

# **Cancer in Australia**

## **2000**

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 purposes of the AACR are:

- to provide a continuing framework for the development of population-based cancer registration in Australia and New Zealand;
- to facilitate the exchange of scientific and technical information between cancer registries and to promote standardisation in the collection and classification of cancer data;
- to facilitate cancer research both nationally and internationally; and
- to facilitate the dissemination of cancer information.

The Australian Institute of Health and Welfare has joined with the AACR to produce national cancer statistics from the National Cancer Statistics Clearing House.

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# **Cancer in Australia 2000**

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# Contents

- List of tables..... vii
- List of figures.....x
- Preface ..... xii
- Contributors ..... xiii
- Executive summary ..... xiv
- 1 Introduction.....1**
  - What is cancer?.....1
  - Cancer surveillance in Australia.....2
  - The National Cancer Statistics Clearing House.....2
  - Other sources of data on cancer.....3
  - Structure of this report.....5
- 2 Cancer in Australia.....7**
  - General .....7
  - Most common cancers.....8
  - Age and sex differences .....13
  - Cancer prevalence.....18
  - Cancers attributed to smoking and alcohol consumption.....19
  - Cancer rates in the states and territories, 1996–2000 .....20
  - A profile of colorectal cancer .....26
- 3 Cancer trends.....34**
  - National trends in cancer incidence and mortality .....34
- 4 Incidence and mortality tables.....44**
  - Guide to interpreting incidence and mortality tables .....44
- 5 Other sources of cancer data.....47**
  - Cancer mortality – multiple causes of death .....47
  - Screening.....48
  - Trends in cancer-related hospital separations.....62
- Summary tables 2000 .....73**
- Tables for selected cancers 2000 .....77**

<b>Appendixes</b> .....	<b>99</b>
Appendix A: International Classification of Diseases, 10th Revision – cancer site – codes and combinations .....	100
Appendix B: Methods .....	101
Appendix C: Population data .....	107
Appendix D: Cancer registration in Australia.....	109
Appendix E: Cancer registries contact list .....	110
Appendix F: Tables published on the Internet .....	113
<b>Glossary</b> .....	<b>116</b>
<b>Data sources</b> .....	<b>118</b>
<b>References</b> .....	<b>119</b>
<b>Related publications</b> .....	<b>122</b>

## List of tables

Table 1:	Most frequently occurring cancers, Australia, 2000.....	9
Table 2:	Cancer site and percentage of cancers attributed to excessive alcohol consumption and to smoking.....	19
Table 3:	Cancer deaths by state of usual residence and state of registration, 1996–2000 .....	22
Table 4:	New cases of colorectal cancer by age, sex and site, Australia, 2000.....	29
Table 5:	Distribution of new cases of colorectal cancer by age, sex and site, Australia, 2000.....	29
Table 6:	Five-year relative survival proportions for colorectal cancer by sex and diagnosis period, Australia, 1982–1997 .....	31
Table 7:	Average cure rates for index year 1997, by sex, Australia .....	31
Table 8:	Average time to death for those who ultimately die from colorectal cancer for index year 1997, by sex, Australia .....	31
Table 9:	Number of persons dying with cancer (underlying cause and from another cause of death), Australia, 2000 (year of registration) .....	47
Table 10:	Number of women screened by BreastScreen Australia in each two-year period, 1996–2000 .....	49
Table 11:	Number of women screened by the National Cervical Screening Program in each two-year period, 1997–2000 .....	52
Table 12:	Pap smear testing, women aged 18 years and over, Australia, 2001.....	54
Table 13:	Pap smear testing, women aged 18 years and over, states, Australia, 2001.....	55
Table 14:	Women aged 18 years and over who have had a Pap smear, Australia, 2001 .....	55
Table 15:	Women who have never had a Pap smear, main language spoken at home, 2001 .....	56
Table 16:	Women who have never had a Pap smear, country of birth, 2001 .....	56
Table 17:	Women who have never had a Pap smear, states, 2001 .....	57
Table 18:	Mammogram examinations, age group, Australia, 2001 .....	58
Table 19:	Women aged 50–69 years: mammogram status and population characteristics, 2001 .....	59
Table 20:	Women who have never had a mammogram, main language spoken at home, 2001 .....	60
Table 21:	Women who have never had a mammogram, country of birth, 2001.....	60
Table 22:	Women who have never had a mammogram, states, 2001.....	61
Table 23:	Cancer-related hospital separations and average annual rate of change, Australia, 1997–98 to 2001–02.....	65

Table 24:	Same-day cancer-related hospital separations, Australia, 1997–98 to 2001–02 .....	66
Table 25:	Patient days for cancer-related hospital separations, Australia, 1997–98 to 2001–02 .....	67
Table 26:	Average length of stay (ALOS) for cancer-related hospital separations, Australia, 1997–98 to 2001–02.....	68
Table 27:	Public patient cancer-related separations, all hospitals, Australia, 1997–98 to 2001–02.....	69
Table 28:	Cancer-related separations from public hospitals as a percentage of all hospital separations and as a percentage of all public patient separations, Australia, 1997–98 to 2001–02.....	70
Table 29:	Cancer-related separations from private hospitals as a percentage of all hospital separations and as a percentage of all public patient separations, Australia, 1997–98 to 2001–02 .....	71
Table 30:	Incidence summary table, Australia, 2000.....	74
Table 31:	Mortality summary table, Australia, 2000.....	75
Table 32:	All cancers (ICD-10 C00–C97 excluding skin cancers other than melanoma C44) .....	78
Table 33:	Cancer of the stomach (ICD-10 C16).....	79
Table 34:	Cancer of the colon and rectum (including anus) (ICD-10 C18–C21) .....	80
Table 35:	Cancer of the pancreas (ICD-10 C25) .....	81
Table 36:	Cancer of the trachea, bronchus and lung (ICD-10 C33–C34).....	82
Table 37:	Cancer of the skin – melanoma (ICD-10 C43).....	83
Table 38:	Cancer of the breast (ICD-10 C50) .....	84
Table 39:	Cancer of the cervix uteri (ICD-10 C53).....	85
Table 40:	Cancer of the corpus uteri and uterus unspecified (ICD-10 C54–C55) .....	86
Table 41:	Cancer of the ovary (ICD-10 C56).....	87
Table 42:	Cancer of the prostate (ICD-10 C61) .....	88
Table 43:	Cancer of the testis (ICD-10 C62).....	89
Table 44:	Cancer of the bladder (ICD-10 C67) .....	90
Table 45:	Cancer of the kidney, renal pelvis, ureter, urethra and other unspecified urinary organs (ICD-10 C64–C66, C68) .....	91
Table 46:	Cancer of the brain (ICD-10 C71).....	92
Table 47:	Cancers of unknown primary site (ICD-10 C76–C80, C26, C39).....	93
Table 48:	Non-Hodgkin’s lymphoma (ICD-10 C82–C85, C96).....	94
Table 49:	All leukaemias (ICD-10 C91–C95).....	95
Table 50:	Cancers attributed to alcohol consumption .....	96
Table 51:	Cancers attributed to smoking.....	97



A comprehensive set of Excel tables for all cancer sites is available on the AIHW's web site <[www.aihw.gov.au](http://www.aihw.gov.au)>. These are listed in Appendix F.

## List of figures

Figure 1:	A conceptual framework for health .....	4
Figure 2:	Most frequently occurring cancers, Australia, 2000.....	11
Figure 3:	Most frequently occurring cancers by age group, ranked by number of new cases (persons), Australia, 2000 .....	12
Figure 4:	Age-specific incidence and mortality rates for melanoma and cancers of the lung, prostate and testis in males, Australia, 2000 .....	14
Figure 5:	Age-specific incidence and mortality rates for melanoma and cancers of the lung, breast and cervix in females, Australia, 2000 .....	15
Figure 6:	Age-specific incidence and mortality rates for colorectal cancer, cancers of the bladder and stomach, and non-Hodgkin's lymphoma in males, Australia, 2000.....	16
Figure 7:	Age-specific incidence and mortality rates for colorectal cancer, cancers of the uterus and stomach, and non-Hodgkin's lymphoma in females, Australia, 2000.....	17
Figure 8:	Age-standardised incidence rates (95% confidence intervals) for all cancers (excluding skin cancers other than melanoma) and for melanoma, states and territories, 1996–2000.....	25
Figure 9:	Distribution of new cases of colorectal cancer by site, Australia, 2000.....	28
Figure 10:	Age-standardised incidence and mortality rates for colorectal cancer of Australia, selected world regions and selected countries.....	33
Figure 11:	Trends in age-standardised incidence and mortality rates for all cancers (excluding skin cancers other than melanoma), Australia, 1983–2001.....	34
Figure 12:	Trends in age-standardised incidence and mortality rates for prostate, breast and colorectal cancer, Australia, 1983–2001 .....	38
Figure 13:	Trends in age-standardised incidence and mortality rates for cancers of the lung, smoking-related cancers and melanoma, Australia, 1983–2001 .....	39
Figure 14:	Trends in age-standardised incidence and mortality rates for non-Hodgkin's lymphoma, and cancers of the bladder and stomach, Australia, 1983–2001.....	40
Figure 15:	Trends in age-standardised incidence and mortality rates for leukaemia and cancers of the brain and pancreas, Australia, 1983–2001.....	41
Figure 16:	Trends in age-standardised incidence and mortality rates for cancers of the cervix, uterus and ovary, Australia, 1983–2001.....	42
Figure 17:	Trends in age-standardised incidence and mortality rates for cancers of the kidney and testis, and cancers of unknown primary site, Australia, 1983–2001 .....	43
Figure 18:	Participation of women aged 50–69 years in BreastScreen Australia by region, 1999–2000.....	50

Figure 19: Participation of women aged 50–69 years in BreastScreen Australia by socioeconomic status, 1999–2000 .....50

Figure 20: Population structure of the 1991 and 2001 standard populations .....108

## Preface

The Australian Institute of Health and Welfare (AIHW) and the Australasian Association of Cancer Registries (AACR) are pleased to present *Cancer in Australia 2000*, 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 screening, multiple cause of death statistics and trends in hospital statistics.

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 currently can expect to be diagnosed with a malignant 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 malignant cancers increased by 36% from 62,597 in 1990 to 85,231 in 2000, compared with population growth of 12%. This is placing pressure on treatment services and there has been an increase of 4.7% per year in the number of hospital inpatient separations for cancer patients. There has also been a sharp rise in the estimated number of new cases of skin cancers other than melanoma per year to 374,000 in 2002.

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.

Protection of the privacy of individual cancer patients is given the highest priority in the use of information on persons with cancer for statistics and research. National cancer statistics are compiled from the national minimum data set summary records of cancer patients in cancer registries, death registers, hospital inpatient records and other national statistical collections such as the national health survey of the Australian Bureau of Statistics. The statistics produced must not identify individuals and no identifiable records may be provided to researchers without the consent of the individuals concerned, and only for studies that have received appropriate ethics committee approvals. Records stored at the AIHW are protected by strong safeguards in the Australian Institute of Health and Welfare Act 1987 and the Commonwealth Privacy Act 1988 while state and territory cancer registries are subject to Commonwealth and state privacy law and state cancer legislation. There is similar legislation governing other collections that include information on persons with cancer.

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 Kate Leeds and Ian McDermid of the Health Registers and Cancer Monitoring Unit of the Australian Institute of Health and Welfare with the assistance of other members of the Institute. 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 various charity 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 2000 and information on cancer screening and cancer hospital inpatients. 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.

Colorectal cancer, currently the subject of a national pilot screening program, is profiled in this report.

The main findings are as follows.

### *New cases of cancer and mortality*

- Excluding skin cancers other than melanoma, there were 85,231 new cancer cases and 35,466 deaths due to cancer in Australia in 2000. At the incidence rates prevailing in 2000, it would be expected that 1 in 3 men and 1 in 4 women would be diagnosed with a malignant cancer in the first 75 years of life. Further, an estimated 253,000 potential years of life would be lost to the community as a result of people dying of cancer in 2000 before the age of 75. Cancer currently accounts for 30% of male deaths and 25% of female deaths (28% of all deaths, compared with 25% in 1990).

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

- In males, prostate cancer (10,512 new cases diagnosed in 2000) is the most common registrable cancer, followed by colorectal cancer (6,863), lung cancer (5,278) and melanoma (4,770). These four cancers account for 60% of all registrable cancers in males.
- In females, breast cancer (11,314) is the most common registrable cancer, followed by colorectal cancer (5,542), melanoma (3,761) and lung cancer (2,782). These four cancers account for 60% of all registrable cancers in females.

### *Cancer deaths*

- The most common cancers causing death are lung (4,594 deaths in 2000), prostate (2,665) and colorectal (2,569) cancers in males, and breast (2,521), lung (2,317) and colorectal (2,149) cancers in females.
- In Australia there were 35,628 deaths registered in 2000 where the underlying cause was malignant cancer and 4,289 additional deaths where cancer was an associated cause reported on the death certificate.
- Among the 4,289 cases where cancer was an additional cause of death, the most common underlying causes of death were ischaemic heart disease, stroke and chronic lower respiratory disease.

### *Prevalence*

- In 2001, there were an estimated 267,600 persons in Australia with malignant cancer living in private households (National Health Survey, Australian Bureau of Statistics).

### *Age distribution*

- The risk of cancer increases with age, with over four times as many cancers diagnosed in those over the age of 60 years as in those under 60 years.

### *Trends*

- In 1990 there were 62,597 new cases of cancer diagnosed (excluding skin cancers other than melanoma) – 34,006 for males (a rate of 517.3 per 100,000 population) and 28,591 for females (a rate of 355.7 per 100,000 population). This rose by 36% to 85,231 new cases in 2000 – 45,935 for males (a rate of 535.7 per 100,000 population) and 39,296 for females (a rate of 390.4 per 100,000 population).
- The 36% increase in new cases between 1990 and 2000 was much higher than the population growth of 12%. The reasons for this are high population growth in the older age groups of the population and cancers mainly being diagnosed in these age groups. In 2000 the average age of first diagnosis of a malignant cancer was 66 years for males and 64 years for females, while the median age was 69 years for males and 65 years for females.
- Between 1990 and 2000, age-standardised incidence rates for all cancers combined (except skin cancers other than melanoma) increased for males by an average of 4.4% per annum until 1994, and then declined by an average of 2.1% per annum until 2000. For females, age-standardised rates increased by an average of 1.9% until 1995 and then fluctuated around that level through to 2000.
- Between 1990 and 2000, age-standardised mortality rates for all cancers combined (except skin cancers other than melanoma) hovered around 270 cases per 100,000 for males until 1994 and then decreased by an average of 2.0% through to 2000. For females the age-standardised rates remained close to 160 cases per 100,000 until 1996 and then declined by an average of 2.0% through to 2000.
- A significant proportion of the rise in female incidence rates can be attributed to the increase in breast cancer incidence which in turn can be attributed in part to detection of prevalent cancers by the BreastScreen Australia program. The recent fall in male incidence rates is strongly influenced by the decline in prostate and lung cancer rates. The introduction of prostate-specific antigen testing in the early 1990s induced the rapid rise and subsequent fall in the rates of the incidence of prostate cancer in recent years.
- Cervical cancer incidence and mortality between 1990 and 2000 fell rapidly by an average of 5.7% and 4.5% per annum, respectively, largely due to early detection and treatment of pre-cancerous abnormalities and early cancers in the national cervical screening program, thereby preventing the onset of cancer in many cases, and allowing early treatment for others.

### *Screening*

- The proportion of women in the target age group (50 to 69 years) who were screened under the BreastScreen Australia program in a two-year period rose from 52.3% in the period 1996–1997 to 55.9% in the period 1999–2000.
- The proportion of women in the target age group who were screened under the National Cervical Cancer Screening Program in a two-year period rose from 62.3% in the period 1996–1997 to 65.5% in the period 1998–1999 and then declined to 63.3% in the period 1999–2000. The decline is unexplained but may be due to changes in measurement, to

lack of media campaigning in most states and to a reduction in encouraging younger women to screen in some states.

- For both screening programs, the 2001 National Health Survey has found that the highest rates of screening are achieved among women whose main language at home is English, who were born in Australia, the United Kingdom or New Zealand, and who are employed and have higher socioeconomic status. Lowest rates for screening are among non-English-speaking women and women who are not in the labour force and have low socioeconomic status.
- There are high rates of screening occurring more frequently than the recommended interval of 2 years. In the 2001 National Health Survey, more than 20% of women aged 30–59 years reported having an annual Pap smear, and 20% of 50–59 year olds and 16% of 60–69 year olds an annual mammogram.

### *Trends in cancer-related hospital separations*

- Hospital separations for patients with a principal diagnosis of cancer increased by an average of 4.7% per annum in the period 1997–98 to 2001–02. Separations for skin cancers other than melanoma increased by an average of 7.4% per annum, for prostate cancer by 7.0%, for non-Hodgkin's lymphoma by 5.7% and for colorectal cancer by 5.5%.
- The proportion of same-day separations for patients with a principal diagnosis of cancer increased from 36.9% in 1997–98 to 44.4% in 2001–02. Excluding same-day separations, the average length of stay in hospital declined only slightly from 8.5 days in 1997–98 to 8.4 days in 2001–02.
- The proportion of public patients amongst separations for patients with a principal diagnosis of cancer decreased from 52.0% in 1997–98 to 47.6% in 2001–02. Public hospitals accounted for 62.0% of separations with a principal diagnosis of cancer in 1997–98, but only 55.3% of such separations in 2001–02.

### *Colorectal cancer*

- Colorectal cancer has the highest incidence of all malignant cancers in Australia, (excluding skin cancers other than melanoma) as it has the second highest incidence for both men and women. There is currently a 1 in 17 lifetime risk of being diagnosed with colorectal cancer for men before the age of 75 years, and a 1 in 26 risk for women.
- Colorectal cancer is the second most common cause of cancer death.
- 60% of colorectal cancer cases occur in the rectum and distal colon.
- Five-year relative survival for persons diagnosed with colorectal cancer between 1992 and 1997 was 57.8% for males and 59.4% for females.
- In 2000–01 there were 25,238 hospital separations (average length of stay 8.6 days) and 2,000 hospital deaths from colorectal cancer in Australia.
- Of people diagnosed with colorectal cancer in 1997, it is estimated that 53.7% will be cured, that is, that their survival probability will become the same as that of the general population. Of those who ultimately die, the average time till death is 2.27 years.
- Of 173 countries for which colorectal cancer incidence rates are available, Australia is ranked fifth highest for men and second highest for women. Among the same countries, Australia is ranked fifteenth highest for colorectal cancer deaths among men and seventeenth highest for women.



# 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 the year 2000 there were 134 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 malignant 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;
- 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 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 Health Ethics Committee and the state and territory cancer registries. General database enquiries and enquiries about the release of statistical data should be addressed to:

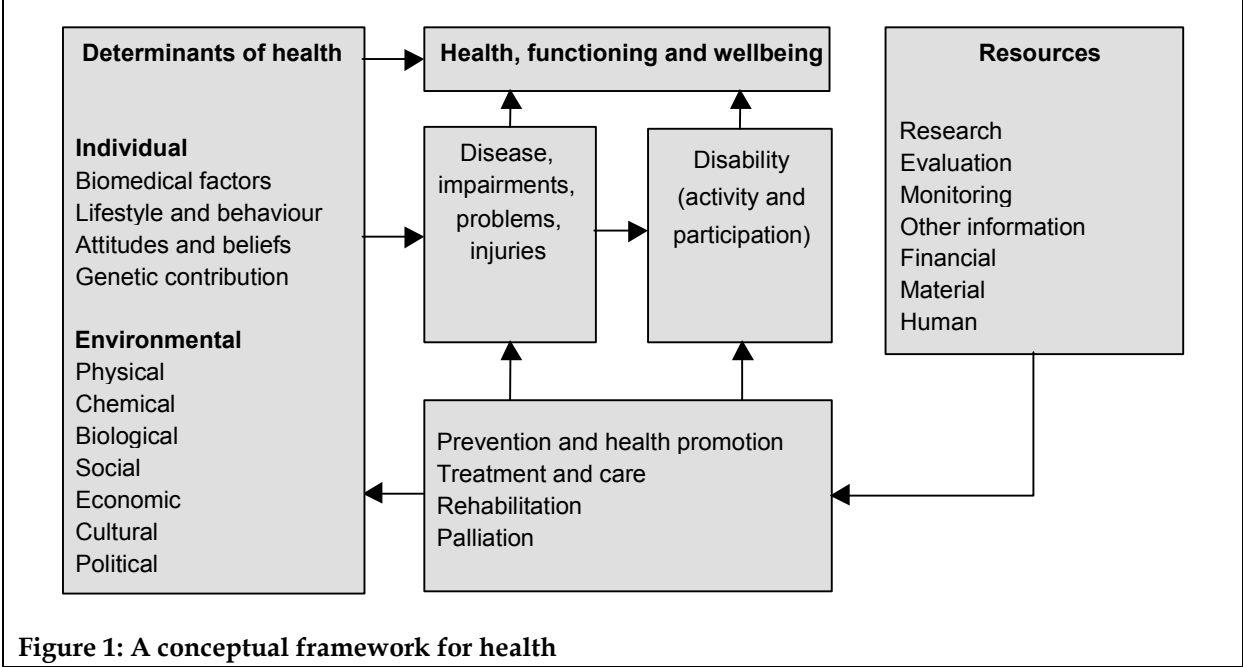
Australian Institute of Health and Welfare  
National Cancer Statistics Clearing House  
Attention: Ian McDermid  
GPO Box 570  
Canberra ACT 2601  
Phone: (02) 6244 1230  
E-mail: cancer@aihw.gov.au

## **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.

Figure 1 presents a conceptual framework for health (AIHW 2002a). Disability, disease and death are aspects of health and wellbeing, and can be seen as the result of a complex interplay of many factors described as individual or environmental. These causes and effects can be modified to various degrees by health promotion and protection and the prevention of illness and injury, or by treatment and rehabilitation; in the end stages of life, palliation services feature. Such interventions are supported by human and material resources, including essential information via research, monitoring and evaluation.

The incidence and mortality data presented in this report contribute to the parts of the framework under 'Health, functioning and wellbeing'. The data in Chapter 5 (multiple causes of death, screening and trends in hospital statistics) extend the coverage of this part of the framework.



**Figure 1: A conceptual framework for health**

There are still significant gaps in cancer-related national data collections. For example, there are still no national data collections of hospital outpatient services and only limited data in areas such as palliative care.

## Structure of this report

This report is divided into six major components:

- an introduction and overview of cancer in Australia in 2000;
- summary tables of incidence and mortality for all cancer sites for 2000;
- a series of incidence and mortality data tables for the most common cancer sites, and some less common but topical cancer sites, for 2000;
- an overview of some additional sources of data on cancer in Australia covering screening, multiple causes of death and trends in hospital statistics;
- glossary and reference sections;
- 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 1983–2000. 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.

### 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 (1983–2000) and mortality (1983–2001).

### Summary tables

Summary tables of incidence and mortality for 2000 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 2000 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 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 new WHO World Standard Population (Appendix C). Included in these tables are 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 skin cancers other than melanoma).

The data tables also include five-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. For a comparison of these two Australian population standards see Appendix C.

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 old World Standard Population. The NCSCH is able to provide state and territory rates that have been age standardised to the new WHO World Standard Population on request, or state and territory cancer registries can be contacted directly.

## **Appendixes**

The appendixes include the International Classification of Diseases 10th Revision coding system; a methods section providing formulae, explanations and examples of the techniques used to present the data in the report; population data for Australia for 2000; 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 skin cancers other than melanoma, there were 85,231 new cancer cases and 35,466 deaths due to cancer in Australia in 2000. Even allowing for the fact that a person may have more than one cancer, at the incidence rates prevailing in 2000, it would be expected that 1 in 3 men and 1 in 4 women will be diagnosed with a malignant cancer in the first 75 years of life. Further, an estimated 253,085 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 30% of male deaths and 25% 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.

## Skin cancers other than melanoma

Incidence data for cancers of the skin, apart from melanoma, are not collected on a routine basis by cancer registries, as these common cancers are not legally notifiable and therefore not routinely reported. Estimates of the frequency of treated skin cancers, 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).

Preliminary data from the 2002 survey 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 affected. 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 forthcoming 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 they are standardised to an older World Standard Population.

The age-standardised incidence estimates, recalculated using the new 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 (85.0 per 100,000) and the next most common female cancer, breast (91.7 per 100,000).

Despite the high incidence rate of skin cancers other than melanoma, mortality rates are relatively low at 1.9 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 36.8 per 100,000 population, male colorectal cancer (20.8 per 100,000), prostate cancer (20.4 per 100,000) and female breast cancer (18.1 per 100,000) (2000 data standardised to the new World Standard Population).

Skin cancers other than melanoma are excluded from further incidence and mortality comparisons in this publication. Trends in hospital treatment for skin cancers other than melanoma are included in the section on trends in cancer-related hospital separations in Chapter 5.

## Most common cancers

### Persons

- Among all persons, the combination of cancers of the colon and rectum (12,405 new cases), often referred to as bowel or colorectal cancer, is the most common registrable cancer in 2000 (Table 1). Colorectal cancer, breast cancer (11,400), prostate cancer (10,512), melanoma (8,531) and lung cancer (8,060) together account for 60% of all registrable cancers in 2000.

### Males

- In males, the most common registrable cancers after prostate cancer are colorectal cancer (6,863 new cases diagnosed in 2000), lung cancer (5,278) and melanoma (4,770) (Table 1, Figure 2). These four cancers account for 60% of all registrable cancers in males.

### Females

- In females, breast cancer (11,314) is the most common registrable cancer, followed by colorectal cancer (5,542), melanoma (3,761) and lung cancer (2,782), which in total account for 60% of all registrable cancers in females.

### Cancers causing death

- The cancers most commonly causing death are lung (4,594), prostate (2,665) and colorectal (2,569) in males, and breast (2,521), lung (2,317) and colorectal (2,149) 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 (43,545 in 2000), followed by colorectal cancer (30,225) and breast cancer (28,545) (Table 1). Cancer of the brain and nervous system is responsible for the fourth highest number of person-years of life lost (17,235). This contrasts with its ranking as the thirteenth most common cancer (1,415 new cases diagnosed in 2000). Further, the ratio of person-years of life lost to new cases for cancer of the brain and nervous system (12.2) is much higher than that for lung cancer (5.4), breast (2.5) or colorectal cancer (2.4). 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 3). In people aged less than 15 years, the most common cancers diagnosed are lymphoid leukaemia and cancers of the brain and central nervous system. These two cancer sites account for 51.3% 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 3) 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 (133) and cancer of the lung (93) in the 15–44 year age group. In the age group 45–64 years, cancers of unknown primary site (451 deaths), cancer of the brain and nervous system (402), pancreatic cancer (365), and non-Hodgkin's lymphoma (353) are responsible for a substantial number of deaths. Cancers of unknown primary site (1,919 deaths), cancer of the pancreas (1,353) and non-Hodgkin's lymphoma (1,154) are also significant causes of death in the 65 years and over age group.

## **Onset of cancer**

In 2000 the average age of first diagnosis of a malignant 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 67 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 2000(a), (b)**

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	10,512	22.9	124.9	85.0	1 in 11	2,665	13.3	35.9	20.4	5,783
Colorectal	6,863	14.9	80.2	56.3	1 in 17	2,569	12.8	31.0	20.8	18,135
Lung	5,278	11.5	62.1	42.7	1 in 22	4,594	22.9	54.8	36.8	28,078
Melanoma	4,770	10.4	53.7	41.4	1 in 25	617	3.1	7.3	5.1	6,150
Bladder	2,139	4.7	26.1	17.1	1 in 61	570	2.8	7.6	4.4	1,735
NHL	1,864	4.1	21.5	15.9	1 in 66	857	4.3	10.4	7.0	7,138
Unknown site	1,607	3.5	19.5	13.0	1 in 83	1,202	6.0	15.1	9.5	6,708
Kidney	1,470	3.2	16.8	12.4	1 in 76	500	2.5	6.0	4.1	4,083
Stomach	1,267	2.8	15.1	10.3	1 in 99	763	3.8	9.3	6.1	5,040
Pancreas	912	2.0	10.9	7.4	1 in 136	872	4.4	10.4	7.1	6,283
<i>All cancers</i>	<i>45,935</i>	<i>100.0</i>	<i>535.7</i>	<i>382.6</i>	<i>1 in 3</i>	<i>20,038</i>	<i>100.0</i>	<i>245.0</i>	<i>161.2</i>	<i>136,660</i>
<b>Females</b>										
Breast	11,314	28.8	115.3	91.7	1 in 11	2,521	16.3	24.7	18.1	28,305
Colorectal	5,542	14.1	53.8	38.0	1 in 26	2,149	13.9	20.2	13.4	12,090
Melanoma	3,761	9.6	38.0	31.2	1 in 35	354	2.3	3.5	2.6	4,403
Lung	2,782	7.1	27.4	19.7	1 in 45	2,317	15.0	22.5	15.8	15,468
NHL	1,593	4.1	15.6	11.5	1 in 88	734	4.8	7.0	4.7	4,598
Uterus	1,564	4.0	15.8	12.1	1 in 75	261	1.7	2.5	1.7	1,458
Unknown site	1,558	4.0	14.6	9.6	1 in 116	1,217	7.9	11.2	7.1	5,803
Ovary	1,201	3.1	12.0	9.2	1 in 108	780	5.1	7.6	5.4	6,485
Kidney	935	2.4	9.2	6.8	1 in 143	334	2.2	3.2	2.1	1,803
Pancreas	896	2.3	8.4	5.5	1 in 195	876	5.7	8.2	5.3	3,720
<i>All cancers</i>	<i>39,296</i>	<i>100.0</i>	<i>390.4</i>	<i>297.4</i>	<i>1 in 4</i>	<i>15,428</i>	<i>100.0</i>	<i>147.5</i>	<i>101.6</i>	<i>116,425</i>
<b>Persons</b>										
Colorectal	12,405	14.6	65.7	46.5	1 in 21	4,718	13.3	25.1	16.8	30,225
Breast	11,400	13.4	60.3	47.3	1 in 21	2,542	7.2	13.5	9.7	28,545
Prostate	10,512	12.3	55.7	39.0	1 in 23	2,665	7.5	14.2	8.4	5,783
Melanoma	8,531	10.0	45.0	35.9	1 in 29	971	2.7	5.1	3.7	10,553
Lung	8,060	9.5	42.7	30.1	1 in 30	6,911	19.5	36.6	25.2	43,545
NHL	3,457	4.1	18.3	13.6	1 in 76	1,591	4.5	8.5	5.7	11,735
Unknown site	3,165	3.7	16.8	11.2	1 in 97	2,419	6.8	12.9	8.2	12,510
Bladder	2,886	3.4	15.3	10.3	1 in 96	819	2.3	4.4	2.6	2,303
Kidney	2,405	2.8	12.7	9.4	1 in 100	834	2.4	4.4	3.0	5,885
Stomach	1,980	2.3	10.5	7.3	1 in 139	1,189	3.4	6.3	4.2	7,518
<i>All cancers</i>	<i>85,231</i>	<i>100.0</i>	<i>450.9</i>	<i>333.7</i>	<i>1 in 3</i>	<i>35,466</i>	<i>100.0</i>	<i>188.3</i>	<i>127.4</i>	<i>253,085</i>

(a) Rates are expressed per 100,000 population and age standardised to the Australian 2001 Standard Population (ASR (A)) and to the World Standard Population (ASR (W)). The rates age standardised to the two populations (World 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) Skin cancer other than melanoma, known to be the most common cancer type, is excluded from this list as it is not a registrable cancer.

(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.

Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.

## Most frequently occurring cancers

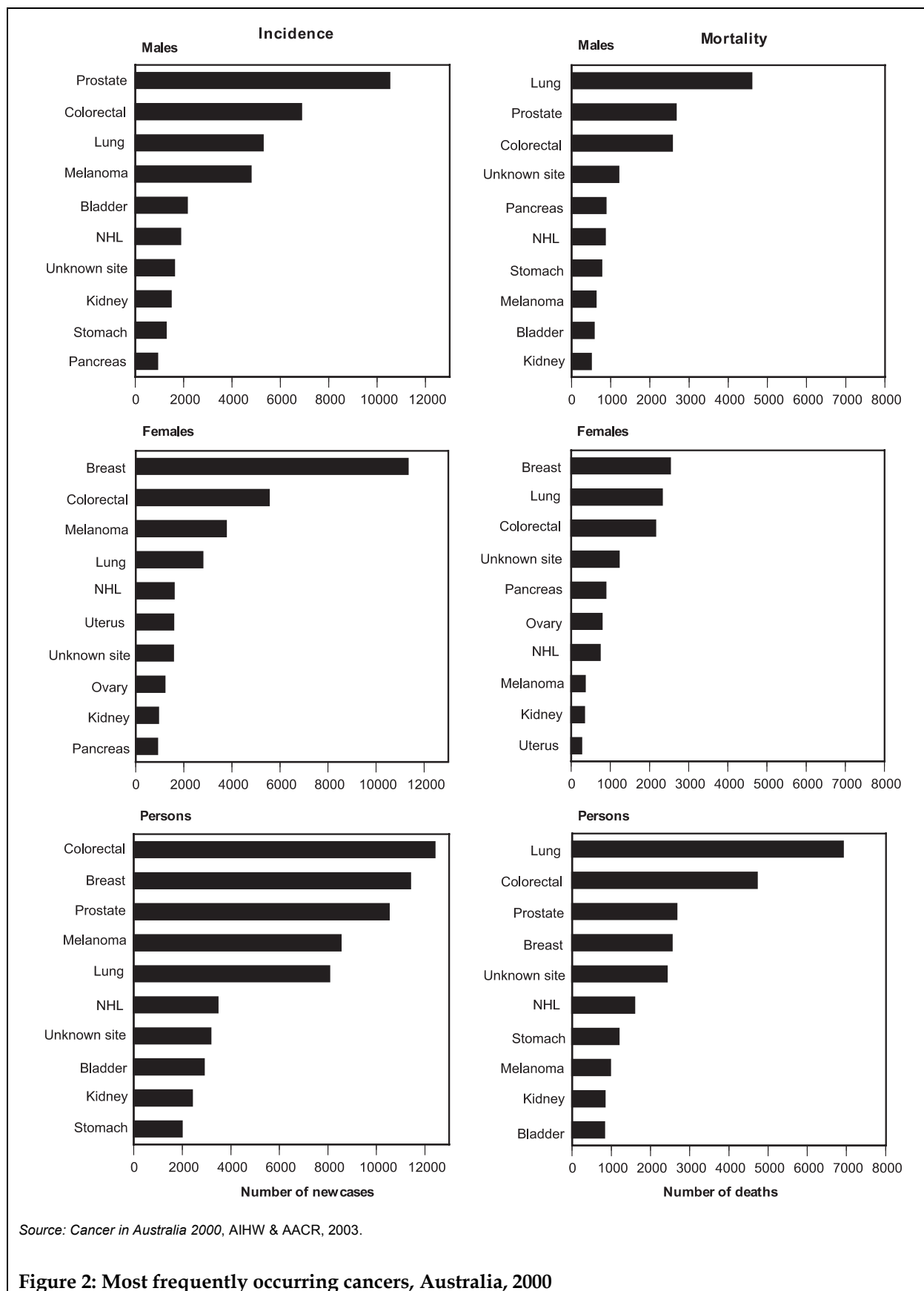
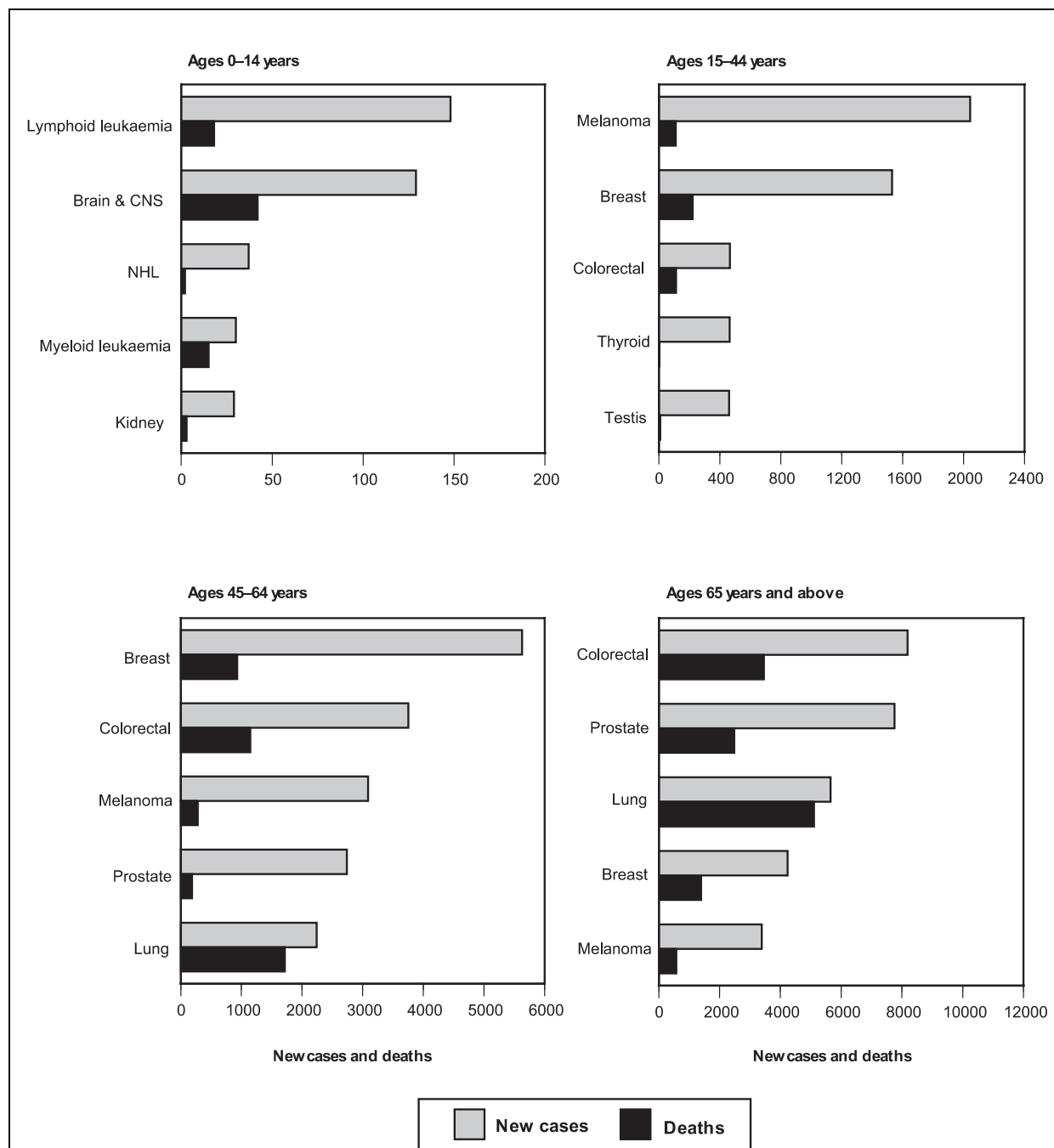


Figure 2: Most frequently occurring cancers, Australia, 2000

## 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 2000*, AIHW & AACR, 2003.

**Figure 3: Most frequently occurring cancers by age group, ranked by number of new cases (persons), Australia, 2000**

## Age and sex differences

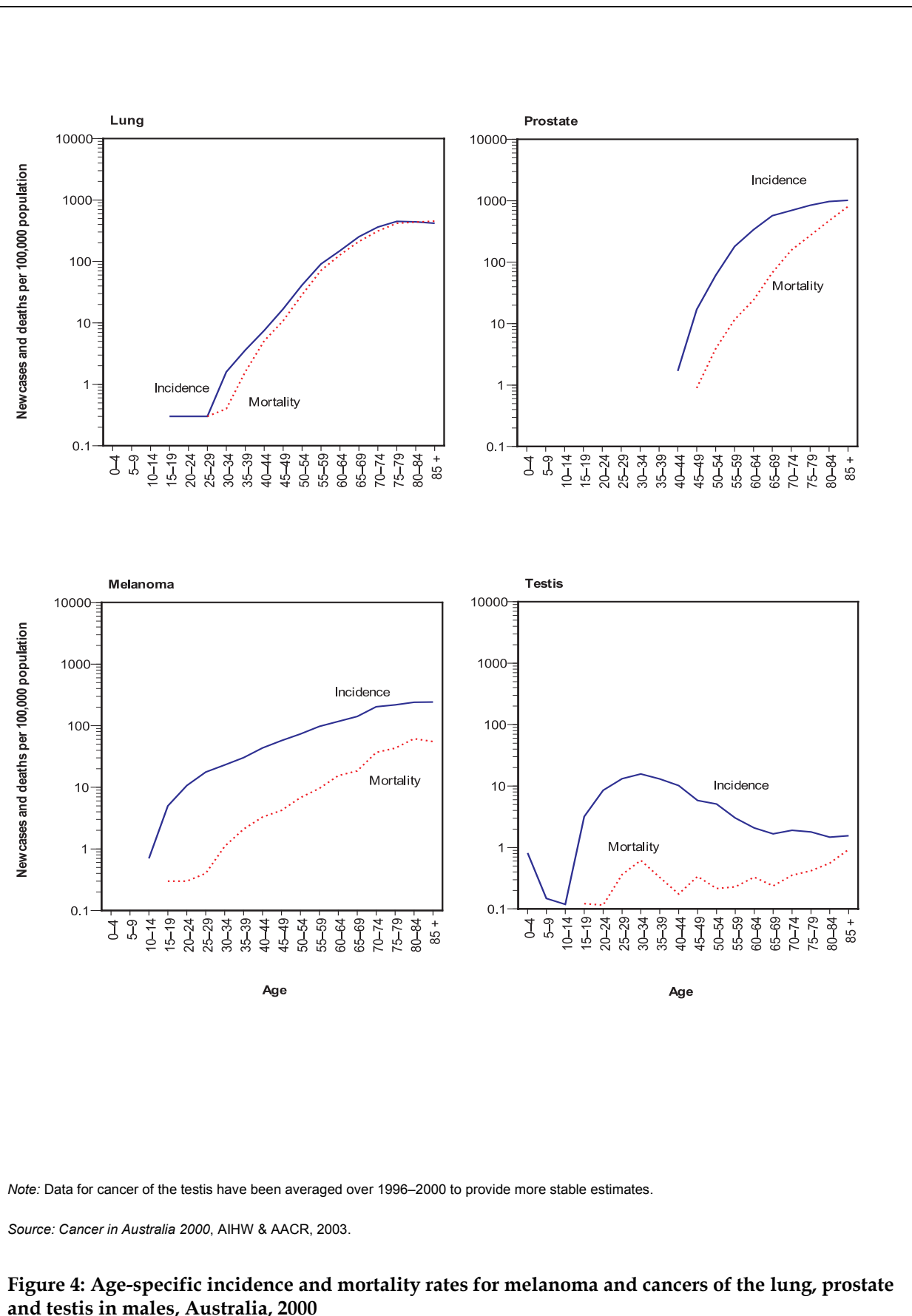
Cancer occurs more commonly in males than females. The age-standardised incidence rate in 2000 for all cancers combined (excluding skin cancers other than melanoma) was 535.7 new cases per 100,000 for males and 390.4 per 100,000 for females, resulting in an age-adjusted sex ratio of 1.4. Males have a higher incidence rate for every cancer site, except for breast, thyroid, gallbladder, anus, connective and soft tissue and cancer of the meninges and other central nervous system.

Of people diagnosed with cancer, 0.7% of all cancers (excluding skin cancers other than melanoma) occur in those aged less than 15 years, 9.6% in the 15–44 year age group, 32.6% in the 45–64 year age group, and 57.0% 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. Cervical and testicular cancers are exceptions to the age pattern, with the number of cases in the 15–44 year age group exceeding that in the 45–64 year and 65 years and over age groups.

The risk of cancer increases with age. The age-specific incidence rate in 2000 for all cancers combined (excluding skin cancers other than melanoma) was 14.1 per 100,000 population for people aged less than 15 years; 97.3 per 100,000 population for 15–44 year olds; 638.2 per 100,000 population for 45–64 year olds; and 2,043.6 per 100,000 population for people aged 65 years and over.

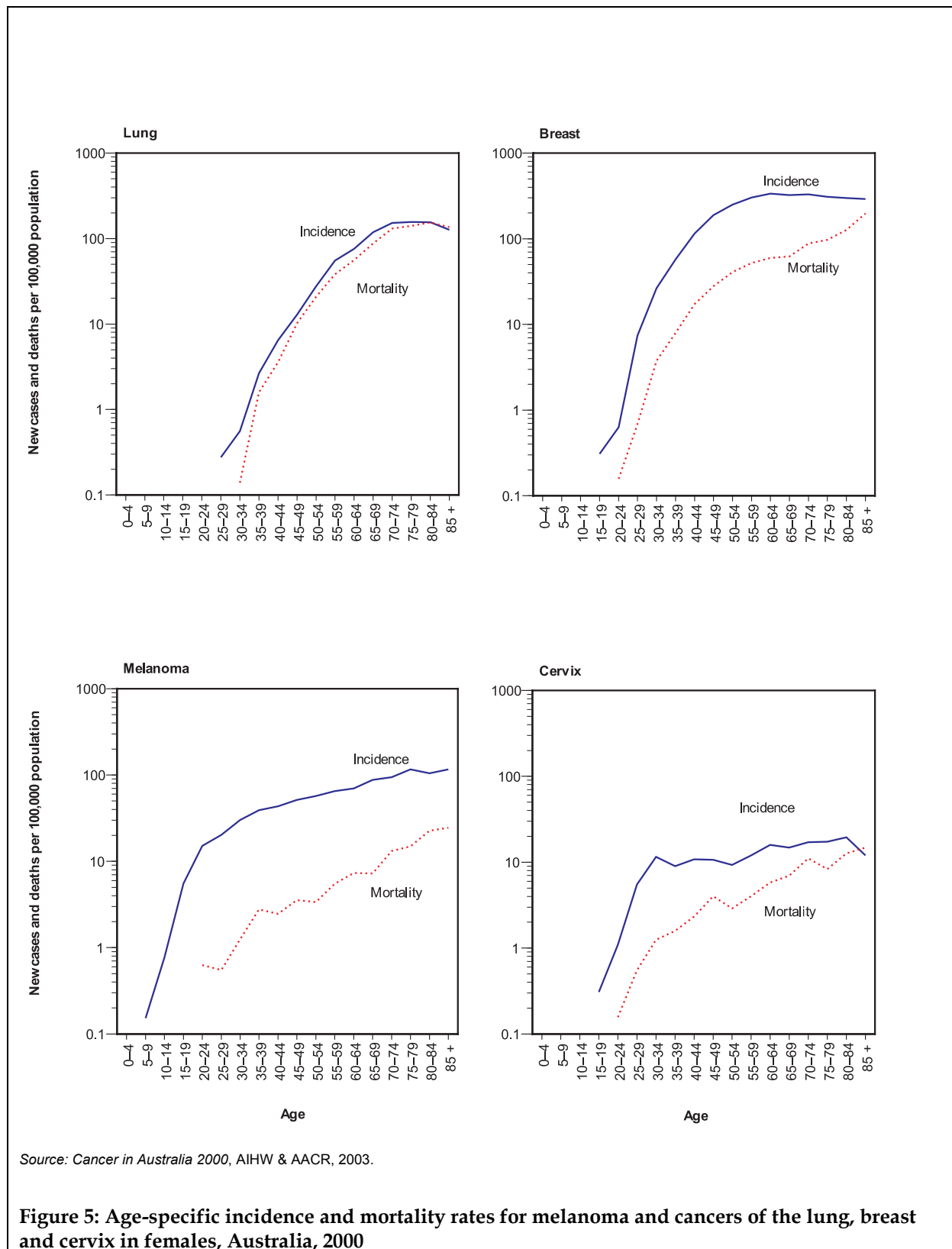
Age-specific incidence and mortality rates vary depending upon the cancer site (Figures 4–7). For example, lung cancer incidence and mortality rates parallel each other closely from age group 30–34 years, rising from ages 20–24 years through to 75–79 years (men) and from ages 20–24 years through to 70–74 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



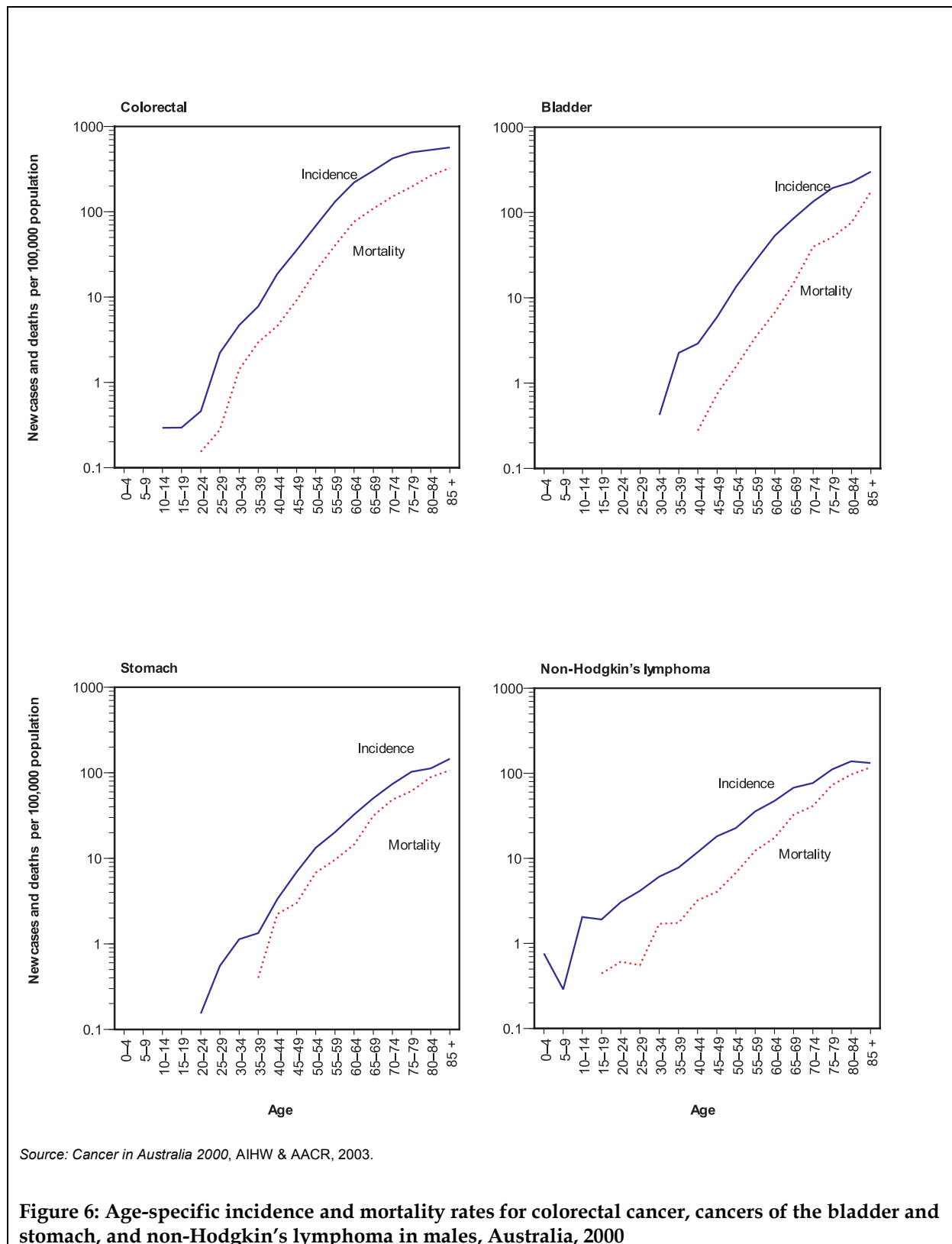
**Figure 4: Age-specific incidence and mortality rates for melanoma and cancers of the lung, prostate and testis in males, Australia, 2000**

## Age-specific incidence and mortality rates – females



**Figure 5: Age-specific incidence and mortality rates for melanoma and cancers of the lung, breast and cervix in females, Australia, 2000**

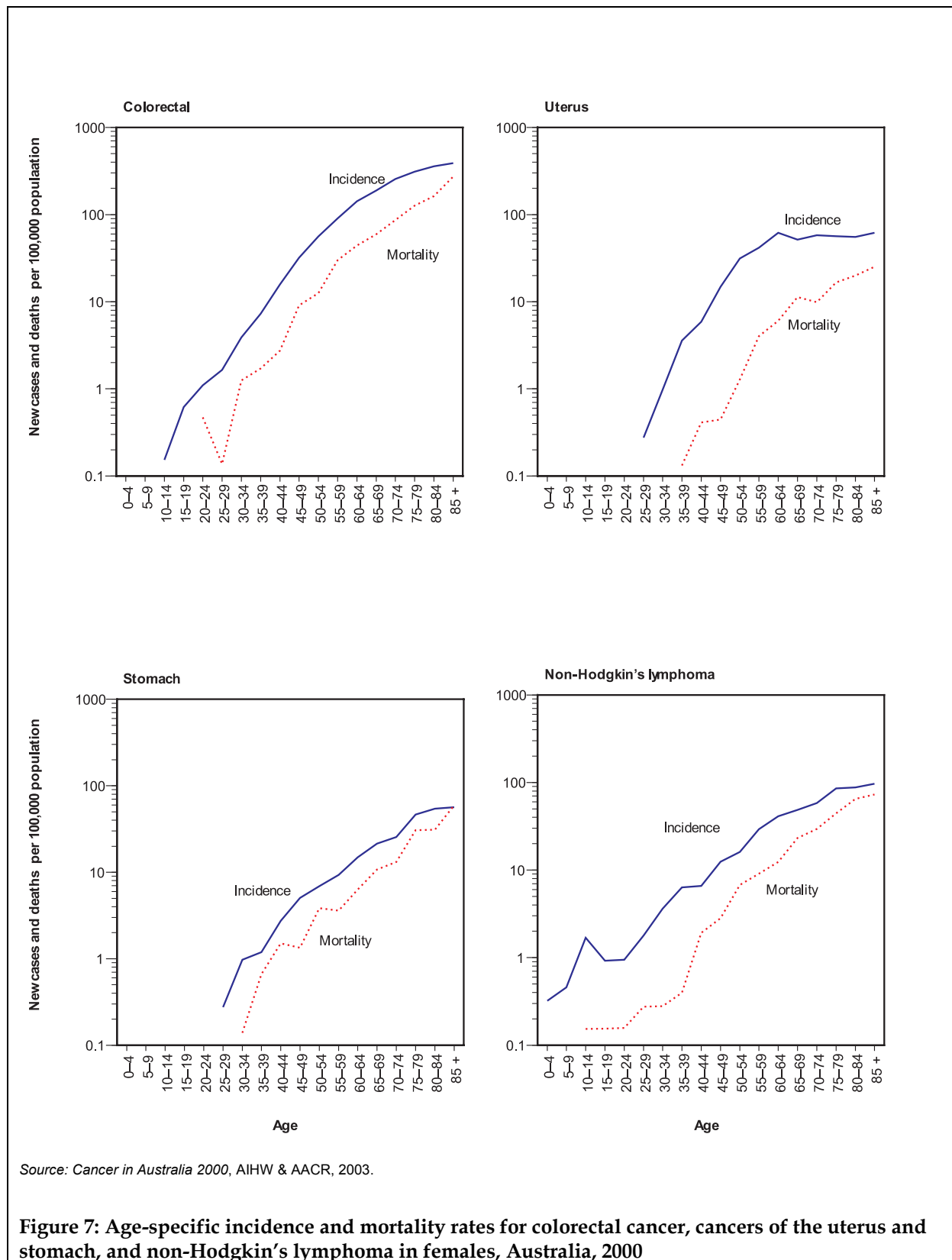
## Age-specific incidence and mortality rates – males



**Figure 6: Age-specific incidence and mortality rates for colorectal cancer, cancers of the bladder and stomach, and non-Hodgkin's lymphoma in males, Australia, 2000**



## Age-specific incidence and mortality rates – females



**Figure 7: Age-specific incidence and mortality rates for colorectal cancer, cancers of the uterus and stomach, and non-Hodgkin's lymphoma in females, Australia, 2000**

## **Cancer prevalence**

In 2001, there were an estimated 267,600 persons in Australia with malignant cancer who were residing in private households at the time of the National Health Survey conducted by the Australian Bureau of Statistics. In the 2001 survey, the ABS changed its methodology from previous National Health Surveys and included questions to ascertain whether the reported cancer had been medically verified. The estimate of 267,600 persons with malignant cancer in private dwellings is therefore in respect of cancers that have been medically verified, and is not comparable with estimates from the surveys conducted in 1995 and 1989–1990.

Of the 267,600, there were 170,200 males and 97,400 females.

## Cancers attributed to smoking and alcohol consumption

Alcohol and smoking are risk factors for many cancers. In 2000, cancers attributed to excessive alcohol consumption accounted for 3.2% of all new cases of cancer, while those cases attributed to smoking accounted for 12.7% of all new cases of cancer. Cancers attributed to smoking also accounted for a large proportion of deaths from cancer in 2000 (21.6% of all cancer deaths). These data and those in Tables 50 and 51 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 2000. 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, 2000**

Cancer site	Males (%)	Females (%)
<b>Cancers attributable to excessive alcohol consumption</b>		
Oral cancers <sup>(a)</sup>	38	27
Oesophagus	45	35
Liver	37	29
Larynx	50	43
Female breast cancer	—	11
<b>Cancers attributable to smoking</b>		
Oral cancers <sup>(a)</sup>	52	40
Oesophagus	50	41
Stomach	12	8
Anus	39	32
Pancreas	23	17
Larynx	69	59
Lung	89	71
Vulva	—	34
Penis	20	—
Kidney	17	12
Renal pelvis	50	41
Bladder	38	29

(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 2000 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 2,697 new cases of cancer were directly attributable to alcohol consumption in 2000 at a rate of 14.3 cases per 100,000 population, as were 1,227 deaths at a rate of 6.5 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 94 for males and 1 in 76 for females. Between 1990 and 2000, the incidence rate for cancers attributable to alcohol consumption in females increased by an average of 1.5% per annum, while the male rate decreased by an average of 0.2% per annum.

Cancers attributable to smoking account for 16.8% of all new cases of cancer in males and 7.9% 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 2003a). 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 10,807 new cases of cancer (57.2 new cases per 100,000 population) and 7,650 deaths (40.5 per 100,000 population) in 2000. Between 1990 and 2000, 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 2.9% per annum for females (Figure 11).

The following illustrates the improvements in the male mortality rate for cancers from the decline in smoking among men. If the 1990 age-specific rates attributable to smoking were applied to the 2000 male population there would be an additional 2,093 male deaths due to smoking in 2000. In contrast, the female mortality rate for cancers attributable to smoking has increased since 1990 because of the lag effect on cancer incidence of rising rates of smoking among women in the 1960s and 1970s. There would be 498 fewer female deaths in 2000 if the 1990 rates were applied to the 2000 female population.

## **Cancer rates in the states and territories, 1996–2000**

Cancer incidence and mortality are reported here for the combined period 1996–2000 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 skin cancers other than melanoma) showed that Queensland had the highest incidence in both males (574.3 per 100,000 population) and females (411.4 per 100,000 population), while the Northern Territory reported the lowest incidence with 480.0 cases per 100,000 for males and 367.1 per 100,000 for females (Figure 8, Table 37) 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 3.8 deaths per 100,000 population for Tasmania to 6.5 deaths per 100,000 population for Queensland (Table 37).

## **Incidence rates excluding melanoma**

When the impact of melanoma was 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 other skin cancers) among males (511.3 per 100,000 population), closely followed by the Australian Capital Territory (510.0 per 100,000 population). The Northern Territory reported the lowest, with 442.5 cases per 100,000 population. The remaining states and territories reported the following rates for males: Victoria 503.2 per 100,000 population, Queensland 500.3, Tasmania 491.7, New South Wales 481.8 and Western Australia 462.0. For females, Queensland reported the highest rate (359.9 per 100,000 population), closely followed by Victoria (359.5 per 100,000 population). Western Australia reported the lowest (329.3 per 100,000 population). The remaining states and territories reported the following rates for females: South Australia 354.9, Tasmania 353.7, Australian Capital Territory 349.1, New South Wales 342.1 and the Northern Territory 340.1 per 100,000 population. New South Wales has lower incidence because of its relatively high proportion of the population born in overseas countries, including many recent arrivals. Migrants/recent arrivals from Asia have lower incidence of cancer (Grulich et al. 1995; McCredie et al. 1999).

## **Mortality rates by state of registration of death**

The 1996–2000 cancer mortality rates reported for males across the states and territories range from 270.1 per 100,000 population in Tasmania to 244.4 per 100,000 population in the Northern Territory. For females, the mortality rates vary from 199.7 per 100,000 population in the Northern Territory to 147.2 in New South Wales (Table 32).

These rates are in respect of deaths for which cancer was the underlying cause of death coded by the Australian Bureau of Statistics (ABS) from death certificates. Some state cancer registries undertake more detailed analyses of all persons with malignant cancer who have died and therefore publish in their state reports numbers and rates of cancer deaths by cancer which differ from the ABS figures in this report.

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

State and territory mortality rates in this publication refer to the state and territory in which deaths were registered. However, it is not uncommon for persons diagnosed with cancer to travel interstate for treatment and end of life care so special care needs to be taken when interpreting these rates, especially for the Australian Capital Territory and the Northern Territory.

Of cancer deaths registered in the Australian Capital Territory during the period 1996–2000, 17.3% usually resided in another state or territory, the majority (16.0%) coming from New South Wales (Table 3).

During the same period, 7.1% of cancer deaths of usual residents of the Northern Territory were registered outside the Territory, the majority in South Australia (3.4%).

**Table 3: Cancer deaths by state of usual residence and state of registration, 1996–2000**

State of Registration	State of usual residence									Total
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Other	
NSW	58769	215	269	13	23	9	34	12	1	59345
VIC	328	45023	61	11	29	21	8	6	0	45487
QLD	522	64	30256	8	14	10	6	9	0	30889
WA	16	18	13	15141	8	3	1	4	8	15212
SA	52	36	11	5	15444	1	2	29	0	15580
TAS	1	8	2	3	3	5056	1	0	0	5074
ACT	361	9	11	2	6	1	1869	0	0	2259
NT	6	4	5	4	10	1	0	789	0	819
<i>Total</i>	<i>60055</i>	<i>45377</i>	<i>30628</i>	<i>15187</i>	<i>15537</i>	<i>5102</i>	<i>1921</i>	<i>849</i>	<i>9</i>	<i>174665</i>
<b>Per cent of deaths registered in each state by state of usual residence</b>										
NSW	99.0	0.4	0.5	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	1.7	0.2	98.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
WA	0.1	0.1	0.1	99.5	0.1	0.0	0.0	0.0	0.1	100.0
SA	0.3	0.2	0.1	0.0	99.1	0.0	0.0	0.2	0.0	100.0
TAS	0.0	0.2	0.0	0.1	0.1	99.6	0.0	0.0	0.0	100.0
ACT	16.0	0.4	0.5	0.1	0.3	0.0	82.7	0.0	0.0	100.0
NT	0.7	0.5	0.6	0.5	1.2	0.1	0.0	96.3	0.0	100.0
<i>Total</i>	<i>34.4</i>	<i>26.0</i>	<i>17.5</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	97.9	0.5	0.9	0.1	0.1	0.2	1.8	1.4	11.1	34.0
VIC	0.5	99.2	0.2	0.1	0.2	0.4	0.4	0.7	0.0	26.0
QLD	0.9	0.1	98.8	0.1	0.1	0.2	0.3	1.1	0.0	17.7
WA	0.0	0.0	0.0	99.7	0.1	0.1	0.1	0.5	88.9	8.7
SA	0.1	0.1	0.0	0.0	99.4	0.0	0.1	3.4	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	97.3	0.0	0.0	1.3
NT	0.0	0.0	0.0	0.0	0.1	0.0	0.0	92.9	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 five-year period with year of death 1996 to 2000.

Source: AIHW mortality database.

## **Cancers attributed to smoking**

Lung cancer incidence rates are highest in the Northern Territory (for males 76.9 cases per 100,000 population, for females 42.3) (Table 36). The lowest lung cancer incidence rates are reported for males in the Australian Capital Territory (45.6 per 100,000 population) and for females in South Australia (24.4).

State and territory variations in cancers attributed to smoking generally reflect those observed for lung cancer (Table 51). The Northern Territory reported the highest incidence rates for males and females (113.7 and 42.5 per 100,000 population respectively). The Australian Capital Territory reported the lowest smoking-related cancer incidence rates for males (72.3 per 100,000 population) and South Australia had the lowest rate for females (27.6). Death rates from cancers attributed to smoking were highest in the Northern Territory for both males and females (87.7 and 32.4 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 2002b) 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 (118.0 per 100,000), followed by South Australia (115.4 per 100,000), Victoria (114.5 per 100,000), and Queensland (113.6 per 100,000). The Northern Territory reported the lowest incidence rate (93.1 cases per 100,000 population) (Table 38).

The Australian Capital Territory reported high rates of prostate cancer (172.4 per 100,000 population), while considerably lower rates were reported in the Northern Territory (102.6 per 100,000 population) (Table 42), 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**

There were large differences in cervical cancer incidence among the states and territories. This probably reflects in part the relative impact of the screening programs in each jurisdiction. Most of the large states show consistent rates of approximately 8–10 new cases per 100,000 population; however, South Australia shows a substantially lower rate of 6.8 per 100,000 population (Table 39). The Northern Territory has a very high incidence rate of 15.9 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 (8.4 deaths per 100,000 population). This high mortality rate may be an indicator of late-stage detection of these cancers.

## Explanations for variations

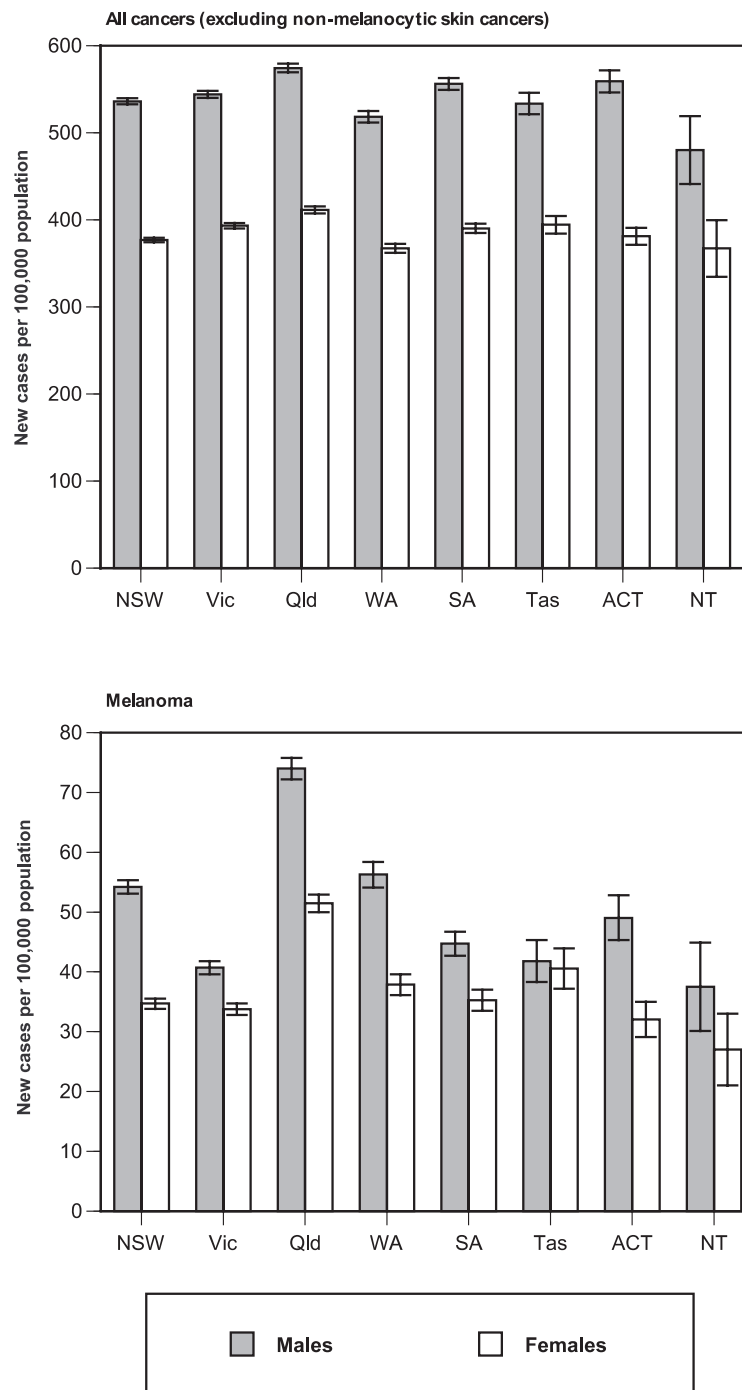
Differences in state and territory cancer incidence rates may be explained by variations in underlying cancer risk, the availability and utilisation of diagnostic procedures, reporting and coding inconsistencies, and normal incidence rate fluctuations. A case in point is bladder cancer (Table 44), where state and territory comparisons vary by more than 100%. 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). Incomplete case ascertainment also contributed to these lower rates to a small extent. A review of data quality in the Northern Territory Cancer Register undertaken during 2001 concluded that, compared to other Australian states, cancer notification to the Northern Territory Cancer Registry in the period 1991–2000 was approximately 10% incomplete (unpublished, J Condon). Under-ascertainment appeared to be due to incomplete notification from one notification source and was not restricted to any particular type of cancer.

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 32 to 51 in this publication are annual averages of the five-year period 1996–2000. 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 2000*, AIHW & AACR, 2003.

**Figure 8: Age-standardised incidence rates (95% confidence intervals) for all cancers (excluding skin cancers other than melanoma) and for melanoma, states and territories, 1996-2000**

# A profile of colorectal cancer

## Introduction

Colorectal cancer is the current focus of considerable national policy interest. Encouraged by success of randomised controlled trials of bowel screening in other countries, a national bowel cancer pilot screening program is under way to trial screening for colorectal cancer in Australia.

As a cancer, colorectal cancer is particularly important because colorectal cancer (ICD-10 codes C18–C21) is the second most frequently occurring cancer in Australian men (behind prostate cancer) and women (behind breast cancer) if skin cancers other than melanoma are excluded. If the data for men and women are combined, it is the most frequently occurring cancer in Australia for new cases of malignant cancer. There is currently a 1 in 17 lifetime risk for males of being diagnosed with colorectal cancer by the age of 75 years and a 1 in 26 risk for females. It is also second only to lung cancer as the most common cause of cancer death in Australia. Further, there is considerable potential for both prevention and early detection of this cancer to greatly reduce its overall burden in both mortality and morbidity. This section presents an overview of the current state of colorectal cancer in Australia.

## What is colorectal cancer?

Colorectal cancer is a tumour that starts in the bowel wall and is confined locally for a relatively long time before spreading through the bowel wall and metastasising to lymph nodes and other parts of the body. Most colorectal cancers are believed to develop from benign precursor lesions, or adenomas. These adenomas develop on the lining of the bowel. Most are of no direct clinical significance, but a proportion become malignant over time and progress to colorectal cancer. The development of colorectal cancer from a small adenoma usually takes many years (NHMRC 1999).

## Potentially modifiable risk factors

The major potentially modifiable risk factors for colorectal cancer relate to diet and physical activity. The proportion of colorectal cancer attributed to dietary factors has been estimated to be about 50% (Kune et al. 1992). Further, around 66–77% of colorectal cancer could be prevented by appropriate combination of diet and physical activity (AICR & WCRF 1997). There is convincing evidence that a diet high in calories and rich in animal fats, most often as red meat, and poor in vegetables and fibre is associated with an increased risk of colorectal cancer. Conversely, a low fat, high vegetable and possibly high fibre diet has a protective effect (Stewart & Kleihues 2003).

In summary, appropriate dietary changes, together with regular physical activity and maintenance of healthy weight, could, in time, substantially reduce the incidence of colorectal cancer in Australia (NHMRC 1999).

The current Australian trends in these dietary and lifestyle risk factors present a mixed picture. The rate of regular physical activity among Australians has decreased significantly in recent years. Average dietary fibre intake among Australian adults has increased significantly, though it remains below the recommended level. However, the average total

calorie intake has increased, along with the rates of overweight and obesity (AIHW: Mathur 2002; AIHW 2002b).

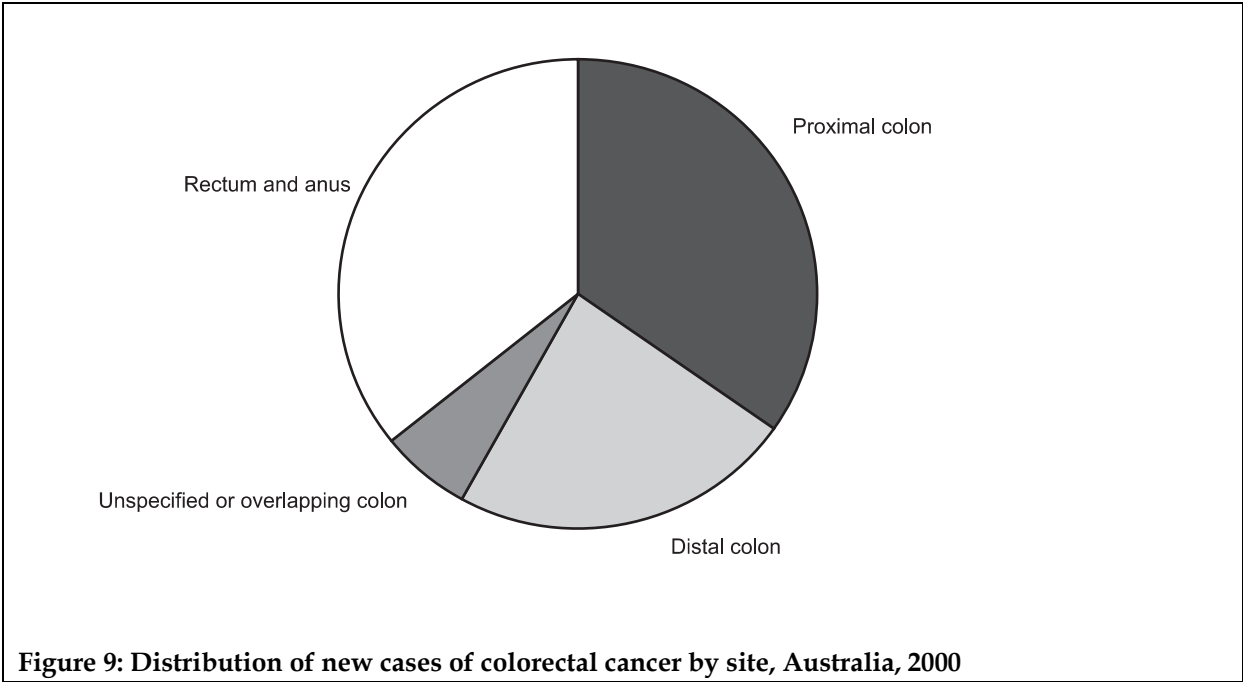
## **Other predisposing factors**

Apart from the dietary and lifestyle risk factors discussed above, there are a number of other predisposing factors for colorectal cancer. These comprise a family history of the cancer, some specific genetic syndromes and some conditions such as inflammatory bowel disease. Around 75% of all new cases of colorectal cancer occur in people with no known predisposing factor (Burt et al. 1990). These people may be considered as at average risk for the disease. People with a family history of colorectal cancer but without any apparent defined genetic syndrome account for most of those at above average risk – about 15% to 20% of all cancer cases. Hereditary nonpolyposis colon cancer accounts for 4%–7% of all cases and familial adenomatous polyposis about 1%. The remainder of cases, about 1%, are attributable to a variety of uncommon conditions such as inflammatory bowel disease, Peutz-Jeghers syndrome and familial juvenile polyposis (Winawer et al. 1997).

## **Incidence by site**

For colorectal cancer, both the male and female incidence rates have increased since 1990 by an average of 0.4% and 0.1% respectively per year. Mortality rates have fallen steadily – the male rate decreased 0.9% per annum between 1990 and 2000 and the female rate decreased 1.4%.

Colorectal cancer can be classified according to its primary site as being in the proximal colon (the part of the colon from the caecum to the splenic flexure), distal colon (the descending and sigmoid colon) or rectum (the rectosigmoid junction, rectum and anus). Figure 9 shows the distribution of cases between these sites. Tables 4 and 5 show the numbers and proportion of cases by age, sex and site. These show that colon cancer is not evenly distributed along the bowel. Around 60% of cases occur in the rectum and distal colon, while only 35% occur in the proximal colon. However, the proportion of cases in the proximal colon increases after the age of 40 years – rising to around 41% by the age of 85 years. This result is consistent with international studies (Cooper et al. 1995). One implication of this is that screening and diagnostic modalities such as sigmoidoscopy, which cannot reach the proximal colon, may potentially detect around 60% of cancers overall but become less effective at older ages.



**Figure 9: Distribution of new cases of colorectal cancer by site, Australia, 2000**

**Table 4: New cases of colorectal cancer by age, sex and site, Australia, 2000**

	Age (years)						All ages
	0–44	45–54	55–64	65–74	75–84	85+	
<b>Males</b>							
Proximal colon (C180–C185)	78	160	403	708	565	171	2,085
Distal colon (C186–C187)	53	138	394	556	419	102	1,662
Unspecified or overlapping colon (C188–C189)	7	28	82	121	109	47	394
Rectum and anus (C19–C21)	110	343	647	880	624	118	2,722
<i>All colorectal (C18–C21)</i>	<i>248</i>	<i>669</i>	<i>1,526</i>	<i>2,265</i>	<i>1,717</i>	<i>438</i>	<i>6,863</i>
<b>Females</b>							
Proximal colon (C180–C185)	74	163	362	635	703	285	2,222
Distal colon (C186–C187)	56	146	272	334	297	130	1,235
Unspecified or overlapping colon (C188–C189)	9	20	39	85	120	100	373
Rectum and anus (C19–C21)	83	236	320	451	454	168	1,712
<i>All colorectal (C18–C21)</i>	<i>222</i>	<i>565</i>	<i>993</i>	<i>1,505</i>	<i>1,574</i>	<i>683</i>	<i>5,542</i>
<b>Persons</b>							
Proximal colon (C180–C185)	152	323	765	1,343	1,268	456	4,307
Distal colon (C186–C187)	109	284	666	890	716	232	2,897
Unspecified or overlapping colon (C188–C189)	16	48	121	206	229	147	767
Rectum and anus (C19–C21)	193	579	967	1,331	1,078	286	4,434
<i>All colorectal (C18–C21)</i>	<i>470</i>	<i>1,234</i>	<i>2,519</i>	<i>3,770</i>	<i>3,291</i>	<i>1,121</i>	<i>12,405</i>

**Table 5: Distribution of new cases of colorectal cancer by age, sex and site, Australia, 2000**

	Age (years)						All ages
	0–44	45–54	55–64	65–74	75–84	85+	
<b>Males</b>							
	(per cent)						
Proximal colon (C180–C185)	31.5	23.9	26.4	31.3	32.9	39.0	30.4
Distal colon (C186–C187)	21.4	20.6	25.8	24.5	24.4	23.3	24.2
Unspecified or overlapping colon (C188–C189)	2.8	4.2	5.4	5.3	6.3	10.7	5.7
Rectum and anus (C19–C21)	44.4	51.3	42.4	38.9	36.3	26.9	39.7
<i>All colorectal (C18–C21)</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>
<b>Females</b>							
	(per cent)						
Proximal colon (C180–C185)	33.3	28.8	36.5	42.2	44.7	41.7	40.1
Distal colon (C186–C187)	25.2	25.8	27.4	22.2	18.9	19.0	22.3
Unspecified or overlapping colon (C188–C189)	4.1	3.5	3.9	5.6	7.6	14.6	6.7
Rectum and anus (C19–C21)	37.4	41.8	32.2	30.0	28.8	24.6	30.9
<i>All colorectal (C18–C21)</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>
<b>Persons</b>							
	(per cent)						
Proximal colon (C180–C185)	32.3	26.2	30.4	35.6	38.5	40.7	34.7
Distal colon (C186–C187)	23.2	23.0	26.4	23.6	21.8	20.7	23.4
Unspecified or overlapping colon (C188–C189)	3.4	3.9	4.8	5.5	7.0	13.1	6.2
Rectum and anus (C19–C21)	41.1	46.9	38.4	35.3	32.8	25.5	35.7
<i>All colorectal (C18–C21)</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>

## Screening and early detection

The existence of a pre-cancerous lesion (the adenoma) and the long period the cancer spends in a highly curable localised state mean that this cancer is an ideal candidate for screening and early detection. Randomised controlled trials of population screening for colorectal cancer using a Faecal Occult Blood Test (FOBT) with colonoscopy follow-up of positive results have been carried out in the USA (Mandel et al. 1993), the UK (Hardcastle et al. 1996), Denmark (Kronborg et al. 1996) and Sweden (Kewenter et al. 1991). These have shown that such screening has the potential to reduce mortality from colorectal cancer by 15–30%. A national pilot study of FOBT screening in Australia is currently being conducted by the Australian Government Department of Health and Ageing. A more detailed discussion of this pilot is presented in Chapter 5.

## Treatment

The usual treatment options for colorectal cancer consist of surgical resection of the colon or rectum (or both), with or without adjuvant chemotherapy or radiotherapy (NHMRC 1999). In 2000–01, there were 25,238 separations from hospitals in Australia of persons with a principal diagnosis of colorectal cancer, with an average stay of 8.6 days. There were 2,000 deaths in hospital. Treatment was mainly acute care (23,401 separations) and palliative care (1,389 separations). The most common procedures (excluding anaesthesia and allied health interventions) were:

- Fiberoptic colonoscopy with excision (6,946)
- Colectomy (5,824)
- Transfusion of blood and gamma globulin (4,328)
- Anterior resection of rectum (3,363)
- Fiberoptic colonoscopy (1,840)
- Division of abdominal adhesions (1,387)
- Computerised tomography of abdomen and pelvis (1,339).

The most common additional diagnoses were:

- Secondary malignant neoplasm of respiratory and digestive organs (4,972)
- Secondary and unspecified malignant neoplasm of lymph nodes (4,533)
- Personal history of certain other diseases (2,996)
- Other medical care (2,745)
- Benign neoplasm of colon, rectum, anus and anal canal (2,658)
- Essential (primary) hypertension (2,597)
- Diverticular disease of intestine (2,079)
- Type 2 diabetes mellitus (1,985)
- Other diseases of intestine (1,700).

## Survival and cure

Survival after a diagnosis of colorectal cancer in Australia has improved steadily since 1982. Table 6 presents relative survival proportions for colorectal cancer by sex and diagnosis period. These show that survival improved for both men and women since 1982, though survival for women was consistently higher than for men.

Statistical modelling techniques can be applied to estimates of cumulative relative survival to provide estimates of the average proportion of people cured of colorectal cancer and the average time to death for those people who ultimately die from the disease. In this case, a cure is defined as having, on average, the same overall risk of death as the general population who do not have a diagnosis of colorectal cancer. These statistical methods are explained in detail in Appendix B.

Table 7 presents the modelled estimates of the proportion of people cured of colorectal cancer, based on the survival experience of people living with a diagnosis of colorectal cancer in 1997. Table 8 presents the modelled estimates of average time to death in years for people who ultimately die from the disease.

**Table 6: Five-year relative survival proportions for colorectal cancer by sex and diagnosis period, Australia, 1982–1997**

Diagnosis period	Crude proportion	95% confidence	Age standardised	95% confidence interval
<b>Males</b>				
1982–1986	49.9	49.0–50.8	49.9	48.8–50.9
1987–1991	53.6	52.8–54.4	53.4	52.4–54.3
1992–1997	57.8	57.0–58.5	57.6	56.8–58.5
<b>Females</b>				
1982–1986	51.9	51.0–52.8	52.0	51.0–52.9
1987–1991	55.3	54.5–56.2	55.6	54.7–56.5
1992–1997	59.4	58.6–60.1	59.9	59.1–60.7

Note: Age adjustment uses as a standard population the total number of cancer cases of all types diagnosed from 1992–1997.

**Table 7: Average cure rates for index year 1997, by sex, Australia**

Sex	Average cure rate (%)	Approximate 95% confidence interval
Males	50.7	50.4–51.0
Females	56.7	56.4–57.0
Persons	53.7	53.4–54.0

**Table 8: Average time to death for those who ultimately die from colorectal cancer for index year 1997, by sex, Australia**

Sex	Average time in years	Approximate 95% confidence interval
Males	1.92	1.80–2.02
Females	2.64	2.56–2.71
Persons	2.27	2.19–2.35

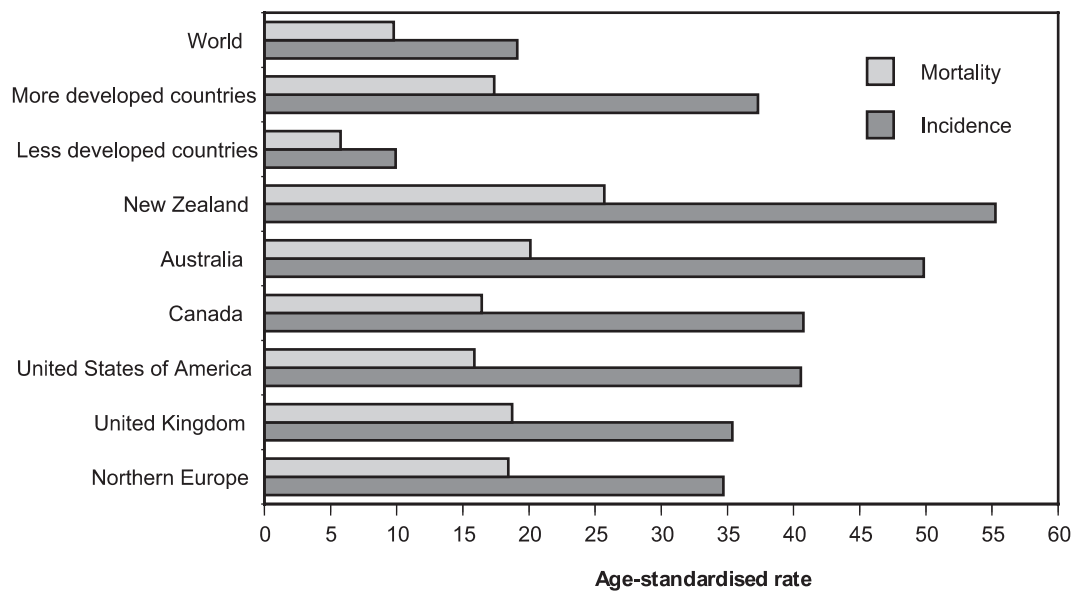
## **International comparisons**

Australia has a high incidence rate of bowel cancer by world standards. The International Agency for Research on Cancer (IARC) has compiled comparative incidence data for colorectal cancer for 173 countries. Out of these countries, Australia has the fifth highest colorectal cancer incidence for men (behind the Czech Republic, New Zealand, Hungary and Slovakia) and the second highest for women (behind New Zealand). However, Australia's colorectal cancer death rates are comparatively lower. Australia is fifteenth out of the 173 for male death rates and seventeenth for female death rates (IARC 2001).

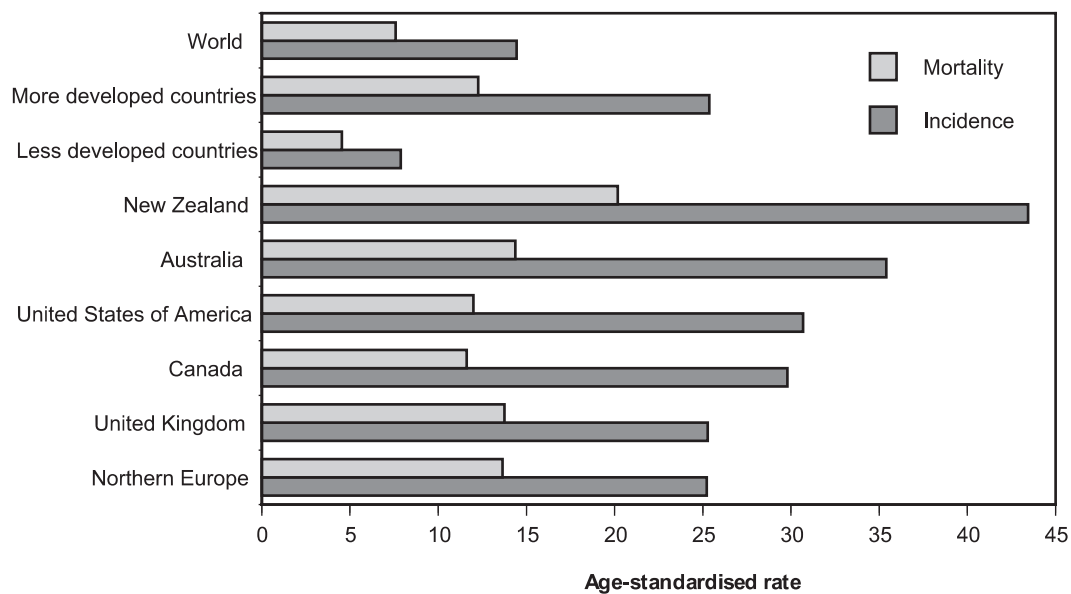
Figure 10 presents a comparison of the age-standardised incidence and mortality rates for Australia, selected regions and selected countries from the IARC study. This shows that colorectal cancer incidence rates in Australia are lower than those in New Zealand but higher than those in the USA, Canada, UK and, on average, Northern Europe. However, while the corresponding Australian mortality rates are higher than those in the USA and Canada, they are comparable to those in the UK and Northern Europe.



**Males**



**Females**



*Notes*

1. Rates are all age standardised to the World Standard Population.
2. Australian rates apply to 1997. Rates for other countries apply to different years in the range 1995 to 1997.

Source: IARC (2001).

**Figure 10: Age-standardised incidence and mortality rates for colorectal cancer of Australia, selected world regions and selected countries**

# 3 Cancer trends

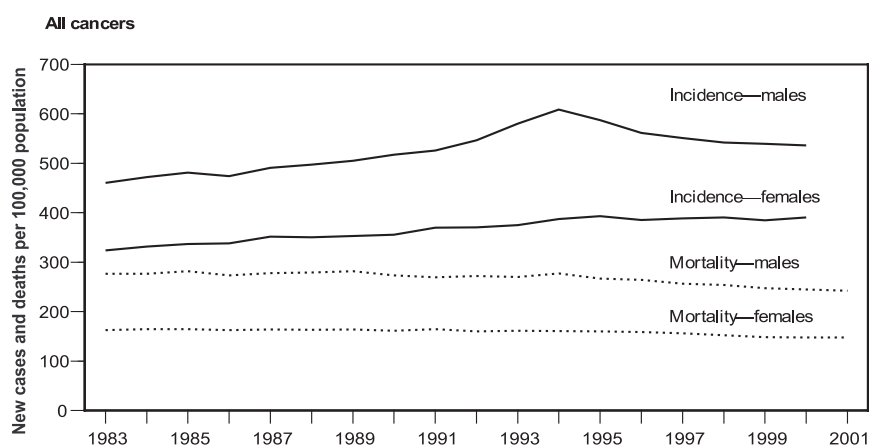
## National trends in cancer incidence and mortality

National cancer incidence and mortality rates for the most common cancer sites are presented in Figures 11–17. Incidence data are presented for the period 1983–2000 while mortality data are presented for the period 1983–2001.

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 113 new cases, whereas the same percentage increase in cervical cancer incidence would result in approximately seven new cases.

Between 1990 and 2000, age-standardised incidence rates for all cancers combined (except skin cancers other than melanoma) increased for males by an average of 4.4% per annum until 1994 and then declined by an average of 2.1% per annum until 2000. For females, age-standardised rates increased by an average of 1.9% until 1995 and then fluctuated around this level through to 2000 (Figure 11). 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 1990 and 2000, age-standardised mortality rates for all cancers combined (except skin cancers other than melanoma) hovered around 270 cases per 100,000 for males until 1994 and then decreased by an average of 2.0% through to 2000. For females the age-standardised rates remained close to 160 cases per 100,000 until 1996 and then declined by an average of 2.0% through to 2000.



Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.

**Figure 11: Trends in age-standardised incidence and mortality rates for all cancers (excluding skin cancers other than melanoma), Australia, 1983–2001**

The decline in male lung cancer and prostate cancer deaths is the main contributor to the falling mortality rate for males. The number of new cases of cancer increased by 79% from 47,666 in 1990 to 85,231 in 2000 while the number of deaths increased by 39% from 25,476 in 1990 to 35,466 in 2000.

### **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 12). 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 2000 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 1.3% per annum between 1990 and 2000.

### **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 94.6 cases per 100,000 population in 1990 to 115.3 cases per 100,000 population in 2000. The breast cancer incidence rate increased on average 1.7% per annum between 1990 and 2000 (Figure 12). From 1990 to 2000 the breast cancer mortality rates declined by an average of 2.0% per year.

### **Colorectal cancer**

For colorectal cancer, both the male and female incidence rates have increased since 1990 by an average of 0.4% and 0.1% respectively per year. Mortality rates have fallen steadily – the male rate decreased 0.9% per annum between 1990 and 2000 and the female rate decreased 1.4% (Figure 12).

### **Lung cancer**

Between 1990 and 2000, the incidence and mortality of lung cancer among males fell by an average of 1.9% per year (Figure 13). These declining rates are attributed to decreased tobacco smoking among men 10 to 20 years earlier, and represent the lowest incidence rate (62.1 new cases per 100,000 population) recorded since national data collection began in 1982. In contrast, lung cancer incidence among females increased by 1.3% per annum between 1990 and 2000. However, the increase in lung cancer incidence is predominantly in women aged 65 years and over, while rates in younger women have generally remained stable or fallen. The death rate from lung cancer among females also increased on average by 1.2% per annum between 1990 and 2000.

### **Melanoma**

The incidence rate for melanoma among males and females increased between 1990 and 2000 on average by 2.4% and 1.5% per year respectively, some of this increase due to improved

registration of this cancer. Mortality rates for males increased by 0.1% per annum between 1990 and 2000 while the female rates decreased by 0.5% per annum over the same period (Figure 13).

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

The incidence of non-Hodgkin's lymphoma increased by an average of 0.8% per year in males and 1.7% in females between 1990 and 2000 (Figure 14). The mortality rate in males and females with non-Hodgkin's lymphoma increased annually by 0.2% and 1.0% respectively between 1990 and 2000.

### **Cancer of the bladder**

The incidence of bladder cancer for males increased between 1990 and 2000 by an average of 0.2% per annum (Figure 14). 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 work-up. The female incidence rate increased by an average of 0.9% per annum over the same period. Mortality rates decreased for both males and females between 1990 and 2000—0.3% per annum and 1.0% per annum respectively.

### **Cancer of the stomach**

Stomach cancer incidence fell by an average of 2.2% and 1.5% per year for males and females respectively over the period 1990–2000 (Figure 14). Mortality rates decreased substantially for both sexes over the 1990 to 2000 period, by 3.2% in males and 3.8% in females on average per annum.

### **Leukaemias**

The incidence rate for leukaemias in males and females decreased between 1990 and 2000 by an average of 0.7% and 0.3% respectively per year (Figure 15). During the same time the mortality rates increased by 0.5% per annum for males and decreased by 0.2% per annum for females.

### **Brain cancer**

Incidence of brain cancer between 1990 and 2000 increased by an average of 0.3% per annum in males and decreased by an average of 0.6% per annum in females (Figure 15). The mortality rate over the same period remained stable for males and decreased on average for females by 0.6% per year.

### **Cancer of the pancreas**

Between 1990 and 2000, the male incidence and mortality rates for cancer of the pancreas fell annually by an average of 0.5% and 0.6% respectively. In contrast, over the same period, the female incidence rate increased by an average of 0.5% per year and the female mortality rate increased by an average of 0.4% per year (Figure 15).

### **Cervical cancer**

The age-standardised incidence rate for cervical cancer declined by an average of 5.7% per annum between 1990 and 2000 (Figure 16). This decline was achieved despite a sharp rise in new cases between 1993 and 1994 and between 1997 and 1998. Mortality rates have fallen by an average of 5.2% per year since 1990. These gains are due, in part, to the success of the National Cervical Screening Program.

### **Cancer of the uterus**

The incidence rate for cancer of the uterus increased on average by 0.7% per year between 1990 and 2000. The mortality rate decreased 1.4% per annum in the same period (Figure 16).

### **Cancer of the ovary**

The incidence and mortality rates for cancer of the ovary declined on average by 0.3% and 1.7% per year between 1990 and 2000 respectively (Figure 16).

### **Cancer of the kidney**

Between 1990 and 2000, male and female incidence rates for cancer of the kidney increased by an average of 1.8% and 1.2% per annum respectively. Mortality rates increased by 0.2% per annum for males and decreased by 0.9% for females (Figure 17).

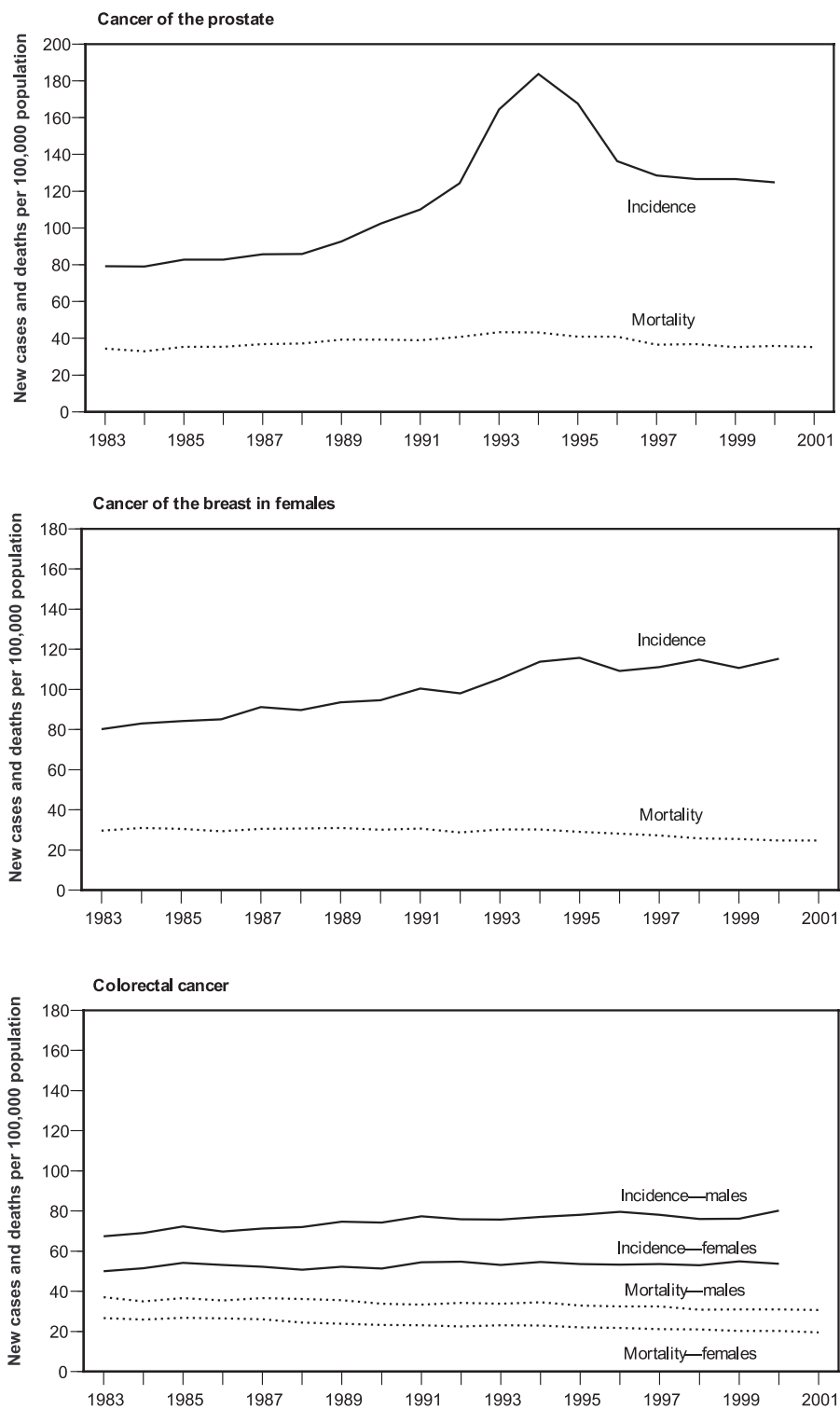
### **Cancer of the testis**

The incidence rate for testicular cancer increased on average by 2.3% per annum between 1990 and 2000. The mortality rate declined on average by 2.7% per annum over the same period (Figure 17).

### **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 4% of new cases and 7% of deaths. Between 1990 and 2000 mortality rates decreased on average for both males and females by 2.7% and 1.9% per annum respectively. Incidence rates declined for both males and females on average by 2.0% and 1.5% per annum respectively (Figure 17). 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.

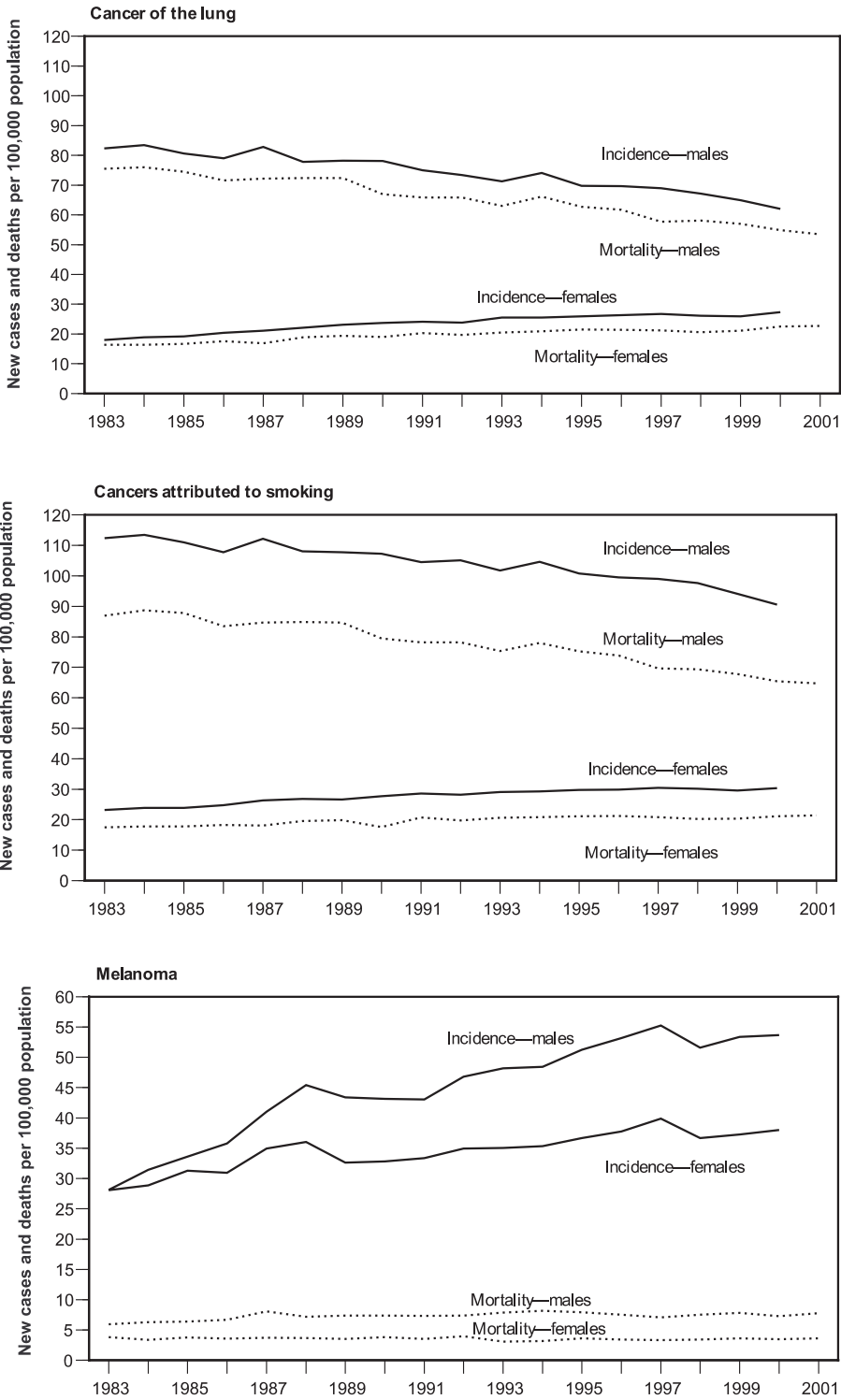
## Prostate, breast and colorectal cancer



Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.

**Figure 12: Trends in age-standardised incidence and mortality rates for prostate, breast and colorectal cancer, Australia, 1983–2001**

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

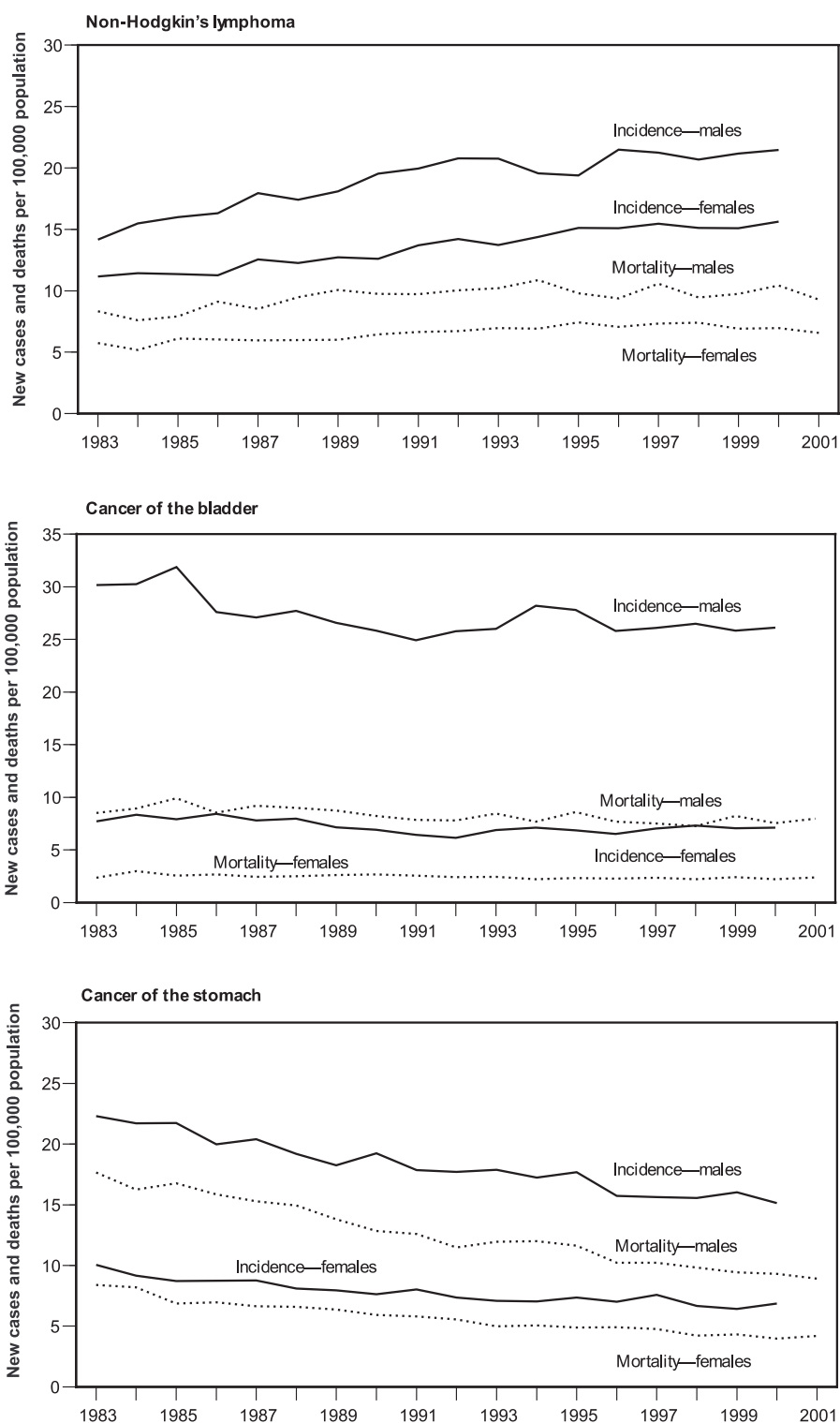


Note: Melanoma is graphed on a different scale from cancer of the lung and smoking-related cancers.

Source: Cancer in Australia 2000, AIHW & AACR, 2003.

**Figure 13: Trends in age-standardised incidence and mortality rates for cancers of the lung, smoking-related cancers and melanoma, Australia, 1983–2001**

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

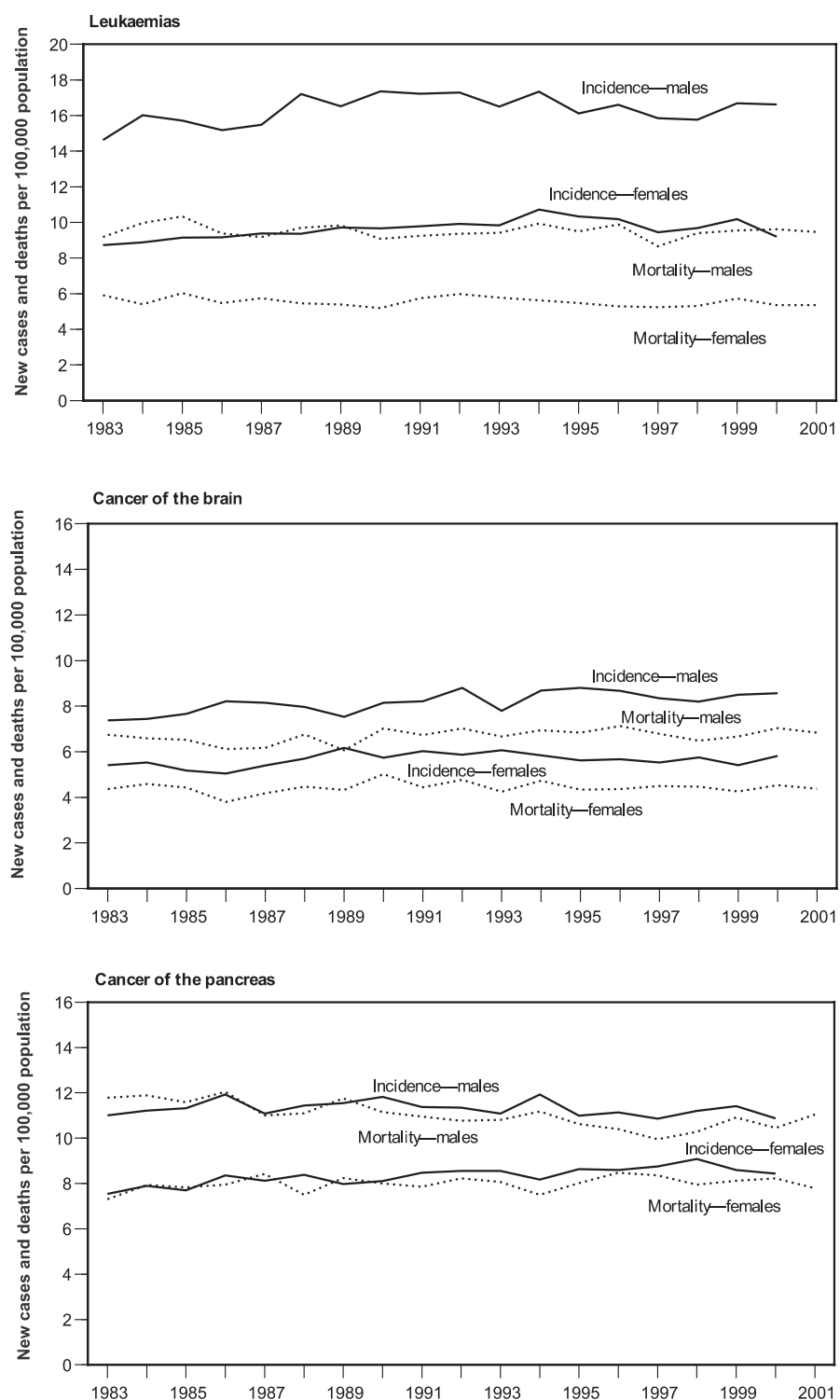


Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.

**Figure 14: Trends in age-standardised incidence and mortality rates for non-Hodgkin's lymphoma, and cancers of the bladder and stomach, Australia, 1983-2001**



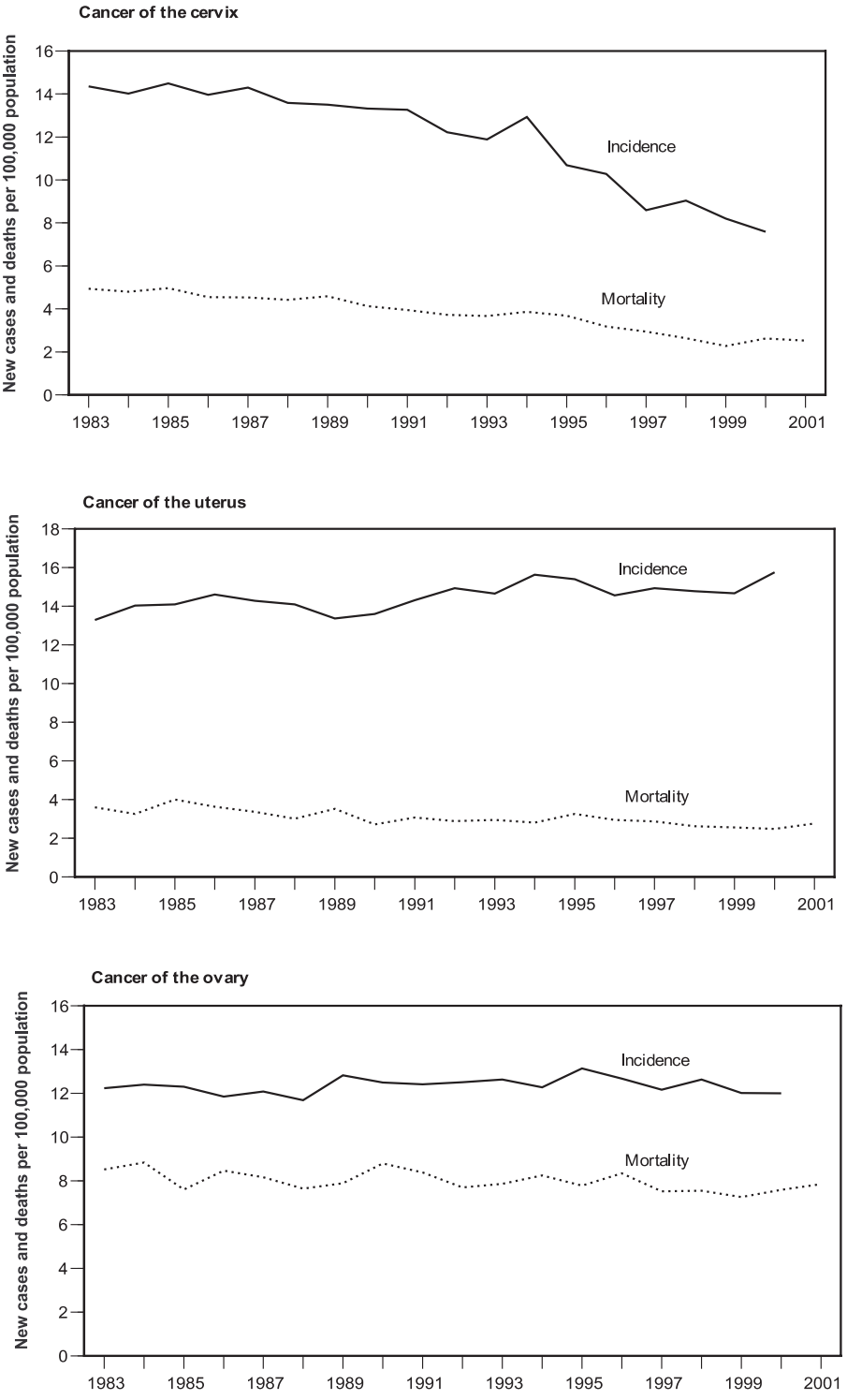
## Leukaemias, and cancers of the brain and pancreas



Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.

**Figure 15: Trends in age-standardised incidence and mortality rates for leukaemia and cancers of the brain and pancreas, Australia, 1983–2001**

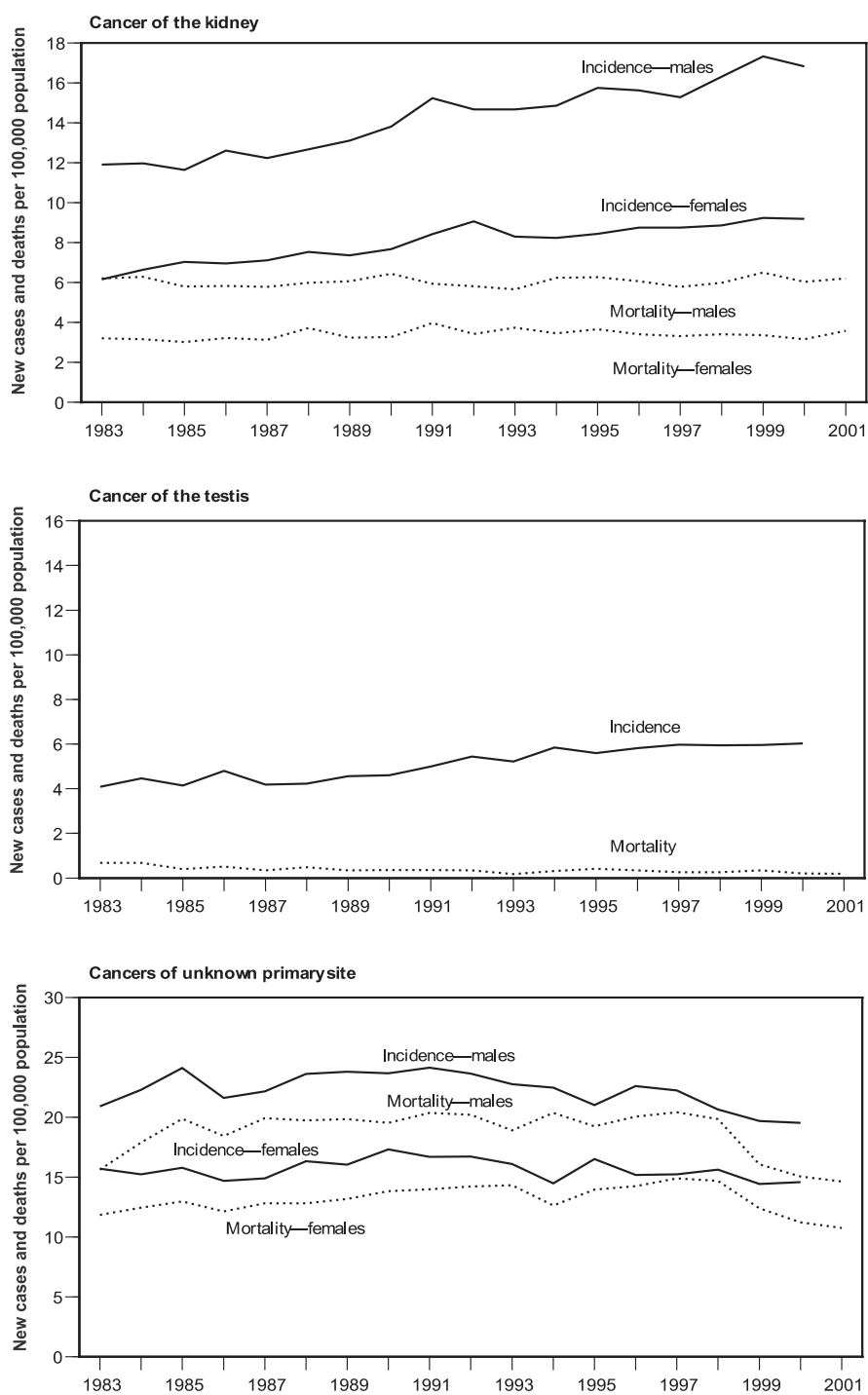
### Cancers of the cervix, uterus and ovary



Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.

**Figure 16: Trends in age-standardised incidence and mortality rates for cancers of the cervix, uterus and ovary, Australia, 1983-2001**

## 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 2000*, AIHW & AACR, 2003.

**Figure 17: Trends in age-standardised incidence and mortality rates for cancers of the kidney and testis, and cancers of unknown primary site, Australia, 1983–2001**

# 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 the International Classification of Diseases, 10th Revision.
- 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 skin cancers other than melanoma.
- 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 five-year age-specific rates. For comparison within broader age groups, summary rates should be age standardised.

## State and territory data

In May 2003 cancer incidence data were available to 2000 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 five-year average 1996–2000. 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 five-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.

State and territory mortality rates in this publication refer to the state and territory in which deaths were registered. This means special care needs to be taken when interpreting these rates, especially for the Australian Capital Territory and the Northern Territory. Of cancer deaths registered in the Australian Capital Territory during the period 1996–2000, 17.3% usually resided in another state or territory. In this same period, 7.1% of cancer deaths of usual residents of the Northern Territory were registered outside the Territory (Table 3).

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 NCSCH 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 July 2003. 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 NCSCH. 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 2000.

**Table 9: Number of persons dying with cancer (underlying cause and from another cause of death), Australia, 2000 (year of registration)**

Cancer	Additional persons who died		Total
	Underlying cause	with this cancer	
Breast (C50)	2,530	538	3,068
Cervix (C53)	267	43	310
Colorectal cancer (C18–C21)	4,712	594	5,306
Lung (C33–C34)	6,878	470	7,348
Melanoma (C43)	980	109	1,089
Non-Hodgkin's lymphoma (C82–C85, C96)	1,593	286	1,879
Skin cancer other than melanoma (C44)	362	146	508
Prostate cancer (C61)	2,663	1,067	3,730
<i>All malignant cancers (C00–C97)</i>	<i>35,628</i>	<i>4,289</i>	<i>39,917</i>

Sources: ABS 2001b; AIHW Mortality Database.

In 2000, 39,917 deaths were registered where the person had cancer. Of these, cancer was the underlying cause in 35,628 deaths. There were 4,289 further registered deaths where the person had cancer but this was not the underlying cause. Of these deaths the most common underlying causes of death were ischaemic heart disease, stroke and chronic lower respiratory disease.

In 1999, the corresponding figures were 35,053 registered deaths where cancer was the underlying cause and 4,364 registered deaths where the person had cancer, but cancer was not the underlying cause.

## Screening

Breast, cervical and bowel cancers are three of a small group of cancers where 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 and are being undertaken in 2003 and 2004.

### National bowel screening pilot program

The Commonwealth government is conducting a pilot test of bowel cancer screening in 2003 and 2004. The primary aim of the pilot is 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 is being 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 socioeconomic 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 years as at 1 January 2003 either have been or will be sent an invitation to participate in the pilot and a screening test kit. These invitations will be sent over a period of 12 to 18 months. Invitees' responses to these invitations and the outcomes for those who complete the screening kits will be monitored to the point of definite diagnosis for those who are found to have bowel cancer.

### BreastScreen Australia

The BreastScreen Australia program is jointly funded by the Commonwealth 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 biennial 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 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.

Recruitment and reminder systems are used to promote screening and re-screening 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 on a regular basis 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 two-year period rose from 52.3% in the period 1996–1997 to 55.9% in the period 1999–2000 (Table 10).

**Table 10: Number of women screened by BreastScreen Australia in each two-year period, 1996–2000**

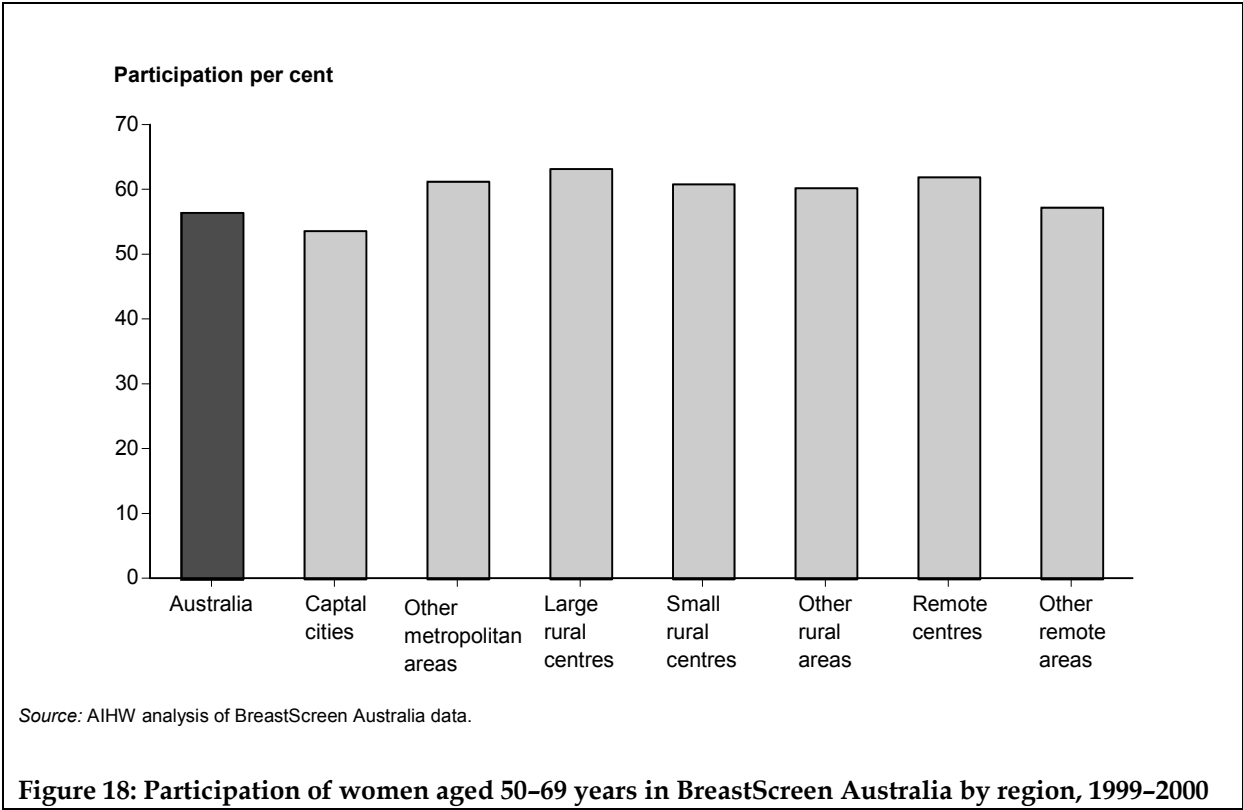
	1996–1997	1997–1998	1998–1999	1999–2000
<b>BreastScreen Australia</b>				
Ages 40 years and over	1,240,885	1,367,759	1,452,263	1,496,417
Target population (ages 50–69 years)	844,607	921,283	975,258	1,011,394
Participation rate for target population (%)	52.3	54.3	55.6	55.9

*Note:* Participation rates are age-standardised to the 2001 total Australian population.

*Source:* AIHW analysis of BreastScreen Australia data.

Regional participation rates in 1999–2000 for the target age group were lowest in capital cities and highest in large rural centres. Other metropolitan areas, large and small rural centres, other rural areas and remote centres all had significantly higher participation rates than the national rate (Figure 18). These higher rates reflect policies aimed at encouraging participation in country areas, for example, through the use of mobile mammography units.

There was no consistent pattern in participation rates by relative socioeconomic disadvantage, with no statistically significant difference in participation between the most and the least disadvantaged groups (Figure 19).



## National Cervical Screening Program

Cervical screening to detect cervical abnormalities has been available to Australian women since the 1960s. Until the early 1990s this screening was largely unstructured, with no agreement on screening intervals and the targeting of women at most risk of cervical cancer. National policies relating to cervical screening were agreed in 1991 and from 1995 mass cervical screening of Australian women formally became known as the National Cervical Screening Program.

Cervical screening services in Australia are provided as part of the mainstream health services with general practitioners performing approximately 80% of Pap smears. Medicare funding accounts for approximately 61% of the costs of screening with the Commonwealth Government contributing 23% by way of special purpose payments to state and territory governments, and the remaining 16% from state and territory governments' own sources of revenue.

There are two tiers to the National Cervical Screening Program – the national level that deals primarily with policy issues, and the states and territories who coordinate and administer their respective screening programs.

There are cervical cytology registries in all states and territories whose functions 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.

Pap smear screening is currently recommended every two years for all women who have not had a hysterectomy and who have been sexually active at any time in their lives up to the age of 70 years. Pap smears may cease at the age of 70 years for women who have had two normal Pap smears within the last five years. However, if a woman 70 years or more requests a Pap smear they are eligible even if they have never been screened before. The National Cervical Screening Program has an agreed target age group of all women between the ages of 20 and 69 years who have not had a hysterectomy.

Cervical cancer incidence and mortality have declined in the target age groups by 56.9% and 57.7% respectively over the past decade (Table 11). Part of this decline may be a result of the success of the program in influencing women to participate in cervical screening so that minor abnormalities can be detected and treated before potentially progressing to cervical cancer.

**Table 11: Number of women screened by the National Cervical Screening Program in each two-year period, 1997–2000**

	1997–1998	1998–1999	1999–2000
<b>National Cervical Screening Program</b>			
Ages 20 years and over	2,721,650	2,777,324	3,314,787
Target population (ages 20–69 years)	2,653,504	2,716,364	3,244,329
Participation rate for target population (%)	64.5	65.5	63.3

*Notes*

1. Participation rates are age standardised to the 2001 Total Australian Population.
2. The Queensland Health Pap Smear registry only commenced in February 1999. Hence the data presented here for cervical screening exclude screening in Queensland prior to 1999.

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

## Uptake of Pap smear and mammography testing

Increasing participation among women in the target age groups is a goal of both the national BreastScreen and cervical screening programs. To achieve this goal there has to be increased participation by:

- women in the target age groups who have never had a Pap smear or a mammogram;
- women who have been screened in the past but who are not attending every two years as recommended by the national guidelines.

The National Health Survey conducted by the Australian Bureau of Statistics in 2001 included questions on frequency of both Pap smear and mammography testing among women. The survey included 9,754 women aged 18 years or more, including 8,081 in the cervical screening target age group of 20–69 years, and 2,441 in the BreastScreen Australia target age group of 50–69 years.

### Pap smear testing

The national cervical screening program appears to have been very successful in encouraging women to have Pap smears. There was a very low proportion of women who reported never having had a Pap smear in the most important age groups for screening of 30–39 years (3.5%), 40–49 years (2.4%), 50–59 years (3.1%) and 60–69 years (9.6%) (Table 12). In the 18–29 year age group when commencement of screening is recommended for 20–29 year olds who have begun to have sexual intercourse, only 27.5% reported never having had a Pap smear. There is a note of caution in interpreting these statistics as between 7% and 12% of women in these age groups did not answer the National Health Survey question. It is not known what proportion of these had never had a Pap smear. These statistics are also not adjusted for the hysterectomy status of the women surveyed.

The state where women reported the highest proportion of women having regular Pap smears was Tasmania (59.7%), where there has been television advertising of the program in recent years in contrast to most other jurisdictions. New South Wales (50.8%) had the lowest proportion, possibly due to a relatively high migrant population with a lower propensity to receive screening (Table 13).

Highest participation in Pap smear screening (Tables 14, 15 and 16) was among women who:

- spoke English as the main language at home, or Tagalog (Filipino) or Spanish;

- were born in New Zealand, the United Kingdom, or Australia;
- were born overseas and arrived in Australia before 1991;
- were employed;
- had high socioeconomic status and high personal income;
- had private health insurance cover; and
- resided outside metropolitan areas but in inner regional Australia.

Lowest participation among women 18 years and over (Tables 16, 17 and 18) was among women who:

- spoke Mandarin, Cantonese, Vietnamese, Arabic, Italian, Greek or German as the main language at home;
- were born in South East Asian countries or Italy;
- were born overseas and arrived in Australia since 1991;
- were unemployed or not in the labour force;
- had low socioeconomic status and low personal income;
- were government health card holders;
- did not have private health insurance cover; and
- resided in major cities.

However, there needs to be further analysis as many older women outside the screening target age group would be government card holders with low personal incomes and low socioeconomic status.

Among women aged 70 years and over, 24.1% reported never having had a Pap smear (Tables 12 & 17). Incidence of cervical cancer for women in this age group is relatively high at 16.7 cases per 100,000 women, compared with 15.4 for women aged 60–69 years (the upper end of the target age group), and 9.5 for women in the screening target age group as a whole (20–69 years).

**Table 12: Pap smear testing, women aged 18 years and over, Australia, 2001**

Frequency of test	Age (years)						Total
	18–29	30–39	40–49	50–59	60–69	70+	
(number of females ('000s))							
Has regular tests							
At least annually	303.5	442.6	371.1	267.4	97.2	52.9	1,534.7
More than 1, up to 2 years	423.6	641.3	575.7	378.9	211.9	74.4	2,305.7
More than 2 years apart	6.7	26.0	11.9	20.8	7.4	7.5	80.2
Not stated	3.0	8.0	4.9	6.2	4.9	2.2	29.3
<i>Total</i>	<i>736.8</i>	<i>1,117.9</i>	<i>963.6</i>	<i>673.3</i>	<i>321.4</i>	<i>136.9</i>	<i>3,949.9</i>
Only had one Pap smear	183.4	31.4	27.6	17.6	24.7	45.9	330.6
Does not have regular Pap smears	93.1	169.2	263.5	291.7	236.6	331.0	1,385.3
Has never had a Pap smear	430.4	51.5	34.3	35.5	71.4	216.6	839.6
Not stated	120.6	108.9	128.3	114.3	91.8	169.1	732.9
<i>Total</i>	<i>1,564.3</i>	<i>1,478.9</i>	<i>1,417.2</i>	<i>1,132.4</i>	<i>745.9</i>	<i>899.5</i>	<i>7,238.3</i>
(per cent)							
Has regular tests							
At least annually	19.4	29.9	26.2	23.6	13.0	5.9	21.2
More than 1, up to 2 years	27.1	43.4	40.6	33.5	28.4	8.3	31.9
More than 2 years apart	0.4	1.8	0.8	1.8	1.0	0.8	1.1
Not stated	0.2	0.5	0.3	0.5	0.7	0.2	0.4
<i>Total</i>	<i>47.1</i>	<i>75.6</i>	<i>68.0</i>	<i>59.5</i>	<i>43.1</i>	<i>15.2</i>	<i>54.6</i>
Only had one Pap smear	11.7	2.1	1.9	1.6	3.3	5.1	4.6
Does not have regular Pap smears	6.0	11.4	18.6	25.8	31.7	36.8	19.1
Has never had a Pap smear	27.5	3.5	2.4	3.1	9.6	24.1	11.6
Not stated	7.7	7.4	9.1	10.1	12.3	18.8	10.1
<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>

*Note:* Estimates of less than 20,000 have high standard errors and should be used with caution while estimates of less than 5,000 are considered too unreliable for general use.

*Source:* ABS (2002b).

**Table 13: Pap smear testing, women aged 18 years and over, states, Australia, 2001**

	States and territories							
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
	(per cent)							
Has regular Pap smears	50.6	55.0	57.7	58.3	55.3	58.4	59.8	65.0
Does not have regular Pap smears <sup>(a)</sup>	23.8	22.0	25.8	23.9	24.2	26.2	21.9	12.2
Never had a Pap smear	11.9	12.9	8.7	12.2	12.6	10.1	10.2	17.0
Not stated <sup>(b)</sup>	13.7	10.2	7.8	5.6	7.9	5.3	8.1	5.8
	(standard error)							
Has regular Pap smears	1.3	1.2	1.3	1.7	1.7	2.5	1.5	6.0
Does not have regular Pap smears <sup>(a)</sup>	1.0	1.2	1.0	1.3	1.5	1.8	1.6	3.4
Never had a Pap smear	0.9	0.8	0.7	1.1	1.3	1.2	1.5	4.8
Not stated <sup>(b)</sup>	1.1	1.0	0.7	0.9	0.9	1.0	1.2	3.0

(a) Includes only had one and does not have regular examinations/tests.

(b) Includes has had a pap smear but regularity not stated and whether had a pap smear not stated.

Source: 2001 National Health Survey.

**Table 14: Women aged 18 years and over who have had a Pap smear, Australia, 2001**

Population characteristic	Per cent	Population characteristic	Per cent
Country of birth		Highest educational qualification	
Australia	56.6	Associate diploma or above	65.6
Other Oceania	57.1	Other qualification	60.1
United Kingdom	57.7	Location	
Other North West Europe	46.7	Major cities	53.1
Southern & Eastern Europe	44.6	Inner regional Australia	58.8
North Africa & Middle East	42.2	Other	55.9
South-East Asia	43.5	Personal income	
All other countries	44.7	1st quintile (lowest income)	32.0
Born overseas		5th quintile (highest income)	77.3
Arrived before 1991	50.5	Index of socioeconomic disadvantage	
Arrived 1991–2001	43.9	1st quintile (most disadvantaged)	47.0
Main language spoken at home		5th quintile (least disadvantaged)	59.4
English only	56.9	Private health insurance cover	
Language other than English	42.8	With private cover	60.4
Labour force		Without private cover	48.3
Employed	64.2	Government health card	
Unemployed	46.6	With card	39.8
Not in labour force	42.8	Without card	64.2

Source: ABS 2002b.

**Table 15: Women who have never had a Pap smear, main language spoken at home, 2001**

Main language spoken at home	Age (years)		
	18–69	70 and over	18 and over
	(per cent)		
English only	7.9	22.2	9.7
Italian	12.9	45.0	19.4
Greek	21.9	41.6	23.1
Cantonese	np	np	32.7
Mandarin	np	np	41.3
Arabic	np	np	22.8
Vietnamese	np	np	26.8
German	np	np	18.9
Spanish	np	np	12.5
Tagalog (Filipino)	np	np	8.9
Other language	16.6	38.0	18.3
<i>Total</i>	<i>9.8</i>	<i>24.1</i>	<i>11.6</i>

np not available for publication.

Source: 2001 National Health Survey, ABS.

**Table 16: Women who have never had a Pap smear, country of birth, 2001**

Country of birth	Age (years)		
	18–69	70 and over	18 and over
	(per cent)		
Australia	9.1	22.0	10.7
New Zealand	np	np	5.4
England	2.9	22.8	5.9
Scotland	np	np	7.1
Italy	12.7	46.2	21.9
Greece	37.2	37.2	12.1
Viet Nam	np	np	25.3
Philippines	np	np	17.5
Other	16.3	31.8	17.7
<i>Total</i>	<i>9.8</i>	<i>24.1</i>	<i>11.6</i>

np not available for publication.

Source: 2001 National Health Survey, ABS.



**Table 17: Women who have never had a Pap smear, states, 2001**

State or territory	Age (years)		
	18–69	70 and over	18 and over
	(per cent)		
NSW	10.0	24.7	11.9
Vic	11.4	22.8	12.9
Qld	7.0	21.8	8.7
WA	9.9	30.7	12.2
SA	10.5	24.7	12.6
Tas	8.0	23.1	10.1
ACT	9.5	17.4	10.2
<i>Australia, including NT</i>	9.8	24.1	11.6

Note: Separate numbers not available for publication for the Northern Territory.

Source: 2001 National Health Survey, ABS.

## Mammography

In the target age group of 50–69 years for the BreastScreen Australia Program, 11.8% of women reported in the 2001 National Health Survey that they had never had a mammogram. The true figure may be much higher as 9.7% of women aged 50–59 years and 11.0% of women aged 60–69 years did not answer the question in the survey (Tables 18–22).

Women least likely to have had a mammogram are those whose main language spoken at home is other than English and whose birthplace is South East Asian (Tables 20 and 21). However, 11.2% of women aged 50–69 years who were born in Australia had never had a mammogram.

Among women aged 50–69 years (the target age group for the BreastScreen Australia program) those less likely to have had a mammogram were as follows (Table 19):

- women from non-English-speaking countries, especially those who arrived more than 10 years earlier;
- less well educated women and those without private health insurance coverage;
- women not in the labour force; and
- residents of remote areas and outer regional Australia .

AIHW BreastScreen Australia Monitoring Reports have also identified relatively low participation among:

- Aboriginal and Torres Straight Islander women; and
- women living in capital cities.

Among women aged 70 years and over, 27.9% reported never having had a mammogram (Table 18). Incidence of breast cancer for women in this age group is 311.1 new cases per 100,000 women, compared with 296.4 for women in the target age group.

**Table 18: Mammogram examinations, age group, Australia, 2001**

Frequency of mammogram	Age (years)						Total
	18–29	30–39	40–49	50–59	60–69	70+	
(number of females ('000s))							
Has regular mammograms							
At least annually	9.9	28.8	144.4	227.2	118.0	72.1	600.5
More than 1, up to 2 years	2.4	18.4	195.3	510.3	363.7	214.7	1,304.8
More than 2 years apart	—	6.1	12.8	9.3	6.3	7.9	42.5
Not stated	—	—	4.6	13.6	6.7	9.3	34.3
<i>Total</i>	<i>12.4</i>	<i>53.3</i>	<i>357.2</i>	<i>760.5</i>	<i>494.7</i>	<i>304.0</i>	<i>1,982.1</i>
Only had one mammogram	32.5	133.8	229.9	67.7	31.2	50.5	545.6
Does not have regular mammograms	14.7	79.2	112.9	56.9	54.4	135.0	453.2
Has never had a mammogram	1,380.1	1,090.4	584.6	138.2	83.8	251.3	3,528.4
Not stated	124.5	122.3	132.6	109.3	81.7	158.8	729.1
<i>Total</i>	<i>1,564.3</i>	<i>1,478.9</i>	<i>1,417.2</i>	<i>1,132.4</i>	<i>745.9</i>	<i>899.5</i>	<i>7,238.3</i>
(per cent)							
Has regular mammograms							
At least annually	0.6	1.9	10.2	20.1	15.8	8.0	8.3
More than 1, up to 2 years	—	1.2	13.8	45.1	48.8	23.9	18.0
More than 2 years apart	—	—	0.9	0.8	0.8	0.9	0.6
Not stated	—	—	0.3	1.2	0.9	1.0	0.5
<i>Total</i>	<i>0.8</i>	<i>3.6</i>	<i>25.2</i>	<i>67.2</i>	<i>66.3</i>	<i>33.8</i>	<i>27.4</i>
Only had one mammogram	2.1	9.0	16.2	6.0	4.2	5.6	7.5
Does not have regular mammograms	0.9	5.4	8.0	5.0	7.3	15.0	6.3
Has never had a mammogram	88.2	73.7	41.3	12.2	11.2	27.9	48.7
Not stated	8.0	8.3	9.4	9.7	11.0	17.7	10.1
<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>

*Note:* Estimates of less than 20,000 have high standard errors and should be used with caution while estimates of less than 5,000 are considered too unreliable for general use.

— nil or rounded to zero.

*Source:* ABS 2002b.

**Table 19: Women aged 50–69 years: mammogram status and population characteristics, 2001**

Population characteristics	Whether has had a mammogram		
	Yes	Never	Not stated
	(per cent and standard error)		
Country of birth			
Australia	81.5 (1.5)	11.2 (1.2)	7.3 (0.9)
Main English-speaking countries	85.2 (2.8)	8.2 (2.0)	6.6 (2.1)
Other	67.0 (1.9)	15.1 (1.6)	17.9 (1.9)
Born overseas			
Arrived before 1991	64.8 (9.1)	22.6 (8.0)	12.5 (4.9)
Arrived 1991–2001	73.0 (2.0)	12.3 (1.5)	14.7 (1.7)
Main language spoken at home			
English	81.8 (1.3)	10.7 (1.0)	7.5 (0.7)
Other	61.4 (2.5)	17.4 (2.3)	21.2 (2.7)
Highest educational qualification			
Associate diploma or above	84.6 (2.0)	9.5 (1.7)	6.0 (1.2)
Other qualification	76.9 (1.4)	12.4 (1.0)	10.7 (1.0)
Labour force			
Employed	83.3 (1.5)	10.1 (1.0)	6.6 (1.0)
Unemployed	75.0 (1.4)	12.8 (1.0)	12.2 (1.1)
Not in the labour force	68.2 (13.2)	25.0 (13.9)	6.8 (4.9)
Location			
Major cities of Australia	76.6 (1.4)	11.8 (0.9)	11.6 (1.2)
Inner regional Australia	85.2 (2.1)	10.0 (1.6)	4.8 (1.1)
Outer regional Australia/other areas	74.5 (3.0)	15.7 (2.5)	9.8 (2.0)
Household composition			
Couple only	82.7 (1.7)	9.2 (1.1)	8.2 (1.2)
Couple with children	75.6 (3.4)	11.5 (2.3)	12.9 (2.5)
Lone parent	78.5 (1.8)	12.2 (1.7)	9.3 (1.0)
Person living alone	71.5 (3.5)	14.9 (3.6)	13.6 (2.5)
All other households	67.2 (5.0)	22.8 (4.1)	10.0 (2.2)
Income unit			
1st quintile (lowest income)	75.7 (2.0)	12.5 (1.4)	11.8 (1.7)
5th quintile (highest income)	85.1 (3.0)	7.3 (1.7)	7.6 (2.6)
Index of socioeconomic disadvantage			
1st quintile (most disadvantaged)	78.3 (2.6)	12.2 (2.0)	9.6 (1.6)
5th quintile (least disadvantaged)	79.7 (2.2)	12.0 (1.8)	8.3 (1.5)
Private health insurance			
With private cover	82.2 (1.5)	9.1 (0.9)	8.7 (1.0)
Without private cover	73.3 (1.6)	15.5 (1.6)	11.3 (1.2)
Government health card			
With card	76.6 (1.3)	12.4 (1.0)	11.1 (1.1)
Without card	80.0 (1.8)	11.3 (1.2)	8.7 (1.0)

Source: ABS 2002b.

**Table 20: Women who have never had a mammogram, main language spoken at home, 2001**

Main language spoken at home	Age (years)			
	18–49	50–69	70 and over	18 and over
	(per cent)			
English only	69.3	10.7	27.5	48.7
Italian	67.2	9.4	26.9	35.5
Greek	72.1	np	np	46.4
Cantonese	52.0	np	np	47.0
Mandarin	75.1	np	np	70.6
Arabic	55.9	np	np	58.7
Vietnamese	64.2	np	np	60.5
German	66.6	23.1	45.1	43.7
Spanish	50.5	np	np	39.3
Tagalog (Filipino)	49.3	np	np	41.5
Other language	66.4	14.9	27.9	51.5
<b>Total</b>	<b>68.5</b>	<b>11.8</b>	<b>27.9</b>	<b>48.7</b>

np not available for publication.

Source: 2001 National Health Survey, ABS.

**Table 21: Women who have never had a mammogram, country of birth, 2001**

Country of birth	Age (years)			
	18–49	50–69	70 and over	18 and over
	Percent			
Australia	70.5	11.2	27.8	51.1
New Zealand	81.7	8.5	65.6	65.0
England	60.5	8.9	23.9	35.6
Scotland	48.9	4.5	32.9	26.9
Italy	60.6	11.1	25.7	27.6
Greece	55.8	np	np	26.2
Germany	65.6	19.7	47.9	38.5
Netherlands	69.0	np	np	23.2
Viet Nam	64.6	np	np	58.1
Philippines	54.1	np	np	46.4
Other	60.6	16.6	27.0	45.4
<b>Total</b>	<b>68.5</b>	<b>11.8</b>	<b>27.9</b>	<b>48.7</b>

np not available for publication.

Source: 2001 National Health Survey, ABS.

**Table 22: Women who have never had a mammogram, states, 2001**

State or territory	Age (years)			
	18–49	50–69	70 and over	18 and over
	(per cent)			
NSW	63.9	12.2	25.2	45.4
Vic	71.0	13.9	29.7	51.1
Qld	67.0	9.3	27.0	47.4
WA	71.8	9.4	28.4	51.3
SA	75.7	11.8	33.8	52.3
Tas	73.3	12.0	36.3	51.2
ACT	73.3	13.2	17.3	53.8
<i>Australia, including NT</i>	<i>68.5</i>	<i>11.8</i>	<i>27.9</i>	<i>48.7</i>

*Note:* Separate numbers not available for publication for the Northern Territory.

*Source:* 2001 National Health Survey, ABS.

## Over-screening

Screening is recommended every two years in the target age groups for both Pap smear testing and the BreastScreen Australia program. More frequent screening is not justified unless there are clinical grounds to do so. It is costly financially, and costly psychologically in cases where false positives are found.

However, the National Health Survey results indicate that there appears to be a significant level of unjustified annual screening occurring:

- More than 20% of women in the 30–59 year age group reported having a Pap smear at least annually, as well as 19.4% of 18–29 year olds and 13.0% of 60–69 year olds (Table 12).
- 10.2% of women aged 40–49 years, 20.1% of those aged 50–59 years, 15.8% of those aged 60–69 years and 8.0% of those aged 70 years or more reported having mammograms at least annually (Table 18).

## Trends in cancer-related hospital separations

The Australian Institute of Health and Welfare (AIHW) National Hospital Morbidity Database (NHMD) contains diagnosis and treatment information for separations of admitted patients from almost all public and private hospitals in Australia from 1993–94 to 2001–02. AIHW publishes detailed statistics on these in June each year. The most recent report is for 2001–02 (AIHW 2003b).

The NHMD contains a wealth of data and many variables. This section presents trend data for admitted patients with a principal diagnosis of cancer for the five-year period from 1997–98 to 2001–02 inclusive.

### 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.

Principal diagnoses for 1997–98 were classified, coded and reported to the NHMD using the second edition of the Australian Version of the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (National Coding Centre 1996). Principal diagnoses for 1998–99 were coded by Queensland, Western Australia, South Australia and Tasmania using ICD-9-CM and by New South Wales, Victoria, the Australian Capital Territory and the Northern Territory using the first edition of the International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification (ICD-10-AM) (National Centre for Classification in Health 1998).

Principal diagnoses for 1999–00 were coded by all states and territories using the first edition of ICD-10-AM and for both 2000–01 and 2001–02 using the second edition of ICD-10-AM (NCCH 2000).

Table 23 gives the ICD-10-AM groupings for principal diagnoses of cancer (ICD-10-AM codes C00–C97 *malignant neoplasms*) and the equivalent ICD-9-CM codes. Both ICD-9-CM and ICD-10-AM include diagnoses codes covering other reasons for hospitalisation (such as Z51.1 *chemotherapy session*), and all codes primarily related to cancer are included in Tables 23–29.

In Tables 23–29, the term 'all cancer-related separations' is used to describe hospital separations with a principal diagnosis of cancer or with another reason for hospitalisation that is primarily related to cancer. These exclude other hospital patients with cancer whose principal diagnosis is related to another disease.

### Effects of coding changes

Not all of the cancer-related groups in ICD-10-AM have a direct equivalent in ICD-9-CM. Some groupings used elsewhere in this publication have been collapsed to improve comparability between the coding schemes used for different years.

There was no diagnosis code in ICD-9-CM for *mesothelioma* (group C45 in ICD-10-AM) and such cancers would primarily have been coded in ICD-9-CM as cancers of *other thoracic organs* (groups 163 and 164), but may also have been coded as cancers of *connective and soft tissue* (groups 158 and 171). The lack of equivalent codes in ICD-9-CM means that there are no reported separations for *mesothelioma* in 1997–98 and the separations for 1998–99 are

understated as only four states and territories used ICD-10-AM in that year. Separations for *other thoracic organs* are overstated in both 1997–98 and 1998–99.

Some of the codes in ICD-10-AM group Z08 *follow-up examination after treatment for malignant neoplasms* have equivalents not specific to cancer in the ICD-9-CM group V67 *follow-up examination*. As a result, there are no reported separations in 1997–98 and separations for 1998–99 are understated, for both Z08.0 *follow-up examination after surgery for malignant neoplasm* and Z08.7–Z08.9 *follow-up examination after combined, other or unspecified treatment for malignant neoplasm*.

## **Main findings**

In 1997–98, there were 264,372 hospital separations where cancer was recorded as the principal diagnosis (Table 23), which represents 4.8% of all separations in that year. In 2001–02, there were 316,853 separations with a principal diagnosis of cancer, 5.0% of all separations in that year. In the period 1997–98 to 2001–02, hospital separations with a principal diagnosis of cancer increased on average by 4.7% per annum.

Other cancer-related separations also increased, with the result that during the period 1999–00 to 2001–02 (when all coding has been in ICD-10-AM), the total for all cancer-related separations increased on average by 5.5% per annum. In 2001–02, there were a total of 622,246 cancer-related separations, which represents 9.7% of all hospital separations in that year.

For the eight National Health Priority Area cancers in the period 1997–98 to 2001–02, separations for skin cancers other than melanoma have increased on average by 7.4% per annum, for prostate cancer by 7.0%, for non-Hodgkin's lymphoma by 5.7%, for colorectal cancer by 5.5%, for breast cancer by 4.6%, for melanoma by 4.3% and for lung cancer by 0.8%. Separations for cancer of the cervix have decreased on average by 2.4% per annum in the same period.

## **Same-day patients and length of stay**

In 2001–02 there were 442,571 cancer-related same-day separations (Table 24), representing 13.2% of all same-day separations in that year. In the same year, there were 1,937,692 patient days (Table 25) associated with all cancer-related separations. These represent 8.3% of all patient days for that year and 7.5% of all patient days excluding same-day separations.

Same-day separations have been increasing as a proportion of all separations with a principal diagnosis of cancer. In 1997–98, 36.9% of such separations were on a same-day basis (Table 24). By 2001–02, 44.4% of such separations were same-day.

As a result of the increase in same-day separations, average length of stay per separation declined for 5.7 days in 1997–98 to 5.1 days in 2001–02 (Table 26). Excluding same-day separations, average length of stay declined only slightly from 8.5 days in 1997–98 to 8.4 days in 2001–02.

## **Public patients and type of hospital**

In 1997–98, 52.0% of hospital separations with a principal diagnosis of cancer were for public patients (Table 27). This proportion had declined to 47.6% by 2001–02.

In 1997–98, public hospitals accounted for 62.0% (Table 28) of hospital separations with a principal diagnosis of cancer and private hospitals for 38% (Table 29). By 2001–02, the public hospital share decreased to 55.3% and the private hospital share increased to 44.7%.

Not all public patient separations with a principal diagnosis of cancer are in public hospitals. In 1997-98, public hospitals accounted for 98.4% of these patients, but only 96.8% in 2001-02 (Table 28).



**Table 23: Cancer-related hospital separations and average annual rate of change, Australia, 1997–98 to 2001–02**

ICD-10-AM	ICD-9-CM	Principal diagnosis	Number					Average annual rate of change
			1997–98	1998–99	1999–00	2000–01	2001–02	%
C00–C97	140–208	All cancers (including C44)	264,372	278,290	294,369	306,536	316,853	4.7
C00	140	Lip	888	846	714	591	686	–8.6
C01–C02	141	Tongue	1,100	1,078	1,217	1,098	1,212	2.2
C03–C06	143–145	Mouth	967	1,053	1,074	992	957	–0.8
C07–C08	142	Parotid & other salivary glands	459	460	458	483	491	1.9
C09–C10	146	Tonsil & other oropharynx	677	697	705	803	761	3.8
C11	147	Nasopharynx	446	464	589	522	464	1.9
C12–C13	148	Hypopharynx	437	494	544	517	485	2.4
C14	149	Other lip, oral cavity & pharynx	258	305	266	282	234	–2.6
C15	150	Oesophagus	3,963	3,880	4,293	4,497	4,368	3.5
C16	151	Stomach	5,041	4,950	5,257	5,609	5,432	2.8
C17	152	Small intestine	379	431	441	634	593	13.9
C18	153	Colon	12,464	12,919	14,459	15,185	15,615	6.3
C19–C21	154	Rectum & anus	8,725	8,825	9,299	10,053	10,126	4.4
C18–C21	153–154	Colorectal (including anus)	21,189	21,744	23,758	25,238	25,741	5.5
C22	155	Liver & intrahepatic bile ducts	1,684	1,731	1,847	2,013	2,082	6.0
C23–C24	156	Gallbladder & other biliary tract	1,120	1,154	1,154	1,145	1,141	0.3
C25	157	Pancreas	3,350	3,562	3,627	3,966	3,981	4.6
C30–C31	160	Nasal cavity & accessory sinuses	409	381	386	387	371	–1.8
C32	161	Larynx	1,423	1,401	1,427	1,461	1,474	1.1
C33–C34	162	Trachea, bronchus & lung	16,890	16,639	16,783	17,086	17,335	0.8
C37–C38	163–164	Other thoracic organs <sup>(b)</sup>	1,322	837	424	467	411	–1.5
C40–C41	170	Bone and articular cartilage	1,281	1,292	1,438	1,389	1,539	4.5
C43	172	Skin—melanoma	6,943	6,639	6,721	7,698	7,924	4.3
C44	173	Skin—other than melanoma	53,225	54,679	59,443	65,618	69,143	7.4
C45	.	Mesothelioma <sup>(b)</sup>	.	762	1,437	1,495	1,618	6.2
C46	176	Kaposi's sarcoma	124	84	66	36	37	–31.5
C47–C49	158,171	Connective & soft tissue	1,937	2,007	2,119	2,054	2,377	4.5
C50	174–175	Breast	17,823	18,474	19,786	20,527	21,191	4.6
C53	180	Cervix uteri	1,994	2,020	2,087	1,920	1,803	–2.4
C54	182	Corpus uteri	2,596	2,389	2,385	2,499	2,525	–0.1
C55	179	Uterus unspecified	215	289	378	469	575	28.8
C56	183.0	Ovary	3,252	3,449	3,537	3,487	3,640	2.4
C57–C58,C51–C52	181,183.2–183.9,184	Placenta & other female genital	879	980	929	1,008	927	1.3
C61	185	Prostate	11,682	11,769	12,886	13,693	15,107	7.0
C62	186	Testis	1,080	1,033	1,109	1,173	1,106	1.8
C63, C60	187	Penis & other male genital	198	162	187	195	212	3.3
C64	189.0	Kidney, except renal pelvis	2,682	3,021	3,281	3,399	3,380	5.8
C65	189.1	Renal pelvis	374	407	410	376	414	1.2
C66	189.2	Ureter	272	279	317	320	379	8.6
C67	188	Bladder	14,578	15,130	16,169	16,377	16,559	3.4
C68	189.3–189.9	Other urinary organs	107	117	126	138	136	6.6
C69	190	Eye and adnexa	628	624	680	590	609	–1.1
C71	191	Brain	3,787	4,170	4,260	4,419	4,620	4.6
C72,C70	192	Meninges & other CNS	373	389	336	320	250	–9.1
C73	193	Thyroid gland	1,917	2,112	2,120	2,259	2,527	6.5
C74	194.0	Adrenal gland	250	363	508	382	215	–1.5
C75	194.1–194.9	Other endocrine glands	115	143	159	162	123	2.5
C81	201	Hodgkin's disease	1,406	1,619	1,384	1,372	1,580	0.7
C82–C85,C96	200,202(excl.202.4)	Non-Hodgkin's lymphoma	13,714	14,794	16,159	16,061	17,363	5.7
C81–C85,C96	200–202(excl.202.4)	All lymphomas	15,120	16,413	17,543	17,433	18,943	5.2
C88	203.8	Immunoproliferative neoplasms	60	640	579	665	648	28.5
C90	203.0–203.1	Multiple myeloma	7,720	10,556	12,127	12,667	12,955	12.1
C91,C95	202.4,204,208	Lymphoid & unspecified leukaemia	6,016	7,277	8,339	7,766	8,269	6.9
C92–C94	205–207	Myeloid & other specified leukaemia	6,251	7,532	8,448	9,003	9,583	10.6
C97,C76–C80,C26,C39	159,165,195–199	Unknown and multiple primary site	38,891	40,982	39,495	39,208	39,300	–0.2
<b>Other cancer-related separations <sup>(a)</sup></b>								
Z80,Z85,Z92.3	V10,V15.3,V16	Personal and family history	16,111	18,752	23,023	28,083	25,823	14.1
Z03.1	V71.1	Observation for suspected cancer	1,353	1,047	1,161	552	500	–22.9
Z12	V76	Special screening examination	42	1,247	1,132	659	8,128	<sup>(c)</sup>
Z40	V50.4–V50.9	Prophylactic surgery	202	220	263	232	309	9.8
Z51.0	V58.0	Radiotherapy session	519	513	555	734	799	13.6
Z51.1	V58.1	Chemotherapy session	193,857	108,406	205,676	219,913	232,804	10.5
Z54.1,Z08.1	V66.1,V67.1	Follow-up after radiotherapy	436	332	584	642	597	13.3
Z54.2,Z08.2	V66.2,V67.2	Follow-up after chemotherapy	1,235	931	1,151	1,121	1,293	2.7
Z08.0	.	Follow-up after surgery for cancer <sup>(b)</sup>	.	14,862	27,394	29,038	30,730	5.9
Z08.7–Z08.9	.	Follow-up after multiple treatment <sup>(b)</sup>	.	1,762	3,325	3,707	4,410	15.4
<b>All cancer-related separations <sup>(b)</sup></b>			<b>478,127</b>	<b>426,362</b>	<b>558,633</b>	<b>591,217</b>	<b>622,246</b>	<b>5.5</b>

(a) Separations for specific procedures, usually related to another separation for a principal diagnosis of cancer, but excluding any procedures conducted as part of that other separation.

(b) Refer to page 62 for the effects of coding changes. Average annual rates of change for these categories have been calculated for the period 1999–00 to 2001–02 only.

(c) Average annual rate of change not calculated due to extreme volatility of the time series.

.. not applicable.

**Table 24: Same-day cancer-related hospital separations, Australia, 1997–98 to 2001–02**

ICD-10-AM <sup>(a)</sup>	Principal diagnosis	Same-day separations					Percentage of all hospital separations				
		1997–98	1998–99	1999–00	2000–01	2001–02	1997–98	1998–99	1999–00	2000–01	2001–02
C00–C97	All cancers (including C44)	97,536	110,284	120,881	130,074	140,808	36.9	39.6	41.1	42.4	44.4
C00	Lip	576	542	481	389	493	64.9	64.1	67.4	65.8	71.9
C01–C02	Tongue	162	212	334	234	267	14.7	19.7	27.4	21.3	22.0
C03–C06	Mouth	137	178	268	187	222	14.2	16.9	25.0	18.9	23.2
C07–C08	Parotid & other salivary glands	39	32	48	46	36	8.5	7.0	10.5	9.5	7.3
C09–C10	Tonsil & other oropharynx	119	137	175	198	169	17.6	19.7	24.8	24.7	22.2
C11	Nasopharynx	94	108	156	109	113	21.1	23.3	26.5	20.9	24.4
C12–C13	Hypopharynx	64	91	131	108	106	14.6	18.4	24.1	20.9	21.9
C14	Other lip, oral cavity & pharynx	43	55	60	64	51	16.7	18.0	22.6	22.7	21.8
C15	Oesophagus	1,242	1,315	1,419	1,500	1,525	31.3	33.9	33.1	33.4	34.9
C16	Stomach	1,442	1,369	1,570	1,674	1,612	28.6	27.7	29.9	29.8	29.7
C17	Small intestine	66	83	104	171	175	17.4	19.3	23.6	27.0	29.5
C18	Colon	3,271	3,314	3,790	4,123	4,371	26.2	25.7	26.2	27.2	28.0
C19–C21	Rectum & anus	2,498	2,642	2,998	3,237	3,445	28.6	29.9	32.2	32.2	34.0
C18–C21	Colorectal (including anus)	5,769	5,956	6,788	7,360	7,816	27.2	27.4	28.6	29.2	30.4
C22	Liver & intrahepatic bile ducts	319	305	364	364	425	18.9	17.6	19.7	18.1	20.4
C23–C24	Gallbladder & other biliary tract	134	144	141	149	176	12.0	12.5	12.2	13.0	15.4
C25	Pancreas	461	490	561	650	653	13.8	13.8	15.5	16.4	16.4
C30–C31	Nasal cavity & accessory sinuses	126	86	81	89	83	30.8	22.6	21.0	23.0	22.4
C32	Larynx	400	405	438	461	492	28.1	28.9	30.7	31.6	33.4
C33–C34	Trachea, bronchus & lung	3,124	3,150	3,288	3,475	3,760	18.5	18.9	19.6	20.3	21.7
C37–C38	Other thoracic organs <sup>(c)</sup>	213	137	58	77	68	16.1	16.4	13.7	16.5	16.5
C40–C41	Bone and articular cartilage	224	239	318	224	359	17.5	18.5	22.1	16.1	23.3
C43	Skin—melanoma	4,228	4,052	4,136	4,935	5,189	60.9	61.0	61.5	64.1	65.5
C44	Skin—other than melanoma	38,916	41,011	45,342	51,397	55,317	73.1	75.0	76.3	78.3	80.0
C45	Mesothelioma <sup>(c)</sup>	..	151	236	249	293	..	19.8	16.4	16.7	18.1
C46	Kaposi's sarcoma	41	39	41	21	22	33.1	46.4	62.1	58.3	59.5
C47–C49	Connective & soft tissue	404	462	531	593	692	20.9	23.0	25.1	28.9	29.1
C50	Breast	3,581	4,172	4,730	4,852	5,155	20.1	22.6	23.9	23.6	24.3
C53	Cervix uteri	425	502	587	516	500	21.3	24.9	28.1	26.9	27.7
C54	Corpus uteri	657	609	639	673	686	25.3	25.5	26.8	26.9	27.2
C55	Uterus unspecified	52	80	109	137	172	24.2	27.7	28.8	29.2	29.9
C56	Ovary	292	317	475	510	720	9.0	9.2	13.4	14.6	19.8
C57–C58,C51–C52	Placenta & other female genital	166	194	188	217	196	18.9	19.8	20.2	21.5	21.1
C61	Prostate	1,954	2,199	2,752	3,203	4,366	16.7	18.7	21.4	23.4	28.9
C62	Testis	153	130	134	172	200	14.2	12.6	12.1	14.7	18.1
C63, C60	Penis & other male genital	59	38	37	39	66	29.8	23.5	19.8	20.0	31.1
C64	Kidney, except renal pelvis	271	392	474	500	464	10.1	13.0	14.4	14.7	13.7
C65	Renal pelvis	41	53	59	55	70	11.0	13.0	14.4	14.6	16.9
C66	Ureter	43	50	71	57	91	15.8	17.9	22.4	17.8	24.0
C67	Bladder	6,403	7,020	7,858	7,859	8,203	43.9	46.4	48.6	48.0	49.5
C68	Other urinary organs	29	31	33	47	55	27.1	26.5	26.2	34.1	40.4
C69	Eye and adnexa	300	275	351	308	263	47.8	44.1	51.6	52.2	43.2
C71	Brain	499	579	640	610	670	13.2	13.9	15.0	13.8	14.5
C72,C70	Meninges & other CNS	128	150	109	118	62	34.3	38.6	32.4	36.9	24.8
C73	Thyroid gland	55	63	71	68	73	2.9	3.0	3.3	3.0	2.9
C74	Adrenal gland	59	141	246	192	77	23.6	38.8	48.4	50.3	35.8
C75	Other endocrine glands	16	18	64	44	47	13.9	12.6	40.3	27.2	38.2
C81	Hodgkin's disease	665	807	672	603	767	47.3	49.8	48.6	44.0	48.5
C82–C85,C96	Non-Hodgkin's lymphoma	4,732	5,724	6,507	6,507	7,559	34.5	38.7	40.3	40.5	43.5
C81–C85,C96	All lymphomas	5,397	6,531	7,179	7,110	8,326	35.7	39.8	40.9	40.8	44.0
C88	Immunoproliferative neoplasms	19	403	405	425	454	31.7	63.0	69.9	63.9	70.1
C90	Multiple myeloma	4,904	7,716	8,448	8,734	9,014	63.5	73.1	69.7	69.0	69.6
C91,C95	Lymphoid & unspecified leukaemia	3,096	3,571	4,270	4,192	4,648	51.5	49.1	51.2	54.0	56.2
C92–C94	Myeloid & other specified leukaemia	3,423	4,532	5,088	5,420	6,090	54.8	60.2	60.2	60.2	63.6
C97,C76–C80,C26,C39	Unknown and multiple primary site	7,171	9,769	8,795	9,292	10,026	18.4	23.8	22.3	23.7	25.5
<b>Other cancer-related separations<sup>(b)</sup></b>											
Z80,Z85,Z92.3	Personal and family history	15,890	18,489	22,759	27,797	25,590	98.6	98.6	98.9	99.0	99.1
Z03.1	Observation for suspected cancer	1,250	963	1,107	512	456	92.4	92.0	95.3	92.8	91.2
Z12	Special screening examination	41	1,235	1,125	655	8,012	97.6	99.0	99.4	99.4	98.6
Z40	Prophylactic surgery	63	23	77	24	31	31.2	10.5	29.3	10.3	10.0
Z51.0	Radiotherapy session	416	450	523	702	698	80.2	87.7	94.2	95.6	87.4
Z51.1	Chemotherapy session	193,247	107,934	205,127	219,479	232,534	99.7	99.6	99.7	99.8	99.9
Z54.1,Z08.1	Follow-up after radiotherapy	285	210	414	461	436	65.4	63.3	70.9	71.8	73.0
Z54.2,Z08.2	Follow-up after chemotherapy	941	571	750	706	862	76.2	61.3	65.2	63.0	66.7
Z08.0	Follow-up after surgery for cancer <sup>(c)</sup>	..	13,768	25,470	27,265	28,941	..	92.6	93.0	93.9	94.2
Z08.7–Z08.9	Follow-up after multiple treatment <sup>(c)</sup>	..	1,669	3,128	3,550	4,203	..	94.7	94.1	95.8	95.3
	<i>All cancer-related separations<sup>(c)</sup></i>	<i>309,669</i>	<i>255,596</i>	<i>381,361</i>	<i>411,225</i>	<i>442,571</i>	<i>64.8</i>	<i>59.9</i>	<i>68.3</i>	<i>69.6</i>	<i>71.1</i>

(a) Refer to table 23 for a list of equivalent ICD-9-CM codes.

(b) Separations for specific procedures, usually related to another separation for a principal diagnosis of cancer, but excluding any procedures conducted as part of that other separation.

(c) Refer to page 62 for the effects of coding changes.

.. not applicable.

**Table 25: Patient days for cancer-related hospital separations, Australia, 1997-98 to 2001-02**

ICD-10-AM <sup>(a)</sup>	Principal diagnosis	Patient days					Patient days excluding same-day separations				
		1997-98	1998-99	1999-00	2000-01	2001-02	1997-98	1998-99	1999-00	2000-01	2001-02
C00-C97	All cancers (including C44)	1,515,494	1,523,611	1,571,837	1,600,204	1,626,863	1,417,958	1,413,327	1,450,956	1,470,130	1,486,055
C00	Lip	1,740	1,598	1,333	1,141	1,297	1,164	1,056	852	752	804
C01-C02	Tongue	8,533	8,972	8,130	8,045	9,507	8,371	8,760	7,796	7,811	9,240
C03-C06	Mouth	9,176	9,631	9,424	9,174	7,777	9,039	9,453	9,156	8,987	7,555
C07-C08	Parotid & other salivary glands	3,313	3,268	3,098	2,853	3,388	3,274	3,236	3,050	2,807	3,352
C09-C10	Tonsil & other oropharynx	5,666	5,641	5,211	6,588	6,101	5,547	5,504	5,036	6,390	5,932
C11	Nasopharynx	2,388	2,624	3,126	2,878	2,826	2,294	2,516	2,970	2,769	2,713
C12-C13	Hypopharynx	5,289	5,107	5,519	6,158	5,233	5,225	5,016	5,388	6,050	5,127
C14	Other lip, oral cavity & pharynx	2,545	2,895	2,044	2,671	2,105	2,502	2,840	1,984	2,607	2,054
C15	Oesophagus	29,730	26,910	30,491	31,954	29,897	28,488	25,595	29,072	30,454	28,372
C16	Stomach	39,796	37,962	40,069	39,576	42,138	38,354	36,593	38,499	37,902	40,526
C17	Small intestine	3,863	4,687	4,114	5,787	5,680	3,797	4,604	4,010	5,616	5,505
C18	Colon	115,714	117,421	128,104	132,595	131,851	112,443	114,107	124,314	128,472	127,480
C19-C21	Rectum & anus	78,779	76,752	80,882	84,826	83,967	76,281	74,110	77,884	81,589	80,522
C18-C21	Colorectal (including anus)	194,493	194,173	208,986	217,421	215,818	188,724	188,217	202,198	210,061	208,002
C22	Liver & intrahepatic bile ducts	12,214	11,737	13,845	14,897	15,216	11,895	11,432	13,481	14,533	14,791
C23-C24	Gallbladder & other biliary tract	11,538	10,571	11,717	10,956	11,988	11,404	10,427	11,576	10,807	11,812
C25	Pancreas	32,599	35,240	34,187	36,328	37,074	32,138	34,750	33,626	35,678	36,421
C30-C31	Nasal cavity & accessory sinuses	2,715	3,061	2,888	2,578	2,488	2,589	2,975	2,807	2,489	2,405
C32	Larynx	11,729	11,366	12,710	12,206	12,555	11,329	10,961	12,272	11,745	12,063
C33-C34	Trachea, bronchus & lung	129,826	126,289	127,409	132,267	137,161	126,702	123,139	124,121	128,792	133,401
C37-C38	Other thoracic organs <sup>(c)</sup>	9,353	6,336	2,849	3,428	2,353	9,140	6,199	2,791	3,351	2,285
C40-C41	Bone and articular cartilage	7,786	7,268	8,315	8,106	8,762	7,562	7,029	7,997	7,882	8,403
C43	Skin—melanoma	18,871	16,746	16,944	20,607	18,817	14,643	12,694	12,808	15,672	13,628
C44	Skin—other than melanoma	101,496	102,440	106,587	111,436	112,403	62,580	61,429	61,245	60,039	57,086
C45	Mesothelioma <sup>(c)</sup>	..	5,022	9,349	10,297	11,943	..	4,871	9,113	10,048	11,650
C46	Kaposi's sarcoma	1,322	713	251	175	98	1,281	674	210	154	76
C47-C49	Connective & soft tissue	12,328	12,867	13,143	12,433	13,889	11,924	12,405	12,612	11,840	13,197
C50	Breast	89,161	87,247	87,200	86,100	85,801	85,580	83,075	82,470	81,248	80,646
C53	Cervix uteri	11,856	9,904	11,006	11,236	10,158	11,431	9,402	10,419	10,720	9,658
C54	Corpus uteri	15,323	13,421	14,184	13,920	14,127	14,666	12,812	13,545	13,247	13,441
C55	Uterus unspecified	1,543	1,499	1,949	2,347	2,875	1,491	1,419	1,840	2,210	2,703
C56	Ovary	20,725	22,586	23,272	23,248	25,124	20,433	22,269	22,797	22,738	24,404
C57-C58,C51-C52	Placenta & other female genital	6,716	7,331	6,950	7,474	6,208	6,550	7,137	6,762	7,257	6,012
C61	Prostate	79,816	74,909	81,019	80,418	84,458	77,862	72,710	78,267	77,215	80,092
C62	Testis	2,850	2,728	3,073	3,222	3,077	2,697	2,598	2,939	3,050	2,877
C63, C60	Penis & other male genital	941	973	1,074	1,169	1,193	882	935	1,037	1,130	1,127
C64	Kidney, except renal pelvis	23,853	27,507	27,310	26,958	28,079	23,582	27,115	26,836	26,458	27,615
C65	Renal pelvis	3,179	3,164	3,571	2,727	5,919	3,138	3,111	3,512	2,672	5,849
C66	Ureter	1,763	2,018	2,205	2,006	2,428	1,720	1,968	2,134	1,949	2,337
C67	Bladder	47,673	48,056	48,313	50,782	50,611	41,270	41,036	40,455	42,923	42,408
C68	Other urinary organs	725	539	640	606	726	696	508	607	559	671
C69	Eye and adnexa	1,802	1,641	2,298	1,557	1,892	1,502	1,366	1,947	1,249	1,629
C71	Brain	42,156	45,654	46,055	50,462	48,595	41,657	45,075	45,415	49,852	47,925
C72,C70	Meninges & other CNS	3,430	2,464	3,113	2,426	2,047	3,302	2,314	3,004	2,308	1,985
C73	Thyroid gland	7,502	7,589	7,858	7,607	8,495	7,447	7,526	7,787	7,539	8,422
C74	Adrenal gland	1,452	1,786	2,515	1,574	1,580	1,393	1,645	2,269	1,382	1,503
C75	Other endocrine glands	799	1,337	761	1,155	662	783	1,319	697	1,111	615
C81	Hodgkin's disease	4,590	5,896	4,685	5,129	5,866	3,925	5,089	4,013	4,526	5,099
C82-C85,C96	Non-Hodgkin's lymphoma	78,495	78,223	84,373	85,348	88,338	73,763	72,499	77,866	78,841	80,779
C81-C85,C96	All lymphomas	83,085	84,119	89,058	90,477	94,204	77,688	77,588	81,879	83,367	85,878
C88	Immunoproliferative neoplasms	416	1,861	1,350	1,894	1,785	397	1,458	945	1,469	1,331
C90	Multiple myeloma	31,109	35,000	40,164	42,059	42,852	26,205	27,284	31,716	33,325	33,838
C91,C95	Lymphoid & unspecified leukaemia	26,086	30,577	33,752	30,068	32,445	22,990	27,006	29,482	25,876	27,797
C92-C94	Myeloid & other specified leukaemia	45,181	46,454	51,691	54,765	57,594	41,758	41,922	46,603	49,345	51,504
C97,C76-C80,C26,C39	Unknown and multiple primary site	308,043	310,123	299,717	293,987	297,414	300,872	300,354	290,922	284,695	287,388
<b>Other cancer-related separations<sup>(b)</sup></b>											
Z80,Z85,Z92.3	Personal and family history	16,277	19,001	23,199	28,338	26,033	387	512	440	541	443
Z03.1	Observation for suspected cancer	1,576	1,148	1,511	654	548	326	185	404	142	92
Z12	Special screening examination	42	1,258	1,141	660	8,184	1	23	16	5	172
Z40	Prophylactic surgery	645	827	900	841	1,039	582	804	823	817	1,008
Z51.0	Radiotherapy session	837	853	934	1,692	1,368	421	403	411	990	670
Z51.1	Chemotherapy session	194,589	109,183	206,689	220,462	233,301	1,342	1,249	1,562	983	767
Z54.1,Z08.1	Follow-up after radiotherapy	1,384	1,253	1,461	1,829	1,895	1,099	1,043	1,047	1,368	1,459
Z54.2,Z08.2	Follow-up after chemotherapy	1,937	1,773	1,764	1,921	2,169	996	1,202	1,014	1,215	1,307
Z08.0	Follow-up after surgery for cancer <sup>(c)</sup>	..	15,788	28,812	30,073	31,768	..	2,020	3,342	2,808	2,827
Z08.7-Z08.9	Follow-up after multiple treatment <sup>(c)</sup>	..	1,835	3,472	3,896	4,524	..	166	344	346	321
	<i>All cancer-related separations<sup>(c)</sup></i>	<b>1,732,781</b>	<b>1,676,530</b>	<b>1,841,720</b>	<b>1,890,570</b>	<b>1,937,692</b>	<b>1,423,112</b>	<b>1,420,934</b>	<b>1,460,359</b>	<b>1,479,345</b>	<b>1,495,121</b>

(a) Refer to table 23 for a list of equivalent ICD-9-CM codes.

(b) Separations for specific procedures, usually related to another separation for a principal diagnosis of cancer, but excluding any procedures conducted as part of that other separation.

(c) Refer to page 62 for the effects of coding changes.

.. not applicable.

**Table 26: Average length of stay (ALOS) for cancer-related hospital separations, Australia, 1997–98 to 2001–02**

ICD-10-AM <sup>(a)</sup>	Principal diagnosis	Average length of stay (days)					ALOS excluding same-day separations				
		1997–98	1998–99	1999–00	2000–01	2001–02	1997–98	1998–99	1999–00	2000–01	2001–02
C00–C97	All cancers (including C44)	5.7	5.5	5.3	5.2	5.1	8.5	8.4	8.4	8.3	8.4
C00	Lip	2.0	1.9	1.9	1.9	1.9	3.7	3.5	3.7	3.7	4.2
C01–C02	Tongue	7.8	8.3	6.7	7.3	7.8	8.9	10.1	8.8	9.0	9.8
C03–C06	Mouth	9.5	9.1	8.8	9.2	8.1	10.9	10.8	11.4	11.2	10.3
C07–C08	Parotid & other salivary glands	7.2	7.1	6.8	5.9	6.9	7.8	7.6	7.4	6.4	7.4
C09–C10	Tonsil & other oropharynx	8.4	8.1	7.4	8.2	8.0	9.9	9.8	9.5	10.6	10.0
C11	Nasopharynx	5.4	5.7	5.3	5.5	6.1	6.5	7.1	6.9	6.7	7.7
C12–C13	Hypopharynx	12.1	10.3	10.1	11.9	10.8	14.0	12.4	13.0	14.8	13.5
C14	Other lip, oral cavity & pharynx	9.9	9.5	7.7	9.5	9.0	11.6	11.4	9.6	12.0	11.2
C15	Oesophagus	7.5	6.9	7.1	7.1	6.8	10.5	10.0	10.1	10.2	10.0
C16	Stomach	7.9	7.7	7.6	7.1	7.8	10.7	10.2	10.4	9.6	10.6
C17	Small intestine	10.2	10.9	9.3	9.1	9.6	12.1	13.2	11.9	12.1	13.2
C18	Colon	9.3	9.1	8.9	8.7	8.4	12.2	11.9	11.7	11.6	11.3
C19–C21	Rectum & anus	9.0	8.7	8.7	8.4	8.3	12.3	12.0	12.4	12.0	12.1
C18–C21	Colorectal (including anus)	9.2	8.9	8.8	8.6	8.4	12.2	11.9	11.9	11.7	11.6
C22	Liver & intrahepatic bile ducts	7.3	6.8	7.5	7.4	7.3	8.7	8.0	9.1	8.8	8.9
C23–C24	Gallbladder & other biliary tract	10.3	9.2	10.2	9.6	10.5	11.6	10.3	11.4	10.9	12.2
C25	Pancreas	9.7	9.9	9.4	9.2	9.3	11.1	11.3	11.0	10.8	10.9
C30–C31	Nasal cavity & accessory sinuses	6.6	8.0	7.5	6.7	6.7	9.1	10.1	9.2	8.4	8.4
C32	Larynx	8.2	8.1	8.9	8.4	8.5	11.1	11.0	12.4	11.7	12.3
C33–C34	Trachea, bronchus & lung	7.7	7.6	7.6	7.7	7.9	9.2	9.1	9.2	9.5	9.8
C37–C38	Other thoracic organs	7.1	7.6	6.7	7.3	5.7	8.2	8.9	7.6	8.6	6.7
C40–C41	Bone and articular cartilage	6.1	5.6	5.8	5.8	5.7	7.2	6.7	7.1	6.8	7.1
C43	Skin—melanoma	2.7	2.5	2.5	2.7	2.4	5.4	4.9	5.0	5.7	5.0
C44	Skin—other than melanoma	1.9	1.9	1.8	1.7	1.6	4.4	4.5	4.3	4.2	4.1
C45	Mesothelioma <sup>(c)</sup>	..	6.6	6.5	6.9	7.4	..	8.0	7.6	8.1	8.8
C46	Kaposi's sarcoma	10.7	8.5	3.8	4.9	2.6	15.4	15.0	8.4	10.3	5.1
C47–C49	Connective & soft tissue	6.4	6.4	6.2	6.1	5.8	7.8	8.0	7.9	8.1	7.8
C50	Breast	5.0	4.7	4.4	4.2	4.0	6.0	5.8	5.5	5.2	5.0
C53	Cervix uteri	5.9	4.9	5.3	5.9	5.6	7.3	6.2	6.9	7.6	7.4
C54	Corpus uteri	5.9	5.6	5.9	5.6	5.6	7.6	7.2	7.8	7.3	7.3
C55	Uterus unspecified	7.2	5.2	5.2	5.0	5.0	9.1	6.8	6.8	6.7	6.7
C56	Ovary	6.4	6.5	6.6	6.7	6.9	6.9	7.1	7.4	7.6	8.4
C57–C58,C51–C52	Placenta & other female genital	7.6	7.5	7.5	7.4	6.7	9.2	9.1	9.1	9.2	8.2
C61	Prostate	6.8	6.4	6.3	5.9	5.6	8.0	7.6	7.7	7.4	7.5
C62	Testis	2.6	2.6	2.8	2.7	2.8	2.9	2.9	3.0	3.0	3.2
C63, C60	Penis & other male genital	4.8	6.0	5.7	6.0	5.6	6.3	7.5	6.9	7.2	7.7
C64	Kidney, except renal pelvis	8.9	9.1	8.3	7.9	8.3	9.8	10.3	9.6	9.1	9.5
C65	Renal pelvis	8.5	7.8	8.7	7.3	14.3	9.4	8.8	10.0	8.3	17.0
C66	Ureter	6.5	7.2	7.0	6.3	6.4	7.5	8.6	8.7	7.4	8.1
C67	Bladder	3.3	3.2	3.0	3.1	3.1	5.0	5.1	4.9	5.0	5.1
C68	Other urinary organs	6.8	4.6	5.1	4.4	5.3	8.9	5.9	6.5	6.1	8.3
C69	Eye and adnexa	2.9	2.6	3.4	2.6	3.1	4.6	3.9	5.9	4.4	4.7
C71	Brain	11.1	10.9	10.8	11.4	10.5	12.7	12.6	12.5	13.1	12.1
C72,C70	Meninges & other CNS	9.2	6.3	9.3	7.6	8.2	13.5	9.7	13.2	11.4	10.6
C73	Thyroid gland	3.9	3.6	3.7	3.4	3.4	4.0	3.7	3.8	3.4	3.4
C74	Adrenal gland	5.8	4.9	5.0	4.1	7.3	7.3	7.4	8.7	7.3	10.9
C75	Other endocrine glands	6.9	9.3	4.8	7.1	5.4	7.9	10.6	7.3	9.4	8.1
C81	Hodgkin's disease	3.3	3.6	3.4	3.7	3.7	5.3	6.3	5.6	5.9	6.3
C82–C85,C96	Non-Hodgkin's lymphoma	5.7	5.3	5.2	5.3	5.1	8.2	8.0	8.1	8.3	8.2
C81–C85,C96	All lymphomas	5.5	5.1	5.1	5.2	5.0	8.0	7.9	7.9	8.1	8.1
C88	Immunoproliferative neoplasms	6.9	2.9	2.3	2.8	2.8	9.7	6.2	5.4	6.1	6.9
C90	Multiple myeloma	4.0	3.3	3.3	3.3	3.3	9.3	9.6	8.6	8.5	8.6
C91,C95	Lymphoid & unspecified leukaemia	4.3	4.2	4.0	3.9	3.9	7.9	7.3	7.2	7.2	7.7
C92–C94	Myeloid & other specified leukaemia	7.2	6.2	6.1	6.1	6.0	14.8	14.0	13.9	13.8	14.7
C97,C76–C80,C26,C39	Unknown and multiple primary site	7.9	7.6	7.6	7.5	7.6	9.5	9.6	9.5	9.5	9.8
<b>Other cancer-related separations<sup>(b)</sup></b>											
Z80,Z85,Z92.3	Personal and family history	1.0	1.0	1.0	1.0	1.0	1.8	1.9	1.7	1.9	1.9
Z03.1	Observation for suspected cancer	1.2	1.1	1.3	1.2	1.1	3.2	2.2	7.5	3.6	2.1
Z12	Special screening examination	1.0	1.0	1.0	1.0	1.0	1.0	1.9	2.3	1.3	1.5
Z40	Prophylactic surgery	3.2	3.8	3.4	3.6	3.4	4.2	4.1	4.4	3.9	3.6
Z51.0	Radiotherapy session	1.6	1.7	1.7	2.3	1.7	4.1	6.4	12.8	30.9	6.6
Z51.1	Chemotherapy session	1.0	1.0	1.0	1.0	1.0	2.2	2.6	2.8	2.3	2.8
Z54.1,Z08.1	Follow-up after radiotherapy	3.2	3.8	2.5	2.8	3.2	7.3	8.5	6.2	7.6	9.1
Z54.2,Z08.2	Follow-up after chemotherapy	1.6	1.9	1.5	1.7	1.7	3.4	3.3	2.5	2.9	3.0
Z08.0	Follow-up after surgery for cancer <sup>(c)</sup>	..	1.1	1.1	1.0	1.0	..	1.8	1.7	1.6	1.6
Z08.7–Z08.9	Follow-up after multiple treatment <sup>(c)</sup>	..	1.0	1.0	1.1	1.0	..	1.8	1.7	2.2	1.6
<i>All cancer-related separations</i>		3.6	3.9	3.3	3.2	3.1	8.4	8.3	8.2	8.2	8.3

(a) Refer to table 23 for a list of equivalent ICD-9-CM codes.

(b) Separations for specific procedures, usually related to another separation for a principal diagnosis of cancer, but excluding any procedures conducted as part of that other separation.

(c) Refer to page 62 for the text on the effects of coding changes.

.. not applicable.

**Table 27: Public patient cancer-related separations, all hospitals, Australia, 1997–98 to 2001–02**

ICD-10-AM <sup>(a)</sup>	Principal diagnosis	Public patient separations <sup>(d)</sup>					Percentage of all hospital separations				
		1997–98	1998–99	1999–00	2000–01	2001–02	1997–98	1998–99	1999–00	2000–01	2001–02
C00–C97	All cancers (including C44)	137,468	147,226	152,910	148,885	150,928	52.0	52.9	51.9	48.6	47.6
C00	Lip	514	520	453	351	397	57.9	61.5	63.4	59.4	57.9
C01–C02	Tongue	749	763	842	722	780	68.1	70.8	69.2	65.8	64.4
C03–C06	Mouth	682	735	771	668	656	70.5	69.8	71.8	67.3	68.5
C07–C08	Parotid & other salivary glands	253	225	247	246	240	55.1	48.9	53.9	50.9	48.9
C09–C10	Tonsil & other oropharynx	518	550	524	603	541	76.5	78.9	74.3	75.1	71.1
C11	Nasopharynx	338	385	445	402	348	75.8	83.0	75.6	77.0	75.0
C12–C13	Hypopharynx	319	372	426	386	363	73.0	75.3	78.3	74.7	74.8
C14	Other lip, oral cavity & pharynx	181	217	191	176	159	70.2	71.1	71.8	62.4	67.9
C15	Oesophagus	2,100	2,105	2,350	2,375	2,399	53.0	54.3	54.7	52.8	54.9
C16	Stomach	2,869	2,806	2,919	3,010	2,933	56.9	56.7	55.5	53.7	54.0
C17	Small intestine	162	227	250	331	320	42.7	52.7	56.7	52.2	54.0
C18	Colon	5,911	6,292	6,852	6,771	7,052	47.4	48.7	47.4	44.6	45.2
C19–C21	Rectum & anus	4,372	4,533	4,729	4,875	4,772	50.1	51.4	50.9	48.5	47.1
C18–C21	Colorectal (including anus)	10,283	10,825	11,581	11,646	11,824	48.5	49.8	48.7	46.1	45.9
C22	Liver & intrahepatic bile ducts	1,078	1,191	1,222	1,297	1,391	64.0	68.8	66.2	64.4	66.8
C23–C24	Gallbladder & other biliary tract	662	642	675	639	622	59.1	55.6	58.5	55.8	54.5
C25	Pancreas	1,875	1,975	1,992	2,158	2,176	56.0	55.4	54.9	54.4	54.7
C30–C31	Nasal cavity & accessory sinuses	251	234	230	239	207	61.4	61.4	59.6	61.8	55.8
C32	Larynx	936	919	962	996	1,036	65.8	65.6	67.4	68.2	70.3
C33–C34	Trachea, bronchus & lung	10,902	10,922	10,978	10,910	10,998	64.5	65.6	65.4	63.9	63.4
C37–C38	Other thoracic organs <sup>(c)</sup>	785	530	294	331	258	59.4	63.3	69.3	70.9	62.8
C40–C41	Bone and articular cartilage	814	928	1,058	885	1,044	63.5	71.8	73.6	63.7	67.8
C43	Skin—melanoma	2,915	2,920	2,857	2,972	3,009	42.0	44.0	42.5	38.6	38.0
C44	Skin—other than melanoma	20,146	20,651	21,525	21,362	21,345	37.9	37.8	36.2	32.6	30.9
C45	Mesothelioma <sup>(c)</sup>	..	427	788	839	831	..	56.0	54.8	56.1	51.4
C46	Kaposi's sarcoma	109	65	46	28	29	87.9	77.4	69.7	77.8	78.4
C47–C49	Connective & soft tissue	1,039	1,005	1,190	1,043	1,227	53.6	50.1	56.2	50.8	51.6
C50	Breast	9,001	9,495	10,134	9,457	9,310	50.5	51.4	51.2	46.1	43.9
C53	Cervix uteri	1,528	1,508	1,605	1,291	1,236	76.6	74.7	76.9	67.2	68.6
C54	Corpus uteri	1,454	1,392	1,318	1,338	1,365	56.0	58.3	55.3	53.5	54.1
C55	Uterus unspecified	104	140	196	242	285	48.4	48.4	51.9	51.6	49.6
C56	Ovary	1,521	1,789	1,686	1,717	1,861	46.8	51.9	47.7	49.2	51.1
C57–C58,C51–C52	Placenta & other female genital	491	608	596	605	534	55.9	62.0	64.2	60.0	57.6
C61	Prostate	4,267	4,196	4,575	4,669	4,835	36.5	35.7	35.5	34.1	32.0
C62	Testis	782	691	733	675	642	72.4	66.9	66.1	57.5	58.0
C63, C60	Penis & other male genital	126	99	120	120	108	63.6	61.1	64.2	61.5	50.9
C64	Kidney, except renal pelvis	1,560	1,712	1,791	1,757	1,743	58.2	56.7	54.6	51.7	51.6
C65	Renal pelvis	212	232	226	191	219	56.7	57.0	55.1	50.8	52.9
C66	Ureter	142	126	147	162	185	52.2	45.2	46.4	50.6	48.8
C67	Bladder	7,200	7,679	8,334	8,015	8,021	49.4	50.8	51.5	48.9	48.4
C68	Other urinary organs	68	54	56	57	68	63.6	46.2	44.4	41.3	50.0
C69	Eye and adnexa	313	333	371	281	285	49.8	53.4	54.6	47.6	46.8
C71	Brain	2,400	2,644	2,818	2,708	2,756	63.4	63.4	66.2	61.3	59.7
C72,C70	Meninges & other CNS	270	233	228	216	167	72.4	59.9	67.9	67.5	66.8
C73	Thyroid gland	1,136	1,227	1,308	1,285	1,361	59.3	58.1	61.7	56.9	53.9
C74	Adrenal gland	193	296	363	298	140	77.2	81.5	71.5	78.0	65.1
C75	Other endocrine glands	81	103	105	103	88	70.4	72.0	66.0	63.6	71.5
C81	Hodgkin's disease	878	1,142	950	878	975	62.4	70.5	68.6	64.0	61.7
C82–C85,C96	Non-Hodgkin's lymphoma	7,631	8,330	8,778	8,314	8,992	55.6	56.3	54.3	51.8	51.8
C81–C85,C96	All lymphomas	8,509	9,472	9,728	9,192	9,967	56.3	57.7	55.5	52.7	52.6
C88	Immunoproliferative neoplasms	37	395	350	353	346	61.7	61.7	60.4	53.1	53.4
C90	Multiple myeloma	4,780	6,254	7,469	7,184	7,198	61.9	59.2	61.6	56.7	55.6
C91,C95	Lymphoid & unspecified leukaemia	3,942	4,840	5,626	4,893	5,356	65.5	66.5	67.5	63.0	64.8
C92–C94	Myeloid & other specified leukaemia	3,891	4,989	5,491	5,508	5,911	62.2	66.2	65.0	61.2	61.7
C97,C76–C80,C26,C39	Unknown and multiple primary site	22,980	24,580	22,720	21,953	21,808	59.1	60.0	57.5	56.0	55.5
<b>Other cancer-related separations<sup>(b)</sup></b>											
Z80,Z85,Z92.3	Personal and family history	4,534	5,825	6,558	7,030	4,595	28.1	31.1	28.5	25.0	17.8
Z03.1	Observation for suspected cancer	668	488	508	240	172	49.4	46.6	43.8	43.5	34.4
Z12	Special screening examination	5	152	197	148	2,835	11.9	12.2	17.4	22.5	34.9
Z40	Prophylactic surgery	76	102	102	92	121	37.6	46.4	38.8	39.7	39.2
Z51.0	Radiotherapy session	379	429	412	560	587	73.0	83.6	74.2	76.3	73.5
Z51.1	Chemotherapy session	111,380	58,731	103,762	101,833	105,673	57.5	54.2	50.4	46.3	45.4
Z54.1,Z08.1	Follow-up after radiotherapy	260	175	380	415	350	59.6	52.7	65.1	64.6	58.6
Z54.2,Z08.2	Follow-up after chemotherapy	746	433	508	506	548	60.4	46.5	44.1	45.1	42.4
Z08.0	Follow-up after surgery for cancer <sup>(c)</sup>	..	6,672	12,703	12,876	12,642	..	44.9	46.4	44.3	41.1
Z08.7–Z08.9	Follow-up after multiple treatment <sup>(c)</sup>	..	620	1,481	1,753	2,332	..	35.2	44.5	47.3	52.9
	<i>All cancer-related separations<sup>(c)</sup></i>	<i>255,516</i>	<i>220,853</i>	<i>279,521</i>	<i>274,338</i>	<i>280,783</i>	<i>53.4</i>	<i>51.8</i>	<i>50.0</i>	<i>46.4</i>	<i>45.1</i>

(a) Refer to table 23 for a list of equivalent ICD-9-CM codes.

(b) Separations for specific procedures, usually related to another separation for a principal diagnosis of cancer, but excluding any procedures conducted as part of that other separation.

(c) Refer to page 62 for the effects of coding changes.

(d) Separations with a patient election status of *Public*.

.. not applicable.

**Table 28: Cancer-related separations from public hospitals as a percentage of all hospital separations and as a percentage of all public patient separations, Australia, 1997–98 to 2001–02**

ICD-10-AM <sup>(a)</sup>	Principal diagnosis	Percentage of all hospital separations					Percentage of public patient separations <sup>(d)</sup>				
		1997–98	1998–99	1999–00	2000–01	2001–02	1997–98	1998–99	1999–00	2000–01	2001–02
C00–C97	All cancers (including C44)	62.0	62.0	60.1	56.2	55.3	98.4	98.2	97.7	97.1	96.8
C00	Lip	65.4	67.0	70.0	67.0	63.6	98.4	99.0	99.1	99.1	98.2
C01–C02	Tongue	80.0	79.9	77.4	74.0	73.0	98.5	98.6	98.5	98.3	97.9
C03–C06	Mouth	79.7	81.3	81.4	76.7	77.5	98.8	98.2	98.1	97.0	98.5
C07–C08	Parotid & other salivary glands	66.7	63.3	63.5	60.0	60.7	99.6	99.1	98.0	96.7	97.9
C09–C10	Tonsil & other oropharynx	88.2	87.7	81.6	83.8	81.1	99.8	99.8	98.1	98.3	98.2
C11	Nasopharynx	84.3	89.0	84.2	81.2	84.9	96.7	98.2	98.0	98.3	99.4
C12–C13	Hypopharynx	85.1	87.9	89.0	84.9	86.4	98.1	99.7	98.1	98.4	99.2
C14	Other lip, oral cavity & pharynx	86.0	79.3	77.8	70.2	79.1	98.3	94.9	96.9	95.5	97.5
C15	Oesophagus	64.6	65.9	64.9	63.4	65.6	97.9	98.8	96.8	97.1	96.7
C16	Stomach	68.7	67.2	63.6	60.5	61.5	98.2	98.1	97.4	96.1	96.3
C17	Small intestine	52.0	61.7	65.1	59.8	63.2	94.4	96.9	99.2	97.6	95.3
C18	Colon	55.6	56.0	54.4	51.6	52.0	97.4	97.5	97.2	96.4	95.7
C19–C21	Rectum & anus	58.0	58.3	56.7	53.9	53.6	98.1	97.8	97.4	95.8	96.2
C18–C21	Colorectal (including anus)	56.6	56.9	55.3	52.5	52.6	97.7	97.6	97.3	96.1	95.9
C22	Liver & intrahepatic bile ducts	78.3	81.7	78.0	78.1	80.5	98.4	98.3	98.8	97.3	97.3
C23–C24	Gallbladder & other biliary tract	76.3	70.2	70.2	70.7	65.9	98.6	99.1	96.4	97.3	97.4
C25	Pancreas	68.6	68.2	65.0	64.4	66.6	96.7	96.7	96.6	96.2	95.5
C30–C31	Nasal cavity & accessory sinuses	72.4	75.9	70.2	74.7	65.8	99.2	99.1	97.0	95.4	95.7
C32	Larynx	78.4	77.2	77.3	76.0	79.2	98.9	98.2	98.2	98.1	98.3
C33–C34	Trachea, bronchus & lung	76.5	75.7	75.3	73.0	72.6	97.9	97.5	97.1	96.7	95.8
C37–C38	Other thoracic organs	73.6	71.6	77.1	75.8	73.0	95.9	96.0	99.0	97.6	98.8
C40–C41	Bone and articular cartilage	81.7	84.6	86.4	81.4	82.3	98.9	99.0	99.7	99.1	99.3
C43	Skin—melanoma	51.0	51.9	50.1	45.6	45.3	98.4	98.3	97.0	96.6	97.0
C44	Skin—other than melanoma	43.9	43.3	40.8	36.6	34.8	98.6	97.5	97.3	96.9	96.3
C45	Mesothelioma <sup>(c)</sup>	..	73.1	68.0	68.1	64.7	..	98.1	97.1	95.5	95.7
C46	Kaposi's sarcoma	91.9	78.6	83.3	88.9	83.8	100.0	96.9	100.0	96.4	100.0
C47–C49	Connective & soft tissue	70.4	61.9	64.9	61.6	63.9	98.8	98.3	97.8	98.1	98.6
C50	Breast	56.8	56.9	55.7	50.2	48.4	98.2	98.5	97.9	97.0	96.8
C53	Cervix uteri	85.8	83.3	83.7	76.0	75.7	99.0	99.5	97.9	98.2	96.3
C54	Corpus uteri	64.8	66.7	63.2	60.9	62.7	98.6	98.8	98.6	98.1	98.2
C55	Uterus unspecified	58.6	54.0	57.4	57.6	58.1	99.0	97.1	97.4	97.9	97.5
C56	Ovary	59.3	60.3	55.8	56.4	59.4	98.3	99.0	98.5	97.2	96.5
C57–C58,C51–C52	Placenta & other female genital	70.3	72.3	72.0	69.1	65.7	99.2	98.5	98.0	97.2	97.6
C61	Prostate	47.7	46.2	44.8	42.7	39.8	98.0	97.0	96.3	95.5	95.4
C62	Testis	75.2	70.8	72.0	63.3	62.8	98.8	98.8	99.3	96.9	97.8
C63, C60	Penis & other male genital	71.2	71.0	68.4	69.7	60.8	97.6	100.0	98.3	98.3	98.1
C64	Kidney, except renal pelvis	68.5	67.7	66.2	62.6	62.4	98.3	97.1	97.3	96.7	96.8
C65	Renal pelvis	69.8	63.6	62.9	55.9	56.8	98.1	94.8	98.7	98.4	97.3
C66	Ureter	62.9	49.5	51.7	58.1	50.4	98.6	97.6	97.3	97.5	95.7
C67	Bladder	56.1	56.0	55.7	52.9	52.1	97.4	96.0	95.5	95.9	96.1
C68	Other urinary organs	72.9	54.7	52.4	57.2	51.5	100.0	96.3	98.2	100.0	94.1
C69	Eye and adnexa	78.3	82.2	83.4	77.1	74.4	99.4	99.7	98.9	97.5	98.6
C71	Brain	76.9	76.9	78.2	74.5	73.4	98.2	98.4	96.9	96.8	97.2
C72,C70	Meninges & other CNS	86.1	88.7	82.1	78.8	80.0	99.6	99.1	97.4	100.0	99.4
C73	Thyroid gland	76.5	75.3	77.1	71.3	67.1	99.6	99.3	99.3	99.3	98.8
C74	Adrenal gland	90.8	96.1	90.7	90.1	87.9	96.4	100.0	100.0	99.7	96.4
C75	Other endocrine glands	81.7	81.1	85.5	82.1	85.4	100.0	98.1	100.0	98.1	98.9
C81	Hodgkin's disease	71.6	78.0	77.8	73.9	71.3	99.1	99.3	99.3	98.7	99.0
C82–C85,C96	Non-Hodgkin's lymphoma	68.4	68.4	64.7	61.9	63.1	99.2	99.1	99.0	98.7	98.3
C81–C85,C96	All lymphomas	68.7	69.3	65.7	62.9	63.7	99.2	99.1	99.0	98.7	98.4
C88	Immunoproliferative neoplasms	78.3	76.3	77.0	73.8	68.8	97.3	100.0	99.1	99.4	98.3
C90	Multiple myeloma	75.1	72.5	72.9	67.6	66.9	99.5	99.7	99.5	99.2	98.6
C91,C95	Lymphoid & unspecified leukaemia	81.5	82.3	81.5	77.1	77.2	99.7	99.6	99.5	98.6	98.7
C92–C94	Myeloid & other specified leukaemia	76.6	78.3	76.8	72.3	73.8	99.5	99.7	99.2	98.8	98.5
C97,C76–C80,C26,C39	Unknown and multiple primary site	71.1	70.6	67.5	64.8	64.3	98.2	98.3	97.6	96.5	96.0
<b>Other cancer-related separations<sup>(b)</sup></b>											
Z80,Z85,Z92.3	Personal and family history	31.3	33.7	30.3	26.6	19.9	98.4	98.3	96.4	93.9	94.7
Z03.1	Observation for suspected cancer	56.2	55.7	48.8	48.2	40.4	99.1	99.2	98.8	95.8	95.9
Z12	Special screening examination	14.3	14.5	7.0	27.6	36.6	100.0	97.4	31.0	94.6	94.4
Z40	Prophylactic surgery	49.5	57.3	43.3	47.0	43.4	98.7	97.1	99.0	95.7	96.7
Z51.0	Radiotherapy session	96.9	94.3	96.4	91.3	97.9	100.0	100.0	100.0	98.9	100.0
Z51.1	Chemotherapy session	68.7	64.1	55.9	49.8	48.3	99.8	100.0	98.5	95.8	93.9
Z54.1,Z08.1	Follow-up after radiotherapy	70.6	61.1	71.7	70.9	68.7	100.0	94.9	98.7	97.6	99.1
Z54.2,Z08.2	Follow-up after chemotherapy	69.7	51.5	48.8	49.5	46.9	99.9	96.8	97.8	99.4	98.5
Z08.0	Follow-up after surgery for cancer <sup>(c)</sup>	..	50.9	49.7	47.7	44.0	..	96.2	96.2	96.5	96.2
Z08.7–Z08.9	Follow-up after multiple treatment <sup>(c)</sup>	..	40.6	50.0	54.3	58.3	..	99.0	97.6	98.8	97.1
	<i>All cancer-related separations</i>	63.7	60.7	56.6	52.0	50.5	99.0	98.6	97.9	96.5	95.6

(a) Refer to table 23 for a list of equivalent ICD-9-CM codes.

(b) Separations for specific procedures, usually related to another separation for a principal diagnosis of cancer, but excluding any procedures conducted as part of that other separation.

(c) Refer to page 62 for the effects of coding changes.

(d) Separations with a patient election status of *Public*.

.. not applicable.

**Table 29: Cancer-related separations from private hospitals as a percentage of all hospital separations and as a percentage of all public patient separations, Australia, 1997–98 to 2001–02**

ICD-10-AM <sup>(a)</sup>	Principal diagnosis	Percentage of all hospital separations					Percentage of public patient separations <sup>(d)</sup>				
		1997–98	1998–99	1999–00	2000–01	2001–02	1997–98	1998–99	1999–00	2000–01	2001–02
C00–C97	All cancers (including C44)	38.0	38.0	39.9	43.8	44.7	1.6	1.8	2.3	2.9	3.2
C00	Lip	34.6	33.0	30.0	33.0	36.4	1.6	1.0	0.9	0.9	1.8
C01–C02	Tongue	20.0	20.1	22.6	26.0	27.0	1.5	1.4	1.5	1.7	2.1
C03–C06	Mouth	20.3	18.7	18.6	23.3	22.5	1.2	1.8	1.9	3.0	1.5
C07–C08	Parotid & other salivary glands	33.3	36.7	36.5	40.0	39.3	0.4	0.9	2.0	3.3	2.1
C09–C10	Tonsil & other oropharynx	11.8	12.3	18.4	16.2	18.9	0.2	0.2	1.9	1.7	1.8
C11	Nasopharynx	15.7	11.0	15.8	18.8	15.1	3.3	1.8	2.0	1.7	0.6
C12–C13	Hypopharynx	14.9	12.1	11.0	15.1	13.6	1.9	0.3	1.9	1.6	0.8
C14	Other lip, oral cavity & pharynx	14.0	20.7	22.2	29.8	20.9	1.7	5.1	3.1	4.5	2.5
C15	Oesophagus	35.4	34.1	35.1	36.6	34.4	2.1	1.2	3.2	2.9	3.3
C16	Stomach	31.3	32.8	36.4	39.5	38.5	1.8	1.9	2.6	3.9	3.7
C17	Small intestine	48.0	38.3	34.9	40.2	36.8	5.6	3.1	0.8	2.4	4.7
C18	Colon	44.4	44.0	45.6	48.4	48.0	2.6	2.5	2.8	3.6	4.3
C19–C21	Rectum & anus	42.0	41.7	43.3	46.1	46.4	1.9	2.2	2.6	4.2	3.8
C18–C21	Colorectal (including anus)	43.4	43.1	44.7	47.5	47.4	2.3	2.4	2.7	3.9	4.1
C22	Liver & intrahepatic bile ducts	21.7	18.3	22.0	21.9	19.5	1.6	1.7	1.2	2.7	2.7
C23–C24	Gallbladder & other biliary tract	23.8	29.8	29.8	29.3	34.1	1.4	0.9	3.6	2.7	2.6
C25	Pancreas	31.4	31.8	35.0	35.6	33.4	3.3	3.3	3.4	3.8	4.5
C30–C31	Nasal cavity & accessory sinuses	27.6	24.1	29.8	25.3	34.2	0.8	0.9	3.0	4.6	4.3
C32	Larynx	21.6	22.8	22.7	24.0	20.8	1.1	0.8	1.8	1.9	1.7
C33–C34	Trachea, bronchus & lung	23.5	24.3	24.7	27.0	27.4	2.1	2.5	2.9	3.3	4.2
C37–C38	Other thoracic organs	26.4	28.4	22.9	24.2	27.0	4.1	4.0	1.0	2.4	1.2
C40–C41	Bone and articular cartilage	18.3	15.4	13.6	18.6	17.7	1.1	1.0	0.3	0.9	0.7
C43	Skin—melanoma	49.0	48.1	49.9	54.4	54.7	1.6	1.7	3.0	3.4	3.0
C44	Skin—other than melanoma	56.1	56.7	59.2	63.4	65.2	1.4	2.5	2.7	3.1	3.7
C45	Mesothelioma <sup>(c)</sup>	..	26.9	32.0	31.9	35.3	..	1.9	2.9	4.5	4.3
C46	Kaposi's sarcoma	8.1	21.4	16.7	11.1	16.2	0.0	3.1	0.0	3.6	0.0
C47–C49	Connective & soft tissue	29.6	38.1	35.1	38.4	36.1	1.2	1.7	2.2	1.9	1.4
C50	Breast	43.2	43.1	44.3	49.8	51.6	1.8	1.5	2.1	3.0	3.2
C53	Cervix uteri	14.2	16.7	16.3	24.0	24.3	1.0	0.5	2.1	1.8	3.7
C54	Corpus uteri	35.2	33.3	36.8	39.1	37.3	1.4	1.2	1.4	1.9	1.8
C55	Uterus unspecified	41.4	46.0	42.6	42.4	41.9	1.0	2.9	2.6	2.1	2.5
C56	Ovary	40.7	39.7	44.2	43.6	40.6	1.7	1.0	1.5	2.8	3.5
C57–C58,C51–C52	Placenta & other female genital	29.7	27.7	28.0	30.9	34.3	0.8	1.5	2.0	2.8	2.4
C61	Prostate	52.3	53.8	55.2	57.3	60.2	2.0	3.0	3.7	4.5	4.6
C62	Testis	24.8	29.2	28.0	36.7	37.2	1.2	1.2	0.7	3.1	2.2
C63, C60	Penis & other male genital	28.8	29.0	31.6	30.3	39.2	2.4	0.0	1.7	1.7	1.9
C64	Kidney, except renal pelvis	31.5	32.3	33.8	37.4	37.6	1.7	2.9	2.7	3.3	3.2
C65	Renal pelvis	30.2	36.4	37.1	44.1	43.2	1.9	5.2	1.3	1.6	2.7
C66	Ureter	37.1	50.5	48.3	41.9	49.6	1.4	2.4	2.7	2.5	4.3
C67	Bladder	43.9	44.0	44.3	47.1	47.9	2.6	4.0	4.5	4.1	3.9
C68	Other urinary organs	27.1	45.3	47.6	42.8	48.5	0.0	3.7	1.8	0.0	5.9
C69	Eye and adnexa	21.7	17.8	16.6	22.9	25.6	0.6	0.3	1.1	2.5	1.4
C71	Brain	23.1	23.1	21.8	25.5	26.6	1.8	1.6	3.1	3.2	2.8
C72,C70	Meninges & other CNS	13.9	11.3	17.9	21.3	20.0	0.4	0.9	2.6	0.0	0.6
C73	Thyroid gland	23.5	24.7	22.9	28.7	32.9	0.4	0.7	0.7	0.7	1.2
C74	Adrenal gland	9.2	3.9	9.3	9.9	12.1	3.6	0.0	0.0	0.3	3.6
C75	Other endocrine glands	18.3	18.9	14.5	17.9	14.6	0.0	1.9	0.0	1.9	1.1
C81	Hodgkin's disease	28.4	22.0	22.2	26.1	28.7	0.9	0.7	0.7	1.3	1.0
C82–C85,C96	Non-Hodgkin's lymphoma	31.6	31.6	35.3	38.1	36.9	0.8	0.9	1.0	1.3	1.7
C81–C85,C96	All lymphomas	31.3	30.7	34.3	37.1	36.3	0.8	0.9	1.0	1.3	1.6
C88	Immunoproliferative neoplasms	21.7	23.8	23.0	26.2	31.2	2.7	0.0	0.9	0.6	1.7
C90	Multiple myeloma	24.9	27.5	27.1	32.4	33.1	0.5	0.3	0.5	0.8	1.4
C91,C95	Lymphoid & unspecified leukaemia	18.5	17.7	18.5	22.9	22.8	0.3	0.4	0.5	1.4	1.3
C92–C94	Myeloid & other specified leukaemia	23.4	21.7	23.2	27.7	26.2	0.5	0.3	0.8	1.2	1.5
C97,C76–C80,C26,C39	Unknown and multiple primary site	28.9	29.4	32.5	35.2	35.7	1.8	1.7	2.4	3.5	4.0
<b>Other cancer-related separations<sup>(b)</sup></b>											
Z80,Z85,Z92.3	Personal and family history	68.7	66.3	69.7	73.4	80.1	1.6	1.7	3.6	6.1	5.3
Z03.1	Observation for suspected cancer	43.8	44.3	51.2	51.8	59.6	0.9	0.8	1.2	4.2	4.1
Z12	Special screening examination	85.7	85.5	93.0	72.4	63.4	0.0	2.6	69.0	5.4	5.6
Z40	Prophylactic surgery	50.5	42.7	56.7	53.0	56.6	1.3	2.9	1.0	4.3	3.3
Z51.0	Radiotherapy session	3.1	5.7	3.6	8.7	2.1	0.0	0.0	0.0	1.1	0.0
Z51.1	Chemotherapy session	31.3	35.9	44.1	50.2	51.7	0.2	0.0	1.5	4.2	6.1
Z54.1,Z08.1	Follow-up after radiotherapy	29.4	38.9	28.3	29.1	31.3	0.0	5.1	1.3	2.4	0.9
Z54.2,Z08.2	Follow-up after chemotherapy	30.3	48.5	51.2	50.5	53.1	0.1	3.2	2.2	0.6	1.5
Z08.0	Follow-up after surgery for cancer <sup>(c)</sup>	..	49.1	50.3	52.3	56.0	..	3.8	3.8	3.5	3.8
Z08.7–Z08.9	Follow-up after multiple treatment <sup>(c)</sup>	..	59.4	50.0	45.7	41.7	..	1.0	2.4	1.2	2.9
<b>All cancer-related separations</b>		<b>36.3</b>	<b>39.3</b>	<b>43.4</b>	<b>48.0</b>	<b>49.5</b>	<b>1.0</b>	<b>1.4</b>	<b>2.1</b>	<b>3.5</b>	<b>4.4</b>

(a) Refer to table 23 for a list of equivalent ICD-9-CM codes.

(b) Separations for specific procedures, usually related to another separation for a principal diagnosis of cancer, but excluding any procedures conducted as part of that other separation.

(c) Refer to page 62 for the effects of coding changes.

(d) Separations with a patient election status of *Public*.

.. not applicable.





# Summary tables 2000

**Table 30: Incidence summary table, Australia, 2000**

ICD-10/ICD-O2	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–C96	All cancers (excluding C44)	45,935	535.7	382.6	39.5	1.4	39,296	390.4	297.4	30.1	
C00	Lip	656	7.4	5.7	0.5	2.9	258	2.5	1.8	0.2	
C01–C02	Tongue	294	3.2	2.6	0.3	2.2	150	1.5	1.1	0.1	
C03–C06	Mouth	286	3.2	2.4	0.3	1.7	195	1.9	1.4	0.1	
C07–C08	Salivary gland	147	1.7	1.2	0.1	2.0	88	0.9	0.7	0.1	
C09	Tonsil	147	1.6	1.3	0.2	3.2	48	0.5	0.4	0.0	
C10	Other oropharynx	62	0.7	0.5	0.1	4.2	17	0.2	0.1	0.0	
C11	Nasopharynx	76	0.8	0.7	0.1	2.2	36	0.4	0.3	0.0	
C12–C13	Hypopharynx	148	1.7	1.2	0.1	5.6	30	0.3	0.2	0.0	
C14	Pharynx unspecified	62	0.7	0.5	0.1	3.5	20	0.2	0.1	0.0	
C15	Oesophagus	711	8.3	5.8	0.6	2.5	354	3.3	2.2	0.2	
C16	Stomach	1,267	15.1	10.3	1.0	2.2	713	6.9	4.7	0.4	
C17	Small intestine	142	1.6	1.2	0.1	1.4	116	1.1	0.9	0.1	
C18	Colon	4,141	49.0	33.8	3.6	1.3	3,830	37.0	25.9	2.7	
C19–C20	Rectum	2,618	30.1	21.6	2.4	1.9	1,596	15.6	11.3	1.2	
C21	Anus	104	1.2	0.9	0.1	1.0	116	1.2	0.9	0.1	
C18–C20	Colorectal (excluding anus)	6,759	79.1	55.4	6.0	1.5	5,426	52.6	37.2	3.9	
C18–C21	Colorectal (including anus)	6,863	80.2	56.3	6.1	1.5	5,542	53.8	38.0	4.0	
C22	Liver	526	6.0	4.4	0.5	3.1	201	2.0	1.4	0.1	
C23–C24	Gallbladder	243	2.9	2.0	0.2	0.9	337	3.2	2.2	0.2	
C25	Pancreas	912	10.9	7.4	0.7	1.3	896	8.4	5.5	0.5	
C30–C31	Nasal cavity	88	1.0	0.7	0.1	2.0	52	0.5	0.4	0.0	
C32	Larynx	481	5.5	4.0	0.4	7.9	69	0.7	0.5	0.1	
C33–C34	Trachea, bronchus & lung	5,278	62.1	42.7	4.6	2.3	2,782	27.4	19.7	2.3	
C37–C38	Other thoracic organs	60	0.7	0.6	0.0	3.1	21	0.2	0.2	0.0	
C40–C41	Bone	93	1.0	0.9	0.1	1.4	69	0.7	0.7	0.1	
C43	Skin—melanoma	4,770	53.7	41.4	4.1	1.4	3,761	38.0	31.2	2.9	
C44	Skin—other than melanoma*										
C45	Mesothelioma	391	4.6	3.2	0.4	6.3	75	0.7	0.5	0.1	
C46	Kaposi's sarcoma	61	0.7	0.5	0.0	9.8	7	0.1	0.1	0.0	
C47–C49	Connective & soft tissue	283	3.2	2.5	0.3	0.9	351	3.5	2.8	0.3	
C50	Breast	86	1.0	0.7	0.1	<0.01	11,314	115.3	91.7	9.7	
C51	Vulva						198	1.9	1.3	0.1	
C52	Vagina						71	0.7	0.5	0.1	
C53	Cervix uteri						745	7.6	6.4	0.6	
C54	Corpus uteri						1,490	15.0	11.5	1.3	
C55	Uterus unspecified						74	0.7	0.5	0.0	
C56	Ovary						1,201	12.0	0.5	0.9	
C57	Other female genital organs						59	0.6	0.5	0.1	
C58	Placenta						1	0.0	0.0	0.0	
C60	Penis	78	0.9	0.7	0.1						
C61	Prostate	10,512	124.9	85.0	9.3						
C62	Testis	578	6.0	5.9	0.4						
C63	Other male genital organs	18	0.2	0.2	0.0						
C64	Kidney	1,242	14.2	10.5	1.1	1.9	745	7.4	5.5	0.6	
C65	Renal pelvis	116	1.3	1.0	0.1	1.1	127	1.2	0.8	0.1	
C66	Ureter	74	0.9	0.6	0.1	1.7	54	0.5	0.3	0.0	
C67	Bladder	2,139	26.1	17.1	1.6	3.7	747	7.1	4.8	0.5	
C68	Other urinary organs	38	0.5	0.3	0.0	5.2	9	0.1	0.1	0.0	
C69	Eye	142	1.6	1.3	0.1	2.2	73	0.7	0.6	0.1	
C71	Brain	778	8.6	7.1	0.7	1.5	576	5.8	4.9	0.5	
C70, C72	Meninges & other CNS	29	0.3	0.3	0.0	1.0	32	0.3	0.3	0.0	
C70–C72	Brain & CNS	807	8.9	7.4	0.7	1.4	608	6.1	5.2	0.5	
C73	Thyroid	265	2.9	2.4	0.2	0.4	775	8.0	7.2	0.6	
C74	Adrenal gland	32	0.3	0.3	0.0	1.3	26	0.3	0.2	0.0	
C75	Other endocrine	15	0.2	0.2	0.0	3.0	5	0.1	0.1	0.0	
C81	Hodgkin's disease	232	2.5	2.4	0.2	1.3	189	1.9	1.9	0.1	
C82–C85, C96	Non-Hodgkin's lymphoma	1,864	21.5	15.9	1.5	1.4	1,593	15.6	11.5	1.1	
M9590/3	Lymphoma NOS	164	2.0	1.4	0.1	1.3	163	1.6	1.1	0.1	
C81–C85, C96	All lymphomas	2,096	23.9	18.3	1.7	1.4	1,782	17.6	13.5	1.3	
C88	Immunoproliferative neoplasms	36	0.4	0.3	0.0	1.3	34	0.3	0.2	0.0	
C90	Multiple myeloma	579	6.9	4.7	0.5	1.5	470	4.6	3.2	0.3	
C91	Lymphoid leukaemia	658	7.5	6.0	0.5	1.9	409	4.0	3.3	0.3	
C92–C94	Myeloid leukaemia	719	8.5	6.1	0.5	1.8	486	4.7	3.5	0.3	
C95	Leukaemia unspecified	51	0.6	0.4	0.0	1.4	47	0.4	0.3	0.0	
C76–C80, C26, C39	Unknown primary site	1,607	19.5	13.0	1.2	1.3	1,558	14.6	9.6	0.9	
#	Attributed to alcohol	1,136	12.9	9.5	1.1	0.8	1,561	15.8	12.5	1.3	
#	Attributed to smoking	7,699	90.5	62.4	6.8	3.0	3,108	30.3	21.4	2.5	

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

\* Incidence data for skin cancer other than melanoma are not routinely collected by state and territory cancer registries.

# See Appendix A for ICD-10 codes.

Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.

**Table 31: Mortality summary table, Australia, 2000**

ICD-10	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–C96	All cancers (excluding C44)	20,038	245.0	161.2	136,660	1.7	15,428	147.5	101.6	116,425
C00	Lip	13	0.2	0.1	73	3.3	6	0.0	0.0	0
C01–C02	Tongue	102	1.2	0.9	1,050	2.0	64	0.6	0.4	698
C03–C06	Mouth	90	1.0	0.7	798	2.2	50	0.5	0.3	348
C07–C08	Salivary gland	40	0.5	0.3	303	3.1	17	0.2	0.1	75
C09	Tonsil	40	0.4	0.3	595	4.2	10	0.1	0.1	165
C10	Other oropharynx	60	0.7	0.5	650	3.7	19	0.2	0.1	138
C11	Nasopharynx	45	0.5	0.4	598	2.2	24	0.2	0.2	270
C12–C13	Hypopharynx	48	0.6	0.4	423	13.6	4	0.0	0.0	38
C14	Pharynx unspecified	29	0.3	0.2	258	3.9	9	0.1	0.1	113
C15	Oesophagus	683	8.2	5.5	5,225	3.1	288	2.6	1.6	1,185
C16	Stomach	763	9.3	6.1	5,040	2.3	426	4.0	2.6	2,478
C17	Small intestine	57	0.7	0.5	553	2.0	36	0.3	0.2	265
C18	Colon	1,786	21.6	14.5	12,350	1.4	1,649	15.5	10.2	8,898
C19–C20	Rectum	757	9.0	6.1	5,600	2.0	467	4.4	3.0	2,940
C21	Anus	26	0.3	0.2	185	1.0	33	0.3	0.2	253
C18–C20	Colorectal (excluding anus)	2,543	30.7	20.6	17,950	1.5	2,116	19.9	13.2	11,838
C18–C21	Colorectal (including anus)	2,569	31.0	20.8	18,135	1.5	2,149	20.2	13.4	12,090
C22	Liver	513	6.0	4.2	4,388	2.8	228	2.2	1.5	1,553
C23–C24	Gallbladder	126	1.6	1.0	600	0.8	206	1.9	1.3	1,058
C25	Pancreas	872	10.4	7.1	6,283	1.3	876	8.2	5.3	3,720
C30–C31	Nasal cavity	25	0.3	0.2	243	2.8	11	0.1	0.1	143
C32	Larynx	203	2.4	1.7	1,680	6.7	36	0.4	0.3	275
C33–C34	Trachea, bronchus & lung	4,594	54.8	36.8	28,078	2.4	2,317	22.5	15.8	15,468
C37–C38	Other thoracic organs	34	0.4	0.3	618	1.8	23	0.2	0.2	195
C40–C41	Bone	29	0.3	0.3	690	1.1	32	0.3	0.3	913
C43	Skin—melanoma	617	7.3	5.1	6,150	2.1	354	3.5	2.6	4,403
C44	Skin—other than melanoma	241	3.1	1.9	1,030	3.0	118	1.0	0.6	360
C45	Mesothelioma	374	4.4	3.0	2,548	7.6	61	0.6	0.4	415
C46	Kaposi's sarcoma	3	0.0	0.0	0		1	0.0	0.0	0
C47–C49	Connective & soft tissue	120	1.4	1.1	1,830	1.0	139	1.3	1.0	1,530
C50	Breast	21	0.3	0.2	240	<0.01	2,521	24.7	18.1	28,305
C51	Vulva						59	0.5	0.3	225
C52	Vagina						25	0.2	0.2	163
C53	Cervix uteri						265	2.6	2.0	3,668
C54	Corpus uteri						227	2.2	1.5	1,348
C55	Uterus unspecified						34	0.3	0.2	110
C56	Ovary						780	7.6	5.4	6,485
C57	Other female genital organs						15	0.1	0.1	70
C58	Placenta						0	0.0	0.0	0
C60	Penis	17	0.2	0.1	130					
C61	Prostate	2,665	35.9	20.4	5,783					
C62	Testis	19	0.2	0.2	575					
C63	Other male genital organs	2	0.0	0.0	0					
C64	Kidney	468	5.6	3.8	3,900	2.0	299	2.8	1.9	1,683
C65	Renal pelvis	10	0.1	0.1	20	1.3	10	0.1	0.1	48
C66	Ureter	14	0.2	0.1	80	1.5	13	0.1	0.1	30
C67	Bladder	570	7.6	4.4	1,735	3.4	249	2.2	1.3	568
C68	Other urinary organs	8	0.1	0.1	83	0.9	12	0.1	0.1	43
C69	Eye	26	0.3	0.2	328	2.6	12	0.1	0.1	55
C71	Brain	633	7.0	5.5	10,495	1.6	455	4.5	3.5	6,390
C70, C72	Meninges & other CNS	5	0.1	0.0	103	0.3	16	0.2	0.1	248
C70–C72	Brain & CNS	638	7.1	5.6	10,598	1.5	471	4.7	3.7	6,638
C73	Thyroid	40	0.5	0.3	373	1.0	50	0.5	0.3	428
C74	Adrenal gland	20	0.2	0.2	528	1.8	12	0.1	0.1	505
C75	Other endocrine	3	0.0	0.0	10	0.7	5	0.1	0.0	133
C81	Hodgkin's disease	37	0.4	0.3	530	1.5	31	0.3	0.2	298
C82–C85, C96	Non-Hodgkin's lymphoma	857	10.4	7.0	7,138	1.5	734	7.0	4.7	4,598
C81–C85, C96	All lymphomas	894	10.9	7.3	7,668	1.5	765	7.3	4.9	4,895
C88	Immunoproliferative neoplasms	27	0.4	0.2	60	2.5	16	0.1	0.1	38
C90	Multiple myeloma	370	4.5	3.0	2,273	1.5	319	3.0	2.0	1,680
C91	Lymphoid leukaemia	260	3.1	2.2	3,295	1.9	178	1.7	1.2	1,705
C92–C94	Myeloid leukaemia	499	6.0	4.1	4,588	1.8	355	3.4	2.4	3,420
C95	Leukaemia unspecified	35	0.5	0.3	108	1.5	36	0.3	0.2	210
C97	Independent (primary) multiple	181	2.4	1.4	780	2.6	97	0.9	0.6	645
C76–C80, C26, C39	Unknown primary site	1,202	15.1	9.5	6,708	1.3	1,217	11.2	7.1	5,803
#	Attributed to alcohol	737	8.6	6.1	6,350	1.8	490	4.7	3.4	4,771
#	Attributed to smoking	5,454	65.4	43.7	31,989	3.1	2,196	21.1	14.5	12,283

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

# See Appendix A for ICD-10 codes.

Source: National Mortality Database, AIHW (from data provided by Registrars of Births, Deaths and Marriages).



# Tables for selected cancers 2000

- 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.
- Note: Mortality numbers refer to the year of death and the state or territory in which the deaths were registered. These more accurately reflect the place of death than mortality numbers based on the usual residence of the person who died. However, cancer incidence numbers are based on usual residence at the time of first diagnosis of the cancer. Therefore mortality numbers for the Australian Capital Territory and the Northern Territory should be interpreted with caution because of migration of persons into and out of the territories following a diagnosis of cancer.

**Table 32: All cancers (ICD-10 C00–C97 excluding skin cancers other than melanoma C44)**

**Australia 2000**

Age group (years)	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0–4	153	23.3	108	17.3	261	20.4	17	2.6	13	2.1	30	2.3
5–9	65	9.4	58	8.8	123	9.1	25	3.6	16	2.4	41	3.0
10–14	90	13.1	86	13.2	176	13.2	14	2.0	22	3.4	36	2.7
15–19	165	24.3	139	21.4	304	22.9	29	4.3	19	2.9	48	3.6
20–24	269	41.1	251	39.5	520	40.3	37	5.6	34	5.3	71	5.5
25–29	425	58.8	443	60.9	868	59.9	41	5.7	40	5.5	81	5.6
30–34	570	80.5	766	106.6	1,336	93.6	89	12.6	96	13.4	185	13.0
35–39	804	107.4	1,278	169.0	2,082	138.4	136	18.2	194	25.6	330	21.9
40–44	1,166	162.0	1,944	266.7	3,110	214.7	269	37.4	342	46.9	611	42.2
45–49	1,739	260.7	2,746	407.3	4,485	334.4	473	70.9	560	83.1	1,033	77.0
50–54	2,911	458.8	3,592	576.4	6,503	517.1	947	149.3	861	138.2	1,808	143.8
55–59	4,059	828.0	3,678	776.8	7,737	802.9	1,372	279.9	1,067	225.4	2,439	253.1
60–64	5,215	1,301.2	3,887	979.5	9,102	1,141.1	1,834	457.6	1,216	306.4	3,050	382.4
65–69	6,470	1,948.6	4,030	1,167.8	10,500	1,550.7	2,597	782.1	1,561	452.4	4,158	614.1
70–74	7,709	2,573.2	4,700	1,408.7	12,409	1,959.6	3,582	1,195.6	2,171	650.7	5,753	908.5
75–79	6,974	3,175.9	4,752	1,651.5	11,726	2,311.3	3,663	1,668.1	2,456	853.5	6,119	1,206.1
80–84	4,203	3,532.9	3,429	1,804.7	7,632	2,470.2	2,618	2,200.6	2,089	1,099.5	4,707	1,523.5
85 and over	2,948	3,803.0	3,409	1,946.3	6,357	2,515.9	2,295	2,960.6	2,671	1,525.0	4,966	1,965.4
<b>Total</b>	<b>45,935</b>		<b>39,296</b>		<b>85,231</b>		<b>20,038</b>		<b>15,428</b>		<b>35,466</b>	

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

Crude rate	483.3	407.3	445.0	210.8	159.9	185.2
95% CI	478.8–487.7	403.3–411.3	442.0–448.0	207.9–213.7	157.4–162.4	183.2–187.1
AS rate (Aust. 2001)	535.7	390.4	450.9	245.0	147.5	188.3
95% CI	530.1–541.3	386.1–394.8	447.5–454.3	241.2–248.9	144.9–150.1	186.1–190.5
AS rate (new WHO World)	382.6	297.4	333.7	161.2	101.6	127.4
95% CI	379.1–386.1	294.4–300.5	331.4–336.0	159.0–163.5	99.9–103.3	126.1–128.8
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)				136,660	116,425	253,085
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, 1996–2000**

	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	15,223	536.8	12,634	377.9	27,857	443.5	6,636	245.9	5,141	147.5	11,777	187.8
Vic	11,098	543.9	9,685	393.2	20,784	454.0	5,025	256.5	4,030	157.2	9,055	197.9
Qld	8,386	574.3	6,879	411.4	15,266	481.4	3,586	259.9	2,539	149.9	6,126	197.2
WA	3,757	518.2	3,144	367.2	6,900	430.2	1,717	254.1	1,303	151.7	3,019	194.5
SA	3,962	556.0	3,308	390.1	7,270	457.9	1,734	250.3	1,374	152.1	3,107	192.2
Tas	1,151	533.5	1,001	394.3	2,152	450.4	561	270.1	450	168.8	1,011	210.8
ACT	558	559.0	485	381.1	1,042	454.9	232	263.8	217	185.8	450	217.2
NT	229	480.0	171	367.1	400	427.1	93	244.4	70	199.7	163	223.3

**Notes**

- AS rates use Australian 2001 Standard Population unless new WHO World Standard Population is indicated. All rates are expressed per 100,000 population.
  - Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of registration of death.
- Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.

**Table 33: Cancer of the stomach (ICD-10 C16)**

**Australia 2000**

Age group (years)	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	0	0.0	1	0.1	2	0.3	2	0.3	4	0.3
25-29	4	0.6	2	0.3	6	0.4	2	0.3	0	0.0	2	0.1
30-34	8	1.1	7	1.0	15	1.1	0	0.0	1	0.1	1	0.1
35-39	10	1.3	9	1.2	19	1.3	3	0.4	5	0.7	8	0.5
40-44	24	3.3	20	2.7	44	3.0	16	2.2	11	1.5	27	1.9
45-49	46	6.9	34	5.0	80	6.0	20	3.0	9	1.3	29	2.2
50-54	84	13.2	43	6.9	127	10.1	43	6.8	24	3.9	67	5.3
55-59	99	20.2	44	9.3	143	14.8	47	9.6	17	3.6	64	6.6
60-64	130	32.4	59	14.9	189	23.7	58	14.5	25	6.3	83	10.4
65-69	168	50.6	74	21.4	242	35.7	104	31.3	37	10.7	141	20.8
70-74	221	73.8	85	25.5	306	48.3	145	48.4	44	13.2	189	29.8
75-79	225	102.5	134	46.6	359	70.8	134	61.0	88	30.6	222	43.8
80-84	134	112.6	103	54.2	237	76.7	106	89.1	59	31.1	165	53.4
85 and over	113	145.8	99	56.5	212	83.9	83	107.1	104	59.4	187	74.0
<b>Total</b>	<b>1,267</b>		<b>713</b>		<b>1,980</b>		<b>763</b>		<b>426</b>		<b>1,189</b>	

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

Crude rate	13.3	7.4	10.3	8.0	4.4	6.2
95% CI	12.6-14.1	6.8-7.9	9.9-10.8	7.5-8.6	4.0-4.8	5.9-6.6
AS rate (Aust. 2001)	15.1	6.9	10.5	9.3	4.0	6.3
95% CI	14.2-16.1	6.3-7.4	10.0-11.0	8.6-10.1	3.5-4.4	5.9-6.7
AS rate (new WHO World)	10.3	4.7	7.3	6.1	2.6	4.2
95% CI	9.7-10.9	4.4-5.1	6.9-7.6	5.7-6.5	2.3-2.8	3.9-4.4
Lifetime risk (0-74)	1 in 99	1 in 227	1 in 139	1 in 172	1 in 481	1 in 257
PYLL (0-74)				5,040	2,478	7,518
Per cent of all cancers	2.8	1.8	2.3	3.8	2.8	3.4

**Average annual numbers and rates by state and territory, 1996-2000**

	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	418	15.1	231	6.6	649	10.4	239	8.9	138	3.9	377	6.1
Vic	345	17.0	194	7.5	538	11.7	213	10.8	128	4.9	341	7.5
Qld	213	15.3	111	6.6	324	10.5	127	9.5	68	3.9	195	6.4
WA	104	14.8	61	7.0	164	10.5	71	10.5	44	5.1	115	7.5
SA	112	15.8	63	6.9	175	10.8	74	10.6	49	5.4	124	7.6
Tas	31	14.9	18	6.9	50	10.4	24	11.6	14	5.2	38	7.9
ACT	13	13.8	9	8.0	22	10.6	9	10.0	8	7.3	17	8.7
NT	4	12.5	1	3.8	6	8.2	2	5.5	1	2.4	3	4.0

*Notes*

- AS rates use Australian 2001 Standard Population unless new WHO World Standard Population is indicated. All rates are expressed per 100,000 population.
  - Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of registration of death.
- Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.

**Table 34: Cancer of the colon and rectum (including anus) (ICD-10 C18–C21)**

Australia 2000												
Age group (years)	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	2	0.3	1	0.2	3	0.2	0	0.0	0	0.0	0	0.0
15–19	2	0.3	4	0.6	6	0.5	0	0.0	0	0.0	0	0.0
20–24	3	0.5	7	1.1	10	0.8	1	0.2	3	0.5	4	0.3
25–29	16	2.2	12	1.7	28	1.9	2	0.3	1	0.1	3	0.2
30–34	33	4.7	28	3.9	61	4.3	10	1.4	9	1.3	19	1.3
35–39	58	7.8	55	7.3	113	7.5	22	2.9	13	1.7	35	2.3
40–44	134	18.6	115	15.8	249	17.2	33	4.6	20	2.7	53	3.7
45–49	237	35.5	216	32.0	453	33.8	61	9.1	61	9.0	122	9.1
50–54	432	68.1	349	56.0	781	62.1	128	20.2	78	12.5	206	16.4
55–59	642	131.0	429	90.6	1,071	111.1	197	40.2	142	30.0	339	35.2
60–64	884	220.6	564	142.1	1,448	181.5	306	76.3	175	44.1	481	60.3
65–69	1,002	301.8	653	189.2	1,655	244.4	361	108.7	205	59.4	566	83.6
70–74	1,263	421.6	852	255.4	2,115	334.0	451	150.5	289	86.6	740	116.9
75–79	1,087	495.0	895	311.0	1,982	390.7	429	195.4	364	126.5	793	156.3
80–84	630	529.5	679	357.4	1,309	423.7	316	265.6	310	163.2	626	202.6
85 and over	438	565.0	683	389.9	1,121	443.7	252	325.1	479	273.5	731	289.3
<b>Total</b>	<b>6,863</b>		<b>5,542</b>		<b>12,405</b>		<b>2,569</b>		<b>2,149</b>		<b>4,718</b>	

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

Crude rate	72.2	57.4	64.8	27.0	22.3	24.6
95% CI	70.5–73.9	55.9–59.0	63.6–65.9	26.0–28.1	21.3–23.2	23.9–25.3
AS rate (Aust. 2001)	80.2	53.8	65.7	31.0	20.2	25.1
95% CI	78.1–82.4	52.2–55.4	64.4–67.0	29.6–32.3	19.2–21.2	24.3–25.9
AS rate (new WHO World)	56.3	38.0	46.5	20.8	13.4	16.8
95% CI	55.0–57.6	37.0–39.1	45.7–47.3	20.0–21.6	12.8–14.0	16.3–17.3
Lifetime risk (0–74)	1 in 17	1 in 26	1 in 21	1 in 49	1 in 81	1 in 61
PYLL (0–74)				18,135	12,090	30,225
Per cent of all cancers	14.9	14.1	14.6	12.8	13.9	13.3

**Average annual numbers and rates by state and territory, 1996–2000**

	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	2,173	76.9	1,780	51.9	3,953	63.0	834	30.9	693	19.8	1,527	24.6
Vic	1,632	79.9	1,391	54.7	3,023	66.0	662	33.6	581	22.5	1,244	27.4
Qld	1,148	78.9	951	56.7	2,099	67.1	446	32.1	356	21.1	802	26.1
WA	544	76.8	420	49.4	964	61.5	228	33.4	181	21.1	408	26.6
SA	563	79.1	506	56.6	1,070	66.7	216	31.1	200	21.9	416	25.9
Tas	162	74.6	155	58.7	317	66.0	71	34.1	74	27.8	145	30.6
ACT	75	75.5	61	52.2	137	63.0	31	33.5	27	24.4	58	29.0
NT	25	54.7	15	42.4	39	49.7	8	21.5	6	18.4	14	20.5

**Notes**

- AS rates use Australian 2001 Standard Population unless new WHO World Standard Population is indicated. All rates are expressed per 100,000 population.
  - Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of registration of death.
- Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.



**Table 35: Cancer of the pancreas (ICD-10 C25)**

Australia 2000												
Age group (years)	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	0	0.0	1	0.1	0	0.0	0	0.0	0	0.0
25-29	2	0.3	1	0.1	3	0.2	0	0.0	0	0.0	0	0.0
30-34	3	0.4	3	0.4	6	0.4	2	0.3	3	0.4	5	0.4
35-39	6	0.8	1	0.1	7	0.5	8	1.1	1	0.1	9	0.6
40-44	15	2.1	16	2.2	31	2.1	10	1.4	6	0.8	16	1.1
45-49	36	5.4	18	2.7	54	4.0	22	3.3	12	1.8	34	2.5
50-54	64	10.1	29	4.7	93	7.4	57	9.0	28	4.5	85	6.8
55-59	67	13.7	48	10.1	115	11.9	74	15.1	41	8.7	115	11.9
60-64	86	21.5	56	14.1	142	17.8	77	19.2	54	13.6	131	16.4
65-69	143	43.1	90	26.1	233	34.4	143	43.1	84	24.3	227	33.5
70-74	150	50.1	141	42.3	291	46.0	142	47.4	151	45.3	293	46.3
75-79	164	74.7	179	62.2	343	67.6	155	70.6	190	66.0	345	68.0
80-84	97	81.5	154	81.1	251	81.2	109	91.6	147	77.4	256	82.9
85 and over	78	100.6	160	91.3	238	94.2	73	94.2	159	90.8	232	91.8
<b>Total</b>	<b>912</b>		<b>896</b>		<b>1,808</b>		<b>872</b>		<b>876</b>		<b>1,748</b>	

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

Crude rate	9.6	9.3	9.4	9.2	9.1	9.1
95% CI	9.0-10.2	8.7-9.9	9.0-9.9	8.6-9.8	8.5-9.7	8.7-9.6
AS rate (Aust. 2001)	10.9	8.4	9.6	10.4	8.2	9.3
95% CI	10.1-11.7	7.8-9.1	9.1-10.1	9.7-11.2	7.6-8.8	8.8-9.8
AS rate (new WHO World)	7.4	5.5	6.4	7.1	5.3	6.2
95% CI	6.9-7.9	5.1-5.9	6.1-6.7	6.6-7.5	4.9-5.7	5.9-6.5
Lifetime risk (0-74)	1 in 136	1 in 195	1 in 161	1 in 144	1 in 201	1 in 168
PYLL (0-74)				6,283	3,720	10,003
Per cent of all cancers	2.0	2.3	2.1	4.4	5.7	4.9

**Average annual numbers and rates by state and territory, 1996-2000**

	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	293	10.7	305	8.6	598	9.5	277	10.3	292	8.2	569	9.1
Vic	234	11.7	228	8.7	461	10.1	223	11.1	221	8.5	444	9.7
Qld	161	11.3	144	8.4	305	9.8	145	10.4	137	8.0	282	9.2
WA	75	10.6	78	9.2	153	9.9	70	10.1	71	8.3	140	9.2
SA	80	11.4	76	8.1	156	9.6	68	9.8	72	7.8	140	8.6
Tas	21	10.2	30	10.8	51	10.6	21	10.2	26	9.6	47	9.9
ACT	10	10.8	10	9.1	20	9.8	10	10.7	10	9.3	20	10.0
NT	6	9.8	3	12.9	9	11.9	5	9.8	4	14.7	9	13.0

*Notes*

- AS rates use Australian 2001 Standard Population unless new WHO World Standard Population is indicated. All rates are expressed per 100,000 population.
  - Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of registration of death.
- Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.

**Table 36: Cancer of the trachea, bronchus and lung (ICD-10 C33–C34)**

Australia 2000												
Age group (years)	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	2	0.3	2	0.3	4	0.3	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	2	0.3	2	0.3	4	0.3	2	0.3	0	0.0	2	0.1
30–34	11	1.6	4	0.6	15	1.1	3	0.4	1	0.1	4	0.3
35–39	27	3.6	20	2.6	47	3.1	12	1.6	12	1.6	24	1.6
40–44	54	7.5	47	6.4	101	7.0	37	5.1	26	3.6	63	4.3
45–49	113	16.9	87	12.9	200	14.9	72	10.8	69	10.2	141	10.5
50–54	261	41.1	172	27.6	433	34.4	183	28.8	130	20.9	313	24.9
55–59	444	90.6	262	55.3	706	73.3	350	71.4	181	38.2	531	55.1
60–64	599	149.5	301	75.8	900	112.8	509	127.0	222	55.9	731	91.6
65–69	839	252.7	409	118.5	1,248	184.3	703	211.7	303	87.8	1,006	148.6
70–74	1,086	362.5	508	152.3	1,594	251.7	938	313.1	437	131.0	1,375	217.1
75–79	989	450.4	450	156.4	1,439	283.6	914	416.2	404	140.4	1,318	259.8
80–84	524	440.5	295	155.3	819	265.1	519	436.2	293	154.2	812	262.8
85 and over	325	419.3	222	126.7	547	216.5	352	454.1	239	136.5	591	233.9
<b>Total</b>	<b>5,278</b>		<b>2,782</b>		<b>8,060</b>		<b>4,594</b>		<b>2,317</b>		<b>6,911</b>	

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

Crude rate	55.5	28.8	42.1	48.3	24.0	36.1
95% CI	54.0–57.0	27.8–29.9	41.2–43.0	46.9–49.7	23.0–25.0	35.2–36.9
AS rate (Aust. 2001)	62.1	27.4	42.7	54.8	22.5	36.6
95% CI	60.2–64.0	26.2–28.5	41.6–43.7	53.0–56.6	21.5–23.5	35.6–37.6
AS rate (new WHO World)	42.7	19.7	30.1	36.8	15.8	25.2
95% CI	41.5–43.8	19.0–20.5	29.5–30.8	35.8–37.9	15.1–16.4	24.6–25.8
Lifetime risk (0–74)	1 in 22	1 in 45	1 in 30	1 in 26	1 in 58	1 in 37
PYLL (0–74)				28,078	15,468	43,545
Per cent of all cancers	11.5	7.1	9.5	22.9	15.0	19.5

**Average annual numbers and rates by state and territory, 1996–2000**

	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	1,825	64.6	876	25.7	2,701	42.7	1,558	56.3	719	21.0	2,277	36.2
Vic	1,332	65.5	687	27.4	2,018	43.9	1,151	57.6	558	22.2	1,709	37.4
Qld	1,014	70.3	432	26.0	1,447	46.1	881	62.2	352	21.2	1,233	39.6
WA	480	68.6	243	28.9	723	46.3	409	60.0	200	23.8	609	39.5
SA	479	67.0	216	24.4	694	42.8	414	58.7	174	19.5	588	36.3
Tas	155	71.3	76	29.7	232	48.1	141	65.4	61	23.6	203	42.2
ACT	43	45.6	32	27.1	75	35.3	46	49.2	31	26.4	76	36.4
NT	34	76.9	14	42.3	48	61.9	29	71.0	12	36.5	41	55.5

*Notes*

- AS rates use Australian 2001 Standard Population unless new WHO World Standard Population is indicated. All rates are expressed per 100,000 population.
  - Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of registration of death.
- Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.

**Table 37: Cancer of the skin—melanoma (ICD-10 C43)**

Australia 2000												
Age group (years)	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	5	0.7	5	0.8	10	0.7	0	0.0	0	0.0	0	0.0
15-19	34	5.0	36	5.5	70	5.3	2	0.3	0	0.0	2	0.2
20-24	70	10.7	96	15.1	166	12.9	2	0.3	4	0.6	6	0.5
25-29	127	17.6	147	20.2	274	18.9	3	0.4	4	0.6	7	0.5
30-34	163	23.0	217	30.2	380	26.6	8	1.1	9	1.3	17	1.2
35-39	226	30.2	296	39.1	522	34.7	16	2.1	21	2.8	37	2.5
40-44	314	43.6	317	43.5	631	43.6	24	3.3	18	2.5	42	2.9
45-49	383	57.4	347	51.5	730	54.4	28	4.2	24	3.6	52	3.9
50-54	467	73.6	357	57.3	824	65.5	43	6.8	21	3.4	64	5.1
55-59	479	97.7	309	65.3	788	81.8	47	9.6	26	5.5	73	7.6
60-64	471	117.5	277	69.8	748	93.8	62	15.5	29	7.3	91	11.4
65-69	469	141.3	303	87.8	772	114.0	61	18.4	25	7.2	86	12.7
70-74	609	203.3	315	94.4	924	145.9	110	36.7	44	13.2	154	24.3
75-79	479	218.1	335	116.4	814	160.4	95	43.3	43	14.9	138	27.2
80-84	286	240.4	199	104.7	485	157.0	73	61.4	43	22.6	116	37.5
85 and over	188	242.5	204	116.5	392	155.1	43	55.5	43	24.6	86	34.0
<b>Total</b>	<b>4,770</b>		<b>3,761</b>		<b>8,531</b>		<b>617</b>		<b>354</b>		<b>971</b>	

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

Crude rate	50.2	39.0	44.5	6.5	3.7	5.1
95% CI	48.8-51.6	37.7-40.2	43.6-45.5	6.0-7.0	3.3-4.1	4.8-5.4
AS rate (Aust. 2001)	53.7	38.0	45.0	7.3	3.5	5.1
95% CI	51.9-55.4	36.6-39.4	43.9-46.0	6.6-7.9	3.1-3.9	4.8-5.5
AS rate (new WHO World)	41.4	31.2	35.9	5.1	2.6	3.7
95% CI	40.2-42.6	30.2-32.3	35.1-36.7	4.7-5.5	2.3-2.8	3.5-3.9
Lifetime risk (0-74)	1 in 25	1 in 35	1 in 29	1 in 203	1 in 419	1 in 276
PYLL (0-74)				6,150	4,403	10,553
Per cent of all cancers	10.4	9.6	10.0	3.1	2.3	2.7

**Average annual numbers and rates by state and territory, 1996-2000**

	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	1,585	54.3	1,140	34.8	2,724	43.4	231	8.4	119	3.5	349	5.6
Vic	862	40.7	815	33.8	1,677	36.6	127	6.3	79	3.1	206	4.5
Qld	1,149	74.0	866	51.5	2,015	61.8	134	9.3	72	4.2	206	6.5
WA	445	56.3	331	37.9	776	46.2	54	7.5	31	3.6	85	5.4
SA	322	44.7	284	35.2	606	39.2	41	5.7	27	3.2	68	4.3
Tas	92	41.8	99	40.6	191	40.5	10	4.9	8	3.1	18	3.8
ACT	61	49.0	44	32.0	106	40.2	6	5.9	4	3.2	10	4.3
NT	26	37.5	19	27.0	45	32.7	3	6.1	1	3.6	4	4.9

*Notes*

- AS rates use Australian 2001 Standard Population unless new WHO World Standard Population is indicated. All rates are expressed per 100,000 population.
  - Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of registration of death.
- Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.

**Table 38: Cancer of the breast (ICD-10 C50)**

Australia 2000												
Age group (years)	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	2	0.3	2	0.2	0	0.0	0	0.0	0	0.0
20-24	0	0.0	4	0.6	4	0.3	0	0.0	1	0.2	1	0.1
25-29	1	0.1	54	7.4	55	3.8	0	0.0	5	0.7	5	0.3
30-34	0	0.0	190	26.5	190	13.3	1	0.1	27	3.8	28	2.0
35-39	2	0.3	435	57.5	437	29.0	2	0.3	60	7.9	62	4.1
40-44	3	0.4	840	115.2	843	58.2	0	0.0	126	17.3	126	8.7
45-49	6	0.9	1,270	188.4	1,276	95.1	1	0.1	188	27.9	189	14.1
50-54	7	1.1	1,562	250.7	1,569	124.8	0	0.0	255	40.9	255	20.3
55-59	5	1.0	1,432	302.4	1,437	149.1	3	0.6	246	52.0	249	25.8
60-64	8	2.0	1,338	337.2	1,346	168.7	2	0.5	237	59.7	239	30.0
65-69	9	2.7	1,118	324.0	1,127	166.4	2	0.6	215	62.3	217	32.0
70-74	19	6.3	1,100	329.7	1,119	176.7	1	0.3	294	88.1	295	46.6
75-79	15	6.8	891	309.7	906	178.6	4	1.8	280	97.3	284	56.0
80-84	6	5.0	567	298.4	573	185.5	2	1.7	240	126.3	242	78.3
85 and over	5	6.5	511	291.7	516	204.2	3	3.9	347	198.1	350	138.5
<b>Total</b>	<b>86</b>		<b>11,314</b>		<b>11,400</b>		<b>21</b>		<b>2,521</b>		<b>2,542</b>	

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

Crude rate	0.9	117.3	59.5	0.2	26.1	13.3
95% CI	0.7-1.1	115.1-119.4	58.4-60.6	0.1-0.3	25.1-27.1	12.8-13.8
AS rate (Aust. 2001)	1.0	115.3	60.3	0.3	24.7	13.5
95% CI	0.8-1.2	113.0-117.7	59.0-61.5	0.1-0.4	23.6-25.8	12.9-14.1
AS rate (new WHO World)	0.7	91.7	47.3	0.2	18.1	9.7
95% CI	0.6-0.8	90.0-93.4	46.4-48.2	0.1-0.3	17.4-18.9	9.3-10.0
Lifetime risk (0-74)	1 in 1,343	1 in 11	1 in 21	1 in 7,677	1 in 56	1 in 109
PYLL (0-74)				240	28,305	28,545
Per cent of all cancers	0.2	28.8	13.4	0.1	16.3	7.2

**Average annual numbers and rates by state and territory, 1996-2000**

	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	3,585	110.9	3,616	58.2	7	0.2	846	25.3	853	13.8
Vic	19	0.9	2,731	114.5	2,750	60.6	7	0.4	702	28.6	709	15.7
Qld	17	1.2	1,873	113.6	1,890	58.9	3	0.3	425	25.5	428	13.7
WA	5	0.7	949	111.5	954	57.8	1	0.1	221	25.7	222	13.9
SA	6	0.9	929	115.4	935	60.9	1	0.1	230	27.0	231	14.8
Tas	2	0.8	248	101.2	250	53.0	1	0.4	68	26.3	68	14.5
ACT	1	1.0	157	118.0	159	62.3	0	0.4	44	36.3	45	20.3
NT	1	1.2	50	93.1	50	44.0	0	0.0	13	32.3	13	15.5

*Notes*

- AS rates use Australian 2001 Standard Population unless new WHO World Standard Population is indicated. All rates are expressed per 100,000 population.
  - Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of registration of death.
- Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.

**Table 39: Cancer of the cervix uteri (ICD-10 C53)**

**Australia 2000**

Age group (years)	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					1	0.2		
25-29			40	5.5					4	0.6		
30-34			83	11.6					9	1.3		
35-39			68	9.0					12	1.6		
40-44			79	10.8					17	2.3		
45-49			72	10.7					27	4.0		
50-54			58	9.3					18	2.9		
55-59			57	12.0					19	4.0		
60-64			63	15.9					23	5.8		
65-69			51	14.8					24	7.0		
70-74			57	17.1					37	11.1		
75-79			50	17.4					24	8.3		
80-84			37	19.5					24	12.6		
85 and over			21	12.0					26	14.8		
<b>Total</b>			<b>745</b>						<b>265</b>			

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

Crude rate	7.7	2.7
95% CI	7.2-8.3	2.4-3.1
AS rate (Aust. 2001)	7.6	2.6
95% CI	7.0-8.2	2.3-3.0
AS rate (new WHO World)	6.4	2.0
95% CI	5.9-6.9	1.7-2.2
Lifetime risk (0-74)	1 in 170	1 in 493
PYLL (0-74)		3,668
Per cent of all cancers	1.9	1.7

**Average annual numbers and rates by state and territory, 1996-2000**

	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			294	9.1					94	2.8		
Vic			190	7.9					59	2.4		
Qld			169	10.0					50	3.0		
WA			76	8.5					28	3.2		
SA			53	6.8					17	2.0		
Tas			23	9.5					9	3.6		
ACT			11	7.3					5	3.4		
NT			10	15.9					4	8.4		

*Notes*

- AS rates use Australian 2001 Standard Population unless new WHO World Standard Population is indicated. All rates are expressed per 100,000 population.
  - Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of registration of death.
- Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.

**Table 40: Cancer of the corpus uteri and uterus unspecified (ICD-10 C54–C55)**

<b>Australia 2000</b>												
	<b>Incidence</b>						<b>Mortality</b>					
	<b>Males</b>		<b>Females</b>		<b>Persons</b>		<b>Males</b>		<b>Females</b>		<b>Persons</b>	
	<b>Number</b>	<b>Rate</b>	<b>Number</b>	<b>Rate</b>	<b>Number</b>	<b>Rate</b>	<b>Number</b>	<b>Rate</b>	<b>Number</b>	<b>Rate</b>	<b>Number</b>	<b>Rate</b>
<b>Age group (years)</b>												
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					1	0.2		
25–29			2	0.3					0	0.0		
30–34			7	1.0					0	0.0		
35–39			27	3.6					1	0.1		
40–44			43	5.9					3	0.4		
45–49			100	14.8					3	0.4		
50–54			195	31.3					8	1.3		
55–59			198	41.8					19	4.0		
60–64			246	62.0					24	6.0		
65–69			178	51.6					39	11.3		
70–74			193	57.8					33	9.9		
75–79			162	56.3					48	16.7		
80–84			105	55.3					38	20.0		
85 and over			108	61.7					44	25.1		
<b>Total</b>			<b>1,564</b>						<b>261</b>			
<b>Rates per 100,000 with 95% confidence intervals (95% CI)</b>												
Crude rate				16.2						2.7		
95% CI				15.4–17.0						2.4–3.0		
AS rate (Aust. 2001)				15.8						2.5		
95% CI				14.9–16.6						2.1–2.8		
AS rate (new WHO World)				12.1						1.7		
95% CI				11.5–12.7						1.5–1.9		
Lifetime risk (0–74)				1 in 75						1 in 594		
PYLL (0–74)										1,458		
Per cent of all cancers				4.0						1.7		

**Average annual numbers and rates by state and territory, 1996–2000**

	<b>Incidence</b>						<b>Mortality</b>					
	<b>Males</b>		<b>Females</b>		<b>Persons</b>		<b>Males</b>		<b>Females</b>		<b>Persons</b>	
	<b>Number</b>	<b>AS rate</b>	<b>Number</b>	<b>AS rate</b>	<b>Number</b>	<b>AS rate</b>	<b>Number</b>	<b>AS rate</b>	<b>Number</b>	<b>AS rate</b>	<b>Number</b>	<b>AS rate</b>
NSW			451	13.6					90	2.5		
Vic			403	16.8					68	2.6		
Qld			253	15.4					46	2.7		
WA			105	12.6					23	2.7		
SA			144	17.2					27	2.9		
Tas			32	12.7					7	2.6		
ACT			20	16.3					4	3.2		
NT			7	16.4					2	5.6		

**Notes**

- AS rates use Australian 2001 Standard Population unless new WHO World Standard Population is indicated. All rates are expressed per 100,000 population.
  - Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of registration of death.
- Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.

**Table 41: Cancer of the ovary (ICD-10 C56)**

<b>Australia 2000</b>												
	<b>Incidence</b>						<b>Mortality</b>					
	<b>Males</b>		<b>Females</b>		<b>Persons</b>		<b>Males</b>		<b>Females</b>		<b>Persons</b>	
	<b>Number</b>	<b>Rate</b>	<b>Number</b>	<b>Rate</b>	<b>Number</b>	<b>Rate</b>	<b>Number</b>	<b>Rate</b>	<b>Number</b>	<b>Rate</b>	<b>Number</b>	<b>Rate</b>
<b>Age group (years)</b>												
0-4			1	0.2					0	0.0		
5-9			3	0.5					1	0.2		
10-14			4	0.6					1	0.2		
15-19			7	1.1					0	0.0		
20-24			8	1.3					1	0.2		
25-29			21	2.9					0	0.0		
30-34			22	3.1					5	0.7		
35-39			40	5.3					10	1.3		
40-44			55	7.5					17	2.3		
45-49			86	12.8					29	4.3		
50-54			137	22.0					54	8.7		
55-59			106	22.4					67	14.2		
60-64			131	33.0					83	20.9		
65-69			111	32.2					87	25.2		
70-74			138	41.4					115	34.5		
75-79			154	53.5					127	44.1		
80-84			84	44.2					83	43.7		
85 and over			93	53.1					100	57.1		
<b>Total</b>			<b>1,201</b>						<b>780</b>			

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

Crude rate		12.4		8.1
95% CI		11.7-13.2		7.5-8.7
AS rate (Aust. 2001)		12.0		7.6
95% CI		11.2-12.8		7.0-8.2
AS rate (new WHO World)		9.2		5.4
95% CI		8.7-9.8		5.0-5.8
Lifetime risk (0-74)		1 in 108		1 in 178
PYLL (0-74)				6,485
Per cent of all cancers		3.1		5.1

**Average annual numbers and rates by state and territory, 1996-2000**

	<b>Incidence</b>						<b>Mortality</b>					
	<b>Males</b>		<b>Females</b>		<b>Persons</b>		<b>Males</b>		<b>Females</b>		<b>Persons</b>	
	<b>Number</b>	<b>AS rate</b>	<b>Number</b>	<b>AS rate</b>	<b>Number</b>	<b>AS rate</b>	<b>Number</b>	<b>AS rate</b>	<b>Number</b>	<b>AS rate</b>	<b>Number</b>	<b>AS rate</b>
NSW			370	11.1					256	7.5		
Vic			382	15.7					212	8.4		
Qld			189	11.4					119	7.1		
WA			88	10.4					63	7.4		
SA			94	11.3					66	7.7		
Tas			31	12.6					22	8.6		
ACT			14	10.8					11	9.2		
NT			4	6.9					3	7.6		

**Notes**

- AS rates use Australian 2001 Standard Population unless new WHO World Standard Population is indicated. All rates are expressed per 100,000 population.
  - Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of registration of death.
- Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.

**Table 42: Cancer of the prostate (ICD-10 C61)**

**Australia 2000**

Age group (years)	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	1	0.2					0	0.0				
25-29	1	0.1					0	0.0				
30-34	0	0.0					0	0.0				
35-39	0	0.0					0	0.0				
40-44	12	1.7					0	0.0				
45-49	114	17.1					6	0.9				
50-54	389	61.3					25	3.9				
55-59	885	180.5					57	11.6				
60-64	1,352	337.3					97	24.2				
65-69	1,888	568.6					223	67.2				
70-74	2,072	691.6					469	156.5				
75-79	1,854	844.3					595	271.0				
80-84	1,154	970.0					565	474.9				
85 and over	790	1,019.1					628	810.1				
<b>Total</b>	<b>10,512</b>						<b>2,665</b>					

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

Crude rate	110.6	28.0
95% CI	108.5-112.7	27.0-29.1
AS rate (Aust. 2001)	124.9	35.9
95% CI	122.1-127.6	34.3-37.4
AS rate (new WHO World)	85.0	20.4
95% CI	83.4-86.7	19.6-21.1
Lifetime risk (0-74)	1 in 11	1 in 76
PYLL (0-74)		5,783
Per cent of all cancers	22.9	13.3

**Average annual numbers and rates by state and territory, 1996-2000**

	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	3,612	129.2					861	35.8				
Vic	2,595	130.3					685	38.9				
Qld	1,640	117.7					471	38.6				
WA	817	116.4					200	34.2				
SA	1,040	146.2					230	36.1				
Tas	283	133.5					82	43.0				
ACT	159	172.4					27	37.3				
NT	36	102.6					6	24.3				

*Notes*

- AS rates use Australian 2001 Standard Population unless new WHO World Standard Population is indicated. All rates are expressed per 100,000 population.
  - Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of registration of death.
- Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.



**Table 43: Cancer of the testis (ICD-10 C62)**

**Australia 2000**

Age group (years)	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0-4	3	0.5					0	0.0				
5-9	1	0.1					0	0.0				
10-14	0	0.0					0	0.0				
15-19	22	3.2					1	0.1				
20-24	53	8.1					3	0.5				
25-29	106	14.7					0	0.0				
30-34	120	16.9					2	0.3				
35-39	93	12.4					2	0.3				
40-44	68	9.4					1	0.1				
45-49	46	6.9					4	0.6				
50-54	33	5.2					0	0.0				
55-59	10	2.0					2	0.4				
60-64	8	2.0					1	0.2				
65-69	4	1.2					1	0.3				
70-74	5	1.7					1	0.3				
75-79	3	1.4					1	0.5				
80-84	1	0.8					0	0.0				
85 and over	2	2.6					0	0.0				
<b>Total</b>	<b>578</b>						<b>19</b>					

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

Crude rate	6.1	0.2
95% CI	5.6-6.6	0.1-0.3
AS rate (Aust. 2001)	6.0	0.2
95% CI	5.5-6.6	0.1-0.3
AS rate (new WHO World)	5.9	0.2
95% CI	5.4-6.4	0.1-0.3
Lifetime risk (0-74)	1 in 237	1 in 6,278
PYLL (0-74)		575
Per cent of all cancers	1.3	0.1

**Average annual numbers and rates by state and territory, 1996-2000**

	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	193	6.0					9	0.3				
Vic	140	6.0					6	0.3				
Qld	97	5.5					5	0.3				
WA	54	5.7					2	0.2				
SA	48	6.5					2	0.3				
Tas	13	5.8					0	0.2				
ACT	13	8.0					0	0.2				
NT	5	4.5					0	0.2				

*Notes*

- AS rates use Australian 2001 Standard Population unless new WHO World Standard Population is indicated. All rates are expressed per 100,000 population.
  - Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of registration of death.
- Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.

**Table 44: Cancer of the bladder (ICD-10 C67)**

**Australia 2000**

Age group (years)	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0-4	2	0.3	0	0.0	2	0.2	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	1	0.1	1	0.2	2	0.2	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	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
30-34	3	0.4	2	0.3	5	0.4	0	0.0	0	0.0	0	0.0
35-39	17	2.3	7	0.9	24	1.6	0	0.0	2	0.3	2	0.1
40-44	21	2.9	11	1.5	32	2.2	2	0.3	0	0.0	2	0.1
45-49	40	6.0	14	2.1	54	4.0	5	0.7	4	0.6	9	0.7
50-54	86	13.6	36	5.8	122	9.7	10	1.6	1	0.2	11	0.9
55-59	134	27.3	51	10.8	185	19.2	17	3.5	7	1.5	24	2.5
60-64	215	53.6	53	13.4	268	33.6	27	6.7	4	1.0	31	3.9
65-69	286	86.1	82	23.8	368	54.3	50	15.1	15	4.3	65	9.6
70-74	405	135.2	127	38.1	532	84.0	119	39.7	30	9.0	149	23.5
75-79	424	193.1	126	43.8	550	108.4	113	51.5	38	13.2	151	29.8
80-84	270	226.9	109	57.4	379	122.7	91	76.5	64	33.7	155	50.2
85 and over	233	300.6	128	73.1	361	142.9	136	175.4	84	48.0	220	87.1
<b>Total</b>	<b>2,139</b>		<b>747</b>		<b>2,886</b>		<b>570</b>		<b>249</b>		<b>819</b>	

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

Crude rate	22.5	7.7	15.1	6.0	2.6	4.3
95% CI	21.5-23.5	7.2-8.3	14.5-15.6	5.5-6.5	2.3-2.9	4.0-4.6
AS rate (Aust. 2001)	26.1	7.1	15.3	7.6	2.2	4.4
95% CI	24.8-27.4	6.5-7.7	14.7-15.9	6.8-8.3	1.9-2.5	4.0-4.7
AS rate (new WHO World)	17.1	4.8	10.3	4.4	1.3	2.6
95% CI	16.4-17.8	4.4-5.2	9.9-10.7	4.0-4.8	1.1-1.5	2.4-2.8
Lifetime risk (0-74)	1 in 61	1 in 207	1 in 96	1 in 296	1 in 1,188	1 in 484
PYLL (0-74)				1,735	568	2,303
Per cent of all cancers	4.7	1.9	3.4	2.8	1.6	2.3

**Average annual numbers and rates by state and territory, 1996-2000**

	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	573	21.2	215	6.1	787	12.5	195	7.9	87	2.4	281	4.6
Vic	684	34.4	223	8.7	907	19.8	134	7.4	62	2.3	196	4.4
Qld	468	33.5	161	9.5	629	20.2	103	8.3	42	2.4	145	4.9
WA	106	16.3	36	4.2	142	9.3	45	7.3	20	2.4	65	4.4
SA	131	18.9	46	4.9	177	10.9	54	8.4	25	2.6	79	4.9
Tas	45	21.9	15	5.4	59	12.4	15	8.4	7	2.5	22	4.8
ACT	19	22.6	5	4.1	24	11.7	10	14.5	3	2.5	13	7.1
NT	5	14.8	1	1.3	6	8.2	2	10.0	0	1.6	3	5.4

**Notes**

- AS rates use Australian 2001 Standard Population unless new WHO World Standard Population is indicated. All rates are expressed per 100,000 population.
  - Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of registration of death.
- Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.

**Table 45: Cancer of the kidney, renal pelvis, ureter, urethra and other and unspecified urinary organs (ICD-10 C64–C66, C68)**

Australia 2000												
Age group (years)	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0–4	15	2.3	10	1.6	25	2.0	1	0.2	1	0.2	2	0.2
5–9	0	0.0	1	0.2	1	0.1	0	0.0	0	0.0	0	0.0
10–14	2	0.3	1	0.2	3	0.2	0	0.0	1	0.2	1	0.1
15–19	1	0.1	0	0.0	1	0.1	0	0.0	0	0.0	0	0.0
20–24	1	0.2	3	0.5	4	0.3	0	0.0	0	0.0	0	0.0
25–29	2	0.3	5	0.7	7	0.5	2	0.3	1	0.1	3	0.2
30–34	9	1.3	7	1.0	16	1.1	2	0.3	1	0.1	3	0.2
35–39	25	3.3	19	2.5	44	2.9	1	0.1	1	0.1	2	0.1
40–44	52	7.2	30	4.1	82	5.7	7	1.0	3	0.4	10	0.7
45–49	73	10.9	46	6.8	119	8.9	23	3.4	6	0.9	29	2.2
50–54	140	22.1	56	9.0	196	15.6	44	6.9	11	1.8	55	4.4
55–59	175	35.7	73	15.4	248	25.7	36	7.3	14	3.0	50	5.2
60–64	183	45.7	93	23.4	276	34.6	53	13.2	24	6.0	77	9.7
65–69	197	59.3	121	35.1	318	47.0	60	18.1	44	12.8	104	15.4
70–74	224	74.8	133	39.9	357	56.4	80	26.7	62	18.6	142	22.4
75–79	193	87.9	163	56.6	356	70.2	84	38.3	58	20.2	142	28.0
80–84	108	90.8	100	52.6	208	67.3	52	43.7	49	25.8	101	32.7
85 and over	70	90.3	74	42.2	144	57.0	55	71.0	58	33.1	113	44.7
<b>Total</b>	<b>1,470</b>		<b>935</b>		<b>2,405</b>		<b>500</b>		<b>334</b>		<b>834</b>	

Rates per 100,000 with 95% confidence intervals (95% CI)						
Crude rate	15.5	9.7	12.6	5.3	3.5	4.4
95% CI	14.7–16.3	9.1–10.3	12.1–13.1	4.8–5.7	3.1–3.8	4.1–4.6
AS rate (Aust. 2001)	16.8	9.2	12.7	6.0	3.2	4.4
95% CI	15.8–17.8	8.5–9.9	12.2–13.3	5.4–6.6	2.8–3.5	4.1–4.8
AS rate (new WHO World)	12.4	6.8	9.4	4.1	2.1	3.0
95% CI	11.7–13.0	6.3–7.2	9.0–9.8	3.7–4.4	1.9–2.4	2.8–3.2
Lifetime risk (0–74)	1 in 76	1 in 143	1 in 100	1 in 258	1 in 454	1 in 330
PYLL (0–74)				4,083	1,803	5,885
Per cent of all cancers	3.2	2.4	2.8	2.5	2.2	2.4

**Average annual numbers and rates by state and territory, 1996–2000**

	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	464	16.0	316	9.3	780	12.4	161	5.9	130	3.7	291	4.7
Vic	339	16.3	213	8.7	552	12.1	130	6.5	78	3.0	207	4.6
Qld	266	17.8	166	9.9	433	13.7	88	6.3	67	3.9	155	5.0
WA	101	13.6	66	7.8	167	10.4	39	5.7	25	3.0	64	4.2
SA	124	17.1	69	8.0	193	12.2	43	6.2	25	2.8	69	4.3
Tas	38	17.0	23	9.0	61	12.8	15	7.0	8	2.9	22	4.7
ACT	16	15.3	12	10.0	28	12.6	7	9.1	5	4.7	12	6.4
NT	7	12.8	3	6.5	10	10.0	1	3.3	1	2.6	2	3.2

*Notes*

- AS rates use Australian 2001 Standard Population unless new WHO World Standard Population is indicated. All rates are expressed per 100,000 population.
  - Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of registration of death.
- Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.

**Table 46: Cancer of the brain (ICD-10 C71)**

**Australia 2000**

Age group (years)	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0-4	26	4.0	20	3.2	46	3.6	7	1.1	2	0.3	9	0.7
5-9	20	2.9	19	2.9	39	2.9	10	1.4	9	1.4	19	1.4
10-14	15	2.2	17	2.6	32	2.4	4	0.6	7	1.1	11	0.8
15-19	11	1.6	6	0.9	17	1.3	8	1.2	3	0.5	11	0.8
20-24	7	1.1	10	1.6	17	1.3	2	0.3	5	0.8	7	0.5
25-29	19	2.6	12	1.7	31	2.1	5	0.7	3	0.4	8	0.6
30-34	37	5.2	16	2.2	53	3.7	16	2.3	7	1.0	23	1.6
35-39	37	4.9	28	3.7	65	4.3	17	2.3	14	1.9	31	2.1
40-44	42	5.8	23	3.2	65	4.5	39	5.4	13	1.8	52	3.6
45-49	50	7.5	33	4.9	83	6.2	49	7.3	22	3.3	71	5.3
50-54	77	12.1	65	10.4	142	11.3	75	11.8	38	6.1	113	9.0
55-59	84	17.1	47	9.9	131	13.6	62	12.6	48	10.1	110	11.4
60-64	65	16.2	46	11.6	111	13.9	61	15.2	42	10.6	103	12.9
65-69	83	25.0	57	16.5	140	20.7	76	22.9	55	15.9	131	19.3
70-74	87	29.0	60	18.0	147	23.2	89	29.7	56	16.8	145	22.9
75-79	59	26.9	47	16.3	106	20.9	63	28.7	55	19.1	118	23.3
80-84	46	38.7	35	18.4	81	26.2	38	31.9	45	23.7	83	26.9
85 and over	13	16.8	35	20.0	48	19.0	12	15.5	31	17.7	43	17.0
<b>Total</b>	<b>778</b>		<b>576</b>		<b>1,354</b>		<b>633</b>		<b>455</b>		<b>1,088</b>	

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

Crude rate	8.2	6.0	7.1	6.7	4.7	5.7
95% CI	7.6-8.8	5.5-6.5	6.7-7.4	6.1-7.2	4.3-5.1	5.3-6.0
AS rate (Aust. 2001)	8.6	5.8	7.1	7.0	4.5	5.7
95% CI	7.9-9.2	5.3-6.4	6.7-7.6	6.4-7.7	4.1-5.0	5.4-6.1
AS rate (new WHO World)	7.1	4.9	6.0	5.5	3.5	4.5
95% CI	6.6-7.6	4.5-5.3	5.6-6.3	5.1-6.0	3.2-3.9	4.2-4.8
Lifetime risk (0-74)	1 in 146	1 in 215	1 in 174	1 in 175	1 in 279	1 in 216
PYLL (0-74)				10,495	6,390	16,885
Per cent of all cancers	1.7	1.5	1.6	3.2	2.9	3.1

**Average annual numbers and rates by state and territory, 1996-2000**

	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	247	8.3	175	5.3	422	6.7	197	6.7	139	4.2	336	5.4
Vic	194	9.0	153	6.3	347	7.5	146	6.9	114	4.7	260	5.7
Qld	132	8.4	99	5.9	231	7.1	112	7.3	79	4.8	191	6.0
WA	63	7.9	45	5.3	109	6.5	54	6.8	39	4.6	93	5.7
SA	61	8.4	46	5.5	107	6.9	52	7.2	37	4.5	89	5.7
Tas	23	9.9	12	4.9	35	7.3	18	8.1	11	4.4	29	6.2
ACT	11	9.2	7	5.2	18	7.0	9	7.6	8	5.9	16	6.7
NT	3	4.4	3	4.9	6	4.5	2	2.9	2	5.4	4	4.2

*Notes*

- AS rates use Australian 2001 Standard Population unless new WHO World Standard Population is indicated. All rates are expressed per 100,000 population.
  - Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of registration of death.
- Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.

**Table 47: Cancers of unknown primary site (ICD-10 C76–C80, C26, C39)**

**Australia 2000**

Age group (years)	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0–4	2	0.3	2	0.3	4	0.3	1	0.2	0	0.0	1	0.1
5–9	0	0.0	0	0.0	0	0.0	0	0.0	1	0.2	1	0.1
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	4	0.6	6	0.5	0	0.0	3	0.5	3	0.2
25–29	5	0.7	0	0.0	5	0.3	0	0.0	1	0.1	1	0.1
30–34	7	1.0	5	0.7	12	0.8	6	0.8	1	0.1	7	0.5
35–39	18	2.4	18	2.4	36	2.4	6	0.8	6	0.8	12	0.8
40–44	19	2.6	27	3.7	46	3.2	9	1.3	15	2.1	24	1.7
45–49	36	5.4	51	7.6	87	6.5	19	2.8	31	4.6	50	3.7
50–54	90	14.2	60	9.6	150	11.9	52	8.2	39	6.3	91	7.2
55–59	112	22.8	75	15.8	187	19.4	83	16.9	58	12.2	141	14.6
60–64	162	40.4	110	27.7	272	34.1	97	24.2	72	18.1	169	21.2
65–69	207	62.3	159	46.1	366	54.1	130	39.2	101	29.3	231	34.1
70–74	270	90.1	196	58.7	466	73.6	212	70.8	149	44.7	361	57.0
75–79	296	134.8	251	87.2	547	107.8	231	105.2	204	70.9	435	85.7
80–84	211	177.4	242	127.4	453	146.6	183	153.8	203	106.8	386	124.9
85 and over	169	218.0	358	204.4	527	208.6	173	223.2	333	190.1	506	200.3
<b>Total</b>	<b>1,607</b>		<b>1,558</b>		<b>3,165</b>		<b>1,202</b>		<b>1,217</b>		<b>2,419</b>	

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

Crude rate	16.9	16.1	16.5	12.6	12.6	12.6
95% CI	16.1–17.7	15.3–17.0	15.9–17.1	11.9–13.4	11.9–13.3	12.1–13.1
AS rate (Aust. 2001)	19.5	14.6	16.8	15.1	11.2	12.9
95% CI	18.5–20.6	13.8–15.4	16.2–17.5	14.1–16.0	10.5–11.9	12.3–13.5
AS rate (new WHO World)	13.0	9.6	11.2	9.5	7.1	8.2
95% CI	12.3–13.6	9.1–10.1	10.8–11.6	9.0–10.1	6.7–7.6	7.9–8.5
Lifetime risk (0–74)	1 in 83	1 in 116	1 in 97	1 in 122	1 in 169	1 in 142
PYLL (0–74)				6,708	5,803	12,510
Per cent of all cancers	3.5	4.0	3.7	6.0	7.9	6.8

**Average annual numbers and rates by state and territory, 1996–2000**

	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	608	22.4	561	15.8	1,168	18.7	456	16.6	450	12.0	907	14.0
Vic	369	18.9	365	14.0	734	16.1	321	16.1	339	12.4	661	14.0
Qld	290	20.7	250	14.7	540	17.5	249	17.5	221	12.4	470	14.7
WA	141	20.8	112	12.8	253	16.4	104	15.2	101	11.2	205	13.0
SA	139	20.0	148	16.0	288	17.8	120	16.8	122	12.3	241	14.3
Tas	41	19.9	47	17.4	87	18.3	37	17.7	45	15.8	81	16.4
ACT	23	26.4	21	18.1	44	21.8	17	21.1	16	13.5	33	16.4
NT	13	26.8	10	28.6	23	28.0	8	22.4	7	18.8	15	20.3

**Notes**

- AS rates use Australian 2001 Standard Population unless new WHO World Standard Population is indicated. All rates are expressed per 100,000 population.
  - Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of registration of death.
- Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.

**Table 48: Non-Hodgkin's lymphoma (ICD-10 C82–C85, C96)**

Australia 2000												
Age group (years)	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	2	0.3	7	0.5	0	0.0	0	0.0	0	0.0
5–9	2	0.3	3	0.5	5	0.4	1	0.1	0	0.0	1	0.1
10–14	14	2.0	11	1.7	25	1.9	0	0.0	1	0.2	1	0.1
15–19	13	1.9	6	0.9	19	1.4	3	0.4	1	0.2	4	0.3
20–24	20	3.1	6	0.9	26	2.0	4	0.6	1	0.2	5	0.4
25–29	30	4.2	13	1.8	43	3.0	4	0.6	2	0.3	6	0.4
30–34	43	6.1	26	3.6	69	4.8	12	1.7	2	0.3	14	1.0
35–39	58	7.8	48	6.3	106	7.0	13	1.7	3	0.4	16	1.1
40–44	85	11.8	48	6.6	133	9.2	23	3.2	14	1.9	37	2.6
45–49	121	18.1	84	12.5	205	15.3	27	4.0	19	2.8	46	3.4
50–54	144	22.7	100	16.0	244	19.4	43	6.8	42	6.7	85	6.8
55–59	175	35.7	139	29.4	314	32.6	60	12.2	43	9.1	103	10.7
60–64	190	47.4	162	40.8	352	44.1	70	17.5	49	12.3	119	14.9
65–69	224	67.5	168	48.7	392	57.9	108	32.5	80	23.2	188	27.8
70–74	230	76.8	194	58.1	424	67.0	123	41.1	98	29.4	221	34.9
75–79	244	111.1	247	85.8	491	96.8	160	72.9	128	44.5	288	56.8
80–84	164	137.9	167	87.9	331	107.1	115	96.7	123	64.7	238	77.0
85 and over	102	131.6	169	96.5	271	107.3	91	117.4	128	73.1	219	86.7
<b>Total</b>	<b>1,864</b>		<b>1,593</b>		<b>3,457</b>		<b>857</b>		<b>734</b>		<b>1,591</b>	

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

Crude rate	19.6	16.5	18.0	9.0	7.6	8.3
95% CI	18.7–20.5	15.7–17.3	17.4–18.7	8.4–9.6	7.1–8.2	7.9–8.7
AS rate (Aust. 2001)	21.5	15.6	18.3	10.4	7.0	8.5
95% CI	20.4–22.6	14.8–16.5	17.6–19.0	9.6–11.2	6.4–7.5	8.0–8.9
AS rate (new WHO World)	15.9	11.5	13.6	7.0	4.7	5.7
95% CI	15.2–16.7	11.0–12.1	13.1–14.1	6.5–7.4	4.3–5.0	5.4–6.0
Lifetime risk (0–74)	1 in 66	1 in 88	1 in 76	1 in 164	1 in 231	1 in 192
PYLL (0–74)				7,138	4,598	11,735
Per cent of all cancers	4.1	4.1	4.1	4.3	4.8	4.5

**Average annual numbers and rates by state and territory, 1996–2000**

	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	600	21.0	512	15.1	1,112	17.8	264	9.7	257	7.3	522	8.4
Vic	478	23.0	399	16.0	877	19.2	216	11.0	186	7.3	402	8.8
Qld	292	19.8	242	14.4	534	16.8	132	9.4	112	6.6	245	7.9
WA	142	19.2	111	13.1	253	15.8	66	9.7	58	6.9	124	8.0
SA	160	22.4	151	17.6	311	19.7	68	9.9	68	7.5	136	8.5
Tas	47	21.7	45	17.5	92	19.3	22	10.5	22	8.1	44	9.1
ACT	25	25.1	20	16.7	45	20.3	12	12.8	13	11.5	25	12.2
NT	6	10.4	5	9.7	11	10.2	1	3.2	2	4.4	3	3.9

*Notes*

- AS rates use Australian 2001 Standard Population unless new WHO World Standard Population is indicated. All rates are expressed per 100,000 population.
  - Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of registration of death.
- Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.

**Table 49: All leukaemias (ICD-10 C91–C95)**

<b>Australia 2000</b>												
Age group (years)	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0–4	59	9.0	45	7.2	104	8.1	7	1.1	4	0.6	11	0.9
5–9	27	3.9	19	2.9	46	3.4	8	1.2	2	0.3	10	0.7
10–14	25	3.7	16	2.5	41	3.1	7	1.0	5	0.8	12	0.9
15–19	24	3.5	16	2.5	40	3.0	7	1.0	9	1.4	16	1.2
20–24	24	3.7	5	0.8	29	2.2	12	1.8	5	0.8	17	1.3
25–29	24	3.3	14	1.9	38	2.6	8	1.1	10	1.4	18	1.2
30–34	20	2.8	18	2.5	38	2.7	6	0.8	7	1.0	13	0.9
35–39	37	4.9	24	3.2	61	4.1	12	1.6	9	1.2	21	1.4
40–44	41	5.7	38	5.2	79	5.5	8	1.1	16	2.2	24	1.7
45–49	56	8.4	28	4.2	84	6.3	25	3.7	13	1.9	38	2.8
50–54	97	15.3	57	9.1	154	12.2	29	4.6	19	3.0	48	3.8
55–59	114	23.3	67	14.2	181	18.8	60	12.2	23	4.9	83	8.6
60–64	109	27.2	58	14.6	167	20.9	56	14.0	34	8.6	90	11.3
65–69	155	46.7	74	21.4	229	33.8	95	28.6	55	15.9	150	22.2
70–74	176	58.7	102	30.6	278	43.9	130	43.4	65	19.5	195	30.8
75–79	200	91.1	111	38.6	311	61.3	139	63.3	90	31.3	229	45.1
80–84	139	116.8	130	68.4	269	87.1	103	86.6	82	43.2	185	59.9
85 and over	101	130.3	120	68.5	221	87.5	82	105.8	121	69.1	203	80.3
<b>Total</b>	<b>1,428</b>		<b>942</b>		<b>2,370</b>		<b>794</b>		<b>569</b>		<b>1,363</b>	

<b>Rates per 100,000 with 95% confidence intervals (95% CI)</b>						
Crude rate	15.0	9.8	12.4	8.4	5.9	7.1
95% CI	14.2–15.8	9.1–10.4	11.9–12.9	7.8–8.9	5.4–6.4	6.7–7.5
AS rate (Aust. 2001)	16.6	9.2	12.5	9.6	5.4	7.2
95% CI	15.6–17.6	8.5–9.9	12.0–13.1	8.8–10.4	4.9–5.9	6.8–7.7
AS rate (new WHO World)	12.6	7.1	9.7	6.6	3.7	5.0
95% CI	11.9–13.2	6.7–7.6	9.3–10.1	6.1–7.1	3.4–4.1	4.8–5.3
Lifetime risk (0–74)	1 in 91	1 in 163	1 in 118	1 in 171	1 in 316	1 in 223
PYLL (0–74)				7,990	5,335	13,325
Per cent of all cancers	3.1	2.4	2.8	4.0	3.7	3.8

**Average annual numbers and rates by state and territory, 1996–2000**

	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	456	16.0	318	9.3	774	12.3	263	9.7	189	5.4	451	7.3
Vic	316	15.6	242	9.5	558	12.2	182	9.3	146	5.6	328	7.2
Qld	267	18.1	183	10.8	450	14.1	139	10.2	97	5.7	236	7.6
WA	99	13.6	71	8.0	170	10.5	67	9.8	40	4.6	107	6.9
SA	141	20.1	104	12.1	246	15.6	73	10.7	57	6.3	130	8.2
Tas	29	13.2	21	8.3	51	10.5	16	7.8	14	5.3	30	6.3
ACT	16	16.8	12	9.3	28	12.2	10	11.2	9	7.6	18	8.9
NT	5	8.5	5	10.7	11	9.6	2	4.6	3	9.2	5	7.1

**Notes**

- AS rates use Australian 2001 Standard Population unless new WHO World Standard Population is indicated. All rates are expressed per 100,000 population.
  - Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of registration of death.
- Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.

**Table 50: Cancers attributed to alcohol consumption**

Australia 2000												
Age group (years)	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	1	0.1	1	0.1	1	0.1	0	0.0	1	0.1
20-24	2	0.3	2	0.3	3	0.3	1	0.1	1	0.1	2	0.1
25-29	1	0.2	9	1.2	10	0.7	1	0.2	2	0.2	3	0.2
30-34	2	0.3	28	3.9	30	2.1	3	0.4	4	0.6	7	0.5
35-39	14	1.8	55	7.3	69	4.6	4	0.5	9	1.2	13	0.9
40-44	37	5.2	103	14.1	140	9.7	14	1.9	19	2.6	33	2.3
45-49	67	10.1	155	23.0	222	16.6	29	4.3	26	3.8	55	4.1
50-54	113	17.9	212	34.0	325	25.9	56	8.9	43	6.9	99	7.9
55-59	126	25.8	192	40.5	318	33.0	63	12.8	42	9.0	105	10.9
60-64	166	41.4	180	45.3	346	43.3	94	23.4	44	11.2	138	17.3
65-69	167	50.4	166	48.1	333	49.2	111	33.5	50	14.5	161	23.8
70-74	181	60.3	152	45.6	333	52.5	133	44.2	56	16.7	188	29.8
75-79	147	66.9	119	41.3	266	52.4	115	52.4	51	17.7	166	32.7
80-84	69	57.7	93	48.7	161	52.2	61	51.4	57	30.1	118	38.3
85 and over	44	56.1	96	54.6	139	55.0	52	67.2	85	48.4	137	54.2
<b>Total</b>	<b>1,136</b>		<b>1,561</b>		<b>2,697</b>		<b>737</b>		<b>490</b>		<b>1,227</b>	

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

Crude rate	12.0	16.2	14.1	7.8	5.1	6.4
95% CI	11.3-12.6	15.4-17.0	13.5-14.6	7.2-8.3	4.6-5.5	6.0-6.8
AS rate (Aust. 2001)	12.9	15.8	14.3	8.6	4.7	6.5
95% CI	12.0-13.7	14.9-16.7	13.7-14.9	7.9-9.3	4.3-5.2	6.1-6.9
AS rate (new WHO World)	9.5	12.5	10.9	6.1	3.4	4.6
95% CI	9.0-10.1	11.8-13.1	10.5-11.4	5.6-6.5	3.1-3.7	4.4-4.9
Lifetime risk (0-74)	1 in 94	1 in 76	1 in 85	1 in 154	1 in 299	1 in 205
PYLL (0-74)				6,350	4,771	11,122
Per cent of all cancers	2.5	4.0	3.2	3.7	3.2	3.5

**Average annual numbers and rates by state and territory, 1996-2000**

	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	378	13.0	498	15.3	876	14.0	240	8.5	167	4.9	408	6.5
Vic	276	13.2	382	15.9	657	14.4	185	9.1	137	5.5	323	7.1
Qld	205	13.6	259	15.7	464	14.6	124	8.6	79	4.7	204	6.5
WA	101	13.5	130	15.3	231	14.2	59	8.4	42	4.9	101	6.4
SA	81	11.1	126	15.6	207	13.3	57	7.9	42	4.8	99	6.2
Tas	29	13.1	36	14.7	66	13.8	19	8.7	13	4.9	31	6.6
ACT	13	12.8	21	16.0	34	14.2	8	8.6	8	6.2	16	7.2
NT	13	25.6	7	14.1	20	20.1	6	16.1	3	6.4	9	11.2

*Notes*

- AS rates use Australian 2001 Standard Population unless new WHO World Standard Population is indicated. All rates are expressed per 100,000 population.
- Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of registration of death.
- Cancers attributable to alcohol are C01-C06, C09-C10, C12-C14, C15, C22, C32, C50 (female breast cancer only).

Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.



**Table 51: Cancers attributed to smoking**

Australia 2000												
Age group (years)	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	77	10.7	32	4.4	109	7.5	26	3.6	11	1.5	37	2.6
45-49	222	33.2	69	10.3	291	21.7	91	13.6	42	6.3	133	9.9
50-54	429	67.6	182	29.2	610	48.5	221	34.9	102	16.3	323	25.7
55-59	668	136.3	273	57.6	941	97.6	401	81.8	158	33.4	559	58.0
60-64	937	233.7	316	79.7	1,253	157.1	601	149.9	195	49.2	796	99.8
65-69	1,217	366.4	447	129.6	1,664	245.7	844	254.2	289	83.6	1,133	167.3
70-74	1,530	510.6	600	179.8	2,129	336.3	1,121	374.0	440	131.9	1,560	246.4
75-79	1,376	626.5	542	188.3	1,918	378.0	1,061	483.3	397	138.1	1,459	287.5
80-84	747	627.9	339	178.6	1,086	351.6	618	519.2	281	148.0	899	290.9
85 and over	498	642.9	307	175.4	806	318.8	470	606.6	281	160.2	751	297.2
<b>Total</b>	<b>7,699</b>		<b>3,108</b>		<b>10,807</b>		<b>5,454</b>		<b>2,196</b>		<b>7,650</b>	

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

Crude rate	81.0	32.2	56.4	57.4	22.8	39.9
95% CI	79.2-82.8	31.1-33.3	55.4-57.5	55.9-58.9	21.8-23.7	39.0-40.8
AS rate (Aust. 2001)	90.5	30.3	57.2	65.4	21.1	40.5
95% CI	88.2-92.8	29.1-31.5	56.0-58.4	63.5-67.4	20.1-22.1	39.5-41.6
AS rate (new WHO World)	62.4	21.4	40.2	43.7	14.5	27.7
95% CI	61.0-63.8	20.6-22.2	39.5-41.0	42.5-44.8	13.9-15.1	27.0-28.3
Lifetime risk (0-74)	1 in 15	1 in 41	1 in 22	1 in 22	1 in 63	1 in 33
PYLL (0-74)				31,989	12,283	44,272
Per cent of all cancers	16.8	7.9	12.7	27.2	14.2	21.6

**Average annual numbers and rates by state and territory, 1996-2000**

	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	2,586	91.7	1,002	29.1	3,588	56.8	1,846	66.8	706	20.2	2,552	40.4
Vic	1,991	97.8	790	31.2	2,781	60.5	1,370	68.5	546	21.3	1,916	41.7
Qld	1,511	104.7	516	30.9	2,027	64.7	1,025	72.7	303	18.2	1,328	42.5
WA	659	93.6	256	30.4	914	58.6	479	70.4	189	22.4	668	43.3
SA	668	93.5	247	27.6	915	56.4	487	68.9	172	18.9	659	40.4
Tas	220	101.1	87	33.3	307	63.6	163	76.0	60	22.5	222	46.1
ACT	67	72.3	34	29.6	102	48.2	57	64.1	28	24.4	85	41.4
NT	50	113.7	14	42.5	64	81.3	34	87.7	10	32.4	45	61.9

*Notes*

- AS rates use Australian 2001 Standard Population unless new WHO World Standard Population is indicated. All rates are expressed per 100,000 population.
  - Incidence numbers are based on state of usual residence at time of diagnosis; mortality numbers on state of registration of death.
  - Cancers attributable to smoking are C00-C06, C09-C14, C15, C16, C210, C212, C218, C25, C32, C33-C34, C519, C53, C54-C55, C60, C64, C65, C67.
- Source: *Cancer in Australia 2000*, AIHW & AACR, 2003.



# Appendixes

# Appendix A: International Classification of Diseases, 10th Revision—cancer site—codes and combinations

<b>Buccal cavity</b>		Placenta	C58
Lip	C00	Prostate	C61
Tongue	C01–C02	Testis	C62
Salivary glands	C07–C08	Penis and other male genital organs	C60, C63
Gum	C03	Bladder	C67
Floor of mouth	C04	Kidney, ureter and urethra	C64–C66, C68
Other and unspecified parts of mouth	C05–C06	<b>Other and unspecified organs</b>	
<b>Pharynx</b>		Eye	C69
Oropharynx	C09–C10	Brain	C71
Nasopharynx	C11	Other and unspecified parts of the nervous system (NS)	C70, C72
Hypopharynx	C12–C13	Thyroid gland	C73
Other sites within the lip, oral cavity and pharynx	C14	Other endocrine glands	C74–C75
Head and neck	C01–C14	Unknown primary site	C76–C80, C26, C39
<b>Digestive organs and peritoneum</b>		<b>Lymphatic and haematopoietic tissue</b>	
Oesophagus	C15	Non-Hodgkin's lymphomas (NHL)	C82–C85, C96
Stomach	C16	Hodgkin's disease	C81
Small intestine	C17	All lymphomas	C81–C85, C96
Colon	C18	Multiple myeloma	C90
Rectum & anus	C19–C21	Immunoproliferative neoplasms	C88
Colorectal (including anus)	C18–C21	Lymphoid leukaemia	C91
Liver and intrahepatic bile ducts	C22	Acute lymphoblastic leukaemia	C91.0
Gallbladder and extrahepatic bile ducts	C23–C24	Chronic lymphocytic leukaemia	C91.1
Pancreas	C25	Myeloid leukaemia	C92
Retroperitoneum and peritoneum	C48	Acute myeloid leukaemia	C92.0
<b>Respiratory system</b>		Chronic myeloid leukaemia	C92.1
Nasal cavities, middle ear and accessory sinuses	C30–C31	Monocytic leukaemia	C93
Larynx	C32	Other leukaemias of specified cell type	C94
Trachea, bronchus and lung	C33–C34	Leukaemia of unspecified cell type	C95
Thymus, heart, mediastinum & pleura	C37–C38	All leukaemias	C91–C95
<b>Bone, connective tissue, skin and breast</b>		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 (sex=female)
Connective and other soft tissue	C47, C49		
Melanoma	C43		
Skin cancer other than melanoma	C44		
Breast	C50		
<b>Genitourinary organs</b>			
Vulva	C51		
Vagina	C52		
Cervix	C53		
Corpus uteri	C54–C55		
Ovary	C56		
Other & unspecified female genital organs	C57		

Source: World Health Organization 1992.

## 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 2000 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	655,870	0.0	1,282,357	0.0
5–9	0	692,562	0.0	1,351,664	0.0
10–14	0	684,739	0.0	1,353,177	0.0
15–19	2	677,754	0.3	1,352,745	4.0
20–24	2	655,257	0.3	1,302,412	4.0
25–29	2	722,233	0.3	1,407,081	3.9
30–34	11	708,467	1.6	1,466,615	22.8
35–39	27	748,345	3.6	1,492,204	53.8
40–44	54	719,843	7.5	1,479,257	111.0
45–49	113	667,121	16.9	1,358,594	230.1
50–54	261	634,443	41.1	1,300,777	535.1
55–59	444	490,199	90.6	1,008,799	913.7
60–64	599	400,799	149.5	822,024	1,228.5
65–69	839	332,035	252.7	682,513	1,724.6
70–74	1,086	299,587	362.5	638,380	2,314.1
75–79	989	219,590	450.4	519,356	2,339.1
80–84	524	118,969	440.5	330,050	1,453.7
85+	325	77,518	419.3	265,235	1,112.0
<b>Total</b>	<b>5,278</b>	<b>9,505,331</b>		<b>19,413,240</b>	

\* Australian Bureau of Statistics 2001a.

\*\* Australian Bureau of Statistics 2002a.

### 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). 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:

$$\begin{aligned}
 \text{Crude incidence rate for lung cancer} &= \frac{\text{Column 1 total}}{\text{Column 2 total}} \times 100,000 \\
 &= \frac{5,278}{9,505,331} \times 100,000 \\
 &= 55.5 \text{ per } 100,000
 \end{aligned}$$

**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:

$$\begin{aligned}
 \text{Age-specific lung cancer incidence rates in males aged 75-79} &= \frac{\text{Column 1 for this age}}{\text{Column 2 for this age}} \times 100,000 \\
 &= \frac{989}{219,590} \times 100,000 \\
 &= 450.4 \text{ per } 100,000
 \end{aligned}$$

**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 1991 Population Standard or the new WHO 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 five-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.

$$\begin{aligned} \text{Cumulative rate} &= \frac{5 \times (\text{Sum of the age-specific rates}) \times 100}{100,000} \\ &= \frac{5 \times 926.8 \times 100}{100,000} \\ &= 4.63\% \end{aligned}$$

The factor of 5 is used to indicate the five 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:

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

For lung cancer in men, the cumulative rate was 4.63%, therefore:

$$\begin{aligned} n &= \frac{1}{(1 - e^{-4.63/100})} \\ &= 22.10 \end{aligned}$$

That is, for men, the lifetime risk (0-74 years) of developing lung cancer is 1 in 22, providing they remain at risk for the whole period and the 2000 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 skin cancers other than melanoma 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.

## Cure rate and survival time

Two quantities of particular interest in the study of cancer are the proportion of people who are 'cured' of the disease and the mean survival of those who ultimately die from the disease (see, for example, Tallis et al. 1988 and De Angelis et al. 1999). In this case, a cure is defined as having, on average, the same overall risk of death as the general population who do not have a diagnosis of colorectal cancer.

Estimates of these quantities can be based on estimates of relative survival rates for each cancer. The relative survival rate is used because it is an estimate of the proportion of people who would survive for a specific length of time following a diagnosis of cancer if all other possible causes of death are excluded. Hence the analysis is not confounded by mortality from other causes (the 'background mortality').

Let

$P$  = the proportion of the cancer patients who will be cured of the cancer; and

$t$  = time since diagnosis;

$T$  = the mean time to death from the cancer for those not cured of the cancer;

$S_t$  = the overall cumulative relative survival rate at time  $t$ ;

$S_t^C$  = the relative survival rate for those cured of the cancer; and

$S_t^D$  = the relative survival rate for those not cured of the cancer.

An equation for  $S_t$  can be written as

$$S_t = P * S_T^C + (1 - P) * S_T^D$$

People who are cured of the cancer are assumed to have an identical risk of death to the general population. This means that  $S_t^C \equiv 1$ , so the equation can be rewritten as

$$S_t = P + (1 - P) * S_T^D$$

Time to death can be modelled using a suitable probability distribution. One of the most common distributions for survival times is the Weibull distribution. It is based on the assumption that the instantaneous risk of death from cancer either increases or decreases at a constant rate in the period following diagnosis.

Using the Weibull distribution, the equation can be rewritten as

$$S_t = P + (1 - P) * e^{-(\lambda t)^\beta}$$

The parameters  $P$ ,  $\lambda$  and  $\beta$  can be estimated in SAS PROC NLIN using a weighted least squares method, where the weight used in the analysis is the inverse of the estimated variance of the  $S_t$  values.

Verdecchia et al. (1998) proposed this way of modelling the relative survival rate. They investigated probability distributions for colon cancer and concluded that the Weibull was a reasonable fit. De Angelis et al. (1999) proposed a more complicated form of the model which allowed for covariates. They also investigated probability distributions for colon cancer and found the Weibull to be a reasonable fit. Investigation of the Weibull distribution carried out as part of the analyses for this report confirmed that it provided a reasonable fit for Australian colorectal cancer data. Hence the modelled results presented in Chapter 2 are based on the Weibull distribution.

# Appendix C: Population data

## Australian resident population, 2000

Age (years)	2000		
	Males	Females	Total
0–4	655,870	623,100	1,278,970
5–9	692,562	657,321	1,349,883
10–14	684,739	652,475	1,337,214
15–19	677,754	649,402	1,327,156
20–24	655,257	635,881	1,291,138
25–29	722,233	727,009	1,449,242
30–34	708,467	718,323	1,426,790
35–39	748,345	756,421	1,504,766
40–44	719,843	728,900	1,448,743
45–49	667,121	674,128	1,341,249
50–54	634,443	623,134	1,257,577
55–59	490,199	473,483	963,682
60–64	400,799	396,853	797,652
65–69	332,035	345,081	677,116
70–74	299,587	333,643	633,230
75–79	219,590	287,744	507,334
80–84	118,969	190,000	308,969
85+	77,518	175,151	252,669
<b>Total</b>	<b>9,505,331</b>	<b>9,648,049</b>	<b>19,153,380</b>

Source: Australian Bureau of Statistics 2001a.

## Australian Standard Population and World Standard Population

Age (years)	Australian Standard Population* (2001)		New WHO World Standard Population** (2002)	
		% of total		% of total
0–4	1,282,357	6.6	8,800	8.8
5–9	1,351,664	7.0	8,700	8.7
10–14	1,353,177	7.0	8,600	8.6
15–19	1,352,745	7.0	8,500	8.5
20–24	1,302,412	6.7	8,200	8.2
25–29	1,407,081	7.2	7,900	7.9
30–34	1,466,615	7.6	7,600	7.6
35–39	1,492,204	7.7	7,200	7.2
40–44	1,479,257	7.6	6,600	6.6
45–49	1,358,594	7.0	6,000	6.0
50–54	1,300,777	6.7	5,400	5.4
55–59	1,008,799	5.2	4,600	4.6
60–64	822,024	4.2	3,700	3.7
65–69	682,513	3.5	3,000	3.0
70–74	638,380	3.3	2,200	2.2
75–79	519,356	2.7	1,500	1.5
80–84	330,050	1.7	900	0.9
85+	265,235	1.4	600	0.6
<b>Total</b>	<b>19,413,240</b>	<b>100.0</b>	<b>100,000</b>	<b>100.0</b>

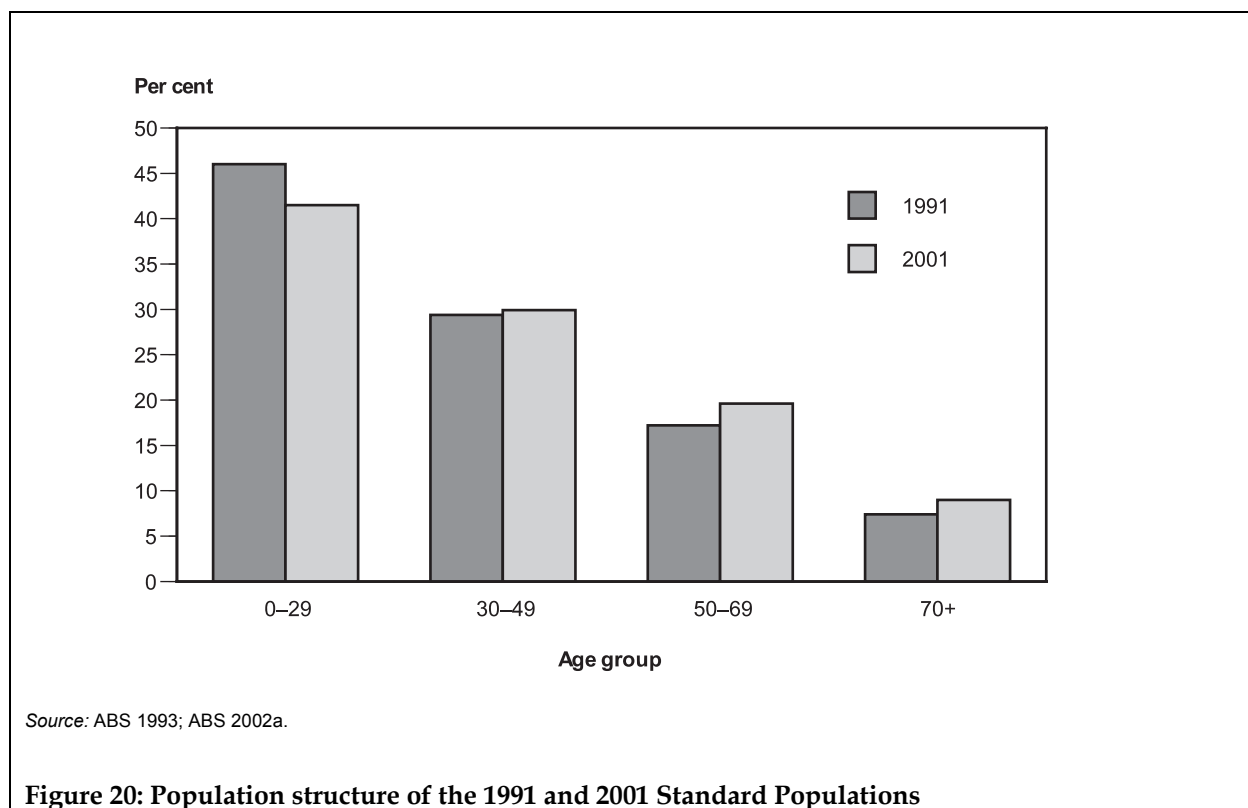
\* Australian Bureau of Statistics 2002a.

\*\*Ahmad et al, 2002.

## 1991 and 2001 Standard Populations

Previous Cancer Series publications (*Cancer in Australia 1991–1994* onwards) have reported rates standardised to the Australian 1991 Standard Population. Considerable differences can be observed between those rates calculated in previous years and those calculated this year, as the current publication contains rates standardised to the Australian 2001 Standard Population.

These differences can be attributed to the differing age structures of the 1991 and 2001 Australian populations (see Figure 20). In 1991 there was a greater proportion of people under the age of 30 years, where there are fewer cancers diagnosed and in 2001 there was a greater proportion of people aged over 50 years, where most of the cancers occur. Therefore, it is no great surprise that, for most cancers, rates standardised to the 2001 Australian Standard Population are higher than those standardised to the 1991 Australian Standard Population.



## 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 (2000)	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 (1996–2000)	27,857	20,784	15,266	6,900	7,270	2,152	1,042	400
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	Govt	Govt	Govt	Pvte–Govt	Govt	Govt
ICD site coding	ICD-O-2	ICD-O-2	ICD-O-2	ICD-O-2	ICD-O-2	ICD-O-2	ICD-O-2	ICD-O-2
Morphology coding	ICD-O-2	ICD-O-2	ICD-O-2	ICD-O-2	ICD-O-2	ICD-O-2	ICD-O-2	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 five-year period 1996–2000.

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

## Appendix E: Cancer registries contact list

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

New South Wales Cancer Council  
LMB 1  
KINGS CROSS NSW 1340  
Phone: +61 2 9334 1902  
Fax: +61 2 9368 0843  
E-mail: [ccr@nswcc.org.au](mailto:ccr@nswcc.org.au)  
Home page: [www.nswcc.org.au](http://www.nswcc.org.au)  
Director: Dr Freddy Sitas  
E-mail: [freddys@nswcc.org.au](mailto:freddys@nswcc.org.au)  
Registry Manager: Ms Elizabeth Tracey  
E-mail: [etracey@nswcc.org.au](mailto:etracey@nswcc.org.au)  
Phone: +61 2 9334 1974

### **Victorian Cancer Registry**

The Cancer Council Victoria  
1 Rathdowne Street  
CARLTON SOUTH VIC 3053  
Phone: +61 3 9635 5000  
Fax: +61 3 9635 5210  
Home page: [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 Department of Western Australia  
PO Box 8172  
Stirling Street  
PERTH WA 6849  
Phone: +61 8 9222 4022/4249  
Fax: +61 8 9222 4236  
E-mail: [wacanreg@health.wa.gov.au](mailto:wacanreg@health.wa.gov.au)  
Home page: [www.health.wa.gov.au](http://www.health.wa.gov.au)  
Director & Registrar: Dr Tim Threlfall  
E-mail: [tim.threlfall@health.wa.gov.au](mailto:tim.threlfall@health.wa.gov.au)

### **Tasmanian Cancer Registry**

Menzies Centre for Population Health  
Research  
GPO Box 252-23  
HOBART TAS 7001  
Phone: +61 3 6226 7706  
Fax: +61 3 6226 7704  
Home page: [www.menzies.utas.edu.au](http://www.menzies.utas.edu.au)  
Director: Dr Alison Venn  
E-mail: [Alison.Venn@utas.edu.au](mailto:Alison.Venn@utas.edu.au)  
Phone: +61 3 6226 7706  
Registrar: Leah Newman  
E-mail: [leah.newman@utas.edu.au](mailto:leah.newman@utas.edu.au)  
Phone: +61 3 6226 7757  
Fax: +61 3 6226 7704

### **Queensland Cancer Registry**

Queensland Cancer Fund  
Locked Bag 1450  
SPRING HILL POST OFFICE QLD 4004

Phone: +61 7 3258 2331  
Fax: +61 7 3258 2345  
Home page: [www.qldcancer.com.au](http://www.qldcancer.com.au)

Director: Dr Joanne Aitken  
Queensland Cancer Fund  
553 Gregory Terrace, Fortitude Valley  
Locked Bag 1450  
SPRING HILL POST OFFICE QLD 4004

E-mail: [joannea@qcfepi.org.au](mailto:joannea@qcfepi.org.au)  
Phone: +61 7 3258 2309  
Fax: +61 7 3258 2345

Registrar: Ms Di Skilton  
E-mail: [diana\\_skilton@health.qld.gov.au](mailto:diana_skilton@health.qld.gov.au)  
Phone: +61 7 3258 2333  
Fax: +61 7 3258 2345

### **South Australian Cancer Registry**

Epidemiology Branch, Dept of Human  
Services  
PO Box 6  
RUNDLE MALL SA 5000

Phone: +61 8 8226 6372  
Fax: +61 8 8226 6291  
Home page: [www.dhs.sa.gov.au/pehs/  
disease-control-status.htm](http://www.dhs.sa.gov.au/pehs/disease-control-status.htm)

Director: Dr Colin Luke  
E-mail: [Colin.Luke@dhs.sa.gov.au](mailto:Colin.Luke@dhs.sa.gov.au)  
Phone: +61 8 8226 6360

Specialist Medical Officer (Public Health  
Physician), Medical Director/Manager:  
Dr Wayne Clapton  
E-mail: [Wayne.Clapton@dhs.sa.gov.au](mailto:Wayne.Clapton@dhs.sa.gov.au)  
Phone: +61 8 8226 6362

Registrar: Lesley Milliken  
E-mail: [Lesley.Milliken@dhs.sa.gov.au](mailto:Lesley.Milliken@dhs.sa.gov.au)  
Phone: +61 8 8226 6372

### **Australian Capital Territory Cancer Registry**

Population Health Research Centre  
ACT Health  
Level 1, Building 5  
The Canberra Hospital  
PO Box 11  
WODEN ACT 2606

Manager: Sally Rubenach  
E-mail: [sally.rubenach@act.gov.au](mailto:sally.rubenach@act.gov.au)  
Phone: +61 2 6244 2174  
Fax: +61 2 6244 4138

Registrar: Dr Berrin Kose  
E-mail: [berrin.kose@act.gov.au](mailto:berrin.kose@act.gov.au)  
Phone: +61 2 6244 4285

### **New Zealand Cancer Registry**

Clinical Coding Services  
New Zealand Health Information Service  
Level 6, WestpacTrust House  
119-125 Willis Street  
PO Box 5013  
Wellington NEW ZEALAND

Phone: +64 4 922 1800  
Fax: +64 4 922 1897

Team Leader: Di Best  
E-mail: [di\\_best@nzhis.govt.nz](mailto:di_best@nzhis.govt.nz)  
Phone: +64 4 922 1885

Chief Analyst: Jim Fraser  
E-mail: [jim.fraser@nzhis.govt.nz](mailto:jim.fraser@nzhis.govt.nz)  
Phone: +64 4 922 1862

**National Cancer Statistics Clearing House**

Australian Institute of Health and Welfare

GPO Box 570

CANBERRA ACT 2601

Phone: +61 2 6244 1000

Fax: + 61 2 6244 1299

E-mail: [cancer@aihw.gov.au](mailto:cancer@aihw.gov.au)

Home page:

[www.aihw.gov.au/cancer/ncsch/](http://www.aihw.gov.au/cancer/ncsch/)

Unit Head: John Harding

E-mail: [john.harding@aihw.gov.au](mailto:john.harding@aihw.gov.au)

Phone: + 61 2 6244 1140

Contact Officer: Ian McDermid

E-mail: [ian.mcdermid@aihw.gov.au](mailto:ian.mcdermid@aihw.gov.au)

Phone: + 61 2 6244 1230

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C/- Health Registers and Cancer Monitoring Unit

Australian Institute of Health and Welfare

GPO Box 570

CANBERRA ACT 2601

E-mail: [cancer@aihw.gov.au](mailto:cancer@aihw.gov.au)

Web page:

[www.aihw.gov.au/cancer/aacr/](http://www.aihw.gov.au/cancer/aacr/)

Phone: +61 2 6244 1000

Fax: + 61 2 6244 1299



## Appendix F: Tables published on the Internet

Table 1:	All cancers (ICD-10 C00–97 except skin cancers other than melanoma 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 (ICD10 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 – other than 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 cervix uteri (ICD-10 C53)
Table 44:	Cancer of the corpus uteri (ICD-10 C54)
Table 45:	Cancer of the uterus unspecified (ICD-10 C55)
Table 46:	Cancer of the corpus uteri and uterus unspecified (ICD-10 C54–C55)
Table 47:	Cancer of the ovary (ICD-10 C56)
Table 48:	Cancer of the other and unspecified female genital organs (ICD-10 C57)
Table 49:	Cancer of the placenta (ICD-10 C58)
Table 50:	Cancer of the penis (ICD-10 C60)
Table 51:	Cancer of the prostate (ICD-10 C61)
Table 52:	Cancer of the testis (ICD-10 C62)
Table 53:	Cancer of the other and unspecified male genital organs (ICD-10 C63)
Table 54:	Cancer of the penis and other and unspecified male genital organs (ICD10 C60, C63)
Table 55:	Cancer of the kidney (ICD-10 C64)
Table 56:	Cancer of the renal pelvis (ICD-10 C65)
Table 57:	Cancer of the ureter (ICD-10 C66)
Table 58:	Cancer of the bladder (ICD-10 C67)
Table 59:	Cancer of the other urinary organs (ICD-10 C68)
Table 60:	Cancer of the kidney and other urinary organs (ICD-10 C64–C66, C68)
Table 61:	Cancer of the eye (ICD-10 C69)
Table 62:	Cancer of the brain (ICD-10 C71)
Table 63:	Cancer of the meninges and other central nervous system (ICD-10 C70, C72)
Table 64:	Cancer of the brain and nervous system (ICD-10 C70–C72)
Table 65:	Cancer of the thyroid gland (ICD-10 C73)
Table 66:	Cancers of the adrenal glands (ICD-10 C74)
Table 67:	Cancers of other endocrine glands (ICD-10 C75)
Table 68:	Cancer of the adrenal glands and other endocrine glands (ICD10 C74, C75)
Table 69:	Cancers of unknown primary site (ICD-10 C76–C80, C26, C39)

- Table 70: Hodgkin's disease (ICD-10 C81)
- Table 71: Non-Hodgkin's lymphoma (ICD-10 C82–C85, C96)
- Table 72: Lymphoma NOS (ICD-O-2 M9590/3)
- Table 73: All lymphomas (ICD-10 C81–C85, C96)
- Table 74: Immunoproliferative neoplasms (ICD-10 C88)
- Table 75: Multiple myeloma (ICD-10 C90)
- Table 76: Lymphoid leukaemia (ICD-10 C91)
- Table 77: Acute lymphoblastic leukaemia (ICD-10 C91.0)
- Table 78: Chronic lymphocytic leukaemia (ICD-10 C91.1)
- Table 79: Myeloid leukaemia (ICD-10 C92)
- Table 80: Acute myeloid leukaemia (ICD-10 C92.0)
- Table 81: Chronic myeloid leukaemia (ICD-10 C92.1)
- Table 82: Monocytic leukaemia (ICD-10 C93)
- Table 83: Other leukaemias of specified cell type (ICD-10 C94)
- Table 84: Leukaemia of unspecified cell type (ICD-10 C95)
- Table 85: Other and unspecified malignant neoplasms of lymphoid, haematopoietic and related tissues (ICD-10 C96)
- Table 86: All leukaemias (ICD-10 C91–95)
- Table 87: Malignant neoplasms of independent (primary) multiple sites (ICD-10 C97)
- Table 88: Alcohol-related cancers
- Table 89: Smoking-related cancers

# 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 (2000). 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?’ on 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, skin cancers other than melanoma, 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 (2000)

**NT:** Northern Territory – a territory in the north of Australia, with a population of 197,768 (2000) 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 (2000) and Brisbane as its capital city

**SA:** South Australia – a state in the southern part of Australia, with a population of 1,511,728 (2000) 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 (2000) and Hobart as its capital city

**Vic:** Victoria – a state in the south-east of Australia, with a population of 4,804,726 (2000) and Melbourne as its capital city

**WA:** Western Australia – the western-most state of Australia, with a population of 1,901,159 (2000) 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 2000.

## **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 2002. 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))
- American Institute for Cancer Research & World Cancer Research Fund (AICR & WCRF) 1997. Food, nutrition and the prevention of cancer: A global perspective. London: World Cancer Fund.
- Australian Bureau of Statistics (ABS) 1993. Estimated resident population by sex and age, states and territories of Australia, June 1987 to June 1992. Cat. no. 3201.0. Canberra: Australian Bureau of Statistics.
- Australian Bureau of Statistics (ABS) 2001a. Australian demographic statistics, September quarter 2001. Cat. no. 3101.0. Canberra: Australian Bureau of Statistics.
- Australian Bureau of Statistics (ABS) 2001b. Causes of death 2000. Cat. no. 3303.0. Canberra: Australian Bureau of Statistics.
- Australian Bureau of Statistics (ABS) 2002a. Australian demographic statistics, September quarter 2002. Cat. no. 3101.0. Canberra: Australian Bureau of Statistics.
- Australian Bureau of Statistics (ABS) 2002b. National Health Survey, summary of results. Cat. no. 4364.0. Canberra: Australian Bureau of Statistics.
- AIHW: Mathur S 2002. Epidemic of coronary heart disease and its treatment in Australia. Cardiovascular Disease Series No. 20. AIHW Cat. no. CVD 21. Canberra: AIHW.
- Australian Institute of Health and Welfare (AIHW) 2002a. Australia's health 2002. Canberra: AIHW.
- Australian Institute of Health and Welfare (AIHW) 2002b. Diabetes: Australian facts 2002. AIHW Cat. No. CVD 20 (Diabetes Series No.3). Canberra: AIHW.
- Australian Institute of Health and Welfare (AIHW) 2003a. 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) 2003b. Australian hospital statistics 2001-02. AIHW cat. no. HSE 25. Canberra: AIHW (Health Services Series no. 20).
- Burt RW, Bishop DT, Lurch HT, Rozen P & Winawer SJ 1990. Risk and surveillance of individuals with heritable factors for colorectal cancer. *Bulletin of the World Health Organization* 68:655-665.
- Condon JR, Warman G & Arnold L 2001. The health and welfare of Territorians. Darwin: Territory Health Services.
- Cooper GS, Yuan Z, Landefeld CS, Johanson JF & Rimm AA 1995. A national population-based study of incidence of colorectal cancer and age. *Cancer* 75:775-781.
- d'Espaignet ET, Measey ML, Condon JR, Jelfs P & Dempsey KE 1996. Cancer in the Northern Territory 1987-1993. Darwin: Territory Health Services.
- De Angelis R, Capocaccia R, Hakulinen T, Soderman B & Verdecchia A 1999. Mixture models for cancer survival analysis: applications to population-based data with covariates. *Statistics in Medicine* 18:441-54

- Doll R, Payne P & Waterhouse JAH (1966). *Cancer incidence in five continents, Vol I*. Geneva: UICC, Berlin, Springer.
- 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.
- Grulich A, McCredie M & Coates M 1995. Cancer incidence in Asian migrants to New South Wales, Australia. *British Journal of Cancer* 71:400–408.
- Hardcastle JD, Chamberlain JO, Robinson MHE & et al. 1996. Randomised controlled trial of faecal-occult-blood screening for colorectal cancer. *Lancet* 348:1472-1477.
- 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) 2001. *GLOBOCAN 2000: cancer incidence, mortality and prevalence worldwide, version 1.0*. IARC CancerBase No. 5. Lyon: IARC Press.
- 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.
- Kewenter J, Bjork S, Haglund E, Smith L, Svanvik J & Ahren C 1991. Screening and rescreening for colorectal cancer: a controlled trial of fecal occult blood testing in 27,700 subjects. *Cancer* 62:645–651.
- Kronborg O, Fenger C, Olsen J, Jorgensen OD & Sondergaard O 1996. Randomised study of screening for colorectal cancer with faecal-occult-blood test. *Lancet* 348:1467–1471.
- Kune GA, Bannerman S & Watson LF 1992. Attributable risk for diet, alcohol and family history in the Melbourne Colorectal Cancer Study. *Nutrition and Cancer* 18:231–235.
- Mandel JS, Bond JH, Church TR & et al. 1993. Reducing mortality from colorectal cancer by screening for fecal occult blood. *New England Journal of Medicine* 328:1365–1371.
- McCredie M, Williams S & Coates M 1999. Cancer mortality in east and southeast Asian migrants to New South Wales, Australia, 1975–1995. *British Journal of Cancer* 79:1277–82.
- National Cancer Control Initiative (NCCI) 2003 (forthcoming). *The 2002 national non-melanoma skin cancer survey: a report by the NCCI Non-melanoma Skin Cancer Working Group*. Editor Staples MP. Melbourne: National Cancer Control Initiative.
- National Centre for Classification in Health (NCCH) 1998. *The international statistical classification of diseases and related health problems, 10th revision, Australian modification (ICD-10-AM)*. Vol 1–5. Sydney: NCCH.
- National Coding Centre 1996. *The Australian version of the international classification of diseases, 9th revision, Clinical modification (ICD-9-CM)*. Vol 1–4. Effective 1 July 1996. Sydney: National Coding Centre.
- National Health and Medical Research Council (NHMRC) 1999. *The prevention, early detection and management of colorectal cancer*. Canberra: Australian Government Publishing Service.



- 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).
- 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.
- Stewart BW & Kleihues P (eds.) 2003. World cancer report. Lyons: IARC Press.
- Tallis GM, Leppard P & O'Neill TJ 1988. The analysis of survival data from a central cancer registry with passive follow-up. *Statistics in Medicine* 7:483-90.
- The Cancer Council Australia 2001. National Cancer Prevention Policy 2001-2003. Sydney: The Cancer Council of Australia.
- 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.
- Verdecchia A et al. 1998. The cure for colon cancer: results from the EURO CARE study. *International Journal of Cancer* 77:322-9.
- Winawer SJ, Fletcher RH, Miller L, Godlee F, Stolar MH, Mulrow CD et al. 1997. Colorectal cancer screening: clinical guidelines and rationale. *Gastroenterology* 112:594-642.
- World Health Organization 1992. International statistical classification of diseases and related health problems, 10th revision. Geneva: World Health Organization.

# Related publications

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

## New South Wales

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

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. Vajdic CM, Krickler 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.

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, Secombe 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, Secombe 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 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.
- Grulich A, Wan X, Law M, Coates M & Kaldor J 1999. Risk of cancer in people with AIDS. *AIDS* 13:839-44.
- 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.
- Marrett LD, Nguyen HL & Armstrong BK 2001. 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 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.
- 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.
- 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.
- 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.
- Supramaniam R, Smith D, Coates M, Hayes L & Armstrong B 1998. *Breast cancer survival in New South Wales in 1997 to 1995*. Sydney: New South Wales Cancer Council.
- 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 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.

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.

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.

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.

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.

## Victoria

Altmann AE, Halliday JL & Giles GG 1998. Associations between congenital malformations and childhood cancer. A register-based case-control study. *British Journal of Cancer* 78:1244–9.

Armes JE, Trute L, White D, Southey M, Hammet F, Tesoriero A, Hutchins A, Dite GS, McCredie MRE, Giles G, Hopper J & Venter DJ 1999. Distinct molecular pathogenesis of early-onset breast cancers in BRCA1 and BRCA2 mutation carriers: a population-based study. *Cancer Research* 59:2011–17.

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.

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.

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.

- Firgaira FA, Seshadri R, McEvoy CRE, Dite G, Giles GG, McCredie MRE, Southey M, Venter DJ & Hopper JH 1999. Rare minisatellite alleles at the h-ras locus and risk of breast cancer before the age of 40 in Australian women. *Journal of the National Cancer Institute* 91:2107-11.
- Frydenberg M, Giles GG, Mameghan H, Thursfield VJ, Millar J, Wheelahan JB, Bolton DM & Syme RR 2000. Prostate cancer in Victoria 1993: patterns of reported management. *Medical Journal of Australia* 172:270-4.
- Giles GG 1996. Cancer in Australia: the experience of men. *Cancer Forum* 20:117-20.
- Giles GG 1997. Cancer registration and cancer control in Australia. Proceedings of the International Symposium 'Cancer Epidemiology and Control in the Asia-Pacific Region', Kobe, Japan, 1-3 December 1997.
- Giles GG 1998. The epidemiology of brain cancer. *Cancer Forum* 22:126-30.
- Giles GG, Armstrong BK, Burton RC, Staples MP & Thursfield V 1996. Has melanoma mortality in Australia stopped rising? *British Medical Journal* 312:1121-5.
- Giles GG & Gonzales M 2000 (in press). The epidemiology of brain tumours and factors in prognosis. In: Kaye A & Laws E (eds). *Brain tumours: an encyclopedic approach*. Edinburgh: Churchill Livingstone.
- 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, McCredie MRE et al. 2001. Smoking and prostate cancer; findings from an Australian case-control study. *Annals of Oncology* 12:1-5.
- Giles GG, Staples M, McCredie MRE, Coates M & Farrugia H 1995. Multiple primary melanomas: an analysis of cancer registry data from Victoria and New South Wales. *Melanoma Research* 5:433-8.
- Giles GG & Thursfield V 1996b. Trends in skin cancer in Australia. *Cancer Forum* 20:188-91.
- Giles GG & Thursfield V 1996a. Cancer in adolescents and young adults. *CANSTAT* 23.
- Giles GG & Thursfield V 1997a. Bowel cancer. *CANSTAT* 26.
- Giles GG & Thursfield V 1997b. Cancer in Victoria 1994. *CANSTAT* 25.
- Giles GG & Thursfield V 1997c. Trends in cancer mortality, Australia 1910-1994. *CANSTAT* 24.
- Giles GG & Thursfield V 2000. Prostate cancer. *CANSTAT* 30.
- Giles GG & Thursfield V 2001. Trends in cancer mortality Australia 1910-1999. *CANSTAT* 33.
- Giles GG, Waters K, Thursfield V & Farrugia H 1995. Childhood cancer in Victoria, Australia, 1970-1989. *International Journal of Cancer* 63:794-7.
- Giles GG, Whitfield K & Thursfield V 2000a. Cancer in Victoria 1998. *CANSTAT* 32.
- Giles GG, Whitfield K & Thursfield V 2000b. Testicular cancer. *CANSTAT* 31.
- Giles GG, Whitfield K, Thursfield V & Staples M 1998. Cancer in Victoria 1995. *CANSTAT* 27.
- Giles GG, Whitfield K, Thursfield V & Staples M 1999. Cancer in Victoria 1996. *CANSTAT* 28.

- Giles GG, Whitfield K, Thursfield V & Staples M 2000. Cancer in Victoria 1997. CANSTAT 29.
- Green A, McCredie M & Giles G 1996. Occurrence of melanomas on the upper and lower limbs in eastern Australia. *Melanoma Research* 6:387-94.
- Green A, McCredie M, Giles G, MacKie R, Young P, Jackman L & Thursfield T 1999. A case-control study of melanomas of the soles and palms (Australia and Scotland). *Cancer Causes and Control* 10:21-5.
- Harmer C, Staples M & Kavanagh A 1999. Evaluation of breast cancer incidence: is the increase due entirely to mammographic screening? *Cancer Causes Control* 10(5):333-7.
- Hopper JL, Chenevix-Trench G, Jolley D, Dite GS, Jenkins MA, Venter DJ, McCredie MRE & Giles GG 1999. Design and analysis issues in a population-based case-control family study of the genetic epidemiology of breast cancer, and the Co-operative Family Registry for Breast Cancer Families (CFRBCF). *Journal of National Cancer Institute Monographs* (26):95-100.
- Hopper JL, Firgaira FA, Dite GS, Giles GG, McCredie MRE, Southey M, Venter DJ, Seshadri R & McEvoy CR 2000 (letter). HRAS1 rare minisatellite alleles and breast cancer in Australian women under the age of 40 years. *Journal of the National Cancer Institute* 92(9):756-7.
- Hopper JL, Southey MC, Dite GS, Jolley DJ, Giles GG, McCredie MRE, Easton DF & Venter DJ for the Australian Breast Cancer Family Study 1999. Population-based estimate of the average age-specific cumulative risk of breast cancer for a defined set of protein truncating mutations in BRCA1 and BRCA2. Australian Breast Cancer Family Study. *Cancer Epidemiology, Biomarkers & Prevention* 8:741-7.
- Jianfeng Xu & International Consortium for Prostate Cancer Genetics 2000. Combined analysis of hereditary prostate cancer linkage to 1q24-25: results from 772 hereditary prostate cancer families from the International Consortium for Prostate Cancer Genetics. *American Journal of Human Genetics* 66(3):945-57.
- Kavanagh AM, Brown R, Fortune D, Mulvany N, Scurry J & Giles GG 1998. Misclassification of microinvasive cervical cancer and carcinoma-in-situ of the cervix. *International Journal of Gynaecological Cancer* 8:46-50.
- Kavanagh AM, Giles GG, Mitchell H & Cawson J 2000. The sensitivity, specificity and positive predictive value of screening mammography and symptomatic status. *Journal of Medical Screening* 7(2):105-10.
- Kavanagh A, Mitchell H, Farrugia H & Giles G 1999. Monitoring interval cancers in an Australian mammographic screening program. *Journal of Medical Screening* 6(3):139-43.
- Kavanagh A, Mitchell H & Giles G 2000. Use of hormone replacement therapy and the accuracy of mammographic screening. *The Lancet* 355:270-4.
- Lord RVN, Law MG, Ward RL, Thomas RJS, Giles GG, Thursfield V et al. 1998. Rising incidence of oesophageal adenocarcinoma in men in Australia. *Journal of Gastroenterology and Hepatology* 13(4):356-62.
- McCredie MRE, Dite GS, Porter L, Maskiell J, Giles GG, Phillips KA, Redman S & Hopper JL (in press). Prevalence of self-reported arm morbidity following treatment for breast cancer in the Australian Breast Cancer Family Study.
- 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.

- McMichael A & Giles GG 1996. Have increases in ultraviolet solar exposure contributed to the rise in incidence of non-Hodgkin's lymphoma? *British Journal of Cancer* 73:945-50.
- Mitchell H & Giles GG 1996. Cancer diagnosis after a report of negative cervical cytology. *Medical Journal of Australia* 164:270-3.
- Preston-Martin S, Pogoda JM, Schlehofer B, Blettner M, Howe GR, Ryan P, Menegoz F, Giles GG et al. 1998. An international case-control study of adult glioma and meningioma: the role of head trauma. *International Journal of Epidemiology* 27:579-86.
- Richardson GE, Thursfield VJ & Giles GG 2000. Reported management of lung cancer in Victoria in 1993: comparison with best practice. *Medical Journal of Australia* 172:321-4.
- Schlehofer B, Blettner M, Preston-Martin S, Niehoff D, Wharendorf J, Arslan A, Ahlbom A, Choi W, Giles GG, Howe G, Little J, Menegoz F & Ryan P 1999. The role of medical history in brain tumour development. Results from the international adult brain tumour study. *International Journal of Cancer* 82(2):155-60.
- Severi G, Giles G, Robertson C, Boyle P & Autier P 2000. Mortality from cutaneous melanoma: evidence for contrasting trends between populations. *British Journal of Cancer* 2(11):1887-91.
- Southey MC, Tesoriero AA, Anderson CR, Jennings KM, Brown SM, Dite GS, Jenkins MA, Osborne RH, Maskill JA, Porter L, Giles GG, McCredie MRE & Venter DJ 1999. BRCA1 mutations and other sequence variants in a population-based sample of Australian women with breast cancer. *British Journal of Cancer* 79:34-9.
- Spurdle AB, Dite GS, Chen X, Mayne C, Southey ME, Batten LE, Chy H, Armes J, Venter DJ, Trute L, McCredie MRE, Giles GG, Hopper JL & Chenevix-Trench G 1999. Androgen receptor Exon 1 CAG repeat length is not a risk factor for breast cancer in women before age 40. *Journal of the National Cancer Institute* 91:961-6.
- Spurdle AB, Webb PE, Chen X, Martin N, McCredie MRE, Giles GG, Hopper JL & Chenevix-Trench G 2000. Androgen receptor Exon 1 CAG repeat length and ovarian cancer risk. *International Journal of Cancer* 87:637-43.
- Staples M, Marks R & Giles G 1998. Skin cancer trends in Australia 1985 to 1995: evidence of the effectiveness of sun protection campaigns. *International Journal of Cancer* 78:144-8.
- Tesoriero A, Andersen C, Southey M, Somers G, McKay M, Armes J, McCredie M, Giles G, Hopper JL & Venter D 1999. De novo BRCA1 mutation in a patient with breast cancer and an inherited BRCA2 mutation. *American Journal of Human Genetics* 65:567-9.
- Thomas RJS, Lade S, Giles GG & Thursfield V 1996. The epidemiology of oesophageal carcinoma in Victoria with emphasis on incidence trends. *Australian and New Zealand Journal of Surgery* 66:271-5.
- Thompson SC, Lin A, Warren R, Giles GG & Crofts N 1997. Risk factors associated with hepatocellular carcinoma notified to the Anti-Cancer Council in Victoria 1991-92. *Australian and New Zealand Journal of Public Health* 21:626-30.
- Thursfield V, Giles GG & Staples M 1995. Skin cancer. *CANSTAT* 20.
- 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, Krickler 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.

Venn A, Watson L, Bruinsma F, Giles GG & Healy D 1999. Fertility drugs, in vitro fertilisation and cancer risk. *Lancet* 354(9190):1586-90.

Venn A, Watson L, Lumley J, Giles G, King C & Healy D 1995. Incidence of breast and ovarian cancer after infertility and IVF. *Lancet* 346:995-1000.

## 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.

Queensland Cancer Registry 1998. *Cancer in Queensland: incidence and mortality 1986-1995.* Brisbane: Health Information Centre, Queensland Health.

Queensland Cancer Registry 1999. Cancer in Queensland: incidence and mortality 1982–1996. Brisbane: Health Information Centre, Queensland Health.

Queensland Cancer Registry 2000. Cancer in Queensland: incidence and mortality 1982–1997. Brisbane: Health Information Centre, Queensland Health.

Queensland Cancer Registry 2001. Cancer in Queensland: incidence and mortality 1982–1999. Brisbane: Queensland Cancer Fund, Queensland Health.

Queensland Cancer Registry 2001. Cancer in Queensland: incidence and mortality 1982–1998. Brisbane: Health Information Centre, Queensland Health.

Queensland Cancer Registry 2002. Cancer in Queensland: incidence and mortality 1982 - 2000. Brisbane: Queensland Cancer Fund, Queensland Health.

## **Western Australia**

Thompson JR & FitzGerald P 1995. Childhood cancer incidence, mortality and survival in Western Australia 1982–1991. Perth: Health Department of Western Australia, Health Statistics Branch.

Threlfall TJ 1997. Cancer incidence and mortality projections for Western Australia, 1996–2001. Statistical Series no. 50. Perth: Health Department of Western Australia.

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

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 & Morgan A 1996. Malignant mesothelioma in Western Australia 1960 to 1994. Data from the Western Australia Mesothelioma Register. Statistical Series no. 46. Perth: Health Department of Western Australia.

Threlfall TJ & Thompson JR 1997. Cancer incidence and mortality in Western Australia, 1995. Statistical Series no. 51. Perth: Health Department of Western Australia.

Threlfall TJ & Thompson JR 1998. Cancer incidence and mortality in Western Australia, 1996. Statistical Series no. 55. Perth: Health Department of Western Australia.

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

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

Threlfall TJ, Whitfort MJ & Thompson JR 1997. Cancer incidence and mortality in Western Australia, 1992–1994. Statistical Series no. 45. Perth: Health Department of 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.

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.
- 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.
- 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.
- Roder D & Wilson D 1983. Oral cancer in South Australia – incidence and case survival. *Australian Dental Journal* 28(5):312-15.
- 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.
- 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.
- 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.
- 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.
- 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.
- McLennan G & Roder DM 1989. Lung cancer in Australia. *Medical Journal of Australia* 150(4):206-7, 210-13.
- McMichael AJ, Bonett A & Roder D 1989. Cancer incidence among migrant populations in South Australia. *Medical Journal of Australia* 150(8):417-20.
- 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.
- Roder D, Bonett A, Hunt R & Beare M 1987. Where patients with cancer die in South Australia. *Medical Journal of Australia* 147(1):11-13.
- 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.
- 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 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.

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

Ashbolt R, Dwyer T & Blizzard L (eds) 2000. *Cancer in Tasmania: incidence and mortality 1997*. Hobart: Menzies Centre for Population Health Research.

Blizzard CL, Dwyer T & Ashbolt R 1997. Self-reported skin type associated with experience of sunburn in 14–15 year old adolescents of Northern European descent. *Melanoma Research* 7:339–346.

Blizzard L & Dwyer T (in press). Declining lung cancer mortality of young Australian women despite increased smoking is linked to reductions in cigarette 'tar' yields. *British Journal of Cancer*.

Burgess J, Dwyer T, McArdle K, Tucker P & Shugg D 2000. The changing incidence and spectrum of thyroid cancer in Tasmania (1978–1998) during a transition from iodine sufficiency to iodine deficiency. *Journal of Clinical Endocrinology & Metabolism* 85:1513–17.

Dwyer T, Blizzard L & Ashbolt R 1995. Sunburn associated with the increased number of naevi in darker as well as lighter skinned adolescents of Northern European descent. *Cancer Epidemiology, Biomarkers and Prevention* 4:825–30.

Dwyer T, Blizzard L, Gies PH, Ashbolt R & Roy C 1996. Assessment of habitual sun exposure in adolescents via questionnaire – a comparison with objective measurement using polysulphone badges. *Melanoma Research* 6:231–9.

Dwyer T, Blizzard L, Shugg D, Hill D & Ansari MZ 1994. Higher lung cancer rates in young women than young men: Tasmania 1983 to 1992. *Cancer Causes and Control* 5:351–8.

- Dwyer T, Muller HK, Blizzard L, Ashbolt R & Phillips G 1998. The use of spectrophotometry to estimate melanin density in Caucasians. *Cancer Epidemiology, Biomarkers and Prevention* 7:203-6.
- Dwyer T, Prota G, Blizzard L, Ashbolt R & Vincensi M 2000. Melanin density and melanin type predict melanocytic naevi in 19-20 year olds of Northern European ancestry. *Melanoma Research* 10: 387-94.
- Hill D, Jamrozik K, White V, Collins J, Boyages J, Shugg D, Pruden M, Giles G & Byrne M 1999. Surgical management of breast cancer in Australia in 1995. Sydney: National Health and Medical Research Council National Breast Cancer Centre.
- Hill D & Shugg D 1989. Breast self-examination practices and attitudes among breast cancer, benign breast disease and general practice patients. *Health Education Research Theory and Practice* 2:193-203.
- Jelfs PL, Giles G, Shugg D, Coates M, Durling G, Fitzgerald P & Ring I 1994. Cutaneous malignant melanoma in Australia, 1989. *Medical Journal of Australia* 161:182-7.
- Jones M, Shugg D, Dwyer T, Young B & Bonnett A 1992. Interstate difference in incidence and mortality from melanoma – a re-examination of the latitudinal gradient. *Medical Journal of Australia* 157:373-7.
- Kaldor J, Shugg D, Young B, Dwyer T & Wang YG 1993. Non-melanoma skin cancer: ten years of cancer registry based surveillance. *International Journal of Cancer* 53:886-91.
- Shugg D 1989. Cancer incidence and mortality in Tasmania 1985. Hobart: Menzies Centre for Population Health Research.
- Shugg D 1990. Cancer incidence and mortality in Tasmania 1986. Hobart: Menzies Centre for Population Health Research.
- Shugg D 1991. Cancer incidence and mortality in Tasmania 1987. Hobart: Menzies Centre for Population Health Research.
- Shugg D 1992. Cancer incidence and mortality in Tasmania 1988. Hobart: Menzies Centre for Population Health Research.
- Shugg D, Allen B, Blizzard L, Dwyer T & Roder D 1994. Brain cancer incidence, mortality and case survival: observations from two Australian cancer registries. *International Journal of Cancer* 59:765-70.
- Shugg D, Dwyer T & Blizzard L (eds) 1993. Cancer incidence and mortality in Tasmania 1989. Hobart: Menzies Centre for Population Health Research.
- Shugg D, Dwyer T & Blizzard L (eds) 1995. Cancer incidence and mortality in Tasmania 1992. Hobart: Menzies Centre for Population Health Research.
- Shugg D, Dwyer T & Blizzard L (eds) 1997. Cancer incidence and mortality in Tasmania 1994. Hobart: Menzies Centre for Population Health Research.
- Shugg D, Dwyer T & Blizzard L (eds) 1999. Cancer in Tasmania: incidence and mortality 1996. Hobart: Menzies Centre for Population Health Research.
- Shugg D, Dwyer T, Blizzard L & Ansari M (eds) 1994. Cancer incidence and mortality in Tasmania 1991. Hobart: Menzies Centre for Population Health Research.
- Shugg D, Dwyer T, Blizzard L & Ansari M (eds) 1994. Cancer incidence and mortality in Tasmania 1990. Hobart: Menzies Centre for Population Health Research.
- Shugg D, Dwyer T & Couper D (eds) 1996. Cancer incidence and mortality in Tasmania 1993. Hobart: Menzies Centre for Population Health Research.

Shugg D, Dwyer T & Couper D (eds) 1998. Cancer in Tasmania: incidence and mortality 1995. Hobart: Menzies Centre for Population Health Research.

Shugg D, Hill D, Cooper D & Shepherd J 1990. Practice of breast self-examination and the treatment of breast cancer. *Australian and New Zealand Journal of Surgery* 60:455–62.

Tasmanian Cancer Registry, Menzies Centre for Population Health Research 2001. Cancer in Tasmania: incidence and mortality 1998. Hobart: Menzies Centre for Population Health Research, University of Tasmania.

## **Australian Capital Territory**

Briscoe N 1996. Cancer in the Australian Capital Territory 1983–1992. Canberra: ACT Department of Health and Community Care.

Fritschi L, Coates M, Shadbolt B & Taylor R 1994. Cancer in the Australian Capital Territory 1982–1991. Canberra: ACT Department of Health.

## **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.

## **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) 2000. National health data dictionary. Version 9. AIHW cat. no. HWI 24. 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).
- Bauman A, Ford I & Armstrong T 2001. Trends in population levels of reported physical activity in Australia, 1997, 1999 and 2000. Canberra: Australian Sports Commission.
- Berg JW 1996. Morphological classification of human cancer. In: Schottenfeld D & Fraumeni JF (eds). Cancer epidemiology and prevention, 2nd ed. Oxford: Oxford University Press, chapter 3 of section 1.
- 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.
- National Health and Medical Research Council 1992. Is there a safe level of daily consumption of alcohol for men and women? Canberra: Australian Government Publishing Service.
- Peto R, Darby S, Deo H, Silcocks P, Whitley E & Doll R 2000. Smoking, smoking cessation and lung cancer in the UK since 1950: combination of national statistics with two case-control studies. *British Medical Journal* 321:323–9.
- Staples M, Marks R & Giles G 1998. Trends in the incidence of non-melanocytic skin cancer (NMSC) treated in Australia 1985–1995: are primary prevention programs starting to have an effect? *International Journal of Cancer* 78:144–8.