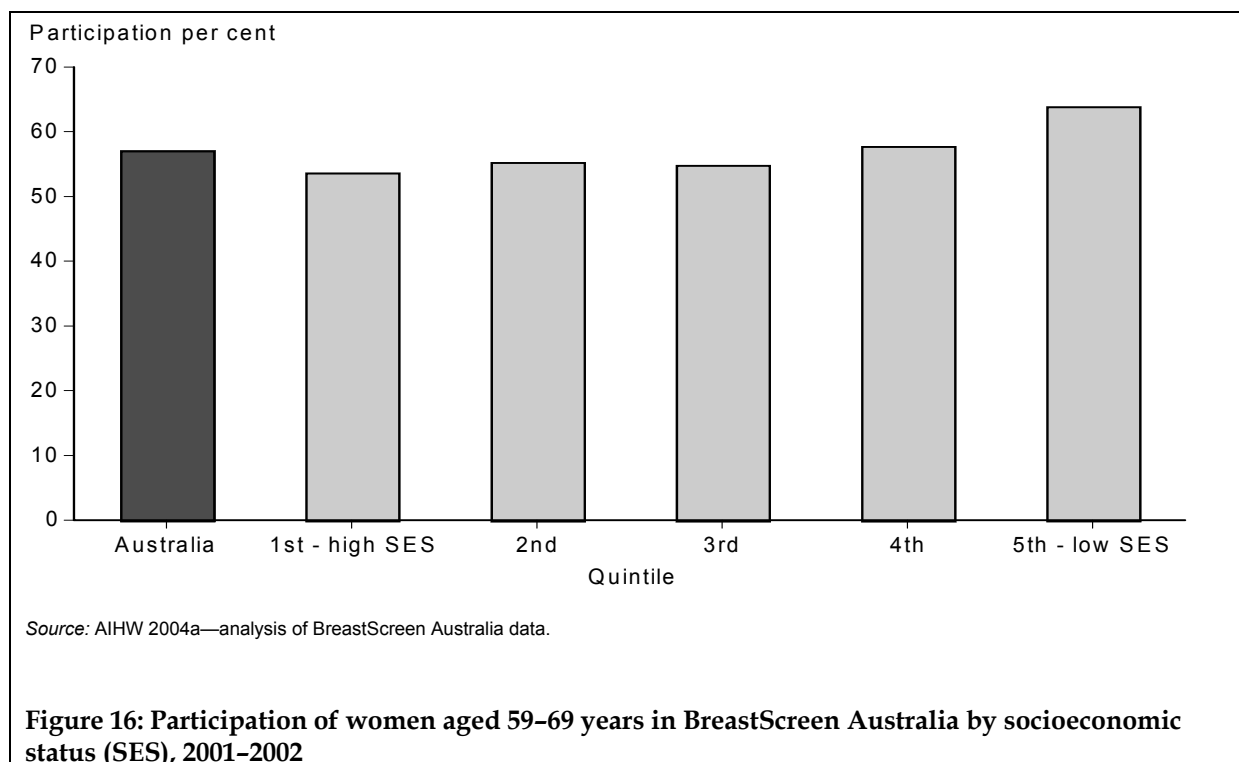
(b) The Queensland Health Pap Smear registry began in February 1999, so the cervical screening data presented here exclude Queensland.

n.a. Not available.

Source: AIHW analysis of state and territory Cervical Cytology Registry data and BreastScreen Australia data.



**Figure 15: Participation of women aged 50–69 years in BreastScreen Australia by region, 2001–2002**



## National Cervical Screening Program

Screening to detect abnormalities of the cervix has been available for Australian women since the 1960s. Until the early 1990s this screening was largely unstructured, with no agreement on the screening target group or the best interval between screens. Since then it has become progressively more organised and in 1995 the program became known as the National Cervical Screening Program.

Unlike breast screening, cervical screening in Australia does not operate through a separate dedicated screening and assessment service. Instead screening services are provided as part of mainstream health services, with approximately 80% of Pap smears performed by general practitioners. Cervical screening is funded mainly by Medicare (61%) with the remainder funded by Australian government contributions through special purpose payments to state and territory governments (23%) and these governments' own revenue sources (16%).

The National Cervical Screening Program has both national and state and territory components. Although policy is usually decided at a national level, coordination of screening activity mainly happens at a state and territory level.

Cervical cytology registries operate in all states and territories. The major functions of the registries are to:

- remind women to attend for screening;
- ensure the follow-up of women with abnormal Pap smears;
- provide 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.

The Australian recommendation is for all women who have been sexually active at any stage in their lives to have a Pap smear every 2 years until they reach the age of 70 years. Screening may cease at the age of 70 for women who have had two normal Pap smears within the last 5 years. Women over 70 years who have never had a Pap smear or who request a Pap smear are also screened. However, for reporting purposes the target group is taken to be all women aged between 20 and 69 years who have not had a hysterectomy.

The proportion of women in the target age group who were screened under the National Cervical Cancer Screening Program in a 2-year period rose from 60.8% in 1996–1997 to 63.4% in 1998–1999 before falling to 61.0% in 2001–2002 (Table 14).

## **National bowel screening pilot program**

The Australian Government Department of Health and Ageing conducted a pilot test of bowel cancer screening in Australia in 2003 and 2004. The primary aim of the pilot was to provide information about the feasibility, acceptability and cost effectiveness of bowel cancer screening amongst the Australian population in both rural and urban areas. The results of the pilot will inform decisions about whether, and how, to introduce a national bowel cancer screening program.

The pilot was conducted at three sites – in Melbourne (part of the North East Valley Division of General Practice), Adelaide (part of the Adelaide Southern and Western Divisions of General Practice), and Mackay (part of the Mackay Division of General Practice). The population living in these areas includes a mixture of urban and rural residents and diverse socio-economic and ethnic groups to reflect the broader Australian population.

The pilot commenced in Mackay in November 2002, with screening starting in the other two sites in early 2003. All people living in each site who were aged from 55 to 74 on 1 January 2003 were sent an invitation to participate in the pilot and a screening test kit. These were sent over a period of 12 to 18 months, with the final invitations and kits being sent in June 2004. Monitoring data has been collected covering responses to these invitations and the outcomes for those who complete the screening kits. These data cover outcomes up to the point of definite diagnosis for those who are found to have bowel cancer. A pilot evaluation report is currently being prepared.

# Cancer workforce

## Introduction

Data on the cancer workforce are limited to those occupations which can be identified as cancer-specific or cancer-related in the AIHW national medical and nursing labour force collections and in the national population census conducted by the Australian Bureau of Statistics. It should be noted that the primary care workforce of general practitioners is the largest workforce providing cancer care (see General practice management of cancer, page 55). A large specialist workforce providing procedural diagnosis services and treatments cannot be identified separately from the procedural workforce at large.

## Medical workforce

The main medical disciplines specialising in cancer include medical oncology (171 in 2001, a decline on a peak of 187 in 1999), and radiation oncology (182 in 2001 compared with 117 in 1995).

**Table 15: Employed specialist clinicians by main specialty of practice, 1995 to 2001**

Occupation	1995	1996	1997	1998	1999	2000	2001
Clinical haematology	122	134	138	127	161	146	149
Haematology	55	55	57	52	61	72	57
Clinical immunology	69	83	83	82	79	69	86
Immunology	11	8	14	12	8	9	1
Medical oncology	135	133	158	152	187	168	171
Diagnostic radiology	985	1,078	1,076	1,035	1,109	1,120	1,135
Obstetric & gynaecology (includes gynae oncology)	904	959	997	1,031	1,089	1,001	1,123
Radiation oncology	117	133	138	152	156	144	182

Source: AIHW National Medical Labour Force Collection.

**Table 16: Employed specialists-in-training by main specialty of practice, 1995 to 2001**

Occupation	1995	1996	1997	1998	1999	2000	2001
Clinical haematology	43	32	28	27	35	36	29
Haematology	16	16	18	19	32	23	50
Clinical immunology	8	6	9	4	28	4	16
Immunology	0	1	2	4	4	7	17
Medical oncology	49	54	51	51	42	69	53
Diagnostic radiology	180	166	187	166	165	165	262
Obstetric & gynaecology (includes gynae oncology)	240	239	272	281	277	299	320
Radiation oncology	47	50	52	56	48	40	57

Source: AIHW National Medical Labour Force Collection.

## Nursing workforce

The number of registered nurses working mainly in the area of oncology increased from 2,620 in 1997 to 3,599 in 2001, while the number of enrolled nurses working in the same area increased from 285 in 1997 to 396 in 2001.

- 87% of registered nurses and 78% of enrolled nurses working mainly in oncology were employed in hospitals.
- There were 1,062 nurses working in hospices in 2001, almost the same as the number in 1995. It should be noted that most of the care nurses provide in hospices is for pain management of terminally ill cancer patients.

**Table 17: All employed nurses working in the area of oncology as their main area of practice, 1997–2001**

Work setting	1997	1999	2001
<b>Enrolled nurses</b>			
Hospital	231	231	308
Day procedure centre	1	8	10
Aged care	15	21	41
Hospice	10	18	10
Community health	1	0	7
Other	27	13	19
<i>Total</i>	285	291	396
<b>Registered Nurses</b>			
Hospital	2,236	2,723	3,139
Day procedure centre	80	99	133
Aged care	44	25	52
Hospice	32	44	45
Community health	61	53	71
Other	168	103	159
<i>Total</i>	2,620	3,046	3,599
<b>Total</b>			
Hospital	2,466	2,953	3,447
Day procedure centre	81	108	143
Aged care	59	45	93
Hospice	42	61	55
Community health	62	53	78
Other	195	116	178
<b>Total</b>	<b>2,904</b>	<b>3,337</b>	<b>3,994</b>

Source: AIHW National Nursing Labour Force Collection.

**Table 18: All employed nurses working in hospices in their main job, 1995–2001**

Classification	1995	1997	1999	2001
Enrolled	248	233	262	232
Registered	822	777	812	830
<b>Total</b>	<b>1,071</b>	<b>1,010</b>	<b>1,074</b>	<b>1,062</b>

Source: AIHW National Nursing Labour Force Collection.

## Radiation therapists

At the 2001 population census, there were 808 radiation therapists, a 15.4% increase on the 700 in 1996.

# Management of cancer in general practice

## Introduction

The continuous national study of general practice activity in Australia, known as the BEACH (Bettering the Evaluation and Care of Health) program, has been running since April 1998. It provides insight into the patients and problems managed in general practice and the ways in which general practitioners (GPs) manage the problems. In BEACH, a random sample of about 1,000 GPs provides details of around 100,000 GP-patient encounters each year. The study is conducted by the General Practice Statistics and Classification Unit (an AIHW collaborating unit within the Family Medicine Research Centre, University of Sydney).

This report presents trend data on those problems that the GP labelled as any type of cancer. In this analysis the 6 years of BEACH data have been divided into three time periods: April 1998 to March 2000, April 2000 to March 2002, April 2002 to March 2004, and comparisons are made to identify any changes which have occurred during that period.

In 1998–2000, 2,031 GPs provided data on 203,100 encounters. In 2000–2002, 1,982 recorded details of 198,200 encounters and in 2002–2004 there were 2,008 GPs providing 200,800 encounters. The participating GPs were randomly selected from the Health Insurance Commission list of active GPs (those who provided more than 375 GP services in the previous quarter). Each GP completed a paper encounter record for each of 100 encounters.

Data elements included:

- date of encounter;
- service item number/form of payment/indirect encounters (e.g. telephone consults);
- patient age and sex and other socio-demographics;
- patient's reasons for encounter (up to three);
- diagnoses/problems managed (up to four);
- status of each problem to the patient (new/old);
- medications prescribed, advised or supplied (up to 4 per problem);
- other treatments provided (up to 2 per problem); and
- referral, pathology tests and imaging ordered.

## Findings

### *Most frequently managed cancers (Table 19)*

- The 10 most frequently managed types of cancer accounted for approximately 75% of all cancers managed.
- There was little difference in the order the individual cancers were managed nor in the rate of management across the three 2-year time periods.
- Skin cancers predominated overall. Extrapolating to the total Australian population, GPs had over half a million patient encounters for basal cell carcinomas and over a quarter of a million for squamous cell carcinomas per year. In addition, there were almost 90,000 patient encounters per year in 2002–2004 for melanomas, and a further 70,000 for other skin cancers.

- The next most common cancers managed were prostate cancer, female breast cancer and lung cancer.

### ***Treatments and referrals (Table 20)***

GP management of cancers included medications, clinical treatments, procedural treatments, and ordering of pathology and imaging tests.

- No significant difference was found in the rate of total medications recorded, but a significant decrease was apparent in prescribing rates, for cancer between 1998–2000 when the rate was 30.5 per 100 contacts (confidence interval: 27.7–33.3) and 2002–2004 when the rate was 25.3 per 100 (CI: 23.1–27.5).
- There was a significant increase in the overall rate of other treatments provided between 1998–2000 and 2002–2004. GPs provided these treatments at a rate of 39.4 per 100 cancer contacts (CI: 37.4–41.4) in 1998–2000 and at a rate of 46.1 per 100 (CI: 42.3–49.8) in 2002–2004.
- The total referral rate for cancer of approximately 20.0 per 100 contacts did not change over time. However, referrals to hospital, though fairly uncommon, decreased significantly through all three measurement points. The same pattern was seen for referrals to allied health services.
- There was a notable decrease in the ordering rate for pathology tests for cancer contacts between 1998–2000 (24.5 per 100, CI: 22.4–26.7) and 2000–2002 (15.0 per 100, CI: 12.4–17.6). This was despite the expansion of the pathology coding frame in BEACH to include specific tests that were previously grouped, which logically should have increased the number of pathology tests coded. The rate in 2002–2004 was also significantly lower than in 1998–2000, but no significant difference was found between the two later time periods.

### ***Medications prescribed (Table 21)***

- Opioids (synthetic narcotics that have opiate-like activities but are not derived from opium) were the most commonly prescribed medications for cancer, accounting for approximately one-quarter of all prescriptions. They were prescribed by GPs at a rate of 7 per 100 cancer contacts in 2002–2004.
- There were no significant changes over time in medications prescribed from 1998 to 2004.

### ***Other treatments by GPs to manage cancer (Table 22)***

- The provision of all other treatments increased significantly from 9.4 per 100 cancer contacts (CI: 37.4–41.4) in 1998–2000 to 46.1 per 100 (CI: 42.3–49.8) in 2002–2004.
- A significant increase was found in the rate at which GPs undertook administrative procedures between 1998–2000 (0.8 per 100 cancer contacts, CI: 0.5–1.0) and the two later periods when the rates were 1.5 per 100 (CI: 1.1–1.9) and 1.9 (CI: 1.4–2.4) respectively.
- An increase over time in the local injection/infiltration rate may be due partly to a methodological change, which saw medications injected at the encounter recorded more consistently as a treatment.



### Referrals made by GPs in management of cancer (Table 23)

- There was no significant difference between 1998–2000 and 2002–2004 in the overall rate of referrals for cancer.
- Of the 10 most common individual referrals only referrals to hospitals showed a significant change, decreasing from 1.4 per 100 cancer contacts (CI: 1.0–1.8) in 1998–2000 to 0.6 per 100 (CI: 0.4–0.9) in 2000–2002 and 0.6 per 100 (CI: 0.3–0.8) in 2002–2004. As a percentage of all referrals, hospital referrals halved between the first and third time periods, from 6.8% to 2.9%.
- The referral rates to unspecified specialists and to allied health professionals had also decreased by 2002–2004, dropping out of the top 10 most common referrals for cancer.

**Table 19: Top ten types of cancer managed at GP-patient encounters, 1998 to 2004**

Type of cancer	Number	Estimated national no. of contacts per year	Rate per 100 encounters	Percentage of total cancer contacts
<b>April 1998 to March 2000</b>				
Basal cell carcinoma	990	511,800	0.5	24.6
Squamous cell carcinoma	507	262,100	0.4	12.6
Prostate cancer	468	241,900	0.2	11.6
Breast cancer (female)	342	176,800	0.2	8.5
Lung cancer	191	98,700	0.1	4.7
Melanoma	148	76,500	0.1	3.7
Other skin cancer	121	62,600	0.1	3.0
Large bowel cancer	120	62,000	0.1	3.0
Colon cancer	81	41,900	0.0	2.0
Leukaemia: chronic lymphocytic	68	35,200	0.0	1.7
<i>All cancers</i>	<i>4,028</i>	<i>2,081,900</i>	<i>2.0</i>	<i>100.0</i>
<b>April 2000 to March 2002</b>				
Basal cell carcinoma	966	511,800	0.5	25.5
Squamous cell carcinoma	495	262,200	0.3	13.1
Prostate cancer	448	237,300	0.2	11.8
Breast cancer (female)	308	163,200	0.2	8.1
Lung cancer	156	82,600	0.1	4.1
Melanoma	145	76,800	0.1	3.8
Other skin cancer	112	59,300	0.1	3.0
Large bowel cancer	98	51,900	0.1	2.6
Colon cancer	95	50,300	0.1	2.5
Bowen's disease	73	38,700	0.0	1.9
<i>All cancers</i>	<i>3,790</i>	<i>2,007,200</i>	<i>1.9</i>	<i>100.0</i>
<b>April 2002 to March 2004</b>				
Basal cell carcinoma	1,106	578,300	0.6	25.9
Squamous cell carcinoma	597	312,200	0.3	14.0
Prostate cancer	474	247,900	0.2	11.1
Breast cancer (female)	425	222,200	0.2	9.9
Melanoma	171	89,400	0.1	4.0
Lung cancer	139	72,700	0.1	3.3
Other skin cancer	129	67,500	0.1	3.0
Colon cancer	111	58,000	0.1	2.6
Large bowel cancer	97	50,700	0.1	2.3
Leukaemia: chronic lymphocytic	71	37,100	0.0	1.7
<i>All cancers</i>	<i>4,276</i>	<i>2,234,900</i>	<i>2.1</i>	<i>100.0</i>

Source: AIHW General Practice Classification and Statistics Unit.

Table 20: GP management of cancer, 1998 to 2004

	Number	Rate per 100 cancer contacts	
		Rate	95% confidence interval
<b>April 1998 to March 2000</b>			
<b>All medications</b>	1,313	32.6	29.7–35.5
Prescribed medications	1,229	30.5	27.7–33.3
Advised over-the-counter medications	28	0.7	0.4–1.0
Medications supplied by GP	56	1.4	0.9–1.9
<b>All other treatments</b>	1,588	39.4	37.4–41.4
Clinical treatments	667	16.6	15.0–18.1
Procedural treatments	921	22.9	21.0–24.7
Referrals			
<b>All referrals</b>	845	21.0	19.5–22.4
Referrals to a hospital	57	1.4	1.0–1.8
Referrals to a specialist	700	17.4	16.0–18.7
Referrals to allied health services	85	2.1	1.6–2.6
Referrals to an emergency department	1	0.0	0.0–0.1
<b>Pathology tests ordered</b>	988	24.5	22.4–26.7
<b>Imaging tests ordered</b>	169	4.2	3.4–5.0
<b>April 2000 to March 2002</b>			
<b>All medications</b>	1,153	30.4	27.3–33.6
Prescribed medications	1,075	28.4	25.3–31.4
Advised over the counter medications	19	0.5	0.3–0.7
Medications supplied by GP	59	1.6	0.9–2.2
<b>All other treatments</b>	1,571	41.5	38.1–44.8
Clinical treatments	678	17.9	16.1–19.7
Procedural treatments	893	23.6	21.0–26.1
Referrals			
<b>All referrals</b>	726	19.2	17.6–20.7
Referrals to a hospital	24	0.6	0.4–0.9
Referrals to a specialist	653	17.2	15.8–18.7
Referrals to allied health services	34	0.9	0.6–1.2
Referrals to an emergency department	1	0.0	0.0–0.1
<b>Pathology tests ordered</b>	567	15.0	12.4–17.6
<b>Imaging tests ordered</b>	185	4.9	4.1–5.7
<b>April 2002 to March 2004</b>			
<b>All medications</b>	1,193	27.9	25.6–30.3
Prescribed medications	1,082	25.3	23.1–27.5
Advised over the counter medications	27	0.6	0.3–0.9
Medications supplied by GP	84	2.0	1.1–2.8
<b>All other treatments</b>	1,970	46.1	42.3–49.8
Clinical treatments	845	19.8	17.2–22.3
Procedural treatments	1,125	26.3	23.5–29.1
Referrals			
<b>All referrals</b>	861	20.1	18.5–21.8
Referrals to a hospital	25	0.6	0.3–0.8
Referrals to a specialist	776	18.2	16.6–19.7
Referrals to allied health services	38	0.9	0.5–1.3
Referrals to an emergency department	1	0.0	0.0–0.1
<b>Pathology tests ordered</b>	722	16.9	14.3–19.5
<b>Imaging tests ordered</b>	191	4.5	3.7–5.3

Source: AIHW General Practice Classification and Statistics Unit.

**Table 21: Top ten medications prescribed by GPs for management of cancer, 1998 to 2004**

ATC <sup>(a)</sup> class of medication	Number	Per cent of all prescriptions	Rate per 100 cancer contacts	
			Rate	95% confidence interval
<b>April 1998 to March 2000</b>				
Opioids	298	24.3	7.4	6.2–8.6
Other analgesics and antipyretics	117	9.5	2.9	2.3–3.5
Hormones and related agents	112	9.1	2.8	2.2–3.3
Hormone antagonists and related agents	90	7.3	2.2	1.7–2.8
Corticosteroids for systemic use, plain	47	3.8	1.2	0.8–1.5
Propulsives	46	3.7	1.1	0.7–1.6
Hypnotics and sedatives	43	3.5	1.1	0.7–1.4
Antipsychotics	29	2.4	0.7	0.4–1.0
Anxiolytics	23	1.9	0.6	0.3–0.8
Laxatives	21	1.7	0.5	0.3–0.8
<b>Total medications</b>	<b>1,229</b>	<b>100.0</b>	<b>30.5</b>	<b>27.7–33.3</b>
<b>April 2000 to March 2002</b>				
Opioids	283	26.3	7.5	6.3–8.7
Hormones and related agents	139	12.9	3.7	3.0–4.3
Other analgesics and antipyretics	94	8.7	2.5	1.9–3.1
Hormone antagonists and related agents	89	8.3	2.4	1.8–2.8
Propulsives	43	4.0	1.1	0.7–1.5
Corticosteroids for systemic use, plain	41	3.8	1.1	0.6–1.5
Hypnotics and sedatives	23	2.1	0.6	0.3–0.9
Antiandrogens	22	2.1	0.6	0.3–0.8
Antipsychotics	19	1.8	0.5	0.3–0.7
Antimetabolites	16	1.5	0.4	0.2–0.7
<b>Total medications</b>	<b>1,075</b>	<b>100.0</b>	<b>28.4</b>	<b>25.3–31.4</b>
<b>April 2002 to March 2004</b>				
Opioids	292	27.0	6.8	5.8–7.8
Hormones and related agents	135	12.5	3.2	2.6–3.7
Hormone antagonists and related agents	92	8.5	2.2	1.7–2.6
Other analgesics and antipyretics	91	8.4	2.1	1.7–2.6
Propulsives	39	3.6	0.9	0.6–1.2
Corticosteroids for systemic use, plain	32	3.0	0.8	0.5–1.0
Hypnotics and sedatives	32	3.0	0.8	0.5–1.0
Antiandrogens	22	2.0	0.5	0.3–0.8
Laxatives	18	1.7	0.4	0.2–0.6
Anxiolytics	17	1.6	0.4	0.2–0.6
<b>Total medications</b>	<b>1,082</b>	<b>100.0</b>	<b>25.3</b>	<b>23.1–27.5</b>

(a) Anatomical Therapeutic Chemical Classification Index, WHO Collaborating Centre for Drug Statistics Methodology.

Source: AIHW General Practice Classification and Statistics Unit.

**Table 22: Top ten other treatments used by GPs for management of cancer, 1998 to 2004**

Treatment	Number	Per cent of all other treatments		Rate per 100 cancer contacts	
		Rate	95% confidence interval	Rate	95% confidence interval
<b>April 1998 to March 2000</b>					
Excision/removal tissue; Biopsy; Destruction; Debridement; Cauterisation	651	41.0	37.8–44.2	16.2	14.6–17.7
Observation/Health education/advice	306	19.3	17.0–21.6	7.6	6.6–8.6
Therapeutic counselling/Listening	305	19.2	16.6–21.8	7.6	6.5–8.7
Repair/Fixation-suture/Cast/Prosthetic device (Apply/Remove)	145	9.1	7.6–10.7	3.6	3.0–4.2
Local injection/Infiltration	32	2.0	1.2–2.8	0.8	0.5–1.1
Administrative procedure	31	2.0	1.3–2.6	0.8	0.5–1.0
Dressing/Pressure/Compression/Tamponade	26	1.6	0.9–2.3	0.7	0.4–0.9
Clarification/discussion of patient's RFE/demand	24	1.5	0.9–2.3	0.6	0.3–0.9
Physical medicine/Rehabilitation	17	1.1	0.5–1.6	0.4	0.2–0.6
Other therapeutic procedures/surgery n.e.c.	14	0.9	0.3–1.4	0.4	0.1–0.6
<b>Total treatments</b>	<b>1,588</b>	<b>100.0</b>		<b>39.4</b>	<b>37.4–41.4</b>
<b>April 2000 to March 2002</b>					
Excision/removal tissue; Biopsy; Destruction; Debridement; Cauterisation	662	42.1	38.3–46.0	17.5	15.0–20.0
Therapeutic counselling/Listening	326	20.8	18.0–23.5	8.6	7.2–10
Observation/Health education/advice	264	16.8	14.6–19.0	7.0	6.0–7.9
Repair/Fixation—suture/Cast/Prosthetic device (Apply/Remove)	107	6.8	5.1–8.5	2.8	2.1–3.5
Administrative procedure	57	3.6	2.6–4.6	1.5	1.1–1.9
Local injection/Infiltration	40	2.6	1.7–3.4	1.1	0.7–1.4
Dressing/Pressure/Compression/Tamponade	34	2.2	1.4–3.0	0.9	0.6–1.2
Clarification/discussion of patient's RFE/demand	22	1.4	0.7–2.1	0.6	0.3–0.9
Other therapeutic procedures/surgery n.e.c.	15	1.0	0.3–1.6	0.4	0.1–0.7
Histological/Exfoliative cytology	6	0.4	0.0–0.7	0.2	0.0–0.3
<b>Total treatments</b>	<b>1,571</b>	<b>100.0</b>		<b>41.5</b>	<b>38.1–44.8</b>
<b>April 2002 to March 2004</b>					
Excision/removal tissue; Biopsy; Destruction; Debridement; Cauterisation	771	39.1	34.5–43.8	18.0	15.4–20.7
Therapeutic counselling/Listening	405	20.6	17.7–23.4	9.5	8.1–10.8
Observation/Health education/advice	322	16.4	13.0–19.7	7.5	5.6–9.4
Repair/Fixation-suture/Cast/Prosthetic device (Apply/Remove)	139	7.1	5.7–8.4	3.3	2.6–3.9
Local injection/Infiltration	95	4.8	3.3–6.4	2.2	1.4–3.0
Administrative procedure	81	4.1	3.0–5.2	1.9	1.4–2.4
Dressings/Pressure/Compression/Tamponade	35	1.8	1.1–2.4	0.8	0.5–1.1
Medication-prescription/Request/Renewal/Injection	28	1.4	0.9–2.0	0.7	0.4–0.9
Clarification/discussion of patient's RFE/demand	27	1.4	0.8–1.9	0.6	0.4–0.9
Other therapeutic procedures/surgery n.e.c.	17	0.9	0.4–1.3	0.4	0.2–0.6
<b>Total treatments</b>	<b>1,970</b>	<b>100.0</b>		<b>46.1</b>	<b>42.3–49.8</b>

Source: AIHW General Practice Classification and Statistics Unit.

Table 23: Top ten referrals made by GPs in management of cancer, 1998 to 2004

Service or specialist type referred to	Number	Per cent of total referrals		Rate per 100 cancer contacts	
		Rate	95% confidence interval	Rate	95% confidence interval
<b>April 1998 to March 2000</b>					
Surgeon	188	22.3	19.3–25.2	4.7	4.0–5.4
Dermatologist	184	21.8	18.7–24.8	4.6	3.8–5.3
Plastic surgeon	95	11.2	8.9–13.6	2.4	1.8–2.9
Hospital	57	6.8	5.0–8.5	1.4	1.0–1.8
Oncologist	49	5.8	4.2–7.4	1.2	0.9–1.6
Urologist	49	5.8	4.2–7.4	1.2	0.9–1.6
Specialist	42	5.0	3.5–6.4	1.0	0.7–1.4
Health professional	32	3.8	2.4–5.2	0.8	0.5–1.1
Colonoscopy	20	2.4	1.4–3.4	0.5	0.3–0.7
Palliative care	19	2.3	1.2–3.3	0.5	0.3–0.7
<b>All referrals</b>	<b>845</b>			<b>21.0</b>	<b>19.5–22.4</b>
<b>April 2000 to March 2002</b>					
Dermatologist	182	25.1	21.6–28.6	4.8	4.0–5.6
Surgeon	152	20.9	17.7–24.2	4.0	3.3–4.7
Plastic surgeon	98	13.5	10.8–16.2	2.6	2.0–3.1
Oncologist	53	7.3	5.4–9.2	1.4	1.0–1.8
Urologist	50	6.9	4.9–8.8	1.3	0.9–1.7
Specialist	25	3.4	2.1–4.8	0.7	0.4–0.9
Hospital	24	3.3	2.0–4.6	0.6	0.4–0.9
Gynaecologist	20	2.8	1.5–4.0	0.5	0.3–0.8
Gastroenterologist	18	2.5	1.3–3.7	0.5	0.2–0.7
Unspecified	14	1.9	0.9–3.0	0.4	0.2–0.6
<b>All referrals</b>	<b>726</b>			<b>19.2</b>	<b>17.6–20.7</b>
<b>April 2002 to March 2004</b>					
Surgeon	210	24.4	21.3–27.5	4.9	4.2–5.7
Dermatologist	172	20.0	17.0–22.9	4.0	3.3–4.7
Plastic surgeon	127	14.8	12.3–17.2	3.0	2.4–3.5
Oncologist	66	7.7	5.9–9.5	1.5	1.2–1.9
Urologist	62	7.2	5.4–9.0	1.5	1.1–1.8
Gynaecologist	32	3.7	2.4–5.0	0.8	0.5–1.0
Hospital	25	2.9	1.7–4.1	0.6	0.3–0.8
Haematologist	23	2.7	1.6–3.7	0.5	0.3–0.8
Unspecified	21	2.4	1.3–3.6	0.5	0.3–0.7
Palliative care	18	2.1	1.0–3.2	0.4	0.2–0.7
<b>All referrals</b>	<b>861</b>			<b>20.1</b>	<b>18.5–21.8</b>

Source: AIHW General Practice Classification and Statistics Unit.

# International comparison

## Introduction

The International Agency for Research on Cancer (IARC) is part of the World Health Organization. Its mission is 'to coordinate and conduct research on the causes of human cancer, the mechanisms of carcinogenesis, and to develop scientific strategies for cancer control'.

It collates cancer incidence and mortality data for 27 cancers from countries around the world and publishes estimates for all countries in its GLOBOCAN database, which is publicly available on its web site at <<http://www.iarc.fr/>>.

The following tables were extracted from the GLOBOCAN database and present comparative data on crude and age-standardised rates of incidence and mortality for selected cancers for selected countries and regions of the world. Numbers and rates are estimates for the middle of 2000, based on the most recent data available, generally 3 to 5 years earlier, so care should be taken in interpretation. Nevertheless they provide a good guide to how Australia compares with countries such as Canada, New Zealand, the United States and the United Kingdom, to the world as a whole, and to regions such as South East Asia and eastern, southern, western and northern Europe.

In summary, in comparison to other developed countries, Australia has relatively high incidence rates but comparatively low mortality rates, indicating that cancer survival in Australia is relatively very good. This suggests that the health system in Australia is performing well in lengthening survival through early detection and in treatment of cancer.

### *All cancers except cancers of the skin*

- Australia has higher age-standardised incidence per 100,000 population for males (355 and females (279) than for the more developed countries of the world (301 and 218 respectively), but lower mortality for males (151 compared with 174) and the same level of mortality for females (103).
- Australia's incidence rates for males and females are much higher than for the United Kingdom and Canada, but are slightly lower than for the United States and are around 20 persons per 100,000 population lower than for New Zealand. Australia's mortality rates are lower than for all four of these countries.

### *Colorectal cancer*

- Colorectal cancer is a disease besetting affluent countries. The age-standardised incidence per 100,000 population is an average of 37 for more developed countries and 10 for less developed countries for males, with Australia having a very high rate by world standards of 50.
- The Australian incidence rate is higher than for the United States, Canada and the United Kingdom, but less than that for New Zealand.
- Australia's male and female mortality rates for colorectal cancer are also high by world standards, including above those of Canada, the United States and the United Kingdom.

### *Female breast cancer*

- Breast cancer is another disease particularly high in affluent countries. Australian age-standardised incidence per 100,000 population is much higher than the average for the more developed countries of the world, but is almost the same as for Canada and New Zealand and below that of the United States.
- Australia's breast cancer screening program appears to have been successful in achieving lower mortality than would be expected from its incidence rate, although the relative reduction in mortality is not as great as that which has been achieved by the United States. Age-standardised breast cancer mortality in Australia is lower than that for Canada, the United States, the United Kingdom and New Zealand.

### *Prostate cancer*

- The age-standardised incidence of prostate cancer in Australia is much higher than in the United Kingdom and other European countries, but is well below the very high rates found in the United States and New Zealand.
- Age-standardised prostate cancer mortality is similar in Australia to each of Canada, the United States, the United Kingdom and New Zealand.

### *Melanoma*

- Because of excessive sun exposure, Australia and New Zealand have by far the highest rates of not only incidence of melanoma in the world, but also mortality, although mortality rates are quite low.
- The melanoma incidence rates in Australia and New Zealand are around four times as high as those found in Canada, the United States and the United Kingdom.

### *Lung cancer*

- Australia's male lung cancer incidence and mortality rates are both well below the averages for the more developed countries of the world, especially compared with very high incidence rates in Canada, the United States and most European countries.
- Canada and the United States have almost double Australia's incidence and mortality for female lung cancer. Australia's rates are also below those of the United Kingdom and New Zealand, and northern European countries, but well above the low levels found in eastern, western and southern Europe.

### *Non-Hodgkin's lymphoma*

- Australian age-standardised incidence and mortality rates for non-Hodgkin's lymphoma are the same as for New Zealand and Canada, but above the rates for the United Kingdom and below those for the United States.

### *Cervical cancer*

- Because of the success of the National Cervical Screening Program in detecting and following up pre-cancerous abnormalities, Australia's cervical cancer incidence and mortality rates have been declining steadily for many years. They are both well below the averages for the more developed countries of the world, and also below those of the United Kingdom, Canada, the United States and New Zealand.



### *Stomach cancer*

- Australia has stomach cancer incidence and mortality rates which are low by world standards, in fact less than half those of the averages for the more developed countries of the world.
- However, the Australian rates are higher than those found in the United States, and similar to those of Canada, the United Kingdom and New Zealand.

### *Cancer of the pancreas*

- There are mixed patterns in the comparisons between Australia and similar western countries for male and female pancreatic cancer data.
- For males, Australian rates of pancreatic cancer incidence and mortality are almost the same as for New Zealand and the United Kingdom, and below the rates experienced in Canada and the United States.
- For females, the age-standardised Australian incidence rate is above that of the United Kingdom but below the rates of Canada, the United States and New Zealand. The Australian mortality rate is on a par with those of New Zealand and the United States, but below the rates of the United States and Canada.

**Table 24: Global ranking of incidence and mortality for cancer of all sites but skin, selected countries, 2000**

Population	Incidence			Mortality		
	Numbers	Crude	ASR(W)	Numbers	Crude	ASR(W)
<b>Males</b>						
World	5,317,905	174.4	201.9	3,522,366	115.5	134.4
More developed countries	2,503,772	433.4	301.0	1,488,212	257.6	173.9
Less developed countries	2,814,132	113.9	153.8	2,034,163	82.3	112.9
Australia	45,066	480.5	355.3	19,803	211.1	150.9
Canada	68,952	447.4	323.4	35,303	229.1	160.5
New Zealand	9,297	488.5	375.3	4,248	223.2	167.3
United Kingdom	123,791	428.6	260.3	84,722	293.3	171.0
United States of America	653,465	476.4	361.4	301,050	219.5	161.8
Eastern Europe	522,447	359.6	290.0	363,550	250.2	199.9
Northern Europe	194,551	420.7	263.4	129,289	279.6	168.2
South-Eastern Asia	237,409	91.8	131.1	181,556	70.2	101.3
Southern Europe	312,156	443.4	275.4	204,532	290.5	172.1
Western Europe	444,491	494.9	318.7	270,193	300.9	185.2
<b>Females</b>						
World	4,737,646	157.6	157.8	2,686,313	89.4	88.3
More developed countries	2,175,974	356.6	218.3	1,157,634	189.7	103.1
Less developed countries	2,561,666	106.9	127.9	1,528,670	63.8	77.5
Australia	37,864	398.3	279.3	15,488	162.9	103.2
Canada	62,664	398.3	266.0	30,400	193.2	116.7
New Zealand	8,163	416.8	303.2	3,814	194.7	131.1
United Kingdom	123,876	413.7	234.3	76,923	256.9	128.1
United States of America	598,177	423.7	283.2	268,965	190.5	116.4
Eastern Europe	483,649	299.1	197.2	274,613	169.8	101.4
Northern Europe	195,489	406.1	235.1	115,945	240.9	121.7
South-Eastern Asia	257,923	99.3	120.1	156,137	60.1	74.1
Southern Europe	248,549	336.9	194.3	137,936	187.0	92.7
Western Europe	375,854	401.8	230.7	213,455	228.2	110.4

*Notes*

1. Cancer numbers and rates are estimates for the middle of 2000, from the most recent data available, generally 3–5 years earlier.
2. Rates are expressed per 100,000 populations and age-standardised to the year 2000 Standard Population of the corresponding country and to the World Standard Population (ASR (W)).

Source: GLOBOCAN 2000, IARC, 2004.

**Table 25: Global ranking of incidence and mortality for cancer of the colon/rectum, selected countries, 2000**

Population	Incidence			Mortality		
	Numbers	Crude	ASR(W)	Numbers	Crude	ASR(W)
<b>Males</b>						
World	498,754	16.4	19.1	254,816	8.4	9.8
More developed countries	318,694	55.2	37.3	152,178	26.3	17.4
Less developed countries	180,059	7.3	9.9	102,640	4.2	5.8
Australia	6,423	68.5	49.9	2,631	28.1	20.1
Canada	8,804	57.1	40.8	3,642	23.6	16.4
New Zealand	1,366	71.8	55.3	650	34.2	25.7
United Kingdom	17,249	59.7	35.4	9,341	32.3	18.7
United States of America	74,938	54.6	40.6	29,843	21.8	15.9
Eastern Europe	60,325	41.5	32.9	33,570	23.1	18.1
Northern Europe	26,409	57.1	34.7	14,357	31.0	18.4
South-Eastern Asia	22,338	8.6	12.6	14,359	5.6	8.1
Southern Europe	38,786	55.1	32.9	20,216	28.7	16.4
Western Europe	61,128	68.1	42.1	30,211	33.6	20.1
<b>Females</b>						
World	445,963	14.8	14.4	237,595	7.9	7.6
More developed countries	291,897	47.8	25.4	149,470	24.5	12.3
Less developed countries	154,064	6.4	7.9	88,121	3.7	4.5
Australia	5,305	55.8	35.4	2,237	23.5	14.4
Canada	7,831	49.8	29.8	3,215	20.4	11.6
New Zealand	1,292	65.9	43.4	606	30.9	20.2
United Kingdom	15,924	53.2	25.3	9,047	30.2	13.8
United States of America	73,033	51.7	30.7	29,753	21.1	12.0
Eastern Europe	60,148	37.2	21.5	36,727	22.7	12.4
Northern Europe	24,953	51.8	25.2	14,204	29.5	13.7
South-Eastern Asia	20,328	7.8	10.0	13,022	5.0	6.4
Southern Europe	32,706	44.3	22.0	17,658	23.9	10.9
Western Europe	58,255	62.3	29.4	31,835	34.0	14.8

*Notes*

1. Cancer numbers and rates are estimates for the middle of 2000, from the most recent data available, generally 3–5 years earlier.
2. Rates are expressed per 100,000 populations and age-standardised to the year 2000 Standard Population of the corresponding country and to the World Standard Population (ASR (W)).

Source: GLOBOCAN 2000, IARC, 2004.

**Table 26: Global ranking of incidence and mortality for cancer of breast, females, selected countries, 2000**

Population	Incidence			Mortality		
	Numbers	Crude	ASR(W)	Numbers	Crude	ASR(W)
<b>Females</b>						
World	1,050,346	34.9	35.7	372,969	12.4	12.5
More developed countries	579,285	94.9	63.2	189,203	31.0	18.6
Less developed countries	471,063	19.7	23.1	183,768	7.7	9.1
Australia	10,645	112.0	82.7	2,723	28.6	19.7
Canada	18,468	117.4	81.8	5,610	35.7	22.8
New Zealand	2,102	107.4	82.6	704	35.9	25.9
United Kingdom	34,815	116.3	74.9	14,415	48.1	26.8
United States of America	183,494	130.0	91.4	45,553	32.3	21.2
Eastern Europe	110,975	68.6	49.4	43,058	26.6	17.2
Northern Europe	54,551	113.3	73.2	20,992	43.6	24.6
South-Eastern Asia	55,907	21.5	25.6	24,961	9.6	11.5
Southern Europe	65,284	88.5	56.2	25,205	34.2	19.1
Western Europe	115,308	123.3	78.2	40,443	43.2	23.5

*Notes*

1. Cancer numbers and rates are estimates for the middle of 2000, from the most recent data available, generally 3–5 years earlier.
2. Rates are expressed per 100,000 populations and age-standardised to the year 2000 Standard Population of the corresponding country and to the World Standard Population (ASR (W)).

Source: GLOBOCAN 2000, IARC, 2004.

**Table 27: Global ranking of incidence and mortality for cancer of the prostate, selected countries, 2000**

Population	Incidence			Mortality		
	Numbers	Crude	ASR(W)	Numbers	Crude	ASR(W)
<b>Males</b>						
World	542,990	17.8	21.2	204,313	6.7	8.0
More developed countries	415,568	71.9	46.7	128,185	22.2	13.7
Less developed countries	127,419	5.2	7.7	76,127	3.1	4.6
Australia	10,129	108.0	76.0	2,518	26.8	18.0
Canada	18,658	121.1	83.9	4,022	26.1	17.1
New Zealand	2,646	139.1	101.1	577	30.3	21.2
United Kingdom	21,302	73.7	40.2	10,062	34.8	18.5
United States of America	193,205	140.8	104.3	35,882	26.2	17.9
Eastern Europe	36,390	25.1	19.4	16,193	11.2	8.5
Northern Europe	37,046	80.1	45.4	16,806	36.4	20.0
South-Eastern Asia	11,152	4.3	7.1	6,681	2.6	4.2
Southern Europe	31,474	44.7	23.9	17,577	25.0	13.0
Western Europe	84,856	94.5	54.9	30,777	34.3	19.3

*Notes*

1. Cancer numbers and rates are estimates for the middle of 2000, from the most recent data available, generally 3–5 years earlier.
2. Rates are expressed per 100,000 populations and age-standardised to the year 2000 Standard Population of the corresponding country and to the World Standard Population (ASR (W)).

Source: GLOBOCAN 2000, IARC, 2004.

**Table 28: Global ranking of incidence and mortality for melanoma of the skin, selected countries, 2000**

Population	Incidence			Mortality		
	Numbers	Crude	ASR(W)	Numbers	Crude	ASR(W)
<b>Males</b>						
World	65,177	2.1	2.4	19,990	0.7	0.8
More developed countries	50,608	8.8	6.7	13,827	2.4	1.7
Less developed countries	14,571	0.6	0.8	6,162	0.3	0.3
Australia	4,841	51.6	40.5	605	6.4	4.8
Canada	1,637	10.6	8.2	409	2.7	2.0
New Zealand	860	45.2	36.7	128	6.8	5.3
United Kingdom	2,398	8.3	6.1	769	2.7	1.8
United States of America	22,463	16.4	13.3	4,860	3.5	2.7
Eastern Europe	9,253	6.4	5.2	3,000	2.1	1.7
Northern Europe	4,688	10.1	7.4	1,437	3.1	2.1
South-Eastern Asia	765	0.3	0.4	359	0.1	0.2
Southern Europe	3,667	5.2	3.8	1,535	2.2	1.5
Western Europe	8,498	9.5	7.0	2,348	2.6	1.8
<b>Females</b>						
World	67,425	2.2	2.2	17,057	0.6	0.6
More developed countries	53,511	8.8	6.1	11,048	1.8	1.1
Less developed countries	13,904	0.6	0.7	6,019	0.3	0.3
Australia	3,865	40.7	31.8	345	3.6	2.5
Canada	1,673	10.6	8.0	286	1.8	1.2
New Zealand	868	44.4	34.9	87	4.5	3.2
United Kingdom	3,375	11.3	7.7	795	2.7	1.5
United States of America	18,183	12.9	9.4	2,931	2.1	1.4
Eastern Europe	10,983	6.8	5.0	2,736	1.7	1.1
Northern Europe	6,085	12.6	8.7	1,293	2.7	1.6
South-Eastern Asia	1,083	0.4	0.5	507	0.2	0.2
Southern Europe	5,053	6.9	4.6	1,352	1.8	1.1
Western Europe	11,215	12.0	8.1	2,222	2.4	1.3

*Notes*

1. Cancer numbers and rates are estimates for the middle of 2000, from the most recent data available, generally 3–5 years earlier.
2. Rates are expressed per 100,000 populations and age-standardised to the year 2000 Standard Population of the corresponding country and to the World Standard Population (ASR (W)).

Source: GLOBOCAN 2000, IARC, 2004.

**Table 29: Global ranking of incidence and mortality for cancer of the lung, selected countries, 2000**

Population	Incidence			Mortality		
	Numbers	Crude	ASR(W)	Numbers	Crude	ASR(W)
<b>Males</b>						
World	901,746	29.6	34.9	810,419	26.6	31.4
More developed countries	470,836	81.5	55.6	430,043	74.4	50.2
Less developed countries	430,919	17.4	24.8	380,389	15.4	22.0
Australia	5,553	59.2	42.2	4,798	51.1	36.2
Canada	11,997	77.8	55.1	11,123	72.2	50.4
New Zealand	1,054	55.4	41.4	1,004	52.8	39.3
United Kingdom	23,708	82.1	47.6	24,433	84.6	48.6
United States of America	107,618	78.5	58.6	98,738	72.0	53.2
Eastern Europe	126,653	87.2	69.7	115,091	79.2	63.1
Northern Europe	119,664	78.4	58.2	109,906	72.0	52.9
South-Eastern Asia	47,456	18.3	27.8	43,716	16.9	25.7
Southern Europe	67,518	95.9	58.8	59,426	84.4	50.4
Western Europe	75,350	83.9	53.2	71,024	79.1	48.9
<b>Females</b>						
World	337,115	11.2	11.1	292,700	9.7	9.5
More developed countries	175,392	28.7	15.6	151,159	24.8	13.1
Less developed countries	161,719	6.8	8.4	141,538	5.9	7.4
Australia	2,604	27.4	17.5	2,140	22.5	14.0
Canada	7,589	48.2	30.2	6,421	40.8	25.0
New Zealand	629	32.1	21.7	553	28.2	18.7
United Kingdom	13,423	44.8	21.8	13,231	44.2	21.1
United States of America	78,320	55.5	34.0	63,378	44.9	27.2
Eastern Europe	24,420	15.1	8.8	22,063	13.6	7.8
Northern Europe	18,063	37.5	18.9	17,792	37.0	18.1
South-Eastern Asia	18,368	7.1	9.1	16,883	6.5	8.4
Southern Europe	11,227	15.2	8.0	10,330	14.0	6.9
Western Europe	18,183	19.4	10.7	16,789	18.0	9.2

*Notes*

1. Cancer numbers and rates are estimates for the middle of 2000, from the most recent data available, generally 3–5 years earlier.
2. Rates are expressed per 100,000 populations and age-standardised to the year 2000 Standard Population of the corresponding country and to the World Standard Population (ASR (W)).

Source: GLOBOCAN 2000, IARC, 2004.

**Table 30: Global ranking of incidence and mortality for non-Hodgkin's lymphoma, persons, selected countries, 2000**

Population	Incidence			Mortality		
	Numbers	Crude	ASR(W)	Numbers	Crude	ASR(W)
<b>Persons</b>						
World	166,624	5.5	6.1	93,309	3.1	3.4
More developed countries	80,181	13.9	10.3	38,575	6.7	4.7
Less developed countries	86,436	3.5	4.3	54,738	2.2	2.8
Australia	1,758	18.7	14.4	848	9.1	6.6
Canada	2,940	19.1	14.6	1,296	8.4	6.1
New Zealand	331	17.4	14.0	148	7.8	6.0
United Kingdom	4,402	15.2	10.4	2,414	8.4	5.3
United States of America	28,094	20.5	16.1	12,835	9.4	7.1
Eastern Europe	11,246	7.7	6.6	5,692	3.9	3.3
Northern Europe	6,767	14.6	10.1	3,688	8.0	5.2
South-Eastern Asia	10,489	4.1	5.2	7,465	2.9	3.8
Southern Europe	9,322	13.2	9.2	4,167	5.9	3.8
Western Europe	14,286	15.9	11.1	6,529	7.3	4.6

*Notes*

1. Cancer numbers and rates are estimates for the middle of 2000, from the most recent data available, generally 3–5 years earlier.
2. Rates are expressed per 100,000 populations and age-standardised to the year 2000 Standard Population of the corresponding country and to the World Standard Population (ASR (W)).

Source: GLOBOCAN 2000, IARC & AIHW, 2004.



**Table 31: Global ranking of incidence and mortality for cancer of the cervix uteri, females, selected countries, 2000**

Population	Incidence			Mortality		
	Numbers	Crude	ASR(W)	Numbers	Crude	ASR(W)
<b>Females</b>						
World	470,606	15.7	16.1	233,372	7.8	8.0
More developed countries	91,451	15.0	11.4	39,350	6.5	4.1
Less developed countries	379,153	15.8	18.7	194,025	8.1	9.8
Australia	835	8.8	7.1	332	3.5	2.4
Canada	1,608	10.2	8.3	650	4.1	2.8
New Zealand	242	12.3	10.6	100	5.1	4.0
United Kingdom	3,537	11.8	9.3	1,906	6.4	3.9
United States of America	13,230	9.4	7.8	6,417	4.5	3.3
Eastern Europe	35,482	21.9	16.8	15,180	9.4	6.2
Northern Europe	6,049	12.6	9.8	3,162	6.6	4.0
South-Eastern Asia	39,648	15.3	18.3	20,462	7.9	9.7
Southern Europe	10,116	13.7	10.2	4,011	5.4	3.3
Western Europe	13,282	14.2	10.4	6,207	6.6	3.7

*Notes*

1. Cancer numbers and rates are estimates for the middle of 2000, from the most recent data available, generally 3–5 years earlier.
2. Rates are expressed per 100,000 populations and age-standardised to the year 2000 Standard Population of the corresponding country and to the World Standard Population (ASR (W)).

Source: GLOBOCAN 2000, IARC & AIHW, 2004.

**Table 32: Global ranking of incidence and mortality for stomach cancer, selected countries, 2000**

Population	Incidence			Mortality		
	Numbers	Crude	ASR(W)	Numbers	Crude	ASR(W)
<b>Males</b>						
World	558,458	18.3	21.5	405,215	13.3	15.6
More developed countries	208,282	36.1	24.6	138,699	24.0	16.2
Less developed countries	350,176	14.2	19.9	266,514	10.8	15.3
Australia	1,243	13.3	9.6	811	8.6	6.1
Canada	1,974	12.8	9.1	1,419	9.2	6.4
New Zealand	274	14.4	10.9	172	9.0	6.8
United Kingdom	6,178	21.4	12.4	5,101	17.7	10.1
United States of America	13,884	10.1	7.6	8,435	6.2	4.5
Eastern Europe	62,207	42.8	34.1	51,342	35.3	28.0
Northern Europe	9,751	21.1	12.7	8,195	17.7	10.6
South-Eastern Asia	15,035	5.8	8.7	12,843	5.0	7.5
Southern Europe	22,884	32.5	19.5	17,113	24.3	14.1
Western Europe	20,187	22.5	13.8	15,934	17.7	10.7
<b>Females</b>						
World	317,883	10.6	10.4	241,352	8.0	7.8
More developed countries	125,029	20.5	11.0	91,240	15.0	7.7
Less developed countries	192,850	8.1	10.0	150,100	6.3	7.8
Australia	753	7.9	5.0	481	5.1	3.1
Canada	1,123	7.1	4.2	894	5.7	3.2
New Zealand	162	8.3	5.2	126	6.4	4.0
United Kingdom	3,579	12.0	5.5	3,199	10.7	4.8
United States of America	8,594	6.1	3.6	5,690	4.0	2.3
Eastern Europe	42,223	26.1	14.5	35,375	21.9	12.2
Northern Europe	6,069	12.6	6.1	5,364	11.1	5.1
South-Eastern Asia	9,949	3.8	4.8	8,473	3.3	4.1
Southern Europe	14,965	20.3	9.7	11,707	15.9	7.2
Western Europe	14,146	15.1	7.0	12,709	13.6	6.0

*Notes*

1. Cancer numbers and rates are estimates for the middle of 2000, from the most recent data available, generally 3–5 years earlier.
2. Rates are expressed per 100,000 populations and age-standardised to the year 2000 Standard Population of the corresponding country and to the World Standard Population (ASR (W)).

Source: GLOBOCAN 2000, IARC & AIHW, 2004.

**Table 33: Global ranking of incidence and mortality of the cancer of the pancreas, 2000**

Population	Incidence			Mortality		
	Numbers	Crude	ASR(W)	Numbers	Crude	ASR(W)
<b>Males</b>						
World	115,697	3.8	4.5	111,966	3.7	4.3
More developed countries	66,186	11.5	7.8	65,773	11.4	7.7
Less developed countries	49,520	2.0	2.8	46,189	1.9	2.7
Australia	855	9.1	6.5	803	8.6	6.1
Canada	1,554	10.1	7.2	1,653	10.7	7.5
New Zealand	158	8.3	6.4	153	8.0	6.0
United Kingdom	2,978	10.3	6.2	3,240	11.2	6.6
United States of America	14,932	10.9	8.2	14,026	10.2	7.5
Eastern Europe	15,899	10.9	8.7	14,966	10.3	8.2
Northern Europe	4,991	10.8	6.7	5,502	11.9	7.2
South-Eastern Asia	3,565	1.4	2.0	3,258	1.3	1.9
Southern Europe	8,088	11.5	6.9	7,778	11.1	6.6
Western Europe	9,633	10.7	6.8	11,724	13.1	8.0
<b>Females</b>						
World	100,670	3.4	3.2	101,496	3.4	3.3
More developed countries	61,230	10.0	5.1	62,957	10.3	5.1
Less developed countries	39,449	1.7	2.1	38,545	1.6	2.0
Australia	872	9.2	5.5	841	8.9	5.2
Canada	1,585	10.1	5.9	1,676	10.7	6.0
New Zealand	188	9.6	6.2	161	8.3	5.1
United Kingdom	3,144	10.5	4.9	3,475	11.6	5.3
United States of America	15,380	10.9	6.3	14,796	10.5	6.0
Eastern Europe	13,732	8.5	4.8	13,085	8.1	4.4
Northern Europe	5,220	10.8	5.2	5,793	12.0	5.6
South-Eastern Asia	3,143	1.2	1.6	3,014	1.2	1.5
Southern Europe	7,463	10.1	4.7	7,177	9.7	4.4
Western Europe	9,223	9.9	4.6	12,069	12.9	5.7

*Notes*

1. Cancer numbers and rates are estimates for the middle of 2000, from the most recent data available, generally 3–5 years earlier.
2. Rates are expressed per 100,000 populations and age-standardised to the year 2000 Standard Population of the corresponding country and to the World Standard Population (ASR (W)).

Source: GLOBOCAN 2000, IARC & AIHW, 2004.



# Summary tables 2001

**Table 34: Incidence summary table, Australia, 2001**

ICD10/ICDO2	Cancer site/type	Males					Females			
		Number	AS rate (Aust 2001)	AS rate (World)	Cum. rate per cent	Sex ratio M:F	Number	AS rate (Aust 2001)	AS rate (World)	Cum. rate per cent
C00–C97	All cancers (excluding NMSC)	47,820	541.4	387.6	39.8	1.4	40,578	393.3	300.3	30.4
C00	Lip	705	7.7	6.0	0.6	3.1	262	2.5	1.8	0.2
C01–C02	Tongue	294	3.2	2.5	0.3	2.1	153	1.5	1.1	0.1
C03–C06	Mouth	266	2.9	2.2	0.3	1.7	173	1.7	1.3	0.1
C07–C08	Salivary gland	149	1.7	1.2	0.1	2.1	88	0.8	0.6	0.1
C09	Tonsil	156	1.6	1.3	0.1	3.7	44	0.4	0.3	0.0
C10	Other oropharynx	60	0.6	0.5	0.1	4.3	15	0.1	0.1	0.0
C11	Nasopharynx	73	0.8	0.6	0.1	2.7	28	0.3	0.2	0.0
C12–C13	Hypopharynx	121	1.3	1.0	0.1	5.8	24	0.2	0.2	0.0
C14	Pharynx unspecified	54	0.6	0.5	0.1	2.9	21	0.2	0.1	0.0
C15	Oesophagus	704	8.0	5.6	0.6	2.3	374	3.4	2.3	0.2
C16	Stomach	1,202	13.8	9.5	1.0	2.1	700	6.5	4.5	0.4
C17	Small intestine	166	1.9	1.3	0.1	1.5	129	1.2	0.9	0.1
C18	Colon	4,233	48.5	33.5	3.5	1.3	4,085	38.2	26.5	2.7
C19–C20	Rectum	2,626	29.4	21.1	2.3	1.8	1,675	16.0	11.5	1.2
C21	Anus	102	1.1	0.8	0.1	0.9	123	1.2	0.9	0.1
C18–C20	Colorectal (excluding anus)	6,859	77.9	54.6	5.8	1.4	5,760	54.2	38.0	3.9
C18–C21	Colorectal (including anus)	6,961	79.0	55.4	5.9	1.4	5,883	55.4	38.9	4.0
C22	Liver	617	6.9	5.0	0.5	3.1	236	2.2	1.6	0.2
C23–C24	Gallbladder	261	3.0	2.0	0.2	1.0	333	3.1	2.1	0.2
C25	Pancreas	958	11.0	7.6	0.8	1.3	900	8.2	5.5	0.5
C30–C31	Nasal cavity	92	1.0	0.8	0.1	2.9	36	0.3	0.3	0.0
C32	Larynx	530	5.8	4.3	0.5	11.2	54	0.5	0.4	0.0
C33–C34	Trachea, bronchus & lung	5,384	61.4	42.3	4.6	2.2	2,891	27.7	20.0	2.2
C37–C38	Other thoracic organs	40	0.4	0.4	0.0	2.4	19	0.2	0.1	0.0
C40–C41	Bone	84	0.9	0.8	0.1	0.9	97	1.0	0.9	0.1
C43	Skin—melanoma	5,024	55.2	42.4	4.2	1.4	3,861	38.3	31.6	3.0
C44	Skin—non-melanoma* (NMSC)									
C45	Mesothelioma	460	5.3	3.6	0.4	5.1	107	1.0	0.7	0.1
C46	Kaposi's sarcoma	41	0.4	0.4	0.0	6.1	8	0.1	0.0	0.0
C47–C49	Connective & soft tissue	317	3.5	2.8	0.2	1.1	330	3.2	2.6	0.3
C50	Breast	95	1.1	0.8	0.1	<0.01	11,791	117.2	93.1	9.9
C51–C52	Vulva & vagina						314	2.9	2.1	0.2
C53	Cervix uteri						735	7.3	6.2	0.5
C54	Corpus uteri						1,450	14.3	11.0	1.2
C55	Uterus unspecified						87	0.8	0.6	0.1
C56–C57	Ovary & other female genital organs						1,295	12.6	9.8	1.0
C58	Placenta						5	0.1	0.1	0.0
C60	Penis	76	0.8	0.6	0.1					
C61	Prostate	11,191	128.5	88.1	9.6					
C62	Testis	604	6.2	6.2	0.4					
C63	Other male genital organs	21	0.2	0.2	0.0					
C64	Kidney	1,314	14.6	10.7	1.1	2.0	758	7.3	5.6	0.6
C65	Renal pelvis	110	1.2	0.9	0.1	1.0	128	1.2	0.8	0.1
C66	Ureter	58	0.7	0.4	0.0	1.5	49	0.5	0.3	0.0
C67	Bladder	2,258	26.6	17.5	1.7	4.1	696	6.4	4.3	0.4
C68	Other urinary organs	32	0.4	0.2	0.0	4.7	9	0.1	0.1	0.0
C69	Eye	137	1.5	1.2	0.1	1.6	96	0.9	0.8	0.1
C71	Brain	786	8.5	7.1	0.7	1.5	562	5.6	4.6	0.4
C70, C72	Meninges & other CNS	36	0.4	0.4	0.0	1.0	37	0.4	0.3	0.0
C70–C72	Brain & CNS	822	8.9	7.4	0.7	1.5	599	5.9	5.0	0.5
C73	Thyroid	298	3.2	2.7	0.2	0.4	882	8.9	7.9	0.7
C74	Adrenal gland	39	0.4	0.4	0.0	1.6	26	0.3	0.2	0.0
C75	Other endocrine	13	0.1	0.1	0.0	1.7	8	0.1	0.1	0.0
C81	Hodgkin's disease	218	2.3	2.2	0.2	1.2	183	1.9	1.8	0.1
C82–C85, C96	Non-Hodgkin's lymphoma	1,923	21.4	16.1	1.6	1.4	1,576	15.1	11.3	1.1
M9590/3	Lymphoma NOS**	168	1.9	1.4	0.1	1.1	182	1.7	1.2	0.1
C81–C85, C96	All lymphomas	2,141	23.7	18.3	1.8	1.4	1,759	17.0	13.2	1.3
C88	Immunoproliferative neoplasms	53	0.6	0.4	0.0	2.3	29	0.3	0.2	0.0
C90	Multiple myeloma	638	7.4	5.1	0.5	1.7	477	4.5	3.1	0.3
C91	Lymphoid leukaemia	654	7.3	5.9	0.5	1.6	467	4.5	3.7	0.3
C92–C94	Myeloid leukaemia	767	8.8	6.3	0.6	1.7	549	5.2	4.1	0.3
C95	Leukaemia unspecified	44	0.5	0.4	0.0	1.6	35	0.3	0.2	0.0
C76–C80, C26, C39	Unknown primary site	1,736	20.5	13.6	1.3	1.4	1,568	14.3	9.5	0.9
#	Attributed to alcohol	1,173	12.9	9.6	1.1	0.8	1,618	16.0	12.6	1.3
#	Attributed to smoking	7,550	86.1	59.4	6.5	3.0	3,042	28.9	20.5	2.3

Note: Rates are expressed per 100,000 population and age-standardised (AS rate) to both the Australian 2001 Standard Population and the WHO 2000 World Standard Population.

\* Complete non-melanoma skin cancer (NMSC) incidence data are not routinely collected by state and territory cancer registries. \*\* Lymphoma NOS is included in C82–C85, C96

\*\*\* Number of cases reported against C91–C95 may have been affected by coding and reporting changes; refer Appendix D for details.

# See Appendix A for ICD-10 codes.

Source: *Cancer in Australia 2001* (AIHW & AACR, 2004).

**Table 35: Mortality summary table, Australia, 2001**

ICD10	Cancer site	Males				Females				
		Number	AS Rate (Aust 2001)	AS Rate (World)	PYLL (<75 yrs)	Sex ratio M:F	Number	AS Rate (Aust 2001)	AS Rate (World)	PYLL (<75 yrs)
C00-C97	All cancers (excluding NMSC)	20,417	241.2	160.0	139,913	1.6	15,902	147.8	102.2	117,545
C00	Lip	13	0.2	0.1	100	2.1	9	0.1	0.0	13
C01-C02	Tongue	106	1.1	0.9	1,348	2.0	60	0.6	0.4	570
C03-C06	Mouth	83	0.9	0.7	950	1.9	55	0.5	0.3	255
C07-C08	Salivary gland	41	0.5	0.3	208	3.3	17	0.2	0.1	145
C09	Tonsil	54	0.6	0.4	668	4.3	14	0.1	0.1	123
C10	Other oropharynx	60	0.7	0.5	650	4.9	14	0.1	0.1	65
C11	Nasopharynx	40	0.4	0.3	605	5.9	8	0.1	0.1	70
C12-C13	Hypopharynx	60	0.7	0.5	468	7.4	10	0.1	0.1	38
C14	Pharynx unspecified	39	0.4	0.3	413	4.9	10	0.1	0.1	15
C15	Oesophagus	698	8.1	5.5	5,213	2.6	341	3.1	2.0	1,340
C16	Stomach	753	8.9	5.9	5,140	2.2	456	4.2	2.8	2,993
C17	Small intestine	49	0.6	0.4	463	1.2	52	0.5	0.3	420
C18	Colon	1,737	20.6	13.6	10,730	1.4	1,590	14.5	9.6	8,535
C19-C20	Rectum	832	9.6	6.6	6,133	2.0	527	4.9	3.3	3,660
C21	Anus	32	0.3	0.3	320	1.0	36	0.3	0.2	390
C18-C20	Colorectal (excluding Anus)	2,569	30.1	20.1	16,863	1.6	2,117	19.3	12.9	12,195
C18-C21	Colorectal (including Anus)	2,601	30.5	20.4	17,183	1.5	2,153	19.7	13.1	12,585
C22	Liver	538	6.1	4.3	4,970	2.7	239	2.2	1.5	1,608
C23-C24	Gallbladder	144	1.7	1.1	1,105	0.9	207	1.9	1.3	998
C25	Pancreas	946	11.0	7.4	6,465	1.4	865	7.8	5.1	3,908
C30-C31	Nasal cavity	33	0.4	0.3	400	3.6	12	0.1	0.1	90
C32	Larynx	222	2.5	1.7	1,513	10.7	25	0.2	0.2	153
C33-C34	Trachea, bronchus & lung	4,657	53.7	36.4	28,948	2.4	2,382	22.6	15.9	16,030
C37-C38	Other thoracic organs	25	0.3	0.2	355	2.7	11	0.1	0.1	83
C40-C41	Bone	29	0.3	0.3	810	0.7	46	0.4	0.4	745
C43	Skin—melanoma	684	7.8	5.5	7,568	2.1	390	3.7	2.7	4,300
C44	Skin—non-melanoma (NMSC)	264	3.3	2.0	1,075	3.1	123	1.1	0.6	363
C45	Mesothelioma	434	5.0	3.4	2,953	6.2	85	0.8	0.6	560
C46	Kaposi's sarcoma	5	0.1	0.0	8		1	0.0	0.0	0
C47-C49	Connective & soft tissue	120	1.3	1.0	1,930	0.9	154	1.5	1.1	1,650
C50	Breast	26	0.3	0.2	193	<0.01	2,594	24.8	18.2	28,540
C51-C52	Vulva & vagina						99	0.9	0.6	508
C53	Cervix uteri						271	2.6	2.0	3,558
C54	Corpus uteri						255	2.4	1.7	2,028
C55	Uterus unspecified						44	0.4	0.3	198
C56-C57	Ovary & other female genital organs						857	8.1	5.7	6,598
C58	Placenta						1	0.0	0.0	33
C60	Penis	17	0.2	0.1	205					
C61	Prostate	2,718	35.2	20.2	5,665					
C62	Testis	17	0.2	0.2	393					
C63	Other male genital organs	8	0.1	0.1	50					
C64	Kidney	501	5.8	4.0	4,330	1.8	343	3.2	2.1	1,765
C65	Renal pelvis	13	0.2	0.1	35	0.9	19	0.2	0.1	45
C66	Ureter	13	0.1	0.1	43	0.9	18	0.2	0.1	110
C67	Bladder	633	8.0	4.8	2,155	3.3	275	2.4	1.4	775
C68	Other urinary organs	13	0.2	0.1	18	3.3	6	0.1	0.0	3
C69	Eye	20	0.2	0.2	308	1.7	15	0.1	0.1	45
C71	Brain	630	6.8	5.4	10,678	1.6	433	4.2	3.3	5,978
C70, C72	Meninges & other CNS	10	0.1	0.1	285	2.7	4	0.0	0.0	28
C70-C72	Brain & CNS	640	6.9	5.5	10,963	1.6	437	4.3	3.3	6,005
C73	Thyroid	34	0.4	0.3	270	0.8	54	0.5	0.3	375
C74	Adrenal gland	17	0.2	0.2	520	0.7	28	0.3	0.2	758
C75	Other endocrine	11	0.1	0.1	270	1.8	7	0.1	0.1	135
C81	Hodgkin's disease	21	0.2	0.2	200	0.9	27	0.3	0.2	420
C82-C85, C96	Non-Hodgkin's lymphoma	787	9.2	6.3	6,628	1.4	715	6.5	4.4	3,935
C81-C85, C96	All lymphomas	808	9.4	6.4	6,828	1.4	742	6.8	4.6	4,355
C88	Immunoproliferative neoplasms	25	0.3	0.2	100	3.3	11	0.1	0.1	18
C90	Multiple myeloma	353	4.3	2.7	1,965	1.5	325	3.0	1.9	1,483
C91	Lymphoid leukaemia	228	2.7	1.9	3,205	1.6	185	1.7	1.2	1,713
C92-C94	Myeloid leukaemia	494	5.8	3.9	3,935	1.7	365	3.4	2.4	3,405
C95	Leukaemia unspecified	57	0.7	0.4	385	2.3	35	0.3	0.2	148
C97	Independent (primary) multiple	124	1.6	0.9	480	2.0	83	0.8	0.5	558
C76-C80, C26, C39	Unknown primary site	1,213	14.7	9.4	7,173	1.4	1,217	10.9	6.9	5,640
#	Attributed to alcohol	776	8.8	6.2	6,777	1.8	515	4.8	3.5	4,680
#	Attributed to smoking	5,556	64.4	43.3	32,575	3.0	2,264	21.3	14.6	12,466

Note: Rates are expressed per 100,000 population and age-standardised (AS rate) to both the Australian 2001 Standard Population and the WHO 2000 World Standard Population.

# See Appendix A for ICD-10 codes.

Source: Cancer in Australia 2001 (AIHW & AACR 2004).





# Tables for selected cancers 2001

- Tables of new cases, deaths, incidence and mortality rates for Australia and the states and territories for selected cancers.
- Tables for other cancer sites can be found on the AIHW's web site at [www.aihw.gov.au](http://www.aihw.gov.au) or can be requested in hard copy from the AIHW.

**Table 36: All cancers (ICD-10 C00–C97 excluding non-melanoma skin cancers (C44))**

**Australia 2001**

Age group	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0–4	156	23.7	128	20.5	284	22.1	23	3.5	15	2.4	38	3.0
5–9	89	12.8	72	10.9	161	11.9	25	3.6	15	2.3	40	3.0
10–14	79	11.4	79	12.0	158	11.7	24	3.5	11	1.7	35	2.6
15–19	186	26.9	132	19.9	318	23.5	30	4.3	20	3.0	50	3.7
20–24	280	42.4	253	39.4	533	40.9	39	5.9	26	4.1	65	5.0
25–29	443	63.2	457	64.7	900	64.0	52	7.4	40	5.7	92	6.5
30–34	552	75.9	758	102.5	1,310	89.3	81	11.1	93	12.6	174	11.9
35–39	800	107.9	1,274	169.7	2,074	139.0	161	21.7	205	27.3	366	24.5
40–44	1,114	151.7	2,102	282.2	3,216	217.4	278	37.9	355	47.7	633	42.8
45–49	1,806	267.5	2,778	406.4	4,584	337.4	507	75.1	562	82.2	1,069	78.7
50–54	2,999	459.6	3,791	584.8	6,790	522.0	867	132.9	886	136.7	1,753	134.8
55–59	4,245	827.7	3,849	776.1	8,094	802.3	1,446	281.9	1,100	221.8	2,546	252.4
60–64	5,341	1,290.2	4,033	988.4	9,374	1,140.4	1,905	460.2	1,206	295.6	3,111	378.5
65–69	6,632	1,976.2	4,093	1,179.8	10,725	1,571.4	2,501	745.3	1,581	455.7	4,082	598.1
70–74	7,983	2,629.8	4,750	1,418.6	12,733	1,994.6	3,590	1,182.7	2,237	668.1	5,827	912.8
75–79	7,315	3,217.4	4,793	1,641.4	12,108	2,331.3	3,749	1,649.0	2,569	879.8	6,318	1,216.5
80–84	4,670	3,641.3	3,637	1,802.3	8,307	2,516.9	2,733	2,131.0	2,280	1,129.8	5,013	1,518.9
85 and over	3,130	3,820.7	3,599	1,963.3	6,729	2,537.0	2,406	2,936.9	2,701	1,473.4	5,107	1,925.5
<b>Total</b>	<b>47,820</b>		<b>40,578</b>		<b>88,398</b>		<b>20,417</b>		<b>15,902</b>		<b>36,319</b>	

**Rates per 100,000 with 95% confidence intervals (95% CI)**

Crude rate	496.5	414.8	455.3	212.0	162.6	187.1
95% CI	492.1–501.0	410.8–418.8	452.3–458.4	209.1–214.9	160.0–165.1	185.2–189.0
AS rate (Aust. 2001)	541.4	393.3	455.3	241.2	147.8	187.1
95% CI	536.5–546.3	389.4–397.1	452.3–458.4	237.9–244.6	145.5–150.1	185.2–189.0
AS rate (WHO World 2000)	387.6	300.3	337.6	160.0	102.2	127.3
95% CI	384.1–391.1	297.3–303.4	335.4–339.9	157.8–162.2	100.5–103.9	125.9–128.6
Lifetime risk (0–74)	1 in 3	1 in 4	1 in 3	1 in 7	1 in 11	1 in 9
PYLL (0–74)	0	0	0	139,913	117,545	257,458
Per cent of all cancers	100.0	100.0	100.0	100.0	100.0	100.0

**Average annual numbers and rates by state and territory, 1997–2001**

	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate
NSW	15,622	537.0	13,037	381.6	28,659	445.9	6,837	246.4	5,230	146.7	12,067	187.8
Vic	11,308	540.8	9,875	392.1	21,183	452.4	5,027	249.9	4,067	155.0	9,094	194.1
Qld	8,704	576.1	7,214	418.7	15,918	486.6	3,596	251.7	2,571	147.0	6,167	192.4
WA	3,838	513.0	3,257	369.0	7,095	429.2	1,726	247.5	1,324	149.3	3,050	190.4
SA	4,035	554.6	3,391	392.6	7,426	458.9	1,754	247.7	1,381	149.5	3,134	189.9
Tas	1,151	523.0	1,022	395.5	2,172	446.7	557	262.7	461	169.8	1,018	208.1
ACT	563	543.5	503	382.1	1,066	448.6	200	219.6	195	159.0	394	182.7
NT	241	489.6	176	365.2	417	429.7	97	246.5	69	187.9	166	218.4

**Notes**

1. Refer Appendix C for details of the populations used to produce age-standardised (AS) rates. All rates are expressed per 100,000 population.
  2. Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of usual residence.
- Source: *Cancer in Australia 2001* (AIHW & AACR 2004).

**Table 37: Cancer of the stomach (ICD-10 C16)**

**Australia 2001**

Age group	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0-4	1	0.2	0	0.0	1	0.1	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	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	0	0.0	0	0.0	0	0.0
25-29	4	0.6	2	0.3	6	0.4	1	0.1	1	0.1	2	0.1
30-34	7	1.0	2	0.3	9	0.6	4	0.6	1	0.1	5	0.3
35-39	14	1.9	16	2.1	30	2.0	11	1.5	10	1.3	21	1.4
40-44	26	3.5	16	2.1	42	2.8	14	1.9	9	1.2	23	1.6
45-49	50	7.4	29	4.2	79	5.8	27	4.0	22	3.2	49	3.6
50-54	78	12.0	36	5.6	114	8.8	30	4.6	25	3.9	55	4.2
55-59	94	18.3	47	9.5	141	14.0	49	9.6	23	4.6	72	7.1
60-64	119	28.7	57	14.0	176	21.4	60	14.5	18	4.4	78	9.5
65-69	157	46.8	72	20.8	229	33.6	91	27.1	36	10.4	127	18.6
70-74	223	73.5	101	30.2	324	50.8	139	45.8	68	20.3	207	32.4
75-79	196	86.2	101	34.6	297	57.2	134	58.9	66	22.6	200	38.5
80-84	134	104.5	103	51.0	237	71.8	92	71.7	70	34.7	162	49.1
85 and over	99	120.8	118	64.4	217	81.8	101	123.3	107	58.4	208	78.4
<b>Total</b>	<b>1,202</b>		<b>700</b>		<b>1,902</b>		<b>753</b>		<b>456</b>		<b>1,209</b>	

**Rates per 100,000 with 95% confidence intervals (95% CI)**

Crude rate	12.5	7.2	9.8	7.8	4.7	6.2
95% CI	11.8-13.2	6.6-7.7	9.4-10.2	7.3-8.4	4.2-5.1	5.9-6.6
AS rate (Aust. 2001)	13.8	6.5	9.8	8.9	4.2	6.2
95% CI	13.0-14.6	6.0-7.0	9.4-10.2	8.3-9.6	3.8-4.5	5.9-6.6
AS rate (WHO World 2000)	9.5	4.5	6.8	5.9	2.8	4.2
95% CI	9.0-10.1	4.2-4.9	6.5-7.1	5.5-6.3	2.5-3.0	3.9-4.4
Lifetime risk (0-74)	1 in 104	1 in 225	1 in 143	1 in 183	1 in 404	1 in 254
PYLL (0-74)				5,140	2,993	8,133
Per cent of all cancers	2.5	1.7	2.2	3.7	2.9	3.3

**Average annual numbers and rates by state and territory, 1997-2001**

	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate
NSW	424	14.9	240	6.7	664	10.3	250	9.1	142	3.9	392	6.1
Vic	344	16.5	198	7.5	542	11.6	207	10.2	127	4.7	334	7.1
Qld	214	14.8	109	6.2	323	10.0	121	8.7	68	3.8	189	6.0
WA	103	14.3	59	6.6	162	10.1	76	10.8	43	4.8	119	7.4
SA	111	15.4	62	6.6	173	10.5	73	10.2	45	4.7	118	7.1
Tas	31	14.3	18	6.5	48	9.8	23	11.5	13	4.8	37	7.5
ACT	13	13.6	9	7.5	23	10.2	8	8.1	7	6.2	15	7.2
NT	5	13.1	1	2.8	6	7.9	2	6.4	1	2.8	3	4.6

**Notes**

1. Refer Appendix C for details of the populations used to produce age-standardised (AS) rates. All rates are expressed per 100,000 population.
  2. Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of usual residence.
- Source: *Cancer in Australia 2001* (AIHW & AACR 2004).

**Table 38: Cancer of the colon and rectum (including anus) (ICD-10 C18–C21)**

Australia 2001												
Age group	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
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	1	0.2	1	0.1	0	0.0	0	0.0	0	0.0
10–14	1	0.1	0	0.0	1	0.1	0	0.0	0	0.0	0	0.0
15–19	2	0.3	7	1.1	9	0.7	1	0.1	0	0.0	1	0.1
20–24	7	1.1	7	1.1	14	1.1	1	0.2	1	0.2	2	0.2
25–29	14	2.0	12	1.7	26	1.8	2	0.3	3	0.4	5	0.4
30–34	32	4.4	30	4.1	62	4.2	5	0.7	10	1.4	15	1.0
35–39	68	9.2	64	8.5	132	8.8	19	2.6	23	3.1	42	2.8
40–44	106	14.4	116	15.6	222	15.0	20	2.7	31	4.2	51	3.4
45–49	233	34.5	226	33.1	459	33.8	70	10.4	47	6.9	117	8.6
50–54	412	63.1	314	48.4	726	55.8	113	17.3	104	16.0	217	16.7
55–59	674	131.4	411	82.9	1,085	107.6	204	39.8	128	25.8	332	32.9
60–64	823	198.8	571	139.9	1,394	169.6	292	70.5	149	36.5	441	53.6
65–69	1,029	306.6	692	199.5	1,721	252.2	340	101.3	215	62.0	555	81.3
70–74	1,264	416.4	880	262.8	2,144	335.9	466	153.5	299	89.3	765	119.8
75–79	1,130	497.0	1,012	346.6	2,142	412.4	459	201.9	329	112.7	788	151.7
80–84	717	559.1	758	375.6	1,475	446.9	334	260.4	351	173.9	685	207.5
85 and over	449	548.1	782	426.6	1,231	464.1	275	335.7	463	252.6	738	278.2
<b>Total</b>	<b>6,961</b>		<b>5,883</b>		<b>12,844</b>		<b>2,601</b>		<b>2,153</b>		<b>4,754</b>	

**Rates per 100,000 with 95% confidence intervals (95% CI)**

Crude rate	72.3	60.1	66.2	27.0	22.0	24.5
95% CI	70.6–74.0	58.6–61.7	65.0–67.3	26.0–28.0	21.1–22.9	23.8–25.2
AS rate (Aust. 2001)	79.0	55.4	66.2	30.5	19.7	24.5
95% CI	77.2–80.9	53.9–56.8	65.0–67.3	29.3–31.6	18.8–20.5	23.8–25.2
AS rate (WHO World 2000)	55.4	38.9	46.6	20.4	13.1	16.5
95% CI	54.1–56.7	37.9–40.0	45.8–47.4	19.6–21.2	12.6–13.7	16.0–16.9
Lifetime risk (0–74)	1 in 17	1 in 26	1 in 21	1 in 51	1 in 82	1 in 63
PYLL (0–74)				17,183	12,585	29,768
Per cent of all cancers	14.6	14.5	14.5	12.7	13.5	13.1

**Average annual numbers and rates by state and territory, 1997–2001**

	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate
NSW	2,228	76.7	1,851	52.6	4,079	63.4	855	30.6	695	19.2	1,550	24.2
Vic	1,644	78.6	1,428	54.9	3,072	65.5	664	32.7	581	21.8	1,246	26.6
Qld	1,213	80.6	980	56.5	2,193	67.8	453	31.2	365	20.8	819	25.6
WA	564	76.9	444	50.5	1,008	62.3	236	33.3	185	20.7	420	26.3
SA	568	78.1	510	55.8	1,078	65.7	224	31.3	201	21.3	425	25.7
Tas	166	74.6	159	59.1	325	66.3	70	32.8	77	27.9	147	30.1
ACT	80	78.3	64	52.5	144	64.3	26	28.1	26	21.7	52	24.7
NT	26	53.9	15	41.6	42	48.6	8	18.3	6	18.3	13	18.9

**Notes**

1. Refer Appendix C for details of the populations used to produce age-standardised (AS) rates. All rates are expressed per 100,000 population.
2. Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of usual residence.

Source: *Cancer in Australia 2001* (AIHW & AACR 2004).

**Table 39: Cancer of the pancreas (ICD-10 C25)**

**Australia 2001**

Age group	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0-4	0	0.0	1	0.2	1	0.1	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	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	0	0.0	0	0.0	0	0.0
25-29	2	0.3	2	0.3	4	0.3	1	0.1	0	0.0	1	0.1
30-34	2	0.3	1	0.1	3	0.2	2	0.3	2	0.3	4	0.3
35-39	8	1.1	10	1.3	18	1.2	1	0.1	3	0.4	4	0.3
40-44	11	1.5	14	1.9	25	1.7	7	1.0	7	0.9	14	0.9
45-49	35	5.2	18	2.6	53	3.9	37	5.5	18	2.6	55	4.0
50-54	64	9.8	38	5.9	102	7.8	45	6.9	28	4.3	73	5.6
55-59	100	19.5	50	10.1	150	14.9	78	15.2	44	8.9	122	12.1
60-64	98	23.7	71	17.4	169	20.6	103	24.9	53	13.0	156	19.0
65-69	138	41.1	91	26.2	229	33.6	131	39.0	84	24.2	215	31.5
70-74	146	48.1	103	30.8	249	39.0	161	53.0	118	35.2	279	43.7
75-79	167	73.5	170	58.2	337	64.9	164	72.1	169	57.9	333	64.1
80-84	102	79.5	145	71.9	247	74.8	131	102.1	157	77.8	288	87.3
85 and over	85	103.8	186	101.5	271	102.2	85	103.8	182	99.3	267	100.7
<b>Total</b>	<b>958</b>		<b>900</b>		<b>1,858</b>		<b>946</b>		<b>865</b>		<b>1,811</b>	

**Rates per 100,000 with 95% confidence intervals (95% CI)**

Crude rate	9.9	9.2	9.6	9.8	8.8	9.3
95% CI	9.3-10.6	8.6-9.8	9.1-10.0	9.2-10.4	8.3-9.4	8.9-9.8
AS rate (Aust. 2001)	11.0	8.2	9.6	11.0	7.8	9.3
95% CI	10.3-11.7	7.7-8.8	9.1-10.0	10.3-11.7	7.3-8.4	8.9-9.8
AS rate (WHO World 2000)	7.6	5.5	6.5	7.4	5.1	6.2
95% CI	7.1-8.1	5.1-5.9	6.2-6.8	7.0-7.9	4.7-5.5	5.9-6.5
Lifetime risk (0-74)	1 in 133	1 in 207	1 in 163	1 in 137	1 in 223	1 in 171
PYLL (0-74)				6,465	3,908	10,373
Per cent of all cancers	2.0	2.2	2.1	4.6	5.4	5.0

**Average annual numbers and rates by state and territory, 1997-2001**

	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate
NSW	302	10.7	309	8.5	611	9.5	294	10.6	293	8.0	587	9.1
Vic	242	11.7	238	8.9	480	10.3	229	11.1	226	8.4	454	9.7
Qld	168	11.4	150	8.5	318	9.9	152	10.4	139	7.8	291	9.1
WA	76	10.4	81	9.2	157	9.8	72	10.0	74	8.3	146	9.2
SA	83	11.5	79	8.3	162	9.8	73	10.3	73	7.7	146	8.8
Tas	22	10.2	26	9.4	48	9.9	20	9.4	26	9.1	45	9.3
ACT	9	9.2	10	8.2	19	8.5	10	10.5	9	7.9	19	9.0
NT	6	10.7	4	12.1	9	11.8	5	9.0	4	15.7	9	12.9

**Notes**

1. Refer Appendix C for details of the populations used to produce age-standardised (AS) rates. All rates are expressed per 100,000 population.
  2. Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of usual residence.
- Source: *Cancer in Australia 2001* (AIHW & AACR 2004).

**Table 40: Cancer of the trachea, bronchus and lung (ICD-10 C33–C34)**

**Australia 2001**

Age group	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0–4	1	0.2	0	0.0	1	0.1	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	1	0.1	1	0.2	2	0.1	0	0.0	0	0.0	0	0.0
15–19	3	0.4	0	0.0	3	0.2	1	0.1	0	0.0	1	0.1
20–24	1	0.2	1	0.2	2	0.2	0	0.0	0	0.0	0	0.0
25–29	2	0.3	3	0.4	5	0.4	2	0.3	0	0.0	2	0.1
30–34	6	0.8	6	0.8	12	0.8	6	0.8	0	0.0	6	0.4
35–39	19	2.6	18	2.4	37	2.5	12	1.6	13	1.7	25	1.7
40–44	56	7.6	63	8.5	119	8.0	50	6.8	40	5.4	90	6.1
45–49	101	15.0	110	16.1	211	15.5	79	11.7	78	11.4	157	11.6
50–54	256	39.2	176	27.2	432	33.2	181	27.7	108	16.7	289	22.2
55–59	435	84.8	269	54.2	704	69.8	358	69.8	196	39.5	554	54.9
60–64	633	152.9	305	74.7	938	114.1	501	121.0	221	54.2	722	87.8
65–69	835	248.8	383	110.4	1,218	178.5	702	209.2	325	93.7	1,027	150.5
70–74	1,119	368.6	494	147.5	1,613	252.7	971	319.9	415	123.9	1,386	217.1
75–79	984	432.8	513	175.7	1,497	288.2	885	389.3	433	148.3	1,318	253.8
80–84	614	478.8	337	167.0	951	288.1	563	439.0	334	165.5	897	271.8
85 and over	318	388.2	212	115.6	530	199.8	346	422.4	219	119.5	565	213.0
<b>Total</b>	<b>5,384</b>		<b>2,891</b>		<b>8,275</b>		<b>4,657</b>		<b>2,382</b>		<b>7,039</b>	

**Rates per 100,000 with 95% confidence intervals (95% CI)**

Crude rate	55.9	29.6	42.6	48.4	24.3	36.3
95% CI	54.4–57.4	28.5–30.6	41.7–43.5	47.0–49.7	23.4–25.3	35.4–37.1
AS rate (Aust. 2001)	61.4	27.7	42.6	53.7	22.6	36.3
95% CI	59.7–63.0	26.7–28.7	41.7–43.5	52.1–55.2	21.7–23.5	35.4–37.1
AS rate (WHO World 2000)	42.3	20.0	30.1	36.4	15.9	25.1
95% CI	41.1–43.4	19.2–20.7	29.4–30.8	35.3–37.4	15.2–16.6	24.5–25.7
Lifetime risk (0–74)	1 in 22	1 in 46	1 in 30	1 in 27	1 in 58	1 in 37
PYLL (0–74)				28,948	16,030	44,978
Per cent of all cancers	11.3	7.1	9.4	22.8	15.0	19.4

**Average annual numbers and rates by state and territory, 1997–2001**

	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate
NSW	1,850	63.9	907	26.1	2,757	42.6	1,603	56.1	756	21.5	2,359	36.5
Vic	1,329	63.7	710	27.6	2,038	43.3	1,136	55.1	576	22.2	1,712	36.4
Qld	1,036	69.4	457	26.7	1,493	46.1	870	59.2	366	21.3	1,236	38.3
WA	483	66.8	253	29.2	736	45.7	412	58.3	203	23.3	615	38.5
SA	476	65.2	230	25.6	706	42.7	408	56.3	183	19.9	591	35.5
Tas	150	67.7	83	31.7	233	47.4	136	61.7	66	24.9	202	41.1
ACT	43	44.0	28	23.2	71	32.3	37	38.1	26	21.4	63	28.7
NT	35	77.9	14	40.3	48	61.1	29	69.9	12	35.2	41	54.1

**Notes**

1. Refer Appendix C for details of the populations used to produce age-standardised (AS) rates. All rates are expressed per 100,000 population.
  2. Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of usual residence.
- Source: *Cancer in Australia 2001* (AIHW & AACR 2004).

**Table 41: Cancer of the skin—melanoma (ICD-10 C43)**

**Australia 2001**

Age group	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0–4	0	0.0	1	0.2	1	0.1	0	0.0	0	0.0	0	0.0
5–9	0	0.0	6	0.9	6	0.4	0	0.0	0	0.0	0	0.0
10–14	6	0.9	6	0.9	12	0.9	0	0.0	0	0.0	0	0.0
15–19	38	5.5	39	5.9	77	5.7	2	0.3	1	0.2	3	0.2
20–24	56	8.5	82	12.8	138	10.6	7	1.1	3	0.5	10	0.8
25–29	127	18.1	141	20.0	268	19.0	7	1.0	8	1.1	15	1.1
30–34	160	22.0	215	29.1	375	25.6	7	1.0	10	1.4	17	1.2
35–39	228	30.8	275	36.6	503	33.7	23	3.1	6	0.8	29	1.9
40–44	299	40.7	350	47.0	649	43.9	31	4.2	18	2.4	49	3.3
45–49	398	59.0	344	50.3	742	54.6	32	4.7	20	2.9	52	3.8
50–54	507	77.7	415	64.0	922	70.9	45	6.9	27	4.2	72	5.5
55–59	517	100.8	334	67.4	851	84.4	58	11.3	35	7.1	93	9.2
60–64	472	114.0	311	76.2	783	95.3	68	16.4	29	7.1	97	11.8
65–69	535	159.4	304	87.6	839	122.9	73	21.8	31	8.9	104	15.2
70–74	594	195.7	339	101.2	933	146.2	112	36.9	42	12.5	154	24.1
75–79	553	243.2	304	104.1	857	165.0	115	50.6	50	17.1	165	31.8
80–84	323	251.9	212	105.1	535	162.1	52	40.5	54	26.8	106	32.1
85 and over	211	257.6	183	99.8	394	148.5	52	63.5	56	30.5	108	40.7
<b>Total</b>	<b>5,024</b>		<b>3,861</b>		<b>8,885</b>		<b>684</b>		<b>390</b>		<b>1,074</b>	

**Rates per 100,000 with 95% confidence intervals (95% CI)**

Crude rate	52.2	39.5	45.8	7.1	4.0	5.5
95% CI	50.7–53.6	38.2–40.7	44.8–46.7	6.6–7.6	3.6–4.4	5.2–5.9
AS rate (Aust. 2001)	55.2	38.3	45.8	7.8	3.7	5.5
95% CI	53.7–56.7	37.1–39.5	44.8–46.7	7.2–8.3	3.3–4.0	5.2–5.9
AS rate (WHO World 2000)	42.4	31.6	36.5	5.5	2.7	4.0
95% CI	41.2–43.6	30.6–32.6	35.7–37.3	5.1–6.0	2.4–3.0	3.8–4.3
Lifetime risk (0–74)	1 in 25	1 in 34	1 in 29	1 in 185	1 in 408	1 in 256
PYLL (0–74)				7,568	4,300	11,868
Per cent of all cancers	10.5	9.5	10.1	3.4	2.5	3.0

**Average annual numbers and rates by state and territory, 1997–2001**

	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate
NSW	1,643	55.1	1,175	35.2	2,818	44.0	245	8.6	128	3.7	373	5.8
Vic	871	40.3	812	33.0	1,683	36.0	126	6.0	82	3.2	208	4.4
Qld	1,241	77.9	917	53.1	2,157	64.5	141	9.3	71	4.1	213	6.5
WA	462	56.9	348	38.8	810	47.0	54	7.4	35	3.9	89	5.4
SA	332	45.3	282	34.4	613	39.1	42	5.8	26	2.9	68	4.2
Tas	94	42.2	101	41.2	196	41.0	11	5.1	9	3.3	20	4.0
ACT	61	47.5	50	35.2	111	41.2	5	5.0	3	2.4	9	3.6
NT	26	37.2	20	29.9	46	34.0	3	6.9	1	2.7	4	4.8

**Notes**

1. Refer Appendix C for details of the populations used to produce age-standardised (AS) rates. All rates are expressed per 100,000 population.
  2. Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of usual residence.
- Source: *Cancer in Australia 2001* (AIHW & AACR 2004).

**Table 42: Cancer of the breast (ICD-10 C50)**

**Australia 2001**

Age group	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
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	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
20-24	1	0.2	9	1.4	10	0.8	0	0.0	1	0.2	1	0.1
25-29	0	0.0	46	6.5	46	3.3	0	0.0	2	0.3	2	0.1
30-34	0	0.0	170	23.0	170	11.6	0	0.0	19	2.6	19	1.3
35-39	1	0.1	449	59.8	450	30.2	1	0.1	66	8.8	67	4.5
40-44	3	0.4	917	123.1	920	62.2	0	0.0	127	17.1	127	8.6
45-49	3	0.4	1,223	178.9	1,226	90.2	1	0.1	186	27.2	187	13.8
50-54	6	0.9	1,649	254.4	1,655	127.2	1	0.2	261	40.3	262	20.1
55-59	9	1.8	1,539	310.3	1,548	153.4	2	0.4	258	52.0	260	25.8
60-64	6	1.4	1,439	352.7	1,445	175.8	4	1.0	229	56.1	233	28.3
65-69	11	3.3	1,175	338.7	1,186	173.8	1	0.3	246	70.9	247	36.2
70-74	19	6.3	1,112	332.1	1,131	177.2	5	1.6	309	92.3	314	49.2
75-79	8	3.5	893	305.8	901	173.5	4	1.8	286	97.9	290	55.8
80-84	17	13.3	611	302.8	628	190.3	5	3.9	276	136.8	281	85.1
85 and over	11	13.4	559	304.9	570	214.9	2	2.4	328	178.9	330	124.4
<b>Total</b>	<b>95</b>		<b>11,791</b>		<b>11,886</b>		<b>26</b>		<b>2,594</b>		<b>2,620</b>	

**Rates per 100,000 with 95% confidence intervals (95% CI)**

Crude rate	1.0	120.5	61.2	0.3	26.5	13.5
95% CI	0.8-1.2	118.4-122.7	60.1-62.3	0.2-0.4	25.5-27.5	13.0-14.0
AS rate (Aust. 2001)	1.1	117.2	61.2	0.3	24.8	13.5
95% CI	0.9-1.3	115.1-119.4	60.1-62.3	0.2-0.4	23.8-25.8	13.0-14.0
AS rate (WHO World 2000)	0.8	93.1	48.0	0.2	18.2	9.7
95% CI	0.6-0.9	91.4-94.9	47.2-48.9	0.1-0.3	17.5-19.0	9.3-10.1
Lifetime risk (0-74)	1 in 1,352	1 in 11	1 in 20	1 in 5,352	1 in 55	1 in 107
PYLL (0-74)				193	28,540	28,733
Per cent of all cancers	0.2	29.1	13.4	0.1	16.3	7.2

**Average annual numbers and rates by state and territory, 1997-2001**

	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate
NSW	31	1.1	3,712	112.3	3,743	58.8	7	0.2	854	24.8	861	13.5
Vic	20	1.0	2,799	114.9	2,819	60.8	7	0.3	697	27.5	703	15.1
Qld	15	1.0	1,995	117.2	2,010	60.7	3	0.2	432	25.0	435	13.4
WA	5	0.7	991	112.9	996	58.4	1	0.1	225	25.3	226	13.7
SA	7	1.0	963	117.4	970	61.9	2	0.2	225	25.8	227	14.1
Tas	2	0.9	261	104.1	263	54.7	1	0.5	71	27.1	72	14.9
ACT	2	1.3	168	122.1	170	64.6	0	0.4	38	29.9	38	16.7
NT	1	1.7	54	97.9	55	46.4	0	0.0	13	26.9	13	12.7

**Notes**

1. Refer Appendix C for details of the populations used to produce age-standardised (AS) rates. All rates are expressed per 100,000 population.
  2. Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of usual residence.
- Source: *Cancer in Australia 2001* (AIHW & AACR 2004).



**Table 43: Cancer of the cervix uteri (ICD-10 C53)**

**Australia 2001**

Age group	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0-4			0	0.0					0	0.0		
5-9			0	0.0					0	0.0		
10-14			0	0.0					0	0.0		
15-19			2	0.3					0	0.0		
20-24			7	1.1					0	0.0		
25-29			41	5.8					1	0.1		
30-34			59	8.0					11	1.5		
35-39			88	11.7					11	1.5		
40-44			67	9.0					17	2.3		
45-49			101	14.8					22	3.2		
50-54			78	12.0					23	3.5		
55-59			53	10.7					22	4.4		
60-64			47	11.5					26	6.4		
65-69			43	12.4					23	6.6		
70-74			42	12.5					29	8.7		
75-79			39	13.4					30	10.3		
80-84			40	19.8					29	14.4		
85 and over			28	15.3					27	14.7		
<b>Total</b>			<b>735</b>						<b>271</b>			

**Rates per 100,000 with 95% confidence intervals (95% CI)**

Crude rate	7.5	2.8
95% CI	7.0-8.1	2.4-3.1
AS rate (Aust. 2001)	7.3	2.6
95% CI	6.8-7.9	2.3-2.9
AS rate (WHO World 2000)	6.2	2.0
95% CI	5.7-6.6	1.7-2.2
Lifetime risk (0-74)	1 in 183	1 in 523
PYLL (0-74)		3,558
Per cent of all cancers	1.8	1.7

**Average annual numbers and rates by state and territory, 1997-2001**

	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate
NSW			279	8.5					92	2.7		
Vic			175	7.2					59	2.3		
Qld			162	9.3					49	2.9		
WA			78	8.6					29	3.2		
SA			55	6.9					18	2.0		
Tas			20	8.6					8	3.2		
ACT			10	6.5					3	2.5		
NT			9	14.6					3	6.7		

**Notes**

1. Refer Appendix C for details of the populations used to produce age-standardised (AS) rates. All rates are expressed per 100,000 population.
  2. Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of usual residence.
- Source: *Cancer in Australia 2001* (AIHW & AACR 2004).

**Table 44: Cancer of the corpus uteri and uterus unspecified (ICD-10 C54–C55)**

**Australia 2001**

Age group	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0–4			0	0.0					0	0.0		
5–9			0	0.0					0	0.0		
10–14			0	0.0					0	0.0		
15–19			0	0.0					0	0.0		
20–24			0	0.0					0	0.0		
25–29			3	0.4					0	0.0		
30–34			12	1.6					2	0.3		
35–39			18	2.4					2	0.3		
40–44			50	6.7					7	0.9		
45–49			93	13.6					13	1.9		
50–54			179	27.6					16	2.5		
55–59			237	47.8					19	3.8		
60–64			217	53.2					25	6.1		
65–69			181	52.2					47	13.5		
70–74			187	55.8					49	14.6		
75–79			181	62.0					45	15.4		
80–84			102	50.5					28	13.9		
85 and over			77	42.0					46	25.1		
<b>Total</b>			<b>1,537</b>						<b>299</b>			

**Rates per 100,000 with 95% confidence intervals (95% CI)**

Crude rate	15.7	3.1
95% CI	14.9–16.5	2.7–3.4
AS rate (Aust. 2001)	15.1	2.8
95% CI	14.4–15.9	2.5–3.1
AS rate (WHO World 2000)	11.7	2.0
95% CI	11.1–12.3	1.8–2.2
Lifetime risk (0–74)	1 in 77	1 in 455
PYLL (0–74)		2,225
Per cent of all cancers	3.8	1.9

**Average annual numbers and rates by state and territory, 1997–2001**

	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate
NSW			469	13.9					88	2.4		
Vic			411	16.7					69	2.6		
Qld			275	16.2					49	2.8		
WA			108	12.5					23	2.7		
SA			147	17.3					28	3.0		
Tas			32	12.4					6	2.4		
ACT			18	14.2					4	3.7		
NT			7	14.5					1	2.7		

**Notes**

1. Refer Appendix C for details of the populations used to produce age-standardised (AS) rates. All rates are expressed per 100,000 population.
  2. Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of usual residence.
- Source: *Cancer in Australia 2001* (AIHW & AACR 2004).

**Table 45: Cancer of the ovary and other and unspecified female genital organs (ICD-10 C56-C57)**

**Australia 2001**

Age group	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0-4			0	0.0					0	0.0		
5-9			1	0.2					0	0.0		
10-14			3	0.5					0	0.0		
15-19			5	0.8					0	0.0		
20-24			16	2.5					1	0.2		
25-29			31	4.4					5	0.7		
30-34			28	3.8					4	0.5		
35-39			38	5.1					6	0.8		
40-44			59	7.9					9	1.2		
45-49			96	14.0					40	5.9		
50-54			122	18.8					53	8.2		
55-59			132	26.6					75	15.1		
60-64			141	34.6					85	20.8		
65-69			123	35.5					87	25.1		
70-74			128	38.2					120	35.8		
75-79			153	52.4					153	52.4		
80-84			108	53.5					104	51.5		
85 and over			111	60.6					115	62.7		
<b>Total</b>			<b>1,295</b>						<b>857</b>			

**Rates per 100,000 with 95% confidence intervals (95% CI)**

Crude rate	13.2	8.8
95% CI	12.5-14.0	8.2-9.3
AS rate (Aust. 2001)	12.6	8.1
95% CI	11.9-13.3	7.5-8.6
AS rate (WHO World 2000)	9.8	5.7
95% CI	9.2-10.3	5.3-6.1
Lifetime risk (0-74)	1 in 104	1 in 175
PYLL (0-74)		6,598
Per cent of all cancers	3.2	5.4

**Average annual numbers and rates by state and territory, 1997-2001**

	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate
NSW			391	0.5					270	0.1		
Vic			396	0.6					221	0.2		
Qld			241	0.4					122	0.2		
WA			95	0.7					66	0.5		
SA			98	0.6					72	0.1		
Tas			33	0.6					20	0.4		
ACT			15	0.7					11	0.4		
NT			4	0.0					3	1.0		

**Notes**

1. Refer Appendix C for details of the populations used to produce age-standardised (AS) rates. All rates are expressed per 100,000 population.
  2. Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of usual residence.
- Source: *Cancer in Australia 2001* (AIHW & AACR 2004).

**Table 46: Cancer of the prostate (ICD-10 C61)**

**Australia 2001**

Age group	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0-4	0	0.0					0	0.0				
5-9	0	0.0					0	0.0				
10-14	0	0.0					0	0.0				
15-19	0	0.0					0	0.0				
20-24	0	0.0					0	0.0				
25-29	0	0.0					0	0.0				
30-34	0	0.0					0	0.0				
35-39	4	0.5					0	0.0				
40-44	21	2.9					0	0.0				
45-49	110	16.3					7	1.0				
50-54	451	69.1					19	2.9				
55-59	1,013	197.5					61	11.9				
60-64	1,452	350.7					102	24.6				
65-69	1,925	573.6					217	64.7				
70-74	2,160	711.6					430	141.7				
75-79	1,975	868.7					603	265.2				
80-84	1,207	941.1					607	473.3				
85 and over	873	1,065.6					672	820.3				
<b>Total</b>	<b>11,191</b>						<b>2,718</b>					

**Rates per 100,000 with 95% confidence intervals (95% CI)**

Crude rate	116.2	28.2
95% CI	114.0-118.4	27.2-29.3
AS rate (Aust. 2001)	128.5	35.2
95% CI	126.1-130.9	33.9-36.6
AS rate (WHO World 2000)	88.1	20.2
95% CI	86.5-89.8	19.5-21.0
Lifetime risk (0-74)	1 in 11	1 in 82
PYLL (0-74)		5,665
Per cent of all cancers	23.4	13.3

**Average annual numbers and rates by state and territory, 1997-2001**

	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate
NSW	3,697	128.5					882	35.2				
Vic	2,689	131.5					688	37.6				
Qld	1,712	118.0					476	37.3				
WA	823	113.4					191	31.4				
SA	1,055	145.2					239	36.2				
Tas	277	127.9					80	40.3				
ACT	156	162.4					22	29.8				
NT	38	103.5					6	24.5				

**Notes**

1. Refer Appendix C for details of the populations used to produce age-standardised (AS) rates. All rates are expressed per 100,000 population.
  2. Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of usual residence.
- Source: *Cancer in Australia 2001* (AIHW & AACR 2004).

**Table 47: Cancer of the testis (ICD-10 C62)**

**Australia 2001**

Age group	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0-4	5	0.8					0	0.0				
5-9	1	0.1					0	0.0				
10-14	0	0.0					0	0.0				
15-19	28	4.1					0	0.0				
20-24	80	12.1					1	0.2				
25-29	96	13.7					1	0.1				
30-34	109	15.0					1	0.1				
35-39	93	12.5					3	0.4				
40-44	82	11.2					2	0.3				
45-49	41	6.1					1	0.1				
50-54	36	5.5					1	0.2				
55-59	10	1.9					0	0.0				
60-64	6	1.4					1	0.2				
65-69	4	1.2					1	0.3				
70-74	9	3.0					1	0.3				
75-79	2	0.9					1	0.4				
80-84	1	0.8					2	1.6				
85 and over	1	1.2					1	1.2				
<b>Total</b>	<b>604</b>						<b>17</b>					

**Rates per 100,000 with 95% confidence intervals (95% CI)**

Crude rate	6.3	0.2
95% CI	5.8-6.8	0.1-0.3
AS rate (Aust. 2001)	6.2	0.2
95% CI	5.7-6.7	0.1-0.3
AS rate (WHO World 2000)	6.2	0.2
95% CI	5.7-6.7	0.1-0.2
Lifetime risk (0-74)	1 in 226	1 in 8,777
PYLL (0-74)		393
Per cent of all cancers	1.3	0.1

**Average annual numbers and rates by state and territory, 1997-2001**

	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate
NSW	204	6.3					10	0.3				
Vic	142	6.0					5	0.2				
Qld	98	5.6					3	0.2				
WA	55	5.7					1	0.2				
SA	45	6.1					2	0.3				
Tas	16	7.2					0	0.2				
ACT	13	7.9					0	0.0				
NT	4	3.1					0	0.2				

**Notes**

1. Refer Appendix C for details of the populations used to produce age-standardised (AS) rates. All rates are expressed per 100,000 population.
  2. Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of usual residence.
- Source: *Cancer in Australia 2001* (AIHW & AACR 2004).

**Table 48: Cancer of the bladder (ICD-10 C67)**

**Australia 2001**

Age group	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0-4	0	0.0	0	0.0	0	0.0	1	0.2	0	0.0	1	0.1
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	1	0.1	0	0.0	1	0.1	0	0.0	0	0.0	0	0.0
20-24	2	0.3	0	0.0	2	0.2	0	0.0	0	0.0	0	0.0
25-29	3	0.4	3	0.4	6	0.4	0	0.0	1	0.1	1	0.1
30-34	9	1.2	4	0.5	13	0.9	1	0.1	0	0.0	1	0.1
35-39	11	1.5	4	0.5	15	1.0	1	0.1	2	0.3	3	0.2
40-44	21	2.9	13	1.7	34	2.3	2	0.3	1	0.1	3	0.2
45-49	47	7.0	15	2.2	62	4.6	5	0.7	4	0.6	9	0.7
50-54	98	15.0	22	3.4	120	9.2	10	1.5	3	0.5	13	1.0
55-59	135	26.3	31	6.3	166	16.5	23	4.5	6	1.2	29	2.9
60-64	199	48.1	57	14.0	256	31.1	32	7.7	12	2.9	44	5.4
65-69	307	91.5	73	21.0	380	55.7	60	17.9	15	4.3	75	11.0
70-74	435	143.3	118	35.2	553	86.6	129	42.5	30	9.0	159	24.9
75-79	432	190.0	125	42.8	557	107.2	118	51.9	50	17.1	168	32.3
80-84	321	250.3	113	56.0	434	131.5	110	85.8	62	30.7	172	52.1
85 and over	237	289.3	118	64.4	355	133.8	141	172.1	89	48.6	230	86.7
<b>Total</b>	<b>2,258</b>		<b>696</b>		<b>2,954</b>		<b>633</b>		<b>275</b>		<b>908</b>	

**Rates per 100,000 with 95% confidence intervals (95% CI)**

Crude rate	23.4	7.1	15.2	6.6	2.8	4.7
95% CI	22.5-24.4	6.6-7.6	14.7-15.8	6.1-7.1	2.5-3.1	4.4-5.0
AS rate (Aust. 2001)	26.6	6.4	15.2	8.0	2.4	4.7
95% CI	25.5-27.7	5.9-6.9	14.7-15.8	7.4-8.6	2.1-2.7	4.4-5.0
AS rate (WHO World 2000)	17.5	4.3	10.3	4.8	1.4	2.9
95% CI	16.8-18.3	4.0-4.7	9.9-10.6	4.4-5.2	1.3-1.6	2.7-3.0
Lifetime risk (0-74)	1 in 60	1 in 235	1 in 96	1 in 265	1 in 1,052	1 in 431
PYLL (0-74)				2,155	775	2,930
Per cent of all cancers	4.7	1.7	3.3	3.1	1.7	2.5

**Average annual numbers and rates by state and territory, 1997-2001**

	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate
NSW	596	21.6	215	5.9	811	12.6	204	8.0	89	2.3	293	4.6
Vic	703	34.5	228	8.7	931	19.8	139	7.4	67	2.4	207	4.4
Qld	495	34.2	158	9.1	653	20.3	106	8.0	45	2.5	152	4.8
WA	110	16.3	40	4.5	150	9.5	45	7.1	20	2.2	65	4.2
SA	135	19.0	50	5.2	185	11.1	58	8.7	24	2.5	82	4.9
Tas	43	20.5	15	5.2	58	11.8	17	8.9	7	2.4	24	5.0
ACT	19	22.2	7	5.9	26	12.6	10	12.5	4	3.0	13	6.7
NT	5	13.7	0	0.8	5	7.3	3	9.4	0	1.6	3	5.3

**Notes**

1. Refer Appendix C for details of the populations used to produce age-standardised (AS) rates. All rates are expressed per 100,000 population.
  2. Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of usual residence.
- Source: *Cancer in Australia 2001* (AIHW & AACR 2004).

**Table 49: Cancer of the kidney, renal pelvis, ureter, urethra and other and unspecified urinary organs (ICD-10 C64–C66, C68)**

**Australia 2001**

Age group	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0–4	11	1.7	15	2.4	26	2.0	0	0.0	0	0.0	0	0.0
5–9	1	0.1	4	0.6	5	0.4	1	0.1	0	0.0	1	0.1
10–14	0	0.0	1	0.2	1	0.1	1	0.1	1	0.2	2	0.1
15–19	2	0.3	1	0.2	3	0.2	0	0.0	0	0.0	0	0.0
20–24	2	0.3	0	0.0	2	0.2	1	0.2	0	0.0	1	0.1
25–29	2	0.3	6	0.8	8	0.6	0	0.0	0	0.0	0	0.0
30–34	13	1.8	10	1.4	23	1.6	2	0.3	1	0.1	3	0.2
35–39	20	2.7	17	2.3	37	2.5	7	0.9	1	0.1	8	0.5
40–44	41	5.6	28	3.8	69	4.7	16	2.2	6	0.8	22	1.5
45–49	89	13.2	55	8.0	144	10.6	16	2.4	3	0.4	19	1.4
50–54	143	21.9	78	12.0	221	17.0	37	5.7	15	2.3	52	4.0
55–59	164	32.0	78	15.7	242	24.0	50	9.7	19	3.8	69	6.8
60–64	145	35.0	77	18.9	222	27.0	46	11.1	31	7.6	77	9.4
65–69	204	60.8	111	32.0	315	46.2	61	18.2	37	10.7	98	14.4
70–74	255	84.0	144	43.0	399	62.5	78	25.7	67	20.0	145	22.7
75–79	219	96.3	143	49.0	362	69.7	105	46.2	87	29.8	192	37.0
80–84	122	95.1	108	53.5	230	69.7	65	50.7	63	31.2	128	38.8
85 and over	81	98.9	68	37.1	149	56.2	54	65.9	55	30.0	109	41.1
<b>Total</b>	<b>1,514</b>		<b>944</b>		<b>2,458</b>		<b>540</b>		<b>386</b>		<b>926</b>	

**Rates per 100,000 with 95% confidence intervals (95% CI)**

Crude rate	15.7	9.6	12.7	5.6	3.9	4.8
95% CI	14.9–16.5	9.0–10.3	12.2–13.2	5.1–6.1	3.6–4.3	4.5–5.1
AS rate (Aust. 2001)	16.9	9.1	12.7	6.3	3.6	4.8
95% CI	16.1–17.8	8.5–9.7	12.2–13.2	5.8–6.8	3.2–3.9	4.5–5.1
AS rate (WHO World 2000)	12.3	6.8	9.3	4.3	2.4	3.2
95% CI	11.6–12.9	6.3–7.2	9.0–9.7	3.9–4.6	2.1–2.6	3.0–3.4
Lifetime risk (0–74)	1 in 78	1 in 142	1 in 101	1 in 262	1 in 435	1 in 327
PYLL (0–74)				4,425	1,923	6,348
Per cent of all cancers	3.2	2.3	2.8	2.6	2.4	2.5

**Average annual numbers and rates by state and territory, 1997–2001**

	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate
NSW	491	16.6	324	9.3	816	12.7	171	6.0	137	3.8	308	4.8
Vic	358	16.9	227	9.0	585	12.5	134	6.6	80	3.0	215	4.6
Qld	269	17.4	170	9.8	438	13.4	88	6.0	67	3.8	155	4.8
WA	107	14.1	65	7.4	173	10.4	41	5.9	26	3.0	68	4.3
SA	130	17.6	70	7.9	199	12.3	44	6.2	27	2.8	71	4.3
Tas	39	17.4	27	10.2	66	13.6	15	6.9	9	3.3	24	5.0
ACT	17	15.4	14	10.8	31	13.1	7	8.6	4	3.5	11	5.6
NT	8	14.2	3	6.9	11	10.8	2	3.8	1	3.4	3	4.0

**Notes**

1. Refer Appendix C for details of the populations used to produce age-standardised (AS) rates. All rates are expressed per 100,000 population.
  2. Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of usual residence.
- Source: *Cancer in Australia 2001* (AIHW & AACR 2004).

**Table 50: Cancer of the brain (ICD-10 C71)**

**Australia 2001**

Age group	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0-4	20	3.0	22	3.5	42	3.3	9	1.4	6	1.0	15	1.2
5-9	24	3.5	11	1.7	35	2.6	8	1.2	6	0.9	14	1.0
10-14	15	2.2	8	1.2	23	1.7	8	1.2	3	0.5	11	0.8
15-19	13	1.9	8	1.2	21	1.6	7	1.0	2	0.3	9	0.7
20-24	19	2.9	7	1.1	26	2.0	4	0.6	4	0.6	8	0.6
25-29	24	3.4	17	2.4	41	2.9	7	1.0	4	0.6	11	0.8
30-34	33	4.5	16	2.2	49	3.3	15	2.1	5	0.7	20	1.4
35-39	27	3.6	17	2.3	44	2.9	21	2.8	17	2.3	38	2.5
40-44	29	3.9	39	5.2	68	4.6	34	4.6	15	2.0	49	3.3
45-49	50	7.4	30	4.4	80	5.9	37	5.5	17	2.5	54	4.0
50-54	79	12.1	52	8.0	131	10.1	68	10.4	39	6.0	107	8.2
55-59	77	15.0	37	7.5	114	11.3	77	15.0	44	8.9	121	12.0
60-64	84	20.3	54	13.2	138	16.8	67	16.2	38	9.3	105	12.8
65-69	93	27.7	54	15.6	147	21.5	81	24.1	44	12.7	125	18.3
70-74	74	24.4	66	19.7	140	21.9	68	22.4	71	21.2	139	21.8
75-79	62	27.3	63	21.6	125	24.1	69	30.3	67	22.9	136	26.2
80-84	38	29.6	37	18.3	75	22.7	34	26.5	28	13.9	62	18.8
85 and over	25	30.5	24	13.1	49	18.5	16	19.5	23	12.5	39	14.7
<b>Total</b>	<b>786</b>		<b>562</b>		<b>1,348</b>		<b>630</b>		<b>433</b>		<b>1,063</b>	

**Rates per 100,000 with 95% confidence intervals (95% CI)**

Crude rate	8.2	5.7	6.9	6.5	4.4	5.5
95% CI	7.6-8.7	5.3-6.2	6.6-7.3	6.0-7.1	4.0-4.8	5.1-5.8
AS rate (Aust. 2001)	8.5	5.6	6.9	6.8	4.2	5.5
95% CI	7.9-9.1	5.1-6.0	6.6-7.3	6.3-7.4	3.8-4.6	5.1-5.8
AS rate (WHO World 2000)	7.1	4.6	5.8	5.4	3.3	4.3
95% CI	6.6-7.6	4.2-5.0	5.5-6.1	5.0-5.8	3.0-3.6	4.1-4.6
Lifetime risk (0-74)	1 in 148	1 in 225	1 in 178	1 in 183	1 in 289	1 in 224
PYLL (0-74)				10,678	5,978	16,655
Per cent of all cancers	1.6	1.4	1.5	3.1	2.7	2.9

**Average annual numbers and rates by state and territory, 1997-2001**

	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate
NSW	240	7.9	173	5.2	413	6.4	202	6.7	143	4.2	345	5.4
Vic	200	9.1	151	6.1	351	7.5	151	6.9	116	4.6	267	5.7
Qld	135	8.3	103	6.0	238	7.1	111	7.0	82	4.7	193	5.8
WA	64	7.8	45	5.1	108	6.3	55	6.9	37	4.3	92	5.5
SA	65	8.7	45	5.3	110	6.9	53	7.1	38	4.4	91	5.7
Tas	19	8.4	13	5.1	32	6.7	17	7.5	12	4.8	30	6.1
ACT	11	9.2	7	5.0	18	6.9	8	7.3	7	5.1	15	5.9
NT	4	6.0	3	6.7	7	6.3	2	3.0	2	6.2	4	4.7

**Notes**

1. Refer Appendix C for details of the populations used to produce age-standardised (AS) rates. All rates are expressed per 100,000 population.
  2. Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of usual residence.
- Source: *Cancer in Australia 2001* (AIHW & AACR 2004).



**Table 51: Cancers of unknown primary site (ICD-10 C76–C80, C26, C39)**

**Australia 2001**

Age group	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0–4	1	0.2	2	0.3	3	0.2	1	0.2	0	0.0	1	0.1
5–9	1	0.1	0	0.0	1	0.1	0	0.0	0	0.0	0	0.0
10–14	1	0.1	1	0.2	2	0.1	0	0.0	0	0.0	0	0.0
15–19	2	0.3	1	0.2	3	0.2	0	0.0	2	0.3	2	0.1
20–24	3	0.5	0	0.0	3	0.2	2	0.3	0	0.0	2	0.2
25–29	6	0.9	2	0.3	8	0.6	1	0.1	2	0.3	3	0.2
30–34	8	1.1	6	0.8	14	1.0	4	0.6	2	0.3	6	0.4
35–39	23	3.1	16	2.1	39	2.6	15	2.0	10	1.3	25	1.7
40–44	32	4.4	35	4.7	67	4.5	16	2.2	21	2.8	37	2.5
45–49	60	8.9	49	7.2	109	8.0	27	4.0	23	3.4	50	3.7
50–54	71	10.9	65	10.0	136	10.5	39	6.0	40	6.2	79	6.1
55–59	117	22.8	84	16.9	201	19.9	71	13.8	50	10.1	121	12.0
60–64	170	41.1	116	28.4	286	34.8	105	25.4	69	16.9	174	21.2
65–69	206	61.4	130	37.5	336	49.2	138	41.1	90	25.9	228	33.4
70–74	289	95.2	210	62.7	499	78.2	194	63.9	137	40.9	331	51.8
75–79	323	142.1	241	82.5	564	108.6	240	105.6	225	77.1	465	89.5
80–84	222	173.1	245	121.4	467	141.5	169	131.8	204	101.1	373	113.0
85 and over	201	245.4	365	199.1	566	213.4	191	233.1	342	186.6	533	201.0
<b>Total</b>	<b>1,736</b>		<b>1,568</b>		<b>3,304</b>		<b>1,213</b>		<b>1,217</b>		<b>2,430</b>	

**Rates per 100,000 with 95% confidence intervals (95% CI)**

Crude rate	18.0	16.0	17.0	12.6	12.4	12.5
95% CI	17.2–18.9	15.2–16.8	16.4–17.6	11.9–13.3	11.7–13.1	12.0–13.0
AS rate (Aust. 2001)	20.5	14.3	17.0	14.7	10.9	12.5
95% CI	19.5–21.4	13.6–15.0	16.4–17.6	13.8–15.5	10.2–11.5	12.0–13.0
AS rate (WHO World 2000)	13.6	9.5	11.4	9.4	6.9	8.0
95% CI	13.0–14.3	9.0–10.0	11.0–11.8	8.9–9.9	6.5–7.3	7.7–8.4
Lifetime risk (0–74)	1 in 80	1 in 117	1 in 96	1 in 126	1 in 185	1 in 150
PYLL (0–74)				7,173	5,640	12,813
Per cent of all cancers	3.6	3.9	3.7	5.9	7.7	6.7

**Average annual numbers and rates by state and territory, 1997–2001**

	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate
NSW	624	22.3	585	16.1	1,209	18.8	433	15.9	427	11.5	860	13.4
Vic	361	17.9	362	13.5	722	15.4	312	15.8	328	12.1	639	13.7
Qld	289	20.0	255	14.4	544	17.0	228	16.3	212	11.9	440	13.9
WA	142	20.3	108	12.0	250	15.7	99	14.6	97	10.7	195	12.4
SA	140	19.7	145	15.2	285	17.2	105	15.0	113	11.6	218	13.1
Tas	41	19.9	46	16.7	87	17.8	36	17.7	44	15.9	80	16.4
ACT	24	26.5	20	16.8	44	21.1	14	16.7	15	12.6	29	14.3
NT	12	26.6	9	25.1	20	25.7	8	21.1	6	18.1	14	19.3

**Notes**

1. Refer Appendix C for details of the populations used to produce age-standardised (AS) rates. All rates are expressed per 100,000 population.
  2. Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of usual residence.
- Source: *Cancer in Australia 2001* (AIHW & AACR 2004).

**Table 52: Non-Hodgkin's lymphoma (ICD-10 C82–C85, C96)**

**Australia 2001**

Age group	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0–4	8	1.2	3	0.5	11	0.9	0	0.0	0	0.0	0	0.0
5–9	11	1.6	7	1.1	18	1.3	3	0.4	2	0.3	5	0.4
10–14	10	1.4	4	0.6	14	1.0	2	0.3	1	0.2	3	0.2
15–19	17	2.5	8	1.2	25	1.8	2	0.3	2	0.3	4	0.3
20–24	20	3.0	15	2.3	35	2.7	6	0.9	1	0.2	7	0.5
25–29	31	4.4	12	1.7	43	3.1	4	0.6	0	0.0	4	0.3
30–34	40	5.5	18	2.4	58	4.0	11	1.5	3	0.4	14	1.0
35–39	50	6.7	31	4.1	81	5.4	3	0.4	5	0.7	8	0.5
40–44	97	13.2	52	7.0	149	10.1	16	2.2	9	1.2	25	1.7
45–49	126	18.7	95	13.9	221	16.3	24	3.6	9	1.3	33	2.4
50–54	166	25.4	137	21.1	303	23.3	32	4.9	25	3.9	57	4.4
55–59	170	33.1	135	27.2	305	30.2	66	12.9	39	7.9	105	10.4
60–64	212	51.2	143	35.0	355	43.2	91	22.0	49	12.0	140	17.0
65–69	221	65.9	175	50.4	396	58.0	77	22.9	79	22.8	156	22.9
70–74	253	83.3	204	60.9	457	71.6	132	43.5	106	31.7	238	37.3
75–79	221	97.2	213	72.9	434	83.6	135	59.4	121	41.4	256	49.3
80–84	171	133.3	175	86.7	346	104.8	103	80.3	122	60.5	225	68.2
85 and over	99	120.8	149	81.3	248	93.5	80	97.7	142	77.5	222	83.7
<b>Total</b>	<b>1,923</b>		<b>1,576</b>		<b>3,499</b>		<b>787</b>		<b>715</b>		<b>1,502</b>	

**Rates per 100,000 with 95% confidence intervals (95% CI)**

Crude rate	20.0	16.1	18.0	8.2	7.3	7.7
95% CI	19.1–20.9	15.3–16.9	17.4–18.6	7.6–8.7	6.8–7.8	7.3–8.1
AS rate (Aust. 2001)	21.4	15.1	18.0	9.2	6.5	7.7
95% CI	20.4–22.4	14.4–15.9	17.4–18.6	8.5–9.8	6.1–7.0	7.3–8.1
AS rate (WHO World 2000)	16.1	11.3	13.6	6.3	4.4	5.3
95% CI	15.4–16.8	10.7–11.9	13.1–14.0	5.8–6.7	4.0–4.7	5.0–5.5
Lifetime risk (0–74)	1 in 64	1 in 88	1 in 74	1 in 172	1 in 242	1 in 202
PYLL (0–74)				6,628	3,935	10,563
Per cent of all cancers	4.0	3.9	4.0	3.9	4.5	4.1

**Average annual numbers and rates by state and territory, 1997–2001**

	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate
NSW	614	21.0	518	14.9	1,133	17.7	280	10.0	262	7.2	542	8.4
Vic	493	23.2	417	16.3	910	19.5	218	10.8	189	7.1	407	8.7
Qld	305	19.9	252	14.6	558	17.0	133	9.2	111	6.3	243	7.6
WA	148	19.3	115	13.1	263	15.9	65	9.1	58	6.7	123	7.6
SA	166	22.8	156	17.8	323	20.1	72	10.1	71	7.6	142	8.7
Tas	50	22.5	43	16.2	93	19.1	23	11.0	23	8.4	47	9.6
ACT	25	23.8	22	17.3	47	20.2	10	10.8	12	10.3	22	10.6
NT	7	9.9	5	9.6	12	10.1	1	3.2	2	5.9	4	4.7

**Notes**

1. Refer Appendix C for details of the populations used to produce age-standardised (AS) rates. All rates are expressed per 100,000 population.
  2. Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of usual residence.
- Source: *Cancer in Australia 2001* (AIHW & AACR 2004).

**Table 53: All leukaemias (ICD-10 C91–C95)**

**Australia 2001**

Age group	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0–4	63	9.6	47	7.5	110	8.6	7	1.1	5	0.8	12	0.9
5–9	33	4.8	30	4.6	63	4.7	12	1.7	5	0.8	17	1.3
10–14	26	3.8	26	3.9	52	3.8	5	0.7	2	0.3	7	0.5
15–19	23	3.3	7	1.1	30	2.2	7	1.0	4	0.6	11	0.8
20–24	18	2.7	15	2.3	33	2.5	7	1.1	6	0.9	13	1.0
25–29	20	2.9	25	3.5	45	3.2	11	1.6	6	0.8	17	1.2
30–34	25	3.4	20	2.7	45	3.1	8	1.1	10	1.4	18	1.2
35–39	34	4.6	29	3.9	63	4.2	8	1.1	10	1.3	18	1.2
40–44	43	5.9	28	3.8	71	4.8	15	2.0	13	1.7	28	1.9
45–49	55	8.1	48	7.0	103	7.6	16	2.4	11	1.6	27	2.0
50–54	75	11.5	66	10.2	141	10.8	25	3.8	31	4.8	56	4.3
55–59	107	20.9	71	14.3	178	17.6	48	9.4	24	4.8	72	7.1
60–64	130	31.4	63	15.4	193	23.5	62	15.0	36	8.8	98	11.9
65–69	140	41.7	86	24.8	226	33.1	72	21.5	46	13.3	118	17.3
70–74	217	71.5	105	31.4	322	50.4	127	41.8	69	20.6	196	30.7
75–79	209	91.9	131	44.9	340	65.5	147	64.7	103	35.3	250	48.1
80–84	149	116.2	106	52.5	255	77.3	113	88.1	95	47.1	208	63.0
85 and over	98	119.6	148	80.7	246	92.7	89	108.6	109	59.5	198	74.7
<b>Total</b>	<b>1,465</b>		<b>1,051</b>		<b>2,516</b>		<b>779</b>		<b>585</b>		<b>1,364</b>	

**Rates per 100,000 with 95% confidence intervals (95% CI)**

Crude rate	15.2	10.7	13.0	8.1	6.0	7.0
95% CI	14.4–16.0	10.1–11.4	12.5–13.5	7.5–8.7	5.5–6.5	6.7–7.4
AS rate (Aust. 2001)	16.5	10.0	13.0	9.2	5.4	7.0
95% CI	15.7–17.4	9.4–10.6	12.5–13.5	8.5–9.9	4.9–5.8	6.7–7.4
AS rate (WHO World 2000)	12.5	8.0	10.1	6.3	3.8	4.9
95% CI	11.9–13.2	7.5–8.5	9.7–10.5	5.8–6.7	3.4–4.1	4.6–5.1
Lifetime risk (0–74)	1 in 89	1 in 147	1 in 111	1 in 191	1 in 320	1 in 240
PYLL (0–74)				7,525	5,265	12,790
Per cent of all cancers	3.1	2.6	2.8	3.8	3.7	3.8

**Average annual numbers and rates by state and territory, 1997–2001**

	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate
NSW	491	16.8	337	9.7	828	12.9	277	9.9	200	5.6	476	7.4
Vic	332	16.0	249	9.6	580	12.4	182	9.0	148	5.6	330	7.0
Qld	267	17.5	191	10.9	458	13.9	135	9.5	95	5.3	230	7.2
WA	104	13.6	70	7.7	173	10.4	66	9.3	45	5.0	111	6.8
SA	145	20.2	106	12.1	252	15.7	73	10.3	57	6.2	130	8.0
Tas	31	13.9	21	8.0	52	10.6	17	8.2	15	5.5	32	6.6
ACT	18	18.3	14	10.4	31	13.3	8	9.2	7	5.6	14	6.8
NT	5	6.8	5	9.6	10	8.4	3	7.0	2	7.0	5	7.3

*Notes*

1. Refer Appendix C for details of the populations used to produce age-standardised (AS) rates. All rates are expressed per 100,000 population.
  2. Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of usual residence.
  3. Number of cases reported against C91–C95 may have been affected by coding and reporting changes; refer Appendix D for details.
- Source: *Cancer in Australia 2001* (AIHW & AACR 2004).

**Table 54: Cancers attributed to alcohol consumption**

**Australia 2001**

Age group	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
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	0.1	0	0.1	1	0.1	0	0.1	0	0.1	1	0.1
20-24	2	0.3	3	0.5	5	0.4	1	0.1	0	0.0	1	0.1
25-29	4	0.6	7	1.0	11	0.8	1	0.2	1	0.1	2	0.2
30-34	8	1.0	25	3.4	32	2.2	1	0.2	3	0.5	5	0.3
35-39	12	1.6	56	7.5	68	4.6	6	0.8	9	1.1	15	1.0
40-44	32	4.4	112	15.0	144	9.7	13	1.8	16	2.2	29	2.0
45-49	69	10.2	145	21.3	214	15.8	37	5.5	27	4.0	65	4.8
50-54	109	16.7	219	33.8	328	25.2	57	8.7	43	6.6	100	7.7
55-59	122	23.8	207	41.8	329	32.6	76	14.8	46	9.2	122	12.1
60-64	187	45.1	196	48.1	383	46.6	93	22.5	42	10.3	135	16.4
65-69	165	49.1	175	50.5	340	49.9	105	31.4	56	16.1	161	23.6
70-74	181	59.5	157	46.9	338	52.9	145	47.6	64	19.0	208	32.6
75-79	152	66.8	109	37.2	261	50.2	125	55.1	60	20.4	185	35.6
80-84	85	66.6	101	50.0	186	56.5	67	52.4	64	31.7	131	39.8
85 and over	46	55.6	105	57.0	150	56.6	48	58.1	84	45.8	132	49.6
<b>Total</b>	<b>1,173</b>		<b>1,618</b>		<b>2,791</b>		<b>776</b>		<b>515</b>		<b>1,291</b>	

**Rates per 100,000 with 95% confidence intervals (95% CI)**

Crude rate	12.2	16.5	14.4	8.1	5.3	6.6
95% CI	11.5-12.9	15.7-17.3	13.8-14.9	7.5-8.6	4.8-5.7	6.3-7.0
AS rate (Aust. 2001)	12.9	16.0	14.4	8.8	4.8	6.6
95% CI	12.2-13.7	15.2-16.8	13.8-14.9	8.1-9.4	4.4-5.3	6.3-7.0
AS rate (WHO World 2000)	9.6	12.6	11.0	6.2	3.5	4.7
95% CI	9.0-10.1	12.0-13.2	10.6-11.4	5.8-6.6	3.1-3.8	4.5-5.0
Lifetime risk (0-74)	1 in 95	1 in 75	1 in 84	1 in 150	1 in 289	1 in 199
PYLL (0-74)				6,777	4,680	11,457
Per cent of all cancers	2.5	4.0	3.2	3.8	3.2	3.6

**Average annual numbers and rates by state and territory, 1997-2001**

	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate
NSW	387	13.0	516	15.5	903	14.1	249	8.5	167	4.7	416	6.5
Vic	281	13.1	391	15.9	671	14.4	187	8.9	138	5.3	325	7.0
Qld	215	13.8	274	16.1	489	14.9	129	8.6	83	4.8	212	6.5
WA	103	13.3	135	15.4	239	14.2	62	8.4	42	4.7	104	6.4
SA	81	11.0	130	15.8	212	13.3	58	7.9	42	4.7	100	6.1
Tas	31	13.6	38	14.9	69	14.2	20	9.0	14	5.2	34	6.9
ACT	14	12.9	23	16.8	36	14.6	7	6.9	6	5.0	13	5.8
NT	15	27.8	8	15.4	23	21.8	8	18.4	3	6.7	11	12.7

**Notes**

1. Refer Appendix C for details of the populations used to produce age-standardised (AS) rates. All rates are expressed per 100,000 population.
2. Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of usual residence.
3. Cancers attributable to alcohol are C01-C06, C09-C10, C12-C14, C15, C22, C32, C50 (female breast cancer only).

Source: *Cancer in Australia 2001* (AIHW & AACR 2004).

**Table 55: Cancers attributed to smoking**

Australia 2001												
Age group	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
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	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	0	0.0	0	0.0	0	0.0
25-29	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
30-34	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
35-39	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
40-44	55	7.4	32	4.3	86	5.8	32	4.4	12	1.6	44	3.0
45-49	183	27.2	77	11.3	260	19.2	101	14.9	47	6.9	148	10.9
50-54	376	57.7	166	25.6	542	41.7	210	32.2	87	13.5	298	22.9
55-59	625	121.8	269	54.2	893	88.6	422	82.3	172	34.7	594	58.9
60-64	932	225.2	318	77.9	1,250	152.1	593	143.3	196	48.0	789	96.0
65-69	1,200	357.5	413	119.2	1,613	236.4	840	250.3	305	87.9	1,145	167.8
70-74	1,534	505.2	574	171.5	2,108	330.2	1,175	387.2	424	126.5	1,599	250.5
75-79	1,320	580.8	547	187.5	1,868	359.7	1,042	458.4	434	148.6	1,476	284.2
80-84	847	660.4	356	176.3	1,203	364.4	680	530.3	315	156.1	995	301.5
85 and over	478	583.4	289	157.8	767	289.3	460	561.8	272	148.5	732	276.1
<b>Total</b>	<b>7,550</b>		<b>3,042</b>		<b>10,592</b>		<b>5,556</b>		<b>2,264</b>		<b>7,820</b>	

**Rates per 100,000 with 95% confidence intervals (95% CI)**

Crude rate	78.4	31.1	54.6	57.7	23.1	40.3
95% CI	76.6 – 80.2	30.0 – 32.2	53.5 – 55.6	56.2 – 59.2	22.2 – 24.1	0.1 – 0.2
AS rate (Aust. 2001)	86.1	28.9	54.6	64.4	21.3	40.3
95% CI	84.1 – 88.1	27.9 – 30.0	53.5 – 55.6	62.6 – 66.1	20.4 – 22.1	39.4 – 41.2
AS rate (WHO World 2000)	59.4	20.5	38.4	43.3	14.6	27.6
95% CI	58.0 – 60.7	19.7 – 21.2	37.6 – 39.1	42.1 – 44.4	14.0 – 15.3	27.0 – 28.3
Lifetime risk (0-74)	1 in 16	1 in 44	1 in 23	1 in 22	1 in 63	1 in 33
PYLL (0-74)				32,575	12,466	45,041
Per cent of all cancers	15.8	7.5	12.0	27.2	14.2	21.5

**Average annual numbers and rates by State and Territory, 1997-2001**

	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate	Number	AS rate
NSW	2,521	87.2	995	28.3	3,516	54.3	1,885	66.4	727	20.4	2,611	40.4
Vic	1,906	91.5	773	29.9	2,678	56.9	1,346	65.5	558	21.3	1,903	40.4
Qld	1,461	98.0	506	29.5	1,967	60.9	1,012	69.3	310	18.1	1,322	41.0
WA	636	87.7	254	29.3	890	55.4	482	68.5	188	21.6	670	42.1
SA	625	85.6	245	26.9	870	52.5	480	66.5	178	19.2	658	39.5
Tas	202	91.3	88	33.0	290	58.9	159	72.4	63	23.5	222	45.0
ACT	66	68.3	32	26.2	98	44.6	47	50.9	24	20.1	71	33.2
NT	50	111.0	13	39.1	63	77.9	36	88.4	11	32.1	47	62.0

*Notes*

1. Refer Appendix C for details of the populations used to produce age-standardised (AS) rates. All rates are expressed per 100,000 population.
  2. Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of usual residence.
  3. Cancers attributable to smoking are C00-C06, C09-C10, C12-C16, C21.0, C21.1, C25, C32, C33-C34, C51.9, C60, C64, C65, C67.
- Source: *Cancer in Australia 2001* (AIHW & AACR 2004).



# Appendixes

# Appendix A: International Classification of Diseases, 10th Revision—cancer codes and combinations used in this report

All cancers (excluding C44)	C00–C96	Kidney	C64
Lip	C00	Renal pelvis	C65
Tongue	C01–C02	Ureter	C66
Mouth	C03–C06	Bladder	C67
Salivary gland	C07–C08	Other urinary organs	C68
Tonsil	C09	Eye	C69
Other oropharynx	C10	Brain	C71
Nasopharynx	C11	Other and unspecified parts of the nervous system (NS)	C70, C72
Hypopharynx	C12–C13	Brain and CNS	C70–C72
Pharynx unspecified	C14	Thyroid gland	C73
Oesophagus	C15	Adrenal gland	C74
Stomach	C16	Other endocrine glands	C75
Small intestine	C17	Hodgkin's disease	C81
Colon	C18	Non-Hodgkin's lymphoma (NHL) (including M9590/3)	C82–C85, C96
Rectum	C19–C20	Lymphoma NOS (ICD-O-2/3)	M9590/3
Anus	C21	All lymphomas	C81–C85, C96
Colorectal (excluding anus)	C18–C20	Immunoproliferative neoplasms	C88
Colorectal (including anus)	C18–C21	Multiple myeloma	C90
Liver and intrahepatic bile ducts	C22	Lymphoid leukaemia	C91
Gallbladder and extrahepatic bile ducts	C23–C24	Myeloid leukaemia	C92
Pancreas	C25	Myeloid leukaemia	C92–C94
Nasal cavities, middle ear and accessory sinuses	C30–C31	Leukaemia of unspecified cell type	C95
Larynx	C32	Unknown primary site	C76–C80, C26, C39
Trachea, bronchus and lung	C33–C34	All leukaemias	C91–C95
Thymus, heart, mediastinum & pleura	C37–C38	Smoking-related cancers (aetiological fractions are applied to the following codes)	C00–C06, C09–C16, C21.0, C21.2, C21.8, C25, C32–C34, 51.9, C60, C67, C64–C65
Bone and articular cartilage	C40–C41	Alcohol-related cancers (aetiological fractions are applied to the following codes)	C01–C06, C09–C10, C12–C15, C22, C32, C50
Melanoma	C43		
Skin cancer — non-melanoma	C44		
Mesothelioma	C45		
Kaposi's sarcoma	C46		
Connective and other soft tissue	C47–C49		
Breast	C50		
Vulva and vagina	C51–C52		
Cervix	C53		
Corpus uteri and uterus unspecified	C54–C55		
Ovary and other and unspecified female genital organs	C56–C57		
Placenta	C58		
Penis	C60		
Prostate	C61		
Testis	C62		
Other male genital organs	C63		

Sources: World Health Organization 1992, 2000.



## Appendix B: Methods

This section describes the methods used to calculate the estimates presented in the tables in this report. The calculations in the example below are applicable to both incidence and mortality.

### Example table

Trachea, bronchus and lung cancer incidence (ICD-10 C33–34) – males

	No. of cases	Australian 2001 male population*	Age-specific rate per 100,000 population	Australian 2001 Population Standard*	Expected number of cases
Age group (years)	(column 1)	(column 2)	(column 3)	(column 4)	(column 5)
0–4	0	657,499	0.0	1,282,357	0
5–9	0	693,790	0.0	1,351,664	0
10–14	0	693,083	0.0	1,353,177	0
15–19	1	690,668	0.1	1,352,745	1
20–24	0	660,776	0.0	1,302,412	0
25–29	2	700,910	0.3	1,407,081	4
30–34	6	726,919	0.8	1,466,615	12
35–39	12	741,434	1.6	1,492,204	24
40–44	50	734,436	6.8	1,479,257	101
45–49	79	675,055	11.7	1,358,594	159
50–54	181	652,540	27.7	1,300,777	360
55–59	358	512,888	69.8	1,008,799	704
60–64	501	413,982	121.0	822,024	995
65–69	702	335,590	209.2	682,513	1,428
70–74	971	303,554	319.9	638,380	2,042
75–79	885	227,356	389.3	519,356	2,022
80–84	563	128,250	439.0	330,050	1,449
85+	346	81,922	422.4	265,235	1,120
<b>Total</b>	<b>4,657</b>	<b>9,630,652</b>		<b>19,413,240</b>	

\* Australian Bureau of Statistics 2004.

### Crude rates—all age groups

A crude incidence rate is defined as the number of new cases of cancer divided by the population at risk in a specified time period. A crude mortality rate substitutes deaths for new cases in this calculation. Both are conventionally expressed as annual rates per 100,000 population and may be calculated for males, females or persons, or for subsets of the population (for example, see 'Age-specific rates' page 106). The total rate calculated in this way without adjustment for age or other factors is known as the 'crude rate'.

The crude rate is calculated by dividing the total number of cases across all age groups by the total population, for example:

$$\begin{aligned}
 \text{Crude incidence rate for lung cancer} &= \frac{\text{Column 1 total}}{\text{Column 2 total}} \times 100,000 \\
 &= \frac{4,657}{9,630,652} \times 100,000 \\
 &= 48.4 \text{ per } 100,000
 \end{aligned}$$

## 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, for example:

$$\begin{aligned}
 \text{Age-specific lung cancer incidence rates in males aged 75-79} &= \frac{\text{Column 1 for this age}}{\text{Column 2 for this age}} \times 100,000 \\
 &= \frac{885}{227,356} \times 100,000 \\
 &= 389.3 \text{ per } 100,000
 \end{aligned}$$

## Age-standardised rates (AS rate)

Rates are adjusted for age to facilitate comparisons between populations that have different age structures, for example, between youthful and ageing communities. There are two different methods commonly used to adjust for age. In this publication direct standardisation is used, in which age-specific rates are multiplied against a constant population (the Australian 2001 Population Standard or the WHO 2000 World Standard Population). This effectively removes the influence of age structure on the summary rate which 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 which can be followed by reference to the example table on the previous page.

*Step 1* Calculate the age-specific rate (as shown above) for each age group (column 3).

*Step 2* Calculate the expected number of cases in each 5-year age group by multiplying the age-specific rates (column 3) by the corresponding standard population (column 4) and dividing by 100,000, giving you the expected number of cases (column 5).

*Step 3* To give the age-standardised rate, sum the expected number of cases in each age group (total column 5). Divide this sum by the total of the standard population used in the calculation and multiply by 100,000.

## Confidence intervals (CI)

The age-standardised and crude incidence and mortality rates presented in the body of this report also show 95% confidence intervals. These confidence intervals indicate the variation that might be expected in such estimates purely by chance. The confidence intervals are calculated using the methods presented in Holman et al. (1987).

A relatively simple approximation of the confidence limits that readers might use when examining state and territory age-standardised rates is as set out below.

$$95\% \text{ CI approximation} = \text{AS rate} \pm 1.96 \times \frac{\text{AS rate}}{\sqrt{\text{Number of cases}}}$$

## Lifetime risk and cumulative rate

Lifetime risk is a measure that approximates the risk of contracting a particular cancer in a lifetime if the risks at the time of estimation remained throughout life. It is based on a mathematical relationship with the cumulative rate and is calculated in this publication for ages 0–74 years.

Cumulative rate is a directly standardised rate calculated by summing age-specific rates from equal age groups, for example, 5–9, 10–14 years. An example is provided below.

$$\begin{aligned} \text{Cumulative rate} &= \frac{5 \times (\text{Sum of the age-specific rates}) \times 100}{100,000} \\ &= \frac{5 \times 768.9 \times 100}{100,000} \\ &= 3.84\% \end{aligned}$$

The factor of 5 is used to indicate the 5 years of life in each age group and the factor of 100 is used to present the result as a percentage. As age-specific rates are presented per 100,000 population (column 3), the result is divided by 100,000 to return the age-specific rates to a division of cases by population. Cumulative risk is related to cumulative rate by the expression:

$$\text{Cumulative risk} = (1 - e^{-\text{rate}/100})$$

where rate is expressed as a percentage.

Lifetime risk is expressed as a '1 in n' proportion by taking the inverse of the above formula:

$$n = \frac{1}{(1 - e^{-\text{rate}/100})}$$

For lung cancer in men, the cumulative rate was 3.84%, therefore:

$$\begin{aligned}n &= \frac{1}{(1 - e^{-3.84/100})} \\ &= 26.51\end{aligned}$$

That is, for men, the lifetime risk (0-74 years) of developing lung cancer is 1 in 27, providing they remain at risk for the whole period and the 2001 age-specific rates apply throughout their lives. Note that no account has been taken of specific cancer risk factors, for example, the risk for men who smoke would be higher than that for those who have never smoked.

## Per cent of all cancers

The 'per cent of all cancers' measure is the proportion of all causes accounted for by a particular cancer. The measure may be computed for cancer incidence or mortality. Using an incidence example, the measure is calculated by taking the number of new cases of a particular cancer, for example, lung cancer, and dividing that by the total number of all new cancer cases and multiplying by 100 to express it as a percentage. This is undertaken for each sex and for total persons. Note that for this publication the incidence and mortality of non-melanoma skin cancers are not included in total new cancer cases.

## Sex ratio

This measure indicates the relative incidence or mortality between the sexes. It can be calculated on the basis of observed numbers, crude rates, age-standardised rates or cumulative rates per cent. In this publication it is calculated using the age-standardised rates where the male rate is divided by the female rate for each cancer. Ratios greater than 1 indicate an excess in males while ratios less than 1 indicate an excess in females.

It is preferable to use either the age-standardised rates or the cumulative rate as these both adjust for age variations between male and female populations. In addition, the use of cumulative rate per cent discounts the occurrence of cancer in people aged over 75 years. This gives more emphasis, therefore, to early cancer diagnosis or death, and diminishes the impact of variable diagnostic investigation of the elderly.

## Person-years of life lost

Person-years of life lost is a concept that attempts to measure the number of years of life lost per annum due to death as a result of a specific cause, for example, lung cancer, given life expectancies at specific ages. Age groups 0-4 years up to 70-74 years were used for the calculations, as deaths before age 75 years are regarded as premature for both men and women. The method used in this publication for the calculation of person-years of life lost is an aggregation of years between age at death and 75 years for each person for each cancer, for example, a person dying at age 50 contributes 25 years to the measure of person-years of life lost.

## Average annual rates of change

To indicate the extent of change in age-standardised rates over time, a linear line of best fit is calculated for the time frame in question. Average annual rates of change are then calculated using the geometric formula:

$$\text{Average rate of change} = \left( (P_n / P_o)^{1/N} - 1 \right) \times 100$$

where

$$P_n = \text{rate at later year } n$$
$$P_o = \text{rate at earlier year } o$$
$$N = n - o.$$

This process averages out variations in the actual annual changes that may have occurred between the two points in time.

# Appendix C: Population data

## Australian resident population, 2001

Age (years)	2001		
	Males	Females	Total
0-4	657,499	624,858	1,282,357
5-9	693,790	657,874	1,351,664
10-14	693,083	660,094	1,353,177
15-19	690,668	662,077	1,352,745
20-24	660,776	641,636	1,302,412
25-29	700,910	706,171	1,407,081
30-34	726,919	739,696	1,466,615
35-39	741,434	750,770	1,492,204
40-44	734,436	744,821	1,479,257
45-49	675,055	683,539	1,358,594
50-54	652,540	648,237	1,300,777
55-59	512,888	495,911	1,008,799
60-64	413,982	408,042	822,024
65-69	335,590	346,923	682,513
70-74	303,554	334,826	638,380
75-79	227,356	292,000	519,356
80-84	128,250	201,800	330,050
85+	81,922	183,313	265,235
<b>Total</b>	<b>9,630,652</b>	<b>9,782,588</b>	<b>19,413,240</b>

Source: Australian Bureau of Statistics 2004.

## Australian Standard Population and World Standard Population

Age (years)	Australian Standard Population* (2001)		WHO World Standard Population** (2000)	
	Number	% of total	Number	% of total
0-4	1,282,357	6.6	8.86	8.9
5-9	1,351,664	7.0	8.69	8.7
10-14	1,353,177	7.0	8.60	8.6
15-19	1,352,745	7.0	8.47	8.5
20-24	1,302,412	6.7	8.22	8.2
25-29	1,407,081	7.2	7.93	7.9
30-34	1,466,615	7.6	7.61	7.6
35-39	1,492,204	7.7	7.15	7.1
40-44	1,479,257	7.6	6.59	6.6
45-49	1,358,594	7.0	6.04	6.0
50-54	1,300,777	6.7	5.37	5.4
55-59	1,008,799	5.2	4.55	4.5
60-64	822,024	4.2	3.72	3.7
65-69	682,513	3.5	2.96	3.0
70-74	638,380	3.3	2.21	2.2
75-79	519,356	2.7	1.52	1.5
80-84	330,050	1.7	0.91	0.9
85+	265,235	1.4	0.63	0.6
<b>Total</b>	<b>19,413,240</b>	<b>100.0</b>	<b>100.03</b>	<b>100.0</b>

\*\* Australian Bureau of Statistics 2004.

\*\*Ahmad et al., 2000.

## Appendix D: Cancer registration in Australia

The table below provides information about cancer registration in Australia. Each state and territory operates its own registry. Generally, operational guidelines for each of the registries are similar and coincide with the objectives of the International Association of Cancer Registries. Although some registries operate under different coding systems for site, morphology and other variables, the bulk of information is directly comparable and has been reconciled for this publication. The reporting sources of the registries vary according to the local conditions and those bodies named in the legislation. Every attempt is made to report all cancer cases, although not every case will be identified. Cancer registries are dependent upon their reporting sources. Variation in reporting of cancers by age, sex, type, geographical location, country of birth or other variables does occur and may have effects on the final statistics. Occasionally, delays in reporting some case information may extend over several years but this has a minimal effect on the final reported data. In order to minimise the effects on the final reported registration, multiple reporting sources are used to compile case information where possible. Case information is exchanged between registries where there is cause for suspicion of duplicate registration. Further information regarding registry coding practices may be obtained by contacting the registrar in each state or territory.

States and territories	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Total population (2001)	6,575,217	4,804,726	3,628,946	1,901,159	1,511,728	471,795	319,317	197,768
Per cent of Australian population	33.9	24.7	18.7	9.8	7.8	2.4	1.6	1.0
Per cent of population older than age 65	13.1	13.0	11.6	11.0	14.6	13.8	8.6	3.7
No. of new cancers (1997–2001)*	28,659	21,183	15,918	7,095	7,426	2,172	1,066	417
First year of population registration	1972	1982	1982	1982	1977	1978	1972	1981
Year of legislation	1972	1982	1982	1981	1977	1992	1994	1991
Funding source	Pvte–Govt	Pvte–Govt	Pvte–Govt	Govt	Govt	Pvte–Govt	Govt	Govt
Topography coding	ICD-O-3	ICD-O-2	ICD-O-2	ICD-O-3	ICD-O-2	ICD-O-3	ICD-O-3	ICD-O-2
Morphology coding	ICD-O-3	ICD-O-2	ICD-O-2	ICD-O-3	ICD-O-2	ICD-O-3	ICD-O-3	ICD-O-2
<b>Reporting sources</b>								
Public hospitals	Yes	Yes	Yes	No**	Yes	Yes	Yes	Yes
Private hospitals	Yes	Yes	Yes	No**	Yes	Yes	Yes	No
Repatriation hospitals	Yes	Yes	Yes	No**	Yes	Yes	Yes	No
Pathology laboratories	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Radiotherapy units	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Nursing homes	Yes	No	Yes	No	No	No**	Yes	No
Registrar of Births, Deaths and Marriages	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Doctors	No**	No**	No**	No**	No**	No**	No**	No**

\* Refers to the average number of new cases over the 5-year period 1997–2001.

\*\* Information is provided on special request only.

## Impact of coding and reporting changes

Cancers are registered and coded using the International Classification of Diseases for Oncology; either the second edition, ICD-O-2 (WHO 1990) or the third edition, ICD-O-3 (WHO 2000). In both versions of ICD-O, neoplasms (tumours) are coded by both morphology (tumour type and behaviour) and topography (site).

The AACR has agreed that all Australian state and territory cancer registries will eventually code in ICD-O-3. As shown in the previous table, by the time of reporting 2001 cancer data, only four states and territories (Australian Capital Territory, New South Wales, Tasmania and Western Australia) had made the transition to ICD-O-3 and a complete recode of all historical cancers is still being completed for some states and territories.

In this report, cancers are tabulated and reported using the ICD-10 codes and groups shown in Appendix A. ICD-O morphology and topography codes are summarised using a single code in ICD-10.

In ICD-O-2 and earlier versions, all malignant neoplasms (cancers) corresponded to an ICD-10 code in the range C00 to C97, whilst benign and in situ neoplasms and other neoplasms of unknown or uncertain behaviour corresponded to an ICD-10 code in the range D00 to D48.

In ICD-O-3, some neoplasms previously considered to be of uncertain behaviour are now coded as malignant, for a list refer Threlfall & Thompson (2004, p.61). In ICD-10, these neoplasms correspond to a code in the range D45 to D47, which also includes some non-malignant neoplasms. Only cancers (malignant neoplasms) are included in Cancer in Australia.

ICD-10 codes in the range D45 to D47 include polycythaemia vera (D45), myelodysplastic syndromes (D46) and other neoplasms of uncertain or unknown behaviour of lymphoid, haematopoietic and related tissue (D47). A full report on these conditions will be included in future editions of Cancer in Australia, when all state and territory cancer registries have made the transition to ICD-O-3.

The four states that reported 2001 cancer data in ICD-O-3 represent a total of 47.7% of the 2001 Australian population. These states reported a total of 218 cancers with ICD-10 codes in the range D45 to D47 in 2001. In the National Mortality Database there were a total of 501 deaths in all states in 2001, with underlying causes due to neoplasms (both malignant and non-malignant) in the range D45 to D47.

For the states and territories that already code in ICD-O-3, rules for multiple primaries (which apply to persons who have more than one neoplasm present) have resulted in some cancers that were formerly reported as leukemias in ICD-10 (codes C91 to C95) being no longer reported, due to prior incidence of one of the above conditions in the range D45 to D47.

A study of cases registered in 2002 by the WA Cancer Registry (Threlfall & Thompson 2004, p.61) found that in addition to the 221 leukaemias reported, there were 12 further leukaemias not reported due to prior incidence of one of the above conditions. So out of a total of 233 that would formerly have been reported in the range C91 to C95 in ICD-10, 12 (5%) will no longer be reported. The transition to ICD-O-3 may lead to similar declines in the number of cancers reported in the range C91 to C95, in other states and territories.



## Appendix E: Cancer registries contact list

### **New South Wales Central Cancer Registry**

Cancer Institute NSW  
Locked Bag 1  
Woolloomooloo NSW 2011  
Phone: +61 2 8374 5747  
Fax: +61 2 8374 5744  
E-mail: [ccr@cancerinstitute.org.au](mailto:ccr@cancerinstitute.org.au)  
Web site: [www.cancerinstitute.org.au/cancer\\_inst/statistics/registry.html](http://www.cancerinstitute.org.au/cancer_inst/statistics/registry.html)  
Registry Manager: Ms Elizabeth Tracey  
E-mail: [etracey@cancerinstitute.org.au](mailto:etracey@cancerinstitute.org.au)  
Maria Arcorace: +61 2 8374 5740  
[maria.arcorace@cancerinstitute.org.au](mailto:maria.arcorace@cancerinstitute.org.au)  
Bruna Corti: +61 2 8374 5749  
[bruna.corti@cancerinstitute.org.au](mailto:bruna.corti@cancerinstitute.org.au)

### **Victorian Cancer Registry**

The Cancer Council Victoria  
1 Rathdowne Street  
CARLTON SOUTH VIC 3053  
Phone: +61 3 9635 5000  
Fax: +61 3 9635 5210  
Web site: [www.cancervic.org.au](http://www.cancervic.org.au)  
Director: Professor Graham Giles  
Director Cancer Epidemiology Centre,  
Deputy Director Cancer Control Research  
Institute  
1 Rathdowne Street  
CARLTON SOUTH VIC 3053  
E-mail: [ggg@cancervic.org.au](mailto:ggg@cancervic.org.au)  
Phone: +61 3 9635 5155  
Director Information Systems:  
Ms Helen Farrugia  
E-mail: [helen.farrugia@cancervic.org.au](mailto:helen.farrugia@cancervic.org.au)  
Phone: +61 3 9635 5318  
Information Manager:  
Mrs Vicky Thursfield  
E-mail: [vicky.thursfield@cancervic.org.au](mailto:vicky.thursfield@cancervic.org.au)  
Phone: +61 3 9635 5162

### **Northern Territory Cancer Registry**

Health Gains Planning Unit  
Northern Territory Department of Health  
and Community Services  
PO Box 40596  
CASUARINA NT 0811  
Phone: +61 8 8999 2977  
Fax: +61 8 8999 2618  
Director & Registrar: Dr John Condon  
E-mail: [john.condon@nt.gov.au](mailto:john.condon@nt.gov.au)  
Phone: +61 8 8999 2977  
Fax: +61 8 8999 2600

### **Western Australian Cancer Registry**

Health Information Centre,  
Health Dept of WA  
PO Box 8172 Stirling Street  
PERTH WA 6849  
Phone: +61 8 9222 4022 or 4249  
Fax: +61 8 9222 4236  
Web site: [www.health.wa.gov.au](http://www.health.wa.gov.au)  
E-mail: [wacanreg@health.wa.gov.au](mailto:wacanreg@health.wa.gov.au)  
Director & Registrar: Dr Tim Threlfall  
E-mail: [tim.threlfall@health.wa.gov.au](mailto:tim.threlfall@health.wa.gov.au)  
Coding advisor Dr Judy Thompson  
Email: [judy.thompson@health.wa.gov.au](mailto:judy.thompson@health.wa.gov.au)  
Analyst/programmer John Langley  
Email: [John.langley@health.wa.gov.au](mailto:John.langley@health.wa.gov.au)  
Case officers:  
Cathy/Charmaine/Colleen/Kaye/Nola:  
(08) 9222 then 4246, 4265, 4215, 4249 or 4269

### **Queensland Cancer Registry**

Locked Bag 1450  
SPRING HILL POST OFFICE Qld 4004

Phone: +61 7 3258 2331

Fax: +61 7 3258 2345

Web site: [www.qldcancer.com.au](http://www.qldcancer.com.au)

Director: Dr Joanne Aitken

Queensland Cancer Fund

553 Gregory Terrace, Fortitude Valley

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SPRING HILL POST OFFICE QLD 4004

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Registrar: Ms Di Skilton

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Phone: +61 7 3258 2333

Fax: +61 7 3258 2345

Coding: [Julie.bourke@health.qld.gov.au](mailto:Julie.bourke@health.qld.gov.au)

Phone: +61 7 3258 2366

### **South Australian Cancer Registry**

Epidemiology Branch,

Dept of Human Services

PO Box 6

Rundle Mall SA 5000

Phone: +61 8 8226 6158

Fax: +61 8 8226 6672

Web site: [www.dhs.sa.gov.au](http://www.dhs.sa.gov.au)

[/pehs/branches/branch-cancer-registry.htm](http://pehs/branches/branch-cancer-registry.htm)

Director: Dr Wayne Clapton

E-mail: [Wayne.Clapton@dhs.sa.gov.au](mailto:Wayne.Clapton@dhs.sa.gov.au)

Phone: +61 8 8226 6362

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## Appendix F: Tables published on the Internet

Table 1:	All cancers (ICD-10 C00–97 excluding non-melanoma skin cancers (C44))
Table 2:	Cancer of the lip (ICD-10 C00)
Table 3:	Cancer of the tongue (ICD-10 C01–C02)
Table 4:	Cancer of the salivary gland (ICD-10 C07–C08)
Table 5:	Cancer of the mouth (ICD-10 C03–C06)
Table 6:	Cancer of the gum (ICD-10 C03)
Table 7:	Cancer of the floor of mouth (ICD-10 C04)
Table 8:	Cancer of the palate and other and unspecified parts of mouth (ICD-10 C05–C06)
Table 9:	Cancer of the tonsil (ICD-10 C09)
Table 10:	Cancer of the oropharynx (ICD-10 C10)
Table 11:	Cancer of the tonsil and oropharynx (ICD-10 C09–C10)
Table 12:	Cancer of the nasopharynx (ICD-10 C11)
Table 13:	Cancer of the hypopharynx (ICD-10 C12–C13)
Table 14:	Cancer of other and ill-defined sites within the lip, oral cavity and pharynx (ICD-10 C14)
Table 15:	Cancer of the head and neck (ICD-10 C01–C14)
Table 16:	Cancer of the oesophagus (ICD-10 C15)
Table 17:	Cancer of the stomach (ICD-10 C16)
Table 18:	Cancer of the small intestine (ICD-10 C17)
Table 19:	Cancer of the colon (ICD-10 C18)
Table 20:	Cancer of the rectum (ICD-10 C19–C20)
Table 21:	Cancer of the anus (ICD-10 C21)
Table 22:	Cancer of the colon and rectum (including anus) (ICD-10 C18–C21)
Table 23:	Cancer of the colon and rectum (excluding anus) (ICD-10 C18–C20)
Table 24:	Cancer of the liver and intrahepatic bile ducts (ICD-10 C22)
Table 25:	Cancer of the gallbladder and extrahepatic bile ducts (ICD-10 C23–C24)
Table 26:	Cancer of the pancreas (ICD-10 C25)
Table 27:	Cancer of the nasal cavities, middle ear and accessory sinuses (ICD-10 C30–C31)
Table 28:	Cancer of the larynx (ICD-10 C32)
Table 29:	Cancer of the trachea, bronchus and lung (ICD-10 C33–C34)
Table 30:	Cancer of the thymus, heart, mediastinum and pleura (ICD-10 C37–C38)
Table 31:	Cancer of the bone and articular cartilage (ICD-10 C40–C41)
Table 32:	Cancer of the skin – melanoma (ICD-10 C43)
Table 33:	Cancer of the skin – non-melanoma (ICD-10 C44)
Table 34:	Mesothelioma (ICD-10 C45)
Table 35:	Kaposi’s sarcoma (ICD-10 C46)

Table 36:	Cancer of the peripheral nerves and autonomic nervous system (ICD-10 C47)
Table 37:	Cancer of the retroperitoneum and peritoneum (ICD-10 C48)
Table 38:	Cancer of other connective and soft tissue (ICD-10 C49)
Table 39:	Cancer of other connective and soft tissue and autonomic nervous system (ICD-10 C47–C49)
Table 40:	Cancer of the breast (ICD-10 C50)
Table 41:	Cancer of the vulva (ICD-10 C51)
Table 42:	Cancer of the vagina (ICD-10 C52)
Table 43:	Cancer of the vulva and vagina (ICD-10 C51–C52)
Table 44:	Cancer of the cervix uteri (ICD-10 C53)
Table 45:	Cancer of the corpus uteri (ICD-10 C54)
Table 46:	Cancer of the uterus unspecified (ICD-10 C55)
Table 47:	Cancer of the corpus uteri and uterus unspecified (ICD-10 C54–C55)
Table 48:	Cancer of the ovary (ICD-10 C56)
Table 49:	Cancer of the other and unspecified female genital organs (ICD-10 C57)
Table 50:	Cancer of the ovary and other and unspecified female genital organs (ICD-10 C56–C57)
Table 51:	Cancer of the placenta (ICD-10 C58)
Table 52:	Cancer of the penis (ICD-10 C60)
Table 53:	Cancer of the prostate (ICD-10 C61)
Table 54:	Cancer of the testis (ICD-10 C62)
Table 55:	Cancer of the other and unspecified male genital organs (ICD-10 C63)
Table 56:	Cancer of the penis and other and unspecified male genital organs (ICD-10 C60, C63)
Table 57:	Cancer of the kidney (ICD-10 C64)
Table 58:	Cancer of the renal pelvis (ICD-10 C65)
Table 59:	Cancer of the ureter (ICD-10 C66)
Table 60:	Cancer of the bladder (ICD-10 C67)
Table 61:	Cancer of the other urinary organs (ICD-10 C68)
Table 62:	Cancer of the kidney and other urinary organs (ICD-10 C64–C66, C68)
Table 63:	Cancer of the eye (ICD-10 C69)
Table 64:	Cancer of the brain (ICD-10 C71)
Table 65:	Cancer of the meninges and other central nervous system (ICD-10 C70, C72)
Table 66:	Cancer of the brain and nervous system (ICD-10 C70–C72)
Table 67:	Cancer of the thyroid gland (ICD-10 C73)
Table 68:	Cancers of the adrenal glands (ICD-10 C74)
Table 69:	Cancers of other endocrine glands (ICD-10 C75)
Table 70:	Cancer of the adrenal glands and other endocrine glands (ICD-10 C74, C75)
Table 71:	Cancers of unknown primary site (ICD-10 C76–C80, C26, C39)

Table 72:	Hodgkin's disease (ICD-10 C81)
Table 73:	Non-Hodgkin's lymphoma (ICD-10 C82-C85, C96)
Table 74:	Lymphoma NOS (ICD-O-2 M9590/3)
Table 75:	All lymphomas (ICD-10 C81-C85, C96)
Table 76:	Immunoproliferative neoplasms (ICD-10 C88)
Table 77:	Multiple myeloma (ICD-10 C90)
Table 78:	Lymphoid leukaemia (ICD-10 C91)
Table 79:	Acute lymphoblastic leukaemia (ICD-10 C91.0)
Table 80:	Chronic lymphocytic leukaemia (ICD-10 C91.1)
Table 81:	Myeloid leukaemia (ICD-10 C92)
Table 82:	Acute myeloid leukaemia (ICD-10 C92.0)
Table 83:	Chronic myeloid leukaemia (ICD-10 C92.1)
Table 84:	Monocytic leukaemia (ICD-10 C93)
Table 85:	Other leukaemias of specified cell type (ICD-10 C94)
Table 86:	Leukaemia of unspecified cell type (ICD-10 C95)
Table 87:	Other and unspecified malignant neoplasms of lymphoid, haematopoietic and related tissues (ICD-10 C96)
Table 88:	All leukaemias (ICD-10 C91-95)
Table 89:	Malignant neoplasms of independent (primary) multiple sites (ICD-10 C97)
Table 90:	Cancers attributed to alcohol
Table 91:	Cancers attributed to smoking

# Glossary

**AACR:** Australasian Association of Cancer Registries

**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 319,317 (2001). Its capital city is Canberra, which is also Australia’s capital city.

**Additional diagnosis:** conditions or complaints either co-existing with the principal diagnosis or arising during the episode of care. Additional diagnoses give information on factors that result in increased length of stay, more intensive treatment or the use of greater resources.

**Admitted patient:** a patient who undergoes a hospital’s formal admission process to receive treatment and/or care. This treatment and/or care is provided over a period of time and can occur in hospital and/or in the person’s home.

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

**AS rate (ASR):** age-standardised rate. See Appendix B for definition.

**Australian Refined Diagnosis Related Groups (AR-DRGs):** an Australian system of Diagnosis Related Groups (DRGs). DRGs provide a clinically meaningful way of relating the number and type of patients treated in a hospital to the resources required by the hospital. Each AR-DRG represents a class of patients with similar clinical conditions requiring similar hospital services.

**Average length of stay (ALOS):** the average length of stay is the ratio of the number of patient days in hospital to the number of separations. This is calculated excluding same-day patients.

**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. (See ‘What is cancer?’ page 1.)

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

**CI:** confidence interval

**CNS:** central nervous system

**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

**IARC:** International Agency for Research on Cancer

**ICD-10:** International Classification of Diseases – a coding system used to identify the primary site of the malignancy. This publication uses the 10th revision of the ICD classification.

**Incidence:** *see* new cancer case

**ML:** myeloid leukaemia

**Mortality:** *see* cancer death

**National Health Priority Areas (NPHAs):** A collaborative initiative of Commonwealth, state and territory governments that seeks to focus public attention and health policy on areas that contribute significantly to the burden of disease in Australia and for which there is potential for health gain. Cancer control is one of the NHPAs and the eight priority cancers are colorectal cancer, lung cancer, melanoma, non-melanoma skin cancers, breast cancer (for women), cancer of the cervix, prostate cancer and non-Hodgkin's lymphoma.

**NCSCH:** National Cancer Statistics Clearing House

**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).

**NHMD:** National Hospital Morbidity Database

**NHL:** non-Hodgkin's lymphoma

**NOS:** not otherwise specified

**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 6,575,217 (2001)

**NT:** Northern Territory – a territory in the north of Australia, with a population of 197,768 (2001) and Darwin as its capital city

**Principal diagnosis:** the principal diagnosis is defined as the diagnosis established, after study, to be chiefly responsible for occasioning the admitted patient's episode of care in hospital

**Procedure block:** the block number is a means of numerically ordering groups of related procedure codes

**PSA:** prostate-specific antigen

**PYLL:** person-years of life lost

**Qld:** Queensland – a state in the north-east of Australia, with a population of 3,628,946 (2001) and Brisbane as its capital city

**SA:** South Australia – a state in the southern part of Australia, with a population of 1,511,728 (2001) and Adelaide as its capital city.

**Separation mode:** status at separation of person from hospital (discharge/transfer/death) and place to which person is released (where applicable)

**SES:** socioeconomic status

**SNOMED:** Systematised Nomenclature of Medicine.

**Tas:** Tasmania – an island state in the south-east of Australia, with a population of 471,795 (2001) and Hobart as its capital city

**Vic:** Victoria – a state in the south-east of Australia, with a population of 4,804,726 (2001) and Melbourne as its capital city

**WA:** Western Australia – the western-most state of Australia, with a population of 1,901,159 (2001) and Perth as its capital city

**WHO:** World Health Organization



# Data sources

## **National Cancer Statistics Clearing House database**

Cancer is a notifiable disease in all states and territories. The data are collected by cancer registries and include clinical and demographic information about people with newly diagnosed cancer. This information is obtained from hospitals, pathologists, radiation oncologists, cancer treatment centres and nursing homes.

The AIHW is responsible for the national collection of cancer incidence statistics through the National Cancer Statistics Clearing House. National statistics are available for all years from 1982 to 2001.

## **National mortality database**

Registration of deaths in Australia is the responsibility of the state and territory Registrars of Births, Deaths and Marriages. Information on the cause of death is supplied by the medical practitioner certifying the death or by a coroner. Other information about the deceased is supplied by a relative or other person acquainted with the deceased or by an official institution where the death occurred. Registration of death is a legal requirement in Australia, and compliance is virtually complete.

The registrars provide deaths data to the ABS for coding and compilation into national statistics. The AIHW also holds these data without unique identifiers in a national mortality database.

# References

- Ahmad OB, Boschi-Pinto C, Lopez AD, Murray CJL, Lozano R & Inoue M 2000. Age standardization of rates: a new WHO standard. GPE Discussion Paper Series No. 31. Geneva: World Health Organization. (available at [http://www3/whi.int/whosis/discussion\\_papers/discussion\\_papers.cfm](http://www3/whi.int/whosis/discussion_papers/discussion_papers.cfm))
- Australian Bureau of Statistics (ABS) 2001. Causes of death 2001. Cat. no. 3303.0. Canberra: Australian Bureau of Statistics.
- Australian Bureau of Statistics (ABS) 2002. National Health Survey, summary of results. Cat. no. 4364.0. Canberra: Australian Bureau of Statistics.
- Australian Bureau of Statistics (ABS) 2004. Australian demographic statistics, March quarter 2004. Cat. no. 3101.0. Canberra: Australian Bureau of Statistics.
- Australian Institute of Health and Welfare (AIHW) 2003. Statistics on drug use in Australia 2002. AIHW cat. no. PHE 43. Canberra: AIHW (Drug Statistics Series no. 12).
- Australian Institute of Health and Welfare (AIHW) 2004a. Australia's health 2004. Canberra: AIHW.
- Australian Institute of Health and Welfare (AIHW) 2004b. Health system expenditure on disease and injury in Australia 2000-01. AIHW cat. no. HWE 26. Canberra: AIHW (Welfare Expenditure Series No.19).
- Condon JR, Warman G & Arnold L 2001. The health and welfare of Territorians. Darwin: Territory Health Services.
- d'Espaignet ET, Measey ML, Condon JR, Jelfs P & Dempsey KE 1996. Cancer in the Northern Territory 1987-1993. Darwin: Territory Health Services.
- English DR, Holman CDJ, Milne E, Winter MG, Hulse GK, Codde JP et al. 1995. The quantification of drug caused morbidity and mortality in Australia 1995. Canberra: Commonwealth Department of Human Services and Health.
- Giles GG, Armstrong BK & Smith LN 1987. Cancer in Australia 1982. Canberra: Australasian Association of Cancer Registries & Australian Institute of Health and Welfare.
- Holman CDJ, Hatton WM, Armstrong BK & English DR 1987. Cancer mortality trends in Australia. Vol II 1910-1984. Perth: Health Department of Western Australia.
- International Agency for Research on Cancer (IARC). GLOBOCAN 2000. Viewed 6 August 2004, < <http://www-dep.iarc.fr/globocan/globocan.html>>
- Jelfs P, Giles G, Shugg D, Coates M, Durling G, Fitzgerald P & Ring I (1994). Cutaneous malignant melanoma in Australia, 1989. Medical Journal of Australia 161: 182-187.
- Jensen OM, Parkin DM, Machennan R & Muir C (eds) 1991. Cancer registration: principles and methods. Lyons: International Agency for Research on Cancer.
- National Cancer Control Initiative (NCCI) 2003. The 2002 national non-melanoma skin cancer survey: a report by the NCCI Non-melanoma Skin Cancer Working Group. Ed: Staples MP. Melbourne: National Cancer Control Initiative.
- Ridolfo B & Stevenson C 2001. The quantification of drug-caused mortality and morbidity in Australia, 1998. AIHW cat. no. PHE 29. Canberra: AIHW (Drug Statistics Series no. 7).

Sergi M (1960). Cancer mortality for selected sites in 24 countries (1950–57). Sendai: Tohoku University School of Public Health.

Smith DP, Armstrong BK & Saunders R 1998. Patterns of prostate specific antigen (PSA) testing in Australia in 1992 to 1996: an examination of Medicare data. Sydney: New South Wales Cancer Council.

Threlfall TJ, English DR & Rouse IL 1998. Prostate cancer in Western Australia: trends in incidence and mortality from 1985 to 1996. *Medical Journal of Australia* 169:21–4.

Threlfall TJ & Thompson JR 2004. Cancer incidence and mortality in Western Australia, 2002. Statistical Series no. 71. Perth: Health Department of Western Australia.

Underwood JCE (ed.) 1996. *General and Systematic Pathology*. London: Churchill Livingstone.

World Health Organization 1990. *International classification of diseases for oncology, 2nd edition*. Eds: Percy C, Van Holten A & Muir, C. Geneva: World Health Organization.

World Health Organization 1992. *International statistical classification of diseases and related health problems, 10th revision*. Geneva: World Health Organization.

World Health Organization 2000. *International classification of diseases for oncology, 3rd edition*. Eds: Fritz A, Percy C, Jack A, Shanmugaratnam K, Sobin L, Parkin DM & Whelan S. Geneva: World Health Organization.

# Related publications

A list of related publications from state and territory cancer registries follows.

## New South Wales

Armstrong B 1999. The role of cancer registries in cancer control: a reassessment from experience of the New South Wales Central Cancer Registry. *Journal of Registry Management* 26:51-5.

Armstrong BK & Jong KE 1998. Brain tumours and mobile phones. *Medical Journal of Australia* 168:308.

Bell J, Coates M, Day P & Armstrong B 1996. Colorectal cancer in New South Wales in 1972-1993. Sydney: New South Wales Cancer Council.

Bell J, McCredie M, Coates MS & Armstrong BK 1997. Trends in colorectal cancer incidence and mortality in New South Wales 1973-1992. *Medical Journal of Australia* 166:178-1.

Bilous M, McCredie M & Porter L 1995. Adequacy of histopathology reports for breast cancer in New South Wales. *Pathology* 27:306-11.

Brennan P, Coates M, Armstrong B, Colin D & Boffetta P 2000. Second primary neoplasms following non-Hodgkin's lymphoma in New South Wales, Australia. *British Journal of Cancer* 82:1344-7.

Brown AM, Christie D, Taylor RJ, Seccombe MA & Coates MS 1997. The occurrence of cancer in a cohort of New South Wales coal miners. *Australian and New Zealand Journal of Public Health* 21:29-32.

Christie DGS, Brown AM, Taylor R, Seccombe MA & Coates MS 1995. Mortality in the New South Wales coal industry, 1973-1992. *Medical Journal of Australia* 163:19-21.

Coates M 1999. Pancreatic cancer in New South Wales, 1972 to 1996: melanoma rates still rising, cervical cancer rates continue to fall. *Cancer information update no. 8 (June)*. Sydney: New South Wales Cancer Council.

Coates M, Krickler A & Armstrong B 1999. Breast cancer in New South Wales in 1997. *Cancer information update no. 7 (February)*. Sydney: New South Wales Cancer Council.

Coates M, Smith D & Mon M 1998. Brain cancer in New South Wales. Incidence and mortality increasing over two decades. *Cancer information update no. 4 (January)*. Sydney: New South Wales Cancer Council.

Coates MS & Tracey EA 2000. *Cancer in New South Wales: incidence and mortality 1997*. Sydney: New South Wales Cancer Council.

Coory M & Armstrong B 1998. *Cancer incidence and projections for area and rural health services in New South Wales*. Sydney: New South Wales Cancer Council.

Farac K, Smith D, Sweeny A, Krickler A, Bilous M & Armstrong B 1999. *Pathology of breast cancer in New South Wales women in 1995*. Sydney: New South Wales Cancer Council.

French J 1998. *Hereditary bowel cancer registers*. *Cancer information update no. 5*. Sydney: New South Wales Cancer Council.

- Fritschi L, Coates M & McCredie M 1995. Incidence of cancer among New South Wales adolescents: which classification scheme describes adolescent cancers better? *International Journal of Cancer* 60:355-60.
- Goumas C, Hughes AM, Kricker A, Smith D & Armstrong B 2000. Non-Hodgkin's lymphoma in New South Wales, 1973 to 1996. *Cancer information update no. 9*. Sydney: New South Wales Cancer Council.
- Green A, McCredie M, Giles G & Jackson L 1996. Occurrence of melanomas on the upper and lower limbs in eastern Australia. *Melanoma Research* 6:387-94.
- Grulich A, McCredie M & Coates M 1995. Cancer incidence in Asian migrants to New South Wales, Australia. *British Journal of Cancer* 71:400-8.
- Grulich A, Wan X, Law M, Coates M & Kaldor J 1999. Risk of cancer in people with AIDS. *AIDS* 13:839-44.
- Grulich AE, Wan X, Coates M, Day P & Kaldor J 1996. Validity of a non-personally identifying method of linking cancer and AIDS register data. *Journal of Epidemiology and Biostatistics* 1:207-12.
- Jong KE, Smith DP, Yu XQ, O'Connell D, Goldstein D & Armstrong B (in press). Remoteness of residence and survival from cancer in New South Wales. *Medical Journal Australia*.
- Kricker A, Armstrong B, Smith D, Bilous M, Camaris C, Mayer A & Pisarianos T 1999. An audit of breast cancer pathology reporting in Australia in 1995. *British Journal of Cancer* 80:563-8.
- Kricker A, Bell J, Coates M & Taylor R 1996. Cancer of the cervix in New South Wales in 1972-92. Sydney: New South Wales Cancer Council.
- Kricker A, Farac K, Smith D, Sweeny A, McCredie M & Armstrong B 1999. Breast cancer in New South Wales in 1972-1995: tumour size and the impact of mammographic screening. *International Journal of Cancer* 81:877-80.
- Kricker A, Hoyer A, McCredie M & Porter L 1995. Breast cancer in New South Wales women: a shift in tumour size. *Medical Journal of Australia* 163:79-81.
- Kricker A, Smoothy V & Armstrong BK 2000. Ductal carcinoma in situ in New South Wales women 1995-1997. Sydney: National Health and Medical Research Council National Breast Cancer Centre.
- Lewis N, Nguyen H, Smith D, Coates M & Armstrong B 1999. Cancer maps for New South Wales: variation by local government area 1991 to 1995. Sydney: New South Wales Cancer Council.
- Macfarlane GJ, McCredie M, Pompe-Kirn V, Sharp L & Coates M 1995. Second cancers occurring after cancers of the mouth and pharynx: data from three population-based registries in Australia, Scotland and Slovenia. *Oral Oncology*. *European Journal of Cancer* 31B:315-18.
- Marrett LD, Nguyen HL & Armstrong BK . Trends in the incidence of cutaneous malignant melanoma in New South Wales, 1983-1996. *International Journal of Cancer* (in press).
- McCredie M 1995. Is the marked increase in reported incidence of prostate cancer due to earlier detection? *Cancer Forum* 19:7-12.
- McCredie M 1996. Breast cancer incidence increasing, mortality steady. *Cancer information update no. 1*. Sydney: New South Wales Cancer Council.
- McCredie M 1998. Second primary cancers in New South Wales. *Cancer information update no. 4* (January). Sydney: New South Wales Cancer Council.

- McCredie M, Bell J, Lee A & Rogers J 1996. Differences in patterns of care of prostate cancer, New South Wales, 1991. *Australian and New Zealand Journal of Surgery* 66:727-30.
- McCredie M, Coates M, Bilous M, Kricker A & Hoyer A 1996. Rising incidence of breast cancer in New South Wales, Australia: real increase or earlier detection? *Journal of Epidemiology and Biostatistics* 1:25-9.
- McCredie M, Coates M, Churches T & Rogers J 1996. Rising incidence of prostate cancer in Australia – a result of ‘screening’? *Journal of Epidemiology and Biostatistics* 1:99-105.
- McCredie M, Coates M, Day P & Bell J 1995. Changes in cancer incidence and mortality in New South Wales, 1973-77 to 1988-92. *Medical Journal of Australia* 163:520-3.
- McCredie M, Macfarlane G, Bell J & Coates M 1997. Second primary cancers following cancers of the colon and rectum in New South Wales, Australia, 1972-1991. *Cancer Epidemiology, Biomarkers and Prevention* 6:155-60.
- McCredie M, Macfarlane G, Stewart JH & Coates M 1996. Second primary cancers following cancers of the kidney and prostate in New South Wales (Australia), 1972-91. *Cancer Causes Control* 7:337-44.
- McCredie M, Williams S & Coates M 1999a. Cancer mortality in east and south-east Asian migrants to New South Wales, Australia 1975-1995. *British Journal of Cancer* 79:1277-82.
- McCredie M, Williams S & Coates M 1999b. Cancer mortality in migrants from the British Isles and continental Europe to New South Wales, Australia, 1975-1995. *International Journal of Cancer* 83:179-82.
- McCredie MRE, Macfarlane GJ, Coates MS & Osborn RA 1996. Risk of second malignant neoplasms following female genital tract cancers in New South Wales (Australia), 1972-91. *International Journal of Gynaecological Cancer* 6:362-8.
- McGeechan K, Kricker A, Armstrong B & Stubbs J 1998. Evaluation of linked cancer registry and hospital records of women with breast cancer. *Australian and New Zealand Journal of Public Health* 22:765-70.
- Nguyen HL, Armstrong BK & Coates MS 1997. *Cutaneous melanoma in New South Wales 1983-1995*. Sydney: New South Wales Cancer Council.
- Osborn M, Armstrong B, Kricker A & Coates M 1999. *Current recording and registration practices for carcinoma in situ (CIS) of the breast in Australasian State and Territory cancer registries*. Sydney: National Health and Medical Research Council National Breast Cancer Centre.
- Reeson L 1997. *The New South Wales pap test register and cervical screening program*. Cancer information update no. 3. Sydney: New South Wales Cancer Council.
- Scott RJ, Vajdic CM, Armstrong BK, Ainsworth CJ, Meldrum CJ, Aitken JF & Kricker A 2002. BRCA2 mutations in population-based series of patients with ocular melanoma. *International Journal of Cancer* 102:188-91. CV7.
- Kricker A, Vajdic CM & Armstrong BK 2003. Ocular melanoma and cutaneous melanoma. *International Journal of Cancer* 104:259.
- Smith D 1998. *Colorectal cancer in New South Wales: increasing incidence, falling mortality*. Cancer information update no. 5. Sydney: New South Wales Cancer Council.
- Smith D, Taylor R & Coates M 1996. Socioeconomic differentials in cancer incidence and mortality in urban New South Wales, 1987-1991. *Australian and New Zealand Journal of Public Health* 20:129-37.

Smith DP & Armstrong BK 1998. Prostate-specific antigen testing in Australia and association with prostate cancer incidence in New South Wales. *Medical Journal of Australia* 169:17-20.

Smith DP, Armstrong BK & Saunders R 1998. Patterns of prostate specific antigen (PSA) testing in Australia in 1992 to 1996: an examination of Medicare data. Sydney: New South Wales Cancer Council.

Smith DP, Supramaniam R, Coates MS & Armstrong BK 1998. Prostate cancer in New South Wales in 1972 to 1994. Sydney: New South Wales Cancer Council.

Supramaniam R 1997. Cervical cancer in New South Wales: incidence and mortality, 1995. Cancer information update no. 3. Sydney: New South Wales Cancer Council.

Supramaniam R, Smith D, Coates M & Armstrong B 1999. Survival from cancer in New South Wales in 1980 to 1995. Sydney: New South Wales Cancer Council.

Supramaniam R, Smith D, Coates M, Hayes L & Armstrong B 1998. Breast cancer survival in New South Wales in 1973 to 1995. Sydney: New South Wales Cancer Council.

Taylor R & Coates M 1997. Breast cancer 5-year survival in New South Wales women 1972-1991. *Australian and New Zealand Journal of Public Health* 21:199-205.

Taylor R & McNeil D 1997. Projections of incidence of major cancers in New South Wales to 2001. Sydney: New South Wales Cancer Council.

Taylor R 1997. Breast cancer 5-year survival, by New South Wales regions, 1980 to 1991. *Australian and New Zealand Journal of Public Health* 21:206-10.

Taylor R, Bell J, Coates M, Churches T & Wain G 1996. Cervical cancer New South Wales women: 5-year survival 1972-1991. *Australian and New Zealand Journal of Public Health* 20:413-20.

Vajdic CM, Hutchins AM, Kricker A, Aitken JF, Armstrong BK, Hayward NK, Armes JE 2003. Chromosomal gains and losses in ocular melanoma detected by comparative genomic hybridisation in an Australian population-based study. *Cancer Genetics Cytogenetics* 144: 12-17. CV10.

Vajdic CM, Kricker A, Duffy DL, Aitken JF, Stark M, Huurne JA, Martin NG, Armstrong BK & Hayward NK 2003. Ocular melanoma is not associated with CDKN2A and MC1R variants—a population-based study. *Melanoma Research* 13:409-13.

Vajdic CM, Kricker A, Giblin M, McKenzie J, Aitken J, Giles GG & Armstrong BK 2001. Eye color and cutaneous nevi predict risk of ocular melanoma in Australia. *International Journal of Cancer* 15(6):906-12.

Yu XQ, O'Connell DL, Gibberd RW, Smith DP, Dickman PW & Armstrong BK 2004. Estimating regional variation in cancer survival: a tool for improving cancer care. *Cancer Causes and Control* (in press).

## Victoria

Autier P, Boniol M, Pedoux R, Severi G, Giles GG & Doré JF 2001. The body – site distribution of melanocytic nevi in 6 to 7 year old European children. *Melanoma Research* 11(2):123-31.

Autier P, Boniol M, Severi G, Pedoux R, Grivegnée A & Doré JF (in press). Sex differences in number of nevi on body sites of young European children: implications for the aetiology of cutaneous melanoma. *Cancer Epidemiology, Biomarkers and Prevention*.

- Boyd NF, Dite GS, Stone J, Gunasekara A, English DR, McCredie MR, Giles GG, Trichler D, Chiarelli A, Yaffe MJ & Hopper JL 2002. Heritability of mammographic density, a risk factor for breast cancer. *New England Journal of Medicine* 347:886-94.
- Buchbinder R, Forbes A, Hall S, Dennett R & Giles GG 2001. Incidence of cancer in biopsy-proven inflammatory myopathy: a population-based cohort study. *Annals of International Medicine* 134:1087-95.
- Chamberlain AJ, Fritschi L, Giles GG, Dowling JP & Kelly JW 2002. Nodular type and older age as the most significant associations of thick melanoma in Victoria, Australia. *Archives of Dermatology* 138:609-14.
- Corti B, English DR, Costa C, Milne E, Cross D & Johnston R 2004. Creating SunSmart schools. *Health Education Research* 19:98-109.
- Cui J, Antoniou AC, Dite GS, Southey MC, Venter DJ, Easton DF, Giles GG, McCredie MRE & Hopper JL 2001. After BRCA1 and BRCA2—what next? Multifactorial segregation analyses of three generational population-based Australian female breast cancer families. *American Journal of Human Genetics* 68:420-31.
- Cui J, Staples MS, Hopper JL, English DR, McCredie MRE & Giles GG 2001. Segregation analyses of 1476 population-based Australian families affected by prostate cancer. *American Journal of Human Genetics* 68(5):1207-18.
- Cui JS, Spurdle AB, Southey MC, Dite GS, Venter DJ, McCredie MR, Giles GG, Chenevix-Trench G & Hopper JL 2003. Regressive logistic and proportional hazards disease models for within-family analyses of measured genotypes, with application to a CYP17 polymorphism and breast cancer. *Genetical Epidemiology* 24:161-72.
- Dite GS, Jenkins MA, Southey MC, Hocking JS, Giles GG, McCredie MR, Venter DJ & Hopper JL 2003. Familial risks, early-onset breast cancer, and BRCA1 and BRCA2 germline mutations. *Journal of National Cancer Institute* 95:448-57.
- Easton DF, Schaid DJ, Whittemore AS & Isaacs WJ 2003. Where are the prostate cancer genes? A summary of eight genome wide searches. *Prostate* 57:261-9.
- Edwards S, Meitz J, Eles R, Evans C, Easton D, Hopper J, Giles G, Foulkes WD, Narod S, Simard J, Badzioch M & Mahle L 2003. Results of a genome-wide linkage analysis in prostate cancer families ascertained through the ACTANE consortium. *Prostate* 57:270-9.
- Elwood M, Aitken JF & English DR 2003. Prevention and screening. In: Balch CM, Houghton AN, Sober AJ & Soong S, editors. *Cutaneous Melanoma*. Fourth ed. St Louis: Quality Medical Publishing.
- English DR, Burton RC, del Mar CB, Donovan RJ, Ireland PD & Emery G 2003. Evaluation of aid to diagnosis of pigmented skin lesions in general practice: controlled trial randomised by practice. *British Medical Journal* 327:375.
- English DR, Del Mar C & Burton RC 2004. Factors influencing the number needed to excise: excision rates of pigmented lesions by general practitioners. *Medical Journal of Australia* 180:16-9.
- English DR, Giles GG, Karavarsamis N & Thursfield V 2003. *Cancer Survival in Victoria. Relative survival for selected cancers diagnosed from 1982 to 1997 with follow-up to 1999*. Melbourne: The Cancer Council Victoria; Report No. 0 947283 730.
- English DR, MacInnis RJ, Hodge AM, Hopper JL, Haydon AM & Giles GG 2004. Red meat, chicken, and fish consumption and risk of colorectal cancer. *Cancer Epidemiology, Biomarkers and Prevention* 13:1509-14.



English DR, Milne E, Jacoby P, Corti B, Cross D & Johnston R (in press). The effect of a school-based sun-protection intervention on the development of melanocytic nevi in children: six-year follow-up. *Cancer Epidemiology, Biomarkers and Prevention*.

English DR, Vu HT & Knuiman MW 2002. The impact of smoking on use of hospital services: the Busselton study. *Australia New Zealand Journal of Public Health* 26:225-30.

Farmer KC, Penfold C, Millar JL, Zalberg J, McLeish JA, Thomas RJ, Lade S, Thursfield VJ & Giles GG 2002. Rectal cancer in Victoria in: patterns of reported management. *Australia New Zealand Journal of Surgery* 72:265-70.

Gaff CL, Aragona C, MacInnis RJ, Cowan R, Payne C, Giles GG & Lindeman GJ 2004. Accuracy and completeness in reporting family history of prostate cancer by unaffected men. *Urology* 63:1111-6.

Giles GG & Amos A 2003. Evaluation of the organised mammographic screening programme in Australia. *Annals of Oncology* 14:1209-11.

Giles GG & Boyle P 2004. Tobacco and lung cancer. In: Boyle P, Gray N, Henningfield J, Seffrin J, Zatonski W (eds.). *Tobacco science, policy & public health*. Oxford: Oxford University Press p. 485-510.

Giles GG & English DR 2002. The Melbourne Collaborative Cohort Study. IARC Scientific Publication 156:69-70.

Giles GG & Thursfield V (in press). Cancer statistics: everything you wanted to know about cancer registry data but were afraid to ask [editorial]. *Australia New Zealand Journal of Surgery*.

Giles GG & Thursfield V 2001. *Cancer in Victoria 1999*. Melbourne: CANSTAT: The Cancer Council Victoria.

Giles GG & Thursfield V 2001. *Trends in cancer mortality Australia 1910-1999*. Melbourne: CANSTAT: The Cancer Council Victoria.

Giles GG & Thursfield V 2002. *Breast cancer*. Melbourne: CANSTAT: The Cancer Council Victoria.

Giles GG & Thursfield V 2002. *Cancer in Victoria 2000*. Melbourne: CANSTAT: The Cancer Council Victoria.

Giles GG & Thursfield V 2002. *Guide to the Victorian Cancer Registry*. Melbourne: CANSTAT: The Cancer Council Victoria.

Giles GG & Thursfield V 2002. *Lung cancer*. Melbourne: CANSTAT: The Cancer Council Victoria.

Giles GG & Thursfield V 2003. *Cancer in Victoria 2001*. Melbourne: CANSTAT: The Cancer Council Victoria.

Giles GG & Thursfield V 2004. *Cancer in Victoria 2002*. Melbourne: CANSTAT: The Cancer Council Victoria.

Giles GG 2002. The Cancer Epidemic in Victoria. In: *Health of Victorians, The Chief Health Officer Bulletin Vol 2. No. 2: Victorian Department of Human Services*.

Giles GG 2003. Epidemiological investigation of prostate cancer. *Methods in Molecular Medicine* 81:1-19.

Giles GG 2004. Epidemiology of food and disease: The Melbourne Cohort Study. *Asia Pacific Journal of Clinical Nutrition* 13:S30.

- Giles GG 2004. In praise of cancer registries [editorial]. *Australian and New Zealand Journal of Surgery* 74:190.
- Giles GG, Russell I, Reed R & Kavanagh A 2001. The In-Situ and Small Invasive Breast Cancer Register in Victoria, 1988 to 1992: tumour characteristics and patient management. *Australian and New Zealand Journal of Surgery* 71(51):266-70.
- Giles GG, Severi G, English DR & Hopper JL 2004. Frequency of ejaculation and risk of prostate cancer [letter]. *Jama* 292:329; author reply.
- Giles GG, Severi G, English DR, McCredie MR, Borland R, Boyle P & Hopper JL 2003. Sexual factors and prostate cancer. *British Journal of Internal Urology* 92:211-6.
- Giles GG, Severi G, English DR, McCredie MR, MacInnis R, Boyle P & Hopper JL 2003. Early growth, adult body size and prostate cancer risk. *International Journal of Cancer* 103:241-5.
- Giles GG, Severi G, McCredie MR, English DR, Johnson W, Hopper JL & Boyle P 2001. Smoking and prostate cancer: findings from an Australian case-control study. *Annals of Oncology* 12:761-5.
- Giles GG, Severi G, McCredie MRE et al. 2001. Smoking and prostate cancer; findings from an Australian case-control study. *Annals of Oncology* 12:1-5.
- Giles GG, Severi G, Sinclair R, English DR, McCredie MR, Johnson W, Boyle P & Hopper JL 2002. Androgenetic alopecia and prostate cancer: findings from an Australian case-control study. *Cancer Epidemiol, Biomarkers and Prevention* 11:549-53.
- Grossi M, Quinn MA, Thursfield VJ, Francis PA, Rome RM, Planner RS & Giles GG 2002. Ovarian cancer: patterns of care in Victoria during 1993-1995. *Medical Journal of Australia* 177:11-6.
- Heenan PJ 2003. Author response to: Nodular melanoma is not a distinct entity [letter]. *Archives of Dermatology* 139:387; author reply.
- Hill D, Elwood JM & English DR (eds) 2004. *Prevention of skin cancer*. Dordrecht: Kluwer Academic Publishers.
- Hodge AM, English DR, McCredie MR, Severi G, Boyle P, Hopper JL & Giles GG 2004. Foods, nutrients and prostate cancer. *Cancer Causes Control* 15:11-20.
- Hope Q, Bullock S, Evans C, Meitz J, Hamel N, Edwards S, Severi G, Dearnley D, Jhavar S, Southgate C, Falconer A, Dowe A, Muir K, Houlston RS, Engert J, Sinnott D, Simard J, Hemidahl K, Moller P, Badzioch M, English DR, Hopper JL, Foulkes WD & Giles GG (in press). Macrophage scavenger receptor 1 (MSR1) 999C>T (R293X) mutation and risk of prostate cancer. *Cancer Epidemiology, Biomarkers and Prevention*.
- Jenkins MA, Baglietto L, Dite GS, Jolley DJ, Southey MC, Whitty J, Mead LJ, St John DJ, Macrae FA, Bishop DT, Venter DJ, Giles GG & Hopper JL 2002. After hMSH2 and hMLH1 – what next? Analysis of three-generational, population-based, early-onset colorectal cancer families. *International Journal of Cancer* 102:166-71.
- Johnston R, Cross D, Costa C, Corti B, Cordin T, Milne E & English DR 2003. Sun safety education intervention for school and home. *Health Education* 103:342-51.
- Kavanagh A, Cawson J, Marr G, Tong B & Giles GG (in press). Hormone replacement therapy, percent mammographic density and the sensitivity of mammography. *Cancer Epidemiology, Biomarkers and Prevention*.
- Keogh LA, Maskiell J, Southey MC, Young MA, Gaff CL, Kirk J & Tucker KM (in press). Uptake of offer to receive genetic information about BRCA1 and BRCA2 in a population-based study. *Cancer Epidemiology, Biomarkers and Prevention*.

- MacInnis R, English DR, Gertig DM, Hopper JL & Giles GG (in press). Body size and composition and breast cancer in postmenopausal women. *Cancer Epidemiology, Biomarkers and Prevention*.
- MacInnis RJ, English DR, Gertig DM, Hopper JL & Giles GG 2003. Body size and composition and prostate cancer risk. *Cancer Epidemiology, Biomarkers and Prevention* 12:1417-21.
- MacInnis RJ, English DR, Hopper JL, Haydon AM, Gertig DM & Giles GG 2004. Body size and composition and colon cancer risk in men. *Cancer Epidemiology, Biomarkers and Prevention* 13:553-9.
- McCredie MR, Dite GS, Porter L, Maskiell J, Giles GG, Phillips KA, Redman S & Hopper JL 2001. Prevalence of self-reported arm morbidity following treatment for breast cancer in the Australian Breast Cancer Family Study. *Breast* 10:515-22.
- McCredie MR, Dite GS, Southey MC, Venter DJ, Giles GG & Hopper JL 2003. Risk factors for breast cancer in young women by oestrogen receptor and progesterone receptor status. *British Journal of Cancer* 89:1661-3.
- McCredie MRE, Staples M, Johnson W, English D & Giles GG 2001. Prevalence of urinary symptoms in a population-based sample of Australian men. *Journal of Epidemiological Biostatistics* 6:211-18.
- McLeish JA, Thursfield VJ & Giles GG 2002. Survival from colorectal cancer in Victoria: 10-year follow up of the 1987 management survey. *Australian and New Zealand Journal of Surgery* 72:352-6.
- Menegoz F, Little J, Colonna M, Arslan A, Preston-Martin S, Schlehofer B, Blettner M, Howe GR, Ryan P, Giles GG, Rodvall Y & Choi WN 2002. Contacts with animals and humans as risk factors for adult brain tumours. An international case-control study. *European Journal of Cancer* 38:696-704.
- Milne E, English DR, Johnston R, Cross D, Borland R, Corti B & Costa C 2001. Reduced sun exposure and tanning in children after 2 years of a school-based intervention (Australia). *Cancer Causes Control* 12:387-93.
- Milne E, Johnston R, Cross D, Corti B & English DR 2002. Effect of a school-based sun-protection intervention on the development of melanocytic nevi in children. *American Journal of Epidemiology* 155:739-45.
- Milne RL, Knight JA, John EM, Dite GS, Balbuena R, Ziogas A, Giles GG, McCredie MRE, Hopper JL & Whittemore AS (in press). Oral contraceptive use and risk of early-onset breast cancer in carriers and non-carriers of BRCA1 and BRCA2 mutations. *Cancer Epidemiology, Biomarkers and Prevention*.
- Mitchell AE, Scarcella DL, Rigutto GL, Thursfield VJ, Giles GG, Sexton M & Ashley DM 2004. Cancer in adolescents and young adults: treatment and outcome in Victoria. *Medical Journal of Australia* 180:59-62.
- Montgomery KG, Gertig DM, Baxter SW, Milne RL, Dite GS, McCredie MR, Giles GG, Southey MC, Hopper JL & Campbell IG 2003. The HER2 I655V polymorphism and risk of breast cancer in women aged less than 40 years. *Cancer Epidemiology, Biomarkers and Prevention* 12:1109-11.
- Moot AR, Polglase A, Giles GG, Garson OM, Thursfield V & Gunter D 2003. Men with colorectal cancer are predisposed to prostate cancer. *Australian and New Zealand Journal of Surgery* 73:289-93.

- Phillips KA, Milne RL, Buys S, Friedlander ML, Ward J, McCredie MRE, Giles GG & Hopper JL, for the Breast Cancer Family Register (in press). Agreement between self-reported breast cancer treatment and medical records in a population-based breast cancer family registry. *Journal of Clinical Oncology*.
- Phillips KA, Milne RL, Friedlander ML, Jenkins MA, McCredie MR, Giles GG & Hopper JL 2004. Prognosis of premenopausal breast cancer and childbirth prior to diagnosis. *Journal of Clinical Oncology* 22:699-705.
- Provenzano E, Hopper JL, Giles GG, Marr G, Venter DJ & Armes JE 2003. Biological markers that predict clinical recurrence in ductal carcinoma in situ of the breast. *European Journal of Cancer* 39:622-30.
- Provenzano E, Hopper JL, Giles GG, Marr G, Venter DJ & Armes JE 2004. Histological markers that predict clinical recurrence in ductal carcinoma in situ of the breast: an Australian population-based study. *Pathology* 36:221-9.
- Richardson AK, Cox B, McCredie MR, Dite GS, Chang JH, Gertig DM, Southey MC, Giles GG & Hopper JL 2004. Cytomegalovirus, Epstein-Barr virus and risk of breast cancer before age 40 years: a case-control study. *British Journal of Cancer* 90:2149-52.
- Schlehofer B, Hettinger I, Ryan P, Blettner M, Preston-Martin S, Little J, Arslan A, Ahlbom A, Giles GG, Howe GR, Menegoz F, Rodvall Y, Choi WN & Wahrendorf J 2004. Occupational risk factors for low grade and high grade glioma: Results from an international case control study of adult brain tumours. *International Journal of Cancer*.
- Severi G & English DR 2004. Descriptive epidemiology of skin cancer. In: Hill D, Elwood JM, & English DR (eds). *Prevention of skin cancer*. Dordrecht: Kluwer p. 328.
- Severi G, Giles GG, Southey MC, Tesoriero A, Tilley W, Neufing P, Morris H, English DR, McCredie MR, Boyle P & Hopper JL 2003. ELAC2/HPC2 Polymorphisms, prostate-specific antigen levels, and prostate cancer. *Journal of National Cancer Institute* 95:818-24.
- Spurdle AB, Goodwin B, Hodgson E, Hopper JL, Chen X, Purdie DM, McCredie MR, Giles GG, Chenevix-Trench G, Liddle C 2002. The CYP3A4\*1B polymorphism has no functional significance and is not associated with risk of breast or ovarian cancer. *Pharmacogenetics* 12:355-66.
- Spurdle AB, Hopper JL, Chen X, Dite GS, Cui J, McCredie MR, Giles GG, Ellis-Steinborner S, Venter DJ, Newman B, Southey MC, Chenevix-Trench G 2002. The BRCA2 372 HH genotype is associated with risk of breast cancer in Australian women under age 60 years. *Cancer Epidemiology, Biomarkers and Prevention* 11:413-6.
- Spurdle AB, Hopper JL, Chen X, Dite GS, McCredie MR, Giles GG, Venter DJ, Southey MC, Purdie DM, Chenevix-Trench G 2001. The steroid 5alpha-reductase type II TA repeat polymorphism is not associated with risk of breast or ovarian cancer in Australian women. *Cancer Epidemiology, Biomarkers and Prevention* 10:1287-93.
- Spurdle AB, Hopper JL, Chen X, McCredie MR, Giles GG, Newman B, Chenevix-Trench G, Khanna K 2002. No evidence for association of ataxia-telangiectasia mutated gene T2119C and C3161G amino acid substitution variants with risk of breast cancer. *Breast Cancer Research* 4:R15.
- Spurdle AB, Hopper JL, Chen X, McCredie MR, Giles GG, Newman B, Chenevix-Trench G 2002. Prohibitin 3' untranslated region polymorphism and breast cancer risk in Australian women. *Lancet* 360:925-6.
- Spurdle AB, Hopper JL, Chen X, McCredie MR, Giles GG, Venter DJ, Southey MC, Chenevix-Trench G 2002. The progesterone receptor exon 4 Val660Leu G/T polymorphism and risk of

breast cancer in Australian women. *Cancer Epidemiology, Biomarkers and Prevention* 11:439-43.

Staples MP, Giles GG, English DR, McCredie MR, Severi G, Cui JS, Hopper JL 2003. Risk of prostate cancer associated with a family history in an era of rapid increase in prostate cancer diagnosis (Australia). *Cancer Causes Control* 14:161-6.

Thursfield V & Giles GG 2002. The epidemiology of prostate cancer and trends in Victoria. In: *The Chief Health Officer's Bulletin* Vol 2. No. 2. Melbourne: Victorian Department of Human Services.

Toner GC, Neerhut GJ, Schwarz MA, Thursfield VJ, Sandeman TF, Giles GG & Snow RM 2001. The management of testicular cancer in Victoria. *Medical Journal of Australia* 174: 328-31.

Vajdic CM, Kricker A, Giblin M, McKenzie J, Aitken J, Giles GG & Armstrong BK 2001. Eye color and cutaneous nevi predict risk of ocular melanoma in Australia. *International Journal of Cancer* 15; 92(6):906-12.

Vajdic CM, Kricker A, Giblin M, McKenzie J, Aitken J, Giles GG, Armstrong BK 2002. Sun exposure predicts risk of ocular melanoma in Australia. *International Journal of Cancer* 101:175-82.

Vajdic CM, Kricker A, Giblin M, McKenzie J, Aitken J, Giles GG, Armstrong BK 2003. Incidence of ocular melanoma in Australia from 1990 to 1998. *International Journal of Cancer* 105:117-22.

Vajdic CM, Kricker A, Giblin M, McKenzie J, Aitken JF, Giles GG, Armstrong BK 2004. Artificial ultraviolet radiation and ocular melanoma in Australia. *International Journal of Cancer* 112:896-900.

White V, Pruden M, Giles G, Collins J, Jamrozik K, Inglis G, Boyages J, Hill D 2004. The management of early breast carcinoma before and after the introduction of clinical practice guidelines. *Cancer* 101:476-85.

## Queensland

Baade P 2000. *Cancer in Queensland*. Information Circular no. 52. Brisbane: Health Information Centre, Queensland Health.

Baade P, Coory M & Ring I 2000. *Cancer in Queensland: trends in incidence and mortality for selected cancer sites 1982 to 1996*. Brisbane: Health Information Centre, Queensland Health.

Baade P, Coory M & Ring I 2000. *Cancer survival in Queensland, 1982 to 1995*. Brisbane: Health Information Centre, Queensland Health.

Baade P, Coory M & Ring I 2000. *National health priority cancers in Queensland (1982 to 1997)*. Brisbane: Health Information Centre, Queensland Health.

Coory M 2000. Lung cancer: still a significant problem among Queensland men and an increasing problem among Queensland women. Information Circular no. 53. Brisbane: Health Information Centre, Queensland Health.

Coory M & Baade P 2002. Mortality from prostate cancer is decreasing (letter). *Medical Journal of Australia* 176(7):354-5; discussion 355, April 1.

Coory M & Byrne D 1999. *Breast cancer and BreastScreen Queensland*. Information Circular no. 48. Brisbane: Health Information Centre, Queensland Health.

Coory M, Fagan P, Muller M, Dunn N 2002. Participation in cervical cancer screening by women in rural and remote Aboriginal and Torres Strait Islander Communities in Queensland. *Medical Journal of Australia* 177:544-547.

Coory M, Thompson A & Ganguly I 2000. Cancer among people living in rural and remote Indigenous communities in Queensland. *Medical Journal of Australia* 173:301-4.

Coory M, Thompson A & Muller J 1999. Cervical cancer and the Queensland cervical screening program. Information Circular no. 49. Brisbane: Health Information Centre, Queensland Health.

Coory M & Tong S 1999. An update on screening for colorectal cancer. Information Circular no. 47. Brisbane: Health Information Centre, Queensland Health.

Health Information Centre 1996. Health of Queenslanders, status report. Brisbane: Queensland Health.

Muller S, Baade P & Coory M 2002. Mortality and incidence trends for leading cancers in Queensland, 1982 to 1999. Information Circular no. 59. Brisbane: Health Information Centre, Queensland Health.

Youlten D & Coory M 2003. Mortality and incidence trends for leading cancers in Queensland, 1982 to 2001. Information Circular no. 65. Brisbane: Health Information Centre, Queensland Health.

Coory M & Dinh M 2004. Mortality and incidence trends for adenocarcinoma of the oesophagus in Queensland, 1982 to 2001. Information Circular no. 66. Brisbane: Health Information Centre, Queensland Health.

Queensland Cancer Registry 2003. Cancer in Queensland: incidence and mortality 1982-2001. Brisbane: Queensland Cancer Fund, Queensland Health.

The Health Outcomes Plan – Cancer Control 2002-2007 2002. Health Systems Strategy Branch, Queensland Health.

## **Western Australia**

Threlfall TJ & Thompson JR 2004. Cancer incidence and mortality in Western Australia, 2002. Statistical Series no. 71. Perth: Department of Health, Western Australia.

Threlfall TJ & Powers KA, Langley J 2004. Cancer in Western Australia, 1998-2002: incidence and mortality by Statistical Local Area (SLA). Statistical Series no. 72. Perth: Department of Health, Western Australia.

Threlfall TJ & Thompson JR 2003. Cancer incidence and mortality in Western Australia, 2001. Statistical Series no. 68. Perth: Department of Health, Western Australia.

Threlfall TJ & Thompson JR 2002. Cancer incidence and mortality in Western Australia, 1999 and 2000. Statistical Series no. 65. Perth: Department of Health, Western Australia.

Threlfall TJ & Thompson JR 2000. Cancer incidence and mortality in Western Australia, 1998. Statistical Series no. 61. Perth: Department of Health, Western Australia.

Threlfall TJ & Brameld K 2000. Cancer survival in Western Australian residents, 1982-1997. Statistical Series no. 60. Perth: Department of Health, Western Australia.

Threlfall TJ & Thompson JR 1999. Cancer incidence and mortality in Western Australia, 1997. Statistical Series no. 57. Perth: Department of Health, Western Australia.

- Threlfall TJ & Thompson JR 1998. Cancer incidence and mortality in Western Australia, 1996. Statistical Series no. 55. Perth: Department of Health, Western Australia.
- Threlfall TJ & Thompson JR 1997. Cancer incidence and mortality in Western Australia, 1995. Statistical Series no. 51. Perth: Department of Health, Western Australia.
- Threlfall TJ 1997. Cancer incidence and mortality projections for Western Australia, 1996–2001. Statistical Series no. 50. Perth: Department of Health, Western Australia.
- Threlfall TJ & Whitfort MJ, Thompson JR 1996. Cancer incidence and mortality in Western Australia, 1992–1994. Statistical Series no. 45. Perth: Department of Health, Western Australia.
- Threlfall T & Morgan A 1996. Malignant mesothelioma in Western Australia, 1960 to 1994. Statistical Series number 46. Perth: Department of Health, Western Australia.
- Thompson J & FitzGerald P 1995. Childhood cancer incidence, mortality and survival in Western Australia 1982–1991. Perth: Department of Health, Western Australia.
- FitzGerald P, Thomson N & Thompson J 1994. Cancer incidence and mortality in Western Australia 1991. Statistical Series no. 39. Perth: Department of Health, Western Australia.

## South Australia

- Beckmann KR, Kirke BA, McCaul KA & Roder DM 2000. Use of fake tanning lotions in the South Australian population. *Medical Journal of Australia* 2001 174: 74–78.
- Birrell SN, Roder DM, Horsfall DJ, Bentel JM & Tilley WD 1995. Medroxyprogesterone acetate therapy in advanced breast cancer: the predictive value of androgen receptor expression. *Journal of Clinical Oncology* 13(7):1572–7.
- Bonett A, Davy M & Roder D 1989. Cervical cancer in South Australia: trends in incidence, mortality and case survival. *Australian & New Zealand Journal of Obstetrics & Gynaecology* 29(3 Pt 1):193–6.
- Bonett A, Dickman P, Roder D, Gibberd R & Hakulinen T 1992. Survival of cancer patients in South Australia 1977–1990. Adelaide: Lutheran Publishing House.
- Bonett A, Dorsch M, Roder D & Esterman A 1990. Infiltrating ductal carcinoma of the breast in South Australia. Implications of trends in tumour diameter, nodal status and case-survival rates for cancer control. *Medical Journal of Australia* 152(1):19–23.
- Bonett A & Roder DM 1982. Survival of South Australian cancer patients: a study of the state's cancer registry data. *Medical Journal of Australia* 1(13):559–62.
- Bonett A, Roder D & Esterman A 1983. Infiltrating ductal carcinoma of the breast in South Australia. Sizes of primary lesions and histological evidence of axillary nodal metastases. *Medical Journal of Australia* 2(1):26–8.
- Bonett A, Roder D & Esterman A 1984. Determinants of case survival for cancers of the lung, colon, breast and cervix in South Australia. *Medical Journal of Australia* 141(11):705–9.
- Bonett A, Roder D & Esterman A 1986. Melanoma case survival rates in South Australia by histological type, thickness and level of tumour at diagnosis. *Medical Journal of Australia* 144(13):680–2.
- Bonett A, Roder D & Esterman A 1988. Cancer case-survival rates for South Australia: a comparison with US rates and a preliminary investigation of time trends. *Medical Journal of Australia* 148(11):556–9.

- Bonett A, Roder D & Esterman A 1989. Epidemiological features of melanoma in South Australia: implications for cancer control. *Medical Journal of Australia* 151(9):502-4, 506-9.
- Bonett A, Roder D & Esterman A 1991. Case-survival rates for infiltrating ductal carcinomas by category of hospital at diagnosis in South Australia. *Medical Journal of Australia* 154(10):695-7.
- Bonett A, Roder D, McCaul K & Milliken L 1992. Epidemiology of cancer in South Australia: incidence, mortality and survival 1977 to 1991; incidence and mortality 1991. Analysed by type and geographical location. Fifteen years of data. Adelaide: Lutheran Publishing House.
- Bonett A, Roder D & MacHarper T 1986. A perspective of the cancer problem in South Australia. *Community Health Studies* 10(3):330-5.
- Bonett A, Roder D & Milliken L 1992. The South Australian Cancer Registry: a means of assessing cancer incidence, mortality and case survival. *European Journal of Cancer* 28A(11):1923-6.
- Clapton W 1998. 1998 Cancer Registry report. *The South Australian Medical Review* 11(9):21.
- Clapton W 1999. 1999 Cancer Registry report. *The South Australian Medical Review* 12(8):19.
- Clapton W, Roder D & Luke C 2000a. South Australian Cancer Registry figures for 1999. *The South Australian Medical Review*.
- Clapton WK, Roder DM, Luke CG & Kirke DK 2000b. The South Australian Cancer Registry: case study of a public health cancer epidemiological monitoring system. Presented at HIC 2000, the eighth national Health Informatics Conference, 'Integrating Information for Health Care', Adelaide, 3-5 September 2000.
- Crane CEB, Luke CG, Rogers JM, Playford PE, Roder DM. An analysis of factors associated with interval as opposed to screen-detected breast cancers, including hormone therapy and mammograph density. *Breast* 2002; 11:131-6.
- A J Crockett, J M Cranston, D Roder, A-M Nguyen. Relative survival of patients with COPD on long-term oxygen therapy. 11th Annual ERS Congress Berlin, Sept. 2001.
- Davy MLJ, Dodd TJ, Luke CG, Roder DM. Cervical cancer: Effect of glandular cell type on prognosis, treatment, and survival. *Obstetrics & Gynecology* 2003; 101:38-45
- Gill PG, Farshid G, Luke CG, Roder DM. Detection by screening mammography is a powerful independent predictor of survival in women diagnosed with breast cancer. *Breast* 2004; 13:15-22.
- Gill PG, Birrell SN, Luke CG, Roder DM. Tumour location and prognostic characteristics as determinants of survival of women with invasive breast cancer: South Australia hospital-based cancer registries, 1987-1998. *Breast* 2002; 11(3):221-227
- Hardingham JE, Butler WJ, Roder D, Dobrovic A, Dymock RB, Sage RE & Roberts-Thomson IC 1998. Somatic mutations, acetylator status, and prognosis in colorectal cancer. *Gut* 42(5):669-72.
- Higgins GD, Davy M, Roder D, Uzelin DM, Phillips GE & Burrell CJ 1991. Increased age and mortality associated with cervical carcinomas negative for human papillomavirus RNA. *Lancet* 338(8772):910-13.
- Hill CL, Nguyen A-M, Roder DM, Roberts-Thomson P. Risk of cancer in patients with scleroderma: a population-based cohort study. *Annals of Rheumatic Diseases* 2003; 62: 728-31.
- Hoffmann D, Moore J & Roder D 1997. Trends in survival from colonic cancer: the impact of subspecialization. *Australian & New Zealand Journal of Surgery* 67(12):842-5.



- Hunt R, Bonett A & Roder D 1993. Trends in the terminal care of cancer patients: South Australia, 1981-1990. *Australian & New Zealand Journal of Medicine* 23(3):245-51.
- Hunt RW, Fazekas BS, Luke CG, Priest KR, Roder DM. The coverage of cancer patients by designated palliative services: a population-based study, South Australia, 1999. *Palliative Medicine* 2002; 16(5): 403-9.
- Hunt RW, Fazekas BS, Luke CG, Roder DM. Where patients with cancer die in South Australia, 1990-1999: a population-based review. *Medical Journal of Australia* 2001; 175(10):526-9.
- Kirke B & Roder D 2000. Using Cancer Registry data to target melanoma: early detection interventions in South Australia. *Australian Cancer Society Cancer Forum* 24(1):16-17.
- Luke C, Nguyen A-M, Priest K, Roder D. Female breast cancers are getting smaller, but socio-demographic differences remain. *Aust NZ J Public Health* 2004; 28(4):312-316.
- Luke CG, Coventry BJ, Foster-Smith EJ, Roder DM. Are cutaneous melanomas of specified thickness showing deeper levels of invasion at diagnosis? *Asian Pacific Journal of Cancer Prevalence* 2003; 4: 307-11.
- Luke CG, Coventry BJ, Foster-Smith EJ, Roder DM. A critical analysis of reasons for improved survival from invasive cutaneous melanoma. *Cancer Causes & Control* 2003; 14(9): 871-8.
- Luke C, Chapman P, Priest K, Roder D. Use of radiotherapy in the primary treatment of cancer in South Australia. *Australasian Radiology* 2003; 47(2):161-7.
- McCaul KA, Luke CG & Roder DM 1995. Trends in prostate cancer incidence and mortality rates in South Australia, 1977-1993. *Medical Journal of Australia* 162(10):520-2.
- McCaul K, Roder D, Shugg D, Threlfal T. Prostate cancer incidence and mortality trends: data from three Australian States. Program and Proceedings of the 24th Annual Scientific Meeting of the Clinical Oncological Society of Australia Inc., Wrest Point Hotel Casino, Hobart, Tasmania 26-28 Nov 1997. Sydney, NSW: The Society, 1997:44.
- McLennan G & Roder DM 1989. Lung cancer in Australia. *Medical Journal of Australia* 150(4):206-7, 210-3.
- McMichael AJ, Bonett A & Roder D 1989. Cancer incidence among migrant populations in South Australia. *Medical Journal of Australia* 150(8):417-20.
- Moore SR, Allister J, Roder D, Pierce AM, Wilson DF. Lip cancer in South Australia, 1977-1996. *Pathology* 2001; 33(2): 67-71.
- North B, Reilly P, Blumbergs P, Roder D & Esterman A 1990. Malignant astrocytoma in South Australia: treatment and case survival. *Medical Journal of Australia* 153(5):250-4.
- Nguyen A-M, Luke CG, Roder DM. Time trends in lung cancer incidence by histology in South Australia: likely causes and public health implications. *Australian and New Zealand Journal of Public Health* 2003; 27:596-601.
- Nguyen A-M, Luke CG, Roder DM. Comparative epidemiological characteristics of oesophageal adenocarcinoma and other cancers of the oesophagus and gastric cardia. *Asian Pacific Journal of Cancer Prevalence* 2003;4: 225-231.
- Roder D, Bonett A, Hunt R & Beare M 1987. Where patients with cancer die in South Australia. *Medical Journal of Australia* 147(1):11-3.
- Roder DM, Luke CG, McCaul KA & Esterman AJ 1995. Trends in prognostic factors of melanoma in South Australia, 1981-1992: implications for health promotion. *Medical Journal of Australia* 162(1):25-9.

- Roder D, Bonett A & Esterman A 1985. Promotion of breast self-examination in South Australia: a short-term evaluation. *Medical Journal of Australia* 142(1):9-11.
- Roder D & Wilson D 1983. Oral cancer in South Australia – incidence and case survival. *Australian Dental Journal* 28(5):312-5.
- Schloeffel P, Hains D, Roder D, Bonett A & Esterman A 1989. The use of state and hospital-based cancer-registry data to describe the epidemiological and clinical characteristics of laryngeal cancer in South Australia. *Medical Journal of Australia* 150(5):252-5.
- Shugg D, Allen BJ, Blizzard L, Dwyer T & Roder D 1994. Brain cancer incidence, mortality and case survival: observations from two Australian cancer registries. *International Journal of Cancer* 59(6):765-70.
- South Australian Cancer Registry 1993. Epidemiology of cancer in South Australia: incidence, mortality and survival 1977 to 1992; incidence and mortality 1992. Analysed by type and geographical location. Sixteen years of data. Adelaide: Lutheran Publishing House.
- South Australian Cancer Registry 1994. Epidemiology of cancer in South Australia: incidence, mortality and survival 1977 to 1993; incidence and mortality 1993. Analysed by type and geographical location. Seventeen years of data. Adelaide: Openbook Publishers.
- South Australian Cancer Registry 1994. South Australian hospital-based cancer registry network. Adelaide: South Australian Health Commission.
- South Australian Cancer Registry 1995. Epidemiology of cancer in South Australia: incidence, mortality and survival 1977 to 1994; incidence and mortality 1994. Analysed by type and geographical location. Eighteen years of data. Adelaide: Openbook Publishers.
- South Australian Cancer Registry 1996. Epidemiology of cancer in South Australia: incidence, mortality and survival 1977 to 1995; incidence and mortality 1995. Analysed by type and geographical location. Nineteen years of data. Adelaide: Openbook Publishers.
- South Australian Cancer Registry 1997. Epidemiology of cancer in South Australia: incidence, mortality and survival 1977 to 1996; incidence and mortality 1996. Analysed by type and geographical location. Twenty years of data. Adelaide: Openbook Publishers.
- South Australian Cancer Registry 1998. Epidemiology of cancer in South Australia: incidence, mortality and survival 1977 to 1997; incidence and mortality 1997. Analysed by type and geographical location. Twenty-one years of data. Adelaide: Openbook Publishers.
- South Australian Cancer Registry 1999. Epidemiology of cancer in South Australia: incidence, mortality and survival 1977 to 1998; incidence and mortality 1998. Analysed by type and geographical location. Twenty-two years of data. Adelaide: Openbook Publishers.
- South Australian Cancer Registry 2000. Epidemiology of cancer in South Australia: incidence, mortality and survival 1977 to 1999; incidence and mortality 1999. Analysed by type and geographical location. Twenty-three years of data. Adelaide: Openbook Publishers.
- South Australian Cancer Registry 2001. Epidemiology of cancer in South Australia: incidence, mortality and survival 1977 to 2000; incidence and mortality 2000. Analysed by type and geographical location. Twenty-four years of data. Adelaide: Openbook Publishers.
- Wilkinson D, Cameron K. Cancer and cancer risk in South Australia: What evidence for a rural-urban health differential? *Australian Journal of Rural Health* 2004; 12(2):61-6.
- Woodward A, Roder D, McMichael AJ, Crouch P & Mylvaganam A 1991. Radon daughter exposures at the Radium Hill uranium mine and lung cancer rates among former workers, 1952-87. *Cancer Causes & Control* 2(4):213-20.

## Tasmania

- Berwick M, Ashbolt R, Blizzard L, Dickinson J, Dwyer T, Fitzgerald L, Reilly A, Sale M, Stankovich J, Williamson J 2004. Does the addition of information on genotype improve the prediction of risk of melanoma and non-melanoma skin cancer beyond that obtained from skin phenotype? *American Journal of Epidemiology*, 159:826–33.
- Blizzard CL & Dwyer T 2003. Case-control study of lung cancer during 1994–1997 in the birth cohort in Tasmania, Australia, with an excess of female cases during 1983–1992. *Cancer Causes and Control*, 14:123–9.
- Blizzard CL & Dwyer T 2002. Lung cancer incidence in Australia: impact of filter-tip cigarettes with unchanged tar yields. *International Journal of Cancer*, 97(5):679–84.
- Blizzard CL & Dwyer T 2001. Declining lung cancer mortality of young Australian women despite increased smoking is linked to reduced cigarette 'tar' yields. *British Journal of Cancer* 84(3) 392–6.
- Blizzard CL 2000. An investigation of the excess of lung cancer in young Tasmanian women aged 25–44 years during the period 1983–92.
- Burdon KP, Craig J, Dickinson J, Elder J, Mackey D, Russell-Eggitt I, Sale M, Wirth GM 2004. Investigation of crystallin genes in familial cataract, and report of two disease associated mutations. *Journal of Medical Genetics* 41:187–191.
- Dwyer T, Blizzard CL, Venn A & Pavlides SL 2001. Cancer in Tasmania: incidence and mortality 1998, Menzies Centre for Population Health Research.
- Goldar D, Lesueur F, McKay J, Moncayo R, Pastore A, Riccabona G, Romeo G, Stankov K, Thompson D & Watfah C 2004. Evidence for interaction between the TCO and NMTC1 loci in familial non-medullary thyroid cancer. *Journal of Medical Genetics* 41:407–12.
- Pavlides SL, Venn A, Blizzard CL, Dwyer T 2002. Cancer in Tasmania: Incidence and Mortality 1999, Menzies Centre for Population Health Research
- Pavlides, SL, Venn, A, Blizzard & CL 2002. Cancer in Tasmania: incidence and mortality 2000, Menzies Centre for Population Health Research.
- Qin J, Berwick M, Ashbolt R & Dwyer T 2002. Quantifying the change of melanoma incidence by breslow thickness. *Biometrics*, 58(3):665–70.
- Shugg D, White V, Kitchen P, Pruden M, Collins J & Hill D 2002. Surgical management of ductal carcinoma in situ in Australia in 1995, *ANZ Journal of Surgery* 72(10):708-15.
- van der Mei I, Blizzard CL, Stankovich J, Ponsonby AL & Dwyer T 2002. Misclassification due to body hair and seasonal variation on melanin density estimates for skin type using spectrophotometry. *Journal of Photochemistry and Photobiology B: Biology* 68(1):45–52.
- Venn A, Healy D, McLachlan R 2003. Cancer risks associated with the diagnosis of infertility. *Best Practice & Research in Clinical Obstetrics & Gynaecology* 17(2):343-67.
- Venn A & Healy D 2003. Infertility medications and the risk of breast cancer. *Fertility and Sterility* 79(4):852-4.
- Venn A 2002. Fertility drug use was not associated with a significantly increased risk of ovarian cancer. *Evidence-based Obstetrics and Gynecology* 4:84-5.
- Venn A, Jones P, Quinn M & Healy D 2001. Characteristics of ovarian and uterine cancers in a cohort of in vitro fertilization patients. *Gynecologic Oncology* 82:64-8.

Walter SD, Ashbolt R, Dwyer T & Marrett LD 2000. Do larger people have more naevi? Naevus frequency versus naevus density. *International Journal of Epidemiology* 29: 1025-1030

## **Australian Capital Territory**

Cancer in the ACT, 1996-2000. Population Health Research Centre, ACT Health: Health Series No 34, ACT Government, Canberra ACT.

Tobacco and Alcohol Use by ACT Secondary Students, 1996-2002. Population Health Research Centre, ACT Health: Health Series No 33, ACT Government, Canberra ACT.

Breast Cancer in the ACT, Population Health Research Centre, ACT Health: Health Series No 31, ACT Government, Canberra ACT.

## **Northern Territory**

d'Espaignet ET, Measey ML, Condon JR, Jelfs P & Dempsey KE 1996. Cancer in the Northern Territory 1987-1993. Darwin: Territory Health Services.

Zhao Y, Condon JR & Garling LS 2004. Cancer Incidence and Mortality Northern Territory 1991-2001. Darwin: Department of Health and Community Services.

Condon JR & Zhao Y 2004. Northern Territory Cancer Register Data Collection, analysis and reporting procedures. Darwin: Department of Health and Community Services.

Condon JR, Zhao Y, Armstrong BK & Barnes A 2004. Northern Territory Cancer Register Data Quality 1981-2001. Darwin: Department of Health and Community Services.

Condon JR, Barnes T, Cunningham J & Armstrong BK 2004. Long-term trends in cancer mortality for Indigenous Australians in the Northern Territory. *Medical Journal of Australia* 180(10):5047.

Condon JR, Armstrong BK, Barnes A, Cunningham J 2003. Cancer in Indigenous Australians: a review. *Cancer Causes Control* 14(2):10921.

## **Australian Institute of Health and Welfare**

Australian Institute of Health and Welfare (AIHW) 1994. Cancer in Australia 1986-1988. Canberra: AIHW (Cancer Series no. 2).

Australian Institute of Health and Welfare (AIHW) 1998. Breast and cervical cancer screening in Australia 1996-1997. AIHW cat. no. CAN 3. Canberra: AIHW (Cancer Series no. 8).

Australian Institute of Health and Welfare (AIHW) 2003. National health data dictionary. Version 12. AIHW cat. no. HWI 75. Canberra: AIHW.

Australian Institute of Health and Welfare (AIHW) 2000. BreastScreen achievement report 1997-1998. AIHW cat. no. CAN 8. Canberra: AIHW (Cancer Series no. 13).

Australian Institute of Health and Welfare (AIHW) 2000. Cervical screening in Australia 1997-1998. AIHW cat. no. CAN 9. Canberra: AIHW (Cancer Series no. 14).

Australian Institute of Health and Welfare & Australasian Association of Cancer Registries 1992. *Cancer in Australia 1983–1985*. Canberra: Australian Government Publishing Services (Cancer Series no. 1).

Australian Institute of Health and Welfare (AIHW) & Australasian Association of Cancer Registries 1998. *Cancer in Australia 1995: incidence and mortality data for 1995 and selected data for 1996*. AIHW cat. no. CAN 5. Canberra: AIHW (Cancer Series no. 10).

Australian Institute of Health and Welfare (AIHW) & Australasian Association of Cancer Registries 1998. *Cancer in Australia 1991–1994 (with projections to 1999)*. Canberra: AIHW (Cancer Series no. 7).

Australian Institute of Health and Welfare (AIHW), Australasian Association of Cancer Registries & National Health and Medical Research Council National Breast Cancer Centre 1998. *Breast cancer survival in Australian women 1982–1994*. AIHW cat. no. CAN 4. Canberra: AIHW (Cancer Series no. 9).

Australian Institute of Health and Welfare (AIHW) & Australasian Association of Cancer Registries 1999. *Cancer in Australia 1996: incidence and mortality data for 1996 and selected data for 1997 and 1998*. AIHW cat. no. CAN 7. Canberra: AIHW (Cancer Series).

Australian Institute of Health and Welfare (AIHW), Australasian Association of Cancer Registries & National Health and Medical Research Council National Breast Cancer Centre 1999. *Breast cancer in Australian women 1982–1996*. Canberra: AIHW (Cancer Series).

Australian Institute of Health and Welfare (AIHW) & Australasian Association of Cancer Registries 2001. *Cancer survival in Australia, 2001. Part 1: National summary statistics*. AIHW cat. no. CAN 13. Canberra: AIHW (Cancer Series No. 18).

Giles G, Jelfs P & Kliewer E 1995. *Cancer mortality in migrants to Australia 1979–1988*. Canberra: AIHW (Cancer Series no. 4).

Jelfs P 1995. *Cervical cancer in Australia*. Canberra: AIHW (Cancer Series no. 3).

Jelfs P, Coates M & Giles G 1996. *Cancer in Australia 1989–1990 (with projections to 1995)*. Canberra: AIHW (Cancer Series no. 5).

Jelfs P, Giles & Shugg D. 1994. *Cutaneous malignant melanoma in Australia, 1989*. *The Medical Journal of Australia* 161:182–7.

Kricker A & Jelfs P 1996. *Breast cancer in Australian women 1921–1994*. Canberra: AIHW (Cancer Series no. 6).

Mathers C, Vos T, & Stevenson C 1999. *The burden of disease and injury in Australia*. AIHW cat. no. PHE 17. Canberra: AIHW.

National Breast Cancer Centre, Australasian Association of Cancer Registries, BreastScreen Australia, Commonwealth Department of Health and Aged Care & Australian Institute of Health and Welfare 2000. *Ductal carcinoma in situ*. *Cancer Monitoring* no. 1. Canberra: AIHW.