

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

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

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

The objectives of the AACR are to:

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

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

CANCER SERIES

Number 37

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

**Australian Institute of Health and Welfare  
Australasian Association of Cancer Registries**

**June 2007**

Australian Institute of Health and Welfare  
Canberra

AIHW cat. no. CAN 32

© Australian Institute of Health and Welfare 2007

This work is copyright. Apart from any use as permitted under the *Copyright Act 1968*, no part may be reproduced without prior written permission from the Australian Institute of Health and Welfare. Requests and enquiries concerning reproduction and rights should be directed to the Head, Business Promotion and Media Unit, Australian Institute of Health and Welfare, GPO Box 570, Canberra ACT 2601.

This publication is part of the Australian Institute of Health and Welfare's Cancer series. A complete list of the Institute's publications is available from the Institute's website <[www.aihw.gov.au](http://www.aihw.gov.au)>.

ISSN 1039-3307

ISBN 978 1 74024 696 5

### **Suggested citation**

AIHW (Australian Institute of Health and Welfare) & AACR (Australasian Association of Cancer Registries) 2007. Cancer in Australia: an overview, 2006. Cancer series no. 37. Cat. no. CAN 32. Canberra: AIHW.

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

Board Chair

Hon. Peter Collins, AM, QC

Director

Penny Allbon

Any enquiries about or comments on this publication should be directed to:

Dr Mark Short

Health Registers and Cancer Monitoring Unit

Australian Institute of Health and Welfare

GPO Box 570

Canberra ACT 2601

Phone: (02) 6244 1063

Email: [cancer@aihw.gov.au](mailto:cancer@aihw.gov.au)

Published by the Australian Institute of Health and Welfare

Printed by

# Contents

<b>Contributors .....</b>	<b>vii</b>
<b>Summary .....</b>	<b>viii</b>
<b>1 Introduction.....</b>	<b>1</b>
What is cancer? .....	1
Cancer surveillance in Australia .....	2
National Cancer Statistics Clearing House.....	2
Cancer data on the AIHW website .....	3
<b>2 Incidence and mortality .....</b>	<b>5</b>
Introduction .....	5
Estimates of cancer incidence and mortality in 2006 .....	6
Incidence in 2003 .....	7
Incidence of lymphoid and haematopoietic neoplasms .....	15
Cancer incidence in the states and territories, 1999–2003.....	16
Incidence trends 1983–2003.....	30
Mortality in 2003.....	43
Mortality trends 1983–2003.....	51
Cancers attributed to smoking and excessive alcohol consumption .....	64
<b>3 Hospitalisation.....</b>	<b>67</b>
Introduction .....	67
Main findings.....	67
<b>4 Prostate cancer in profile .....</b>	<b>73</b>
Introduction .....	73
Incidence and mortality.....	73
Drivers of growth in new cases diagnosed.....	78
Implications for projected incidence of prostate cancer .....	82
International comparison.....	83
Key statistics on prostate cancer .....	85
<b>5 Regional cancer differentials .....</b>	<b>88</b>
Introduction .....	88
Incidence differentials .....	88
Mortality differentials.....	94
<b>Appendix A: WHO classification of lymphoid and haematopoietic neoplasms .....</b>	<b>100</b>
<b>Appendix B: Methods.....</b>	<b>101</b>
<b>Appendix C: Population data.....</b>	<b>107</b>

<b>Appendix D: Cancer registration in Australia .....</b>	<b>108</b>
<b>Appendix E: Cancer registries contact list .....</b>	<b>109</b>
<b>Appendix F: Data sources .....</b>	<b>112</b>
<b>Abbreviations and glossary .....</b>	<b>113</b>
<b>References .....</b>	<b>116</b>
<b>Related state and territory cancer registry publications .....</b>	<b>119</b>
<b>List of tables .....</b>	<b>130</b>
<b>List of figures .....</b>	<b>132</b>

# Contributors

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

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

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

## **AIHW**

Mr John Harding

Dr Mark Short

Ms Edith Christensen

Ms Kathy Southgate

## **New South Wales**

Dr Paul Jelfs

Ms Deborah Baker

Mrs Maria Arcorace

## **Victoria**

Professor Graham Giles

Ms Helen Farrugia

Mrs Vicky Thursfield

## **Queensland**

Dr Joanne Aitken

Ms Kerrie Dennison

Ms Marilla Fraser

Ms Julie Moore

## **Western Australia**

Dr Tim Threlfall

Dr Judy Thompson

Mr John Langley

Ms Kaye Garrod

Ms Charmaine Brewster

Ms Kathy Johnston

Ms Colleen Kontor

## **South Australia**

Mr Ron Somers

Dr Colin Luke

Mr Kevin Priest

## **Tasmania**

Dr Alison Venn

Ms Marita Dalton

Ms Leah Newman

## **Australian Capital Territory**

Ms Linda Halliday

Ms Roslyn Sexton

Ms Janet Li

## **Northern Territory**

Dr John Condon

Ms Lindy Garling

Ms Lesley Milliken

# Summary

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

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

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

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

## Key findings

### Cancers diagnosed in Australia in 2006

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

### Deaths from cancer in Australia in 2006

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

### Most common cancers in 2003

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



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

## **Risk of cancer in 2003**

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

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

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

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

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

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

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

## **State and territory comparisons**

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

## **Regional comparisons**

Regional analyses were undertaken using the Australian Standard Geographical Classification.

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

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

## Hospitalisation

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

## Prostate cancer

### Overview

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

### Incidence

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

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

### **Mortality**

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

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

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

### **PSA tests**

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

### **Hospitalisation**

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

# 1 Introduction

Cancer is a notifiable disease in all states and territories. Cancer, excluding non-melanocytic skin cancer (NMSC), is the only major disease category for which complete coverage of incidence data is available. It 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 effects 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 tissues and 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 2004 there were 101 registered deaths from benign tumours.

The main features of a malignant tumour (cancer) are its ability to grow in an uncontrolled way and to invade and spread to other parts of the body (metastasise). Invasion occurs when cancer cells push between and break through other surrounding cells and structures. Cancer spreads to other parts of the body 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 even 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 chemotherapy (cancer-destroying drugs) or radiation therapy. The growth of some cancers can also be controlled through hormone therapy.

Treatment 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 that the cancer does not recur.

## **Cancer surveillance in Australia**

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

The only effective method of obtaining cancer incidence data is through universal registration of cancer diagnoses. In Australia, cancer registration is required under state and territory legislation. The cancer registrations are collated by cancer registries that are supported by a mix of state and territory government and non-government organisations. The registries obtain their information from hospital, pathology, radiotherapy and physicians' records (Appendix D). The earliest cancer registries have been operating since 1972 but it was not until 1982 that cancer registration was universal in Australia for all states and territories except the Australian Capital Territory. Cancer notification in the Australian Capital Territory was not legislated until 1994 so pre-1994 cancer data for this jurisdiction are considered to be incomplete.

## **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 an ongoing facility for compiling data produced by individual state and territory registries and identifying cross-border duplicate registrations.

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

- enable computation and publication of national statistics on cancer
- allow tracking of interstate movement of cancer cases via record linkage so that the same cancer case is not counted more than once

- facilitate exchange of scientific and technical information between cancer registries and promote standardisation in the collection and classification of cancer data
- facilitate cancer research both nationally and internationally.

The NCSCH primarily 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 that permits examination of the data in greater depth.

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

Health Registers and Cancer Monitoring Unit  
 Australian Institute of Health and Welfare  
 GPO Box 570  
 Canberra ACT 2601  
 Phone: (02) 6244 1000  
 Email: cancer@aihw.gov.au

## **Cancer data on the AIHW website**

Cancer data on the AIHW website includes the following at <[www.aihw.gov.au/dataonline](http://www.aihw.gov.au/dataonline)>.

### **Australian Cancer Incidence and Mortality books**

These are newly developed interactive Excel workbooks of tables and graphs by age and sex for 'all cancers' and the major cancers, for incidence from 1982 to 2003 and mortality from 1968 to 2005.

### **Cancer incidence data cubes**

There are two cancer incidence data cubes, one age-specific and the second age-standardised, with data from 1983 to 2003:

- The age-specific data cube includes the number of new cases and age-specific rates for all registrable cancers (International Classification of Diseases, 10<sup>th</sup> edition (ICD-10) categories C00–C96 excluding NMSC C44) by year of diagnosis, sex and 5-year age groups.
- The age-standardised database includes the number of new cases, age-standardised incidence rates and crude rates by year of diagnosis, sex and age. All rates are expressed per 100,000 persons and are age-standardised to both the Australian 2001 Population Standard and to the World Health Organization's (WHO) new World Population Standard.

## **General Record of Incidence of Mortality (GRIM) books**

The GRIM books (AIHW 2006b) are interactive Excel workbooks that feature mortality data on selected causes of death by age and sex for each year from 1907 to 2005.

## **National hospital morbidity data cubes**

The interactive national hospital morbidity data page contains links to a number of data cubes containing information on the principal diagnoses, procedures and diagnosis-related groups of patients admitted to Australian hospitals. These include patients with a principal diagnosis of cancer. The source of these data is the National Hospital Morbidity Database. This database, compiled by the AIHW from data supplied by the state and territory health authorities, is a collection of records for admitted patients separated from public and private hospitals in Australia.



## 2 Incidence and mortality

### Introduction

#### Classifications

Recent *Cancer in Australia* reports have been based on the International Classification of Diseases for Oncology, 2nd edition (ICD-O-2) classification scheme for cancers (WHO 1990). This is the first report based on the third edition of the classification, the ICD-O-3 scheme (WHO 2000). The main effects of this change are that some neoplasms that used to be considered of borderline malignancy are now considered malignant and vice versa:

- Five types of neoplasms of the ovary and two of the brain changed from malignant to borderline.
- One type of neoplasm of the cervix, two of the brain and meninges, and 10 of the lymphoid and haematopoietic system changed from borderline to malignant.

Neoplasms of borderline malignancy are not considered cancers and so their numbers are not reported here. Conditions that change from malignant to borderline pose no problem for measuring past trends or forecasting future ones because they are simply no longer counted. However, conditions that change from borderline to malignant do pose a problem because they may not have been routinely collected by cancer registries until very recently. Hence there may be no reliable historical data. This is indeed the case for the 10 types of lymphoid and haematopoietic neoplasms mentioned above. For 2003 there are complete or reasonably complete incidence data. However, for 2002 several states and territories do not have complete data and none has for 2001 and before.

In order to allow comparison of incidence (coded by cancer registries in ICD-O-3) and mortality (coded by the ABS in ICD-10) the ICD-O-3 topography and morphology codes are mapped to appropriate ICD-10 codes. However, some ICD-O-3 codes for lymphoid and haematopoietic neoplasms do not map well to ICD-10. Therefore this chapter includes a section in which the incidence of these conditions is reported using ICD-O-3 morphology codes.

#### Age-standardised rates

Incidence and mortality are reported using numbers and age-standardised rates (ASRs). Two different ASRs are used: ASR(A) uses the Australian 2001 Standard Population and ASR(W) uses the World 2000 Standard Population. The methods for calculating these rates are explained in Appendix B.

#### Non-melanocytic skin cancer

NMSC will be used throughout this report as an abbreviation for non-melanocytic skin cancer (also called non-melanoma skin cancer). By far the two most common types of NMSC are basal cell carcinoma (BCC) and squamous cell carcinoma (SCC), each of which is more

common than all other cancers combined. These two cancers are the only cancers that are not legally notifiable diseases and as such the exact numbers of these conditions are unknown. Estimates of the frequency of treated BCC and SCC are derived from data that have been collected in national household surveys in 1985, 1990, 1995 and 2002 (NCCI 2003). The 2002 survey report indicates that approximately 256,000 people were diagnosed with BCC and 118,000 with SCC in Australia during 2002, a total of 374,000 people. In contrast, the total number of all other cancers diagnosed in 2002 was 92,337.

NMSC is excluded from all further incidence data in this report.

## **Risk of a diagnosis of cancer**

The life-expectancy of Australians in 2003–2005 was 78.5 years for males and 83.3 years for females (ABS 2006a). The cancer incidence tables in this chapter provide the risk of a diagnosis of cancer to age 75 and age 85. Note that these risks represent averages over the whole population and do not take account of any individual's risk factors.

## **Person-years of life lost**

The cancer mortality tables in this chapter provide the total person-years of life lost (PYLL) to age 75 and age 85. PYLL measures how many years of life are lost due to premature death. A person who dies at age 10 loses many more potential years of life than a person who dies at age 90.

## **Estimates of cancer incidence and mortality in 2006**

It is estimated that in 2006 there were 106,000 new cases of cancer diagnosed in Australia (60,600 males and 45,400 females) and 39,200 deaths from cancer (21,900 males and 17,300 females).

## **Background**

In 2005 it was projected that, based on trends to 2001, there would be 93,332 new cases of cancer diagnosed in 2003 in Australia, 50,531 males and 42,801 females (AIHW, AACR & NCSG: Ian McDermid 2005). The actual number of cases diagnosed in 2003 was 93,194, almost the same as the total projected. However, there were about 900 additional cancers diagnosed in males, because of an increase in the incidence of prostate cancer in 2003, and about 900 fewer cancers diagnosed in females, mainly because of a decline in the incidence of breast cancer in females in 2003.

In Chapter 4 the rise in the incidence of prostate cancer is analysed in association with screening and hospitalisation data trends. It is concluded that in 2006 an estimated 18,700 new cases of prostate cancer will have been diagnosed, well above the projection of 12,929. The age-standardised incidence rate of breast cancer in females was rising slightly each year until 2001. It was projected in 2005 that the 2001 rate would continue unchanged. In fact, the rate declined from 117.2 cases per 100,000 females in 2001 to 116.8 per 100,000 in 2002 and 111.8 per 100,000 in 2003. New South Wales breast cancer numbers tend to mirror national trends. The age-standardised rate in New South Wales was 117.5 and 117.6 per 100,000 in

2001 and 2002 before declining to 114.8 per 100,000 in 2003 and to 111.9 per 100,000 in 2004 (Cancer Institute NSW 2007). It is not known whether the rate will stabilise at this lower level, decline further or actually begin to rise again with increased screening rates in response to an increased marketing effort in some states and territories to encourage greater participation in screening. Assuming that the national age-standardised rate continues at about 111 new cases per 100,000 females, the estimated number of new cases in 2006 is 12,500, compared with the 2005 projection of 13,261.

Changes have occurred in incidence for other cancers, but prostate cancer and breast cancer are two of the three most common cancers and therefore significant changes in these cancers have a larger impact on the projected numbers. In 2005 it was projected that there would be 100,976 new cases of cancer diagnosed in 2006. However, with an estimated 5,800 additional cases of prostate cancer and 761 fewer cases of female breast cancer, it is now estimated that approximately 106,000 new cases of cancer will have been diagnosed in 2006: 60,600 males and 45,400 females.

To estimate cancer deaths in 2006, age-specific death rates for males and females by 5-year age group for all cancers from 2000 to 2004 were projected to 2006 and applied to the 2006 estimated resident population. This resulted in a mortality estimate of 39,200 deaths from cancer in 2006: 21,900 males and 17,300 females.

## **Incidence in 2003**

The 10 most common cancers are shown in Table 2.1. Incidence data on a more comprehensive list of cancers are shown in tables 2.2–2.4.

### **Most common cancers in 2003**

- In 2003 prostate cancer (13,526 cases) overtook colorectal cancer (12,536) as Australia's most common cancer (excluding NMSC). The next most common cancers in persons were breast cancer (11,889 cases), melanoma of the skin (9,524) and lung cancer (8,249). These five cancers accounted for 60% of all new cancers.
- In males the five most common cancers were prostate cancer (13,526 cases), colorectal cancer (6,857), melanoma of the skin (5,535), lung cancer (5,281) and lymphoma (2,297). These five cancers accounted for 65% of all new cancers in males.
- In females the five most common cancers were breast cancer (11,788 cases), colorectal cancer (5,679), melanoma of the skin (3,989), lung cancer (2,968) and lymphoma (1,832). These five cancers accounted for 63% of all new cancers in females.

### **Risk of a diagnosis of cancer, based on 2003 data**

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

**Table 2.1: The 10 most common cancers, Australia, 2003<sup>(a)</sup>**

Cancer type	Number	Per cent of total	ASR(A) <sup>(b)</sup>	ASR(W) <sup>(b)</sup>	Risk to age 75	Risk to age 85
<b>Persons</b>						
Prostate	13,526	14.5	—	—	—	—
Colorectal	12,536	13.5	61.3	43.4	1 in 22	1 in 12
Breast	11,889	12.8	—	—	—	—
Melanoma	9,524	10.2	46.9	37.1	1 in 28	1 in 19
Lung	8,249	8.9	40.4	28.2	1 in 33	1 in 17
Lymphoma	4,129	4.4	20.3	15.7	1 in 66	1 in 40
Unknown site	3,454	3.7	16.8	11.3	1 in 98	1 in 44
Leukaemia	2,524	2.7	12.4	9.8	1 in 114	1 in 66
Bladder	2,229	2.4	10.9	7.3	1 in 138	1 in 63
Kidney	2,019	2.2	9.9	7.5	1 in 126	1 in 80
<i>All cancers<sup>(a)</sup></i>	<i>93,194</i>	<i>100.0</i>	<i>456.8</i>	<i>339.1</i>	<i>1 in 3</i>	<i>1 in 2</i>
<b>Males</b>						
Prostate	13,526	26.3	144.2	101.2	1 in 9	1 in 5
Colorectal	6,857	13.3	73.2	51.6	1 in 18	1 in 10
Melanoma	5,535	10.8	57.9	44.2	1 in 24	1 in 15
Lung	5,281	10.3	57.1	38.9	1 in 25	1 in 12
Lymphoma	2,297	4.5	24.1	18.7	1 in 56	1 in 34
Unknown site	1,749	3.4	19.3	12.9	1 in 85	1 in 38
Bladder	1,649	3.2	18.3	12.0	1 in 89	1 in 38
Leukaemia	1,460	2.8	15.6	12.0	1 in 93	1 in 51
Kidney	1,302	2.5	13.6	10.1	1 in 94	1 in 57
Stomach	1,216	2.4	13.2	9.1	1 in 108	1 in 55
<i>All cancers<sup>(a)</sup></i>	<i>51,418</i>	<i>100.0</i>	<i>548.2</i>	<i>394.4</i>	<i>1 in 3</i>	<i>1 in 2</i>
<b>Females</b>						
Breast	11,788	28.2	111.8	89.0	1 in 11	1 in 9
Colorectal	5,679	13.6	51.1	36.2	1 in 27	1 in 15
Melanoma	3,989	9.5	37.9	31.0	1 in 34	1 in 25
Lung	2,968	7.1	27.1	19.3	1 in 49	1 in 27
Lymphoma	1,832	4.4	16.9	13.0	1 in 80	1 in 48
Unknown site	1,705	4.1	14.7	9.8	1 in 116	1 in 50
Uterus	1,613	3.9	15.1	11.7	1 in 74	1 in 54
Ovary	1,084	2.6	10.1	7.8	1 in 123	1 in 81
Leukaemia	1,064	2.5	9.8	7.8	1 in 144	1 in 87
Thyroid	1,041	2.5	10.2	9.0	1 in 127	1 in 113
<i>All cancers<sup>(a)</sup></i>	<i>41,776</i>	<i>100.0</i>	<i>386.5</i>	<i>294.8</i>	<i>1 in 4</i>	<i>1 in 3</i>

(a) Excluding non-melanocytic skin cancer (ICD-10 code C44).

(b) Age-standardised rates are expressed per 100,000 persons/males/females depending on the section of the table.

Source: National Cancer Statistics Clearing House, AIHW.

**Table 2.2: Cancer incidence in persons, Australia, 2003**

Cancer site/type (ICD-10 codes)	Number	Per cent of total	ASR(A)	ASR(W)	Risk to age 75	Risk to age 85	M:F ratio (ASR(A))
Lip (C00)	987	1.1	4.9	3.8	1 in 265	1 in 177	3.0
Tongue (C01–C02)	492	0.5	2.4	1.9	1 in 474	1 in 341	2.6
Mouth (C03–C06)	466	0.5	2.3	1.7	1 in 561	1 in 340	1.8
Major salivary glands (C07–C08)	229	0.2	1.1	0.8	1 in 1,210	1 in 744	1.7
Oropharynx (C09–C10)	292	0.3	1.4	1.2	1 in 770	1 in 616	4.1
Nasopharynx (C11)	107	0.1	0.5	0.5	1 in 2,350	1 in 2,041	2.7
Hypopharynx (C12–C13)	133	0.1	0.7	0.5	1 in 1,527	1 in 1,168	9.0
Pharynx, unspecified (C14)	70	0.1	0.3	0.3	1 in 3,676	1 in 2,262	4.3
Nasal cavity, middle ear & sinuses (C30–C31)	130	0.1	0.6	0.5	1 in 2,032	1 in 1,223	2.0
Larynx (C32)	557	0.6	2.7	2.1	1 in 406	1 in 281	9.4
<i>Head and neck (C01–C14, C30–C32)</i>	<i>2,476</i>	<i>2.7</i>	<i>12.1</i>	<i>9.3</i>	<i>1 in 97</i>	<i>1 in 67</i>	<i>3.1</i>
Oesophagus (C15)	1,154	1.2	5.6	3.9	1 in 256	1 in 125	2.4
Stomach (C16)	1,873	2.0	9.2	6.4	1 in 153	1 in 80	2.3
Small intestine (C17)	347	0.4	1.7	1.3	1 in 749	1 in 446	1.5
Colon (C18)	8,144	8.7	39.8	27.7	1 in 35	1 in 18	1.3
Rectum (C19–C20)	4,392	4.7	21.5	15.8	1 in 58	1 in 35	1.8
<i>Colorectal (C18–C20)</i>	<i>12,536</i>	<i>13.5</i>	<i>61.3</i>	<i>43.4</i>	<i>1 in 22</i>	<i>1 in 12</i>	<i>1.4</i>
Anus (C21)	252	0.3	1.2	0.9	1 in 1,096	1 in 691	0.8
Liver (C22)	890	1.0	4.4	3.2	1 in 300	1 in 168	2.6
Gallbladder (C23–C24)	586	0.6	2.9	2.0	1 in 515	1 in 246	0.8
Pancreas (C25)	1,996	2.1	9.7	6.6	1 in 152	1 in 73	1.4
Lung, bronchus & trachea (C33–C34)	8,249	8.9	40.4	28.2	1 in 33	1 in 17	2.1
Other thoracic organs (C37–C38)	74	0.1	0.4	0.3	1 in 3,674	1 in 2,558	2.1
Bone & articular cartilage (C40–C41)	167	0.2	0.8	0.8	1 in 1,585	1 in 1,358	1.5
Melanoma of skin (C43)	9,524	10.2	46.9	37.1	1 in 28	1 in 19	1.5
Mesothelioma (C45)	633	0.7	3.1	2.1	1 in 435	1 in 215	5.8
Kaposi sarcoma (C46)	57	0.1	0.3	0.2	1 in 3,997	1 in 3,230	7.7
Peritoneum & retroperitoneum (C48)	165	0.2	0.8	0.6	1 in 1,334	1 in 990	0.4
Other connective and soft tissue (C47, C49)	491	0.5	2.4	2.0	1 in 585	1 in 356	1.7
Breast (C50)	11,889	12.8	—	—	—	—	0.01
Vulva (C51)	220	0.2	—	—	—	—	—
Vagina (C52)	67	0.1	—	—	—	—	—
Cervix (C53)	725	0.8	—	—	—	—	—
Uterus, body (C54)	1,613	1.7	—	—	—	—	—
Uterus, unspecified (C55)	85	0.1	—	—	—	—	—

(continued)

**Table 2.2 (continued): Cancer incidence in persons, Australia, 2003**

Cancer site/type (ICD-10 codes)	Number	Per cent of total	ASR(A)	ASR(W)	Risk to age 75	Risk to age 85	M:F ratio (ASR(A))
Ovary (C56)	1,084	1.2	—	—	—	—	—
Other female genital organs (C57)	57	0.1	—	—	—	—	—
Placenta (C58)	6	0.0	—	—	—	—	—
<i>Gynaecological (C51–C58)</i>	<i>3,857</i>	<i>4.1</i>	<i>—</i>	<i>—</i>	<i>—</i>	<i>—</i>	<i>—</i>
Penis (C60)	67	0.1	—	—	—	—	—
Prostate (C61)	13,526	14.5	—	—	—	—	—
Testis (C62)	638	0.7	—	—	—	—	—
Other male genital organs (C63)	24	0.0	—	—	—	—	—
Kidney (C64)	2,019	2.2	9.9	7.5	1 in 126	1 in 80	2.0
Bladder (C67)	2,229	2.4	10.9	7.3	1 in 138	1 in 63	3.6
Other urinary organs (C65–C66, C68)	362	0.4	1.8	1.2	1 in 926	1 in 370	1.1
Eye (C69)	254	0.3	1.3	1.0	1 in 1,028	1 in 669	1.5
Brain (C71)	1,360	1.5	6.7	5.6	1 in 191	1 in 131	1.4
Other central nervous system (C70, C72)	71	0.1	0.4	0.3	1 in 3,760	1 in 2,722	1.2
Thyroid (C73)	1,402	1.5	7.0	6.1	1 in 187	1 in 158	0.4
Other endocrine organs (C74–C75)	76	0.1	0.4	0.4	1 in 3,391	1 in 2,527	1.3
Hodgkin lymphoma (C81)	430	0.5	2.2	2.1	1 in 615	1 in 495	1.4
Non-Hodgkin lymphoma (C82–C85, C96)	3,699	4.0	18.1	13.7	1 in 74	1 in 43	1.4
<i>All lymphomas (C81–C85, C96)</i>	<i>4,129</i>	<i>4.4</i>	<i>20.3</i>	<i>15.7</i>	<i>1 in 66</i>	<i>1 in 40</i>	<i>1.4</i>
Immunoproliferative neoplasms (C88)	86	0.1	0.4	0.3	1 in 4,423	1 in 1,545	2.0
Myeloma (C90)	1,153	1.2	5.6	3.9	1 in 257	1 in 127	1.5
Lymphoid leukaemia (C91)	1,214	1.3	6.0	4.9	1 in 230	1 in 139	1.7
Myeloid leukaemia (C92–C94)	1,238	1.3	6.1	4.6	1 in 234	1 in 133	1.5
Leukaemia, unspecified (C95)	72	0.1	0.4	0.3	1 in 4,985	1 in 2,146	1.7
<i>All leukaemias (C91–C95)</i>	<i>2,524</i>	<i>2.7</i>	<i>12.4</i>	<i>9.8</i>	<i>1 in 114</i>	<i>1 in 66</i>	<i>1.6</i>
Polycythaemia rubra vera (D45)	326	0.3	1.6	1.2	1 in 797	1 in 473	1.8
Myelodysplastic syndromes (D46)	988	1.1	4.8	3.0	1 in 471	1 in 146	2.0
Other chronic myeloproliferative diseases (D47 <sup>(b)</sup> )	303	0.3	1.5	1.0	1 in 1,104	1 in 486	1.3
Unknown primary site (C26, C39, C76, C80)	3,454	3.7	16.8	11.3	1 in 98	1 in 44	1.3
<b>All cancers (C00–C96<sup>(a)</sup>, D45–D47<sup>(b)</sup>)</b>	<b>93,194</b>	<b>100.0</b>	<b>456.8</b>	<b>339.1</b>	<b>1 in 3</b>	<b>1 in 2</b>	<b>1.4</b>

(a) Excluding non-melanocytic skin cancer (ICD-10 code C44).

(b) Only includes D47.1 and D47.3.

Source: National Cancer Statistics Clearing House, AIHW.

**Table 2.3: Cancer incidence in males, Australia, 2003**

Cancer site/type (ICD-10 codes)	Number	Per cent of total	ASR(A)	ASR(W)	Risk to age 75	Risk to age 85
Lip (C00)	717	1.4	7.4	5.9	1 in 173	1 in 116
Tongue (C01–C02)	343	0.7	3.5	2.7	1 in 314	1 in 235
Mouth (C03–C06)	287	0.6	3.0	2.2	1 in 423	1 in 271
Major salivary glands (C07–C08)	136	0.3	1.5	1.0	1 in 1,018	1 in 525
Oropharynx (C09–C10)	232	0.5	2.3	1.9	1 in 471	1 in 383
Nasopharynx (C11)	77	0.1	0.8	0.6	1 in 1,544	1 in 1,343
Hypopharynx (C12–C13)	119	0.2	1.2	0.9	1 in 839	1 in 615
Pharynx, unspecified (C14)	55	0.1	0.6	0.4	1 in 2,155	1 in 1,378
Nasal cavity, middle ear & sinuses (C30–C31)	82	0.2	0.9	0.6	1 in 1,436	1 in 895
Larynx (C32)	498	1.0	5.1	3.9	1 in 221	1 in 149
<i>Head and neck (C01–C14, C30–C32)</i>	<i>1,829</i>	<i>3.6</i>	<i>18.9</i>	<i>14.4</i>	<i>1 in 62</i>	<i>1 in 43</i>
Oesophagus (C15)	765	1.5	8.2	5.7	1 in 169	1 in 88
Stomach (C16)	1,216	2.4	13.2	9.1	1 in 108	1 in 55
Small intestine (C17)	195	0.4	2.1	1.5	1 in 620	1 in 370
Colon (C18)	4,185	8.1	45.2	31.2	1 in 31	1 in 16
Rectum (C19–C20)	2,672	5.2	28.0	20.4	1 in 44	1 in 26
<i>Colorectal (C18–C20)</i>	<i>6,857</i>	<i>13.3</i>	<i>73.2</i>	<i>51.6</i>	<i>1 in 18</i>	<i>1 in 10</i>
Anus (C21)	105	0.2	1.1	0.8	1 in 1,270	1 in 806
Liver (C22)	614	1.2	6.5	4.8	1 in 198	1 in 113
Gallbladder (C23–C24)	238	0.5	2.6	1.8	1 in 545	1 in 271
Pancreas (C25)	1,047	2.0	11.3	7.8	1 in 124	1 in 62
Lung, bronchus & trachea (C33–C34)	5,281	10.3	57.1	38.9	1 in 25	1 in 12
Other thoracic organs (C37–C38)	48	0.1	0.5	0.4	1 in 2,660	1 in 1,698
Bone & articular cartilage (C40–C41)	99	0.2	1.0	1.0	1 in 1,310	1 in 1,135
Melanoma of skin (C43)	5,535	10.8	57.9	44.2	1 in 24	1 in 15
Mesothelioma (C45)	524	1.0	5.7	3.8	1 in 252	1 in 116
Kaposi sarcoma (C46)	50	0.1	0.5	0.4	1 in 2,331	1 in 1,744
Peritoneum & retroperitoneum (C48)	41	0.1	0.4	0.3	1 in 2,465	1 in 1,991
Other connective and soft tissue (C47, C49)	296	0.6	3.1	2.5	1 in 469	1 in 259
Breast (C50)	101	0.2	1.1	0.8	1 in 1,189	1 in 722
Penis (C60)	67	0.1	0.7	0.5	1 in 2,192	1 in 987
Prostate (C61)	13,526	26.3	144.2	101.2	1 in 9	1 in 5
Testis (C62)	638	1.2	6.5	6.4	1 in 221	1 in 214
Other male genital organs (C63)	24	0.0	0.3	0.2	1 in 5,493	1 in 2,996
Kidney (C64)	1,302	2.5	13.6	10.1	1 in 94	1 in 57
Bladder (C67)	1,649	3.2	18.3	12.0	1 in 89	1 in 38
Other urinary organs (C65–C66, C68)	171	0.3	1.9	1.2	1 in 896	1 in 340
Eye (C69)	146	0.3	1.5	1.2	1 in 865	1 in 525
Brain (C71)	770	1.5	7.9	6.5	1 in 164	1 in 111
Other central nervous system (C70, C72)	38	0.1	0.4	0.3	1 in 3,774	1 in 2,183
Thyroid (C73)	361	0.7	3.7	3.1	1 in 353	1 in 261

(continued)

**Table 2.3 (continued): Cancer incidence in males, Australia, 2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>Number</b>	<b>Per cent of total</b>	<b>ASR(A)</b>	<b>ASR(W)</b>	<b>Risk to age 75</b>	<b>Risk to age 85</b>
Other endocrine organs (C74–C75)	42	0.1	0.4	0.4	1 in 3,264	1 in 2,183
Hodgkin lymphoma (C81)	247	0.5	2.5	2.4	1 in 528	1 in 424
Non-Hodgkin lymphoma (C82–C85, C96)	2,050	4.0	21.6	16.3	1 in 63	1 in 36
<i>All lymphomas (C81–C85, C96)</i>	<i>2,297</i>	<i>4.5</i>	<i>24.1</i>	<i>18.7</i>	<i>1 in 56</i>	<i>1 in 34</i>
Immunoproliferative neoplasms (C88)	52	0.1	0.6	0.4	1 in 3,337	1 in 1,139
Myeloma (C90)	637	1.2	7.0	4.7	1 in 220	1 in 103
Lymphoid leukaemia (C91)	719	1.4	7.6	6.1	1 in 184	1 in 107
Myeloid leukaemia (C92–C94)	700	1.4	7.6	5.6	1 in 198	1 in 105
Leukaemia, unspecified (C95)	41	0.1	0.4	0.3	1 in 3,987	1 in 1,606
<i>All leukaemias (C91–C95)</i>	<i>1,460</i>	<i>2.8</i>	<i>15.6</i>	<i>12.0</i>	<i>1 in 93</i>	<i>1 in 51</i>
Polycythaemia rubra vera (D45)	198	0.4	2.1	1.6	1 in 587	1 in 376
Myelodysplastic syndromes (D46)	581	1.1	6.8	4.1	1 in 354	1 in 104
Other chronic myeloproliferative diseases (D47 <sup>(b)</sup> )	152	0.3	1.7	1.1	1 in 1,061	1 in 451
Unknown primary site (C26, C39, C76, C80)	1,749	3.4	19.3	12.9	1 in 85	1 in 38
<b>All cancers (C00–C96<sup>(a)</sup>, D45–D47<sup>(b)</sup>)</b>	<b>51,418</b>	<b>100.0</b>	<b>548.2</b>	<b>394.4</b>	<b>1 in 3</b>	<b>1 in 2</b>

(a) Excluding non-melanocytic skin cancer (ICD-10 code C44).

(b) Only includes D47.1 and D47.3.

Source: National Cancer Statistics Clearing House, AIHW.



**Table 2.4: Cancer incidence in females, Australia, 2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>Number</b>	<b>Per cent of total</b>	<b>ASR(A)</b>	<b>ASR(W)</b>	<b>Risk to age 75</b>	<b>Risk to age 85</b>
Lip (C00)	270	0.6	2.5	1.8	1 in 563	1 in 337
Tongue (C01–C02)	149	0.4	1.4	1.1	1 in 937	1 in 586
Mouth (C03–C06)	179	0.4	1.6	1.2	1 in 829	1 in 448
Major salivary glands (C07–C08)	93	0.2	0.9	0.7	1 in 1,476	1 in 1,109
Oropharynx (C09–C10)	60	0.1	0.6	0.4	1 in 2,070	1 in 1,459
Nasopharynx (C11)	30	0.1	0.3	0.3	1 in 4,844	1 in 4,068
Hypopharynx (C12–C13)	14	0.0	0.1	0.1	1 in 7,536	1 in 5,813
Pharynx, unspecified (C14)	15	0.0	0.1	0.1	1 in 11,885	1 in 5,250
Nasal cavity, middle ear & sinuses (C30–C31)	48	0.1	0.4	0.3	1 in 3,367	1 in 1,819
Larynx (C32)	59	0.1	0.6	0.4	1 in 2,222	1 in 1,311
<i>Head and neck (C01–C14, C30–C32)</i>	<i>647</i>	<i>1.5</i>	<i>6.0</i>	<i>4.6</i>	<i>1 in 218</i>	<i>1 in 135</i>
Oesophagus (C15)	389	0.9	3.4	2.2	1 in 511	1 in 200
Stomach (C16)	657	1.6	5.8	4.1	1 in 254	1 in 127
Small intestine (C17)	152	0.4	1.4	1.0	1 in 936	1 in 538
Colon (C18)	3,959	9.5	35.4	24.6	1 in 39	1 in 20
Rectum (C19–C20)	1,720	4.1	15.7	11.5	1 in 84	1 in 50
<i>Colorectal (C18–C20)</i>	<i>5,679</i>	<i>13.6</i>	<i>51.1</i>	<i>36.2</i>	<i>1 in 27</i>	<i>1 in 15</i>
Anus (C21)	147	0.4	1.3	1.0	1 in 968	1 in 614
Liver (C22)	276	0.7	2.5	1.8	1 in 608	1 in 293
Gallbladder (C23–C24)	348	0.8	3.1	2.1	1 in 487	1 in 230
Pancreas (C25)	949	2.3	8.3	5.6	1 in 192	1 in 86
Lung, bronchus & trachea (C33–C34)	2,968	7.1	27.1	19.3	1 in 49	1 in 27
Other thoracic organs (C37–C38)	26	0.1	0.2	0.2	1 in 5,821	1 in 4,388
Bone & articular cartilage (C40–C41)	68	0.2	0.7	0.6	1 in 2,010	1 in 1,687
Melanoma of skin (C43)	3,989	9.5	37.9	31.0	1 in 34	1 in 25
Mesothelioma (C45)	109	0.3	1.0	0.7	1 in 1,460	1 in 724
Kaposi sarcoma (C46)	7	0.0	0.1	0.0	1 in 13,323	1 in 13,323
Peritoneum & retroperitoneum (C48)	124	0.3	1.2	0.9	1 in 922	1 in 685
Other connective and soft tissue (C47, C49)	195	0.5	1.8	1.6	1 in 767	1 in 513
Breast (C50)	11,788	28.2	111.8	89.0	1 in 11	1 in 9
Vulva (C51)	220	0.5	1.9	1.3	1 in 856	1 in 406
Vagina (C52)	67	0.2	0.6	0.4	1 in 2,715	1 in 1,343
Cervix (C53)	725	1.7	7.0	5.9	1 in 191	1 in 149
Uterus, body (C54)	1,613	3.9	15.1	11.7	1 in 74	1 in 54
Uterus, unspecified (C55)	85	0.2	0.8	0.6	1 in 1,794	1 in 1,307
Ovary (C56)	1,084	2.6	10.1	7.8	1 in 123	1 in 81
Other female genital organs (C57)	57	0.1	0.5	0.4	1 in 2,450	1 in 1,567
Placenta (C58)	6	0.0	0.1	0.1	1 in 24,334	1 in 24,334

(continued)

**Table 2.4 (continued): Cancer incidence in females, Australia, 2003**

Cancer site/type (ICD-10 codes)	Number	Per cent of total	ASR(A)	ASR(W)	Risk to age 75	Risk to age 85
<i>Gynaecological (C51–C58)</i>	3,857	9.2	36.2	28.3	1 in 34	1 in 24
Kidney (C64)	717	1.7	6.7	5.1	1 in 191	1 in 121
Bladder (C67)	580	1.4	5.1	3.5	1 in 299	1 in 134
Other urinary organs (C65–C66, C68)	191	0.5	1.7	1.1	1 in 958	1 in 395
Eye (C69)	108	0.3	1.0	0.9	1 in 1,250	1 in 863
Brain (C71)	590	1.4	5.6	4.7	1 in 229	1 in 156
Other central nervous system (C70, C72)	33	0.1	0.3	0.3	1 in 3,733	1 in 3,318
Thyroid (C73)	1,041	2.5	10.2	9.0	1 in 127	1 in 113
Other endocrine organs (C74–C75)	34	0.1	0.3	0.3	1 in 3,539	1 in 2,903
Hodgkin lymphoma (C81)	183	0.4	1.8	1.7	1 in 735	1 in 589
Non-Hodgkin lymphoma (C82–C85, C96)	1,649	3.9	15.1	11.3	1 in 90	1 in 52
<i>All lymphomas (C81–C85, C96)</i>	<i>1,832</i>	<i>4.4</i>	<i>16.9</i>	<i>13.0</i>	<i>1 in 80</i>	<i>1 in 48</i>
Immunoproliferative neoplasms (C88)	34	0.1	0.3	0.2	1 in 6,517	1 in 2,187
Myeloma (C90)	516	1.2	4.6	3.2	1 in 308	1 in 157
Lymphoid leukaemia (C91)	495	1.2	4.5	3.8	1 in 307	1 in 189
Myeloid leukaemia (C92–C94)	538	1.3	4.9	3.9	1 in 283	1 in 171
Leukaemia, unspecified (C95)	31	0.1	0.3	0.2	1 in 6,626	1 in 2,970
<i>All leukaemias (C91–C95)</i>	<i>1,064</i>	<i>2.5</i>	<i>9.8</i>	<i>7.8</i>	<i>1 in 144</i>	<i>1 in 87</i>
Polycythaemia rubra vera (D45)	128	0.3	1.2	0.8	1 in 1,219	1 in 621
Myelodysplastic syndromes (D46)	407	1.0	3.4	2.1	1 in 693	1 in 212
Other chronic myeloproliferative diseases (D47 <sup>(b)</sup> )	151	0.4	1.3	0.9	1 in 1,147	1 in 519
Unknown primary site (C26, C39, C76, C80)	1,705	4.1	14.7	9.8	1 in 116	1 in 50
<b>All cancers (C00–C96<sup>(a)</sup>, D45–D47<sup>(b)</sup>)</b>	<b>41,776</b>	<b>100.0</b>	<b>386.5</b>	<b>294.8</b>	<b>1 in 4</b>	<b>1 in 3</b>

(a) Excluding non-melanocytic skin cancer (ICD-10 code C44).

(b) Only includes D47.1 and D47.3.

Source: National Cancer Statistics Clearing House, AIHW.

# Incidence of lymphoid and haematopoietic neoplasms

Ongoing research into the lymphoid and haematopoietic neoplasms (see Glossary) has revealed that the ICD-10 classification scheme for these neoplasms is no longer satisfactory (WHO 2000, p. 13). For example, lymphomas (ICD-10 codes C81–C85) and lymphoid leukaemias (code C91) were once thought to be quite distinct but are now known to be different patterns of spread of the same cellular dysfunction. The WHO classification scheme (WHO 2001) reflects the current state of knowledge in this field but further research will undoubtedly lead to more changes. Table 2.5 shows the 2003 incidence for these diseases, grouped according to the WHO scheme but with the addition of some new categories to accommodate the vague morphology codes that are sometimes used in source documentation (for example haematology reports). See Appendix A for the list of ICD-O-3 morphology codes that correspond to each group. Note that mortality numbers are not available for these groups because cause of death is coded in the ICD-10 scheme.

**Table 2.5: Incidence of malignant lymphoid and haematopoietic neoplasms, Australia, 2003**

Group	Males			Females			Persons		
	Cases	ASR (A)	ASR (W)	Cases	ASR (A)	ASR (W)	Cases	ASR (A)	ASR (W)
<i>Lymphoid neoplasms</i>	3,648	38.6	29.5	2,834	26.0	19.8	6,482	31.8	24.4
Hodgkin lymphomas	247	2.5	2.4	183	1.8	1.7	430	2.2	2.1
B-cell neoplasms	2,659	28.2	20.7	2,050	18.6	13.6	4,709	23.0	17.0
T- and NK-cell neoplasms	163	1.7	1.3	116	1.1	0.9	279	1.4	1.1
Non-Hodgkin lymphomas, NOS	427	4.5	3.8	355	3.3	2.8	782	3.9	3.3
Composite Hodgkin/non-Hodgkin lymphoma	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Lymphoid neoplasms, NOS	152	1.6	1.2	130	1.1	0.8	282	1.4	1.0
<i>Myeloid neoplasms</i>	1,635	18.2	12.4	1,225	10.8	7.8	2,860	14.0	9.8
Acute myeloid leukaemias	456	4.9	3.7	357	3.3	2.7	813	4.0	3.1
Chronic myeloproliferative diseases	351	3.8	2.7	282	2.5	1.8	633	3.1	2.2
Myelodysplastic syndromes	581	6.8	4.1	407	3.4	2.1	988	4.8	3.0
Myelodysplastic/myeloproliferative diseases	96	1.1	0.7	58	0.5	0.3	154	0.7	0.5
Myeloid neoplasms, NOS	151	1.6	1.3	121	1.1	0.9	272	1.3	1.1
<i>Lymphoid / myeloid neoplasms, NOS</i>	37	0.4	0.3	30	0.3	0.2	67	0.3	0.2
<i>Other lymphoid and haematopoietic neoplasms</i>	57	0.6	0.4	43	0.4	0.3	100	0.5	0.3
Mast cell diseases	3	0.0	0.0	6	0.1	0.1	9	0.0	0.0
Histiocytic and dendritic cell neoplasms	2	0.0	0.0	3	0.0	0.0	5	0.0	0.0
Other immunoproliferative diseases	52	0.6	0.4	34	0.3	0.2	86	0.4	0.3
<b>Total</b>	<b>5,377</b>	<b>57.8</b>	<b>42.6</b>	<b>4,132</b>	<b>37.4</b>	<b>28.0</b>	<b>9,509</b>	<b>46.6</b>	<b>34.8</b>

Source: National Cancer Statistics Clearing House, AIHW.

## **Cancer incidence in the states and territories, 1999–2003**

Cancer registration is based on the patient's state or territory of residence at the time of diagnosis. Differences in age-standardised rates between the states and territories 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.

Incidence rates for many types of cancer are considerably lower or higher for the Northern Territory than for other states and territories. These differences are mainly due to low or high incidence of these cancers in Aboriginal and Torres Strait Islander peoples, who comprise 29% of the Northern Territory population (d'Espaignet et al. 1996; Condon et al. 2001), and higher rates of smoking and excessive alcohol consumption in the past (see the final section of this chapter).

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 are annual averages over the 5-year period 1999–2003. For annual sex- and cancer-specific data or data cross-classified by other variables (for example age or geographic area), the state and territory cancer registries should be contacted directly.

### **All cancers, excluding NMSC**

For all cancers, excluding NMSC, the highest age-standardised incidence rates occurred in Queensland (492.7 cases per 100,000 persons), followed by Tasmania (471.0), Western Australia (457.2), South Australia (453.1), New South Wales (452.2), the Australian Capital Territory (445.9), Victoria (440.4) and the Northern Territory (413.8).

### **Melanoma of the skin**

The age-standardised rates for all forms of skin cancer are correlated with exposure to ultraviolet radiation (Jelfs et al. 1994). Therefore one would expect to see higher rates in the more northern states and territories, and lower rates in the more southern ones. However, the rates will also be affected by sun-protection behaviour and the percentage of the Indigenous population (which has a lower rate of skin cancer than the non-Indigenous population).

For melanoma of the skin, the highest age-standardised incidence rates occurred in Queensland (65.3 cases per 100,000 persons), followed by Western Australia (54.3), New South Wales (45.4), Tasmania (43.9), the Australian Capital Territory (39.5), South Australia (39.0), Victoria (35.4) and the Northern Territory (33.0).

### **All cancers, excluding all skin cancers**

Given that rates of skin cancer have a geographic component, it is useful to compare the 'all cancers' rates with the effect of skin cancer removed.

For all cancers, excluding all skin cancers, the age-standardised incidence rates become more similar and the ranking of the states and territories changes somewhat. The highest age-standardised incidence rates occurred in Queensland (427.4 cases per 100,000 persons), followed by Tasmania (427.1), South Australia (414.1), New South Wales (406.8), the Australian Capital Territory (406.4), Victoria (405.0), Western Australia (402.9) and the Northern Territory (380.8).

## **Prostate cancer**

For prostate cancer, the highest age-standardised incidence rates occurred in the Australian Capital Territory (143.8 cases per 100,000 males), followed by Tasmania (139.6), South Australia (135.8), Victoria (134.3), New South Wales (132.5), Western Australia (131.1), Queensland (129.5) and the Northern Territory (103.6).

## **Breast cancer in females**

For breast cancer in females, the highest age-standardised incidence rates occurred in the Australian Capital Territory (126.5 cases per 100,000 females), followed by Queensland (117.1), Western Australia (116.5), South Australia (116.4), Victoria (113.7), New South Wales (112.9), Tasmania (111.1) and the Northern Territory (96.8).

## **Colorectal cancer**

For colorectal cancer, the highest age-standardised incidence rates occurred in Tasmania (66.5 cases per 100,000 persons), followed by Queensland (65.7), South Australia (65.7), Victoria (64.8), the Australian Capital Territory (64.3), New South Wales (60.9), Western Australia (60.7) and the Northern Territory (44.3).

## **Lung cancer**

For lung cancer, the highest age-standardised incidence rates occurred in the Northern Territory (52.9 cases per 100,000 persons), followed by Tasmania (49.8), Western Australia (46.2), Queensland (45.1), Victoria (41.9), South Australia (41.6), New South Wales (40.9) and the Australian Capital Territory (30.5).

**Table 2.6: Average annual number of new cases of cancer, persons, states and territories, 1999–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>NSW</b>	<b>Vic</b>	<b>Qld</b>	<b>WA</b>	<b>SA</b>	<b>Tas</b>	<b>ACT</b>	<b>NT</b>	<b>Aust</b>
Lip (C00)	247	247	207	94	127	43	4	6	975
Tongue (C01–C02)	164	105	95	39	31	13	5	6	458
Mouth (C03–C06)	150	108	84	42	32	14	7	4	441
Major salivary glands (C07–C08)	85	42	47	22	20	4	4	1	225
Oropharynx (C09–C10)	90	69	58	30	25	7	4	8	291
Nasopharynx (C11)	51	34	13	7	6	2	1	2	115
Hypopharynx (C12–C13)	51	38	33	13	8	3	2	3	151
Pharynx, unspecified (C14)	25	15	19	7	4	3	0	1	75
Nasal cavity, middle ear & sinuses (C30–C31)	47	34	18	12	10	6	2	1	130
Larynx (C32)	200	136	105	52	39	15	5	7	559
<i>Head and neck (C01–C14, C30–C32)</i>	<i>864</i>	<i>582</i>	<i>472</i>	<i>223</i>	<i>174</i>	<i>67</i>	<i>29</i>	<i>34</i>	<i>2,445</i>
Oesophagus (C15)	360	274	201	104	96	40	14	8	1,098
Stomach (C16)	651	539	323	158	175	49	23	6	1,923
Small intestine (C17)	105	66	56	24	28	8	5	1	292
Colon (C18)	2,680	2,068	1,541	669	736	221	103	29	8,046
Rectum (C19–C20)	1,431	1,122	733	379	387	119	54	16	4,242
<i>Colorectal (C18–C20)</i>	<i>4,111</i>	<i>3,190</i>	<i>2,274</i>	<i>1,048</i>	<i>1,123</i>	<i>340</i>	<i>157</i>	<i>45</i>	<i>12,288</i>
Anus (C21)	98	51	47	19	15	8	3	2	241
Liver (C22)	302	239	127	62	56	15	11	8	821
Gallbladder (C23–C24)	201	147	102	53	63	21	6	4	597
Pancreas (C25)	645	492	337	167	165	58	18	10	1,890
Lung, bronchus & trachea (C33–C34)	2,763	2,063	1,559	792	714	256	73	47	8,267
Other thoracic organs (C37–C38)	27	16	16	5	4	2	1	1	73
Bone & articular cartilage (C40–C41)	64	40	37	15	14	3	2	1	176
Melanoma of skin (C43)	3,030	1,725	2,311	983	633	215	111	48	9,054
Mesothelioma (C45)	184	118	101	69	55	11	5	1	544
Kaposi sarcoma (C46)	29	18	5	4	5	0	1	0	63
Peritoneum & retroperitoneum (C48)	53	27	35	9	11	2	2	0	139
Other connective and soft tissue (C47, C49)	155	146	81	35	66	18	5	4	510
Breast (C50)	3,926	2,910	2,143	1,094	995	290	188	60	11,607
Vulva (C51)	76	51	35	21	19	9	2	3	217
Vagina (C52)	27	11	11	7	6	2	1	0	66
Cervix (C53)	256	159	159	79	51	19	10	9	742
Uterus, body (C54)	464	415	297	120	154	33	19	8	1,509
Uterus, unspecified (C55)	32	27	8	3	0	2	2	0	73
Ovary (C56)	375	303	199	107	95	28	17	6	1,130
Other female genital organs (C57)	20	16	9	7	6	2	1	0	60
Placenta (C58)	2	1	1	0	1	0	0	0	5
<i>Gynaecological (C51–C58)</i>	<i>1,251</i>	<i>984</i>	<i>719</i>	<i>343</i>	<i>331</i>	<i>95</i>	<i>52</i>	<i>26</i>	<i>3,802</i>

(continued)

**Table 2.6 (continued): Average annual number of new cases of cancer, persons, states and territories, 1999–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>NSW</b>	<b>Vic</b>	<b>Qld</b>	<b>WA</b>	<b>SA</b>	<b>Tas</b>	<b>ACT</b>	<b>NT</b>	<b>Aust</b>
Penis (C60)	25	16	14	6	5	2	2	1	70
Prostate (C61)	4,048	2,930	2,046	1,039	1,035	318	156	44	11,617
Testis (C62)	213	145	107	62	44	18	13	5	607
Other male genital organs (C63)	7	4	3	1	2	1	1	0	20
Kidney (C64)	684	517	358	176	189	62	31	8	2,025
Bladder (C67)	804	380	656	168	185	64	29	5	2,291
Other urinary organs (C65–C66, C68)	147	71	90	35	27	7	3	1	382
Eye (C69)	74	50	53	19	27	5	4	1	233
Brain (C71)	449	360	236	122	109	34	19	7	1,336
Other central nervous system (C70, C72)	28	17	13	4	6	1	2	0	70
Thyroid (C73)	454	225	251	103	85	29	17	7	1,171
Other endocrine organs (C74–C75)	28	18	16	9	4	2	1	0	78
Hodgkin lymphoma (C81)	154	117	67	37	33	10	6	4	428
Non-Hodgkin lymphoma (C82–C85, C96)	1,177	961	584	310	345	95	50	14	3,536
<i>All lymphomas (C81–C85, C96)</i>	<i>1,331</i>	<i>1,078</i>	<i>651</i>	<i>347</i>	<i>379</i>	<i>106</i>	<i>55</i>	<i>18</i>	<i>3,964</i>
Immunoproliferative neoplasms (C88)	27	24	15	10	7	1	1	0	85
Myeloma (C90)	401	285	198	97	104	29	11	2	1,127
Lymphoid leukaemia (C91)	407	246	268	103	133	28	13	3	1,202
Myeloid leukaemia (C92–C94)	441	295	225	96	128	30	18	7	1,238
Leukaemia, unspecified (C95)	40	17	7	7	4	4	0	0	80
<i>All leukaemias (C91–C95)</i>	<i>888</i>	<i>558</i>	<i>500</i>	<i>206</i>	<i>265</i>	<i>62</i>	<i>32</i>	<i>9</i>	<i>2,521</i>
Polycythaemia rubra vera (D45) <sup>(b)</sup>	70	54	62	5	2	1	3	0	197
Myelodysplastic syndromes (D46) <sup>(b)</sup>	232	203	174	72	3	10	6	0	701
Other chronic myeloproliferative diseases (D47) <sup>(b)(c)</sup>	76	76	72	32	1	3	2	0	262
Unknown primary site (C26, C39, C76, C80)	1,338	706	527	228	278	87	46	26	3,237
<b>All cancers (C00–C96<sup>(a)</sup>, D45–D47<sup>(c)</sup>)</b>	<b>30,389</b>	<b>21,589</b>	<b>17,196</b>	<b>8,042</b>	<b>7,607</b>	<b>2,383</b>	<b>1,147</b>	<b>445</b>	<b>88,799</b>

(a) Excluding non-melanocytic skin cancer (ICD-10 code C44).

(b) Due to ICD-O-3 coding changes these conditions were not recorded as malignant until 2002 to 2004, depending on the state or territory. Therefore the averages given are under-representative of the true averages.

(c) Only includes D47.1 and D47.3.

Source: National Cancer Statistics Clearing House, AIHW.

**Table 2.7: Average annual age-standardised rates of cancer incidence, persons, states and territories, 1999–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>NSW</b>	<b>Vic</b>	<b>Qld</b>	<b>WA</b>	<b>SA</b>	<b>Tas</b>	<b>ACT</b>	<b>NT</b>	<b>Aust</b>
Lip (C00)	3.7	5.1	5.9	5.2	7.7	8.7	1.5	4.7	5.0
Tongue (C01–C02)	2.5	2.1	2.7	2.2	1.9	2.7	1.9	4.3	2.4
Mouth (C03–C06)	2.2	2.2	2.4	2.3	1.9	2.8	2.5	3.9	2.3
Major salivary glands (C07–C08)	1.3	0.9	1.3	1.2	1.2	0.8	1.3	1.7	1.2
Oropharynx (C09–C10)	1.4	1.4	1.6	1.6	1.5	1.5	1.4	5.7	1.5
Nasopharynx (C11)	0.8	0.7	0.4	0.4	0.4	0.4	0.3	1.7	0.6
Hypopharynx (C12–C13)	0.8	0.8	0.9	0.7	0.5	0.5	0.6	3.0	0.8
Pharynx, unspecified (C14)	0.4	0.3	0.6	0.4	0.3	0.5	0.2	1.5	0.4
Nasal cavity, middle ear & sinuses (C30–C31)	0.7	0.7	0.5	0.7	0.6	1.2	0.8	0.6	0.7
Larynx (C32)	3.0	2.8	3.0	2.9	2.3	3.0	1.9	6.4	2.9
<i>Head and neck (C01–C14, C30–C32)</i>	<i>12.9</i>	<i>11.9</i>	<i>13.4</i>	<i>12.5</i>	<i>10.5</i>	<i>13.3</i>	<i>10.9</i>	<i>28.7</i>	<i>12.6</i>
Oesophagus (C15)	5.3	5.6	5.8	6.0	5.6	7.9	6.1	9.2	5.7
Stomach (C16)	9.6	10.9	9.4	9.2	10.2	9.5	9.7	6.7	9.9
Small intestine (C17)	1.6	1.3	1.6	1.4	1.7	1.5	1.9	0.4	1.5
Colon (C18)	39.7	42.0	44.7	38.9	42.9	43.2	42.4	28.9	41.5
Rectum (C19–C20)	21.2	22.9	21.0	21.8	22.8	23.4	21.9	15.4	21.8
<i>Colorectal (C18–C20)</i>	<i>60.9</i>	<i>64.8</i>	<i>65.7</i>	<i>60.7</i>	<i>65.7</i>	<i>66.5</i>	<i>64.3</i>	<i>44.3</i>	<i>63.3</i>
Anus (C21)	1.5	1.0	1.3	1.1	0.9	1.5	1.0	1.2	1.2
Liver (C22)	4.5	4.9	3.7	3.6	3.3	3.0	4.4	7.5	4.2
Gallbladder (C23–C24)	3.0	3.0	3.0	3.1	3.6	4.1	2.3	4.7	3.1
Pancreas (C25)	9.5	10.0	9.8	9.7	9.6	11.3	7.6	10.2	9.7
Lung, bronchus & trachea (C33–C34)	40.9	41.9	45.1	46.2	41.6	49.8	30.5	52.9	42.6
Other thoracic organs (C37–C38)	0.4	0.3	0.5	0.3	0.3	0.4	0.5	0.5	0.4
Bone & articular cartilage (C40–C41)	1.0	0.8	1.0	0.8	0.9	0.5	0.7	0.8	0.9
Melanoma of skin (C43)	45.4	35.4	65.3	54.3	39.0	43.9	39.5	33.0	46.6
Mesothelioma (C45)	2.7	2.4	2.9	4.0	3.2	2.1	2.1	0.8	2.8
Kaposi sarcoma (C46)	0.4	0.4	0.2	0.2	0.3	0.0	0.4	0.4	0.3
Peritoneum & retroperitoneum (C48)	0.8	0.5	1.0	0.5	0.7	0.3	0.7	0.0	0.7
Other connective and soft tissue (C47, C49)	2.3	3.0	2.3	1.9	4.0	3.7	1.9	2.1	2.6
Kidney (C64)	10.2	10.6	10.2	9.9	11.3	12.3	12.0	6.2	10.4
Bladder (C67)	11.8	7.7	19.1	10.0	10.6	12.5	12.6	7.2	11.8
Other urinary organs (C65–C66, C68)	2.2	1.4	2.6	2.0	1.6	1.4	1.5	1.5	2.0
Eye (C69)	1.1	1.0	1.5	1.1	1.7	1.1	1.5	0.3	1.2
Brain (C71)	6.7	7.4	6.7	6.7	6.7	6.9	6.8	5.3	6.9
Other central nervous system (C70, C72)	0.4	0.3	0.4	0.2	0.4	0.3	0.6	0.6	0.4
Thyroid (C73)	6.9	4.6	7.0	5.5	5.5	5.9	5.3	3.8	6.0
Other endocrine organs (C74–C75)	0.4	0.4	0.4	0.5	0.2	0.3	0.5	0.2	0.4
Hodgkin lymphoma (C81)	2.3	2.4	1.9	1.9	2.2	2.2	1.7	2.9	2.2

(continued)



**Table 2.7 (continued): Average annual age-standardised rates of cancer incidence, persons, states and territories, 1999–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>NSW</b>	<b>Vic</b>	<b>Qld</b>	<b>WA</b>	<b>SA</b>	<b>Tas</b>	<b>ACT</b>	<b>NT</b>	<b>Aust</b>
Non-Hodgkin lymphoma (C82–C85, C96)	17.5	19.6	16.7	17.7	20.7	18.9	19.4	10.6	18.2
<i>All lymphomas (C81–C85, C96)</i>	<i>19.9</i>	<i>22.0</i>	<i>18.6</i>	<i>19.6</i>	<i>22.9</i>	<i>21.2</i>	<i>21.1</i>	<i>13.5</i>	<i>20.4</i>
Immunoproliferative neoplasms (C88)	0.4	0.5	0.4	0.6	0.4	0.2	0.5	0.2	0.4
Myeloma (C90)	5.9	5.8	5.7	5.7	6.1	5.6	4.5	3.4	5.8
Lymphoid leukaemia (C91)	6.1	5.0	7.6	5.8	8.0	5.6	5.1	2.3	6.2
Myeloid leukaemia (C92–C94)	6.6	6.0	6.4	5.5	7.6	5.9	7.2	5.5	6.4
Leukaemia, unspecified (C95)	0.6	0.4	0.2	0.4	0.2	0.8	0.1	0.0	0.4
<i>All leukaemias (C91–C95)</i>	<i>13.2</i>	<i>11.4</i>	<i>14.3</i>	<i>11.7</i>	<i>15.9</i>	<i>12.4</i>	<i>12.5</i>	<i>7.8</i>	<i>13.0</i>
Polycythaemia rubra vera (D45) <sup>(b)</sup>	1.0	1.1	1.8	0.3	0.1	0.2	1.3	0.0	1.0
Myelodysplastic syndromes (D46) <sup>(b)</sup>	3.4	4.1	5.1	4.3	0.2	1.9	2.9	0.0	3.6
Other chronic myeloproliferative diseases (D47) <sup>(b)(c)</sup>	1.1	1.5	2.1	1.9	0.1	0.6	1.0	0.0	1.4
Unknown primary site (C26, C39, C76, C80)	19.8	14.3	15.4	13.4	16.0	17.0	19.8	32.2	16.7
<b>All cancers (C00–C96<sup>(a)</sup>, D45–D47<sup>(c)</sup>)</b>	<b>452.2</b>	<b>440.4</b>	<b>492.7</b>	<b>457.2</b>	<b>453.1</b>	<b>471.0</b>	<b>445.9</b>	<b>413.8</b>	<b>457.4</b>

(a) Excluding non-melanocytic skin cancer (ICD-10 code C44).

(b) Due to ICD-O-3 coding changes these conditions were not recorded as malignant until 2002 to 2004, depending on the state or territory. Therefore the averages given are under-representative of the true averages.

(c) Only includes D47.1 and D47.3.

Source: National Cancer Statistics Clearing House, AIHW.

**Table 2.8: Average annual number of new cases of cancer, males, states and territories, 1999–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>NSW</b>	<b>Vic</b>	<b>Qld</b>	<b>WA</b>	<b>SA</b>	<b>Tas</b>	<b>ACT</b>	<b>NT</b>	<b>Aust</b>
Lip (C00)	176	174	150	67	95	31	3	5	701
Tongue (C01–C02)	109	69	64	28	20	11	4	5	310
Mouth (C03–C06)	91	64	53	28	20	9	4	3	272
Major salivary glands (C07–C08)	56	23	31	13	11	2	2	1	137
Oropharynx (C09–C10)	69	52	45	25	19	6	3	7	226
Nasopharynx (C11)	34	25	10	6	4	1	0	1	83
Hypopharynx (C12–C13)	42	31	28	12	7	2	2	3	127
Pharynx, unspecified (C14)	20	11	15	6	3	2	0	1	58
Nasal cavity, middle ear & sinuses (C30–C31)	30	22	11	9	7	5	1	1	86
Larynx (C32)	177	118	97	45	33	13	4	6	494
<i>Head and neck (C01–C14, C30–C32)</i>	<i>628</i>	<i>415</i>	<i>354</i>	<i>171</i>	<i>125</i>	<i>50</i>	<i>21</i>	<i>29</i>	<i>1,793</i>
Oesophagus (C15)	230	177	142	71	62	29	9	6	726
Stomach (C16)	414	339	218	105	115	31	14	4	1,240
Small intestine (C17)	60	35	32	15	16	4	2	0	164
Colon (C18)	1,359	1,052	798	354	373	110	53	17	4,116
Rectum (C19–C20)	884	676	460	238	225	71	33	12	2,599
<i>Colorectal (C18–C20)</i>	<i>2,243</i>	<i>1,728</i>	<i>1,258</i>	<i>591</i>	<i>598</i>	<i>181</i>	<i>86</i>	<i>30</i>	<i>6,715</i>
Anus (C21)	46	23	19	8	4	4	1	1	107
Liver (C22)	216	173	89	47	40	11	7	6	589
Gallbladder (C23–C24)	79	62	47	25	26	9	2	2	251
Pancreas (C25)	322	250	179	84	88	28	9	7	967
Lung, bronchus & trachea (C33–C34)	1,810	1,313	1,050	512	464	160	46	34	5,389
Other thoracic organs (C37–C38)	18	10	11	3	2	1	1	0	47
Bone & articular cartilage (C40–C41)	35	22	21	8	9	1	1	1	98
Melanoma of skin (C43)	1,778	926	1,331	580	346	108	60	26	5,155
Mesothelioma (C45)	149	96	84	59	45	9	5	1	449
Kaposi sarcoma (C46)	26	14	5	3	5	0	1	0	53
Peritoneum & retroperitoneum (C48)	13	6	7	2	3	0	0	0	33
Other connective and soft tissue (C47, C49)	84	81	48	22	37	10	3	3	287
Breast (C50)	32	22	15	7	7	1	1	1	87
Penis (C60)	25	16	14	6	5	2	2	1	70
Prostate (C61)	4,048	2,930	2,046	1,039	1,035	318	156	44	11,617
Testis (C62)	213	145	107	62	44	18	13	5	607
Other male genital organs (C63)	7	4	3	1	2	1	1	0	20
Kidney (C64)	430	326	230	112	126	38	18	5	1,286
Bladder (C67)	592	274	500	125	136	48	23	5	1,702
Other urinary organs (C65–C66, C68)	69	43	42	20	14	4	1	1	194
Eye (C69)	44	31	33	13	14	3	2	1	141
Brain (C71)	262	205	133	70	63	20	11	5	769

(continued)

**Table 2.8 (continued): Average annual number of new cases of cancer, males, states and territories, 1999–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>NSW</b>	<b>Vic</b>	<b>Qld</b>	<b>WA</b>	<b>SA</b>	<b>Tas</b>	<b>ACT</b>	<b>NT</b>	<b>Aust</b>
Other central nervous system (C70, C72)	12	9	7	2	3	1	0	0	35
Thyroid (C73)	107	58	67	27	22	6	4	3	294
Other endocrine organs (C74–C75)	17	10	8	5	2	1	1	0	44
Hodgkin lymphoma (C81)	81	67	37	21	21	6	3	3	239
Non-Hodgkin lymphoma (C82–C85, C96)	645	511	325	173	188	53	28	9	1,932
<i>All lymphomas (C81–C85, C96)</i>	<i>725</i>	<i>578</i>	<i>362</i>	<i>194</i>	<i>209</i>	<i>59</i>	<i>31</i>	<i>12</i>	<i>2,170</i>
Immunoproliferative neoplasms (C88)	14	15	10	5	4	1	1	0	50
Myeloma (C90)	223	164	111	54	58	15	6	2	632
Lymphoid leukaemia (C91)	242	145	155	65	80	18	9	2	716
Myeloid leukaemia (C92–C94)	255	163	136	53	74	17	11	4	713
Leukaemia, unspecified (C95)	22	10	4	5	2	2	0	0	44
<i>All leukaemias (C91–C95)</i>	<i>519</i>	<i>319</i>	<i>294</i>	<i>122</i>	<i>157</i>	<i>37</i>	<i>20</i>	<i>6</i>	<i>1,474</i>
Polycythaemia rubra vera (D45) <sup>(b)</sup>	42	27	41	3	1	1	2	0	116
Myelodysplastic syndromes (D46) <sup>(b)</sup>	128	122	103	46	3	6	5	0	412
Other chronic myeloproliferative diseases (D47) <sup>(b)(c)</sup>	39	37	36	15	1	1	1	0	130
Unknown primary site (C26, C39, C76, C80)	690	351	280	118	131	42	24	16	1,653
<b>All cancers (C00–C96<sup>(a)</sup>, D45–D47<sup>(c)</sup>)</b>	<b>16,568</b>	<b>11,528</b>	<b>9,487</b>	<b>4,419</b>	<b>4,120</b>	<b>1,289</b>	<b>596</b>	<b>258</b>	<b>48,265</b>

(a) Excluding non-melanocytic skin cancer (ICD-10 code C44).

(b) Due to ICD-O-3 coding changes these conditions were not recorded as malignant until 2002 to 2004, depending on the state or territory. Therefore the averages given are under-representative of the true averages.

(c) Only includes D47.1 and D47.3.

Source: National Cancer Statistics Clearing House, AIHW.

**Table 2.9: Average annual age-standardised rates of cancer incidence, males, states and territories, 1999–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>NSW</b>	<b>Vic</b>	<b>Qld</b>	<b>WA</b>	<b>SA</b>	<b>Tas</b>	<b>ACT</b>	<b>NT</b>	<b>Aust</b>
Lip (C00)	5.7	7.7	8.8	7.6	12.5	13.3	2.2	7.2	7.7
Tongue (C01–C02)	3.4	3.0	3.7	3.2	2.6	4.4	3.1	6.1	3.3
Mouth (C03–C06)	2.9	2.8	3.0	3.2	2.7	3.5	3.2	4.6	2.9
Major salivary glands (C07–C08)	1.9	1.0	1.9	1.6	1.4	0.9	1.4	3.5	1.6
Oropharynx (C09–C10)	2.2	2.2	2.6	2.8	2.5	2.5	2.0	8.6	2.4
Nasopharynx (C11)	1.1	1.1	0.6	0.7	0.6	0.4	0.2	3.0	0.9
Hypopharynx (C12–C13)	1.3	1.4	1.7	1.4	0.9	0.8	1.1	5.3	1.4
Pharynx, unspecified (C14)	0.6	0.5	0.8	0.7	0.3	0.7	0.4	1.8	0.6
Nasal cavity, middle ear & sinuses (C30–C31)	1.0	1.0	0.7	1.0	0.9	2.1	1.1	1.1	1.0
Larynx (C32)	5.6	5.2	5.7	5.3	4.2	5.4	3.9	10.0	5.4
<i>Head and neck (C01–C14, C30–C32)</i>	<i>20.0</i>	<i>18.2</i>	<i>20.7</i>	<i>20.0</i>	<i>16.1</i>	<i>20.8</i>	<i>16.4</i>	<i>43.9</i>	<i>19.5</i>
Oesophagus (C15)	7.5	8.1	8.8	9.0	8.2	12.2	9.3	12.5	8.2
Stomach (C16)	13.7	15.4	14.0	13.6	15.2	13.8	13.1	9.0	14.3
Small intestine (C17)	1.9	1.6	1.9	1.8	2.1	1.8	2.1	0.4	1.8
Colon (C18)	44.7	48.1	50.1	45.8	49.2	47.9	48.4	31.4	47.1
Rectum (C19–C20)	28.5	30.3	27.8	29.4	29.3	30.1	28.9	22.4	29.0
<i>Colorectal (C18–C20)</i>	<i>73.1</i>	<i>78.4</i>	<i>77.9</i>	<i>75.2</i>	<i>78.4</i>	<i>77.9</i>	<i>77.3</i>	<i>53.7</i>	<i>76.1</i>
Anus (C21)	1.5	1.0	1.1	0.9	0.6	1.6	0.9	1.3	1.2
Liver (C22)	7.0	7.7	5.4	5.7	5.2	4.8	6.0	11.8	6.6
Gallbladder (C23–C24)	2.6	2.8	3.0	3.1	3.4	4.0	2.1	4.4	2.9
Pancreas (C25)	10.8	11.5	11.2	10.6	11.6	12.2	9.1	11.3	11.1
Lung, bronchus & trachea (C33–C34)	59.3	59.9	65.7	66.0	61.0	69.3	43.4	70.1	61.5
Other thoracic organs (C37–C38)	0.6	0.4	0.7	0.3	0.3	0.3	0.7	0.4	0.5
Bone & articular cartilage (C40–C41)	1.1	1.0	1.2	0.8	1.1	0.5	0.9	0.9	1.0
Melanoma of skin (C43)	57.1	41.0	78.8	67.7	45.6	46.5	45.9	36.0	56.6
Mesothelioma (C45)	4.9	4.4	5.3	7.6	5.9	3.8	4.1	1.2	5.1
Kaposi sarcoma (C46)	0.8	0.6	0.3	0.4	0.6	0.1	0.5	0.9	0.6
Peritoneum & retroperitoneum (C48)	0.4	0.2	0.5	0.3	0.4	0.1	0.2	0.0	0.4
Other connective and soft tissue (C47, C49)	2.7	3.6	2.8	2.5	5.1	4.2	2.0	2.7	3.2
Breast (C50)	1.1	1.0	0.9	1.0	0.9	0.6	0.8	1.0	1.0
Penis (C60)	0.8	0.7	0.9	0.7	0.7	0.8	1.4	2.0	0.8
Prostate (C61)	132.5	134.3	129.5	131.1	135.8	139.6	143.8	103.6	132.9
Testis (C62)	6.5	6.0	5.9	6.4	6.0	8.1	8.0	3.9	6.3
Other male genital organs (C63)	0.2	0.2	0.2	0.2	0.3	0.4	0.7	0.8	0.2
Kidney (C64)	13.7	14.5	13.8	13.5	16.5	15.9	15.1	7.7	14.2
Bladder (C67)	20.1	13.0	32.2	17.3	18.2	21.4	22.2	12.3	20.1
Other urinary organs (C65–C66, C68)	2.3	2.0	2.6	2.7	1.9	1.8	1.3	1.7	2.2
Eye (C69)	1.4	1.4	1.9	1.6	1.9	1.5	1.5	0.6	1.6

(continued)

**Table 2.9 (continued): Average annual age-standardised rates of cancer incidence, males, states and territories, 1999–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>NSW</b>	<b>Vic</b>	<b>Qld</b>	<b>WA</b>	<b>SA</b>	<b>Tas</b>	<b>ACT</b>	<b>NT</b>	<b>Aust</b>
Brain (C71)	8.3	9.0	7.7	8.1	8.2	8.3	8.6	5.9	8.3
Other central nervous system (C70, C72)	0.4	0.4	0.4	0.2	0.5	0.5	0.3	0.2	0.4
Thyroid (C73)	3.3	2.5	3.9	2.9	2.9	2.6	2.5	2.8	3.1
Other endocrine organs (C74–C75)	0.5	0.4	0.5	0.5	0.2	0.3	0.6	0.3	0.5
Hodgkin lymphoma (C81)	2.5	2.8	2.1	2.2	2.8	2.8	1.7	3.0	2.5
Non-Hodgkin lymphoma (C82–C85, C96)	20.8	22.8	19.8	21.3	24.8	22.9	24.7	10.4	21.5
<i>All lymphomas (C81–C85, C96)</i>	<i>23.3</i>	<i>25.6</i>	<i>21.9</i>	<i>23.6</i>	<i>27.6</i>	<i>25.7</i>	<i>26.5</i>	<i>13.4</i>	<i>24.0</i>
Immunoproliferative neoplasms (C88)	0.5	0.7	0.6	0.7	0.5	0.3	0.9	0.4	0.6
Myeloma (C90)	7.4	7.6	7.0	7.0	7.7	6.8	5.3	5.1	7.3
Lymphoid leukaemia (C91)	7.8	6.5	9.3	7.8	10.6	7.7	7.5	3.3	8.0
Myeloid leukaemia (C92–C94)	8.3	7.5	8.5	6.7	10.0	7.8	10.9	5.6	8.2
Leukaemia, unspecified (C95)	0.8	0.4	0.2	0.6	0.3	0.7	0.1	0.0	0.5
<i>All leukaemias (C91–C95)</i>	<i>16.9</i>	<i>14.5</i>	<i>18.1</i>	<i>15.1</i>	<i>20.8</i>	<i>16.2</i>	<i>18.5</i>	<i>8.9</i>	<i>16.7</i>
Polycythaemia rubra vera (D45) <sup>(b)</sup>	1.3	1.2	2.5	0.3	0.1	0.3	1.3	0.0	1.3
Myelodysplastic syndromes (D46) <sup>(b)</sup>	4.7	6.1	7.2	6.7	0.3	2.5	5.4	0.0	5.2
Other chronic myeloproliferative diseases (D47) <sup>(b)(c)</sup>	1.3	1.8	2.3	2.0	0.1	0.6	1.5	0.0	1.5
Unknown primary site (C26, C39, C76, C80)	23.2	16.5	18.1	15.9	17.6	19.6	24.7	36.2	19.4
<b>All cancers (C00–C96<sup>(a)</sup>, D45–D47<sup>(c)</sup>)</b>	<b>540.5</b>	<b>523.0</b>	<b>586.2</b>	<b>550.7</b>	<b>542.2</b>	<b>561.1</b>	<b>527.2</b>	<b>474.7</b>	<b>545.8</b>

(a) Excluding non-melanocytic skin cancer (ICD-10 code C44).

(b) Due to ICD-O-3 coding changes these conditions were not recorded as malignant until 2002 to 2004, depending on the state or territory. Therefore the averages given are under-representative of the true averages.

(c) Only includes D47.1 and D47.3.

Source: National Cancer Statistics Clearing House, AIHW.

**Table 2.10: Average annual number of new cases of cancer, females, states and territories, 1999–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>NSW</b>	<b>Vic</b>	<b>Qld</b>	<b>WA</b>	<b>SA</b>	<b>Tas</b>	<b>ACT</b>	<b>NT</b>	<b>Aust</b>
Lip (C00)	71	73	57	26	32	12	1	1	274
Tongue (C01–C02)	55	36	31	11	11	3	1	1	148
Mouth (C03–C06)	59	44	32	13	12	5	3	1	169
Major salivary glands (C07–C08)	29	19	16	9	9	2	2	0	87
Oropharynx (C09–C10)	21	17	13	5	6	1	1	1	65
Nasopharynx (C11)	17	9	3	1	1	1	1	0	33
Hypopharynx (C12–C13)	9	7	5	1	1	1	0	0	24
Pharynx, unspecified (C14)	5	4	5	1	2	1	0	0	17
Nasal cavity, middle ear & sinuses (C30–C31)	17	13	6	4	3	1	1	0	44
Larynx (C32)	23	18	8	7	6	2	0	1	65
<i>Head and neck (C01–C14, C30–C32)</i>	<i>236</i>	<i>166</i>	<i>118</i>	<i>52</i>	<i>50</i>	<i>17</i>	<i>9</i>	<i>5</i>	<i>652</i>
Oesophagus (C15)	130	98	59	32	34	12	5	2	372
Stomach (C16)	237	200	104	53	60	18	9	3	684
Small intestine (C17)	44	31	24	9	12	4	2	0	128
Colon (C18)	1,322	1,016	743	315	363	111	50	11	3,931
Rectum (C19–C20)	547	446	273	142	161	48	21	4	1,643
<i>Colorectal (C18–C20)</i>	<i>1,869</i>	<i>1,462</i>	<i>1,016</i>	<i>457</i>	<i>524</i>	<i>160</i>	<i>71</i>	<i>16</i>	<i>5,573</i>
Anus (C21)	52	28	27	11	10	4	1	1	134
Liver (C22)	86	66	39	16	16	4	4	2	233
Gallbladder (C23–C24)	123	85	55	28	37	12	4	2	346
Pancreas (C25)	322	242	158	82	77	30	9	3	924
Lung, bronchus & trachea (C33–C34)	954	751	508	280	250	95	27	13	2,878
Other thoracic organs (C37–C38)	9	6	5	3	2	1	0	0	26
Bone & articular cartilage (C40–C41)	29	18	16	8	5	1	1	1	78
Melanoma of skin (C43)	1,251	799	981	403	286	106	51	22	3,899
Mesothelioma (C45)	35	21	17	10	9	2	0	0	95
Kaposi sarcoma (C46)	3	4	0	1	1	0	0	0	10
Peritoneum & retroperitoneum (C48)	40	21	28	7	8	1	1	0	107
Other connective and soft tissue (C47, C49)	70	65	33	14	29	9	2	1	223
Breast (C50)	3,894	2,889	2,128	1,087	988	289	187	59	11,520
Vulva (C51)	76	51	35	21	19	9	2	3	217
Vagina (C52)	27	11	11	7	6	2	1	0	66
Cervix (C53)	256	159	159	79	51	19	10	9	742
Uterus, body (C54)	464	415	297	120	154	33	19	8	1,509
Uterus, unspecified (C55)	32	27	8	3	0	2	2	0	73
Ovary (C56)	375	303	199	107	95	28	17	6	1,130
Other female genital organs (C57)	20	16	9	7	6	2	1	0	60
Placenta (C58)	2	1	1	0	1	0	0	0	5

(continued)

**Table 2.10 (continued): Average annual number of new cases of cancer, females, states and territories, 1999–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>NSW</b>	<b>Vic</b>	<b>Qld</b>	<b>WA</b>	<b>SA</b>	<b>Tas</b>	<b>ACT</b>	<b>NT</b>	<b>Aust</b>
<i>Gynaecological (C51–C58)</i>	1,251	984	719	343	331	95	52	26	3,802
Kidney (C64)	254	191	128	64	63	25	13	2	739
Bladder (C67)	212	106	156	43	49	17	7	1	589
Other urinary organs (C65–C66, C68)	79	27	49	14	13	3	2	1	188
Eye (C69)	30	20	21	6	12	2	2	0	92
Brain (C71)	187	155	103	51	46	14	8	2	567
Other central nervous system (C70, C72)	15	7	6	2	2	0	1	0	35
Thyroid (C73)	347	167	185	75	63	22	13	4	877
Other endocrine organs (C74–C75)	11	8	8	4	2	1	1	0	35
Hodgkin lymphoma (C81)	73	51	30	16	12	4	3	1	189
Non-Hodgkin lymphoma (C82–C85, C96)	532	449	259	137	157	43	21	6	1,604
<i>All lymphomas (C81–C85, C96)</i>	<i>605</i>	<i>500</i>	<i>289</i>	<i>153</i>	<i>169</i>	<i>47</i>	<i>24</i>	<i>7</i>	<i>1,794</i>
Immunoproliferative neoplasms (C88)	13	9	5	4	3	0	0	0	35
Myeloma (C90)	177	122	87	44	46	13	5	1	495
Lymphoid leukaemia (C91)	165	100	113	39	53	10	5	1	486
Myeloid leukaemia (C92–C94)	186	132	89	43	54	12	7	3	525
Leukaemia, unspecified (C95)	18	7	3	2	2	3	0	0	36
<i>All leukaemias (C91–C95)</i>	<i>369</i>	<i>239</i>	<i>206</i>	<i>84</i>	<i>108</i>	<i>25</i>	<i>12</i>	<i>4</i>	<i>1,047</i>
Polycythaemia rubra vera (D45) <sup>(b)</sup>	28	27	21	3	1	0	2	0	81
Myelodysplastic syndromes (D46) <sup>(b)</sup>	104	82	71	26	1	4	2	0	289
Other chronic myeloproliferative diseases (D47) <sup>(b)(c)</sup>	37	39	36	17	0	2	1	0	133
Unknown primary site (C26, C39, C76, C80)	648	355	247	110	147	45	22	11	1,584
<b>All cancers (C00–C96<sup>(a)</sup>, D45–D47<sup>(c)</sup>)</b>	<b>13,822</b>	<b>10,062</b>	<b>7,709</b>	<b>3,623</b>	<b>3,487</b>	<b>1,093</b>	<b>551</b>	<b>187</b>	<b>40,534</b>

(a) Excluding non-melanocytic skin cancer (ICD-10 code C44).

(b) Due to ICD-O-3 coding changes these conditions were not recorded as malignant until 2002 to 2004, depending on the state or territory. Therefore the averages given are under-representative of the true averages.

(c) Only includes D47.1 and D47.3.

Source: National Cancer Statistics Clearing House, AIHW.

**Table 2.11: Average annual age-standardised rates of cancer incidence, females, states and territories, 1999–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>NSW</b>	<b>Vic</b>	<b>Qld</b>	<b>WA</b>	<b>SA</b>	<b>Tas</b>	<b>ACT</b>	<b>NT</b>	<b>Aust</b>
Lip (C00)	2.0	2.7	3.1	2.8	3.4	4.4	0.9	2.0	2.6
Tongue (C01–C02)	1.6	1.4	1.7	1.2	1.2	1.1	0.8	1.9	1.4
Mouth (C03–C06)	1.6	1.7	1.7	1.4	1.3	1.9	1.9	3.1	1.6
Major salivary glands (C07–C08)	0.8	0.8	0.9	1.0	1.0	0.8	1.3	0.2	0.8
Oropharynx (C09–C10)	0.6	0.7	0.7	0.5	0.7	0.5	0.8	2.1	0.6
Nasopharynx (C11)	0.5	0.4	0.2	0.1	0.2	0.3	0.4	0.3	0.3
Hypopharynx (C12–C13)	0.3	0.2	0.3	0.1	0.1	0.2	0.1	0.3	0.2
Pharynx, unspecified (C14)	0.1	0.1	0.3	0.1	0.2	0.3	0.0	0.9	0.2
Nasal cavity, middle ear & sinuses (C30–C31)	0.5	0.5	0.3	0.4	0.3	0.4	0.4	0.0	0.4
Larynx (C32)	0.6	0.7	0.4	0.8	0.7	0.9	0.3	2.0	0.6
<i>Head and neck (C01–C14, C30–C32)</i>	<i>6.6</i>	<i>6.4</i>	<i>6.4</i>	<i>5.6</i>	<i>5.5</i>	<i>6.4</i>	<i>6.1</i>	<i>10.7</i>	<i>6.3</i>
Oesophagus (C15)	3.4	3.4	3.1	3.4	3.5	3.9	3.9	6.1	3.4
Stomach (C16)	6.3	7.3	5.6	5.6	6.2	6.2	7.1	4.7	6.4
Small intestine (C17)	1.2	1.2	1.3	1.0	1.4	1.4	1.7	0.4	1.2
Colon (C18)	35.6	37.1	40.1	33.6	37.8	39.5	37.3	26.1	36.9
Rectum (C19–C20)	15.1	16.6	14.9	15.2	17.4	17.4	15.6	7.2	15.7
<i>Colorectal (C18–C20)</i>	<i>50.7</i>	<i>53.7</i>	<i>54.9</i>	<i>48.7</i>	<i>55.2</i>	<i>56.9</i>	<i>52.9</i>	<i>33.3</i>	<i>52.6</i>
Anus (C21)	1.4	1.0	1.5	1.2	1.2	1.5	1.0	1.0	1.3
Liver (C22)	2.3	2.4	2.1	1.7	1.7	1.4	3.1	3.1	2.2
Gallbladder (C23–C24)	3.3	3.1	2.9	3.0	3.7	4.2	2.6	4.9	3.2
Pancreas (C25)	8.5	8.6	8.4	8.7	7.8	10.4	6.6	8.4	8.5
Lung, bronchus & trachea (C33–C34)	26.3	28.0	27.9	30.3	26.8	34.9	20.6	33.2	27.6
Other thoracic organs (C37–C38)	0.3	0.2	0.3	0.3	0.2	0.4	0.3	0.5	0.3
Bone & articular cartilage (C40–C41)	0.9	0.7	0.9	0.8	0.6	0.6	0.5	0.5	0.8
Melanoma of skin (C43)	36.1	31.2	53.8	42.8	34.1	42.3	33.9	29.1	38.6
Mesothelioma (C45)	0.9	0.8	0.9	1.1	1.0	0.6	0.1	0.3	0.9
Kaposi sarcoma (C46)	0.1	0.1	0.0	0.1	0.1	0.0	0.2	0.0	0.1
Peritoneum & retroperitoneum (C48)	1.1	0.8	1.5	0.8	0.9	0.5	1.1	0.0	1.0
Other connective and soft tissue (C47, C49)	2.0	2.5	1.8	1.4	3.3	3.3	1.7	1.4	2.2
Breast (C50)	112.9	113.7	117.1	116.5	116.4	111.1	126.5	96.8	114.5
Vulva (C51)	2.0	1.9	1.9	2.2	1.9	3.1	1.6	5.2	2.0
Vagina (C52)	0.7	0.4	0.6	0.8	0.6	0.7	0.8	0.0	0.6
Cervix (C53)	7.5	6.3	8.7	8.3	6.3	7.6	6.4	12.5	7.4
Uterus, body (C54)	13.2	16.2	16.3	12.9	17.4	12.2	13.9	16.3	14.8
Uterus, unspecified (C55)	0.9	1.0	0.4	0.3	0.0	0.9	1.2	0.0	0.7
Ovary (C56)	10.6	11.6	10.9	11.5	10.6	10.6	12.4	9.5	11.0
Other female genital organs (C57)	0.6	0.6	0.5	0.7	0.7	0.8	0.5	0.2	0.6

(continued)



**Table 2.11 (continued): Average annual age-standardised rates of cancer incidence, females, states and territories, 1999–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>NSW</b>	<b>Vic</b>	<b>Qld</b>	<b>WA</b>	<b>SA</b>	<b>Tas</b>	<b>ACT</b>	<b>NT</b>	<b>Aust</b>
Placenta (C58)	0.1	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.1
<i>Gynaecological (C51–C58)</i>	<i>35.6</i>	<i>38.0</i>	<i>39.4</i>	<i>36.7</i>	<i>37.7</i>	<i>35.9</i>	<i>37.0</i>	<i>43.7</i>	<i>37.3</i>
Kidney (C64)	7.1	7.3	7.0	6.8	7.0	9.3	9.5	4.1	7.2
Bladder (C67)	5.5	3.8	8.4	4.5	4.9	5.7	5.1	1.7	5.4
Other urinary organs (C65–C66, C68)	2.1	1.0	2.7	1.6	1.3	1.1	1.6	1.6	1.8
Eye (C69)	0.8	0.8	1.1	0.6	1.4	0.7	1.4	0.0	0.9
Brain (C71)	5.4	6.0	5.7	5.5	5.4	5.5	5.4	4.8	5.6
Other central nervous system (C70, C72)	0.5	0.3	0.3	0.2	0.3	0.2	0.9	0.9	0.3
Thyroid (C73)	10.4	6.7	10.2	8.0	8.0	9.0	8.0	5.0	8.9
Other endocrine organs (C74–C75)	0.3	0.3	0.4	0.5	0.2	0.4	0.4	0.0	0.4
Hodgkin lymphoma (C81)	2.2	2.0	1.6	1.6	1.6	1.6	1.6	2.6	1.9
Non-Hodgkin lymphoma (C82–C85, C96)	14.7	16.8	14.1	14.8	17.3	15.6	15.3	10.1	15.4
<i>All lymphomas (C81–C85, C96)</i>	<i>16.9</i>	<i>18.9</i>	<i>15.7</i>	<i>16.4</i>	<i>18.9</i>	<i>17.3</i>	<i>16.8</i>	<i>12.6</i>	<i>17.3</i>
Immunoproliferative neoplasms (C88)	0.3	0.3	0.3	0.5	0.3	0.2	0.2	0.0	0.3
Myeloma (C90)	4.8	4.4	4.7	4.6	4.8	4.6	4.0	2.1	4.6
Lymphoid leukaemia (C91)	4.6	3.8	6.1	4.1	5.8	3.8	3.4	1.3	4.7
Myeloid leukaemia (C92–C94)	5.1	4.9	4.8	4.5	5.9	4.5	4.9	5.3	5.0
Leukaemia, unspecified (C95)	0.5	0.3	0.2	0.3	0.2	0.9	0.1	0.0	0.3
<i>All leukaemias (C91–C95)</i>	<i>10.1</i>	<i>9.0</i>	<i>11.1</i>	<i>8.9</i>	<i>11.9</i>	<i>9.2</i>	<i>8.4</i>	<i>6.5</i>	<i>10.0</i>
Polycythaemia rubra vera (D45) <sup>(b)</sup>	0.8	1.0	1.1	0.3	0.1	0.1	1.2	0.0	0.8
Myelodysplastic syndromes (D46) <sup>(b)</sup>	2.6	2.8	3.7	2.6	0.1	1.3	1.4	0.0	2.6
Other chronic myeloproliferative diseases (D47) <sup>(b)(c)</sup>	1.0	1.4	2.0	1.8	0.0	0.6	0.7	0.0	1.2
Unknown primary site (C26, C39, C76, C80)	17.0	12.5	13.0	11.4	14.7	15.6	16.4	28.4	14.4
<b>All cancers (C00–C96<sup>(a)</sup>, D45–D47<sup>(c)</sup>)</b>	<b>387.6</b>	<b>382.4</b>	<b>420.3</b>	<b>386.8</b>	<b>389.9</b>	<b>407.1</b>	<b>389.2</b>	<b>348.0</b>	<b>392.6</b>

(a) Excluding non-melanocytic skin cancer (ICD-10 code C44).

(b) Due to ICD-O-3 coding changes these conditions were not recorded as malignant until 2002 to 2004, depending on the state or territory. Therefore the averages given are under-representative of the true averages.

(c) Only includes D47.1 and D47.3.

Source: National Cancer Statistics Clearing House, AIHW.

# Incidence trends 1983–2003

## Numbers

The numbers of new cases over the period 1983–2003 are shown in tables 2.12–2.14. Note that cancers for which the numbers are small are subject to large percentage fluctuations from one year to the next. Therefore the following comments are restricted to National Health Priority Area (NHPA) cancers and cancers for which the number of cases in 1993 was at least 500 persons.

- The total number of cancers diagnosed in 2003 was 26% higher than in 1993 (24% for males and 29% for females), compared with 12% population growth over this period.
- Among the NHPA cancers, cases of cervical cancer were 29% lower in 2003 than in 1993, and there were increases for melanoma (up 41%: 49% in males, 31% in females), non-Hodgkin lymphoma (up 36%: 34% in males, 39% in females), breast cancer in females (up 34%), colorectal cancer (up 27%: 29% in males, 26% in females), prostate cancer (up 21%) and lung cancer (up 13%: 3.1% in males, 34% in females).
- Among other cancers, there were major increases between 1993 and 2003 for thyroid cancer (up 106%: 139% in males (but small numbers), 97% in females), myeloma (up 44%: 36% in males, 54% in females), kidney cancer (up 39%: 45% in males, 29% in females), uterine cancer (up 31%), pancreatic cancer (up 30%: 35% in males, 25% in females), oesophageal cancer (up 26%: 35% in males, 11% in females), leukaemia (up 23%: 24% in males, 21% in females), brain cancer (up 22%: 28% in males, 15% in females) and cancers of unknown primary site (up 18%: 15% in males, 21% in females).

## Age-standardised rates

Age-standardised incidence rates (against the Australian 2001 Standard Population) over the period 1983–2003 are shown in tables 2.15–2.17. Note that cancers for which the rates are small are subject to large percentage fluctuations from one year to the next. Therefore the following comments are restricted to NHPA cancers and cancers for which the 1993 rate was at least 5.0 per 100,000.

- The rate for all cancers (excluding NMSC) was 0.7% lower in 2003 than in 1993.
- Among the NHPA cancers the largest decrease in rate from 1993 to 2003 was for cervical cancer (down 41%), followed by prostate cancer (12%), lung cancer (11%: down 20% in males, up 6.1% in females) and colorectal cancer (1.5%: 1.7% in males, 2.0% in females).
- The largest increase in rate for NHPA cancers from 1993 to 2003 was for melanoma (up 14%: 19% in males, 6.8% in females), followed by non-Hodgkin lymphoma (7.2%: 4.4% in males, 9.9% in females) and breast cancer in females (6.1%).
- In other cancers in persons, the rate decreased by at least 10% for bladder cancer (down 23%: 25% in males, 19% in females), stomach cancer (down 22%: 26% in males, 17% in females) and cancers of unknown primary site (down 10%: 13% in males, 7.9% in females).
- In other cancers in males, the rate decreased by at least 10% for lip cancer (down 27%) and laryngeal cancer (27%). The rate increased by over 10% for liver cancer (up 29%), testicular cancer (25%) and kidney cancer (11%).
- In other cancers in females, the rate decreased by at least 10% only for ovarian cancer (down 19%). The rate increased by at least 10% only for thyroid cancer (up 67%).

**Table 2.12: New cases of cancer, persons, Australia, selected years, 1983–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>1983</b>	<b>1988</b>	<b>1993</b>	<b>1998</b>	<b>2003</b>	<b>Per cent change 93–03</b>
<b>NHPA cancers</b>						
Colorectal (C18–C20)	7,118	8,249	9,836	11,115	12,536	27.5
Lung, bronchus & trachea (C33–C34)	6,117	6,695	7,327	8,010	8,249	12.6
Melanoma of skin (C43)	3,803	6,044	6,765	7,974	9,524	40.8
Non-Hodgkin lymphoma (C82–C85, C96)	1,614	2,080	2,723	3,190	3,699	35.8
<b>Other cancers</b>						
Lip (C00)	663	846	986	1,135	987	0.1
Tongue (C01–C02)	286	328	368	429	492	33.7
Mouth (C03–C06)	350	363	415	480	466	12.3
Major salivary glands (C07–C08)	126	150	182	216	229	25.8
Oropharynx (C09–C10)	201	197	207	272	292	41.1
Nasopharynx (C11)	84	86	125	105	107	–14.4
Hypopharynx (C12–C13)	146	172	181	158	133	–26.5
Pharynx, unspecified (C14)	34	52	66	63	70	6.1
Nasal cavity, middle ear & sinuses (C30–C31)	83	98	140	125	130	–7.1
Larynx (C32)	600	580	592	621	557	–5.9
<i>Head and neck (C01–C14, C30–C32)</i>	<i>1,910</i>	<i>2,026</i>	<i>2,276</i>	<i>2,469</i>	<i>2,476</i>	<i>8.8</i>
Oesophagus (C15)	610	842	919	1,001	1,154	25.6
Stomach (C16)	1,910	1,779	1,845	1,902	1,873	1.5
Small intestine (C17)	94	134	155	259	347	123.9
Colon (C18)	4,694	5,472	6,479	7,281	8,144	25.7
Rectum (C19–C20)	2,424	2,777	3,357	3,834	4,392	30.8
Anus (C21)	98	151	161	218	252	56.5
Liver (C22)	205	300	498	627	890	78.7
Gallbladder (C23–C24)	434	502	498	616	586	17.7
Pancreas (C25)	1,176	1,345	1,530	1,793	1,996	30.5
Other thoracic organs (C37–C38)	40	61	71	87	74	4.2
Bone & articular cartilage (C40–C41)	150	148	153	158	167	9.2
Mesothelioma (C45)	144	275	370	472	633	71.1
Kaposi sarcoma (C46)	18	146	207	94	57	–72.5
Peritoneum & retroperitoneum (C48)	36	46	75	111	165	120.0
Other connective and soft tissue (C47, C49)	337	368	419	543	491	17.2
Breast (C50)	5,421	6,784	8,854	10,815	11,889	34.3
Vulva (C51)	132	150	177	213	220	24.3
Vagina (C52)	50	45	64	57	67	4.7
Cervix (C53)	995	1,062	1,017	863	725	–28.7
Uterus, body (C54)	876	1,029	1,227	1,368	1,613	31.5
Uterus, unspecified (C55)	53	39	15	35	85	466.7

(continued)

**Table 2.12 (continued): New cases of cancer, persons, Australia, selected years, 1983–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>1983</b>	<b>1988</b>	<b>1993</b>	<b>1998</b>	<b>2003</b>	<b>Per cent change 93–03</b>
Ovary (C56)	856	893	1,076	1,120	1,084	0.7
Other female genital organs (C57)	22	26	39	43	57	46.2
Placenta (C58)	9	10	5	8	6	20.0
<i>Gynaecological (C51–C58)</i>	<i>2,993</i>	<i>3,254</i>	<i>3,620</i>	<i>3,707</i>	<i>3,857</i>	<i>6.5</i>
Penis (C60)	46	34	54	67	67	24.1
Prostate (C61)	3,747	4,775	11,154	10,073	13,526	21.3
Testis (C62)	316	355	474	564	638	34.6
Other male genital organs (C63)	5	8	25	23	24	–4.0
Kidney (C64)	799	1,071	1,454	1,830	2,019	38.9
Bladder (C67)	2,103	2,209	2,240	2,199	2,229	–0.5
Other urinary organs (C65–C66, C68)	327	310	327	357	362	10.7
Eye (C69)	160	165	232	257	254	9.5
Brain (C71)	883	1,006	1,114	1,193	1,360	22.1
Other central nervous system (C70, C72)	49	71	61	65	71	16.4
Thyroid (C73)	421	471	680	981	1,402	106.2
Other endocrine organs (C74–C75)	45	79	82	81	76	–7.3
Hodgkin lymphoma (C81)	334	349	351	399	430	22.5
<i>All lymphomas (C81–C85, C96)</i>	<i>1,948</i>	<i>2,429</i>	<i>3,074</i>	<i>3,589</i>	<i>4,129</i>	<i>34.3</i>
Immunoproliferative neoplasms (C88)	15	22	45	82	86	91.1
Myeloma (C90)	558	668	801	1,065	1,153	43.9
Lymphoid leukaemia (C91)	688	871	986	1,119	1,214	23.1
Myeloid leukaemia (C92–C94)	714	874	990	1,110	1,238	25.1
Leukaemia, unspecified (C95)	93	96	81	82	72	–11.1
<i>All leukaemias (C91–C95)</i>	<i>1,495</i>	<i>1,841</i>	<i>2,057</i>	<i>2,311</i>	<i>2,524</i>	<i>22.7</i>
Polycythaemia rubra vera (D45)	27	39	105	145	326	210.5
Myelodysplastic syndromes (D46)	6	28	161	396	988	513.7
Other chronic myeloproliferative diseases (D47 <sup>(b)</sup> )	35	64	129	263	303	134.9
Unknown primary site (C26, C39, C76, C80)	2,280	2,670	2,925	3,124	3,454	18.1
<b>All cancers (C00–C96<sup>(a)</sup>, D45–D47<sup>(b)</sup>)</b>	<b>48,542</b>	<b>58,310</b>	<b>73,759</b>	<b>81,771</b>	<b>93,194</b>	<b>26.3</b>

(a) Excludes non-melanocytic skin cancer (ICD-10 code C44).

(b) Only includes D47.1 and D47.3.

Source: National Cancer Statistics Clearing House, AIHW.

**Table 2.13: New cases of cancer, males, Australia, selected years, 1983–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>1983</b>	<b>1988</b>	<b>1993</b>	<b>1998</b>	<b>2003</b>	<b>Per cent change 93–03</b>
<b>NHPA cancers</b>						
Colorectal (C18–C20)	3,702	4,415	5,314	6,031	6,857	29.0
Lung, bronchus & trachea (C33–C34)	4,788	4,949	5,120	5,448	5,281	3.1
Melanoma of skin (C43)	1,813	3,213	3,715	4,458	5,535	49.0
Prostate (C61)	3,747	4,775	11,154	10,073	13,526	21.3
Non-Hodgkin lymphoma (C82–C85, C96)	845	1,143	1,533	1,711	2,050	33.7
<b>Other cancers</b>						
Lip (C00)	558	664	758	837	717	–5.4
Tongue (C01–C02)	197	227	265	279	343	29.4
Mouth (C03–C06)	229	239	273	285	287	5.1
Major salivary glands (C07–C08)	71	90	111	121	136	22.5
Oropharynx (C09–C10)	160	156	155	215	232	49.7
Nasopharynx (C11)	59	67	91	80	77	–15.4
Hypopharynx (C12–C13)	124	139	155	136	119	–23.2
Pharynx, unspecified (C14)	23	42	50	49	55	10.0
Nasal cavity, middle ear & sinuses (C30–C31)	51	69	101	80	82	–18.8
Larynx (C32)	534	516	538	563	498	–7.4
<i>Head and neck (C01–C14, C30–C32)</i>	<i>1,448</i>	<i>1,545</i>	<i>1,739</i>	<i>1,808</i>	<i>1,829</i>	<i>5.2</i>
Oesophagus (C15)	373	499	567	627	765	34.9
Stomach (C16)	1,206	1,154	1,219	1,233	1,216	–0.2
Small intestine (C17)	44	76	94	133	195	107.4
Colon (C18)	2,286	2,745	3,280	3,671	4,185	27.6
Rectum (C19–C20)	1,416	1,670	2,034	2,360	2,672	31.4
Anus (C21)	35	67	77	92	105	36.4
Liver (C22)	157	226	368	467	614	66.8
Gallbladder (C23–C24)	175	196	192	251	238	24.0
Pancreas (C25)	630	688	773	885	1,047	35.4
Other thoracic organs (C37–C38)	33	37	48	50	48	0.0
Bone & articular cartilage (C40–C41)	88	94	90	86	99	10.0
Mesothelioma (C45)	130	244	318	412	524	64.8
Kaposi sarcoma (C46)	12	139	192	78	50	–74.0
Peritoneum & retroperitoneum (C48)	15	22	28	30	41	46.4
Other connective and soft tissue (C47, C49)	190	211	231	312	296	28.1
Breast (C50)	45	59	64	91	101	57.8
Penis (C60)	46	34	54	67	67	24.1
Testis (C62)	316	355	474	564	638	34.6
Other male genital organs (C63)	5	8	25	23	24	–4.0
Kidney (C64)	517	656	898	1,163	1,302	45.0

(continued)

**Table 2.13 (continued): New cases of cancer, males, Australia, selected years, 1983–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>1983</b>	<b>1988</b>	<b>1993</b>	<b>1998</b>	<b>2003</b>	<b>Per cent change 93–03</b>
Bladder (C67)	1,571	1,612	1,682	1,611	1,649	–2.0
Other urinary organs (C65–C66, C68)	168	149	162	179	171	5.6
Eye (C69)	85	88	143	151	146	2.1
Brain (C71)	492	561	602	684	770	27.9
Other central nervous system (C70, C72)	28	37	33	29	38	15.2
Thyroid (C73)	103	124	151	264	361	139.1
Other endocrine organs (C74–C75)	23	44	46	40	42	–8.7
Hodgkin lymphoma (C81)	206	208	193	218	247	28.0
<i>All lymphomas (C81–C85, C96)</i>	<i>1,051</i>	<i>1,351</i>	<i>1,726</i>	<i>1,929</i>	<i>2,297</i>	<i>33.1</i>
Immunoproliferative neoplasms (C88)	8	15	26	57	52	100.0
Myeloma (C90)	288	366	467	597	637	36.4
Lymphoid leukaemia (C91)	421	550	589	653	719	22.1
Myeloid leukaemia (C92–C94)	380	491	552	629	700	26.8
Leukaemia, unspecified (C95)	53	51	40	44	41	2.5
<i>All leukaemias (C91–C95)</i>	<i>854</i>	<i>1,092</i>	<i>1,181</i>	<i>1,326</i>	<i>1,460</i>	<i>23.6</i>
Polycythaemia rubra vera (D45)	17	18	58	89	198	241.4
Myelodysplastic syndromes (D46)	4	15	96	234	581	505.2
Other chronic myeloproliferative diseases (D47 <sup>(b)</sup> )	16	35	59	144	152	157.6
Unknown primary site (C26, C39, C76, C80)	1,132	1,395	1,516	1,576	1,749	15.4
<b>All cancers (C00–C96<sup>(a)</sup>, D45–D47<sup>(b)</sup>)</b>	<b>25,913</b>	<b>31,228</b>	<b>41,460</b>	<b>44,129</b>	<b>51,418</b>	<b>24.0</b>

(a) Excludes non-melanocytic skin cancer (ICD-10 code C44).

(b) Only includes D47.1 and D47.3.

Source: National Cancer Statistics Clearing House, AIHW.

**Table 2.14: New cases of cancer, females, Australia, selected years, 1983–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>1983</b>	<b>1988</b>	<b>1993</b>	<b>1998</b>	<b>2003</b>	<b>Per cent change 93–03</b>
<b>NHPA cancers</b>						
Colorectal (C18–C20)	3,416	3,834	4,522	5,084	5,679	25.6
Lung, bronchus & trachea (C33–C34)	1,329	1,746	2,207	2,562	2,968	34.5
Melanoma of skin (C43)	1,990	2,831	3,050	3,516	3,989	30.8
Breast (C50)	5,376	6,725	8,790	10,724	11,788	34.1
Cervix (C53)	995	1,062	1,017	863	725	–28.7
Non-Hodgkin lymphoma (C82–C85, C96)	769	937	1,190	1,479	1,649	38.6
<b>Other cancers</b>						
Lip (C00)	105	182	228	298	270	18.4
Tongue (C01–C02)	89	101	103	150	149	44.7
Mouth (C03–C06)	121	124	142	195	179	26.1
Major salivary glands (C07–C08)	55	60	71	95	93	31.0
Oropharynx (C09–C10)	41	41	52	57	60	15.4
Nasopharynx (C11)	25	19	34	25	30	–11.8
Hypopharynx (C12–C13)	22	33	26	22	14	–46.2
Pharynx, unspecified (C14)	11	10	16	14	15	–6.3
Nasal cavity, middle ear & sinuses (C30–C31)	32	29	39	45	48	23.1
Larynx (C32)	66	64	54	58	59	9.3
<i>Head and neck (C01–C14, C30–C32)</i>	<i>462</i>	<i>481</i>	<i>537</i>	<i>661</i>	<i>647</i>	<i>20.5</i>
Oesophagus (C15)	237	343	352	374	389	10.5
Stomach (C16)	704	625	626	669	657	5.0
Small intestine (C17)	50	58	61	126	152	149.2
Colon (C18)	2,408	2,727	3,199	3,610	3,959	23.8
Rectum (C19–C20)	1,008	1,107	1,323	1,474	1,720	30.0
Anus (C21)	63	84	84	126	147	75.0
Liver (C22)	48	74	130	160	276	112.3
Gallbladder (C23–C24)	259	306	306	365	348	13.7
Pancreas (C25)	546	657	757	908	949	25.4
Other thoracic organs (C37–C38)	7	24	23	37	26	13.0
Bone & articular cartilage (C40–C41)	62	54	63	72	68	7.9
Mesothelioma (C45)	14	31	52	60	109	109.6
Kaposi sarcoma (C46)	6	7	15	16	7	–53.3
Peritoneum & retroperitoneum (C48)	21	24	47	81	124	163.8
Other connective and soft tissue (C47, C49)	147	157	188	231	195	3.7
Vulva (C51)	132	150	177	213	220	24.3
Vagina (C52)	50	45	64	57	67	4.7
Uterus, body (C54)	876	1,029	1,227	1,368	1,613	31.5
Uterus, unspecified (C55)	53	39	15	35	85	466.7

(continued)

**Table 2.14 (continued): New cases of cancer, females, Australia, selected years, 1983–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>1983</b>	<b>1988</b>	<b>1993</b>	<b>1998</b>	<b>2003</b>	<b>Per cent change 93–03</b>
Ovary (C56)	856	893	1,076	1,120	1,084	0.7
Other female genital organs (C57)	22	26	39	43	57	46.2
Placenta (C58)	9	10	5	8	6	20.0
<i>Gynaecological (C51–C58)</i>	<i>2,993</i>	<i>3,254</i>	<i>3,620</i>	<i>3,707</i>	<i>3,857</i>	<i>6.5</i>
Kidney (C64)	282	415	556	667	717	29.0
Bladder (C67)	532	597	558	588	580	3.9
Other urinary organs (C65–C66, C68)	159	161	165	178	191	15.8
Eye (C69)	75	77	89	106	108	21.3
Brain (C71)	391	445	512	509	590	15.2
Other central nervous system (C70, C72)	21	34	28	36	33	17.9
Thyroid (C73)	318	347	529	717	1,041	96.8
Other endocrine organs (C74–C75)	22	35	36	41	34	–5.6
Hodgkin lymphoma (C81)	128	141	158	181	183	15.8
<i>All lymphomas (C81–C85, C96)</i>	<i>897</i>	<i>1,078</i>	<i>1,348</i>	<i>1,660</i>	<i>1,832</i>	<i>35.9</i>
Immunoproliferative neoplasms (C88)	7	7	19	25	34	78.9
Myeloma (C90)	270	302	334	468	516	54.5
Lymphoid leukaemia (C91)	267	321	397	466	495	24.7
Myeloid leukaemia (C92–C94)	334	383	438	481	538	22.8
Leukaemia, unspecified (C95)	40	45	41	38	31	–24.4
<i>All leukaemias (C91–C95)</i>	<i>641</i>	<i>749</i>	<i>876</i>	<i>985</i>	<i>1,064</i>	<i>21.5</i>
Polycythaemia rubra vera (D45)	10	21	47	56	128	172.3
Myelodysplastic syndromes (D46)	2	13	65	162	407	526.2
Other chronic myeloproliferative diseases (D47 <sup>(b)</sup> )	19	29	70	119	151	115.7
Unknown primary site (C26, C39, C76, C80)	1,148	1,275	1,409	1,548	1,705	21.0
<b>All cancers (C00–C96<sup>(a)</sup>, D45–D47<sup>(b)</sup>)</b>	<b>22,629</b>	<b>27,082</b>	<b>32,299</b>	<b>37,642</b>	<b>41,776</b>	<b>29.3</b>

(a) Excludes non-melanocytic skin cancer (ICD-10 code C44).

(b) Only includes D47.1 and D47.3.

Source: National Cancer Statistics Clearing House, AIHW.



**Table 2.15: Age-standardised rate of cancer incidence, persons, Australia, selected years, 1983–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>1983</b>	<b>1988</b>	<b>1993</b>	<b>1998</b>	<b>2003</b>	<b>Per cent change 93–03</b>
<b>NHPA cancers</b>						
Colorectal (C18–C20)	57.9	58.7	62.3	62.0	61.3	–1.5
Lung, bronchus & trachea (C33–C34)	47.3	46.2	45.6	44.4	40.4	–11.5
Melanoma of skin (C43)	28.0	40.4	41.2	43.9	46.9	13.9
Non-Hodgkin lymphoma (C82–C85, C96)	12.6	14.2	16.9	17.7	18.1	7.2
<b>Other cancers</b>						
Lip (C00)	5.0	5.9	6.1	6.3	4.9	–20.4
Tongue (C01–C02)	2.2	2.2	2.3	2.4	2.4	5.2
Mouth (C03–C06)	2.7	2.5	2.6	2.7	2.3	–12.2
Major salivary glands (C07–C08)	1.0	1.0	1.1	1.2	1.1	–0.3
Oropharynx (C09–C10)	1.5	1.4	1.3	1.5	1.4	11.0
Nasopharynx (C11)	0.6	0.6	0.8	0.6	0.5	–31.9
Hypopharynx (C12–C13)	1.1	1.2	1.1	0.9	0.7	–42.2
Pharynx, unspecified (C14)	0.3	0.4	0.4	0.3	0.3	–15.4
Nasal cavity, middle ear & sinuses (C30–C31)	0.7	0.7	0.9	0.7	0.6	–26.6
Larynx (C32)	4.5	3.9	3.6	3.4	2.7	–24.8
<i>Head and neck (C01–C14, C30–C32)</i>	<i>14.6</i>	<i>13.9</i>	<i>14.1</i>	<i>13.7</i>	<i>12.1</i>	<i>–14.0</i>
Oesophagus (C15)	5.0	6.0	5.8	5.6	5.6	–3.2
Stomach (C16)	15.8	12.9	11.8	10.6	9.2	–22.1
Small intestine (C17)	0.7	0.9	1.0	1.4	1.7	77.9
Colon (C18)	38.4	39.1	41.2	40.7	39.8	–3.2
Rectum (C19–C20)	19.5	19.6	21.1	21.3	21.5	2.0
Anus (C21)	0.8	1.1	1.0	1.2	1.2	22.3
Liver (C22)	1.6	2.1	3.1	3.5	4.4	42.1
Gallbladder (C23–C24)	3.6	3.6	3.2	3.5	2.9	–10.4
Pancreas (C25)	9.6	9.7	9.7	10.1	9.7	0.3
Other thoracic organs (C37–C38)	0.3	0.4	0.4	0.5	0.4	–14.8
Bone & articular cartilage (C40–C41)	1.0	0.9	0.9	0.9	0.8	–5.3
Mesothelioma (C45)	1.1	1.9	2.3	2.6	3.1	34.0
Kaposi sarcoma (C46)	0.2	0.9	1.2	0.5	0.3	–75.6
Peritoneum & retroperitoneum (C48)	0.3	0.3	0.5	0.6	0.8	75.8
Other connective and soft tissue (C47, C49)	2.5	2.5	2.6	3.0	2.4	–5.0
Kidney (C64)	6.2	7.4	9.1	10.1	9.9	9.2
Bladder (C67)	17.1	15.7	14.2	12.3	10.9	–23.2
Other urinary organs (C65–C66, C68)	2.6	2.2	2.0	2.0	1.8	–12.8
Eye (C69)	1.2	1.1	1.4	1.4	1.3	–11.3
Brain (C71)	6.4	6.6	6.7	6.6	6.7	0.6
Other central nervous system (C70, C72)	0.3	0.4	0.4	0.4	0.4	–0.9

(continued)

**Table 2.15 (continued): Age-standardised rate of cancer incidence, persons, Australia, selected years, 1983–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>1983</b>	<b>1988</b>	<b>1993</b>	<b>1998</b>	<b>2003</b>	<b>Per cent change 93–03</b>
Thyroid (C73)	3.1	3.0	4.0	5.3	7.0	73.3
Other endocrine organs (C74–C75)	0.3	0.5	0.5	0.4	0.4	–17.9
Hodgkin lymphoma (C81)	2.2	2.1	2.0	2.1	2.2	8.6
<i>All lymphomas (C81–C85, C96)</i>	<i>14.8</i>	<i>16.4</i>	<i>18.9</i>	<i>19.8</i>	<i>20.3</i>	<i>7.4</i>
Immunoproliferative neoplasms (C88)	0.1	0.2	0.3	0.5	0.4	51.7
Myeloma (C90)	4.5	4.8	5.1	6.0	5.6	10.7
Lymphoid leukaemia (C91)	5.2	5.9	6.1	6.2	6.0	–1.1
Myeloid leukaemia (C92–C94)	5.5	6.1	6.2	6.2	6.1	–2.3
Leukaemia, unspecified (C95)	0.8	0.7	0.5	0.5	0.4	–34.1
<i>All leukaemias (C91–C95)</i>	<i>11.5</i>	<i>12.7</i>	<i>12.8</i>	<i>12.8</i>	<i>12.4</i>	<i>–3.0</i>
Polycythaemia rubra vera (D45)	0.2	0.3	0.6	0.8	1.6	147.2
Myelodysplastic syndromes (D46)	0.0	0.2	1.1	2.2	4.8	346.6
Other chronic myeloproliferative diseases (D47 <sup>(b)</sup> )	0.3	0.5	0.8	1.5	1.5	80.2
Unknown primary site (C26, C39, C76, C80)	18.9	19.4	18.8	17.6	16.8	–10.4
<b>All cancers (C00–C96<sup>(a)</sup>, D45–D47<sup>(b)</sup>)</b>	<b>383.6</b>	<b>406.8</b>	<b>459.9</b>	<b>454.3</b>	<b>456.8</b>	<b>–0.7</b>

(a) Excludes non-melanocytic skin cancer (ICD-10 code C44).

(b) Only includes D47.1 and D47.3.

Source: National Cancer Statistics Clearing House, AIHW.

**Table 2.16: Age-standardised rate of cancer incidence, males, Australia, selected years, 1983–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>1983</b>	<b>1988</b>	<b>1993</b>	<b>1998</b>	<b>2003</b>	<b>Per cent change 93–03</b>
<b>NHPA cancers</b>						
Colorectal (C18–C20)	67.9	70.8	74.5	74.5	73.2	–1.7
Lung, bronchus & trachea (C33–C34)	84.5	77.7	71.4	67.5	57.1	–20.1
Melanoma of skin (C43)	28.6	46.0	48.8	52.4	57.9	18.7
Prostate (C61)	80.9	85.7	164.7	127.9	144.2	–12.5
Non-Hodgkin lymphoma (C82–C85, C96)	14.2	17.2	20.7	20.6	21.6	4.4
<b>Other cancers</b>						
Lip (C00)	9.1	10.0	10.2	10.0	7.4	–27.5
Tongue (C01–C02)	3.4	3.2	3.5	3.2	3.5	1.1
Mouth (C03–C06)	3.7	3.5	3.5	3.4	3.0	–15.8
Major salivary glands (C07–C08)	1.4	1.4	1.6	1.5	1.5	–4.9
Oropharynx (C09–C10)	2.6	2.3	2.0	2.5	2.3	15.0
Nasopharynx (C11)	0.9	0.9	1.2	0.9	0.8	–34.8
Hypopharynx (C12–C13)	2.0	2.0	2.0	1.6	1.2	–40.6
Pharynx, unspecified (C14)	0.4	0.6	0.6	0.6	0.6	–11.0
Nasal cavity, middle ear & sinuses (C30–C31)	0.9	1.1	1.4	0.9	0.9	–36.5
Larynx (C32)	8.7	7.5	7.1	6.7	5.1	–27.3
<i>Head and neck (C01–C14, C30–C32)</i>	23.8	22.6	22.9	21.3	18.9	–17.6
Oesophagus (C15)	7.0	7.9	7.9	7.9	8.2	3.1
Stomach (C16)	22.8	19.1	17.9	15.4	13.2	–26.1
Small intestine (C17)	0.9	1.1	1.3	1.6	2.1	64.3
Colon (C18)	42.2	44.6	46.7	46.0	45.2	–3.2
Rectum (C19–C20)	25.7	26.2	27.8	28.5	28.0	0.8
Anus (C21)	0.6	1.1	1.1	1.1	1.1	2.2
Liver (C22)	2.7	3.5	5.0	5.5	6.5	28.8
Gallbladder (C23–C24)	3.4	3.3	2.8	3.3	2.6	–6.2
Pancreas (C25)	11.5	11.4	11.1	11.2	11.3	2.0
Other thoracic organs (C37–C38)	0.5	0.5	0.6	0.6	0.5	–17.9
Bone & articular cartilage (C40–C41)	1.2	1.2	1.1	0.9	1.0	–5.5
Mesothelioma (C45)	2.1	3.9	4.4	5.1	5.7	28.3
Kaposi sarcoma (C46)	0.2	1.8	2.2	1.0	0.5	–76.0
Peritoneum & retroperitoneum (C48)	0.2	0.3	0.4	0.3	0.4	7.7
Other connective and soft tissue (C47, C49)	3.1	3.2	3.1	3.6	3.1	2.2
Breast (C50)	0.9	0.9	0.9	1.1	1.1	22.1
Penis (C60)	0.9	0.6	0.8	0.8	0.7	–11.5
Testis (C62)	4.1	4.2	5.2	6.0	6.5	25.0
Other male genital organs (C63)	0.1	0.1	0.4	0.3	0.3	–30.2
Kidney (C64)	8.8	10.1	12.2	13.9	13.6	11.0

(continued)

**Table 2.16 (continued): Age-standardised rate of cancer incidence, males, Australia, selected years, 1983–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>1983</b>	<b>1988</b>	<b>1993</b>	<b>1998</b>	<b>2003</b>	<b>Per cent change 93–03</b>
Bladder (C67)	30.1	26.8	24.5	20.8	18.3	–25.4
Other urinary organs (C65–C66, C68)	3.2	2.4	2.3	2.3	1.9	–17.1
Eye (C69)	1.3	1.3	1.9	1.8	1.5	–17.9
Brain (C71)	7.4	7.8	7.6	7.9	7.9	5.0
Other central nervous system (C70, C72)	0.4	0.5	0.4	0.3	0.4	–2.9
Thyroid (C73)	1.6	1.7	1.9	3.0	3.7	94.7
Other endocrine organs (C74–C75)	0.3	0.5	0.5	0.4	0.4	–16.9
Hodgkin lymphoma (C81)	2.7	2.6	2.2	2.3	2.5	12.7
<i>All lymphomas (C81–C85, C96)</i>	<i>17.0</i>	<i>19.8</i>	<i>22.9</i>	<i>23.0</i>	<i>24.1</i>	<i>5.2</i>
Immunoproliferative neoplasms (C88)	0.1	0.3	0.3	0.7	0.6	71.7
Myeloma (C90)	5.4	6.1	6.7	7.6	7.0	4.7
Lymphoid leukaemia (C91)	7.4	8.5	8.1	7.7	7.6	–5.4
Myeloid leukaemia (C92–C94)	6.5	7.8	7.9	7.9	7.6	–4.2
Leukaemia, unspecified (C95)	1.1	1.0	0.6	0.6	0.4	–31.5
<i>All leukaemias (C91–C95)</i>	<i>15.0</i>	<i>17.3</i>	<i>16.6</i>	<i>16.2</i>	<i>15.6</i>	<i>–5.8</i>
Polycythaemia rubra vera (D45)	0.3	0.3	0.8	1.1	2.1	166.3
Myelodysplastic syndromes (D46)	0.1	0.2	1.6	3.2	6.8	324.7
Other chronic myeloproliferative diseases (D47 <sup>(b)</sup> )	0.3	0.7	0.9	1.9	1.7	97.7
Unknown primary site (C26, C39, C76, C80)	21.7	23.2	22.3	20.2	19.3	–13.4
<b>All cancers (C00–C96<sup>(a)</sup>, D45–D47<sup>(b)</sup>)</b>	<b>469.9</b>	<b>496.1</b>	<b>581.9</b>	<b>543.6</b>	<b>548.2</b>	<b>–5.8</b>

(a) Excludes non-melanocytic skin cancer (ICD-10 code C44).

(b) Only includes D47.1 and D47.3.

Source: National Cancer Statistics Clearing House, AIHW.

**Table 2.17: Age-standardised rate of cancer incidence, females, Australia, selected years, 1983–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>1983</b>	<b>1988</b>	<b>1993</b>	<b>1998</b>	<b>2003</b>	<b>Per cent change 93–03</b>
<b>NHPA cancers</b>						
Colorectal (C18–C20)	50.4	49.4	52.2	51.9	51.1	–2.0
Lung, bronchus & trachea (C33–C34)	18.9	22.2	25.5	26.4	27.1	6.2
Melanoma of skin (C43)	28.3	36.3	35.5	37.2	37.9	6.8
Breast (C50)	80.8	89.5	105.3	114.5	111.8	6.1
Cervix (C53)	14.4	13.5	11.9	9.1	7.0	–41.3
Non-Hodgkin lymphoma (C82–C85, C96)	11.2	11.9	13.7	15.2	15.1	9.9
<b>Other cancers</b>						
Lip (C00)	1.5	2.3	2.6	3.0	2.5	–5.2
Tongue (C01–C02)	1.3	1.3	1.2	1.6	1.4	15.2
Mouth (C03–C06)	1.8	1.6	1.7	2.0	1.6	–2.4
Major salivary glands (C07–C08)	0.8	0.8	0.8	1.0	0.9	9.3
Oropharynx (C09–C10)	0.6	0.5	0.6	0.6	0.6	–9.0
Nasopharynx (C11)	0.4	0.2	0.4	0.3	0.3	–30.5
Hypopharynx (C12–C13)	0.3	0.4	0.3	0.2	0.1	–53.7
Pharynx, unspecified (C14)	0.2	0.1	0.2	0.1	0.1	–26.0
Nasal cavity, middle ear & sinuses (C30–C31)	0.5	0.4	0.5	0.5	0.4	–4.5
Larynx (C32)	0.9	0.8	0.6	0.6	0.6	–12.7
<i>Head and neck (C01–C14, C30–C32)</i>	<i>6.6</i>	<i>6.1</i>	<i>6.3</i>	<i>6.9</i>	<i>6.0</i>	<i>–4.3</i>
Oesophagus (C15)	3.5	4.4	4.0	3.7	3.4	–15.9
Stomach (C16)	10.4	8.1	7.1	6.7	5.8	–17.4
Small intestine (C17)	0.7	0.8	0.7	1.3	1.4	104.0
Colon (C18)	35.5	35.1	36.8	36.7	35.4	–3.9
Rectum (C19–C20)	14.9	14.3	15.3	15.2	15.7	2.4
Anus (C21)	0.9	1.1	1.0	1.3	1.3	39.8
Liver (C22)	0.7	0.9	1.5	1.6	2.5	68.1
Gallbladder (C23–C24)	3.8	3.9	3.5	3.7	3.1	–12.4
Pancreas (C25)	7.9	8.4	8.6	9.1	8.3	–3.1
Other thoracic organs (C37–C38)	0.1	0.3	0.3	0.4	0.2	–5.2
Bone & articular cartilage (C40–C41)	0.8	0.7	0.7	0.8	0.7	–7.7
Mesothelioma (C45)	0.2	0.4	0.6	0.6	1.0	60.3
Kaposi sarcoma (C46)	0.1	0.1	0.2	0.2	0.1	–60.4
Peritoneum & retroperitoneum (C48)	0.3	0.3	0.5	0.8	1.2	118.7
Other connective and soft tissue (C47, C49)	2.0	2.0	2.2	2.4	1.8	–15.1
Vulva (C51)	2.0	1.9	2.0	2.1	1.9	–3.0
Vagina (C52)	0.7	0.6	0.8	0.6	0.6	–21.5
Uterus, body (C54)	12.7	13.6	14.5	14.5	15.1	4.5
Uterus, unspecified (C55)	0.8	0.5	0.2	0.4	0.8	320.1

(continued)

**Table 2.17 (continued): Age-standardised rate of cancer incidence, females, Australia, selected years, 1983–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>1983</b>	<b>1988</b>	<b>1993</b>	<b>1998</b>	<b>2003</b>	<b>Per cent change 93–03</b>
Ovary (C56)	12.4	11.7	12.6	11.7	10.1	–19.4
Other female genital organs (C57)	0.3	0.3	0.5	0.4	0.5	13.4
Placenta (C58)	0.1	0.1	0.1	0.1	0.1	13.6
<i>Gynaecological (C51–C58)</i>	<i>43.4</i>	<i>42.2</i>	<i>42.5</i>	<i>39.0</i>	<i>36.2</i>	<i>–14.8</i>
Kidney (C64)	4.0	5.3	6.4	6.9	6.7	3.5
Bladder (C67)	7.8	7.7	6.3	5.9	5.1	–19.2
Other urinary organs (C65–C66, C68)	2.2	2.0	1.9	1.8	1.7	–10.0
Eye (C69)	1.1	1.0	1.0	1.1	1.0	–1.3
Brain (C71)	5.5	5.6	5.9	5.3	5.6	–3.9
Other central nervous system (C70, C72)	0.3	0.4	0.3	0.4	0.3	0.7
Thyroid (C73)	4.5	4.4	6.1	7.6	10.2	66.8
Other endocrine organs (C74–C75)	0.3	0.4	0.4	0.4	0.3	–18.3
Hodgkin lymphoma (C81)	1.6	1.7	1.7	1.9	1.8	4.3
<i>All lymphomas (C81–C85, C96)</i>	<i>12.8</i>	<i>13.6</i>	<i>15.5</i>	<i>17.1</i>	<i>16.9</i>	<i>9.3</i>
Immunoproliferative neoplasms (C88)	0.1	0.1	0.2	0.3	0.3	34.9
Myeloma (C90)	3.9	3.8	3.9	4.7	4.6	18.0
Lymphoid leukaemia (C91)	3.7	4.0	4.5	4.8	4.5	1.8
Myeloid leukaemia (C92–C94)	4.8	4.9	5.0	4.9	4.9	–1.7
Leukaemia, unspecified (C95)	0.6	0.6	0.5	0.4	0.3	–41.0
<i>All leukaemias (C91–C95)</i>	<i>9.0</i>	<i>9.5</i>	<i>9.9</i>	<i>10.0</i>	<i>9.8</i>	<i>–1.9</i>
Polycythaemia rubra vera (D45)	0.1	0.3	0.5	0.6	1.2	114.3
Myelodysplastic syndromes (D46)	0.0	0.2	0.7	1.6	3.4	367.2
Other chronic myeloproliferative diseases (D47 <sup>(b)</sup> )	0.3	0.4	0.8	1.2	1.3	70.8
Unknown primary site (C26, C39, C76, C80)	16.8	16.4	16.0	15.4	14.7	–7.9
<b>All cancers (C00–C96<sup>(a)</sup>, D45–D47<sup>(b)</sup>)</b>	<b>330.1</b>	<b>350.5</b>	<b>376.6</b>	<b>391.8</b>	<b>386.5</b>	<b>2.6</b>

(a) Excludes non-melanocytic skin cancer (ICD-10 code C44).

(b) Only includes D47.1 and D47.3.

Source: National Cancer Statistics Clearing House, AIHW.

## **Mortality in 2003**

The 10 most common cancer deaths are shown in Table 2.18. Mortality data on a more comprehensive list of cancers are shown in tables 2.19–2.21.

### **Most common cancer deaths in 2003**

- In persons the five most common cancer deaths were from lung cancer (6,988 deaths), colorectal cancer (4,372), unknown primary site (3,115), prostate cancer (2,837) and breast cancer (2,720). These five cancers accounted for 53% of all deaths from cancer.
- In males the five most common cancer deaths were from lung cancer (4,506 deaths), prostate cancer (2,837), colorectal cancer (2,382), unknown primary site (1,567), and pancreatic cancer (942). These five cancers accounted for 58% of all deaths from cancer in males.
- In females the five most common cancer deaths were from breast cancer (2,710 deaths), lung cancer (2,482), colorectal cancer (1,990), unknown primary site (1,548) and pancreatic cancer (940). These five cancers accounted for 58% of all deaths from cancer in females.

### **Risk of dying from cancer, based on 2003 data**

- In 2003 the risk of dying from cancer for males was 1 in 8 before age 75 and 1 in 4 before age 85. The highest risk was for lung cancer with a 1 in 30 chance before age 75 and a 1 in 14 chance before age 85.
- In females the risk was 1 in 11 before age 75 and 1 in 6 before age 85. The highest risk to age 75 was for breast cancer (1 in 56) and to age 85 was for lung cancer (1 in 31).

### **Person-years of life lost due to premature death from cancer**

- In 2003 Australians lost 261,348 person-years of life to age 75 and 523,665 years to age 85 due to premature death from cancer. The greatest contributor to this total was lung cancer, with 43,325 years to age 75 and 96,218 years to age 85.
- In 2003 males lost 140,573 person-years of life to age 75 and 292,668 years to age 85 due to premature death from cancer. The greatest contributor to this total was lung cancer, with 27,253 years to age 75 and 61,920 years to age 85.
- In 2003 females lost 120,775 person-years of life to age 75 and 230,998 years to age 85 due to premature death from cancer. The greatest contributor to this total was breast cancer, with 29,670 years to age 75 and 50,188 years to age 85.

**Table 2.18: The 10 most common causes of death from cancer, Australia, 2003**

<b>Cancer site/type</b>	<b>Number</b>	<b>Per cent of all deaths</b>	<b>ASR(A)<sup>(a)</sup></b>	<b>ASR(W)<sup>(a)</sup></b>	<b>PYLL to age 75</b>	<b>PYLL to age 85</b>
<b>Persons</b>						
Lung	6,988	18.4	34.2	23.5	43,325	96,218
Colorectal	4,372	11.5	21.3	14.3	27,118	57,003
Unknown site	3,115	8.2	15.1	9.7	15,148	33,860
Prostate	2,837	7.5	—	—	—	—
Breast	2,720	7.2	—	—	—	—
Pancreas	1,882	5.0	9.2	6.2	11,365	24,453
Lymphoma	1,539	4.1	7.5	5.1	11,318	21,860
Leukaemia	1,384	3.7	6.8	4.7	12,670	22,158
Stomach	1,169	3.1	5.7	3.8	7,860	15,750
Melanoma	1,146	3.0	5.6	4.0	11,585	20,228
<i>All cancers</i>	<i>37,907</i>	<i>100.0</i>	<i>184.9</i>	<i>125.1</i>	<i>261,348</i>	<i>523,665</i>
<b>Males</b>						
Lung	4,506	21.2	49.1	33.0	27,253	61,920
Prostate	2,837	13.4	34.1	19.6	6,285	20,928
Colorectal	2,382	11.2	26.2	17.5	15,743	33,530
Unknown site	1,567	7.4	17.8	11.3	8,775	19,283
Pancreas	942	4.4	10.2	7.0	6,625	13,873
Lymphoma	846	4.0	9.3	6.3	6,818	13,083
Leukaemia	795	3.7	8.8	6.0	7,663	13,570
Oesophagus	767	3.6	8.3	5.7	5,943	12,010
Melanoma	764	3.6	8.3	5.8	7,663	13,540
Stomach	686	3.2	7.6	5.1	4,853	9,865
<i>All cancers</i>	<i>21,238</i>	<i>100.0</i>	<i>236.5</i>	<i>156.0</i>	<i>140,573</i>	<i>292,668</i>
<b>Females</b>						
Breast	2,710	16.3	24.6	18.2	29,670	50,188
Lung	2,482	14.9	22.4	15.5	16,073	34,298
Colorectal	1,990	11.9	17.2	11.4	11,375	23,473
Unknown site	1,548	9.3	13.1	8.3	6,373	14,578
Pancreas	940	5.6	8.2	5.4	4,740	10,580
Ovary	781	4.7	7.1	5.1	6,690	12,510
Lymphoma	693	4.2	6.0	4.1	4,500	8,778
Leukaemia	589	3.5	5.1	3.6	5,008	8,588
Stomach	483	2.9	4.2	2.8	3,008	5,885
Brain	473	2.8	4.4	3.5	6,985	10,980
<i>All cancers</i>	<i>16,669</i>	<i>100.0</i>	<i>146.9</i>	<i>101.2</i>	<i>120,775</i>	<i>230,998</i>

(a) Age-standardised rates are expressed per 100,000 persons/males/females depending on the section of the table.

Source: National Mortality Database, AIHW.



**Table 2.19: Cancer mortality in persons, Australia, 2003**

Cancer site/type (ICD-10 codes)	Number	Per cent of total	ASR(A)	ASR(W)	PYLL to age 75	PYLL to age 85	M:F ratio (ASR(A))
Lip (C00)	11	0.0	0.1	0.0	63	123	4.0
Tongue (C01–C02)	178	0.5	0.9	0.6	1,853	3,290	2.5
Mouth (C03–C06)	116	0.3	0.6	0.4	948	1,800	1.9
Major salivary glands (C07–C08)	72	0.2	0.3	0.2	535	993	1.8
Oropharynx (C09–C10)	115	0.3	0.6	0.4	1,343	2,370	2.6
Nasopharynx (C11)	49	0.1	0.2	0.2	695	1,135	1.6
Hypopharynx (C12–C13)	57	0.2	0.3	0.2	538	1,033	9.3
Pharynx, unspecified (C14)	76	0.2	0.4	0.3	623	1,205	4.4
Nasal cavity, middle ear & sinuses (C30–C31)	33	0.1	0.2	0.1	240	470	1.7
Larynx (C32)	223	0.6	1.1	0.8	1,645	3,458	8.5
<i>Head and neck (C01–C14, C30–C32)</i>	<i>919</i>	<i>2.4</i>	<i>4.5</i>	<i>3.2</i>	<i>8,418</i>	<i>15,753</i>	<i>3.2</i>
Oesophagus (C15)	1,130	3.0	5.5	3.8	7,505	15,625	2.7
Stomach (C16)	1,169	3.1	5.7	3.8	7,860	15,750	1.8
Small intestine (C17)	89	0.2	0.4	0.3	775	1,440	1.5
Colon (C18)	3,012	7.9	14.7	9.7	17,778	37,950	1.4
Rectum (C19–C20)	1,360	3.6	6.6	4.5	9,340	19,053	1.8
<i>Colorectal (C18–C20)</i>	<i>4,372</i>	<i>11.5</i>	<i>21.3</i>	<i>14.3</i>	<i>27,118</i>	<i>57,003</i>	<i>1.5</i>
Anus (C21)	57	0.2	0.3	0.2	405	783	1.2
Liver (C22)	892	2.4	4.4	3.1	7,073	13,900	2.5
Gallbladder (C23–C24)	290	0.8	1.4	1.0	1,793	3,803	0.8
Pancreas (C25)	1,882	5.0	9.2	6.2	11,365	24,453	1.3
Lung, bronchus & trachea (C33–C34)	6,988	18.4	34.2	23.5	43,325	96,218	2.2
Other thoracic organs (C37–C38)	36	0.1	0.2	0.1	350	620	2.9
Bone & articular cartilage (C40–C41)	100	0.3	0.5	0.4	2,815	3,675	1.5
Melanoma of skin (C43)	1,146	3.0	5.6	4.0	11,585	20,228	2.4
Non-melanoma of skin (C44)	390	1.0	1.9	1.1	1,493	3,458	2.9
Mesothelioma (C45)	510	1.3	2.5	1.7	2,738	6,440	6.3
Kaposi sarcoma (C46)	5	0.0	0.0	0.0	3	18	2.7
Peritoneum & retroperitoneum (C48)	59	0.2	0.3	0.2	400	833	0.2
Other connective and soft tissue (C47, C49)	186	0.5	0.9	0.7	2,973	4,485	1.6
Breast (C50)	2,720	7.2	—	—	—	—	0.004
Vulva (C51)	47	0.1	—	—	—	—	—
Vagina (C52)	29	0.1	—	—	—	—	—
Cervix (C53)	239	0.6	—	—	—	—	—
Uterus, body (C54)	216	0.6	—	—	—	—	—
Uterus, unspecified (C55)	81	0.2	—	—	—	—	—
Ovary (C56)	781	2.1	—	—	—	—	—
Other female genital organs (C57)	22	0.1	—	—	—	—	—

(continued)

**Table 2.19 (continued): Cancer mortality in persons, Australia, 2003**

Cancer site/type (ICD-10 codes)	Number	Per cent of total	ASR(A)	ASR(W)	PYLL to age 75	PYLL to age 85	M:F ratio (ASR(A))
Placenta (C58)	0	0.0	—	—	—	—	—
<i>Gynaecological (C51–C58)</i>	<i>1,415</i>	<i>3.7</i>	—	—	—	—	—
Penis (C60)	15	0.0	—	—	—	—	—
Prostate (C61)	2,837	7.5	—	—	—	—	—
Testis (C62)	17	0.0	—	—	—	—	—
Other male genital organs (C63)	3	0.0	—	—	—	—	—
Kidney (C64)	798	2.1	3.9	2.7	5,813	11,683	2.0
Bladder (C67)	871	2.3	4.2	2.6	2,750	7,498	3.0
Other urinary organs (C65–C66, C68)	70	0.2	0.3	0.2	203	623	1.2
Eye (C69)	37	0.1	0.2	0.1	300	553	1.4
Brain (C71)	1,111	2.9	5.5	4.3	17,335	26,968	1.5
Other central nervous system (C70, C72)	22	0.1	0.1	0.1	538	735	1.1
Thyroid (C73)	86	0.2	0.4	0.3	373	928	1.2
Other endocrine organs (C74–C75)	40	0.1	0.2	0.2	1,093	1,453	1.0
Hodgkin lymphoma (C81)	67	0.2	0.3	0.2	975	1,448	1.3
Non-Hodgkin lymphoma (C82–C85, C96)	1,472	3.9	7.2	4.9	10,343	20,413	1.6
<i>All lymphomas (C81–C85, C96)</i>	<i>1,539</i>	<i>4.1</i>	<i>7.5</i>	<i>5.1</i>	<i>11,318</i>	<i>21,860</i>	<i>1.5</i>
Immunoproliferative neoplasms (C88)	34	0.1	0.2	0.1	140	343	1.8
Myeloma (C90)	742	2.0	3.6	2.3	3,683	8,350	1.5
Lymphoid leukaemia (C91)	444	1.2	2.2	1.5	4,720	7,693	1.9
Myeloid leukaemia (C92–C94)	864	2.3	4.2	2.9	7,233	13,283	1.6
Leukaemia, unspecified (C95)	76	0.2	0.4	0.3	718	1,183	1.9
<i>All leukaemias (C91–C95)</i>	<i>1,384</i>	<i>3.7</i>	<i>6.8</i>	<i>4.7</i>	<i>12,670</i>	<i>22,158</i>	<i>1.7</i>
Polycythaemia rubra vera (D45)	25	0.1	0.1	0.1	90	250	1.4
Myelodysplastic syndromes (D46)	302	0.8	1.5	0.8	528	1,728	2.1
Other chronic myeloproliferative diseases (D47 <sup>(a)</sup> )	124	0.3	0.6	0.4	353	913	1.9
Multiple primary cancers (C97)	369	1.0	1.8	1.1	1,585	3,885	2.1
Unknown primary site (C26, C39, C76–C80)	3,115	8.2	15.1	9.7	15,148	33,860	1.4
<b>All cancers (C00–C97, D45–D47<sup>(a)</sup>)</b>	<b>37,907</b>	<b>100.0</b>	<b>184.9</b>	<b>125.1</b>	<b>261,348</b>	<b>523,665</b>	<b>1.6</b>

(a) Only includes D47.1 and D47.3.

Source: National Cancer Statistics Clearing House, AIHW.

**Table 2.20: Cancer mortality in males, Australia, 2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>Number</b>	<b>Per cent of total</b>	<b>ASR(A)</b>	<b>ASR(W)</b>	<b>PYLL to age 75</b>	<b>PYLL to age 85</b>
Lip (C00)	8	0.0	0.1	0.1	50	100
Tongue (C01–C02)	120	0.6	1.3	0.9	1,340	2,405
Mouth (C03–C06)	71	0.3	0.7	0.6	835	1,425
Major salivary glands (C07–C08)	41	0.2	0.5	0.3	293	580
Oropharynx (C09–C10)	81	0.4	0.8	0.6	955	1,690
Nasopharynx (C11)	29	0.1	0.3	0.2	463	725
Hypopharynx (C12–C13)	51	0.2	0.5	0.4	453	888
Pharynx, unspecified (C14)	59	0.3	0.6	0.5	558	1,053
Nasal cavity, middle ear & sinuses (C30–C31)	19	0.1	0.2	0.1	138	270
Larynx (C32)	196	0.9	2.1	1.5	1,460	3,075
<i>Head and neck (C01–C14, C30–C32)</i>	<i>667</i>	<i>3.1</i>	<i>7.1</i>	<i>5.1</i>	<i>6,493</i>	<i>12,110</i>
Oesophagus (C15)	767	3.6	8.3	5.7	5,943	12,010
Stomach (C16)	686	3.2	7.6	5.1	4,853	9,865
Small intestine (C17)	49	0.2	0.5	0.4	425	790
Colon (C18)	1,571	7.4	17.4	11.5	9,923	21,438
Rectum (C19–C20)	811	3.8	8.8	6.0	5,820	12,093
<i>Colorectal (C18–C20)</i>	<i>2,382</i>	<i>11.2</i>	<i>26.2</i>	<i>17.5</i>	<i>15,743</i>	<i>33,530</i>
Anus (C21)	28	0.1	0.3	0.2	215	420
Liver (C22)	604	2.8	6.5	4.5	5,173	10,073
Gallbladder (C23–C24)	113	0.5	1.2	0.8	818	1,685
Pancreas (C25)	942	4.4	10.2	7.0	6,625	13,873
Lung, bronchus & trachea (C33–C34)	4,506	21.2	49.1	33.0	27,253	61,920
Other thoracic organs (C37–C38)	25	0.1	0.3	0.2	285	488
Bone & articular cartilage (C40–C41)	59	0.3	0.6	0.5	1,668	2,180
Melanoma of skin (C43)	764	3.6	8.3	5.8	7,663	13,540
Non-melanoma of skin (C44)	258	1.2	3.0	1.9	1,258	2,790
Mesothelioma (C45)	426	2.0	4.7	3.1	2,203	5,303
Kaposi sarcoma (C46)	3	0.0	0.0	0.0	3	13
Peritoneum & retroperitoneum (C48)	8	0.0	0.1	0.1	68	128
Other connective and soft tissue (C47, C49)	108	0.5	1.2	0.9	1,718	2,603
Breast (C50)	10	0.0	0.1	0.1	100	175
Penis (C60)	15	0.1	0.2	0.1	185	298
Prostate (C61)	2,837	13.4	34.1	19.6	6,285	20,928
Testis (C62)	17	0.1	0.2	0.2	500	668
Other male genital organs (C63)	3	0.0	0.0	0.0	38	68
Kidney (C64)	492	2.3	5.3	3.7	4,150	8,123
Bladder (C67)	594	2.8	7.0	4.2	2,058	5,488
Other urinary organs (C65–C66, C68)	32	0.2	0.4	0.2	103	290

(continued)

**Table 2.20 (continued): Cancer mortality in males, Australia, 2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>Number</b>	<b>Per cent of total</b>	<b>ASR(A)</b>	<b>ASR(W)</b>	<b>PYLL to age 75</b>	<b>PYLL to age 85</b>
Eye (C69)	19	0.1	0.2	0.1	203	353
Brain (C71)	638	3.0	6.6	5.2	10,350	15,988
Other central nervous system (C70, C72)	11	0.1	0.1	0.1	320	428
Thyroid (C73)	42	0.2	0.5	0.3	198	520
Other endocrine organs (C74–C75)	19	0.1	0.2	0.2	543	718
Hodgkin lymphoma (C81)	34	0.2	0.4	0.3	460	730
Non-Hodgkin lymphoma (C82–C85, C96)	812	3.8	9.0	6.1	6,358	12,353
<i>All lymphomas (C81–C85, C96)</i>	<i>846</i>	<i>4.0</i>	<i>9.3</i>	<i>6.3</i>	<i>6,818</i>	<i>13,083</i>
Immunoproliferative neoplasms (C88)	19	0.1	0.2	0.1	83	208
Myeloma (C90)	399	1.9	4.5	2.9	2,240	4,918
Lymphoid leukaemia (C91)	263	1.2	2.9	2.0	2,988	5,008
Myeloid leukaemia (C92–C94)	487	2.3	5.4	3.7	4,238	7,845
Leukaemia, unspecified (C95)	45	0.2	0.5	0.3	438	718
<i>All leukaemias (C91–C95)</i>	<i>795</i>	<i>3.7</i>	<i>8.8</i>	<i>6.0</i>	<i>7,663</i>	<i>13,570</i>
Polycythaemia rubra vera (D45)	13	0.1	0.2	0.1	48	120
Myelodysplastic syndromes (D46)	173	0.8	2.1	1.2	350	1,073
Other chronic myeloproliferative diseases (D47 <sup>(a)</sup> )	69	0.3	0.8	0.5	265	688
Multiple primary cancers (C97)	225	1.1	2.6	1.6	853	2,270
Unknown primary site (C26, C39, C76–C80)	1,567	7.4	17.8	11.3	8,775	19,283
<b>All cancers (C00–C97, D45–D47<sup>(a)</sup>)</b>	<b>21,238</b>	<b>100.0</b>	<b>236.5</b>	<b>156.0</b>	<b>140,573</b>	<b>292,668</b>

(a) Only includes D47.1 and D47.3.

Source: National Cancer Statistics Clearing House, AIHW.

**Table 2.21: Cancer mortality in females, Australia, 2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>Number</b>	<b>Per cent of total</b>	<b>ASR(A)</b>	<b>ASR(W)</b>	<b>PYLL to age 75</b>	<b>PYLL to age 85</b>
Lip (C00)	3	0.0	0.0	0.0	13	23
Tongue (C01–C02)	58	0.3	0.5	0.4	513	885
Mouth (C03–C06)	45	0.3	0.4	0.2	113	375
Major salivary glands (C07–C08)	31	0.2	0.3	0.2	243	413
Oropharynx (C09–C10)	34	0.2	0.3	0.2	388	680
Nasopharynx (C11)	20	0.1	0.2	0.1	233	410
Hypopharynx (C12–C13)	6	0.0	0.1	0.0	85	145
Pharynx, unspecified (C14)	17	0.1	0.1	0.1	65	153
Nasal cavity, middle ear & sinuses (C30–C31)	14	0.1	0.1	0.1	103	200
Larynx (C32)	27	0.2	0.2	0.2	185	383
<i>Head and neck (C01–C14, C30–C32)</i>	<i>252</i>	<i>1.5</i>	<i>2.2</i>	<i>1.6</i>	<i>1,925</i>	<i>3,643</i>
Oesophagus (C15)	363	2.2	3.1	2.0	1,563	3,615
Stomach (C16)	483	2.9	4.2	2.8	3,008	5,885
Small intestine (C17)	40	0.2	0.4	0.3	350	650
Colon (C18)	1,441	8.6	12.5	8.2	7,855	16,513
Rectum (C19–C20)	549	3.3	4.8	3.2	3,520	6,960
<i>Colorectal (C18–C20)</i>	<i>1,990</i>	<i>11.9</i>	<i>17.2</i>	<i>11.4</i>	<i>11,375</i>	<i>23,473</i>
Anus (C21)	29	0.2	0.3	0.2	190	363
Liver (C22)	288	1.7	2.5	1.7	1,900	3,828
Gallbladder (C23–C24)	177	1.1	1.5	1.0	975	2,118
Pancreas (C25)	940	5.6	8.2	5.4	4,740	10,580
Lung, bronchus & trachea (C33–C34)	2,482	14.9	22.4	15.5	16,073	34,298
Other thoracic organs (C37–C38)	11	0.1	0.1	0.1	65	133
Bone & articular cartilage (C40–C41)	41	0.2	0.4	0.4	1,148	1,495
Melanoma of skin (C43)	382	2.3	3.4	2.5	3,923	6,688
Non-melanoma of skin (C44)	132	0.8	1.0	0.6	235	668
Mesothelioma (C45)	84	0.5	0.8	0.5	535	1,138
Kaposi sarcoma (C46)	2	0.0	0.0	0.0	0	5
Peritoneum & retroperitoneum (C48)	51	0.3	0.5	0.3	333	705
Other connective and soft tissue (C47, C49)	78	0.5	0.7	0.6	1,255	1,883
Breast (C50)	2,710	16.3	24.6	18.2	29,670	50,188
Vulva (C51)	47	0.3	0.4	0.2	180	403
Vagina (C52)	29	0.2	0.2	0.1	105	253
Cervix (C53)	239	1.4	2.2	1.7	3,420	5,338
Uterus, body (C54)	216	1.3	1.9	1.4	1,540	3,118
Uterus, unspecified (C55)	81	0.5	0.7	0.5	510	1,010
Ovary (C56)	781	4.7	7.1	5.1	6,690	12,510
Other female genital organs (C57)	22	0.1	0.2	0.1	158	328

(continued)

**Table 2.21 (continued): Cancer mortality in females, Australia, 2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>Number</b>	<b>Per cent of total</b>	<b>ASR(A)</b>	<b>ASR(W)</b>	<b>PYLL to age 75</b>	<b>PYLL to age 85</b>
Placenta (C58)	0	0.0	0.0	0.0	0	0
<i>Gynaecological (C51–C58)</i>	<i>1,415</i>	<i>8.5</i>	<i>12.7</i>	<i>9.1</i>	<i>12,603</i>	<i>22,958</i>
Kidney (C64)	306	1.8	2.7	1.8	1,663	3,560
Bladder (C67)	277	1.7	2.3	1.4	693	2,010
Other urinary organs (C65–C66, C68)	38	0.2	0.3	0.2	100	333
Eye (C69)	18	0.1	0.2	0.1	98	200
Brain (C71)	473	2.8	4.4	3.5	6,985	10,980
Other central nervous system (C70, C72)	11	0.1	0.1	0.1	218	308
Thyroid (C73)	44	0.3	0.4	0.2	175	408
Other endocrine organs (C74–C75)	21	0.1	0.2	0.2	550	735
Hodgkin lymphoma (C81)	33	0.2	0.3	0.2	515	718
Non-Hodgkin lymphoma (C82–C85, C96)	660	4.0	5.7	3.8	3,985	8,060
<i>All lymphomas (C81–C85, C96)</i>	<i>693</i>	<i>4.2</i>	<i>6.0</i>	<i>4.1</i>	<i>4,500</i>	<i>8,778</i>
Immunoproliferative neoplasms (C88)	15	0.1	0.1	0.1	58	135
Myeloma (C90)	343	2.1	2.9	1.9	1,443	3,433
Lymphoid leukaemia (C91)	181	1.1	1.5	1.1	1,733	2,685
Myeloid leukaemia (C92–C94)	377	2.3	3.3	2.3	2,995	5,438
Leukaemia, unspecified (C95)	31	0.2	0.3	0.2	280	465
<i>All leukaemias (C91–C95)</i>	<i>589</i>	<i>3.5</i>	<i>5.1</i>	<i>3.6</i>	<i>5,008</i>	<i>8,588</i>
Polycythaemia rubra vera (D45)	12	0.1	0.1	0.1	43	130
Myelodysplastic syndromes (D46)	129	0.8	1.0	0.6	178	655
Other chronic myeloproliferative diseases (D47 <sup>(a)</sup> )	55	0.3	0.4	0.2	88	225
Multiple primary cancers (C97)	144	0.9	1.2	0.8	733	1,615
Unknown primary site (C26, C39, C76–C80)	1,548	9.3	13.1	8.3	6,373	14,578
<b>All cancers (C00–C97, D45–D47<sup>(a)</sup>)</b>	<b>16,669</b>	<b>100.0</b>	<b>146.9</b>	<b>101.2</b>	<b>120,775</b>	<b>230,998</b>

(a) Only includes D47.1 and D47.3.

Source: National Cancer Statistics Clearing House, AIHW.

## Mortality trends 1983–2003

### Numbers

The numbers of deaths from cancer over the period 1983–2003 are shown in tables 2.22–2.24. Note that cancers for which the numbers are small are subject to large percentage fluctuations from one year to the next. Therefore the following comments are restricted to NHPA cancers and cancers for which the number of deaths in 1993 was at least 500 persons.

- The total number of deaths from cancer in 2003 was 15% higher than in 1993 (14% for males, 17% for females) compared with a 9.1% increase in deaths from all causes over the same period.
- Among the NHPA cancers the number of deaths from cervical cancer decreased by 25% and those from colorectal cancer decreased by 0.6% (up 2.6% in males, down 4.1% in females). The number of deaths increased for melanoma (up 34%: 31% in males, 40% in females), prostate cancer (12%), non-Hodgkin lymphoma (10%: 13% in males, 6.8% in females), lung cancer (up 10% overall: down 0.4% in males but up 36% in females) and breast cancer in females (up 3.8%).
- Among other cancers in males the number of stomach cancer deaths decreased by 13%. The number of deaths increased for oesophageal cancer (up 39%), cancers of unknown primary site (39%), pancreatic cancer (25%), leukaemia (20%), brain cancer (19%) and bladder cancer (11%).
- Among other cancers in females there were no decreases in the number of deaths. The number of deaths increased for cancers of unknown primary site (up 36%), pancreatic cancer (30%), ovarian cancer (11%) and leukaemia (8.3%).

### Age-standardised rates

Age-standardised death rates (against the Australian 2001 Standard Population) over the period 1983–2003 are shown in tables 2.25–2.27. Note that cancers for which the rates are small are subject to large percentage fluctuations from one year to the next. Therefore the following comments are restricted to cancers for which the 1993 rate was at least 5.0 per 100,000.

- The death rate for all cancers was 12% lower in 2003 than in 1993.
- Among the NHPA cancers the largest decrease in death rate from 1993 to 2003 was for cervical cancer (down 41%), followed by colorectal cancer (25%: 24% in males, 27% in females), prostate cancer (22%), breast cancer in females (20%), non-Hodgkin lymphoma (15%: 13% in males, 19% in females) and lung cancer (14%: down 24% in males but up 6.7% in females). Among the NHPA cancers the only increase in death rate from 1993 to 2003 was for melanoma of the skin (up 4.4%: 3.3% in males, 9.1% in females).
- In other cancers in males, the death rate decreased by more than 10% for stomach cancer (down 37%), bladder cancer (22%) and leukaemia (12%). There were no increases of more than 10%.
- In other cancers in females, the death rate decreased by more than 10% for stomach cancer (down 17%), leukaemia (16%) and ovarian cancer (12%). There were no increases of more than 10%.

**Table 2.22: Deaths from cancer, persons, Australia, selected years 1983–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>1983</b>	<b>1988</b>	<b>1993</b>	<b>1998</b>	<b>2003</b>	<b>Per cent change 93–03</b>
<b>NHPA cancers</b>						
Colorectal (C18–C20)	3,758	4,112	4,398	4,599	4,372	–0.6
Lung, bronchus & trachea (C33–C34)	5,433	6,115	6,351	6,764	6,988	10.0
Melanoma of skin (C43)	623	771	853	966	1,146	34.3
Non-Hodgkin lymphoma (C82–C85, C96)	844	1,061	1,336	1,509	1,472	10.2
<b>Other cancers</b>						
Lip (C00)	17	16	13	12	11	–15.4
Tongue (C01–C02)	146	167	172	168	178	3.5
Mouth (C03–C06)	97	117	111	127	116	4.5
Major salivary glands (C07–C08)	48	60	62	73	72	16.1
Oropharynx (C09–C10)	81	112	135	117	115	–14.8
Nasopharynx (C11)	55	55	60	54	49	–18.3
Hypopharynx (C12–C13)	57	71	73	58	57	–21.9
Pharynx, unspecified (C14)	13	27	35	36	76	117.1
Nasal cavity, middle ear & sinuses (C30–C31)	40	25	48	53	33	–31.3
Larynx (C32)	203	211	247	197	223	–9.7
<i>Head and neck (C01–C14, C30–C32)</i>	<i>740</i>	<i>845</i>	<i>943</i>	<i>883</i>	<i>919</i>	<i>–2.5</i>
Oesophagus (C15)	585	785	829	976	1,130	36.3
Stomach (C16)	1,456	1,376	1,232	1,195	1,169	–5.1
Small intestine (C17)	52	61	61	88	89	45.9
Colon (C18)	2,796	3,086	3,289	3,394	3,012	–8.4
Rectum (C19–C20)	962	1,026	1,109	1,205	1,360	22.6
Anus (C21)	34	32	29	44	57	96.6
Liver (C22)	325	374	501	631	892	78.0
Gallbladder (C23–C24)	330	310	297	349	290	–2.4
Pancreas (C25)	1,141	1,259	1,477	1,618	1,882	27.4
Other thoracic organs ex. pleura (C37–C38, ex. C38.4) <sup>(a)</sup>	22	38	27	43	36	33.3
Bone & articular cartilage (C40–C41)	98	93	101	92	100	–1.0
Non-melanoma of skin (C44)	213	210	374	358	390	4.3
Mesothelioma and other pleura (C45, C38.4) <sup>(a)</sup>	92	130	187	403	510	172.7
Kaposi sarcoma (C46)	0	0	0	2	5	—
Peritoneum & retroperitoneum (C48)	41	31	50	66	59	18.0
Other connective and soft tissue (C47, C49)	145	166	203	184	186	–8.4
Breast (C50)	2,053	2,384	2,626	2,560	2,720	3.6
Vulva (C51)	34	50	51	61	47	–7.8
Vagina (C52)	19	16	23	22	29	26.1
Cervix (C53)	343	345	318	260	239	–24.8

(continued)



**Table 2.22 (continued): Deaths from cancer, persons, Australia, selected years 1983–2003**

<b>Cancer site/type</b>	<b>1983</b>	<b>1988</b>	<b>1993</b>	<b>1998</b>	<b>2003</b>	<b>Per cent change 93–03</b>
Uterus, body (C54)	206	194	223	225	216	–3.1
Uterus, unspecified (C55)	38	33	30	30	81	170.0
Ovary (C56)	595	602	704	750	781	10.9
Other female genital organs (C57)	13	10	17	32	22	29.4
Placenta (C58)	2	0	1	0	0	–100.0
<i>Gynaecological (C51–C58)</i>	<i>1,250</i>	<i>1,250</i>	<i>1,367</i>	<i>1,380</i>	<i>1,415</i>	<i>3.5</i>
Penis (C60)	12	11	10	12	15	50.0
Prostate (C61)	1,397	1,883	2,539	2,570	2,837	11.7
Testis (C62)	45	33	16	22	17	6.3
Other male genital organs (C63)	2	2	2	3	3	50.0
Kidney (C64)	539	621	699	771	798	14.2
Bladder (C67)	583	708	766	798	871	13.7
Other urinary organs (C65–C66, C68)	39	53	47	67	70	48.9
Eye (C69)	30	36	29	27	37	27.6
Brain (C71)	754	847	915	1,010	1,111	21.4
Other central nervous system (C70, C72)	19	18	18	13	22	22.2
Thyroid (C73)	76	69	78	66	86	10.3
Other endocrine organs (C74–C75)	45	46	51	49	40	–21.6
Hodgkin lymphoma (C81)	93	107	83	52	67	–19.3
<i>All lymphomas (C81–C85, C96)</i>	<i>937</i>	<i>1,168</i>	<i>1,419</i>	<i>1,561</i>	<i>1,539</i>	<i>8.5</i>
Immunoproliferative neoplasms (C88)	17	28	31	28	34	9.7
Myeloma (C90)	350	469	546	615	742	35.9
Lymphoid leukaemia (C91)	311	369	391	420	444	13.6
Myeloid leukaemia (C92–C94)	593	631	782	851	864	10.5
Leukaemia, unspecified (C95)	74	64	34	61	76	123.5
<i>All leukaemias (C91–C95)</i>	<i>978</i>	<i>1,064</i>	<i>1,207</i>	<i>1,332</i>	<i>1,384</i>	<i>14.7</i>
Polycythaemia rubra vera (D45)	30	40	25	24	25	0.0
Myelodysplastic syndromes and chronic myeloproliferative disorders (D46–D47 <sup>(b)(c)</sup> )	24	65	243	374	426	75.3
Multiple primary cancers (C97) <sup>(d)</sup>	0	0	0	361	369	—
Unknown primary site (C26, C39, C76–C80)	1,476	2,016	2,270	2,498	3,115	37.2
<b>All cancers (C00–C97, D45–D47<sup>(b)</sup>)</b>	<b>25,761</b>	<b>29,535</b>	<b>32,830</b>	<b>35,414</b>	<b>37,907</b>	<b>15.5</b>

(a) The ICD-10 codes C38.4 and C45 are inseparable in ICD-9 coding (used for deaths registered in 1996 and before).

(b) Only includes D47.1 and D47.3.

(c) The ICD-10 codes D46 and D47 are inseparable in ICD-9 coding (used for deaths registered in 1996 and before).

(d) The ICD-10 code C97 had no equivalent in ICD-9 coding (used for deaths registered in 1996 and before).

Source: National Mortality Database, AIHW.

**Table 2.23: Deaths from cancer, males, Australia, selected years 1983–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>1983</b>	<b>1988</b>	<b>1993</b>	<b>1998</b>	<b>2003</b>	<b>Per cent change 93–03</b>
<b>NHPA cancers</b>						
Colorectal (C18–C20)	1,933	2,190	2,322	2,465	2,382	2.6
Lung, bronchus & trachea (C33–C34)	4,255	4,595	4,523	4,714	4,506	–0.4
Melanoma of skin (C43)	362	479	581	623	764	31.5
Prostate (C61)	1,397	1,883	2,539	2,570	2,837	11.7
Non-Hodgkin lymphoma (C82–C85, C96)	448	585	719	756	812	12.9
<b>Other cancers</b>						
Lip (C00)	14	12	12	7	8	–33.3
Tongue (C01–C02)	107	124	116	128	120	3.4
Mouth (C03–C06)	66	77	66	79	71	7.6
Major salivary glands (C07–C08)	32	37	42	48	41	–2.4
Oropharynx (C09–C10)	68	87	102	89	81	–20.6
Nasopharynx (C11)	45	41	42	39	29	–31.0
Hypopharynx (C12–C13)	42	58	57	46	51	–10.5
Pharynx, unspecified (C14)	9	21	26	28	59	126.9
Nasal cavity, middle ear & sinuses (C30–C31)	24	15	31	36	19	–38.7
Larynx (C32)	184	185	219	184	196	–10.5
<i>Head and neck (C01–C14, C30–C32)</i>	<i>577</i>	<i>645</i>	<i>701</i>	<i>677</i>	<i>667</i>	<i>–4.9</i>
Oesophagus (C15)	374	505	550	646	767	39.5
Stomach (C16)	892	861	786	765	686	–12.7
Small intestine (C17)	31	31	26	56	49	88.5
Colon (C18)	1,358	1,552	1,682	1,742	1,571	–6.6
Rectum (C19–C20)	575	638	640	723	811	26.7
Anus (C21)	11	14	18	19	28	55.6
Liver (C22)	225	244	354	425	604	70.6
Gallbladder (C23–C24)	120	115	108	137	113	4.6
Pancreas (C25)	636	669	754	813	942	24.9
Other thoracic organs ex. pleura (C37–C38, ex. C38.4) <sup>(a)</sup>	15	26	17	13	18	5.9
Bone & articular cartilage (C40–C41)	59	49	53	54	59	11.3
Non-melanoma of skin (C44)	151	158	270	242	258	–4.4
Mesothelioma and other pleura (C45, C38.4) <sup>(a)</sup>	77	111	165	370	433	162.4
Kaposi sarcoma (C46)	0	0	0	2	3	—
Peritoneum & retroperitoneum (C48)	17	12	25	23	8	–68.0
Other connective and soft tissue (C47, C49)	83	94	102	97	108	5.9
Breast (C50)	13	23	15	19	10	–33.3
Penis (C60)	12	11	10	12	15	50.0
Testis (C62)	45	33	16	22	17	6.3

(continued)

**Table 2.23 (continued): Deaths from cancer, males, Australia, selected years 1983–2003**

<b>Cancer site/type</b>	<b>1983</b>	<b>1988</b>	<b>1993</b>	<b>1998</b>	<b>2003</b>	<b>Per cent change 93–03</b>
Other male genital organs (C63)	2	2	2	3	3	50.0
Kidney (C64)	327	358	382	450	492	28.8
Bladder (C67)	414	502	533	553	594	11.4
Other urinary organs (C65–C66, C68)	21	20	24	37	32	33.3
Eye (C69)	18	20	12	16	19	58.3
Brain (C71)	437	484	534	569	638	19.5
Other central nervous system (C70, C72)	9	11	11	8	11	0.0
Thyroid (C73)	22	18	30	37	42	40.0
Other endocrine organs (C74–C75)	25	24	31	25	19	–38.7
Hodgkin lymphoma (C81)	49	66	59	32	34	–42.4
<i>All lymphomas (C81–C85, C96)</i>	<i>497</i>	<i>651</i>	<i>778</i>	<i>788</i>	<i>846</i>	<i>8.7</i>
Immunoproliferative neoplasms (C88)	14	18	22	20	19	–13.6
Myeloma (C90)	189	225	303	331	399	31.7
Lymphoid leukaemia (C91)	195	226	215	247	263	22.3
Myeloid leukaemia (C92–C94)	304	352	428	490	487	13.8
Leukaemia, unspecified (C95)	38	35	20	35	45	125.0
<i>All leukaemias (C91–C95)</i>	<i>537</i>	<i>613</i>	<i>663</i>	<i>772</i>	<i>795</i>	<i>19.9</i>
Polycythaemia rubra vera (D45)	12	15	14	13	13	–7.1
Myelodysplastic syndromes and chronic myeloproliferative disorders (D46–D47 <sup>(b)(c)</sup> )	12	35	140	215	242	72.9
Multiple primary cancers (C97) <sup>(d)</sup>	0	0	0	227	225	—
Unknown primary site (C26, C39, C76–C80)	729	1,063	1,129	1,256	1,567	38.8
<b>All cancers (C00–C97, D45–D47<sup>(b)</sup>)</b>	<b>14,564</b>	<b>16,819</b>	<b>18,555</b>	<b>20,091</b>	<b>21,238</b>	<b>14.5</b>

(a) The ICD-10 codes C38.4 and C45 are inseparable in ICD-9 coding (used for deaths registered in 1996 and before).

(b) Only includes D47.1 and D47.3.

(c) The ICD-10 codes D46 and D47 are inseparable in ICD-9 coding (used for deaths registered in 1996 and before).

(d) The ICD-10 code C97 had no equivalent in ICD-9 coding (used for deaths registered in 1996 and before).

Source: National Mortality Database, AIHW.

**Table 2.24: Deaths from cancer, females, Australia, selected years 1983–2003**

<b>Cancer site/type (ICD-10 codes)</b>	<b>1983</b>	<b>1988</b>	<b>1993</b>	<b>1998</b>	<b>2003</b>	<b>Per cent change 93–03</b>
<b>NHPA cancers</b>						
Colorectal (C18–C20)	1,825	1,923	2,076	2,134	1,990	–4.1
Lung, bronchus & trachea (C33–C34)	1,178	1,521	1,828	2,050	2,482	35.8
Melanoma of skin (C43)	261	293	272	343	382	40.4
Breast (C50)	2,040	2,361	2,611	2,541	2,710	3.8
Cervix (C53)	343	345	318	260	239	–24.8
Non-Hodgkin lymphoma (C82–C85, C96)	396	476	618	753	660	6.8
<b>Other cancers</b>						
Lip (C00)	3	4	1	5	3	200.0
Tongue (C01–C02)	39	44	56	40	58	3.6
Mouth (C03–C06)	31	40	45	48	45	0.0
Major salivary glands (C07–C08)	16	23	20	25	31	55.0
Oropharynx (C09–C10)	13	25	33	28	34	3.0
Nasopharynx (C11)	10	14	18	15	20	11.1
Hypopharynx (C12–C13)	15	13	16	12	6	–62.5
Pharynx, unspecified (C14)	4	6	9	8	17	88.9
Nasal cavity, middle ear & sinuses (C30–C31)	16	10	17	17	14	–17.6
Larynx (C32)	19	26	28	13	27	–3.6
<i>Head and neck (C01–C14, C30–C32)</i>	<i>163</i>	<i>201</i>	<i>242</i>	<i>206</i>	<i>252</i>	<i>4.1</i>
Oesophagus (C15)	211	280	279	330	363	30.1
Stomach (C16)	564	515	446	430	483	8.3
Small intestine (C17)	21	30	35	32	40	14.3
Colon (C18)	1,438	1,535	1,607	1,652	1,441	–10.3
Rectum (C19–C20)	387	388	469	482	549	17.1
Anus (C21)	23	18	11	25	29	163.6
Liver (C22)	100	130	147	206	288	95.9
Gallbladder (C23–C24)	210	195	190	212	177	–6.8
Pancreas (C25)	505	590	723	805	940	30.0
Other thoracic organs ex. pleura (C37–C38, ex. C38.4) <sup>(a)</sup>	7	12	10	14	9	–10.0
Bone & articular cartilage (C40–C41)	39	44	48	38	41	–14.6
Non-melanoma of skin (C44)	62	52	104	116	132	26.9
Mesothelioma and other pleura (C45, C38.4) <sup>(a)</sup>	15	19	22	49	86	290.9
Kaposi sarcoma (C46)	0	0	0	0	2	—
Peritoneum & retroperitoneum (C48)	24	19	25	43	51	104.0
Other connective and soft tissue (C47, C49)	62	72	102	87	78	–23.5
Vulva (C51)	34	50	51	61	47	–7.8
Vagina (C52)	19	16	23	22	29	26.1

(continued)

**Table 2.24 (continued): Deaths from cancer, females, Australia, selected years 1983–2003**

<b>Cancer site/type</b>	<b>1983</b>	<b>1988</b>	<b>1993</b>	<b>1998</b>	<b>2003</b>	<b>Per cent change 93–03</b>
Uterus, body (C54)	206	194	223	225	216	–3.1
Uterus, unspecified (C55)	38	33	30	30	81	170.0
Ovary (C56)	595	602	704	750	781	10.9
Other female genital organs (C57)	13	10	17	32	22	29.4
Placenta (C58)	2	0	1	0	0	–100.0
<i>Gynaecological (C51–C58)</i>	<i>1,250</i>	<i>1,250</i>	<i>1,367</i>	<i>1,380</i>	<i>1,415</i>	<i>3.5</i>
Kidney (C64)	212	263	317	321	306	–3.5
Bladder (C67)	169	206	233	245	277	18.9
Other urinary organs (C65–C66, C68)	18	33	23	30	38	65.2
Eye (C69)	12	16	17	11	18	5.9
Brain (C71)	317	363	381	441	473	24.1
Other central nervous system (C70, C72)	10	7	7	5	11	57.1
Thyroid (C73)	54	51	48	29	44	–8.3
Other endocrine organs (C74–C75)	20	22	20	24	21	5.0
Hodgkin lymphoma (C81)	44	41	24	20	33	37.5
<i>All lymphomas (C81–C85, C96)</i>	<i>440</i>	<i>517</i>	<i>642</i>	<i>773</i>	<i>693</i>	<i>7.9</i>
Immunoproliferative neoplasms (C88)	3	10	9	8	15	66.7
Myeloma (C90)	161	244	243	284	343	41.2
Lymphoid leukaemia (C91)	116	143	176	173	181	2.8
Myeloid leukaemia (C92–C94)	289	279	354	361	377	6.5
Leukaemia, unspecified (C95)	36	29	14	26	31	121.4
<i>All leukaemias (C91–C95)</i>	<i>441</i>	<i>451</i>	<i>544</i>	<i>560</i>	<i>589</i>	<i>8.3</i>
Polycythaemia rubra vera (D45)	18	25	11	11	12	9.1
Myelodysplastic syndromes and chronic myeloproliferative disorders (D46–D47 <sup>(b)(c)</sup> )	12	30	103	159	184	78.6
Multiple primary cancers (C97) <sup>(d)</sup>	0	0	0	134	144	—
Unknown primary site (C26, C39, C76–C80)	747	953	1,141	1,242	1,548	35.7
<b>All cancers (C00–C97, D45–D47<sup>(b)</sup>)</b>	<b>11,197</b>	<b>12,720</b>	<b>14,278</b>	<b>15,323</b>	<b>16,669</b>	<b>16.7</b>

(a) The ICD-10 codes C38.4 and C45 are inseparable in ICD-9 coding (used for deaths registered in 1996 and before).

(b) Only includes D47.1 and D47.3.

(c) The ICD-10 codes D46 and D47 are inseparable in ICD-9 coding (used for deaths registered in 1996 and before).

(d) The ICD-10 code C97 had no equivalent in ICD-9 coding (used for deaths registered in 1996 and before).

Source: National Mortality Database, AIHW.

**Table 2.25: Age-standardised death rates for cancer, persons, Australia, selected years 1983–2003**

Cancer site/type (ICD-10 codes)	1983	1988	1993	1998	2003	Per cent change 93–03
<b>NHPA cancers</b>						
Colorectal (C18–C20)	31.7	30.0	28.4	25.8	21.3	–25.0
Lung, bronchus & trachea (C33–C34)	42.5	42.6	39.7	37.6	34.2	–13.9
Melanoma of skin (C43)	4.9	5.4	5.4	5.4	5.6	4.4
Non-Hodgkin lymphoma (C82–C85, C96)	6.9	7.6	8.5	8.5	7.2	–15.3
<b>Other cancers</b>						
Lip (C00)	0.1	0.1	0.1	0.1	0.1	–35.3
Tongue (C01–C02)	1.1	1.2	1.1	0.9	0.9	–19.1
Mouth (C03–C06)	0.8	0.8	0.7	0.7	0.6	–19.5
Major salivary glands (C07–C08)	0.4	0.5	0.4	0.4	0.3	–13.5
Oropharynx (C09–C10)	0.6	0.8	0.8	0.7	0.6	–33.3
Nasopharynx (C11)	0.4	0.4	0.4	0.3	0.2	–36.7
Hypopharynx (C12–C13)	0.4	0.5	0.5	0.3	0.3	–38.2
Pharynx, unspecified (C14)	0.1	0.2	0.2	0.2	0.4	67.1
Nasal cavity, middle ear & sinuses (C30–C31)	0.3	0.2	0.3	0.3	0.2	–45.7
Larynx (C32)	1.5	1.4	1.5	1.1	1.1	–29.2
<i>Head and neck (C01–C14, C30–C32)</i>	5.8	5.9	5.9	4.9	4.5	–24.1
Oesophagus (C15)	4.9	5.7	5.3	5.5	5.5	4.0
Stomach (C16)	12.5	10.2	8.0	6.7	5.7	–28.5
Small intestine (C17)	0.4	0.4	0.4	0.5	0.4	12.5
Colon (C18)	23.6	22.6	21.3	19.1	14.7	–31.0
Rectum (C19–C20)	8.1	7.5	7.1	6.8	6.6	–7.0
Anus (C21)	0.3	0.2	0.2	0.2	0.3	48.5
Liver (C22)	2.6	2.6	3.2	3.5	4.4	38.5
Gallbladder (C23–C24)	2.7	2.3	1.9	2.0	1.4	–26.9
Pancreas (C25)	9.4	9.1	9.4	9.1	9.2	–2.6
Other thoracic organs ex. pleura (C37–C38, ex. C38.4) <sup>(a)</sup>	0.2	0.3	0.2	0.2	0.2	–3.4
Bone & articular cartilage (C40–C41)	0.7	0.6	0.6	0.5	0.5	–17.4
Non-melanoma of skin (C44)	1.9	1.6	2.4	2.0	1.9	–22.9
Mesothelioma and other pleura (C45, C38.4) <sup>(a)</sup>	0.7	0.9	1.2	2.2	2.5	115.0
Kaposi sarcoma (C46)	0.0	0.0	0.0	0.0	0.0	—
Peritoneum & retroperitoneum (C48)	0.3	0.2	0.3	0.4	0.3	–7.1
Other connective and soft tissue (C47, C49)	1.1	1.1	1.3	1.0	0.9	–27.2
Kidney (C64)	4.3	4.4	4.4	4.3	3.9	–11.8
Bladder (C67)	5.1	5.3	5.1	4.5	4.2	–16.9
Other urinary organs (C65–C66, C68)	0.3	0.4	0.3	0.4	0.3	15.1
Eye (C69)	0.2	0.2	0.2	0.2	0.2	–5.4

(continued)

**Table 2.25 (continued): Age-standardised death rates for cancer, persons, Australia, selected years 1983–2003**

<b>Cancer site/type</b>	<b>1983</b>	<b>1988</b>	<b>1993</b>	<b>1998</b>	<b>2003</b>	<b>Per cent change 93–03</b>
Brain (C71)	5.6	5.7	5.6	5.6	5.5	–2.3
Other central nervous system (C70, C72)	0.2	0.1	0.1	0.1	0.1	4.6
Thyroid (C73)	0.6	0.5	0.5	0.4	0.4	–15.8
Other endocrine organs (C74–C75)	0.3	0.3	0.3	0.3	0.2	–34.0
Hodgkin lymphoma (C81)	0.7	0.7	0.5	0.3	0.3	–34.7
<i>All lymphomas (C81–C85, C96)</i>	<i>7.6</i>	<i>8.3</i>	<i>9.0</i>	<i>8.7</i>	<i>7.5</i>	<i>–16.4</i>
Immunoproliferative neoplasms (C88)	0.2	0.2	0.2	0.2	0.2	–20.3
Myeloma (C90)	2.9	3.4	3.5	3.5	3.6	2.5
Lymphoid leukaemia (C91)	2.4	2.6	2.5	2.3	2.2	–12.4
Myeloid leukaemia (C92–C94)	4.7	4.5	5.0	4.8	4.2	–14.7
Leukaemia, unspecified (C95)	0.6	0.5	0.2	0.3	0.4	76.0
<i>All leukaemias (C91–C95)</i>	<i>7.7</i>	<i>7.6</i>	<i>7.7</i>	<i>7.4</i>	<i>6.8</i>	<i>–11.4</i>
Polycythaemia rubra vera (D45)	0.3	0.3	0.2	0.1	0.1	–27.2
Myelodysplastic syndromes and chronic myeloproliferative disorders (D46–D47 <sup>(b)(c)</sup> )	0.2	0.5	1.7	2.1	2.1	23.3
Multiple primary cancers (C97) <sup>(d)</sup>	0.0	0.0	0.0	2.0	1.8	—
Unknown primary site (C26, C39, C76–C80)	12.4	14.8	14.7	14.1	15.1	3.0
<b>All cancers (C00–C97, D45–D47<sup>(b)</sup>)</b>	<b>210.4</b>	<b>212.3</b>	<b>209.6</b>	<b>198.6</b>	<b>184.9</b>	<b>–11.8</b>

(a) The ICD-10 codes C38.4 and C45 are inseparable in ICD-9 coding (used for deaths registered in 1996 and before).

(b) Only includes D47.1 and D47.3.

(c) The ICD-10 codes D46 and D47 are inseparable in ICD-9 coding (used for deaths registered in 1996 and before).

(d) The ICD-10 code C97 had no equivalent in ICD-9 coding (used for deaths registered in 1996 and before).

Source: National Mortality Database, AIHW.

**Table 2.26: Age-standardised death rates for cancer, males, Australia, selected years 1983–2003**

Cancer site/type (ICD-10 codes)	1983	1988	1993	1998	2003	Per cent change 93–03
<b>NHPA cancers</b>						
Colorectal (C18–C20)	38.1	37.0	34.6	31.6	26.2	–24.4
Lung, bronchus & trachea (C33–C34)	77.0	73.9	64.3	59.3	49.1	–23.7
Melanoma of skin (C43)	6.0	7.3	8.0	7.7	8.3	3.3
Prostate (C61)	34.7	37.6	43.7	37.2	34.1	–21.9
Non-Hodgkin lymphoma (C82–C85, C96)	8.4	9.5	10.3	9.6	9.0	–13.2
<b>Other cancers</b>						
Lip (C00)	0.3	0.2	0.2	0.1	0.1	–46.3
Tongue (C01–C02)	1.8	1.8	1.5	1.5	1.3	–17.2
Mouth (C03–C06)	1.1	1.1	0.9	0.9	0.7	–13.0
Major salivary glands (C07–C08)	0.8	0.7	0.6	0.6	0.5	–27.0
Oropharynx (C09–C10)	1.1	1.3	1.4	1.1	0.8	–38.7
Nasopharynx (C11)	0.7	0.7	0.6	0.4	0.3	–46.3
Hypopharynx (C12–C13)	0.7	0.9	0.8	0.5	0.5	–30.3
Pharynx, unspecified (C14)	0.1	0.3	0.4	0.3	0.6	77.9
Nasal cavity, middle ear & sinuses (C30–C31)	0.4	0.2	0.4	0.5	0.2	–45.7
Larynx (C32)	3.1	2.8	3.1	2.3	2.1	–33.2
<i>Head and neck (C01–C14, C30–C32)</i>	9.8	9.9	9.6	8.2	7.1	–26.2
Oesophagus (C15)	7.1	8.2	8.0	8.2	8.3	3.3
Stomach (C16)	17.8	15.1	12.1	9.9	7.6	–37.2
Small intestine (C17)	0.6	0.5	0.4	0.7	0.5	46.4
Colon (C18)	26.5	26.2	25.2	22.3	17.4	–30.9
Rectum (C19–C20)	11.6	10.8	9.5	9.3	8.8	–7.2
Anus (C21)	0.2	0.3	0.3	0.2	0.3	23.5
Liver (C22)	4.1	4.0	4.9	5.2	6.5	30.9
Gallbladder (C23–C24)	2.3	1.9	1.7	1.8	1.2	–26.6
Pancreas (C25)	11.9	11.2	10.9	10.4	10.2	–6.2
Other thoracic organs ex. pleura (C37–C38, ex. C38.4) <sup>(a)</sup>	0.2	0.4	0.2	0.1	0.2	–19.7
Bone & articular cartilage (C40–C41)	0.9	0.6	0.7	0.6	0.6	–10.7
Non-melanoma of skin (C44)	3.5	3.0	4.2	3.4	3.0	–27.7
Mesothelioma and other pleura (C45, C38.4) <sup>(a)</sup>	1.3	1.8	2.3	4.6	4.8	110.7
Kaposi sarcoma (C46)	0.0	0.0	0.0	0.0	0.0	—
Peritoneum & retroperitoneum (C48)	0.3	0.2	0.4	0.3	0.1	–76.0
Other connective and soft tissue (C47, C49)	1.4	1.5	1.4	1.2	1.2	–18.7
Breast (C50)	0.3	0.4	0.2	0.2	0.1	–54.9
Penis (C60)	0.3	0.2	0.1	0.1	0.2	14.7
Testis (C62)	0.7	0.5	0.2	0.3	0.2	–5.8

(continued)



**Table 2.26 (continued): Age-standardised death rates for cancer, males, Australia, selected years 1983–2003**

<b>Cancer site/type</b>	<b>1983</b>	<b>1988</b>	<b>1993</b>	<b>1998</b>	<b>2003</b>	<b>Per cent change 93–03</b>
Other male genital organs (C63)	0.0	0.0	0.0	0.0	0.0	4.9
Kidney (C64)	6.0	5.8	5.5	5.7	5.3	–3.8
Bladder (C67)	9.1	9.6	9.0	7.7	7.0	–22.5
Other urinary organs (C65–C66, C68)	0.4	0.4	0.4	0.5	0.4	3.9
Eye (C69)	0.3	0.3	0.2	0.2	0.2	11.7
Brain (C71)	7.0	7.0	6.9	6.7	6.6	–3.5
Other central nervous system (C70, C72)	0.2	0.2	0.1	0.1	0.1	–17.0
Thyroid (C73)	0.4	0.3	0.4	0.5	0.5	9.2
Other endocrine organs (C74–C75)	0.4	0.3	0.4	0.3	0.2	–51.1
Hodgkin lymphoma (C81)	0.7	1.0	0.8	0.4	0.4	–53.1
<i>All lymphomas (C81–C85, C96)</i>	<i>9.1</i>	<i>10.5</i>	<i>11.1</i>	<i>10.0</i>	<i>9.3</i>	<i>–16.0</i>
Immunoproliferative neoplasms (C88)	0.4	0.3	0.4	0.3	0.2	–43.6
Myeloma (C90)	3.8	3.8	4.6	4.3	4.5	–1.7
Lymphoid leukaemia (C91)	3.4	3.8	3.3	3.1	2.9	–13.4
Myeloid leukaemia (C92–C94)	5.6	5.9	6.4	6.3	5.4	–15.1
Leukaemia, unspecified (C95)	0.8	0.6	0.3	0.5	0.5	71.7
<i>All leukaemias (C91–C95)</i>	<i>9.8</i>	<i>10.3</i>	<i>10.0</i>	<i>9.9</i>	<i>8.8</i>	<i>–11.9</i>
Polycythaemia rubra vera (D45)	0.3	0.3	0.2	0.2	0.2	–30.7
Myelodysplastic syndromes and chronic myeloproliferative disorders (D46–D47 <sup>(b)(c)</sup> )	0.3	0.7	2.5	3.2	2.9	18.5
Multiple primary cancers (C97) <sup>(d)</sup>	0.0	0.0	0.0	3.1	2.6	—
Unknown primary site (C26, C39, C76–C80)	14.3	18.2	17.1	16.5	17.8	3.8
<b>All cancers (C00–C97, D45–D47<sup>(b)</sup>)</b>	<b>280.5</b>	<b>283.7</b>	<b>277.2</b>	<b>260.6</b>	<b>236.5</b>	<b>–14.7</b>

(a) The ICD-10 codes C38.4 and C45 are inseparable in ICD-9 coding (used for deaths registered in 1996 and before).

(b) Only includes D47.1 and D47.3.

(c) The ICD-10 codes D46 and D47 are inseparable in ICD-9 coding (used for deaths registered in 1996 and before).

(d) The ICD-10 code C97 had no equivalent in ICD-9 coding (used for deaths registered in 1996 and before).

Source: National Mortality Database, AIHW.

**Table 2.27: Age-standardised death rates for cancer, females, Australia, selected years 1983–2003**

Cancer site/type (ICD-10 codes)	1983	1988	1993	1998	2003	Per cent change 93–03
<b>NHPA cancers</b>						
Colorectal (C18–C20)	27.2	24.9	23.7	21.3	17.2	–27.3
Lung, bronchus & trachea (C33–C34)	16.7	19.3	20.9	21.0	22.4	6.7
Melanoma of skin (C43)	3.9	3.8	3.2	3.5	3.4	9.1
Breast (C50)	30.2	31.2	30.8	26.4	24.6	–20.0
Cervix (C53)	5.0	4.5	3.7	2.7	2.2	–40.8
Non–Hodgkin lymphoma (C82–C85, C96)	5.8	6.1	7.0	7.6	5.7	–18.5
<b>Other cancers</b>						
Lip (C00)	0.0	0.0	0.0	0.0	0.0	111.7
Tongue (C01–C02)	0.6	0.6	0.6	0.4	0.5	–21.8
Mouth (C03–C06)	0.5	0.5	0.5	0.5	0.4	–24.8
Major salivary glands (C07–C08)	0.3	0.3	0.2	0.2	0.3	13.8
Oropharynx (C09–C10)	0.2	0.3	0.4	0.3	0.3	–15.2
Nasopharynx (C11)	0.2	0.2	0.2	0.2	0.2	–7.5
Hypopharynx (C12–C13)	0.2	0.2	0.2	0.1	0.1	–67.4
Pharynx, unspecified (C14)	0.1	0.1	0.1	0.1	0.1	32.9
Nasal cavity, middle ear & sinuses (C30–C31)	0.2	0.1	0.2	0.2	0.1	–36.2
Larynx (C32)	0.3	0.3	0.3	0.1	0.2	–24.3
<i>Head and neck (C01–C14, C30–C32)</i>	2.4	2.6	2.8	2.1	2.2	–19.6
Oesophagus (C15)	3.1	3.6	3.1	3.2	3.1	–1.2
Stomach (C16)	8.5	6.7	5.0	4.3	4.2	–17.0
Small intestine (C17)	0.3	0.4	0.4	0.3	0.4	–10.5
Colon (C18)	21.5	19.9	18.4	16.5	12.5	–32.3
Rectum (C19–C20)	5.7	5.1	5.3	4.9	4.8	–10.0
Anus (C21)	0.3	0.2	0.1	0.3	0.3	86.3
Liver (C22)	1.5	1.7	1.7	2.1	2.5	53.3
Gallbladder (C23–C24)	3.1	2.5	2.2	2.1	1.5	–28.6
Pancreas (C25)	7.4	7.6	8.1	8.0	8.2	0.0
Other thoracic organs ex. pleura (C37–C38, ex. C38.4) <sup>(a)</sup>	0.1	0.2	0.1	0.1	0.1	–33.1
Bone & articular cartilage (C40–C41)	0.5	0.6	0.5	0.4	0.4	–26.0
Non–melanoma of skin (C44)	1.0	0.7	1.2	1.1	1.0	–11.4
Mesothelioma and other pleura (C45, C38.4) <sup>(a)</sup>	0.2	0.2	0.3	0.5	0.8	199.9
Kaposi sarcoma (C46)	0.0	0.0	0.0	0.0	0.0	—
Peritoneum & retroperitoneum (C48)	0.4	0.2	0.3	0.4	0.5	62.2
Other connective and soft tissue (C47, C49)	0.9	0.9	1.2	0.9	0.7	–39.3
Vulva (C51)	0.5	0.7	0.6	0.6	0.4	–33.1
Vagina (C52)	0.3	0.2	0.3	0.2	0.2	–6.7

(continued)

**Table 2.27 (continued): Age-standardised death rates for cancer, females, Australia, selected years 1983–2003**

<b>Cancer site/type</b>	<b>1983</b>	<b>1988</b>	<b>1993</b>	<b>1998</b>	<b>2003</b>	<b>Per cent change 93–03</b>
Uterus, body (C54)	2.9	2.5	2.5	2.3	1.9	–22.9
Uterus, unspecified (C55)	0.6	0.4	0.3	0.3	0.7	105.6
Ovary (C56)	8.7	7.8	8.0	7.7	7.1	–12.1
Other female genital organs (C57)	0.2	0.1	0.2	0.3	0.2	2.0
Placenta (C58)	0.0	0.0	0.0	0.0	0.0	–100.0
<i>Gynaecological (C51–C58)</i>	<i>18.2</i>	<i>16.2</i>	<i>15.7</i>	<i>14.1</i>	<i>12.7</i>	<i>–18.7</i>
Kidney (C64)	3.0	3.4	3.6	3.2	2.7	–26.1
Bladder (C67)	2.5	2.6	2.6	2.4	2.3	–12.3
Other urinary organs (C65–C66, C68)	0.3	0.4	0.3	0.3	0.3	28.6
Eye (C69)	0.2	0.2	0.2	0.1	0.2	–19.4
Brain (C71)	4.5	4.6	4.4	4.6	4.4	1.6
Other central nervous system (C70, C72)	0.2	0.1	0.1	0.1	0.1	38.0
Thyroid (C73)	0.8	0.6	0.6	0.3	0.4	–32.9
Other endocrine organs (C74–C75)	0.3	0.3	0.2	0.3	0.2	–10.5
Hodgkin lymphoma (C81)	0.6	0.5	0.3	0.2	0.3	8.9
<i>All lymphomas (C81–C85, C96)</i>	<i>6.4</i>	<i>6.6</i>	<i>7.3</i>	<i>7.8</i>	<i>6.0</i>	<i>–17.5</i>
Immunoproliferative neoplasms (C88)	0.0	0.1	0.1	0.1	0.1	27.8
Myeloma (C90)	2.4	3.1	2.8	2.8	2.9	7.0
Lymphoid leukaemia (C91)	1.7	1.8	2.0	1.7	1.5	–21.4
Myeloid leukaemia (C92–C94)	4.1	3.6	4.0	3.6	3.3	–17.5
Leukaemia, unspecified (C95)	0.5	0.4	0.2	0.3	0.3	76.5
<i>All leukaemias (C91–C95)</i>	<i>6.3</i>	<i>5.8</i>	<i>6.1</i>	<i>5.6</i>	<i>5.1</i>	<i>–16.4</i>
Polycythaemia rubra vera (D45)	0.3	0.3	0.1	0.1	0.1	–12.9
Myelodysplastic syndromes and chronic myeloproliferative disorders (D46–D47 <sup>(b)(c)</sup> )	0.2	0.4	1.2	1.5	1.5	26.1
Multiple primary cancers (C97) <sup>(d)</sup>	0.0	0.0	0.0	1.3	1.2	—
Unknown primary site (C26, C39, C76–C80)	11.0	12.3	12.9	12.3	13.1	0.9
<b>All cancers (C00–C97, D45–D47<sup>(b)</sup>)</b>	<b>164.2</b>	<b>164.4</b>	<b>163.7</b>	<b>154.7</b>	<b>146.9</b>	<b>–10.2</b>

(a) The ICD-10 codes C38.4 and C45 are inseparable in ICD-9 coding (used for deaths registered in 1996 and before).

(b) Only includes D47.1 and D47.3.

(c) The ICD-10 codes D46 and D47 are inseparable in ICD-9 coding (used for deaths registered in 1996 and before).

(d) The ICD-10 code C97 had no equivalent in ICD-9 coding (used for deaths registered in 1996 and before).

Source: National Mortality Database, AIHW.

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

Data on cancers attributed to smoking and excessive alcohol consumption are derived from a series of age- and sex-specific aetiological fractions developed by Ridolfo and Stevenson (2001) and from cancer incidence for specific cancer sites for 2003. This methodology and the attributable fractions are described in Appendix B.

### **Summary**

- In 2003 there were an estimated 10,378 new cases of cancer and 7,727 deaths from cancer in Australia attributed to smoking.
- In 2003 there were an estimated 2,844 new cases of cancer and 1,358 deaths from cancer in Australia attributed to excessive alcohol consumption.
- Among the states and territories, the highest incidence and mortality rates attributed to smoking and excessive alcohol consumption were experienced by the Northern Territory. Cancer mortality in the Territory due to smoking was 53% higher than the national rate, while cancer mortality due to excessive alcohol consumption was double the national rate.

**Table 2.28: Cancer incidence and mortality attributed to smoking, Australia, 2003**

<b>Australia 2003</b>												
Age group	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0-4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
5-9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
10-14	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
15-19	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
20-24	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
25-29	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
30-34	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
35-39	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
40-44	53	7.0	29	3.7	82	5.3	28	3.7	15	2.0	43	2.8
45-49	185	26.6	72	10.2	257	18.3	102	14.6	38	5.5	140	10.0
50-54	367	56.1	152	23.2	519	39.6	196	29.9	100	15.3	296	22.6
55-59	691	118.2	247	43.3	938	81.2	413	70.6	168	29.4	581	50.3
60-64	874	198.7	361	83.9	1,235	141.9	587	133.6	223	51.8	811	93.1
65-69	1,083	304.4	406	111.1	1,489	206.4	797	224.1	292	79.9	1,089	151.0
70-74	1,354	447.5	506	153.5	1,860	294.2	1,040	343.8	390	118.3	1,430	226.2
75-79	1,289	535.8	627	210.2	1,917	355.5	1,028	427.3	466	156.2	1,495	277.2
80-84	898	616.2	363	164.3	1,262	343.7	747	512.5	332	149.9	1,079	293.9
85 and over	508	564.4	311	158.2	819	285.8	456	506.7	308	156.7	764	266.6
<b>Total</b>	<b>7,302</b>		<b>3,077</b>		<b>10,378</b>		<b>5,394</b>		<b>2,334</b>		<b>7,727</b>	

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

Crude rate	74.0	30.8	52.2	54.6	23.3	38.9
95% CI	72.3 – 75.6	29.7 – 31.9	51.2 – 53.2	53.2 – 56.1	22.4 – 24.3	38.0 – 39.8
AS rate (Aust. 2001)	78.6	27.9	50.8	58.9	20.8	37.8
95% CI	76.8 – 80.5	26.9 – 28.9	49.8 – 51.7	57.3 – 60.5	20.0 – 21.7	36.9 – 38.6
AS rate (WHO World 2000)	54.0	19.6	35.5	39.5	14.2	25.8
95% CI	52.8 – 55.3	18.8 – 20.3	34.8 – 36.2	38.4 – 40.5	13.6 – 14.9	25.2 – 26.4
Risk to age 75	1 in 18	1 in 47	1 in 26	1 in 25	1 in 67	1 in 36
PYLL (0-74)				31,253	12,706	43,959

**Average annual numbers and rates by state and territory, 1999-2003**

	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	2,482	81.4	1,024	27.9	3,506	51.8	1,878	62.5	770	20.7	2,648	39.1
Vic	1,739	79.2	762	28.2	2,501	50.8	1,346	62.3	588	21.4	1,935	39.2
Qld	1,489	93.0	546	29.8	2,034	58.9	1,037	66.1	381	20.7	1,418	41.3
WA	681	87.3	278	30.1	958	55.9	507	67.0	205	22.1	712	41.9
SA	621	81.4	258	27.3	878	51.1	469	62.2	189	19.5	658	37.9
Tas	219	94.6	97	35.0	316	61.6	162	70.8	72	25.9	234	45.5
ACT	71	67.2	31	23.7	102	42.8	49	48.8	23	18.1	72	31.2
NT	50	99.4	14	36.2	64	70.0	36	82.0	12	31.7	48	58.0

Note: Cancers attributable to smoking are C01-C06, C09-C10, C12-C16, C21.0, C21.1, C25, C32, C33-C34, C51.9, C60, C64, C65, C67.

Source: National Cancer Statistics Clearing House, AIHW.

**Table 2.29: Cancer incidence and mortality attributed to excessive alcohol consumption, Australia, 2003**

Australia 2003												
Age group	Incidence						Mortality					
	Males		Females		Persons		Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0-4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
5-9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
10-14	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
15-19	2	0.2	0	0.1	2	0.2	0	0.1	0	0.0	0	0.0
20-24	1	0.1	3	0.4	4	0.3	0	0.1	0	0.1	1	0.1
25-29	2	0.3	7	1.0	9	0.7	1	0.1	0	0.1	1	0.1
30-34	5	0.7	25	3.3	31	2.0	0	0.0	6	0.7	6	0.4
35-39	12	1.7	59	8.1	71	4.9	8	1.2	9	1.2	17	1.2
40-44	37	4.9	112	14.5	149	9.7	19	2.5	17	2.3	37	2.4
45-49	72	10.4	159	22.5	231	16.5	31	4.4	26	3.7	57	4.1
50-54	122	18.7	203	30.8	325	24.8	60	9.2	42	6.3	102	7.8
55-59	148	25.3	217	38.0	364	31.6	79	13.5	55	9.7	134	11.6
60-64	182	41.4	188	43.5	369	42.4	94	21.4	50	11.6	144	16.6
65-69	173	48.8	185	50.5	358	49.6	119	33.3	62	16.9	181	25.0
70-74	173	57.3	132	39.9	305	48.2	135	44.7	53	16.1	188	29.8
75-79	145	60.2	121	40.5	266	49.3	133	55.1	67	22.4	199	37.0
80-84	88	60.7	123	55.5	211	57.6	81	55.9	73	33.0	155	42.1
85 and over	49	55.0	99	50.5	149	51.9	47	52.2	89	45.2	136	47.4
<b>Total</b>	<b>1,213</b>		<b>1,632</b>		<b>2,844</b>		<b>808</b>		<b>549</b>		<b>1,358</b>	

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

Crude rate	12.3	16.3	14.3	8.2	5.5	6.8
95% CI	11.6 – 13.0	15.5 – 17.1	13.8 – 14.8	7.6 – 8.7	5.0 – 6.0	6.5 – 7.2
AS rate (Aust. 2001)	12.6	15.3	13.9	8.6	4.9	6.6
95% CI	11.9 – 13.3	14.6 – 16.1	13.4 – 14.4	8.0 – 9.2	4.5 – 5.3	6.3 – 7.0
AS rate (WHO World 2000)	9.4	12.1	10.7	6.1	3.5	4.7
95% CI	8.9 – 9.9	11.5 – 12.7	10.3 – 11.1	5.7 – 6.5	3.2 – 3.8	4.5 – 5.0
Risk to age 75	1 in 96	1 in 80	1 in 87	1 in 154	1 in 292	1 in 203
PYLL (0-74)				7,014	5,019	12,032

**Average annual numbers and rates by state and territory, 1999-2003**

	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	398	12.7	542	15.6	939	14.0	258	8.4	178	4.8	436	6.5
Vic	289	12.8	402	15.7	691	14.2	193	8.8	140	5.2	333	6.8
Qld	224	13.3	290	15.9	514	14.6	140	8.7	86	4.6	226	6.5
WA	109	13.1	146	15.6	256	14.2	64	8.0	43	4.6	107	6.2
SA	86	11.2	134	15.7	220	13.4	61	8.1	44	4.8	106	6.2
Tas	35	14.5	41	15.4	75	14.9	22	9.6	15	5.2	37	7.2
ACT	14	11.9	25	17.3	39	14.5	8	7.8	7	5.2	15	6.3
NT	16	25.0	9	16.7	25	21.1	9	18.0	4	8.6	13	13.4

Note: Cancers attributable to alcohol are C01-C06, C09-C10, C12-C14, C15, C22, C32, C50 (female breast cancer only).

Source: National Cancer Statistics Clearing House, AIHW.

# 3 Hospitalisation

## Introduction

The AIHW National Hospital Morbidity Database contains diagnosis and treatment information for separations of admitted patients from almost all public and private hospitals in Australia from 1993–94. This section presents trend data for admitted patients with a principal diagnosis of cancer for the 5-year period from 2000–01 to 2004–05 inclusive.

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 2000–01 and 2001–02 were classified, coded and reported to the National Hospital Morbidity Database using the second edition of the Australian Version of the International Classification of Diseases, 10th Revision, Australian Modification (ICD-10-AM) (NCCH 2000). Principal diagnoses for 2002–03 and 2003–04 were coded using the third edition of ICD-10-AM (NCCH 2002). Principal diagnoses for 2004–05 were coded using the fourth edition of ICD-10-AM (NCCH 2004).

Table 3.1 gives the ICD-10-AM groupings for principal diagnoses of cancer (ICD-10-AM codes C00–C97 malignant neoplasms). ICD-10-AM includes diagnosis codes covering other reasons for hospitalisation (such as Z51.1 chemotherapy session). All codes primarily related to cancer are included in tables 3.1 and 3.2.

In tables 3.1 and 3.2, 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 hospital separations where the patient has cancer but was admitted for a reason unrelated to cancer.

## Main findings

- In 2004–05, there were 703,576 principal diagnosis and other cancer-related separations, 10.0% of all hospital separations in that year. From 2000–01 to 2004–05 the total for all cancer-related separations increased on average by 4.5% per annum.
- In 2004–05, there were 334,330 hospital separations with a principal diagnosis of cancer, 4.8% of all hospital separations in that year. In the period 2000–01 to 2004–05, separations with a principal diagnosis of cancer increased on average by 2.5% per annum.
- For the eight NHPA cancers in the period 2000–01 to 2004–05, the average annual increase in separations was 15.1% for prostate cancer, 4.0% for non-Hodgkin lymphoma, 2.9% for colorectal cancer, 2.8% for skin cancers other than melanoma, 2.5% for melanoma, 1.8% for breast cancer and 1.1% for lung cancer. Separations for cancer of the cervix decreased on average by 1.3% per annum in the same period.
- The average length of stay for a person in hospital with a principal diagnosis of cancer declined slightly between 2000–01 and 2004–05, from 5.2 to 5.0 days. Excluding same-day separations, the average stay was virtually unchanged over this period at around 8.3 days.

- For the eight National Health Priority Area cancers in the period 2000-01 to 2004-05, the average length of stay (including same-day separations):
  - increased slightly for patients suffering from lung cancer from 7.7 to 7.9 days
  - remained around the same for patients suffering from melanoma at 2.5 days, for non-Hodgkin lymphoma at about 5.2 days, and skin cancers other than melanoma at 1.6 days
  - decreased for patients suffering from prostate cancer (from 5.9 to 4.4 days), colorectal cancer (from 8.6 to 7.8 days), cervical cancer (from 5.8 to 5.2 days), and breast cancer (from 4.2 to 3.8 days).



**Table 3.1: Cancer-related hospital separations and average annual rate of change, Australia, 2000–01 to 2004–05**

ICD-10-AM	Principal diagnosis	2000–01	2001–02	2002–03	2003–04	2004–05	Average annual change (per cent)
C00–C97	All cancers (including C44)	307,268	316,643	332,484	344,090	334,330	2.5
C00	Lip	591	685	730	698	658	2.2
C01–C02	Tongue	1,099	1,209	1,348	1,332	1,305	4.4
C03–C06	Mouth	992	950	901	972	1,032	1.1
C07–C08	Parotid & other salivary glands	485	491	487	464	497	–0.1
C09–C10	Tonsil & other oropharynx	804	760	874	877	983	5.7
C11	Nasopharynx	528	464	441	511	546	1.7
C12–C13	Hypopharynx	518	485	497	505	480	–1.1
C14	Other lip, oral cavity & pharynx	282	234	323	228	205	–6.1
C15	Oesophagus	4,505	4,362	4,628	4,687	4,769	1.9
C16	Stomach	5,638	5,429	5,523	5,499	5,432	–0.6
C17	Small intestine	639	593	644	758	686	4.0
C18	Colon	15,229	15,614	16,612	16,565	16,918	2.7
C19–C21	Rectum & anus	10,073	10,124	10,777	11,036	11,320	3.2
C18–C21	Colorectal (including anus)	25,302	25,738	27,389	27,601	28,238	2.9
C22	Liver & intrahepatic bile ducts	2,030	2,081	2,346	2,595	2,739	8.6
C23–C24	Gallbladder & other biliary tract	1,145	1,140	1,108	1,076	953	–4.1
C25	Pancreas	3,979	3,982	4,199	4,358	4,766	4.7
C30–C31	Nasal cavity & accessory sinuses	388	369	406	390	409	1.6
C32	Larynx	1,467	1,472	1,441	1,475	1,562	1.3
C33–C34	Trachea, bronchus & lung	17,144	17,322	17,360	17,716	17,911	1.1
C37–C38	Other thoracic organs	470	411	517	453	398	–2.2
C40–C41	Bone and articular cartilage	1,386	1,532	1,610	1,769	1,809	7.0
C43	Skin—melanoma	7,715	7,918	8,425	8,680	8,330	2.5
C44	Skin—other than melanoma	65,693	69,135	74,282	74,660	72,634	2.8
C45	Mesothelioma	1,501	1,620	1,785	1,989	1,950	7.5
C46	Kaposi sarcoma	37	37	52	35	52	6.8
C47–C49	Connective & soft tissue	2,052	2,374	2,246	2,275	2,440	3.0
C50	Breast	20,587	21,151	22,701	23,748	21,190	1.8
C53	Cervix uteri	1,925	1,798	1,921	1,782	1,812	–1.3
C54	Corpus uteri	2,506	2,523	2,584	2,795	2,886	4.0
C55	Uterus unspecified	469	573	629	640	697	9.2
C56	Ovary	3,490	3,638	3,217	3,323	3,239	–2.4
C57–C58, C51–C52	Placenta & other female genital	1,012	926	843	1,011	1,038	1.4
C61	Prostate	13,715	15,109	17,153	20,547	23,343	15.1
C62	Testis	1,181	1,104	1,127	1,246	1,195	1.5
C63, C60	Penis & other male genital	196	212	196	165	218	–0.2
C64	Kidney, except renal pelvis	3,402	3,374	3,306	3,538	3,675	2.1
C65	Renal pelvis	377	414	411	404	416	1.7
C66	Ureter	321	379	334	295	363	0.0
C67	Bladder	16,416	16,558	15,672	15,256	14,848	–2.8
C68	Other urinary organs	138	136	115	107	139	–2.1
C69	Eye and adnexa	590	608	608	698	680	4.3
C71	Brain	4,436	4,611	4,566	4,384	4,603	0.2
C72, C70	Meninges & other CNS	320	250	240	320	286	0.1
C73	Thyroid gland	2,272	2,523	2,570	2,972	3,101	8.2
C74	Adrenal gland	383	215	243	338	290	–2.1
C75	Other endocrine glands	163	123	113	86	102	–13.0
C81	Hodgkin disease	1,375	1,580	1,510	1,675	1,802	6.2
C82–C85, C96	Non-Hodgkin lymphoma	16,110	17,358	19,174	18,901	18,841	4.0
C81–C85, C96	All lymphomas	17,485	18,938	20,684	20,576	20,643	4.1

(continued)

**Table 3.1 continued: Cancer-related hospital separations and average annual rate of change, Australia, 2000-01 to 2004-05**

ICD-10-AM	Principal diagnosis	2000-01	2001-02	2002-03	2003-04	2004-05	Average annual change (per cent)
C88	Immunoproliferative neoplasms	665	648	663	783	779	5.3
C90	Multiple myeloma	12,691	12,953	13,833	15,244	9,167	-3.7
C91, C95	Lymphoid & unspecified leukaemia	7,776	8,273	8,976	9,567	9,534	5.6
C92-C94	Myeloid & other specified leukaemia	9,016	9,583	9,937	10,156	10,146	2.9
C97, C76-C80, C26, C39	Unknown and multiple primary site	39,346	39,230	40,280	42,506	39,156	0.7
<b>Other cancer-related separations<sup>(a)</sup></b>							
Z80, Z85, Z92.3	Personal and family history	28,144	25,821	14,229	12,156	11,203	-25.0
Z03.1	Observation for suspected cancer	555	500	412	450	429	-6.3
Z12	Special screening examination	608	8,125	23,010	25,319	29,229	<sup>(b)</sup>
Z40	Prophylactic surgery	232	309	299	397	452	17.6
Z51.0	Radiotherapy session	733	799	849	561	605	-6.8
Z51.1	Chemotherapy session	220,026	232,806	256,226	265,616	285,701	6.8
Z54.1, Z08.1	Follow-up after radiotherapy	641	598	509	482	420	-10.1
Z54.2, Z08.2	Follow-up after chemotherapy	1,122	1,291	1,047	1,096	977	-4.3
Z08.0	Follow-up after surgery for cancer	29,158	30,730	32,177	32,913	33,635	3.6
Z08.7-Z08.9	Follow-up after multiple treatment	3,714	4,410	5,758	6,317	6,595	15.9
<b>All cancer related separations</b>		<b>592,201</b>	<b>622,032</b>	<b>667,000</b>	<b>689,397</b>	<b>703,576</b>	<b>4.5</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) Average annual rate of change not calculated due to extreme volatility of the time series.

Source: AIHW National Hospital Morbidity Database.

**Table 3.2: Average length of stay for cancer-related hospital separations, Australia, 2000–01 to 2004–05**

ICD-10-AM	Principal diagnosis	Year					Year				
		00–01	01–02	02–03	03–04	04–05	00–01	01–02	02–03	03–04	04–05
		Average length of stay (days)					ALOS excl. same-day separations				
C00–C97	All cancers (including C44)	5.2	5.1	5.0	4.9	5.0	8.3	8.4	8.4	8.3	8.2
C00	Lip	1.9	1.9	1.7	2.0	1.6	3.7	4.2	3.9	4.9	3.4
C01–C02	Tongue	7.3	7.9	6.7	6.4	6.0	9.0	9.8	8.8	8.4	7.7
C03–C06	Mouth	9.2	8.1	7.7	8.0	9.1	11.1	10.2	10.0	10.3	11.6
C07–C08	Parotid & other salivary glands	6.0	6.9	6.2	6.3	6.0	6.5	7.4	6.8	6.9	6.5
C09–C10	Tonsil & other oropharynx	8.3	8.0	6.8	6.7	6.0	10.6	10.0	8.5	8.7	7.5
C11	Nasopharynx	5.5	6.1	5.9	5.0	4.9	6.7	7.7	7.3	6.9	6.7
C12–C13	Hypopharynx	11.9	10.8	11.5	8.5	10.4	14.8	13.5	14.7	11.2	12.6
C14	Other lip, oral cavity & pharynx	9.5	8.9	7.6	8.4	8.0	12.0	11.2	10.4	11.1	10.0
C15	Oesophagus	7.1	6.8	7.1	6.9	6.5	10.2	10.0	10.1	9.8	9.1
C16	Stomach	7.1	7.8	7.3	7.7	7.4	9.6	10.6	10.2	10.7	10.2
C17	Small intestine	9.2	9.6	9.4	7.9	8.8	12.1	13.2	12.9	11.6	11.8
C18	Colon	8.7	8.4	8.5	8.3	8.0	11.6	11.3	11.5	11.1	10.7
C19–C21	Rectum & anus	8.4	8.3	8.1	7.9	7.6	11.9	12.0	11.8	11.4	10.9
C18–C21	Colorectal (including anus)	8.6	8.4	8.3	8.1	7.8	11.7	11.6	11.6	11.2	10.7
C22	Liver & intrahepatic bile ducts	7.0	7.3	7.9	7.3	7.4	8.3	8.9	9.3	8.8	8.9
C23–C24	Gallbladder & other biliary tract	9.6	10.5	9.5	8.9	9.5	10.9	12.2	11.1	10.6	11.1
C25	Pancreas	9.2	9.3	9.2	9.4	9.0	10.8	10.9	11.1	11.2	10.8
C30–C31	Nasal cavity & accessory sinuses	6.7	6.7	6.8	8.7	7.3	8.3	8.4	8.5	10.6	9.1
C32	Larynx	8.4	8.5	8.2	8.3	7.8	11.8	12.3	12.1	12.0	11.6
C33–C34	Trachea, bronchus & lung	7.7	7.9	8.0	7.8	7.9	9.5	9.8	10.0	9.8	9.8
C37–C38	Other thoracic organs	7.3	5.7	6.0	7.0	5.9	8.6	6.7	7.0	8.4	7.3
C40–C41	Bone and articular cartilage	5.8	5.7	5.5	6.1	5.7	6.8	7.1	6.5	7.3	6.9
C43	Skin—melanoma	2.5	2.4	2.4	2.3	2.5	5.1	5.0	5.1	5.0	5.3
C44	Skin—other than melanoma	1.7	1.6	1.6	1.6	1.6	4.2	4.1	4.3	4.3	4.4
C45	Mesothelioma	6.9	7.4	7.5	6.9	7.3	8.1	8.8	8.7	8.0	8.6
C46	Kaposi sarcoma	4.8	2.6	6.0	6.7	6.4	10.3	5.1	11.3	11.4	13.3
C47–C49	Connective & soft tissue	6.1	5.8	6.0	6.0	5.8	8.1	7.8	8.0	7.7	7.6
C50	Breast	4.2	4.0	3.8	3.8	3.8	5.2	5.0	4.8	4.9	4.6
C53	Cervix uteri	5.8	5.6	5.0	5.4	5.2	7.6	7.4	6.9	7.3	7.6
C54	Corpus uteri	5.6	5.6	5.5	5.0	5.3	7.3	7.3	7.2	6.8	7.1
C55	Uterus unspecified	5.0	5.0	5.1	5.0	5.4	6.6	6.7	6.9	7.0	7.2
C56	Ovary	6.7	6.9	7.0	7.3	7.3	7.6	8.4	8.4	8.8	8.9
C57–C58, C51–C52	Placenta & other female genital	7.4	6.6	6.9	6.5	6.7	9.2	8.1	8.9	8.4	8.4
C61	Prostate	5.9	5.6	5.3	4.7	4.4	7.3	7.5	7.4	7.1	6.6
C62	Testis	2.8	2.8	2.8	3.0	3.1	3.1	3.2	3.2	3.5	3.5
C63, C60	Penis & other male genital	6.0	5.6	4.2	4.9	5.1	7.2	7.7	5.2	6.7	6.7
C64	Kidney, except renal pelvis	7.9	8.3	8.1	7.8	7.7	9.1	9.5	9.1	9.1	8.8
C65	Renal pelvis	7.3	14.3	6.6	6.8	7.2	8.3	17.0	8.1	8.1	8.8
C66	Ureter	6.3	6.4	5.6	7.1	6.6	7.4	8.1	7.3	9.8	8.3
C67	Bladder	3.1	3.1	3.0	3.1	3.1	5.0	5.1	5.1	5.2	5.2
C68	Other urinary organs	4.4	5.3	6.0	6.3	5.6	6.1	8.3	8.6	9.4	7.7
C69	Eye and adnexa	2.6	3.1	3.2	2.7	2.7	4.4	4.7	5.0	4.6	4.3
C71	Brain	11.4	10.5	10.5	11.3	10.6	13.1	12.1	12.3	12.7	12.7
C72, C70	Meninges & other CNS	7.6	8.2	7.3	9.0	8.0	11.4	10.6	9.9	14.8	13.3
C73	Thyroid gland	3.4	3.4	3.4	3.1	3.3	3.5	3.4	3.4	3.2	3.3
C74	Adrenal gland	4.1	7.3	5.6	5.9	5.5	7.3	10.9	8.0	9.2	9.0
C75	Other endocrine glands	7.2	5.4	7.2	8.5	6.7	9.5	8.1	9.3	9.8	7.6

(continued)

**Table 3.2 (continued): Average length of stay for cancer-related hospital separations, Australia, 2000–01 to 2004–05**

ICD-10-AM	Principal diagnosis	Year					Year				
		00–01	01–02	02–03	03–04	04–05	00–01	01–02	02–03	03–04	04–05
		Average length of stay (days)					ALOS excl. same-day separations				
C81	Hodgkin disease	3.7	3.7	4.1	4.1	3.9	5.9	6.3	6.8	7.2	6.6
C82–C85, C96	Non-Hodgkin lymphoma	5.3	5.1	5.1	4.9	5.2	8.3	8.2	8.3	8.2	8.3
C81–C85, C96	All lymphomas	5.2	5.0	5.0	4.9	5.1	8.1	8.1	8.2	8.1	8.2
C88	Immunoproliferative neoplasms	2.8	2.8	3.1	2.7	3.0	6.1	6.9	8.0	7.6	7.3
C90	Multiple myeloma	3.3	3.3	3.4	3.2	4.9	8.5	8.6	9.6	9.3	9.8
C91, C95	Lymphoid & unspecified leukaemia	3.9	3.9	3.8	3.7	3.9	7.2	7.7	7.7	7.4	7.9
C92–C94	Myeloid & other specified leukaemia	6.0	6.0	5.8	5.8	6.0	13.6	14.8	14.2	14.1	14.8
C97, C76–C80, C26, C39	Unknown and multiple primary site	7.5	7.6	7.2	7.0	7.7	9.5	9.8	9.6	9.6	9.4
<b>Other cancer related separations<sup>(a)</sup></b>											
Z80, Z85, Z92.3	Personal and family history	1.0	1.0	1.0	1.0	1.0	1.9	1.9	2.0	1.7	2.2
Z03.1	Observation for suspected cancer	1.2	1.1	1.2	1.1	1.1	3.6	2.1	2.7	2.6	3.0
Z12	Special screening examination	1.0	1.0	1.0	1.0	1.0	1.3	1.5	1.6	1.5	1.4
Z40	Prophylactic surgery	3.6	3.4	3.2	3.6	3.0	3.9	3.6	3.4	3.8	3.3
Z51.0	Radiotherapy session	1.2	1.7	1.2	1.1	1.1	4.8	6.6	4.9	5.6	8.4
Z51.1	Chemotherapy session	1.0	1.0	1.0	1.0	1.0	2.3	2.8	2.2	2.4	1.7
Z54.1, Z08.1	Follow-up after radiotherapy	2.9	3.2	2.4	3.1	3.8	7.6	9.0	7.0	9.2	10.9
Z54.2, Z08.2	Follow-up after chemotherapy	1.7	1.7	1.4	1.7	1.4	2.9	3.0	2.6	3.0	2.6
Z08.0	Follow-up after surgery for cancer	1.0	1.0	1.0	1.0	1.0	1.6	1.6	1.6	1.6	1.6
Z08.7–Z08.9	Follow-up after multiple treatment	1.1	1.0	1.0	1.0	1.0	2.2	1.6	1.7	1.7	1.8
<b>All cancer-related separations</b>		<b>3.2</b>	<b>3.1</b>	<b>3.0</b>	<b>2.9</b>	<b>2.9</b>	<b>8.2</b>	<b>8.3</b>	<b>8.3</b>	<b>8.2</b>	<b>8.1</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.

Source: AIHW National Hospital Morbidity Database.

# 4 Prostate cancer in profile

## Introduction

Prostate cancer is a NHPA cancer. It is the most common cancer diagnosis in males apart from NMSC, and the second most common cause of male cancer death. The number of new cases increased by 12.7% from 12,003 in 2002 to 13,526 in 2003 and by a further 16.2% in 2004 in state cancer registries. Trends to 2005–06 in the number of prostate-specific antigen (PSA) tests undertaken for screening for prostate cancer, in admissions to hospital for prostate cancer, and in prostatectomies performed suggest that an estimated 18,700 new cases of prostate cancer will have been diagnosed in 2006.

PSA tests increased by 42% from 492,147 in 2001–02 to 698,828 in 2005–06. Hospital admissions almost doubled from 13,715 in 2000–01 to 25,429 in 2005–06. Prostatectomies on males with a principal diagnosis of cancer increased by 56% in the same period, from 6,088 to 9,478.

There was a small decline in the age-standardised death rate, from 35.2 per 100,000 males in 2001 to 32.0 per 100,000 in 2004 before an increase to 32.8 per 100,000 in 2005, when there were 2,946 deaths from prostate cancer.

## Incidence and mortality

- In 2003 there were 13,526 new cases of prostate cancer and 2,837 deaths (Table 4.1). There were 2,761 deaths in 2004 (Table 4.4) and 2,946 in 2005 (ABS 2007b).
- In 2003 the age-standardised incidence rate was 144 new cases per 100,000 males and the age-standardised mortality rate was 34 cases per 100,000. The highest age-specific incidence and mortality rates occurred in men aged 85 years and over (Table 4.1).
- In 2003 84% of new cases occurred in men aged 60 and over, with 84% of deaths occurring among men aged 70 and over.
- From 1982 to 2003 the age-standardised incidence rate experienced a sharp rise in the early 1990s following the introduction of PSA testing, peaked in 1994 and then had a sharp decline until 1998. Another sharp rise occurred in 2003 (Figure 4.2, Table 4.3). These changes are analysed in more detail later in this chapter.
- From 1982 to 1998 the age-standardised mortality rate mirrored the rise and fall of the incidence rate, peaking at 44 deaths per 100,000 males in 1993 and 1994 and declining to 35 deaths per 100,000 in 1999 before levelling off at this rate until 2002 (Figure 4.2, Table 4.4). There was a decline to 32 deaths per 100,000 in 2004 followed by an increase to 32.8 per 100,000 in 2005 (ABS 2007b).
- In the long-term period from 1922 to 2003 there was a very large increase in the age-specific death rate from prostate cancer in the 85 years and over age group and, by comparison, a quite moderate increase in the rate for the 65–84 year age group. The rate for the 45–64 age group remained very low over the whole period (Figure 4.3).

**Table 4.1: Prostate cancer incidence and mortality, Australia, 2003**

Age group	Incidence			Mortality		
	Number	Per cent	Rate	Number	Per cent	Rate
Less than 40	5	0.0	0.0	2	0.1	0.3
40–44	33	0.2	4.3	2	0.1	0.3
45–49	121	0.9	17.4	9	0.3	1.3
50–54	563	4.2	86.1	24	0.8	3.7
55–59	1,492	11.0	255.5	67	2.4	11.5
60–64	1,992	14.7	453.2	117	4.1	26.6
65–69	2,495	18.4	701.4	229	8.0	64.1
70–74	2,383	17.6	787.5	398	14.0	131.5
75–79	2,131	15.8	885.5	604	21.3	251.0
80–84	1,412	10.4	968.7	653	23.0	447.3
85 and over	899	6.6	999.2	732	25.8	812.4
<b>Total</b>	<b>13,526</b>	<b>100.0</b>		<b>2,837</b>	<b>100.0</b>	
<b>Rates per 100,000 with 95% confidence intervals</b>						
Crude rate			137.0			28.7
95% CI			134.7–139.3			27.6–29.8
ASR(A)			144.2			34.1
95% CI			141.7–146.6			32.8–35.4
ASR(W)			101.2			19.6
95% CI			99.5–102.9			18.9–20.4

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

**Table 4.2: Incidence of prostate cancer and age-standardised rates, Australia, 1982 to 2003**

Year	New cases	ASR(A)	95% CI	ASR(W)	95% CI
1982	3,597	79.4	76.5–82.2	49.7	48.0–51.3
1983	3,747	80.9	78.1–83.7	50.3	48.7–52.0
1984	3,889	80.1	77.4–82.9	50.3	48.7–52.0
1985	4,158	83.2	80.5–85.9	52.1	50.4–53.7
1986	4,303	82.9	80.2–85.5	51.9	50.4–53.5
1987	4,564	85.6	82.9–88.2	53.4	51.8–54.9
1988	4,775	85.7	83.2–88.3	53.9	52.4–55.5
1989	5,298	92.8	90.1–95.4	58.2	56.6–59.8
1990	6,100	102.6	99.9–105.4	65.1	63.4–66.7
1991	6,746	110.0	107.2–112.7	69.6	67.9–71.2
1992	7,927	124.4	121.5–127.2	79.3	77.5–81.1
1993	11,154	164.7	161.6–167.9	107.8	105.8–109.8
1994	13,064	184.3	181.0–187.5	123.5	121.3–125.6
1995	12,344	168.4	165.4–171.5	114.6	112.5–116.6
1996	10,300	137.6	134.9–140.3	93.4	91.6–95.2
1997	9,966	129.7	127.1–132.3	87.8	86.1–89.6
1998	10,073	127.9	125.3–130.4	86.6	84.9–88.3
1999	10,535	129.3	126.8–131.8	87.8	86.1–89.5
2000	10,734	127.7	125.2–130.1	87.2	85.5–88.8
2001	11,285	129.7	127.2–132.1	88.9	87.2–90.5
2002	12,003	132.7	130.3–135.1	92.2	90.5–93.8
2003	13,526	144.2	141.7–146.6	101.2	99.5–102.9

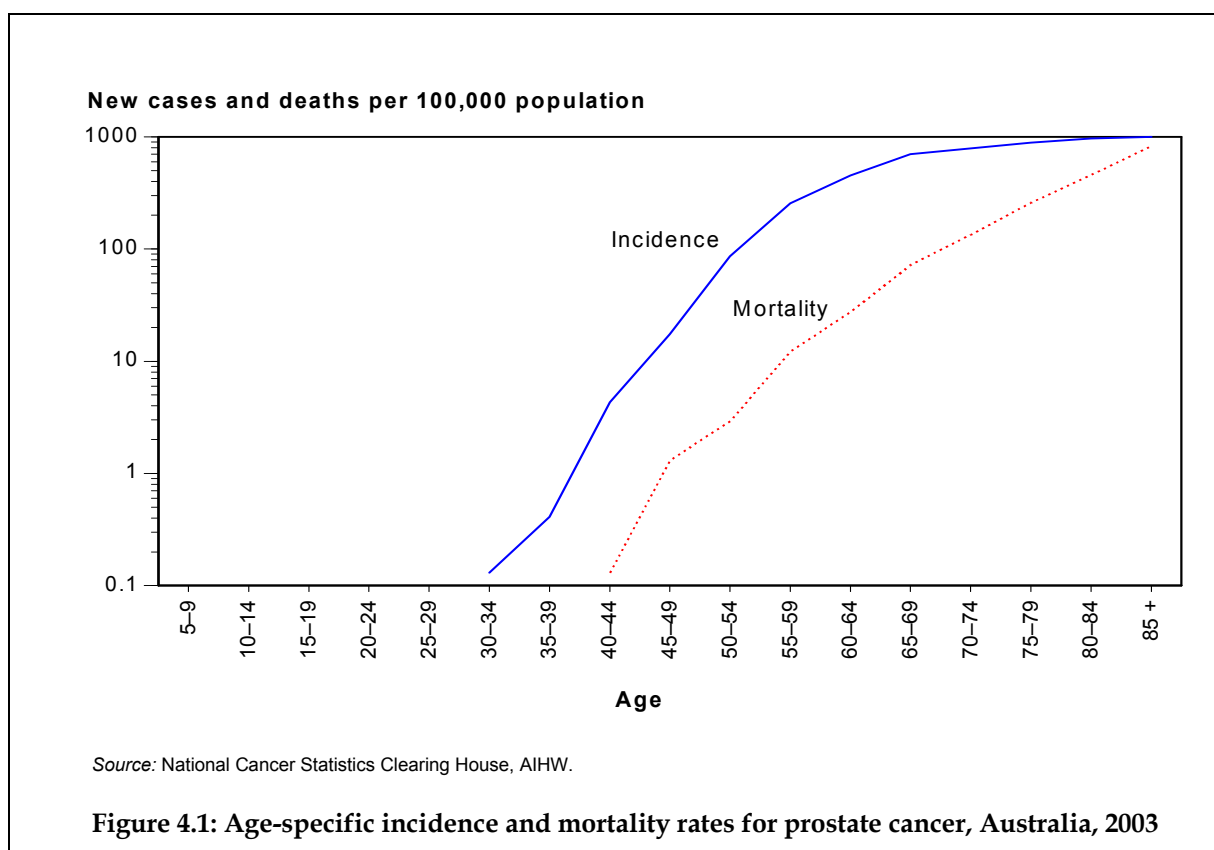
Sources: National Cancer Statistics Clearing House, AIHW; National Mortality Database, AIHW.

**Table 4.3: Trends in age-specific incidence of prostate cancer, Australia, 1982 to 2003**

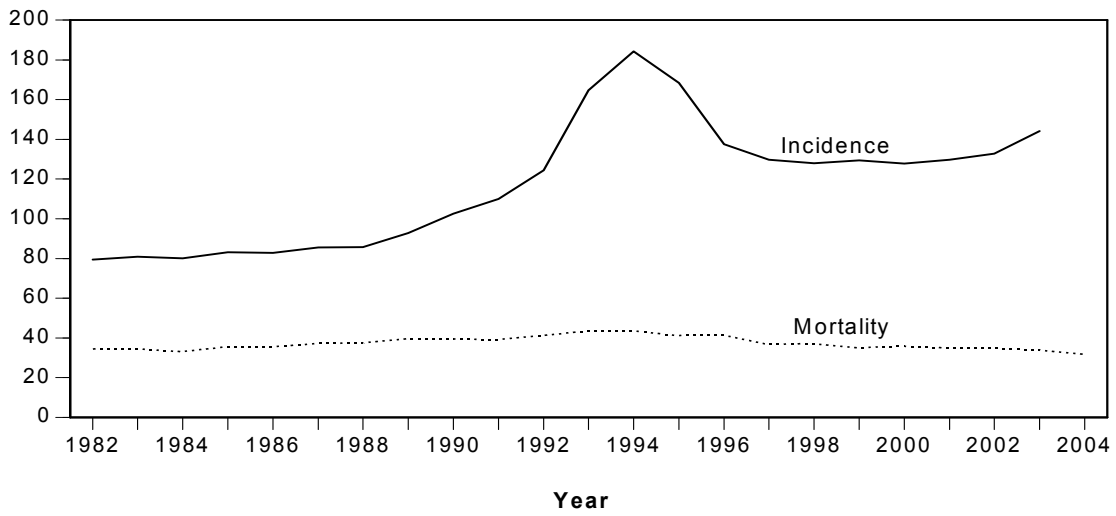
Year	Age										Total rate	
	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Crude	ASR (A)
1982	0.9	3.1	11.5	44.9	118.9	258.6	445.2	667.9	938.5	976.8	47.5	79.4
1983	0.7	1.8	12.2	46.4	112.7	252.9	441.5	750.1	855.1	1,071.7	48.7	80.9
1984	0.6	3.5	15.8	44.7	121.0	277.1	448.3	677.0	850.9	1,043.2	50.0	80.1
1985	0.8	3.8	9.6	48.3	125.3	273.3	453.8	714.8	969.8	1,039.9	52.8	83.2
1986	0.8	3.0	12.7	50.2	129.4	271.8	443.8	694.6	985.8	1,034.4	53.8	82.9
1987	0.4	2.9	13.3	49.4	133.4	256.7	490.8	703.9	990.5	1,128.2	56.2	85.6
1988	1.3	2.8	10.9	53.0	132.4	284.3	496.5	739.6	922.9	1,063.8	57.9	85.8
1989	1.1	1.9	15.3	55.5	145.0	312.4	509.0	795.1	1,003.0	1,203.1	63.2	92.8
1990	1.6	3.8	16.4	69.2	168.3	374.8	565.4	850.9	1,074.6	1,289.5	71.7	102.7
1991	1.2	3.4	17.8	66.7	174.2	384.5	663.5	905.1	1,158.6	1,343.3	78.3	110.0
1992	0.6	4.1	21.1	79.7	225.0	464.7	706.4	1,035.4	1,252.8	1,491.2	91.0	124.4
1993	1.7	6.2	36.0	124.6	330.7	680.6	1,063.5	1,347.8	1,506.5	1,515.4	126.8	164.8
1994	2.1	7.8	50.8	185.8	447.9	833.8	1,163.7	1,397.0	1,547.6	1,482.7	147.0	184.3
1995	2.9	12.9	67.3	199.6	448.4	788.8	1,029.5	1,197.0	1,261.1	1,344.0	137.3	168.4
1996	1.9	13.3	60.5	181.3	358.1	614.0	816.0	934.9	1,082.6	1,172.5	113.1	137.6
1997	1.2	12.3	50.5	164.1	348.7	573.7	759.7	883.1	1,044.8	1,137.6	108.3	129.7
1998	2.5	12.4	60.5	183.3	332.5	544.3	701.3	875.3	1,060.7	1,134.6	108.4	127.9
1999	1.3	11.5	65.9	176.3	345.5	555.1	727.1	931.2	990.1	1,098.9	112.1	129.3
2000	1.7	16.9	61.8	183.2	343.6	579.2	702.6	863.9	997.7	1,068.1	112.9	127.7
2001	3.0	16.4	69.6	197.7	355.1	577.8	714.5	875.3	950.5	1,090.1	117.2	129.7
2002	2.7	20.0	84.5	215.5	392.3	614.9	743.6	810.5	917.4	1,038.7	123.1	132.7
2003	4.3	17.4	86.1	255.5	453.2	701.4	787.5	885.5	968.7	999.2	137.0	144.2

Note: Age-specific rates for age less than 40 years are close to zero and have been excluded.

Source: National Cancer Statistics Clearing House, AIHW.



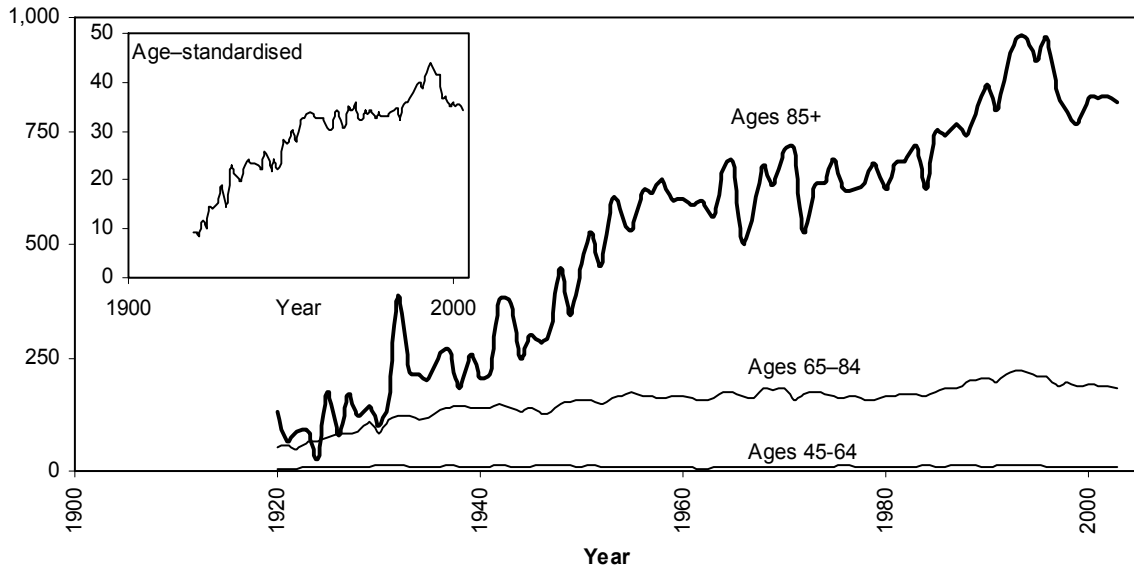
**New cases and deaths per 100,000 population**



Source: National Cancer Statistics Clearing House, AIHW.

**Figure 4.2: Trends in age-standardised incidence and mortality rates for prostate cancer, Australia, 1982–2004**

**Deaths per 100,000**



Source: AIHW 2006e.

**Figure 4.3: Age-specific and age-standardised death rates for prostate cancer, 1920–2003**



**Table 4.4: Mortality from prostate cancer and age-standardised rates, Australia, 1982 to 2004**

Year	Deaths	ASR(A)	95% CI	ASR(W)	95% CI
1982	1,343	34.5	32.5–36.5	20.1	19.0–21.2
1983	1,397	34.7	32.7–36.7	20.1	19.0–21.2
1984	1,411	33.3	31.4–35.2	19.6	18.6–20.7
1985	1,526	35.7	33.8–37.6	20.7	19.6–21.7
1986	1,612	35.7	33.9–37.6	20.9	19.8–21.9
1987	1,735	37.2	35.4–39.1	21.7	20.7–22.8
1988	1,883	37.6	35.8–39.4	22.1	21.1–23.1
1989	1,985	39.6	37.8–41.5	23.2	22.2–24.2
1990	2,036	39.7	37.9–41.5	23.1	22.1–24.1
1991	2,099	39.3	37.5–41.1	22.9	22.0–23.9
1992	2,290	41.2	39.4–42.9	24.2	23.2–25.1
1993	2,539	43.7	41.9–45.5	25.4	24.4–26.4
1994	2,561	43.6	41.9–45.4	25.3	24.3–26.3
1995	2,513	41.2	39.6–42.9	24.0	23.1–24.9
1996	2,591	41.4	39.7–43.0	23.9	22.9–24.8
1997	2,449	36.8	35.3–38.3	21.3	20.5–22.2
1998	2,570	37.2	35.8–38.7	21.6	20.7–22.4
1999	2,513	35.2	33.8–36.6	20.3	19.5–21.1
2000	2,666	35.9	34.5–37.3	20.7	19.9–21.5
2001	2,718	35.2	33.9–36.6	20.2	19.5–21.0
2002	2,820	35.1	33.8–36.4	20.3	19.5–21.0
2003	2,837	34.1	32.8–35.4	19.6	18.9–20.4
2004	2,761	32.0	30.8–33.2	18.5	17.8–19.2

Note: 1982–2003 mortality based on year of death; 2004 mortality based on year of registration.

Source: AIHW National Mortality Database.

**Table 4.5: Trends in age-specific mortality from prostate cancer, males, Australia, 1982 to 2004**

Year	Age 40 years and over										Rates	
	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85+	Crude	ASR (A)
1982	0.0	0.8	3.1	11.5	29.2	66.1	150.4	307.8	446.5	678.1	17.7	34.5
1983	0.0	0.5	2.9	14.2	25.4	66.3	136.5	277.2	507.2	716.8	17.8	34.7
1984	0.2	1.0	4.2	8.6	34.9	74.6	151.3	258.8	443.4	652.4	18.1	33.3
1985	0.0	0.7	4.5	8.1	30.5	71.7	134.5	312.7	490.4	728.2	19.4	35.7
1986	0.0	0.7	1.9	12.2	30.7	74.0	160.0	284.8	465.8	746.2	20.2	35.7
1987	0.2	1.1	2.1	12.9	36.0	80.7	144.7	294.2	507.3	783.4	21.4	37.2
1988	0.2	1.3	3.0	13.3	34.6	80.4	171.2	311.5	509.6	707.4	22.4	37.6
1989	0.3	1.0	4.2	14.8	39.8	75.3	163.1	330.4	530.7	800.4	23.7	39.6
1990	0.2	0.4	2.9	9.5	31.8	85.4	179.4	315.1	510.1	849.3	23.9	39.7
1991	0.2	1.3	3.0	13.6	36.5	81.8	160.2	318.9	520.1	820.9	24.4	39.3
1992	0.2	0.9	4.0	15.2	34.5	94.5	189.4	287.5	559.1	863.9	26.3	41.2
1993	0.0	1.0	3.9	14.1	34.1	93.7	178.4	354.6	562.2	951.4	28.3	43.7
1994	0.0	1.1	3.8	13.2	38.3	81.5	184.2	351.5	572.3	947.8	28.8	43.6
1995	0.5	1.3	3.8	11.3	39.9	86.2	174.8	303.8	535.1	919.5	27.9	41.2
1996	0.1	1.4	3.3	12.9	32.5	80.6	165.5	324.1	532.8	950.2	28.4	41.4
1997	0.3	0.8	3.6	12.2	29.9	73.5	150.4	277.9	492.0	821.5	26.6	36.8
1998	0.3	1.2	4.6	11.4	31.7	67.7	156.8	266.5	537.1	810.6	27.6	37.2
1999	0.6	0.9	2.9	9.8	26.5	64.4	141.2	284.2	478.6	773.3	26.7	35.2
2000	0.0	0.9	3.9	11.6	24.2	67.2	156.5	271.0	474.9	811.4	28.0	35.9
2001	0.0	1.0	2.9	11.9	24.6	64.7	141.7	265.2	473.3	820.3	28.2	35.2
2002	0.1	1.3	2.9	12.2	27.6	72.0	134.4	258.6	458.7	828.8	28.9	35.1
2003	0.3	1.3	3.7	11.5	26.6	64.1	131.5	251.0	447.3	812.4	28.7	34.1
2004	0.0	0.7	3.3	10.9	28.9	59.4	122.4	237.1	422.6	754.5	27.6	32.0

Note: 1982–2003 mortality based on year of death; 2004 mortality based on year of registration.

Source: AIHW National Mortality Database.

## Drivers of growth in new cases diagnosed

The most significant risk factor for prostate cancer is increasing age. The two tests commonly used to detect possible signs of prostate cancer are the PSA blood test and the digital rectal examination (DRE) (The Cancer Council Australia 2005). The Cancer Council expresses caution in its 2005 *Prostate cancer screening position statement* about the use of these tests for population screening because of lack of direct evidence of benefits in terms of reduction in mortality. Nevertheless, the main drivers of the growth in incidence and treatment numbers appear to be rapid growth in the elderly male 'at risk' population and increasing use of the PSA test and DRE in health checks of older males.

### Population ageing

The male population of Australia aged 65 and over has been increasing at around 2.8% a year. However, the highest incidence rates for prostate cancer are in the 75 years and over 5-year age groups. In the year to 30 June 2001 the 75 and over population increased by 5.2%. Although the percentage increase declined in subsequent years, this population still increased by 3.7% in the year to 30 June 2006.

**Table 4.6: Male population of Australia 65 years and over and 75 years and over, 2001 to 2006**

Year	65 years and over	Per cent increase	75 years and over	Per cent increase
2001	1,076,672	2.8	437,528	5.2
2002	1,105,896	2.7	456,942	4.4
2003	1,134,702	2.6	476,387	4.3
2004	1,165,489	2.7	495,663	4.0
2005	1,198,642	2.8	514,298	3.8
2006	1,233,431	2.9	533,467	3.7

Source: ABS: *Population projections, Australia, 2004 to 2101* (cat. no. 3222.0), Series 26.

### PSA test

In the early 1990s, introduction of the PSA test resulted in a sharp rise for a few years in numbers and rates of new cases of prostate cancer diagnosed. The age-standardised rate increased from 110 per 100,000 males in 1991 to a peak of 184 per 100,000 in 1994, with the actual numbers diagnosed increasing from 6,746 to 13,064 per annum. This reflects the large pool of undiagnosed cases that were found using the PSA test (and subsequent biopsy and confirmation by a specialist) and that would otherwise have remained undiagnosed until symptoms emerged, or never diagnosed because of mortality from another condition.

After 1994 the age-standardised incidence rate declined to 128 per 100,000 males in 1998, then slowly increased to 133 per 100,000 in 2002. However, there is strong evidence that since 2002 there has been a repeat of the rapid increase of the early 1990s in new cases diagnosed. Between 2002 and 2003 the age-standardised incidence rate increased by 8.7% from 133 to 144 per 100,000 males, and the actual number of cases by 12.7% from 12,003 to 13,526. Prostate cancer incidence numbers for 2004 for the New South Wales, Victorian, Queensland, West Australian, South Australian and Tasmanian cancer registries experienced an average increase of 16.2% on those published for 2003, from 13,315 to 15,478 (Table 4.7).

**Table 4.7: Prostate cancer incidence numbers, state cancer registries, 2003 and 2004**

Year of diagnosis	NSW	Vic	Qld	WA	SA	Tas	Total
2003	4,637	3,441	2,552	1,245	1,032	408	13,315
2004	5,477	3,838	2,921	1,501	1,326	415	15,478
Per cent increase	18.1	11.5	14.5	20.6	28.5	1.7	16.2

Source: State cancer registry 2003 and 2004 incidence and mortality reports; unpublished Tasmanian data.

If the same percentage increase occurred for the two territories, the total figure for Australia for 2004 would be approximately 15,800 cases, although this might reduce to 15,500 after any interstate duplicates are identified.

Further evidence of rapid growth in incidence is that:

- Hospital admissions for a principal diagnosis of prostate cancer almost doubled from 13,715 in 2000–01 to 25,429 in 2005–06 (Table 4.11).
- Prostatectomies for males with a principal diagnosis of prostate cancer increased by 56% in the same period, from 6,088 to 9,478 (Table 4.12).

Underpinning the increase in diagnoses is increasing use of PSA tests for prostate cancer screening, up by 42% from 492,147 in 2001–02 to 698,828 in 2005–06 (Table 4.8). There are three current Medicare Benefits Schedule (MBS) item numbers for PSA tests – 66655 for one PSA test for screening in a 12-month period, and 66656 and 66659, which are tests to monitor previously diagnosed prostatic disease and to follow up a PSA result in the equivocal range. In 2005–06, there were 698,828 services for item 66655; 480,206 for item 66656; and 30,522 for item 66659. Item 66655 was introduced on 1 May 2001. On 1 November 1993 two items for PSA tests were first listed on the MBS Schedule: 66357 and 66359. These, and two replacement numbers in 1998, covered both screening and monitoring so it is not possible to extract screening only data prior to 2001. Between 1993–94 and 2005–06, a total of 9.5 million PSA tests (screening and non-screening) were undertaken (Table 4.10).

**Table 4.8: PSA tests for screening, 2000–01 to 2005–06**

Year	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia	Per cent increase
2001–02	147,419	104,761	94,770	66,130	53,438	11,841	10,633	3,155	492,147	—
2002–03	156,894	119,205	103,166	62,443	49,078	12,868	10,356	3,336	517,346	5.1
2003–04	189,645	128,272	107,189	66,283	51,180	14,412	11,145	3,730	571,856	10.5
2004–05	210,985	140,594	110,978	71,814	56,737	15,031	11,988	3,609	621,736	8.7
2005–06	237,231	154,608	128,318	78,795	65,146	18,348	12,335	4,047	698,828	12.4
Per cent increase from 2001–02 to 2005–06	60.9	47.6	35.4	19.2	21.9	55.0	16.0	28.3	42.0	
Per cent increase from 2004–05 to 2005–06	12.4	10.0	15.6	9.7	14.8	22.1	2.9	12.1	12.4	

Source: Medicare Australia statistics: Medicare Benefits Schedule Item 66655.

On a per capita basis in 2005–06, PSA tests were provided at a rate of 20,859 tests per 100,000 males for those aged 55–64 years, at 22,667 tests per 100,000 for 65–74 year olds and at 15,796 tests per 100,000 for 75–84 year olds (Table 4.9). However, the rates for these age groups were much higher in South Australia, the ACT, Western Australia and Tasmania than in other jurisdictions. The highest rate was 28,590 tests per 100,000 males in the 65–74 year age group in South Australia in 2005–06.

Table 4.9: PSA tests for screening by age, states and territories, 2005–06

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
<b>Number of PSA tests</b>									
Less than 25	2,824	1,680	1,660	1,085	423	162	130	40	8,004
25–34	2,409	1,430	1,430	938	359	126	107	34	6,833
35–44	16,186	10,871	10,441	5,657	3,218	912	771	338	48,394
45–54	58,203	38,648	35,028	21,050	14,727	4,299	3,483	1,247	176,685
55–64	79,173	51,409	43,586	26,520	22,022	6,427	4,570	1,587	235,294
65–74	53,861	35,096	26,161	16,760	16,107	4,532	2,335	630	155,482
75–84	23,920	15,013	10,154	6,892	7,647	1,815	931	188	66,560
85 and over	3,064	1,891	1,288	831	1,002	201	115	17	8,409
<b>Total</b>	<b>237,231</b>	<b>154,608</b>	<b>128,318</b>	<b>78,795</b>	<b>65,146</b>	<b>18,348</b>	<b>12,335</b>	<b>4,047</b>	<b>698,828</b>
<b>Per cent</b>									
Less than 25	1.2	1.1	1.3	1.4	0.6	0.9	1.1	1.0	1.1
25–34	1.0	0.9	1.1	1.2	0.6	0.7	0.9	0.8	1.0
35–44	6.8	7.0	8.1	7.2	4.9	5.0	6.3	8.4	6.9
45–54	24.5	25.0	27.3	26.7	22.6	23.4	28.2	30.8	25.3
55–64	33.4	33.3	34.0	33.7	33.8	35.0	37.0	39.2	33.7
65–74	22.7	22.7	20.4	21.3	24.7	24.7	18.9	15.6	22.2
75–84	10.1	9.7	7.9	8.7	11.7	9.9	7.5	4.6	9.5
85 and over	1.3	1.2	1.0	1.1	1.5	1.1	0.9	0.4	1.2
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Services per 100,000 population</b>									
35–44	3,180	2,794	3,535	3,633	2,795	2,661	3,045	1,980	3,140
45–54	12,406	11,085	12,730	14,479	13,333	12,124	14,846	8,798	12,426
55–64	21,237	18,840	19,407	23,776	24,660	21,847	25,394	16,734	20,859
65–74	23,080	20,339	20,199	26,449	28,590	24,590	26,472	17,829	22,667
75–84	16,244	13,774	13,675	19,199	19,931	17,293	18,928	15,607	15,796
85 and over	8,402	7,180	6,511	9,708	10,161	8,584	9,986	7,176	8,029
<b>Average, all ages</b>	<b>6,980</b>	<b>6,120</b>	<b>6,398</b>	<b>7,743</b>	<b>8,423</b>	<b>7,525</b>	<b>7,427</b>	<b>3,868</b>	<b>6,827</b>

Source: Medicare Australia statistics: Medicare Benefits Schedule Item 66655.

**Table 4.10: All PSA tests (screening and non-screening), states and territories, 1993–93 to 2005–06**

Year	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia	Per cent inc.
1993–94	84,692	47,847	40,883	29,086	16,809	4,090	3,381	711	227,499	—
1994–95	181,467	109,699	85,687	72,659	34,954	10,412	7,722	1,503	504,103	—
1995–96	190,259	134,084	89,175	70,657	38,881	11,351	8,420	1,958	544,785	8.1
1996–97	188,843	129,814	91,289	57,482	36,153	12,147	9,516	2,021	527,265	-3.2
1997–98	207,598	160,439	96,804	65,824	39,564	12,663	9,772	2,564	595,228	12.9
1998–99	227,223	182,811	114,224	72,339	43,312	13,520	10,914	3,076	667,419	12.1
1999–00	249,790	193,259	121,831	71,313	47,418	14,282	11,635	3,246	712,774	6.8
2000–01	269,343	215,735	133,294	80,482	68,610	15,572	13,959	3,795	800,790	12.3
2001–02	286,144	202,774	140,137	89,392	67,977	17,095	13,754	3,993	821,266	2.6
2002–03	285,149	217,735	139,772	89,569	68,050	18,471	13,834	4,011	836,591	1.9
2003–04	322,805	250,344	171,887	97,475	74,325	21,859	15,305	4,598	958,598	14.6
2004–05	369,387	276,493	192,902	107,430	80,996	23,057	16,950	4,599	1,071,814	11.8
2005–06	414,571	303,371	231,988	117,923	92,289	26,573	17,675	5,166	1,209,556	12.9
<b>Total</b>	<b>3,277,271</b>	<b>2,424,405</b>	<b>1,649,873</b>	<b>1,021,631</b>	<b>709,338</b>	<b>201,092</b>	<b>152,837</b>	<b>41,241</b>	<b>9,477,688</b>	

Source: Medicare Australia.

**Table 4.11: Hospital separations for admitted patients with a principal diagnosis of prostate cancer, Australia, 1993–94 to 2004–05**

Year	Separations	Per cent increase
1993–94	13,351	—
1994–95	13,257	-0.7
1995–96	12,840	-3.1
1996–97	11,210	-12.7
1997–98	11,682	4.2
1998–99	11,769	0.7
1999–00	12,886	9.5
2000–01	13,715	6.4
2001–02	15,109	10.2
2002–03	17,153	13.5
2003–04	20,547	19.8
2004–05	23,343	13.6
2005–06	25,429	8.9

Source: National Hospital Morbidity Database, AIHW.

**Table 4.12: Separations for prostatectomies performed upon patients with a principal diagnosis of prostate cancer, 2000–01 to 2005–06**

Procedure block	2000–01	2001–02	2002–03	2003–04	2004–05	2005–06
1165 Transurethral prostatectomy	4,001	3,798	3,906	3,995	4,112	4,140
1166 Other closed prostatectomy	80	76	83	66	259	413
1167 Open prostatectomy	2,007	2,383	2,823	3,746	4,713	4,925
<b>Total</b>	<b>6,088</b>	<b>6,257</b>	<b>6,812</b>	<b>7,807</b>	<b>9,084</b>	<b>9,478</b>

Source: National Hospital Morbidity Database, AIHW.

**Table 4.13: Separations for prostatectomies performed upon patients with a principal diagnosis of prostate cancer by age, 2004–05**

Procedure block	Age group					Total
	Under 50	50–59	60–69	70–79	80+	
	<b>Number</b>					
1165 Transurethral prostatectomy	11	174	757	1,744	1,426	4,112
1166 Other closed prostatectomy	3	38	97	96	25	259
1167 Open prostatectomy	187	1,576	2,546	396	8	4,713
<b>Total</b>	<b>201</b>	<b>1,788</b>	<b>3,400</b>	<b>2,236</b>	<b>1,459</b>	<b>9,084</b>
	<b>Per cent</b>					
1165 Transurethral prostatectomy	0.3	4.2	18.4	42.4	34.7	100.0
1166 Other closed prostatectomy	1.2	14.7	37.5	37.1	9.7	100.0
1167 Open prostatectomy	4.0	33.4	54.0	8.4	0.2	100.0
<b>Total</b>	<b>2.2</b>	<b>19.7</b>	<b>37.4</b>	<b>24.6</b>	<b>16.1</b>	<b>100.0</b>

Source: National Hospital Morbidity Database, AIHW.

There are many additional prostatectomies performed in Australian hospitals other than those for a principal diagnosis of prostate cancer. Total separations for procedures on the prostate or seminal vesicle included 21,110 transurethral prostatectomies, 816 other closed prostatectomies and 5,347 open prostatectomies in 2004–05 (Table 4.14). Of the 21,110 transurethral prostatectomies, 14,109 were for a principal diagnosis of hyperplasia of the prostate, 4,112 for prostate cancer, 335 for retention of urine, 294 for bladder-neck obstruction and 209 for cancer of the bladder not otherwise specified.

**Table 4.14: All separations from Australian hospitals for procedures performed on the prostate or seminal vesicle, 1998–99 to 2004–05**

Procedure group	98–99	99–00	00–01	01–02	02–03	03–04	04–05
1160 Other application, insertion or removal procedures on prostate or seminal vesicle	107	143	159	151	218	224	n.a.
1161 Incision procedures on prostate or seminal vesicle	155	154	126	96	107	131	126
1162 Destruction of prostatic tissue	388	481	430	477	540	598	651
1163 Closed biopsy of prostate or seminal vesicle	4,637	4,928	5,477	6,976	8,495	12,389	14,856
1164 Open biopsy of prostate or seminal vesicle	102	133	180	246	450	540	n.a.
1165 Transurethral prostatectomy	20,518	20,492	20,660	20,342	20,223	20,511	21,110
1166 Other closed prostatectomy	625	582	645	591	455	501	816
1167 Open prostatectomy	2,038	2,338	2,617	3,003	3,413	4,357	5,347
1168 Other excision procedures on prostate or seminal vesicle	347	627	191	88	4	7	13
1169 Repair procedures on prostate or seminal vesicle	63	33	28	41	32	38	n.a.
1170 Other procedures on prostate or seminal vesicle	53	35	30	33	31	46	66
<b>1160–1170 Prostate and seminal vesicle</b>	<b>29,033</b>	<b>29,946</b>	<b>30,543</b>	<b>32,044</b>	<b>33,968</b>	<b>39,342</b>	<b>43,920</b>

Note: A change in coding occurred in 2004–05.

Source: National Hospital Morbidity Database, AIHW.

## Implications for projected incidence of prostate cancer

Incidence projections published by the AIHW in 2005 for prostate cancer have been found to be significantly underestimated. Based on the trends from 1998 to 2001, the projection to 2003 was for 11,797 new cases to be diagnosed, with a 95% prediction interval of 11,290–12,441. The projection to 2006 was for 12,929 cases, with a 95% prediction interval of 12,370–13,619 (AIHW, AACR & NCSG: Ian McDermid 2005). In reality, the number diagnosed in 2003 was

13,526 and the number reported by cancer registries in 2004 indicates that nationally, after removing duplicate records, there were over 15,500 new cases diagnosed in that year.

If the increase in numbers slowed to, say 10% p.a., there would be an estimated 17,000 cases diagnosed in 2005 and 18,700 in 2006. Hospital admissions for prostate cancer increased by 13.6% in 2004–05 and 8.9% in 2005–06, while PSA tests increased by 8.7% in 2004–05 and 12.4% in 2005–06. A 10% p.a. increase in new cases of prostate cancer diagnosed would be in line with these increases.

## International comparison

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

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

The summary in Table 4.15 was extracted from the 2002 GLOBOCAN database and presents comparative data on crude and age-standardised rates of incidence and mortality for prostate cancer for selected countries and regions of the world. Numbers and rates are estimates for the middle of 2000, based on the most recent data available, generally 3 to 5 years earlier, so care should be taken in interpretation. In particular, the numbers and rates for Australia do not reflect the more recent increase in incidence or decline in mortality.

### Main features

- Prostate cancer is a disease with very low incidence in China, Japan, other South-East Asian countries, and less developed regions of the world. Incidence is high in the most developed countries, but the incidence rates for around the year 2000 (age-standardised to the world population) vary considerably among countries, possibly in relation to the extent to which PSA and digital rectal examination screening are used. The figures therefore should be interpreted with caution.
- In around the year 2000 the GLOBOCAN-measured age-standardised incidence was highest in the United States of America (125 cases per 100,000 males), New Zealand (101 cases per 100,000), Sweden (91 per 100,000), Finland (84 per 100,000), Norway (82 per 100,000) and Iceland (81 per 100,000). Australia, then at 76 cases per 100,000, was similar to Switzerland, Belgium and Austria, but well above countries such as France (59 per 100,000), the United Kingdom (52 cases per 100,000) and Greece (26 per 100,000). Australia's 2003 incidence, age-standardised to the world population, was 101 new cases per 100,000 population.
- The highest age-standardised mortality rates in the world for prostate cancer were experienced by Norway and Sweden, each with 28 deaths per 100,000 males. The Australian rate was 18 deaths per 100,000, similar to Western European countries but above the United States rate of 16 per 100,000.

**Table 4.15: Prostate cancer incidence and mortality in selected countries**

Country/region	Incidence			Mortality		
	Cases	Crude Rate	ASR(W)	Deaths	Crude Rate	ASR(W)
<b>World</b>	<b>679,023</b>	<b>21.7</b>	<b>25.3</b>	<b>221,002</b>	<b>7.1</b>	<b>8.2</b>
<b>More developed regions</b>	<b>513,464</b>	<b>88.4</b>	<b>56.2</b>	<b>130,382</b>	<b>22.4</b>	<b>13.5</b>
<b>Less developed regions</b>	<b>165,347</b>	<b>6.5</b>	<b>9.4</b>	<b>90,514</b>	<b>3.6</b>	<b>5.2</b>
<b>Australia</b>	<b>10,807</b>	<b>111.3</b>	<b>76.0</b>	<b>2,646</b>	<b>27.3</b>	<b>17.7</b>
New Zealand	2,678	141.9	100.9	560	29.7	20.3
Canada	17,900	115.8	78.2	3,989	25.8	16.6
United States of America	239,930	168.9	124.8	32,442	22.8	15.8
China	10,125	1.5	1.7	5,919	0.9	1.0
Japan	16,808	27.0	12.6	7,667	12.3	5.7
<i>South-Eastern Asia</i>	<i>11,834</i>	<i>4.4</i>	<i>7.0</i>	<i>7,665</i>	<i>2.9</i>	<i>4.5</i>
<i>Central and Eastern Europe</i>	<i>32,891</i>	<i>23.2</i>	<i>17.4</i>	<i>18,496</i>	<i>13.1</i>	<i>9.7</i>
<i>Northern Europe</i>	<i>46,974</i>	<i>100.4</i>	<i>57.5</i>	<i>16,771</i>	<i>35.9</i>	<i>19.7</i>
Denmark	1,842	69.8	39.3	1,075	40.7	22.6
Estonia	335	52.9	36.3	164	25.9	17.6
Finland	3,556	140.9	84.4	774	30.7	18.0
Iceland	159	112.1	81.0	47	33.1	23.0
Ireland	1,442	74.9	56.3	521	27.1	19.7
Latvia	315	28.6	19.8	213	19.4	13.4
Lithuania	791	45.7	32.3	406	23.5	16.6
Norway	3,071	137.9	81.8	1,133	50.9	28.4
Sweden	7,848	180.2	90.9	2,550	58.5	27.7
United Kingdom	27,463	93.6	52.2	9,834	33.5	17.9
<i>Southern Europe</i>	<i>47,279</i>	<i>66.9</i>	<i>35.5</i>	<i>18,417</i>	<i>26.1</i>	<i>13.2</i>
Greece	2,920	55.9	26.2	1,310	25.1	11.2
Italy	23,518	84.6	40.5	7,419	26.7	12.2
Portugal	3,995	82.8	46.8	1,784	37.0	19.9
Spain	13,253	68.1	35.9	5,857	30.1	14.9
<i>Western Europe</i>	<i>98,083</i>	<i>109.2</i>	<i>61.6</i>	<i>29,382</i>	<i>32.7</i>	<i>17.5</i>
Austria	4,701	119.6	71.4	1,282	32.6	18.4
Belgium	6,928	137.9	74.2	2,032	40.4	20.3
France	29,434	101.4	59.3	9,789	33.7	18.2
Germany	44,383	110.8	60.5	12,158	30.3	15.8
Luxembourg	200	90.9	57.2	57	25.9	15.6
The Netherlands	7,112	89.9	56.7	2,529	32.0	19.7
Switzerland	5,126	145.0	77.3	1,481	41.9	21.6

Note: Data cover the circa 2000 period. This varies among countries.

Source: GLOBOCAN 2002, IARC.



## Key statistics on prostate cancer

The following is a summary of key statistics on prostate cancer.

### Incidence

Prostate cancer is the most common cancer diagnosed in males in Australia apart from NMSC.

- In 2003 there were 13,526 new cases of prostate cancer diagnosed in Australia and it is estimated that 18,700 new cases were diagnosed in 2006.
- In 1982 there were 3,597 cases diagnosed. This had increased to 6,746 by 1991, the year before PSA testing was introduced in Australia. In 1994 the first wave of increased numbers from PSA testing peaked at 13,064. By 1997 the annual number of cases had declined to 9,966. There was a steady increase to 12,003 cases diagnosed in 2002 before a sharp increase of 12.7% in 2003 to 13,526 cases.
- The age-standardised incidence of prostate cancer in 2003 was 144 new cases per 100,000 males, an 8.7% increase from the previous year, but still well below the 1994 peak of 184 cases per 100,000.
- In 2001–2003 age-standardised incidence was 3% higher in Inner Regional areas and more than 20% lower in Very Remote areas, compared with Major Cities (Chapter 5).
- Age-specific incidence of prostate cancer increases with age. In 2003 the rate was 86 per 100,000 males for 50–54 year olds, increasing to 999 per 100,000 for males aged 85 and over.
- In 2003 the risk of a diagnosis of prostate cancer was 1 in 9 by age 75, and 1 in 5 by age 85.
- The average age of a diagnosis of prostate cancer was 69.7 years in 2003, down from 72.3 years in 1993. The median age was 70 years in 2003, compared with 72 years in 1993.

### Mortality

Prostate cancer is the second most common cause of cancer death in males, after lung cancer.

- There were 2,837 deaths in 2003 from prostate cancer, 2,761 in 2004 and 2,946 in 2005 (ABS 2007b).
- The age-standardised death rate from prostate cancer in Australia increased in the early 1990s in line with the increase in incidence following the introduction of PSA testing. It reached a peak of 44 deaths per 100,000 males in both 1993 and 1994, then declined through the late 1990s in line with the decline in incidence rates. After the age-standardised incidence rate began to increase again from 2001, there was a small decline in the age-standardised death rate from 35.2 per 100,000 population in 2001 to 32.0 per 100,000 in 2004 before an increase to 32.8 per 100,000 in 2005.
- In 2003 the risk of death from prostate cancer was 1 in 84 by age 75 and 1 in 22 by age 85.
- In 2003 the average age of death from prostate cancer was 78.3 years, up from 77.1 years in 1993. The median age was 79 years, up from 77 years in 1993.

- Compared with the Major City areas of Australia, the age-standardised death rate from prostate cancer in 2003 was around 20% higher in Inner Regional and Outer Regional areas and 10% higher in Remote areas, but about one third lower in Very Remote areas (Chapter 5).

## Survival

- Five-year relative survival for males diagnosed with prostate cancer in Australia between 1992 and 1997 was 82.7%. It was 88% for males aged 50–59 years and 60–69 years, 82% for age 70–79, 67% for age 80–89, and 39% for those aged 90 and over (AIHW 2001). For males in Victoria in 2004 with prostate cancer who have survived at least 5 years 5-year survival was 91% for age 0–54, 93% for age 55–64, 90% for age 65–74, and 69% for age 75 and over (The Cancer Council Victoria Epidemiology Centre 2007).
- 5-year relative survival was 88% for males in New South Wales diagnosed between 1999 and 2003 (NSW Central Cancer Registry 2006) and 87% for South Australian males diagnosed between 1997 and 2003 (South Australian Cancer Registry 2007). Survival was 84% for males in Victoria in 2004 with prostate cancer who have survived at least 5 years (The Cancer Council Victoria Epidemiology Centre 2007).
- In 2005 the Cancer Council Queensland analysed 5-year relative survival by remoteness and socioeconomic status for males in Queensland diagnosed between 1996 and 2002. In respect of remoteness, 5-year relative survival was 82.8% in Major City areas, 84.4% in Inner Regional, 79.6% in Outer Regional, and 67.1% in Remote areas. Males living in the most affluent 10% of the state had a 5-year relative survival of 88.6%, those in the middle 80% of socioeconomic areas 82.3% and for those in the most disadvantaged 10% of areas it was 76.7% (Viertel Centre for Research in Cancer Control 2005).
- A geographic analysis of 5-year survival has also been undertaken for Victoria for Integrated Cancer Services Regions. It ranged from a high of 89% for Loddon-Mallee to a low of 70% for Barwon South Western for males in 2004 who have survived at least 5 years. On average it was 86% for Melbourne and 80% for the rest of Victoria (The Cancer Council Victoria Epidemiology Centre 2007).
- The Cancer Institute NSW has compared New South Wales and United States of America data on extent of disease for prostate cancer patients diagnosed from 1995–2004 (Cancer Institute NSW 2007). For the cases in New South Wales where extent of disease was known, 81% of cases were localised, compared with over 90% in the United States.

	Localised	Regional	Distant	Unknown	Total
	Per cent				
NSW	42	5	5	49	100
USA	91	5	0	4	100

## Demographics of the 'at risk' population

- The male population of Australia aged 65 and over increased at around 2.8% a year from 2001 to 2006.
- The highest incidence rates for prostate cancer are in the 75 years and over age group. The 75 years and over population increased by 3.7% in the year to 30 June 2006.

## International comparisons

- In around the year 2000 the GLOBOCAN-measured age-standardised incidence was highest in the United States (125 cases per 100,000 males), New Zealand (101 cases per 100,000), Sweden (91 per 100,000), Finland (84 per 100,000), Norway (82 per 100,000) and Iceland (81 per 100,000). Australia, then at 76 cases per 100,000, was similar to Switzerland, Belgium and Austria, but well above countries such as France (59 per 100,000), the United Kingdom (52 cases per 100,000) and Greece (26 per 100,000). These figures should be interpreted with caution. For example, Australia's 2003 incidence, age-standardised to the world population, was 101 new cases per 100,000 males.
- The highest mortality rates in the world for prostate cancer were experienced by Norway and Sweden with 28 age-standardised deaths per 100,000 males. The Australian rate was 18 deaths per 100,000 males, similar to Western European countries but above the United States rate of 16 per 100,000.

## PSA tests

- PSA tests for prostate cancer screening increased by 42% from 492,147 in 2001–02 to 698,828 in 2005–06. The increase during 2005–06 of 12.4% was the highest annual increase in the 5-year period.
- In 2005–06, PSA tests were being provided at a rate of 20,859 per 100,000 males for those aged 55–64 years, at 22,667 per 100,000 for 65–74 year olds and at 15,796 per 100,000 for 75–84 year olds. The rates in these age groups were much higher in South Australia, the Australian Capital Territory, Western Australia and Tasmania than in other jurisdictions.
- In the 2004 Queensland Cancer Risk Survey 52% of men aged 50–75 years reported ever having had a PSA test (Carriere et al. 2007).

## Hospitalisation

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

# 5 Regional cancer differentials

## Introduction

The AIHW Rural health and Health inequalities monitoring series provide data on a range of rural health issues including health status, determinants of health and health service provision. *Health inequalities in Australia: mortality* (Queensland University of Technology and AIHW 2004) and *Rural, regional and remote health. Mortality trends 1992–2003* (AIHW 2006c) include analyses of age-standardised cancer mortality rates by regional area for ‘all cancers’ and selected major cancers. *Rural, regional and remote health: indicators of health 2007* (AIHW 2007, in preparation) will include cancer incidence and mortality analyses.

Cancer incidence and mortality data have been analysed in this chapter using the Australian Standard Geographical Classification (ASGC) which groups geographic areas into five classes. These classes are based on Census Collection Districts (CDs) and defined using the Accessibility/Remoteness Index for Australia (ARIA). ARIA is a measure of the remoteness of a location from the services provided by large towns or cities. A higher ARIA score denotes a more remote location. The five classes of the ASGC Remoteness classification, along with a sixth ‘Migratory’ class, are listed in Table 5.1.

**Table 5.1: Remoteness areas for the ASGC remoteness classification**

Region	Collection districts within region
Major cities of Australia (MC)	CDs with an average ARIA index value of 0 to 0.2
Inner regional Australia (IR)	CDs with an average ARIA index value greater than 0.2 and less than or equal to 2.4
Outer regional Australia (OR)	CDs with an average ARIA index value greater than 2.4 and less than or equal to 5.92
Remote Australia (R)	CDs with an average ARIA index value greater than 5.92 and less than or equal to 10.53
Very remote Australia (VR)	CDs with an average ARIA index value greater than 10.53
Migratory	Areas composed of off-shore, shipping and migratory CDs

Source: ABS 2001.

To compare regional and remote age-standardised rates with those for Major City areas for 2001–2003, standardised incidence ratios (SIRs) have been used. The SIR for a regional category is the age-standardised rate for the region divided by the age-standardised rate for Major City areas. Hence the SIR for Major City areas is always 1.00. Similarly the average annual numbers of excess cancer cases by region have been calculated by comparing the actual number with the number expected if each region had the same age-standardised rate as for Major City areas.

In the same way, standardised mortality ratios (SMRs) are used to compare regional and remote age-standardised death rates with those for Major City areas.

## Incidence differentials

Cancer incidence differentials are presented for 2001–2003 in tables 5.2, 5.3 and 5.4.

## Summary

Preventable cancers associated with excessive sun exposure (melanoma), higher smoking rates (lung, head and neck, and lip) and low Pap smear screening (cervical cancer) were among the main cancers with significantly higher incidence rates in rural and remote areas in 2001–2003. The incidence of cancer of unknown primary site, which is most likely to be diagnosed as an advanced cancer, is also much higher in males in all rural and remote categories and may be related to lower general practitioner consultation rates by males in these areas compared with Major City areas.

The main cancers with significantly lower incidence rates in regional and remote areas included stomach cancer, liver cancer, female breast cancer and lymphoma. In 2001 males and females in Inner Regional and Outer Regional areas were 1.6 times as likely as Major City residents to eat four or more serves of fruit and vegetables a day (AIHW 2005a) and this may be a contributor to lower stomach cancer incidence. On the other hand, colorectal cancer incidence was significantly higher (by 4%) in Inner Regional and Outer Regional areas.

## Key statistics

- Males living in Inner Regional and Outer Regional areas had all-cancer incidence 5% higher than the rate for Major City areas. In Very Remote areas incidence was significantly lower, at 93% of the Major City rate.
- Females living in Inner Regional areas had all-cancer incidence 3% higher than for Major City areas. In Very Remote areas incidence was 88% of the Major City rate.
- Melanoma incidence was 20% higher in Inner Regional areas and 8% higher in Outer Regional areas for males, and 30% higher in Inner Regional, 24% higher in Outer Regional and 34% higher in Remote areas for females. Largely because Aboriginal and Torres Strait Islander people have skin pigmentation protective against melanoma, Very Remote areas had significantly lower incidence.
- Lung, head and neck, and lip cancer rates – all smoking-related – increased significantly with increasing remoteness. Smoking rates in the general Australian population have been declining for many years. In 2004 a record low of 20.4% of the non-Indigenous population aged 14 years and over were current smokers compared with 39.0% of Aboriginal and Torres Strait Islander people (AIHW 2005b). There may be higher rates of smoking among both the Indigenous and non-Indigenous populations in Remote and Very Remote areas that lead to increased rates of smoking-related cancers in these areas.
- Cervical cancer incidence was 20% higher in Outer Regional areas (statistically significant), 35% higher in Remote areas and 26% higher in Very Remote areas (both rates not statistically significant because of small numbers).
- Incidence of cancer of unknown primary site in males was 10% higher in Inner Regional, 23% higher in Outer Regional, 26% higher in Remote and 43% higher in Very Remote areas.
- Incidence of female breast cancer is significantly lower in Inner Regional areas (98% of the Major City rate), Outer Regional areas (91%), Remote areas (89%), and Very Remote areas (78%). This is related to a significantly higher incidence of breast cancer in high socioeconomic status areas; these areas are more prevalent in Major City areas. In 2000–2002 the age-standardised rate of female breast cancer was 133.8 new cases per 100,000 women in the highest socioeconomic status quintile in Australia, compared with

rates of 120.2, 115.8, 116.2 and 110.2 per 100,000 in the other four quintiles (AIHW & National Breast Cancer Centre 2006).

- Stomach cancer, liver cancer and lymphoma also have significantly lower incidence rates in rural and remote areas compared with Major City areas, but it is not known what contributes to these lower rates.

**Table 5.2: Average annual cancer incidence: cancer site, sex and remoteness classification, Australia, 2001–2003**

Cancer site	Males					Females					Persons				
	MC	IR	OR	R	VR	MC	IR	OR	R	VR	MC	IR	OR	R	VR
All cancers	27,984	10,542	5,066	652	251	22,881	7,926	3,500	421	156	50,865	18,469	8,566	1,073	407
Bladder	1,068	429	191	23	9	386	135	67	7	2	1,454	564	258	29	11
Brain	532	193	87	11	4	406	145	56	10	2	938	338	143	20	6
Breast	59	21	11	1	1	7,943	2,600	1,126	142	53	8,002	2,622	1,137	143	53
Cervical	—	—	—	—	—	468	145	84	13	6	468	145	84	13	6
Colorectal	4,383	1,636	806	106	33	3,789	1,351	593	61	18	8,172	2,987	1,399	166	51
Connective & soft tissue	218	77	34	4	3	220	78	27	4	1	438	155	61	8	4
Head & neck	735	269	161	30	19	351	117	51	7	4	1,085	387	211	37	22
Kidney	850	293	143	17	6	490	170	76	9	3	1,341	463	219	25	9
Leukaemia	942	354	171	19	8	704	241	104	11	5	1,646	595	276	30	12
Lip	392	198	111	18	7	153	85	37	4	2	545	284	148	22	9
Liver	449	106	57	6	5	190	39	20	3	3	639	145	76	10	8
Lung	3,349	1,259	645	86	40	1,934	674	320	33	18	5,283	1,933	965	119	58
Lymphoma	1,518	476	209	23	11	1,254	389	158	15	7	2,772	865	367	39	18
Melanoma	3,307	1,371	608	78	28	2,446	1,028	458	66	17	5,753	2,399	1,066	143	46
Pancreas	626	236	105	12	5	599	218	100	12	3	1,225	454	205	24	9
Prostate	7,711	2,933	1,390	173	54	—	—	—	—	—	7,711	2,933	1,390	173	54
Stomach	798	272	116	16	6	480	134	62	4	2	1,277	407	178	20	7
Unknown primary site	1,046	417	222	29	13	1,068	378	162	22	12	2,114	795	384	50	25

Source: National Cancer Statistics Clearing House, AIHW.

**Table 5.3: Standardised incidence ratios: cancer site, sex and remoteness classification, Australia, 2001–2003**

Cancer site	Males					Females					Persons				
	MC	IR	OR	R	VR	MC	IR	OR	R	VR	MC	IR	OR	R	VR
All cancers	1.00	*1.05	*1.05	1.02	*0.93	1.00	*1.03	1.00	0.99	*0.88	1.00	*1.04	*1.03	1.01	*0.91
Bladder	1.00	*1.10	1.04	0.98	0.93	1.00	1.03	1.16	1.06	0.9	1.00	*1.08	1.07	1.00	0.93
Brain	1.00	1.07	0.97	0.82	0.74	1.00	1.09	0.91	1.23	*0.44	1.00	*1.07	0.95	0.97	*0.63
Breast	1.00	1.01	1.03	1.03	0.93	1.00	*0.98	*0.91	*0.89	*0.78	1.00	*0.98	*0.92	*0.89	*0.78
Cervical	—	—	—	—	—	1.00	0.98	*1.20	1.35	1.26	1.00	0.98	*1.20	1.35	1.26
Colorectal	1.00	1.03	*1.05	1.06	*0.81	1.00	*1.05	1.03	0.93	*0.72	1.00	*1.04	*1.04	1.01	*0.77
Connective & soft tissue	1.00	1.04	0.93	0.82	1.42	1.00	1.07	*0.80	0.98	0.51	1.00	1.05	0.87	0.89	1.03
Head & neck	1.00	1.04	*1.25	*1.69	*2.36	1.00	1.00	0.95	1.04	1.36	1.00	1.03	*1.16	*1.51	*2.09
Kidney	1.00	0.97	0.97	0.84	0.70	1.00	1.02	1.02	0.95	0.70	1.00	0.99	0.98	0.87	*0.70
Leukaemia	1.00	1.06	1.07	0.88	0.82	1.00	1.03	0.99	0.89	0.89	1.00	1.05	1.04	0.88	0.84
Lip	1.00	*1.49	*1.69	*1.84	1.56	1.00	*1.66	*1.60	1.47	1.96	1.00	*1.54	*1.66	*1.76	*1.64
Liver	1.00	*0.66	*0.72	*0.60	1.15	1.00	*0.60	*0.69	1.05	2.45	1.00	*0.64	*0.72	0.71	1.44
Lung	1.00	1.02	*1.10	*1.17	*1.36	1.00	1.01	*1.08	0.98	1.36	1.00	1.02	*1.09	1.11	*1.36
Lymphoma	1.00	*0.91	*0.81	*0.65	*0.65	1.00	*0.93	*0.84	*0.67	0.73	1.00	*0.92	*0.82	*0.66	*0.68
Melanoma	1.00	*1.20	*1.08	0.97	*0.79	1.00	*1.30	*1.24	*1.34	*0.78	1.00	*1.24	*1.15	*1.11	*0.78
Pancreas	1.00	1.04	0.97	0.87	0.92	1.00	1.07	1.11	1.18	0.94	1.00	1.05	1.03	1.00	0.93
Prostate	1.00	*1.03	1.02	1.01	*0.78	—	—	—	—	—	1.00	*1.03	1.02	1.01	*0.78
Stomach	1.00	0.94	*0.84	0.92	0.76	1.00	*0.83	*0.86	*0.49	0.55	1.00	*0.90	*0.84	*0.78	*0.69
Unknown primary site	1.00	*1.10	*1.23	*1.26	*1.43	1.00	1.05	1.02	1.26	*1.81	1.00	*1.07	*1.13	*1.26	*1.58

\* Statistically significant.

Source: National Cancer Statistics Clearing House, AIHW.



**Table 5.4: Average annual excess cancer incidence: cancer site, sex and remoteness classification, 2001–2003**

Cancer site	Males					Females					Persons				
	MC	IR	OR	R	VR	MC	IR	OR	R	VR	MC	IR	OR	R	VR
All cancers	0	496	223	12	-18	0	258	13	-6	-21	0	771	251	10	-38
Bladder	0	39	7	0	-1	0	4	9	0	0	0	43	16	0	-1
Brain	0	12	-2	-2	-2	0	11	-5	2	-2	0	23	-8	-1	-3
Breast	0	0	0	0	0	0	-62	-106	-17	-15	0	-62	-105	-17	-15
Cervical	—	—	—	—	—	0	-3	14	3	1	0	-3	14	3	1
Colorectal	0	42	40	6	-8	0	59	18	-4	-7	0	102	58	2	-15
Connective & soft tissue	0	3	-3	-1	1	0	5	-7	0	-1	0	8	-9	-1	0
Head & neck	0	10	33	12	11	0	0	-3	0	1	0	10	30	13	12
Kidney	0	-11	-5	-3	-3	0	4	1	0	-1	0	-7	-4	-4	-4
Leukaemia	0	20	11	-3	-2	0	6	-1	-1	-1	0	26	9	-4	-2
Lip	0	65	45	8	2	0	34	14	1	1	0	99	*59	9	4
Liver	0	-56	-22	-4	1	0	-26	-9	0	2	0	-81	-30	-4	2
Lung	0	30	59	12	11	0	9	24	-1	5	0	39	83	12	15
Lymphoma	0	-50	-48	-13	-6	0	-28	-31	-8	-3	0	-77	-78	-20	-8
Melanoma	0	230	47	-2	-8	0	236	89	17	-5	0	467	137	15	-13
Pancreas	0	8	-4	-2	0	0	14	10	2	0	0	22	6	0	-1
Prostate	0	91	31	1	-15	—	—	—	—	—	0	91	31	1	-15
Stomach	0	-17	-23	-1	-2	0	-28	-10	-4	-1	0	-45	-33	-6	-3
Unknown primary site	0	38	42	6	4	0	17	3	4	5	0	55	45	10	9

Source: National Cancer Statistics Clearing House, AIHW.

## Mortality differentials

Cancer death numbers by ASGC region are presented for 2003 for selected cancers in tables 5.5 to 5.12 and for standardised mortality ratios (SMRs) in Table 5.13. The source of these tables is *Rural, regional and remote health. Mortality trends 1992–2003* (AIHW 2006c).

Notes in interpreting Table 5.13:

- The statistic used to compare rates of death in each area and between years is the ratio of the number of observed cases to the number expected if 'standard rates' applied in each area and each year.
- The standard for all years is the rate, for males and females, of death in Major City areas for each cause in the period 2001–2003.
- A ratio greater than 1 indicates more deaths than expected (that is, a higher death rate than in Major City areas in 2001–2003). A ratio less than 1 indicates fewer deaths than expected (that is, a lower death rate than in Major Cities in 2001–2003).
- In the *Rural, regional and remote health. Mortality trends 1992–2003* report the statistical significance of differences between death rates in different areas or years was not calculated.

## Summary

- In 2003, 38% of male cancer deaths and 35% of female cancer deaths in Australia were of residents of regional and remote areas (Table 5.5).
- Although incidence of 'all cancers' was about 10% lower for males and females in Very Remote areas compared with Major City areas in 2001–2003, mortality was about 10% higher than for Major City areas in 2003 (Table 5.13). Hence cancer survival in these areas must be much poorer than in Major City areas.
- Males living in Outer Regional areas also experienced about 10% higher mortality for 'all cancers'.
- Between 1992 and 2003 there was a reduction in the death rates across all regions for both males and females. However, the reduction was greater in Major City areas than in rural and remote areas.
- Lung cancer incidence and mortality for males was over one third higher in Very Remote areas in 2001–2003 than for Major City areas.
- Colorectal cancer death rates were similar among Major City, Inner Regional and Outer Regional areas, but lower in remote areas in 2003.
- Female breast cancer death rates from 2000 to 2003 were very similar for Major City, Inner Regional and Outer Regional areas. In remote areas the rates were generally lower than in all other areas but fluctuate considerably from year to year because of small numbers.
- Prostate cancer death rates were about 20% higher in Inner Regional and Outer Regional areas, and 10% to 40% lower in Remote areas, than in Major City areas in 2001–2003.
- Melanoma death rates for males were 20 to 30% higher in 2002 and 2003 in Inner Regional and Outer Regional areas than in Major City areas. Melanoma death rates for

females in Outer Regional, Remote and Very Remote areas were lower than in Major City areas.

**Table 5.5: Number of deaths due to all cancers, 2003**

	MC	IR	OR	R	VR	Total
Males	13,235	5,202	2,606	292	131	21,466
Females	10,933	3,896	1,749	195	83	16,856

Note: 70 records were missing details of geographic location and have been excluded from the analysis.

**Table 5.6: Number of deaths due to lung cancer, 2003**

	MC	IR	OR	R	VR	Total
Males	2,759	1,091	557	60	35	4,502
Females	1,623	555	249	26	10	2,463

Note: 11 records were missing details of geographic location and have been excluded from the analysis.

**Table 5.7: Number of deaths due to colorectal cancer, 2003**

	MC	IR	OR	R	VR	Total
Males	1,526	578	275	28	10	2,417
Females	1,307	481	210	22	6	2,026

Note: 4 records were missing details of geographic location and have been excluded from the analysis.

**Table 5.8: Number of deaths due to breast cancer, 2003**

	MC	IR	OR	R	VR	Total
Males	7	<3	<3	<3	<3	9
Females	1,744	616	305	24	16	2,705

Note: 8 records were missing details of geographic location and have been excluded from the analysis.

**Table 5.9: Number of deaths due to cervical cancer, 2003**

	MC	IR	OR	R	VR	Total
Females	147	48	37	4	<3	237

Note: 1 record was missing details of geographic location and has been excluded from the analysis.

**Table 5.10: Number of deaths due to prostate cancer, 2003**

	MC	IR	OR	R	VR	Total
Males	1,690	745	360	37	9	2,841

Note: 1 record was missing details of geographic location and has been excluded from the analysis.

**Table 5.11: Number of deaths due to melanoma, 2003**

	MC	IR	OR	R	VR	Total
Males	461	186	97	12	<3	758
Females	247	93	30	<3	<3	372

Note: 2 records were missing details of geographic location and have been excluded from the analysis.

**Table 5.12: Number of deaths due to other cancers, 2003**

	MC	IR	OR	R	VR	Total
Males	6,792	2,600	1,316	154	76	10,938
Females	5,866	2,103	919	119	47	9,054

Note: 43 records were missing details of geographic location and have been excluded from the analysis.

**Table 5.13: Standardised mortality ratios, selected cancers, 1992 to 2003**

Year	Males					Females				
	MC	IR	OR	R	VR	MC	IR	OR	R	VR
<b>All cancers</b>										
1992	1.20	1.20	1.25	1.12	1.33	1.09	1.08	1.14	1.12	1.55
1993	1.18	1.16	1.26	1.29	1.21	1.12	1.07	1.12	1.12	1.58
1994	1.20	1.19	1.28	1.36	1.17	1.10	1.07	1.11	1.19	1.15
1995	1.17	1.15	1.18	1.21	1.06	1.09	1.09	1.11	1.08	1.07
1996	1.14	1.15	1.27	1.17	1.22	1.09	1.08	1.13	1.18	1.16
1997	1.10	1.15	1.16	1.11	1.05	1.07	1.08	1.09	0.97	1.36
1998	1.08	1.13	1.16	1.16	1.33	1.05	1.02	1.03	1.05	1.27
1999	1.06	1.10	1.13	1.16	1.10	1.03	1.01	1.03	1.02	1.00
2000	1.03	1.06	1.16	1.12	1.22	1.01	1.01	1.06	0.93	1.11
2001	1.03	1.05	1.10	1.13	1.05	1.00	1.03	1.07	1.11	1.31
2002	1.00	1.08	1.12	0.93	0.88	1.01	1.04	1.08	1.00	1.13
2003	0.97	1.04	1.11	0.98	1.11	0.98	1.03	1.04	1.04	1.15
<b>Lung cancer</b>										
1992	1.35	1.27	1.36	1.51	1.51	0.89	0.84	0.78	0.93	2.16
1993	1.25	1.27	1.36	1.53	1.73	0.92	0.83	0.91	0.76	1.90
1994	1.29	1.29	1.40	1.61	1.56	0.93	0.88	0.91	0.77	0.56
1995	1.25	1.19	1.27	1.46	1.17	0.94	0.92	0.95	1.18	1.34
1996	1.20	1.25	1.36	1.22	1.76	0.96	0.91	0.98	1.01	1.55
1997	1.16	1.18	1.20	1.15	1.59	0.96	0.90	0.95	1.18	2.14
1998	1.16	1.17	1.29	1.41	1.67	0.94	0.88	0.85	1.18	0.89
1999	1.12	1.11	1.21	1.33	1.56	0.96	0.96	0.87	1.04	1.26
2000	1.05	1.06	1.25	1.15	1.64	1.00	0.97	1.05	0.70	1.03
2001	1.04	1.08	1.11	1.29	1.25	1.01	0.96	1.12	1.31	1.67
2002	1.03	1.07	1.16	0.92	1.29	1.00	1.10	1.22	1.18	1.63
2003	0.94	1.00	1.08	0.92	1.36	1.00	0.98	1.00	0.93	0.99

(continued)

**Table 5.13 (continued): Standardised mortality ratios, selected cancers, 1992 to 2003**

Year	Males					Females				
	MC	IR	OR	R	VR	MC	IR	OR	R	VR
<b>Colorectal cancer</b>										
1992	1.22	1.32	1.24	1.13	0.98	1.19	1.30	1.51	1.46	0.52
1993	1.23	1.25	1.39	1.22	0.83	1.27	1.31	1.21	1.21	1.62
1994	1.29	1.24	1.34	1.29	1.39	1.24	1.38	1.32	1.13	0.55
1995	1.18	1.33	1.22	0.84	0.68	1.18	1.26	1.31	1.01	1.40
1996	1.23	1.14	1.34	1.24	1.10	1.17	1.23	1.30	1.46	0.86
1997	1.19	1.26	1.31	1.21	0.59	1.15	1.33	1.40	0.65	1.04
1998	1.12	1.26	1.20	1.23	0.57	1.15	1.26	1.20	1.35	1.18
1999	1.13	1.15	1.13	1.27	1.04	1.08	1.10	1.26	1.14	0.72
2000	1.09	1.10	1.26	1.14	0.69	1.11	1.14	1.33	0.77	0.47
2001	1.09	1.11	1.22	1.45	0.70	1.01	1.19	1.20	1.14	1.23
2002	0.95	1.14	1.11	0.69	0.34	1.05	1.17	1.13	0.74	0.61
2003	0.96	0.99	1.00	0.81	0.69	0.95	1.02	1.02	0.96	0.77
<b>Breast cancer</b>										
1992	n.p.	n.p.	n.p.	n.p.	n.p.	1.15	1.18	1.19	0.87	1.66
1993	n.p.	n.p.	n.p.	n.p.	n.p.	1.26	1.17	1.16	1.16	0.99
1994	n.p.	n.p.	n.p.	n.p.	n.p.	1.24	1.14	1.14	1.26	0.77
1995	n.p.	n.p.	n.p.	n.p.	n.p.	1.18	1.14	1.16	0.99	0.90
1996	n.p.	n.p.	n.p.	n.p.	n.p.	1.15	1.13	1.06	1.16	1.26
1997	n.p.	n.p.	n.p.	n.p.	n.p.	1.14	1.11	1.06	0.93	0.44
1998	n.p.	n.p.	n.p.	n.p.	n.p.	1.07	1.07	1.12	0.72	0.99
1999	n.p.	n.p.	n.p.	n.p.	n.p.	1.02	1.00	1.03	1.24	1.31
2000	n.p.	n.p.	n.p.	n.p.	n.p.	1.00	0.99	1.02	0.90	1.09
2001	n.p.	n.p.	n.p.	n.p.	n.p.	1.01	0.99	0.95	0.91	0.64
2002	n.p.	n.p.	n.p.	n.p.	n.p.	1.01	1.05	1.00	0.81	0.84
2003	n.p.	n.p.	n.p.	n.p.	n.p.	0.97	1.01	1.11	0.73	1.24
<b>Cervical cancer</b>										
1992	..	..	..	..	..	1.73	1.72	2.17	2.90	3.01
1993	..	..	..	..	..	1.57	1.73	2.20	2.90	5.49
1994	..	..	..	..	..	1.68	1.72	2.09	3.66	5.21
1995	..	..	..	..	..	1.67	1.72	1.88	1.40	5.25
1996	..	..	..	..	..	1.43	1.82	1.20	1.17	5.15
1997	..	..	..	..	..	1.36	1.57	1.72	1.58	6.95
1998	..	..	..	..	..	1.25	1.10	1.60	2.72	3.53
1999	..	..	..	..	..	1.05	0.83	1.35	1.43	1.98
2000	..	..	..	..	..	1.22	0.97	1.75	1.99	1.98
2001	..	..	..	..	..	1.09	1.15	1.69	2.50	1.82
2002	..	..	..	..	..	0.95	0.94	1.44	1.05	0.86
2003	..	..	..	..	..	0.97	0.95	1.60	1.51	1.04

(continued)

**Table 5.13 (continued): Standardised mortality ratios, selected cancers, 1992 to 2003**

Year	Males					Females				
	MC	IR	OR	R	VR	MC	IR	OR	R	VR
<b>Prostate cancer</b>										
1992	1.21	1.41	1.52	1.14	0.91	..	..	..	..	..
1993	1.30	1.35	1.55	1.58	0.83	..	..	..	..	..
1994	1.25	1.38	1.53	1.84	0.70	..	..	..	..	..
1995	1.22	1.31	1.40	1.29	1.23	..	..	..	..	..
1996	1.18	1.33	1.54	1.32	0.46	..	..	..	..	..
1997	1.08	1.22	1.25	1.30	1.15	..	..	..	..	..
1998	1.07	1.22	1.32	1.45	1.39	..	..	..	..	..
1999	1.02	1.15	1.24	1.03	1.11	..	..	..	..	..
2000	1.02	1.21	1.36	1.32	0.98	..	..	..	..	..
2001	1.03	1.12	1.26	1.17	0.62	..	..	..	..	..
2002	1.01	1.23	1.25	1.00	0.91	..	..	..	..	..
2003	0.97	1.16	1.23	1.09	0.73	..	..	..	..	..
<b>Melanoma</b>										
1992	1.01	1.04	1.03	0.85	0.70	1.19	1.18	1.23	0.76	1.48
1993	1.05	1.09	1.29	0.98	0.39	0.86	1.14	1.00	1.16	0.63
1994	1.15	1.07	1.07	1.14	0.71	0.98	0.86	0.91	0.71	1.44
1995	1.08	1.04	1.21	0.85	0.41	0.97	1.22	1.21	1.03	0.04
1996	1.00	1.08	1.08	1.04	0.09	1.03	0.89	1.28	1.45	0.01
1997	0.93	1.21	1.11	0.41	0.01	1.00	1.01	1.19	0.96	0.72
1998	1.00	1.17	1.07	0.85	0.93	1.06	0.99	1.02	0.99	1.63
1999	0.98	1.25	0.90	1.17	0.34	1.04	1.14	0.95	1.20	0.74
2000	0.93	1.06	1.15	0.99	0.85	0.95	1.18	1.25	0.95	1.58
2001	0.99	1.23	1.07	0.69	0.49	1.05	1.19	1.13	0.19	0.64
2002	0.97	1.25	1.28	0.90	0.61	0.94	0.99	0.91	0.47	0.06
2003	1.04	1.17	1.28	1.23	0.40	1.01	1.13	0.80	0.16	0.57
<b>Other cancers</b>										
1992	1.13	1.10	1.15	0.97	1.45	1.09	1.04	1.10	1.13	1.52
1993	1.12	1.06	1.11	1.16	1.23	1.09	1.03	1.12	1.13	1.59
1994	1.12	1.10	1.17	1.19	1.08	1.07	1.02	1.09	1.25	1.43
1995	1.12	1.06	1.08	1.19	1.10	1.07	1.07	1.07	1.08	0.90
1996	1.10	1.06	1.16	1.10	1.27	1.08	1.07	1.15	1.17	1.01
1997	1.08	1.10	1.08	1.07	0.99	1.05	1.05	1.04	0.97	1.39
1998	1.04	1.06	1.06	0.99	1.35	1.04	1.00	0.99	1.02	1.41
1999	1.02	1.06	1.08	1.09	0.98	1.03	1.01	1.02	0.89	0.86
2000	1.02	1.01	1.06	1.08	1.25	0.99	0.98	0.99	1.00	1.23
2001	1.02	1.00	1.03	1.00	1.16	1.00	1.01	1.03	1.12	1.49
2002	1.00	1.02	1.06	0.97	0.85	1.02	1.00	1.06	1.10	1.27
2003	0.98	1.03	1.10	1.01	1.23	0.99	1.04	1.03	1.22	1.28

Source: AIHW 2006c.

# Appendixes

# Appendix A: WHO classification of lymphoid and haematopoietic neoplasms

**Table A.1: WHO classification of lymphoid and haematopoietic neoplasms and the corresponding ICD-O-3 morphology codes**

Group	ICD-O-3 morphology codes (all malignant)
<i>Lymphoid neoplasms</i>	
Hodgkin lymphomas	9650–55, 9659, 9661–65, 9667
B-cell neoplasms	9670–71, 9673, 9675, 9678–80, 9684, 9687, 9689–91, 9695, 9698–99, 9728, 9731–34, 9823, 9826, 9833, 9836, 9940
T-cell and NK-cell neoplasms	9700–02, 9705, 9708–09, 9714, 9716–19, 9729, 9827, 9831, 9834, 9837, 9948
Non-Hodgkin lymphomas, NOS	9591, 9727, 9820, 9832, 9835
Composite Hodgkin / non-Hodgkin lymphoma	9596
Lymphoid neoplasms, NOS	9590
<i>Myeloid neoplasms</i>	
Acute myeloid leukaemias	9805, 9840, 9861, 9866–67, 9870–74, 9891, 9895–97, 9910, 9920, 9930–31
Chronic myeloproliferative diseases	9875, 9950, 9960–64
Myelodysplastic syndromes	9980, 9982–87, 9989
Myelodysplastic / myeloproliferative diseases	9876, 9945–46
Myeloid neoplasms, NOS	9860, 9863
<i>Lymphoid / myeloid neoplasms, NOS</i>	9800–01
<i>Other lymphoid and haematopoietic neoplasms</i>	
Mast cell diseases	9740–42
Histiocytic and dendritic cell neoplasms	9750, 9754–58
Other immunoproliferative diseases	9760–62, 9764, 9766

Source: Adapted from WHO (2001) to incorporate various 'NOS' morphology codes and the 'Other immunoproliferative diseases' group.



## 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, Australia, 2002

	No. of cases in 2002	Australian 2002 male population <sup>(a)</sup>	Age-specific rate per 100,000 population	Australian 2001 Population Standard <sup>(a)</sup>	Expected number of cases
Age group	(column 1)	(column 2)	(column 3)	(column 4)	(column 5)
0–4	1	651,556	0.2	1,282,357	3
5–9	0	691,399	0.0	1,351,664	0
10–14	0	700,013	0.0	1,353,177	0
15–19	2	696,033	0.3	1,352,745	4
20–24	4	676,737	0.6	1,302,412	8
25–29	3	689,035	0.4	1,407,081	6
30–34	5	744,130	0.7	1,466,615	10
35–39	15	733,565	2.0	1,492,204	30
40–44	56	751,657	7.5	1,479,257	111
45–49	118	684,477	17.2	1,358,594	234
50–54	222	650,897	34.1	1,300,777	444
55–59	453	550,272	82.3	1,008,799	830
60–64	608	427,466	142.2	822,024	1,169
65–69	812	344,606	235.6	682,513	1,608
70–74	1,107	304,348	363.7	638,380	2,322
75–79	1,031	233,554	441.4	519,356	2,292
80–84	624	137,123	455.1	330,050	1,502
85+	338	86,265	391.8	265,235	1,039
<b>Total</b>	<b>5,399</b>	<b>9,753,133</b>		<b>19,413,240</b>	

(a) Australian Bureau of Statistics 2005.

### 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' below). 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:

$$\begin{aligned} \text{Crude incidence rate for lung cancer} &= \frac{\text{Column 1 total}}{\text{Column 2 total}} \times 100,000 \\ &= \frac{5,399}{9,753,133} \times 100,000 \\ &= 55.4 \text{ per } 100,000 \end{aligned}$$

## Age-specific rates

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

$$\begin{aligned} \text{Age-specific lung cancer incidence rates in males aged 75-79} &= \frac{\text{Column 1 for this age}}{\text{Column 2 for this age}} \times 100,000 \\ &= \frac{1,031}{233,554} \times 100,000 \\ &= 441.4 \text{ per } 100,000 \end{aligned}$$

## Age-standardised rates (ASRs)

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

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

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

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

## Confidence intervals (CI)

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

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

## Risk to age 75 and age 85

These quantities are measures that approximate the risk of contracting (or dying from) a particular cancer before a given age, assuming that the risks at the time of estimation remained throughout life. It is based on a mathematical relationship with the cumulative rate. An example for risk to age 75 follows.

The cumulative rate is calculated by summing the age-specific rates for the age groups from 0-4 to 70-74. Using the example table at the start of this appendix we have:

$$\begin{aligned} \text{Cumulative rate} &= \frac{5 \times (\text{Sum of the age-specific rates}) \times 100}{100,000} \\ &= \frac{5 \times 886.8 \times 100}{100,000} \\ &= 4.43\% \end{aligned}$$

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

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

where rate is expressed as a percentage.

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

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

Continuing with the example, the cumulative rate was 3.84%. Therefore:

$$\begin{aligned} n &= \frac{1}{(1 - e^{-4.43/100})} \\ &= 23.06 \end{aligned}$$

That is, for men, the risk to age 75 of developing lung cancer is about 1 in 23, providing they remain at risk for the whole period and the 2002 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 percentage of all cancers accounted for by a particular cancer. The measure may be computed for cancer incidence or mortality. Using an incidence example, the measure is calculated by taking the number of new cases of a particular cancer, for example lung cancer, and dividing that by the total number of all new cancer cases and multiplying by 100 to express it as a percentage. This is undertaken for each sex and for total persons. Note that for this publication the incidence and mortality of non-melanoma skin cancers are not included in total new cancer cases.

## Sex ratio

This measure indicates the relative incidence or mortality between the sexes. It can be calculated on the basis of observed numbers, crude rates, age-standardised rates or cumulative rates. 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 rate or the cumulative rate as these both adjust for age variations between male and female populations. In addition, the use of cumulative rate to a certain age, for example 85 years, discounts the occurrence of cancer in people aged over 85 years. This gives more emphasis 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. The method used in this publication for the calculation of person-years of life lost is the number of years between age at death and 75 years, or 85 years, summed over all persons. For example, a person dying at age 50 contributes 25 years, or 35 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:

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

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.

## Cancers attributed to smoking and excessive alcohol consumption

Data on cancers attributed to smoking and excessive alcohol consumption 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 2003. 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 A.2 on the next page.

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.

**Table A.2: Cancer site and percentage of cancers attributed to excessive alcohol consumption and to smoking**

<b>Cancer site</b>	<b>Males (per cent)</b>	<b>Females (per cent)</b>
<b>Cancers attributed to excessive alcohol consumption</b>		
Oral cancers <sup>(a)</sup>	39	31
Oesophagus	46	40
Liver	39	35
Larynx	51	46
Female breast cancer	—	12
<b>Cancers attributed to smoking</b>		
Oral cancers <sup>(a)</sup>	57	51
Oesophagus	54	46
Stomach	14	11
Anus	48	41
Pancreas	24	19
Larynx	73	66
Lung	84	77
Vulva	—	40
Penis	30	—
Bladder	43	36
Renal parenchyma	28	21
Renal pelvis	55	48

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

Source: Ridolfo & Stevenson 2001.

# Appendix C: Population data

## Australian resident population, 2003

Age (years)	Males	Females	Total
0–4	648,280	616,337	1,264,617
5–9	686,684	650,780	1,337,464
10–14	707,035	672,422	1,379,457
15–19	698,587	665,547	1,364,134
20–24	696,402	667,642	1,364,044
25–29	683,946	677,970	1,361,916
30–34	753,661	766,190	1,519,851
35–39	726,362	735,055	1,461,417
40–44	763,933	770,184	1,534,117
45–49	696,193	706,208	1,402,401
50–54	654,034	657,524	1,311,558
55–59	584,059	570,788	1,154,847
60–64	439,569	430,831	870,400
65–69	355,712	365,745	721,457
70–74	302,603	329,740	632,343
75–79	240,645	298,451	539,096
80–84	145,767	221,296	367,063
85+	89,975	196,489	286,464
<b>Total</b>	<b>9,873,447</b>	<b>9,999,199</b>	<b>19,872,646</b>

Source: Australian Bureau of Statistics.

## Australian Standard Population and World Standard Population

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

Sources: Australian Bureau of Statistics and Ahmad et al. (2000).

# Appendix D: Cancer registration in Australia

The table below provides information about cancer registration in Australia. Each state and territory operates its own registry. Generally, operational guidelines for each of the registries are similar and coincide with the objectives of the IACR. 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 affect 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 (2003)	6,682,053	4,911,425	3,801,039	1,949,948	1,526,301	477,305	323,363	198,544
Per cent of Australian population	33.6	24.7	19.1	9.8	7.7	2.4	1.6	1.0
Per cent of population aged 65 and over	13.33	13.23	11.87	11.42	14.88	14.12	9.03	4.17
No. of new cancers per year <sup>(a)</sup>	30,389	21,589	17,196	8,042	7,607	2,383	1,147	447
First year of population registration	1972	1982	1982	1982	1977	1978	1972	1981
Year of legislation	1972	1982	1982	1981	1977	1992	1994	1991
Funding source	Pvte-Govt	Pvte-Govt	Pvte-Govt	Govt	Govt	Pvte-Govt	Govt	Govt
Topography coding	ICD-O-3	ICD-O-3	ICD-O-3	ICD-O-3	ICD-9	ICD-O-3	ICD-O-3	ICD-9
Morphology coding	ICD-O-3	ICD-O-3	ICD-O-3	ICD-O-3	ICD-O-1	ICD-O-3	ICD-O-3	ICD-O-1
<b>Reporting sources</b>								
Public hospitals	Yes	Yes	Yes	No <sup>(b)</sup>	Yes	Yes	Yes	Yes
Private hospitals	Yes	Yes	Yes	No <sup>(b)</sup>	Yes	Yes	Yes	No
Repatriation hospitals	Yes	Yes	Yes	No <sup>(b)</sup>	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 <sup>(b)</sup>	Yes	No
Registrar of Births, Deaths and Marriages	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Doctors	No <sup>(b)</sup>	No <sup>(b)</sup>	No <sup>(b)</sup>	No <sup>(b)</sup>	No <sup>(b)</sup>	No <sup>(b)</sup>	No <sup>(b)</sup>	No <sup>(b)</sup>

(a) Refers to the average annual number of new cases over the 5-year period 1999–2003.

(b) Information is provided on special request only.



# Appendix E: Cancer registries contact list

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

Cancer Institute NSW  
Locked Bag 1  
Woolloomooloo NSW 2011  
Phone: +61 2 8374 5600  
Fax: +61 2 8374 5744  
Email: [ccr@cancerinstitute.org.au](mailto:ccr@cancerinstitute.org.au)  
Website: [www.cancerinstitute.org.au/cancer\\_inst/programs/centralcr](http://www.cancerinstitute.org.au/cancer_inst/programs/centralcr)  
Operations manager: Ms Narelle Grayson  
Coding manager: Ms Maria Arcorace

## **Victorian Cancer Registry**

The Cancer Council Victoria  
1 Rathdowne Street  
Carlton South VIC 3053  
Phone: +61 3 9635 5000  
Fax: +61 3 9635 5210  
Website: [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  
Email: [graham.giles@cancervic.org.au](mailto:graham.giles@cancervic.org.au)  
Phone: +61 3 9635 5155  
Director Information Systems:  
Ms Helen Farrugia  
Email: [helen.farrugia@cancervic.org.au](mailto:helen.farrugia@cancervic.org.au)  
Phone: +61 3 9635 5318  
Information Manager: Mrs Vicky Thursfield  
Email: [vicky.thursfield@cancervic.org.au](mailto:vicky.thursfield@cancervic.org.au)  
Phone: +61 3 9635 5162

## **Northern Territory Cancer Registry**

Health Gains Planning  
Dept of Health and Community Services  
PO Box 40596  
Casuarina NT 0811  
Phone: +61 8 8985 8078  
Fax: +61 8 8985 8075  
Acting registrar: Ms Karen Dempsey  
Email: [karen.dempsey@nt.gov.au](mailto:karen.dempsey@nt.gov.au)  
Phone: +61 8 8985 8081  
Fax: +61 8 8985 8075

## **Western Australian Cancer Registry**

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

### **Queensland Cancer Registry**

Locked Bag 1450  
Spring Hill QLD 4004  
Spring Hill QLD 4004

Phone: +61 7 3258 2341  
Fax: +61 7 3258 2345  
Website: [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 QLD 4004

Email: [JoanneAitken@qldcancer.com.au](mailto:JoanneAitken@qldcancer.com.au)  
Phone: +61 7 3258 2300  
Fax: +61 7 3258 2345

Registrar: Ms Marilla Fraser  
Email: [marilla\\_fraser@health.qld.gov.au](mailto:marilla_fraser@health.qld.gov.au)  
Phone: +61 7 3258 2333  
Fax: +61 7 3258 2345

Assistant Registrar: Ms Julie Moore  
Email: [julie\\_moore@health.qld.gov.au](mailto:julie_moore@health.qld.gov.au)  
Phone: +61 7 3258 2366  
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 6158  
Fax: +61 8 8226 6672  
Website: [www.dh.sa.gov.au/pehs/branches/branch-cancer-registry.htm](http://www.dh.sa.gov.au/pehs/branches/branch-cancer-registry.htm)

Email: [Epidemiology@health.sa.gov.au](mailto:Epidemiology@health.sa.gov.au)

Director: Dr Ron Somers  
Email: [Ron.Somers@health.sa.gov.au](mailto:Ron.Somers@health.sa.gov.au)  
Phone: +61 8 8226 6361

Data manager: Mr Kevin Priest  
Email: [Kevin.Priest@health.sa.gov.au](mailto:Kevin.Priest@health.sa.gov.au)

### **Tasmanian Cancer Registry**

Menzies Research Institute  
Private Bag 23  
Hobart TAS 7001

Phone: +61 3 6226 7757  
Fax: +61 3 6226 7755  
Website: [www.menzies.utas.edu.au/re\\_cancer\\_reg.html](http://www.menzies.utas.edu.au/re_cancer_reg.html)

Director: A/Prof Alison Venn  
Phone: +61 3 6226 7706

Registry manager: Marita Dalton  
Email: [tcr@mail.menzies.utas.edu.au](mailto:tcr@mail.menzies.utas.edu.au)  
Phone: +61 3 6226 7757

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

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

Phone: +61 2 6207 4032  
Fax: +61 2 6244 4138

Director: Linda Halliday  
Email: [cancerregistry@act.gov.au](mailto:cancerregistry@act.gov.au)  
Phone: +61 2 6207 4036

Data Manager: Rosalind Sexton  
Email: [cancerregistry@act.gov.au](mailto:cancerregistry@act.gov.au)  
Phone: +61 2 6207 4032

### **New Zealand Cancer Registry**

New Zealand Health Information Service  
Ministry of Health  
PO Box 5013  
Wellington NEW ZEALAND

Phone: +64 4 816 3334  
Fax: +64 4 816 2897  
Website: [www.nzhis.govt.nz](http://www.nzhis.govt.nz)

Team Leader: Susan Hanna  
Email: [Susan\\_Hanna@nzhis.govt.nz](mailto:Susan_Hanna@nzhis.govt.nz)

**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

Email: [cancer@aihw.gov.au](mailto:cancer@aihw.gov.au)

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

Unit Head: John Harding

Email: [cancer@aihw.gov.au](mailto:cancer@aihw.gov.au)

Phone: + 61 2 6244 1140

**Australasian Association of Cancer Registries**

Secretariat

C/- Health Registers and Cancer Monitoring Unit

Australian Institute of Health and Welfare

GPO Box 570

Canberra ACT 2601

Email: [cancer@aihw.gov.au](mailto:cancer@aihw.gov.au)

Website: [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: Data sources

## National Cancer Statistics Clearing House database

Cancer (excluding NMSC) 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 compilation of national cancer incidence statistics through the National Cancer Statistics Clearing House. National statistics are available for all years from 1982 to 2003.

## 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 in its national mortality database.

# Abbreviations and glossary

**AACR:** Australasian Association of Cancer Registries

**ABS:** Australian Bureau of Statistics

**ACIM books:** Australian Cancer Incidence and Mortality books

**ACT:** Australian Capital Territory

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

**ARIA:** Accessibility/Remoteness Index of Australia

**ASGC:** Australian Standard Geographical Classification

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

**ASR(A):** age-standardised rate using the Australian 2001 Standard Population

**ASR(W):** age-standardised rate using the World 2000 Standard Population

**Aust:** Australia

**BCC:** Basal cell carcinoma

**Cancer (malignant neoplasm):** a term used to describe one of many 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.

**CD:** Census Collection District

**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.

**GRIM books:** General Record of Incidence of Mortality books

**IACR:** International Association of Cancer Registries

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

**ICD-10:** International Classification of Diseases, 10th edition

**ICD-10-AM:** International Classification of Diseases, 10th edition, Australian Modification

**ICD-O-2:** International Classification of Diseases for Oncology, 2nd edition

**ICD-O-3:** International Classification of Diseases for Oncology, 3rd edition

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

**IR:** Inner Regional (area)

**Lymphoid and haematopoietic neoplasms:** (also called lymphohaematopoietic neoplasms and haematological neoplasms) neoplasms of the generative cells of the blood and lymphoid tissues; usually found in blood, bone marrow, spleen or lymph nodes.

**MBS:** Medicare Benefits Schedule

**MC:** Major Cities (area)

**Mortality:** *see* cancer death

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

**NCSC:** National Cancer Statistics Clearing House

**New cancer case:** a person who has a new cancer diagnosed for the first time. A 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 called the 'multiple primary rules'. For the latest version see <[www.iacr.com.fr/MPrules\\_july2004.pdf](http://www.iacr.com.fr/MPrules_july2004.pdf)>.

**NMSC:** non-melanocytic skin cancer (also called non-melanoma skin cancer). Any skin cancer other than melanoma. See the introduction to Chapter 2.

**NOS:** not otherwise specified

**NSW:** New South Wales

**NT:** Northern Territory

**OR:** Outer Regional (area)

**PSA:** prostate-specific antigen

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

**Qld:** Queensland

**R:** Remote (area)

**SA:** South Australia

**SCC:** squamous cell carcinoma

**SIR:** standardised incidence ratio

**SMR:** standardised mortality ratio

**Tas:** Tasmania

**Vic:** Victoria

**VR:** Very Remote (area)

**WA:** Western Australia

**WHO:** World Health Organization

# References

- ABS (Australian Bureau of Statistics) 2001. Outcomes of ABS views on remoteness consultation, Australia. Information paper. Cat. no. 1244.0.00.001. Canberra: ABS.
- ABS 2006a. Deaths 2005. Cat. no. 3302.0. Canberra: ABS.
- ABS 2006b. Causes of death 2004. Cat. no. 3303.0. Canberra: ABS.
- ABS 2007a. Australian demographic statistics. Cat. no. 3101.0. Canberra: ABS.
- ABS 2007b. Causes of death 2005. Cat. no. 3303.0. Canberra: ABS.
- Ahmad OB, Boschi-Pinto C, Lopez AD, Murray CJL, Lozano R & Inoue M 2000. Age standardization of rates: a new WHO standard. GPE discussion paper series No. 31. Geneva: World Health Organization.
- AIHW 2005a. Rural, regional and remote health: indicators of health. Rural health series no. 5. Cat. no. PHE 59. Canberra: AIHW.
- AIHW 2005b. 2004 National Drug Strategy Household Survey: detailed findings. Drug statistics series no. 16. Cat. no. PHE 66. Canberra: AIHW.
- AIHW 2006a. Australian hospital statistics 2004–05. Health services series no. 26. Cat. no. HSE 41. Canberra: AIHW.
- AIHW 2006b. GRIM (General Record of Incidence of Mortality) books. Canberra: AIHW. Viewed 1 May 2007, [www.aihw.gov.au](http://www.aihw.gov.au).
- AIHW 2006c. Rural, regional and remote health: mortality trends 1992–2003. Rural health series no. 7. Cat. no. PHE 71. Canberra: AIHW.
- AIHW 2006d. Cervical screening in Australia 2003–2004. Cancer series no. 33. Cat. no. CAN 28. Canberra: AIHW.
- AIHW 2006e. Mortality over the 20th century in Australia: trends and patterns in major causes of death. Mortality surveillance series no. 4. Cat. no. PHE 73. Canberra: AIHW.
- AIHW 2007. BreastScreen monitoring report 2003–2004. Cancer series no. 36. Cat. no. CAN 31. Canberra: AIHW.
- AIHW & NBCC (National Breast Cancer Centre) 2006. Breast cancer in Australia: an overview, 2006. Cancer series no. 34. Cat. no. CAN 29. Canberra: AIHW & NBCC.
- AIHW & AACR (Australasian Association of Cancer Registries) 2001. Cancer survival in Australia, 2001. Part 1: National summary statistics. Cancer series no. 18. Cat. no. CAN 13. Canberra: AIHW & AACR.
- AIHW, AACR & NCSG (National Cancer Strategies Group): Ian McDermid 2005. Cancer incidence projections, Australia 2002 to 2011. Cancer series no. 30. Cat. no. CAN 25. Canberra: AIHW, AACR & NCSG.



- Cancer Institute NSW 2007. NSW Cancer Registry Statistical Reporting Module. Sydney: Cancer Institute NSW. Viewed 18 April 2007, <[www.statistics.cancerinstitute.org.au](http://www.statistics.cancerinstitute.org.au)>.
- Carrière P, Baade P, Newman B, Aitken J & Janda M 2007. Cancer screening in Queensland men. *Medical Journal of Australia* 186 (8): 404–407.
- Condon JR, Warman G & Arnold L 2001. *The health and welfare of Territorians*. Darwin: Territory Health Services.
- d'Espaignet ET, Measey ML, Condon JR, Jelfs P & Dempsey KE 1996. *Cancer in the Northern Territory 1987–1993*. Darwin: Territory Health Services.
- English DR, Holman CDJ, Milne E, Winter MG, Hulse GK, Codde JP et al. 1995. *The quantification of drug caused morbidity and mortality in Australia 1995*. Canberra: Commonwealth Department of Human Services and Health.
- Holman CDJ, Hatton WM, Armstrong BK & English DR 1987. *Cancer mortality trends in Australia. Vol II 1910–1984*. Perth: Health Department of Western Australia.
- IARC (International Agency for Research on Cancer) 2002. *GLOBOCAN 2002*. Lyon: IARC. Viewed 6 April 2007, <[www-dep.iarc.fr/globocan/globocan.html](http://www-dep.iarc.fr/globocan/globocan.html)>.
- Jelfs P, Giles G, Shugg D, Coates M, Durling G, Fitzgerald P & Ring I 1994. Cutaneous malignant melanoma in Australia, 1989. *Medical Journal of Australia* 161: 182–187.
- NCCH (National Centre for Classification in Health) 2000. *The international statistical classification of diseases and related health problems, 10th revision, Australian modification (ICD-10-AM), 2nd edn*. Sydney: University of Sydney.
- NCCH 2002. *The international statistical classification of diseases and related health problems, 10th revision, Australian modification (ICD-10-AM), 3rd edn*. Sydney: University of Sydney.
- NCCH 2004. *The international statistical classification of diseases and related health problems, 10th revision, Australian modification (ICD-10-AM), 4th edn*. Sydney: University of Sydney.
- NCCI (National Cancer Control Initiative) 2003. *The 2002 national non-melanoma skin cancer survey: a report by the NCCI Non-melanoma Skin Cancer Working Group*. Staples MP (ed.). Melbourne: NCCI.
- NSW Central Cancer Registry 2006. *Cancer in New South Wales incidence and mortality 2004*. Sydney: Cancer Institute NSW.
- QUT (Queensland University of Technology) & AIHW 2004. *Health inequalities in Australia: mortality. Health inequalities monitoring series no. 1. Cat. no. PHE 55*. Canberra: QUT & AIHW.
- Ridolfo B & Stevenson C 2001. *The quantification of drug-caused mortality and morbidity in Australia, 1998. Drug statistics series no. 7. Cat. no. PHE 29*. Canberra: AIHW.
- South Australian Cancer Registry 2007. *Cancer in South Australia 2004 – with projections to 2007*. Adelaide: South Australian Department of Health.

The Cancer Council Australia 2005. Prostate cancer screening position statement, April 2005. Sydney: The Cancer Council Australia. Viewed 6 April 2007, <[www.cancer.org.au](http://www.cancer.org.au)>.

The Cancer Council Victoria Epidemiology Centre 2007. Cancer survival Victoria 2007. Melbourne: The Cancer Council Victoria.

Viertel Centre for Research in Cancer Control 2005. Geographic differentials in cancer incidence and survival in Queensland, 1996 to 2002. Brisbane: Queensland Cancer Fund.

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

WHO 2000. International classification of diseases for oncology, 3rd edition. Fritz A, Percy C, Jack A, Shanmugaratnam K, Sobin L, Parkin DM et al. (eds). Geneva: WHO.

WHO 2001. World Health Organization classification of tumours. Pathology and genetics of tumours of hematopoietic and lymphoid tissues. Jaffe ES, Harris NL, Stein H & Vardiman JW (eds). Lyon: IARC Press.

# Related state and territory cancer registry publications

A list of related publications from state and territory cancer registries since 2002 follows.

## New South Wales

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.

Jong K, Vale P, Armstrong BK. Rural inequalities in cancer care and outcome. *Medical Journal of Australia* 2005; 182:13–14.

Jong KE, Smith DP, Yu XQ, O'Connell DL, Goldstein D, Armstrong BK. Remoteness of residence and survival from cancer in New South Wales. *Medical Journal of Australia*. 2004; 180: 618–22.

Scott RJ, Vajdic CM, Armstrong BK, Ainsworth CJ, Meldrum CJ, Aitken JF & Krickler A 2002. A BRCA2 mutations in population-based series of patients with ocular melanoma. *International Journal of Cancer* 102:188–91. CV7.

Krickler A, Vajdic CM & Armstrong BK 2003. Ocular melanoma and cutaneous melanoma. *International Journal of Cancer* 104:259.

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

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

Yu XQ, O'Connell DL, Gibberd RW, Smith DP, Dickman PW, Armstrong BK. Estimating regional variation in cancer survival: a tool for improving cancer care. *Cancer Causes and Control* 2004; 15:611–618.

## Victoria

Boyd NF, Dite GS, Stone J, Gunasekara A, English DR, McCredie MR, Giles GG, Trichler D, Chiarelli A, Yaffe MJ & Hopper JL 2002. Heritability of mammographic density, a risk factor for breast cancer. *New England Journal of Medicine* 347:886–94.

Chamberlain AJ, Fritschi L, Giles GG, Dowling JP & Kelly JW 2002. Nodular type and older age as the most significant associations of thick melanoma in Victoria, Australia. *Archives of Dermatology* 138:609–14.

Corti B, English DR, Costa C, Milne E, Cross D & Johnston R 2004. Creating SunSmart schools. *Health Education Research* 19:98–109.

Cui JS, Spurdle AB, Southey MC, Dite GS, Venter DJ, McCredie MR, Giles GG, Chenevix-Trench G & Hopper JL 2003. Regressive logistic and proportional hazards disease models for within-family analyses of measured genotypes, with application to a CYP17 polymorphism and breast cancer. *Genetical Epidemiology* 24:161–72.

- Dite GS, Jenkins MA, Southey MC, Hocking JS, Giles GG, McCredie MR, Venter DJ & Hopper JL 2003. Familial risks, early-onset breast cancer, and BRCA1 and BRCA2 germline mutations. *Journal of National Cancer Institute* 95:448-57.
- Easton DF, Schaid DJ, Whittemore AS & Isaacs WJ 2003. Where are the prostate cancer genes? A summary of eight genome wide searches. *Prostate* 57:261-9.
- Edwards S, Meitz J, Eles R, Evans C, Easton D, Hopper J, Giles G, Foulkes WD, Narod S, Simard J, Badzioch M & Mahle L 2003. Results of a genome-wide linkage analysis in prostate cancer families ascertained through the ACTANE consortium. *Prostate* 57:270-9.
- Elwood M, Aitken JF & English DR 2003. Prevention and screening. In: Balch CM, Houghton AN, Sober AJ & Soong S, editors. *Cutaneous Melanoma*. Fourth ed. St Louis: Quality Medical Publishing.
- English DR, Burton RC, del Mar CB, Donovan RJ, Ireland PD & Emery G 2003. Evaluation of aid to diagnosis of pigmented skin lesions in general practice: controlled trial randomised by practice. *British Medical Journal* 327:375.
- English DR, Del Mar C & Burton RC 2004. Factors influencing the number needed to excise: excision rates of pigmented lesions by general practitioners. *Medical Journal of Australia* 180:16-9.
- English DR, Giles GG, Karavarsamis N & Thursfield V 2003. *Cancer Survival in Victoria. Relative survival for selected cancers diagnosed from 1982 to 1997 with follow-up to 1999*. Melbourne: The Cancer Council Victoria; Report No. 0 947283 730.
- English DR, MacInnis RJ, Hodge AM, Hopper JL, Haydon AM & Giles GG 2004. Red meat, chicken, and fish consumption and risk of colorectal cancer. *Cancer Epidemiology, Biomarkers and Prevention* 13:1509-14.
- English DR, Vu HT & Knuiman MW 2002. The impact of smoking on use of hospital services: the Busselton study. *Australia New Zealand Journal of Public Health* 26:225-30.
- Farmer KC, Penfold C, Millar JL, Zalberg J, McLeish JA, Thomas RJ, Lade S, Thursfield VJ & Giles GG 2002. Rectal cancer in Victoria in: patterns of reported management. *Australia New Zealand Journal of Surgery* 72:265-70.
- Gaff CL, Aragona C, MacInnis RJ, Cowan R, Payne C, Giles GG & Lindeman GJ 2004. Accuracy and completeness in reporting family history of prostate cancer by unaffected men. *Urology* 63:1111-6.
- Giles GG & Amos A 2003. Evaluation of the organised mammographic screening programme in Australia. *Annals of Oncology* 14:1209-11.
- Giles GG & Boyle P 2004. Tobacco and lung cancer. In: Boyle P, Gray N, Henningfield J, Seffrin J, Zatonski W (eds.). *Tobacco science, policy & public health*. Oxford: Oxford University Press, pp. 485-510.
- Giles GG & English DR 2002. *The Melbourne Collaborative Cohort Study*. IARC Scientific Publication 156:69-70.
- Giles GG, Thursfield V. Cancer statistics: everything you wanted to know about cancer registry data but were afraid to ask. *ANZ J Surg* 2004;74(11):931-4.
- Giles GG. In praise of cancer registries. *ANZ J Surg*. 2004 Apr;74(4):190.
- Giles GG & Thursfield V 2002. *Breast cancer*. Melbourne: CANSTAT: The Cancer Council Victoria.
- Giles GG & Thursfield V 2002. *Cancer in Victoria 2000*. Melbourne: CANSTAT: The Cancer Council Victoria.
- Giles GG & Thursfield V 2002. *Guide to the Victorian Cancer Registry*. Melbourne: CANSTAT: The Cancer Council Victoria.

- Giles GG & Thursfield V 2002. Lung cancer. Melbourne: CANSTAT: The Cancer Council Victoria.
- Giles GG & Thursfield V 2003. Cancer in Victoria 2001. Melbourne: CANSTAT: The Cancer Council Victoria.
- Giles GG & Thursfield V 2004. Cancer in Victoria 2002. Melbourne: CANSTAT: The Cancer Council Victoria.
- Giles GG 2002. The Cancer Epidemic in Victoria. In: Health of Victorians, The Chief Health Officer Bulletin Vol 2. No. 2: Victorian Department of Human Services.
- Giles GG 2003. Epidemiological investigation of prostate cancer. *Methods in Molecular Medicine* 81:1-19.
- Giles GG 2004. Epidemiology of food and disease: The Melbourne Cohort Study. *Asia Pacific Journal of Clinical Nutrition* 13:S30.
- Giles GG 2004. In praise of cancer registries [editorial]. *Australian and New Zealand Journal of Surgery* 74:190.
- Giles GG, Severi G, English DR & Hopper JL 2004. Frequency of ejaculation and risk of prostate cancer [letter]. *Jama* 292:329; author reply.
- Giles GG, Severi G, English DR, McCredie MR, Borland R, Boyle P & Hopper JL 2003. Sexual factors and prostate cancer. *British Journal of Internal Urology* 92:211-6.
- Giles GG, Severi G, English DR, McCredie MR, MacInnis R, Boyle P & Hopper JL 2003. Early growth, adult body size and prostate cancer risk. *International Journal of Cancer* 103:241-5.
- Giles GG, Severi G, Sinclair R, English DR, McCredie MR, Johnson W, Boyle P & Hopper JL 2002. Androgenetic alopecia and prostate cancer: findings from an Australian case-control study. *Cancer Epidemiol, Biomarkers and Prevention* 11:549-53.
- Grossi M, Quinn MA, Thursfield VJ, Francis PA, Rome RM, Planner RS & Giles GG 2002. Ovarian cancer: patterns of care in Victoria during 1993-1995. *Medical Journal of Australia* 177:11-6.
- Heenan PJ 2003. Author response to: Nodular melanoma is not a distinct entity [letter]. *Archives of Dermatology* 139:387; author reply.
- Hill D, Elwood JM & English DR (eds) 2004. Prevention of skin cancer. Dordrecht: Kluwer Academic Publishers.
- Hodge AM, English DR, McCredie MR, Severi G, Boyle P, Hopper JL & Giles GG 2004. Foods, nutrients and prostate cancer. *Cancer Causes Control* 15:11-20.
- Hope Q, Bullock S, Evans C, Meitz J, Hamel N, Edwards SM, Severi G, Dearnaley D, Jhavar S, Southgate C, Falconer A, Dowe A, Stevens M, Houlston RS, Engert J, Sinnott D, Simard J, Heimdahl K, Moller P, Badzioch M, Eeles RA, The Cancer Research UK/British Association of Urological Surgeons' Section of Oncology Collaborators, Easton DF, English DR, Hopper JL, Foulkes WD, Giles GG. Macrophage Scavenger Receptor 1 999C>T (R293X) Mutation and Risk of Prostate Cancer. *Cancer Epidemiol Biomarkers Prev* 2005;14:397-402.
- Jenkins MA, Baglietto L, Dite GS, Jolley DJ, Southey MC, Whitty J, Mead LJ, St John DJ, Macrae FA, Bishop DT, Venter DJ, Giles GG & Hopper JL 2002. After hMSH2 and hMLH1 – what next? Analysis of three-generational, population-based, early-onset colorectal cancer families. *International Journal of Cancer* 102:166-71.
- Johnston R, Cross D, Costa C, Corti B, Cordin T, Milne E & English DR 2003. Sun safety education intervention for school and home. *Health Education* 103:342-51.

- Kavanagh AM, Cawson J, Byrnes GB, Giles GG, Marr G, Tong B, Gertig DM, Hopper JL. Hormone replacement therapy, percent mammographic density, and sensitivity of mammography. *Cancer Epidemiol Biomarkers Prev* 2005;14:1060-4.
- Keogh LA, Maskiell J, Southey MC, Young MA, Gaff CL, Kirk J, Tucker KM. Uptake of offer to receive genetic information about BRCA1 and BRCA2 in a population-based study. *Cancer Epidemiol Biomarkers Prev* 2004;13:2258-63.
- Macinnis RJ, English DR, Gertig DM, Hopper JL, Giles GG. Body size and composition and risk of postmenopausal breast cancer. *Cancer Epidemiol Biomarkers Prev* 2004;13:2117-25.
- MacInnis RJ, English DR, Gertig DM, Hopper JL & Giles GG 2003. Body size and composition and prostate cancer risk. *Cancer Epidemiology, Biomarkers and Prevention* 12:1417-21.
- MacInnis RJ, English DR, Hopper JL, Haydon AM, Gertig DM & Giles GG 2004. Body size and composition and colon cancer risk in men. *Cancer Epidemiology, Biomarkers and Prevention* 13:553-9.
- McCredie MR, Dite GS, Southey MC, Venter DJ, Giles GG & Hopper JL 2003. Risk factors for breast cancer in young women by oestrogen receptor and progesterone receptor status. *British Journal of Cancer* 89:1661-3.
- McLeish JA, Thursfield VJ & Giles GG 2002. Survival from colorectal cancer in Victoria: 10-year follow up of the 1987 management survey. *Australian and New Zealand Journal of Surgery* 72:352-6.
- Menegoz F, Little J, Colonna M, Arslan A, Preston-Martin S, Schlehofer B, Blettner M, Howe GR, Ryan P, Giles GG, Rodvall Y & Choi WN 2002. Contacts with animals and humans as risk factors for adult brain tumours. An international case-control study. *European Journal of Cancer* 38:696-704.
- Milne E, Johnston R, Cross D, Corti B & English DR 2002. Effect of a school-based sun-protection intervention on the development of melanocytic nevi in children. *American Journal of Epidemiology* 155:739-45.
- Milne RL, Knight JA, John EM, Dite GS, Balbuena R, Ziogas A, Andrulis IL, West DW, Li FP, Southey MC, Giles GG, McCredie MR, Hopper JL, Whittemore AS. Oral Contraceptive Use and Risk of Early-Onset Breast Cancer in Carriers and Noncarriers of BRCA1 and BRCA2 Mutations. *Cancer Epidemiol Biomarkers Prev* 2005;14:350-6.
- Mitchell AE, Scarcella DL, Rigutto GL, Thursfield VJ, Giles GG, Sexton M & Ashley DM 2004. Cancer in adolescents and young adults: treatment and outcome in Victoria. *Medical Journal of Australia* 180:59-62.
- Montgomery KG, Gertig DM, Baxter SW, Milne RL, Dite GS, McCredie MR, Giles GG, Southey MC, Hopper JL & Campbell IG 2003. The HER2 I655V polymorphism and risk of breast cancer in women aged less than 40 years. *Cancer Epidemiology, Biomarkers and Prevention* 12:1109-11.
- Moot AR, Polglase A, Giles GG, Garson OM, Thursfield V & Gunter D 2003. Men with colorectal cancer are predisposed to prostate cancer. *Australian and New Zealand Journal of Surgery* 73:289-93.
- Phillips KA, Milne RL, Buys S, Friedlander ML, Ward JH, McCredie MR, Giles GG, Hopper JL. Agreement Between Self-Reported Breast Cancer Treatment and Medical Records in a Population-Based Breast Cancer Family Registry. *J Clin Oncol* 2005;23:4679-86.
- Phillips KA, Milne RL, Friedlander ML, Jenkins MA, McCredie MR, Giles GG & Hopper JL 2004. Prognosis of premenopausal breast cancer and childbirth prior to diagnosis. *Journal of Clinical Oncology* 22:699-705.
- Provenzano E, Hopper JL, Giles GG, Marr G, Venter DJ & Armes JE 2003. Biological markers that predict clinical recurrence in ductal carcinoma in situ of the breast. *European Journal of Cancer* 39:622-30.

- Provenzano E, Hopper JL, Giles GG, Marr G, Venter DJ & Armes JE 2004. Histological markers that predict clinical recurrence in ductal carcinoma in situ of the breast: an Australian population-based study. *Pathology* 36:221-9.
- Richardson AK, Cox B, McCredie MR, Dite GS, Chang JH, Gertig DM, Southey MC, Giles GG & Hopper JL 2004. Cytomegalovirus, Epstein-Barr virus and risk of breast cancer before age 40 years: a case-control study. *British Journal of Cancer* 90:2149-52.
- Schlehofer B, Hettinger I, Ryan P, Blettner M, Preston-Martin S, Little J, Arslan A, Ahlbom A, Giles GG, Howe GR, Menegoz F, Rodvall Y, Choi WN & Wahrendorf J 2004. Occupational risk factors for low grade and high grade glioma: Results from an international case control study of adult brain tumours. *International Journal of Cancer*.
- Severi G & English DR 2004. Descriptive epidemiology of skin cancer. In: Hill D, Elwood JM, & English DR (eds). *Prevention of skin cancer*. Dordrecht: Kluwer p. 328.
- Severi G, Giles GG, Southey MC, Tesoriero A, Tilley W, Neufing P, Morris H, English DR, McCredie MR, Boyle P & Hopper JL 2003. ELAC2/HPC2 Polymorphisms, prostate-specific antigen levels, and prostate cancer. *Journal of National Cancer Institute* 95:818-24.
- Spurdle AB, Goodwin B, Hodgson E, Hopper JL, Chen X, Purdie DM, McCredie MR, Giles GG, Chenevix-Trench G, Liddle C 2002. The CYP3A4\*1B polymorphism has no functional significance and is not associated with risk of breast or ovarian cancer. *Pharmacogenetics* 12:355-66.
- Spurdle AB, Hopper JL, Chen X, Dite GS, Cui J, McCredie MR, Giles GG, Ellis-Steinborner S, Venter DJ, Newman B, Southey MC, Chenevix-Trench G 2002. The BRCA2 372 HH genotype is associated with risk of breast cancer in Australian women under age 60 years. *Cancer Epidemiology, Biomarkers and Prevention* 11:413-6.
- Spurdle AB, Hopper JL, Chen X, McCredie MR, Giles GG, Newman B, Chenevix-Trench G, Khanna K 2002. No evidence for association of ataxia-telangiectasia mutated gene T2119C and C3161G amino acid substitution variants with risk of breast cancer. *Breast Cancer Research* 4:R15.
- Spurdle AB, Hopper JL, Chen X, McCredie MR, Giles GG, Newman B, Chenevix-Trench G 2002. Prohibitin 3' untranslated region polymorphism and breast cancer risk in Australian women. *Lancet* 360:925-6.
- Spurdle AB, Hopper JL, Chen X, McCredie MR, Giles GG, Venter DJ, Southey MC, Chenevix-Trench G 2002. The progesterone receptor exon 4 Val660Leu G/T polymorphism and risk of breast cancer in Australian women. *Cancer Epidemiology, Biomarkers and Prevention* 11:439-43.
- Staples MP, Giles GG, English DR, McCredie MR, Severi G, Cui JS, Hopper JL 2003. Risk of prostate cancer associated with a family history in an era of rapid increase in prostate cancer diagnosis (Australia). *Cancer Causes Control* 14:161-6.
- The Cancer Council Victoria Epidemiology Centre 2007. *Cancer survival Victoria 2007*. Melbourne: The Cancer Council Victoria.
- Thursfield V & Giles GG 2002. The epidemiology of prostate cancer and trends in Victoria. In: *The Chief Health Officer's Bulletin Vol 2. No. 2*. Melbourne: Victorian Department of Human Services.
- Vajdic CM, Kricker A, Giblin M, McKenzie J, Aitken J, Giles GG, Armstrong BK 2002. Sun exposure predicts risk of ocular melanoma in Australia. *International Journal of Cancer* 101:175-82.
- Vajdic CM, Kricker A, Giblin M, McKenzie J, Aitken J, Giles GG, Armstrong BK 2003. Incidence of ocular melanoma in Australia from 1990 to 1998. *International Journal of Cancer* 105:117-22.
- Vajdic CM, Kricker A, Giblin M, McKenzie J, Aitken JF, Giles GG, Armstrong BK 2004. Artificial ultraviolet radiation and ocular melanoma in Australia. *International Journal of Cancer* 112:896-900.

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

## **Queensland**

Coory M, Baade PD, Aitken JF, Smithers M, McLeod GRC, Ring I. Trends for in-situ and invasive melanoma in Queensland, Australia, 1982 to 2002. *Cancer Causes and Control*. 2006; 17(1) 21-27

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

Coory M, Smithers M, Aitken J, Baade PD, Ring I. Urban-rural differences in survival from cutaneous melanoma in Queensland, Australia. *Australian and New Zealand Journal of Public Health* 2006 Feb; 30(1):71-4

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

Hall L, Youlten D, Coory M. Mortality and incidence trends for leading cancers in Queensland, 1982 to 2002.

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

Homewood J, Coory M, Dinh M 2005. An update on Cancer among Indigenous people in Queensland. Information. Circular 70. Health Information Branch, Queensland Health.

Queensland Cancer Registry 2005. Cancer in Queensland. Incidence and Mortality 1982-2003. Brisbane: Queensland Cancer Fund, Queensland Health.

Youlten D, Baade P, Coory M. Cancer Survival in Queensland, 2002. Brisbane, Queensland Health and Queensland Cancer Fund. 2005.

Youlten D, Baade PD. Cancer Prevalence in Queensland 2002. Queensland Health and Queensland Cancer Fund, 2005.

## **Western Australia**

Threlfall TJ & Thompson JR 2006. Cancer incidence and mortality in Western Australia, 2005. Statistical Series no. 81. Perth: Department of Health, Western Australia.

Threlfall TJ & Thompson JR 2006. Cancer incidence and mortality in Western Australia, 2004. Statistical Series no. 76. Perth: Department of Health, Western Australia.

Threlfall TJ, Thompson JR & Olsen N 2005. Cancer in Western Australia: Incidence and mortality 2003 and Mesothelioma 1960-2003. Statistical series no. 74. Perth: Department of Health, Western Australia.

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

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

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



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

## **South Australia**

Crane CEB, Luke CG, Rogers JM, Playford PE & Roder DM 2002. An analysis of factors associated with interval as opposed to screen-detected breast cancers, including hormone therapy and mammograph density. *Breast*; 11:131–6.

Davy MLJ, Dodd TJ, Luke CG & Roder DM 2003. Cervical cancer: Effect of glandular cell type on prognosis, treatment, and survival. *Obstetrics & Gynecology*; 101:38–45

Gill PG, Farshid G, Luke CG, & Roder DM 2004. Detection by screening mammography is a powerful independent predictor of survival in women diagnosed with breast cancer. *Breast*; 13:15–22.

Gill PG, Birrell SN, Luke CG & Roder DM 2002. Tumour location and prognostic characteristics as determinants of survival of women with invasive breast cancer: South Australia hospital-based cancer registries, 1987–1998. *Breast*; 11(3):221–227.

Heard AR, Roder DM, Shorne L, Kenny B & Priest KR 2007. Endometrial cells as a predictor of uterine cancer. *Aust NZJ Obst Gynaec*; 47:50–53.

Heard A, Roder D & Luke C 2005. Multiple primary cancers of separate organ sites: Implications for research and cancer control (Australia). *Cancer Causes and Control*; 16:475–481.

Hill CL, Nguyen A-M, Roder DM, Roberts-Thomson P. Risk of cancer in patients with scleroderma: a population-based cohort study. *Annals of Rheumatic Diseases* 2003; 62:728–31.

Hunt RW, Fazekas BS, Luke CG, Priest KR, Roder DM. The coverage of cancer patients by designated palliative services: a population-based study, South Australia, 1999. *Palliative Medicine* 2002; 16(5): 403–9.

Luke C, Nguyen A-M, Heard A, Kenny B, Shorne L & Roder D 2007. Benchmarking epidemiological characteristics of cervical cancer in advance of change in screening practice and commencement of vaccination. *Aust NZJ Public Health*; 31:149–154.

Luke C, Nguyen A-M, To B, Seshadri R, Hughes T, Bardy P, Colbeck M, Buranyi-Trevarton D, McMellon M, Roder D 2006. Myeloid leukaemia treatment and survival – the South Australian experience, 1977–2002. *Asian Pacific J Cancer Prev*; 7:227–233.

Luke C, Nguyen A-M, Priest K, Roder D. Female breast cancers are getting smaller, but socio-demographic differences remain. *Aust NZ J Public Health* 2004; 28(4):312–316.

Luke CG, Coventry BJ, Foster-Smith EJ, Roder DM. Are cutaneous melanomas of specified thickness showing deeper levels of invasion at diagnosis? *Asian Pacific Journal of Cancer Prevalence* 2003; 4: 307–11.

Luke CG, Coventry BJ, Foster-Smith EJ, Roder DM. A critical analysis of reasons for improved survival from invasive cutaneous melanoma. *Cancer Causes & Control* 2003; 14(9): 871–8.

Luke C, Chapman P, Priest K, Roder D. Use of radiotherapy in the primary treatment of cancer in South Australia. *Australasian Radiology* 2003; 47(2):161–7.

Nguyen A-M, Luke CG, Roder DM. Time trends in lung cancer incidence by histology in South Australia: likely causes and public health implications. *Australian and New Zealand Journal of Public Health* 2003; 27:596–601.

Nguyen A-M, Luke CG, Roder DM. Comparative epidemiological characteristics of oesophageal adenocarcinoma and other cancers of the oesophagus and gastric cardia. *Asian Pacific Journal of Cancer Prevalence* 2003;4: 225–231.

South Australian Cancer Registry 2002. *Cancer in South Australia 2002 – with projections to 2005*. Adelaide: South Australian Department of Health.

South Australian Cancer Registry 2003. *Cancer in South Australia 2003 – with incidence projections to 2006 and prevalence and mortality projections to 2011*. Adelaide: South Australian Department of Health.

South Australian Cancer Registry 2007. *Cancer in South Australia 2004 – with projections to 2007*. Adelaide: South Australian Department of Health.

Wilkinson D, Cameron K. Cancer and cancer risk in South Australia: What evidence for a rural-urban health differential? *Australian Journal of Rural Health* 2004; 12(2):61–6.

## **Tasmania**

Begg CB, Hummer AJ, Mujumdar U, Armstrong BK, Krickler A, Marrett LD, Millikan RC, Gruber SB, Culver HA, Zanetti R, Gallagher RP, Dwyer T, Rebbeck TR, Busam K, From L, Berwick M; GEM Study Group 2006. A design for cancer case-control studies using only incident cases: experience with the GEM study of melanoma. *Int J Epidemiol.*; 35(3):756–64

Begg CB, Orlov I, Hummer AJ, Armstrong BK, Krickler A, Marrett LD, Millikan RC, Gruber SB, Anton-Culver H, Zanetti R, Gallagher RP, Dwyer T, Rebbeck TR, Mitra N, Busam K, Begg C, Hummer A, Mujumdar U, Armstrong B, Krickler A, Marrett L, Millikan R, Gruber S, Anton-Culver H, Klotz J, Zanetti R, Gallagher R, Dwyer T, Rebbeck T, Berwick M 2004. Familial aggregation of melanoma risks in a large population-based sample of melanoma cases. *Cancer Causes and Control*;15:957–965

Begg CB, Hummer A, Mujumdar U, Armstrong BK, Krickler A, Marrett LD, Millikan RC, Gruber SB, Anton-Culver H, Klotz JB, Zanetti R, Gallagher RP, Dwyer T, Rebbeck TR, Berwick M. 2004. "Familial aggregation of melanoma risks in a large population-based sample of melanoma cases." *Cancer Causes Control* 15(9): 957–65.

Berwick M, Ashbolt R, Blizzard L, Dickinson J, Dwyer T, Fitzgerald L, Reilly A, Sale M, Stankovich J, Williamson J 2004. Does the addition of information on genotype improve the prediction of risk of melanoma and non-melanoma skin cancer beyond that obtained from skin phenotype? *American Journal of Epidemiology*, 159:826–33.

Berwick M, Orlov I, Hummer AJ, Armstrong BK, Krickler A, Marrett LD, Millikan RC, Gruber SB, Anton-Culver H, Zanetti R, Gallagher RP, Dwyer T, Rebbeck TR, Kanetsky PA, Busam K, From L, Mujumdar U, Wilcox H, Begg CB; GEM Study Group 2006. The prevalence of CDKN2A germ-line mutations and relative risk for cutaneous malignant melanoma: an international population-based study. *Cancer Epidemiol Biomarkers Prev*; 15(8):1520–5

Blizzard CL & Dwyer T 2003. Case-control study of lung cancer during 1994–1997 in the birth cohort in Tasmania, Australia, with an excess of female cases during 1983–1992. *Cancer Causes and Control*, 14:123–9.

Blizzard CL & Dwyer T 2002. Lung cancer incidence in Australia: impact of filter-tip cigarettes with unchanged tar yields. *International Journal of Cancer*, 97(5):679–84.

Burdon KP, Craig J, Dickinson J, Elder J, Mackey D, Russell-Eggitt I, Sale M, Wirth GM 2004. Investigation of crystallin genes in familial cataract, and report of two disease associated mutations. *Journal of Medical Genetics* 41:187–191.

Dwyer T, Stankovich JM, Blizzard L, Fitzgerald LM, Dickinson JL, Reilly A, Williamson J, Ashbolt R, Berwick M, Sale MM. 2004. "Does the addition of information on genotype improve prediction of the

risk of melanoma and nonmelanoma skin cancer beyond that obtained from skin phenotype?" *Am J Epidemiol* 159(9): 826–33.

From L, Berwick M; Genes Environment and Melanoma Study Group 2005. Lifetime risk of melanoma in CDKN2A mutation carriers in a population-based sample. *J Natl Cancer Inst.*; 19;97(20):1507–15.

Goldar D, Lesueur F, McKay J, Moncayo R, Pastore A, Riccabona G, Romeo G, Stankov K, Thompson D & Watfah C 2004. Evidence for interaction between the TCO and NMTC1 loci in familial non-medullary thyroid cancer. *Journal of Medical Genetics* 41:407–12.

Granger R, Blizzard L, Fryer J, \*Dwyer T 2006. Association between dietary fat and skin cancer in Australian population using case-control and cohort study designs. *BMC Cancer*; 6 (E-published)

Kanetsky PA, Rebbeck TR, Hummer AJ, Panossian S, Armstrong BK, Krickler A, Marrett LD, Millikan RC, Gruber SB, Culver HA, Zanetti R, Gallagher RP, Dwyer T, Busam K, From L, Mujumdar U, Wilcox H, Begg CB, Berwick M 2006. Population-based study of natural variation in the melanocortin-1 receptor gene and melanoma. *Cancer Res*; 15;66(18):9330–7

Kemp A, \*Ponsonby AL, \*Dwyer T 2005. Birth Order, Atopy, and Risk of Non Hodgkin Lymphoma. *Journal of the National Cancer Institute.* 97(19):1475–6. Letter.

Krickler A, Armstrong BK, Goumas C, Litchfield M, Begg CB, Hummer AJ, Marrett LD, Theis B, Millikan RC, Thomas N, Culver HA, Gallagher RP, Dwyer T, Rebbeck TR, Kanetsky PA, Busam K, From L, Mujumdar U, Zanetti R, Berwick M; for the GEM Study Group 2007. Ambient UV, personal sun exposure and risk of multiple primary melanomas. *Cancer Causes Control*; E-pub 06/01

McKay JD, Thompson D, Lesueur F, Stankov K, Pastore A, Watfah C, Strolz S, Riccabona G, Moncayo R, Romeo G, Goldgar DE. 2004. "Evidence for interaction between the TCO and NMTC1 loci in familial non-medullary thyroid cancer." *J Med Genet* 41(6): 407–12.

Millikan R, Hummer A, Begg C, Player J, de Cotret AR, Winkel S, Mohreweiser H, Thomas N, Armstrong B, Krickler A, Marrett L, Gruber S, Anton-Culver H, Zanetti R, Gallagher R, Dwyer T, Rebbeck T, Busam K, From L, Mujumdar U, Berwick M 2006. Polymorphisms in nucleotide excision repair genes and risk of multiple primary melanoma: the Genes Environment and Melanoma study. *Carcinogenesis*;17:610–8

Newman L, Venn A, Fryer J, Blizzard L, Dwyer T. *Cancer in Tasmania: Incidence and Mortality 1980 to 1999*. Menzies Research Institute, Hobart, 2003.

Newman L, Venn A, Albion T, Blizzard L. 2006. *Cancer in Tasmania: Incidence and Mortality 2003*. Menzies Research Institute, Hobart.

Orlow I, Begg CB, Cotignola J, Roy P, Hummer AJ, Clas BA, Mujumdar U, Canchola R, Armstrong BK, Krickler A, Marrett LD, Millikan RC, Gruber SB, Anton-Culver H, Zanetti R, Gallagher RP, Dwyer T, Rebbeck TR, Kanetsky PA, Wilcox H, Busam K, From L, Berwick M 2007. CDKN2A Germline Mutations in Individuals with Cutaneous Malignant Melanoma. *J Invest Dermatol*; E-pub 11/01

Pavlidis S, Venn A, Blizzard L. *Cancer in Tasmania: Incidence and Mortality 2000*. Menzies Centre for Population Health Research, Hobart, 2002.

Pavlidis SL, Venn A, Blizzard CL, Dwyer T 2002. *Cancer in Tasmania: Incidence and Mortality 1999*, Menzies Centre for Population Health Research

Pavlidis, SL, Venn, A, Blizzard & CL 2002. *Cancer in Tasmania: incidence and mortality 2000*, Menzies Centre for Population Health Research.

Qin J, Berwick M, Ashbolt R & Dwyer T 2002. Quantifying the change of melanoma incidence by breslow thickness. *Biometrics*, 58(3):665–70.

Shugg D, White V, Kitchen P, Pruden M, Collins J & Hill D 2002. Surgical management of ductal carcinoma in situ in Australia in 1995, *ANZ Journal of Surgery* 72(10):708–15.

Stankov K, Pastore A, Toschi L, McKay J, Lesueur F, Kraimps JL, Bonneau D, Gibelin H, Levillain P, Volante M, Papotti M, Romeo G. 2004. "Allelic loss on chromosomes 2q21 and 19p 13.2 in oxyphilic thyroid tumors." *Int J Cancer* 111(3): 463-7.

The Tasmanian Cancer Registry, Menzies Centre for Population Health Research 2002. *Cancer in Tasmania Incidence and Mortality 1999*. Hobart: Menzies Centre for Population Health Research, University of Tasmania.

Van der Mei I, Blizzard CL, Stankovich J, Ponsonby AL & Dwyer T 2002. Misclassification due to body hair and seasonal variation on melanin density estimates for skin type using spectrophotometry. *Journal of Photochemistry and Photobiology B: Biology* 68(1):45-52.

Venn A 2002. Fertility drug use was not associated with a significantly increased risk of ovarian cancer. *Evidence-based Obstetrics and Gynecology* 4:84-5.

Venn A, Healy D, McLachlan R 2003. Cancer risks associated with the diagnosis of infertility. *Best Practice & Research in Clinical Obstetrics & Gynaecology* 17(2):343-67.

Venn A & Healy D 2003. Infertility medications and the risk of breast cancer. *Fertility and Sterility* 79(4):852-4.

## **Australian Capital Territory**

Population Health Research Centre, ACT Health 2003. *Breast Cancer in the ACT*. Health Series no. 31. Canberra: ACT Government.

Population Health Research Centre, ACT Health 2003. *Cancer in the ACT, 1996-2000*. Health Series no. 34. Canberra: ACT Government.

Population Health Research Centre, ACT Health 2003. *Tobacco and Alcohol Use by ACT Secondary Students, 1996-2002*. Health Series no. 33. Canberra: ACT Government.

## **Northern Territory**

Condon JR, Zhang X, Li SQ, Garling LS 2007. *Northern Territory Cancer Incidence and Mortality by Region, 1991-2003*. Department of Health and Community Services.

Condon JR, Lee H, Garling LS 2006. *Cancer survival, Northern Territory 1991-2001*. Darwin: Department of Health and Community Services.

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

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

Condon JR, Cunningham J, Barnes T, Armstrong BK, Selva-Nayagam S, 2006. Cancer diagnosis and treatment in the Northern Territory: assessing health service performance for indigenous Australians. *Intern Med J*. 2006 Aug;36(8):498-505.

Condon JR, Armstrong BK, Barnes T, Zhao Y, 2005. Cancer incidence and survival for indigenous Australians in the Northern Territory. *Aust N Z J Public Health*. 2005 Apr;29(2):123-8.

Condon JR, Barnes T, Armstrong BK, Selva-Nayagam S, Elwood JM, 2005. Stage at diagnosis and cancer survival for Indigenous Australians in the Northern Territory. *Med J Aust*. 2005 Mar 21;182(6):277-80.

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

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

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

# List of tables

Table 2.1: The 10 most common cancers, Australia, 2003 .....	8
Table 2.2: Cancer incidence in persons, Australia, 2003 .....	9
Table 2.3: Cancer incidence in males, Australia, 2003 .....	11
Table 2.4: Cancer incidence in females, Australia, 2003.....	13
Table 2.5: Incidence of malignant lymphoid and haematopoietic neoplasms, Australia, 2003.....	15
Table 2.6: Average annual number of new cases of cancer, persons, states and territories, 1999–2003..	18
Table 2.7: Average annual age-standardised rates of cancer incidence, persons, states and territories, 1999–2003 .....	20
Table 2.8: Average annual number of new cases of cancer, males, states and territories, 1999–2003 .....	22
Table 2.9: Average annual age-standardised rates of cancer incidence, males, states and territories, 1999–2003 .....	24
Table 2.10: Average annual number of new cases of cancer, females, states and territories, 1999–2003 .....	26
Table 2.11: Average annual age-standardised rates of cancer incidence, females, states and territories, 1999–2003.....	28
Table 2.12: New cases of cancer, persons, Australia, selected years, 1983–2003 .....	31
Table 2.13: New cases of cancer, males, Australia, selected years, 1983–2003.....	33
Table 2.14: New cases of cancer, females, Australia, selected years, 1983–2003.....	35
Table 2.15: Age-standardised rate of cancer incidence, persons, Australia, selected years, 1983–2003 ..	37
Table 2.16: Age-standardised rate of cancer incidence, males, Australia, selected years, 1983–2003.....	39
Table 2.17: Age-standardised rate of cancer incidence, females, Australia, selected years, 1983–2003 ..	41
Table 2.18: The 10 most common causes of death from cancer, Australia, 2003 .....	44
Table 2.19: Cancer mortality in persons, Australia, 2003.....	45
Table 2.20: Cancer mortality in males, Australia, 2003 .....	47
Table 2.21: Cancer mortality in females, Australia, 2003 .....	49
Table 2.22: Deaths from cancer, persons, Australia, selected years 1983–2003.....	52
Table 2.23: Deaths from cancer, males, Australia, selected years 1983–2003 .....	54
Table 2.24: Deaths from cancer, females, Australia, selected years 1983–2003.....	56
Table 2.25: Age-standardised death rates for cancer, persons, Australia, selected years 1983–2003.....	58
Table 2.26: Age-standardised death rates for cancer, males, Australia, selected years 1983–2003 .....	60
Table 2.27: Age-standardised death rates for cancer, females, Australia, selected years 1983–2003.....	62
Table 2.28: Cancer incidence and mortality attributed to smoking, Australia, 2003 .....	65
Table 2.29: Cancer incidence and mortality attributed to excessive alcohol consumption, Australia, 2003.....	66
Table 3.1: Cancer-related hospital separations and average annual rate of change, Australia, 2000–01 to 2004–05 .....	69
Table 3.2: Average length of stay for cancer-related hospital separations, Australia, 2000–01 to 2004–05.....	71

Table 4.1: Prostate cancer incidence and mortality, Australia, 2003 .....	74
Table 4.2: Incidence of prostate cancer and age-standardised rates, Australia, 1982 to 2003 .....	74
Table 4.3: Trends in age-specific incidence of prostate cancer, Australia, 1982 to 2003 .....	75
Table 4.4: Mortality from prostate cancer and age-standardised rates, Australia, 1982 to 2004 .....	77
Table 4.5: Trends in age-specific mortality from prostate cancer, males, Australia, 1982 to 2004 .....	77
Table 4.6: Male population of Australia 65 years and over and 75 years and over, 2001 to 2006 .....	78
Table 4.7: Prostate cancer incidence numbers, state cancer registries, 2003 and 2004 .....	79
Table 4.8: PSA tests for screening, 2000-01 to 2005-06 .....	79
Table 4.9: PSA tests for screening by age, states and territories, 2005-06 .....	80
Table 4.10: All PSA tests (screening and non-screening), states and territories, 1993-93 to 2005-06 .....	81
Table 4.11: Hospital separations for admitted patients with a principal diagnosis of prostate cancer, Australia, 1993-94 to 2004-05 .....	81
Table 4.12: Separations for prostatectomies performed upon patients with a principal diagnosis of prostate cancer, 2000-01 to 2005-06 .....	81
Table 4.13: Separations for prostatectomies performed upon patients with a principal diagnosis of prostate cancer by age, 2004-05 .....	82
Table 4.14: All separations from Australian hospitals for procedures performed on the prostate or seminal vesicle, 1998-99 to 2004-05 .....	82
Table 4.15: Prostate cancer incidence and mortality in selected countries .....	84
Table 5.1: Remoteness areas for the ASGC remoteness classification .....	88
Table 5.2: Average annual cancer incidence: cancer site, sex and remoteness classification, Australia, 2001-2003 .....	91
Table 5.3: Standardised incidence ratios: cancer site, sex and remoteness classification, Australia, 2001-2003 .....	92
Table 5.4: Average annual excess cancer incidence: cancer site, sex and remoteness classification, 2001-2003 .....	93
Table 5.5: Number of deaths due to all cancers, 2003 .....	95
Table 5.6: Number of deaths due to lung cancer, 2003 .....	95
Table 5.7: Number of deaths due to colorectal cancer, 2003 .....	95
Table 5.8: Number of deaths due to breast cancer, 2003 .....	95
Table 5.9: Number of deaths due to cervical cancer, 2003 .....	95
Table 5.10: Number of deaths due to prostate cancer, 2003 .....	95
Table 5.11: Number of deaths due to melanoma, 2003 .....	96
Table 5.12: Number of deaths due to other cancers, 2003 .....	96
Table 5.13: Standardised mortality ratios, selected cancers, 1992 to 2003 .....	96
Table A.1: WHO classification of lymphoid and haematopoietic neoplasms and the corresponding ICD-O-3 morphology codes .....	100
Table A.2: Cancer site and percentage of cancers attributed to excessive alcohol consumption and to smoking .....	106

# List of figures

Figure 4.1: Age-specific incidence and mortality rates for prostate cancer, Australia, 2003 .....75

Figure 4.2: Trends in age-standardised incidence and mortality rates for prostate cancer, Australia, 1982–2004.....76

Figure 4.3: Age-specific and age-standardised death rates for prostate cancer, 1920–2003.....76