

Cancer survival in Australia, 2001

Part 1: National summary statistics

The Australian Institute of Health and Welfare is an independent health and welfare statistics and information agency. The Institute's mission is to inform community discussion and decision making through national leadership in the development and provision of authoritative and timely information on the health and welfare of Australians.

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

The purposes of the AACR are:

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

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

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Cancer survival in Australia, 2001

Part 1: National summary statistics

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

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Foreword

This Government is strongly committed to the control of cancer in Australia, providing substantial ongoing funding for initiatives aimed at improving the prevention, detection, treatment, and palliation of cancer, cancer research and cancer education for the Australian community.

In 1996, cancer was identified as one of the National Health Priority Areas (NHPAs) in order to focus public attention and health policy to achieve significant gains in the health status of the Australians. Lung cancer, colorectal cancer, melanoma, non-melanocytic skin cancer, breast cancer, prostate cancer, cervical cancer, and non-Hodgkin's lymphoma have been identified as the eight priority cancers.

I am now delighted to present to you the national cancer survival analysis, which is the first report of its kind. Previously, cancer survival data has been collected by the State and Territory Cancer Registries and published in separate reports. The Commonwealth has commissioned the Australian Institute of Health and Welfare to bring together national cancer survival data.

Cancer survival data tells us how well we are doing in diagnosing cancer early and treating it effectively and provides essential information about what outcome is likely when cancer is diagnosed. I am proud to announce that internationally, Australia is one of the world leaders in cancer survival rates. This is an excellent achievement.

Australia's biggest improvements in five-year relative cancer survival between 1982–1986 and 1992–1997 have included:

- Breast cancer in women, where survival increased from 72% to 84%;
- Hodgkin's disease—from 74% to 84%;
- Cancer of the kidney—from 50% to 59%;
- Colorectal cancer—the second largest cause of cancer deaths, with colon cancer survival improving from 51% to 59%, and rectal cancer survival improving from 50% to 58%; and
- Cervical cancer, with survival improving from 70% to 75%.

Australia's improving cancer survival rates can be partly attributed to our effective detection programs, such as BreastScreen Australia and the National Cervical Screening program. These are world-leading programs. Our progressively improving management and treatment programs are also reflected in the data presented here. The Commonwealth Government will continue to implement other innovative programs and monitor our progress in all aspects of cancer control. Initiatives, in areas of high need, such as colorectal cancer, ovarian cancer, prostate cancer and lung cancer, will hopefully continue these improvements and build on our record in the fight against cancer.

The Hon. Dr Michael Wooldridge, MP
Minister for Health and Aged Care
September 2001

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- contributed through the State and Territory cancer registries the cancer data underlying the analyses,
- assisted in refereeing of drafts of the report.

The Project Steering Committee comprised:

Dr Paul Jelfs	Australian Institute of Health and Welfare
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Abbreviations

AACR	Australasian Association of Cancer Registries
ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
CI	confidence intervals
IACR	International Association of Cancer Registries
ICD-9	International Classification of Diseases, 9th Revision
ICD-O2	International Classification of Diseases for Oncology, 2nd edn
NCI	National Cancer Institute (United States)
NCSCH	National Cancer Statistics Clearing House
NDI	National Death Index
NHMRC	National Health and Medical Research Council
PSA	prostate-specific antigen testing
PYLL	person-years of life lost
SACR	South Australian Cancer Registry
SEER	Surveillance, Epidemiology and End Results Program (National Cancer Institute, United States)
SEIFA	Socio Economic Index for Areas
SNOMED	Systematised Nomenclature of Medicine
WHO	World Health Organization

Executive summary

This project was undertaken jointly by the Australian Institute of Health and Welfare (AIHW) and the Australasian Association of Cancer Registries, and was funded by the Department of Health and Aged Care.

The cancer incidence period covers all persons diagnosed with cancer during the 16-year period from 1 January 1982 to 31 December 1997. The period of death matched to the incidence data was 1 January 1982 to 31 December 1999. The analysis presents relative survival for 20 individual sites and for all cancers. Trends were analysed over three diagnostic periods—1982–1986, 1987–1991, and 1992–1997. The first two periods contain five years each and the latter period contains six years, in order to make full use of the available data.

Relative survival has been used because it is a measure that takes into consideration the crude survival (time between diagnosis and death) in the cancer population, and the corresponding expected survival in the general population. Expressed as a percentage, it is the cancer population that survives a specific number of years after the diagnosis divided by the general population that survives the same number of years.

For example, in the general population during 1992–1997, the expected proportion of males aged 60–69 years who survive for the next five years is 90.6%. The observed survival rate after five years for males diagnosed with lung cancer at age 60–69 is 10.8%. The five-year relative survival proportion for males diagnosed with lung cancer at age 60–69 is the ratio of these two percentages (10.8/90.6), that is 0.119, or 11.9% (Table 8.1).

The main findings were as follows.

Survival estimates for all cancers

Sex differences

- Females had higher survival proportions than males. On average, during the 1992–1997 diagnosis period, males and females diagnosed with cancer had five-year relative survival rates of 56.8% and 63.4% respectively (Table 3.1).

Improvement over time

- There were significant increases in survival proportions for cancer during the three diagnosis periods (1982–1986, 1987–1991 and 1992–1997).
 - For males, from 1982–1986 to 1992–1997 (Figure 3.1; Table 3.5):
 - the one-year relative survival proportion improved from 64.5% to 73.6%
 - the five-year relative survival proportion improved from 43.8% to 56.8%.

The ten-year relative survival proportion, for males, rose from 38.9% to 43.2% between the 1982–1986 and 1987–1991 periods.

- For females, from 1982–1986 to 1992–1997 (Figure 3.1; Table 3.6):
 - the one-year relative survival proportion improved from 73.5% to 77.5%
 - the five-year relative survival proportion improved from 55.3% to 63.4%.

The ten-year relative survival proportion for females rose from 50.8% to 55.0% between the 1982–1986 and 1987–1991 periods.

Age group differences

- The five-year relative survival proportion (1992–1997) for all cancers was highest in the 20–29 age group (82.9% for males and 87.2% for females) after which five-year relative survival decreased progressively as age increased. These proportions decreased to 30.2% for males and 32.7% for females in the 90–99 age group (Figure 3.2; Tables 3.8 and 3.9).
- There was a significant increase in five-year relative survival between diagnosis periods 1982–1986 and 1992–1997 for males and females in all age groups below 90 years. The largest of these increases occurred for males aged 40–59 (by about 16 percentage points) and for females aged 30–59 (by about 10 percentage points) (Figures 3.2; Tables 3.8 and 3.9).

Survival estimates for cancer sites

Cancers with highest survival

- Cancer sites with the highest five-year relative survival proportions in males were cancer of the testis (95.4%), melanoma of the skin (90.0%), cancer of the thyroid (87.9%) and cancer of the prostate (82.7%). Cancer sites with the highest five-year relative survival proportions in females were cancer of the thyroid (95.6%), melanoma of the skin (94.6%), Hodgkin's lymphoma (84.4%) and cancer of the breast (84.0%) (Figures 3.4 and 3.5; Tables 3.3 and 3.4).

Cancers with lowest survival

- Cancer sites with the lowest relative survival proportions in males were cancer of the pancreas (5.4%), cancer of the lung (11.0%), cancer of unknown primary site (13.4%), cancer of the stomach (22.6%) and cancer of the brain (23.8%). Females had the same five cancer sites with the lowest relative survival proportions—cancer of the pancreas (5.2%), cancer of unknown primary (11.5%), cancer of the lung (14.0%), cancer of the brain (23.8%) and cancer of the stomach (24.8%) (Figures 3.4 and 3.5; Tables 3.3 and 3.4).

Cancer survival over time

- There were significant improvements in the five-year relative survival proportion over the three diagnosis periods for most of the cancer sites that were analysed (Tables 3.3 and 3.4). The exceptions were leukaemia in males and cancers of the pancreas, bladder, brain and unknown primary site, which experienced no improvement.

International comparisons

International comparisons were made between selected countries based on availability of relative survival estimates. The selected countries were Denmark, England, Finland, Iceland, Italy, Scotland, Wales, the United States (Table 1.1). A weighted estimate was used when a figure for Europe was provided.

International comparison of five-year relative survival is difficult because of definitional and coding differences between countries. For instance, multifocal disease of the kidney is counted as one primary malignant neoplasm in Australia, whereas in other countries it is counted as more than one primary malignant neoplasm. Also, different countries include different histology behaviours for particular cancer sites. For instance, the United States SEER Program combines in situ and invasive bladder cancers, whereas Australia includes only invasive bladder cancers.

Cancer screening also makes international comparisons of relative survival difficult by introducing lead-time bias for those countries where screening is practised (Parkin et al. 1992). Lead-time bias extends the length of time between diagnosis (which is made earlier due to screening) and the end of life even if this remains at the same point in time, thus inflating cancer relative survival.

Therefore, the following comparisons should be considered with caution.

- Five-year relative survival after cancer was highest in the United States, followed by Australia, then Iceland and Finland. Five-year relative survival after individual cancers tended to be highest in these four countries, with the United States and Australia tending to rank first and second (Figure 3.3; Table 3.11).
- The United States recently reported on five-year relative survival proportions for the period 1992–1997 (the earlier period 1987–1991 was used in the international comparison sections of this report). For the 1992–1997 period, five-year relative survival for females for all cancers was higher for Australia (63.4%) than the United States (62.3%). Five-year relative survival for males for all cancers was 56.8% in Australia compared with 61.2% in the United States.
- Some specific cancer differences between the United States and Australia also exist. These differences are largely due to coding differences between the two countries. For example, the United States includes *in situ* bladder cancers with invasive bladder cancers, increasing relative survival estimates (Parkin et al. 1992).

Compared with the other countries for the 1987–1991 period, Australian five-year relative survival proportions were highest for males with lung cancer, testicular cancer, stomach cancer, Hodgkin’s disease and non-Hodgkin’s lymphoma; for females with pancreatic cancer and leukaemia; and for males and females with melanoma of the skin.

Table A: Five-year cancer relative survival proportions, Australia, 1992–1997

Male five-year survival %		Female five-year survival %	
Cancer site	%	Cancer site	%
Cancer of the testis	95.4	Cancer of the thyroid	95.6
Melanoma of the skin	90.0	Melanoma of the skin	94.6
Cancer of the thyroid	87.9	Hodgkin's disease	84.4
Cancer of the prostate	82.7	Cancer of the breast	84.0
Hodgkin's disease	82.6	Cancer of the uterus	81.4
Cancer of the bladder	70.8	Cancer of the cervix	74.6
Cancer of the kidney	59.9	Cancer of the bladder	64.7
Cancer of the colon	58.3	All cancer sites	63.4
All cancer sites	56.8	Cancer of the rectum	60.6
Cancer of the rectum	56.6	Cancer of the colon	58.7
Non-Hodgkin's lymphoma	54.6	Cancer of the kidney	57.5
Leukaemia	41.2	Non-Hodgkin's lymphoma	55.8
Cancer of the brain	23.8	Leukaemia	43.2
Cancer of the stomach	22.6	Cancer of the ovary	42.0
Cancer of unknown primary site	13.4	Cancer of the stomach	24.8
Cancer of the lung	11.0	Cancer of the brain	23.8
Cancer of the pancreas	5.4	Cancer of the lung	14.0
		Cancer of unknown primary site	11.4
		Cancer of the pancreas	5.2