

**Health system expenditures  
on cancer and other neoplasms  
in Australia, 2000–01**

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# **Health system expenditures on cancer and other neoplasms in Australia, 2000–01**

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# Preface

The first comprehensive study of cancer health system expenditures in Australia covered the year 1993–94 and was released in 1998 (AIHW: Mathers et al. 1998c).

This report updates the expenditure estimates to 2000–01 and includes ‘other neoplasms’ as well as cancers. The methodology has been revised in some areas and the analysis applied across the cancer site groups used in the first Australian Burden of Disease study (AIHW: Mathers et al. 1999). The underlying data are analysed using the ICD-10 Classification of Diseases and the International Classification of Primary Care Version 2 (ICPC-2).

This analysis of expenditures on cancer and other neoplasms is part of the larger analysis of health system expenditure on disease and injury in Australia in 2000–01 (AIHW 2004a). The larger study uses the ‘burden of disease’ chapter classifications, thus allowing for the analysis of both epidemiological information and expenditure across all areas of the health system. This report extends the analyses of both epidemiology and expenditure to 27 individual cancer sites.

These estimates provide a useful picture of health expenditure according to the clinically relevant categories of disease. However, they should not be used as a basis for resource allocation decisions. The existing expenditure on a disease, no matter how large or small, does not in itself give an indication of the loss of health due to that disease, or the priority for intervention or need for additional health services expenditure. Resource allocation decisions require information not only on average costs and outcomes but also on the marginal costs and marginal outcomes associated with specific interventions.

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The data used from the Institute's disease expenditure database was primarily produced by Nick Mann, John Goss, Angelique Jerga and Chris Stevenson.

Ian Titulaer, of the AIHW Hospitals and Mental Health Services Unit, carried out the analysis of the Institute's National Hospital Morbidity Database which was the basis for the allocation of hospital expenditure. Ruth Penm and Angela Frino, also of the Hospitals and Mental Health Services Unit, extracted and prepared the BEACH (Bettering the Evaluation and Care of Health) data used in the analysis of expenditure on out-of-hospital medical services. In addition to providing valuable advice on the interpretation of the BEACH data, Helena Britt and Clare Bayram of the General Practice Statistics and Classification Unit prepared a mapping from the International Classification of Primary Care Version 2 (ICPC-2) (which is used to classify health conditions in the BEACH data) to the Burden of Disease condition categories used in this study.



# Executive summary

This report provides a systematic analysis of Australian health expenditure in 2000–01 to treat or prevent cancer and other neoplasms, and to care for those with neoplastic disease. Cancer (also called malignant neoplasm) is a group of diseases characterised by the uncontrolled proliferation of abnormal cells. Other neoplasms include benign, in situ and unspecified neoplasms. Cancer and ‘other neoplasms’ are collectively called ‘neoplasms’.

## Main results

Expenditure for cancer and other neoplasms in 2000–01 was \$2.9 billion which was 5.8% of total health expenditure allocated by disease. The expenditures for cancer and other neoplasms attributed to the seven health sectors were as follows:

- Hospitals \$1,988 million
- Out-of-hospital medical services \$343 million
- Research \$215 million
- Total pharmaceuticals \$183 million
- Aged care homes \$37 million
- Dental and other professional services \$24 million
- Public health programs (non-MBS) \$130 million

Expenditure in hospitals was 68% of expenditure for cancer and other neoplasms. In contrast, for all other diseases, 42% of expenditure was in hospitals.

Expenditure on cancers (malignant neoplasms) was \$2.15 billion, with \$634 million being spent for other neoplasms. The most expensive cancer was non-melanoma skin cancer (NMSC) (\$264 million) followed by breast cancer (\$241 million), colorectal cancer (\$235 million) and prostate cancer (\$201 million).

NMSC was the most common of all the cancers, with 364,000 new cases in 2001 (National Cancer Control Initiative, 2003). All other cancers together accounted for 88,400 new cases in 2001. The high frequency of NMSC means that although it was the most expensive cancer, it had the lowest cost per case (around \$700 per NMSC removed).

Ninety per cent of expenditure on cancer was for treatment.

Leukaemia had the highest lifetime treatment cost, at \$51,000 per case.

## Health expenditure on cancer by age and sex

Total expenditure on cancers was \$1.2 billion for males and \$0.9 billion for females.

The most expensive cancer for males was prostate cancer (\$201 million). Of this expenditure, 48% was for non-hospital pharmaceuticals (\$97 million).

Breast cancer was the most expensive cancer for females (\$241 million). Of this expenditure, 40% was for organised mammography screening (\$96 million).

NMSC was the second most expensive for both males (\$153 million) and females (\$111 million).

The most expensive cancers for boys and girls (aged 0–14) were leukaemia and brain cancer. Males accounted for higher expenditure than females. For leukaemia, \$10 million was for males and \$8 million for females. For brain cancer, \$3.4 million was for males and \$3.1 million for females.

In the 15–24 age group, leukaemia and bone and connective tissue cancer had the highest expenditure for both males and females. Again, expenditure on these two cancers was higher for males than for females. For leukaemia, \$5.6 million was for males and \$3.7 million was for females. For bone and connective tissue cancer, \$1.5 million was for males and \$1.4 million was for females.

The most expensive cancer for males in the 25–64 age group was NMSC (\$53 million), followed by colorectal cancer (\$43 million). For females in the 25–64 age group the most expensive was breast cancer (\$89 million), followed by NMSC (\$44 million).

In the group aged 65 and over, prostate cancer (\$169 million) was the most expensive for males, followed by NMSC (\$100 million). For females 65 and over, the most expensive was colorectal cancer (\$74 million), followed by NMSC (\$66 million).

## **Changes in treatment expenditure by disease, 1993–94 to 2000–01**

The analysis of the change in expenditure has been conducted on treatment expenditure only. Total expenditure (in 2000–01 prices) on treatment of cancers increased \$400 million (a 24% increase) in the period 1993–94 to 2000–01. The leading causes of the increase were prostate cancer (\$97 million, a 93% increase), colorectal cancer (\$72 million, a 44% increase), NMSC (\$51 million, a 24% increase) and breast cancer (\$31 million, a 30% increase). There was a 131% increase in expenditure per case for prostate cancer; this increase was due to greater use of community (non-hospital) pharmaceuticals in the treatment of prostate cancer.

Increases in expenditure for cancers were recorded for each of the age groups except the 15–24 age group and males aged 0–14 years. The greatest increases occurred in the group aged 65 and over, (38% for males, 25% for females and 32% for all persons).

The change in treatment expenditure for all cancer was \$400 million, of which two-thirds was attributed to males (\$257 million). Of this amount, 73% was in the group aged 65 and over and 23% was in the group aged 25–64.

## Conclusion

Of the total expenditure on cancers and other neoplasms, 68% occurred in the hospitals sector, and 45% occurred in the group aged 65 and over. This age group accounted for 48% of all new cancer cases (58% if NMSC is excluded).

The real 18% increase in treatment expenditure for cancer (excluding NMSC and prostate cancer) between 1993-94 and 2000-01 is largely explained by an increase of 17% <sup>(1)</sup> in the number of cases of cancer not an increase in cost per case. However, prostate cancer did show a large increase in cost per case from \$8,000 per case in 1993-94 to \$18,000 per case in 2000-01, and this increase was the major reason that there was a 24% increase rather than a 18% increase in expenditure for cancers overall.

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<sup>1</sup> The 17% increase in cases of cancer from 1993-94 to 2000-01 is almost entirely due to the demographic factors of ageing and population growth, as the age-standardised incidence of the cancers (excluding NMSC and prostate cancer) increased only 2% in the period.

# 1 Introduction

## 1.1 Use and interpretation of expenditure estimates in this publication

Throughout this publication a number of different subsets of total cancer and other neoplasms expenditure are used to allow accurate and meaningful analysis. Table 1.1 shows the breakdown of the total expenditure on cancer and other neoplasms into the different subsets used in this publication. Cancer (also called malignant neoplasm) is a group of diseases characterised by the uncontrolled proliferation of abnormal cells. Other neoplasms include benign, in situ and unspecified neoplasms. Cancer and ‘other neoplasms’ are collectively called ‘neoplasms’.

**Table 1.1: Total expenditure on cancer and other neoplasms by analysis subsets used in this publication (\$ million)**

	Cancer (malignant neoplasms)		Other neoplasms	Total cancer & other neoplasms
	Including NMSC	Excluding NMSC		
Treatment	2,089	1,824	541	2,630
Prevention (non Public health programs)	67	67	38	105
Public health program delivered through MBS	—	—	54 <sup>(a)</sup>	54
<b>Total</b>	<b>2,156</b>	<b>1,891</b>	<b>634</b>	<b>2,790</b>
Public health programs (non-MBS)	96	—	34	130
<b>Total</b>	<b>2, 252</b>	<b>1,891</b>	<b>667</b>	<b>2,919</b>

(a) \$54.4 million for Pap smears carried out in GP surgeries and associated pathology which are part of the National Cervical Screening Program.

- In Chapter 2, Tables 2.1, 2.2, 2.3 and 2.6 relate to all expenditure for cancer and other neoplasms (\$2,919 million). Table 2.4 shows the distribution of Public health cancer screening expenditure (\$184 million). Table 2.5 uses estimates of treatment expenditure for cancer (excluding NMSC) (\$1,824 million) to estimate lifetime average costs of each cancer.
- Chapter 3 deals with treatment and prevention expenditure for cancer (malignant neoplasms) including non-melanoma skin cancer (NMSC) (\$2,156 million), but excluding the \$96 million spent on organised mammography.
- Chapter 4 deals with health services for all cancers except for the services delivered through organised mammography. The health services covered in Chapter 4 cost \$2,156 million to provide.



- Chapter 5 analyses treatment expenditure for cancer (malignant neoplasms) including NMSC (\$2,089 m).

NMSCs are often analysed separately in these tables as they are a cancer that is not registrable. Thus, in contrast to the other cancers, we do not have true incidence data, and so cannot, for instance, calculate a lifetime cost its treatment. We do have an estimate of the number of people who had non-melanoma skin cancers removed, which was 364,000 in 2001, but this is a measure of number of people with the cancer treated in that year, not of people suffering from the cancer for the first time.

Disease-specific expenditure estimates provide a useful perspective on the utilisation and costs of health services in Australia, as well as a reference source for planners and researchers interested in the costs and utilisation patterns for a particular disease group. The estimates in this report are derived in a consistent framework, but it is important that their interpretation and limitations be clearly understood. Some important points to note are:

- Existing expenditure on a disease, no matter how large or small, does not in itself give an indication of the loss of health due to that disease or the priority for intervention or need for additional health services expenditure. Resource allocation decisions require information not only on average costs and outcomes but also on the marginal costs and marginal outcomes associated with the specific interventions under consideration.
- Care should be taken when interpreting expenditure associated with disease treatment as an estimate of the savings that would result from prevention of disease. Conversion of the opportunity cost of resources being devoted to disease treatment, or the benefits forgone, into expenditure savings involves a number of additional considerations (see, for example, AIHW: Mathers et al. 1998b).
- Although the expenditure estimates reported here provide a broad picture of use of health system resources classified by disease group, they should be interpreted with caution for specific diseases. Although the methodology yields consistency, good coverage and totals that add up to known expenditures, it is not as sensitive or accurate for any specific disease as would be a detailed analysis of actual costs incurred by patients with that disease.

Monetary expenditure on health services by itself tells us something about what is happening in the health system but does not inform us about priorities for funding or interventions. If, however, these expenditures can be linked to output and outcome measures (such as number of hospital admissions and changes in health status), the expenditure information becomes more meaningful, especially if dissected by disease categories.

Disease expenditure estimates cannot provide an assessment of the impact of disease on the welfare of society. Nevertheless, by indicating the economic resources that society is currently devoting to treating and preventing disease, we have a baseline set of data which enable us to see the future impact of decreases or increases in expenditures on treatment and prevention.

## 1.2 Background

The first detailed Australian study of expenditure across disease and injury groups was published in 1998 and referred to the year 1993–94 (AIHW: Mathers et al. 1998b). That study classified disease and injury according to the major chapter groupings of the International Classification of Diseases, Ninth Revision (ICD-9).

A number of reports were published from this study, including *Health System Costs of Cancer in Australia, 1993–94* (AIHW: Mathers et al. 1998c) which was a comprehensive report on total expenditures for the different types of cancer in 1993–94. This current report compares expenditure in 2000–01 with expenditure in 1993–94.

## 1.3 Methodology

The expenditure on disease as presented in this report is an example of a satellite national account. Satellite accounts enable the linkage of non-monetary data sources and analysis to the monetary accounting system. In health, such accounts were first proposed by Stone in 1975 (United Nations 1975). The UN System of National Accounts 1993 introduced the concept of satellite accounts as a way of going beyond the rigidities of the National Accounts structure to provide a focus on data relevant to specific policy areas (CEC, IMF, OECD, UN & WB 1993).

To ensure consistency across the disease expenditure project and the associated Burden of Disease project, the disease groups used in the 2000–01 disease expenditure estimates were based on the 176 diseases published in the Australian Burden of Disease Study (AIHW: Mathers et al. 1999). Extra categories were added to provide a more comprehensive list of diseases, and as in 1993–94, the two categories of ‘Symptoms, signs and ill-defined conditions’ and ‘Other contact with health services’ were included to cover health service expenditures that cannot be allocated by disease. Inclusion of these two categories allows for the allocation of all the ICD-10 codes.

The 2000–01 estimates have been derived using a methodology which is, in the main, consistent with that used for the 1993–94 estimates. This allows comparisons between the estimates for the two years.

Since 1993–94, nursing homes and hostels have been integrated into a single residential aged care system. The ‘nursing home’ portion of 2000–01 residential aged care services expenditure has been estimated on the basis of care needed by residents, with expenditure on high-dependency residents (Residential Classification Scale (RCS) categories 1–4) taken as approximating expenditure on nursing homes.

Disease expenditure estimates for 2000–01 are available by the following areas of expenditure: hospitals, aged care homes, out-of-hospital medical services, pharmaceuticals, other professional services, dental and research. A detailed analysis has been undertaken for admitted hospital patients, aged care homes, out-of-hospital medical services, and pharmaceuticals requiring a prescription (72% of allocated expenditure). For other areas of expenditure, estimates have been made by adjusting the 1993–94 estimates for changes in the age and sex structure of the population and

then multiplying these by a factor that ensured they add to the known total 2000–01 expenditure for that area.

## **Areas of health expenditure**

### **Hospital: admitted patients**

The proportions of total expenditure in public acute-hospitals that relate to admitted patients are estimated using the admitted patient fractions estimated by each state and territory and published in *Australian Hospital Statistics 2001–02* (AIHW 2003a). Private hospital expenditure data are derived from the Australian Bureau of Statistics Private Health Establishments Survey.

The hospital morbidity expenditure method estimates acute hospital admitted patient costs by apportioning the total admitted patient expenditure to individual episodes of hospitalisation, with an adjustment for the resource intensity of treatment for the specific episode (using the Diagnostic Related Groups, or DRGs) and the length of stay. The adjustment for length of stay is made in such a way as to reflect the fact that some costs are proportional to length of stay (e.g. ward costs and meals), whereas others are independent of length of stay (e.g. theatre costs). The subdivision of episode costs into these cost ‘buckets’ is made using National Hospital Costs Data Collection data.

An adjustment is also made for costs in the actual hospital where the treatment is provided. The standard DRG method for estimating costs uses state DRG weights, and so assumes that the hospital has the same average costliness as the average for the state. The Establishments Database contains the actual cost of treating admitted patients at each hospital, and these data are used to scale up or down the estimate that comes from using whole-of-state DRG weights.

For sub-acute and non-acute patients, where there are no DRG weights, the most recent data on costs comes from the July to December 1996 sub-acute and non-acute patient (SNAP) study (Eagar et al. 1997). Per diem costs have been applied and inflated to 2000–01 estimates using the implicit price deflator for final government consumption expenditure on hospital and nursing home care (AIHW 2002).

Estimates of expenditure on medical services for private patients in hospitals are included in admitted patient hospital costs. Expenditure for private medical services in hospitals in 2000–01 was \$1,822 million. This estimate comes from Health Insurance Commission data on the fee charged by private medical practitioners for in-hospital services. Sometimes, specialists accept a discounted amount as full payment for the services, so the fee-charged data will be a slight overestimate of actual expenditure for private medical services in hospitals.

### **Hospital: non-admitted patients**

Total expenditure for non-admitted patients comes from *Australian Hospital Statistics 2001–02* (AIHW 2003a). The figure was broken down by disease by adjusting the

1993–94 non-admitted patient disease expenditure pattern for demographic changes. These numbers are therefore preliminary.

### **Aged care homes**

Since the 1993–94 disease costing study was undertaken, nursing homes and hostels have been integrated into a single residential aged care system. People receiving residential aged care are categorised according to the level of care they need. Each resident is categorised into one of eight care categories on admission, and this categorisation is periodically reviewed. The ‘nursing home’ portion of residential aged care services expenditure is estimated on the basis of this level of care. Categories 1 to 4 comprise residents with high levels of dependency and are approximately equivalent to the services delivered by nursing homes in the past. Expenditure for residents in aged care homes categorised to RCS levels 1 to 4 comes from *Health Expenditure Australia 2001–02* (AIHW 2003b). It is allocated to disease based on data from the Australian Bureau of Statistics 2003 Survey of Disability, Ageing and Carers which asked staff in aged care homes to identify the health condition that caused most problems for residents.

### **Out-of-hospital medical services**

Data from the general practitioners survey, *Bettering the Evaluation and Care of Health (BEACH)*, was used to allocate private medical services provided by both general practitioners (GPs) and specialists. The International Classification of Primary Care Version 2 codes (ICPC2) used in BEACH were mapped to the disease-costing groups to enable medical services expenditure to be allocated by disease. Expenditures for ‘Unreferred attendances’, ‘Imaging’ and ‘Pathology’ were allocated to disease on the basis of GP encounters, and expenditure for ‘Other medical services’ (i.e. specialist services) was allocated to disease on the basis of the referral pattern in BEACH. Allocation of GP costs where there were multiple presenting conditions in the GP encounter was done on a pro rata basis. Total expenditure was from the health expenditure database which in turn was derived from Health Insurance Commission (HIC) data.

In-hospital medical expenditure for private patients is not included under medical services but is allocated as part of admitted patient expenditure. (*Health Expenditure Australia 2001–02* (AIHW 2003b) includes this in-hospital medical expenditure in the category ‘Medical services’.)

### **Pharmaceuticals**

#### **Prescription drugs**

The Department of Health and Ageing provided detailed costing data for pharmaceuticals issued under the Pharmaceutical Benefits Scheme and the Department of Veterans’ Affairs Repatriation Pharmaceutical Benefits Scheme. It also provided volume data for private prescriptions and under-copayment drugs. These data originally came from a Pharmacy Guild survey and were adjusted by the

Australian Government Department of Health and Ageing to represent volume figures for all of Australia. Costing figures were applied to these prescription drugs to obtain a total expenditure figure for each prescription drug. Prescription drugs were coded by the fifth edition of the Anatomical Therapeutic Chemical classification – a system developed by the World Health Organization for classifying therapeutic drugs (WHO Collaborating Centre for Drug Statistics Methodology 2002). The codes were mapped to codes for prescription drugs used in the BEACH survey. As a result, data from BEACH were used to allocate expenditure on prescription drugs to each disease group, based on the medical problem in the GP encounter that related to the prescribing of the particular drug. An assumption was made that the pattern of diseases relating to each type of prescription drug is the same when prescribed by a GP and by a specialist. This assumption was applied because there are no data that permit allocation of specialist-written prescriptions to diseases.

Pharmaceuticals that are dispensed in hospitals are included in the estimates of hospital costs.

### **Over-the-counter drugs**

*Health Expenditure Australia 2001–02* (AIHW 2003b) separates expenditure on pharmaceuticals into ‘Benefit paid pharmaceuticals’ and ‘All other pharmaceuticals’. ‘All other pharmaceuticals’ include over-the-counter drugs but also pharmaceuticals for which a script is required, such as private prescriptions and under-copayment drugs. The estimates in this report separate pharmaceuticals for which a script is required from over-the-counter drugs. Therefore, to calculate the expenditure on over-the-counter drugs, expenditure on private prescriptions and under-copayment drugs was subtracted from ‘All other pharmaceuticals’.

Expenditure on over-the-counter drugs in 2000–01 by disease is based on a revision to the 1993–94 disease-costing estimates that allows for demographic change, and increases in expenditure in this area, and is therefore an approximation.

### **Other professional services**

Total expenditure on ‘Other professional services’ was obtained from *Health Expenditure Australia 2001–02* (AIHW 2003b) and was allocated to disease by adjusting the 1993–94 disease figures for demographic change. The 2000–01 disease expenditure estimates for ‘Other professional services’ are therefore approximations and should be used with caution.

### **Research**

Total expenditure on ‘Research’ was obtained from *Health Expenditure Australia 2001–02* (AIHW 2003b) and was allocated to disease using data from the latest Australian Bureau of Statistics research and experimental development surveys. Most of the research data is classified at a fairly high level, but it does give a valid picture of the distribution of research expenditure at the chapter level. Within a chapter, research is allocated in proportion to the distribution of all other expenditure by disease within that chapter.

## Changes in methodology for this publication

The methodology used in the analysis of expenditures for cancer and other neoplasms has followed the methodology used in *Health System Expenditure on Disease and Injury in Australia 2000–01 (Second edition)* (AIHW 2005). The changes in the second edition as compared to the first edition (AIHW 2004a) that affect this publication are as follows.

- Analysis of BEACH data revealed expenditure for cervical screening in the signs and symptoms chapter. This has been moved to 'Carcinoma in situ cervix uteri'.
- Public health expenditure by states and territories on mammography and cervical screening has been included.

These changes in methodology are reflected in differences between tables published in this publication and similar tables published previously (AIHW 2004). Other differences compared to the tables in the first edition are due to changes in the age-sex data in the medical services and pharmaceutical areas.

Treatment incidence data for non-melanoma skin cancer have been supplied by the National Cancer Control Initiative from the 2002 National Non-melanoma Skin Cancer Survey. The treatment incidence rates from this survey have been applied to the June 2001 population to obtain an estimate of 2001 treatment incidence.

## 2 Cancer and other neoplasms expenditures

This chapter relates to the treatment and prevention expenditure for cancer and other neoplasms (\$2,919 million). Table 2.1 compares total cancer and other neoplasms expenditure with other diseases, Table 2.2 shows the distribution of total expenditure by cancer site and sector, and Table 2.3 displays proportions of total expenditure by site and sector. Table 2.4 shows the distribution of Public health cancer screening expenditure (\$184 million). Figure 2.2 shows the proportion of costs across sectors for selected cancers, but not for any of the 'other neoplasms'. The costs do not include public health program expenditure, but do include some minor other preventive expenditures. Table 2.5 uses estimates of treatment expenditure for cancer (excluding NMSC) (\$1,824 million) to estimate lifetime average costs of treating each cancer. Table 2.6 shows the split by site of total expenditure on cancer and other neoplasms into treatment (\$2,630 million), public health programs (\$184 million) and other preventive expenditure (\$105 million).

### 2.1 Cancer and other neoplasms expenditure and total health expenditure

Table 2.1 shows health expenditure in Australia in 2000–01, summarised at the broad disease group level. This expenditure includes expenditure funded by the Australian and state governments, by private health insurance and by individuals and households. These disease expenditure estimates allocate 88% of total recurrent health expenditure in 2000–01, or \$50.1 billion.

Expenditure not allocated by disease includes capital expenditure and capital consumption, patient transport, health administration, and health aids and appliances. The community mental health portion of community health has been allocated by disease, and the cancer screening portion of public health has been allocated to cancer and other neoplasms, but other areas of community and public health could not be allocated by disease. Welfare expenditures such as the Home and Community Care program and low-level care in aged care homes are not included.

Cancer and other neoplasms expenditure was \$2.9 billion in 2000–01 which was 5.7% of total health expenditure allocable by disease. Of this, 68% was spent in the hospital sector (just under \$2 billion) compared with 42% of health expenditure for all other diseases. The out-of-hospital medical sector, including general practitioner, imaging, pathology and other medical services, accounted for \$343 million or 12% of expenditure on cancer and other neoplasms. Only 6% of expenditure on cancer and other neoplasms (\$183 million) was for pharmaceuticals obtained outside a hospital. (Hospital pharmaceuticals for the treatment of cancer and other neoplasms are included with hospital expenditure). Research for cancer and other neoplasms

**Table 2.1: Diseases and injury by burden of disease chapter: health system costs by health sector, 2000–01 (\$ million) and number of deaths, 2001**

Burden of disease chapter	Hospitals <sup>(a)</sup>	Aged care homes <sup>(b)</sup>	Out-of-hospital medical services	Dental <sup>(d)</sup> and other professional services <sup>(c) (e)</sup>	Total pharmaceuticals <sup>(f)</sup>	Community and public health <sup>(g)</sup>	Research	Total expenditure allocated by disease	% of total allocated expenditure	Number of deaths	% of total deaths
Cardiovascular	2,533	526	782	73	1,411	—	153	5,479	11.2	49,172	38.3
Nervous system	1,057	2,168	573	519	400	21	204	4,942	9.7	6,260	4.9
Musculoskeletal	1,828	482	879	710	680	—	55	4,634	9.5	899	0.7
Injuries	2,831	105	622	265	184	—	6	4,013	8.2	7,483	5.8
Respiratory	1,494	88	840	87	1,197	—	35	3,742	7.6	10,682	8.3
Oral health	189	0	15	3,108	34	—	27	3,372	6.9	12	0.0
Mental disorders <sup>(g)</sup>	1,196	366	499	134	616	821	109	3,741	6.0	939	0.7
Digestive system	1,571	34	347	191	637	—	31	2,811	5.7	4,107	3.2
Cancer and other neoplasms	1,988	37	343	22	183	130	215	2,919	5.7	37,615	29.3
Genitourinary	1,317	14	469	29	233	—	13	2,076	4.2	3,168	2.5
Endocrine, nutritional & metabolic	392	14	340	59	714	—	68	1,587	3.2	1,651	1.3
Skin diseases	562	13	341	96	344	—	13	1,370	2.8	266	0.2
Maternal conditions	1,178	0	107	10	9	—	11	1,315	2.7	12	0.0
Infectious & parasitic	478	8	366	25	209	—	139	1,224	2.5	1,746	1.4
Diabetes mellitus	289	38	183	33	234	—	35	812	1.7	3,089	2.4
Neonatal causes	334	0	12	0	1	—	11	358	0.7	690	0.5
Congenital anomalies	158	6	19	1	2	—	37	221	0.5	623	0.5
Signs, symptoms, ill-defined conditions and other contact with the health system <sup>(h)</sup>	2,634	0	1,717	163	996	—	21	5,530	11.3	125	0.1
<b>Total</b>	<b>22,030</b>	<b>3,999</b>	<b>8,454</b>	<b>5,524</b>	<b>8,085</b>	<b>972</b>	<b>1,182</b>	<b>50,146</b>	<b>100</b>	<b>128,540</b>	<b>100</b>
<b>As per cent of total</b>	<b>43.9</b>	<b>7.8</b>	<b>16.9</b>	<b>11.0</b>	<b>16.1</b>	<b>1.9</b>	<b>2.4</b>	<b>100.0</b>			

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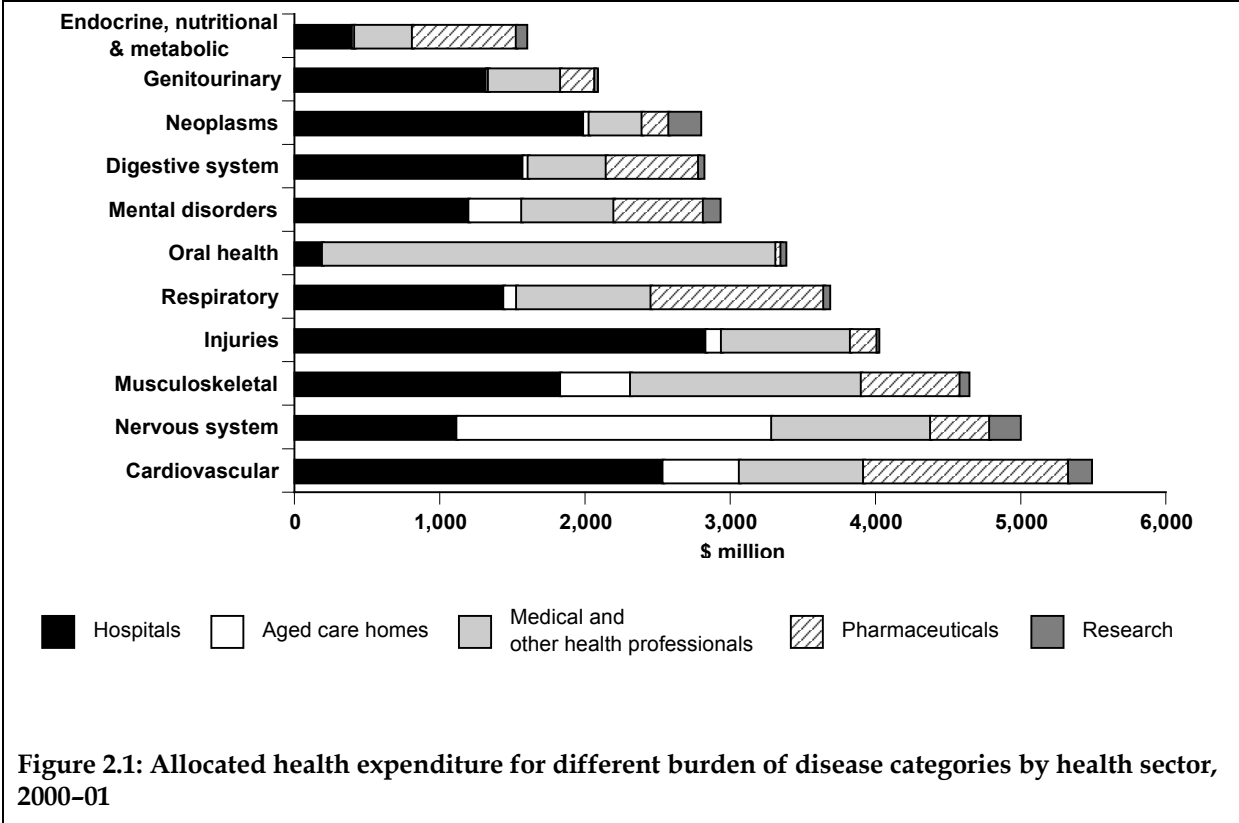
**Table 2.1 (continued): Diseases and injury by burden of disease chapter: health system costs by health sector, 2000–01 (\$ million) and number of deaths, 2001**

- (a) Public and private acute hospitals and psychiatric hospitals. Includes a preliminary estimate of private medical services provided in hospital.
- (b) Includes expenditure on residents that require a level of care that falls within one of the four highest levels in residential aged care services.
- (c) Based on preliminary AIHW estimates.
- (d) Expenditure on dental services was \$3,084 million and is all included in the 'Oral health' category.
- (e) Includes services delivered outside of hospitals by paramedical professionals such as physiotherapists, chiropractors, occupational therapists, audiologists, speech therapists, hydropaths, podiatrists, therapeutic and clinical massage therapists, clinical psychologists, dietitians and osteopaths.
- (f) Includes all pharmaceuticals for which a prescription is needed, including private prescriptions and under-copayment prescriptions, and includes over-the-counter medications such as vitamins and minerals, patent medicines, first aid and wound care products, analgesics, feminine hygiene products, cold sore preparations, and a number of complementary health products that are sold in both pharmacies and other retail outlets.
- (g) Includes expenditure on community mental health and public health cancer-screening programs.
- (h) 'Signs, symptoms and ill-defined conditions' includes diagnostic and other services for signs, symptoms and ill-defined conditions where the cause of the problem is unknown. 'Other contact with the health system' includes fertility control, reproduction and development; elective plastic surgery; general prevention; screening and health examination; and treatment and aftercare for unspecified disease.

(\$215 million) was 18% of total allocated research expenditure. Research expenditure was 7% of total expenditure on cancer and other neoplasms compared with an average of 2.4% for all disease expenditure. A very small proportion (<1%) of residential aged care expenditure was for cancer and other neoplasms. Similarly, less than 1% of expenditure on cancer and other neoplasms occurred in the 'other professional services' sector. It should be noted that 11.3% of expenditure allocated by disease is allocated against signs, symptoms, ill-defined conditions and other contact with the health system. Some of this expenditure is for signs and symptoms that after diagnostic tests prove to be cancer and other neoplasms, and as a result, expenditure incurred as a result of cancer and other neoplasms is underestimated in this report.

Cancer and other neoplasms accounted for 37,615 deaths in 2001 – 29% of all deaths.

Figure 2.1 shows expenditure as a proportion of allocated health expenditure for selected disease groups in 2000–01. Of the major disease groups shown, cancer and other neoplasms had the largest proportion (68%) of expenditure in the hospital sector.



Injuries (70%) and genitourinary diseases (63%) were the other groups with a high proportion of expenditure in this sector. The remaining expenditure on cancer and other neoplasms was fairly equally divided among health professionals (10%), pharmaceuticals (7%) and research (8%). This pattern of expenditure was unique among the groups shown in Figure 2.1.

## 2.2 Expenditure by cancer and other neoplasms site

Table 2.2 shows expenditure for different cancers and other neoplasms for 2000–01. Table 2.3 shows the proportion of expenditure for each cancer and other neoplasms by area of expenditure for the same period. Non-melanoma skin cancer, breast cancer, colorectal cancer and prostate cancer had the largest expenditures, each exceeding \$200 million in 2000–01, and together making up 32% of expenditure on cancer (Table 2.3). Nearly 60% of pharmaceutical expenditure occurred for prostate cancer (\$97 million); nearly 50% of out-of-hospital medical expenses were for NMSC and cervical cancer; and nearly 24% of admitted patient expenditure was for colorectal cancer (\$188 million), NMSC (\$119 million) and leukaemia (\$101 million). Expenditure on benign, in situ and unspecified neoplasms<sup>2</sup> made up 23% (\$667 million) of total neoplasm expenditure.

Expenditure by the Commonwealth and states and territories for screening added \$184 million to expenditure on cancer and other neoplasms (Table 2.4). Of this, \$54 million was included in MBS expenditure for cervical screening by GPs.

Figure 2.2 shows the distribution across sectors of expenditure within selected cancers and other neoplasms. It is evident that the majority of expenditure, (up to 85% for mouth and oropharynx cancer), occurred within the admitted patient sector. Out-of-hospital medical expenditure was mostly quite small for cancer and other neoplasms, though 30% of expenditure for NMSC was out-of-hospital medical expenditure and almost all of the expenditure relating to the cervix was out of hospital. Prostate cancer had a different distribution of expenditure from the other cancers shown, with 48% occurring in the community (non-hospital) pharmaceuticals sector.

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<sup>2</sup> Includes Carcinoma in situ cervix uteri (\$140 million) and Other benign, in situ and unspecified neoplasms (\$527 million).

**Table 2.2: Expenditure on cancer and other neoplasms, health system costs by sector, 2000–01, and number of new cases and deaths in 2001 (\$ million)**

Condition	Admitted patients	Out-of-hospital medical	Pharmaceuticals requiring a prescription	Other	Total expenditure	New cases in 2001 (no.)	Deaths in 2001 (no.)
Mouth and oropharynx	52	0	0	9	62	2,686	801
Oesophagus	26	1	1	6	33	1,078	1,153
Stomach	36	1	0	7	44	1,902	1,337
Colorectal	188	10	3	34	235	12,844	5,240
Liver	12	0	0	2	15	853	858
Pancreatic	27	1	1	5	34	1,858	2,000
Lung	94	5	8	30	136	8,275	7,739
Melanoma	18	6	1	5	30	8,885	1,180
Non-melanoma skin cancer	119	84	1	60	264	<sup>(c)</sup> 364,140	431
Breast cancer — total	72	21	27	122	241	11,314	2,873
Organised mammography <sup>(a)</sup>	—	—	—	96	96	—	—
Other	72	21	27	25	145	11,314	2,873
Cervical cancer	9	1	0	3	13	735	288
Carcinoma in situ cervix uteri <sup>(b)</sup>	9	85	0	46	140	n. a.	0
Uterine cancer	14	1	0	3	18	1,542	324
Ovarian cancer	19	1	2	4	25	1,295	933
Prostate	58	10	97	37	201	11,191	2,985
Bladder	46	1	2	15	64	2,954	1,000
Kidney	32	1	0	5	39	2,458	1,015
Brain	44	1	1	8	55	1,348	1,192
Non-Hodgkin's lymphoma	77	4	1	15	97	3,499	1,673
Hodgkin's disease	6	0	0	1	8	401	54
Multiple myeloma	36	1	1	7	44	1,197	787
Leukaemia	101	3	0	25	129	2,516	1,534
Larynx	17	0	0	3	20	584	281
Gall bladder	9	0	0	1	11	594	390
Thyroid	8	1	0	1	10	1,180	97
Testicular	3	1	0	1	4	604	19
Bone and connective tissue	16	1	1	3	21	701	306
Other cancers	259	7	16	65	348	5,904	376
Prevention	28	0	0	22	51	n.a.	n.a.
Other benign, in situ and unspecified neoplasms	282	95	3	148	527	n.a.	750
<b>Total</b>	<b>1,716</b>	<b>343</b>	<b>167</b>	<b>693</b>	<b>2,919</b>	<b>452,538</b>	<b>37,615</b>

(a) Includes public health expenditure by the Australian Government and states and territories for the BreastScreen Australia screening program. See Table 2.4.

(b) Includes public health expenditure of \$88.2m by the Australian government and states and territories for the National Cervical Screening Program. See Table 2.4.

(c) Non-melanoma skin cancer cases from the 2002 National Non-melanoma Skin Cancer Survey (National Cancer Control Initiative 2003).

**Table 2.3: Proportion of costs in each sector due to each type of cancer and other neoplasms, 2000–01, per cent**

Condition	Admitted patients	Out-of-hospital medical	Pharmaceuticals requiring a prescription	Other	Total expenditure	New cases in 2001 <sup>(a)</sup>	Deaths in 2001
Mouth and oropharynx	3.0	0.1	0.0	1.3	2.1	3.0	2.1
Oesophagus	1.5	0.2	0.5	0.8	1.1	1.2	3.1
Stomach	2.1	0.2	0.3	1.0	1.5	2.2	3.6
Colorectal	10.9	2.9	2.0	4.9	8.1	14.5	13.9
Liver	0.7	0.1	0.2	0.4	0.5	1.0	2.3
Pancreatic	1.6	0.2	0.6	0.7	1.2	2.1	5.3
Lung	5.5	1.5	4.5	4.3	4.7	9.4	20.6
Melanoma	1.0	1.7	0.4	0.8	1.0	10.1	3.1
Non-melanoma skin cancer	6.9	24.6	0.6	8.7	9.1		1.1
Breast cancer	4.2	6.3	15.9	17.5	8.3	12.8	7.6
Cervical cancer	0.5	0.3	0.1	0.4	0.4	0.8	0.8
Carcinoma in situ cervix uteri	0.5	24.9	0.0	6.6	4.8	n.a.	0.0
Uterine cancer	0.8	0.2	0.0	0.5	0.6	1.7	0.9
Ovarian cancer	1.1	0.4	0.9	0.5	0.9	1.5	2.5
Prostate	3.4	2.8	57.9	5.3	6.9	12.7	7.9
Bladder	2.7	0.3	0.9	2.2	2.2	3.3	2.7
Kidney	1.9	0.4	0.3	0.8	1.3	2.8	2.7
Brain	2.6	0.3	0.7	1.2	1.9	1.5	3.2
Non-Hodgkin's lymphoma	4.5	1.0	0.8	2.2	3.3	4.0	4.4
Hodgkin's disease	0.3	0.1	0.1	0.2	0.3	0.5	0.1
Multiple myeloma	2.1	0.3	0.6	0.9	1.5	1.4	2.1
Leukaemia	5.9	0.8	0.2	3.6	4.4	2.8	4.1
Larynx	1.0	0.0	0.0	0.4	0.7	0.7	0.7
Gall bladder	0.5	0.0	0.3	0.1	0.4	0.7	1.0
Thyroid	0.5	0.2	0.3	0.1	0.4	1.3	0.3
Testicular	0.2	0.2	0.0	0.1	0.1	0.7	0.1
Bone and connective tissue	0.9	0.3	0.5	0.5	0.7	0.8	0.8
Other cancers	15.1	2.2	9.7	9.4	11.9	6.7	1.0
Prevention	1.6	0.1	0.0	3.2	1.8	n.a.	n.a.
Other benign, in situ and unspecified neoplasms	16.4	27.7	1.7	21.3	18.1	n.a.	2.0
<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>

(a) Proportion of new cases not including non-melanoma skin cancer.

**Table 2.4: Public health expenditure on cancer-screening programs, 2000-01 (\$ million)**

	Commonwealth and state programs (non-MBS)	MBS expenditure	Total expenditure
Breast cancer screening <sup>(a)</sup>	96.0		96.0
Cervical screening <sup>(b)</sup>	33.8	54.4	88.2
<b>Total</b>	<b>129.8</b>		<b>184.2</b>

(a) BreastScreen Australia.

(b) National Cervical Screening Program.

Source: AIHW 2004b. National public health expenditure report 2000-01 (p24)

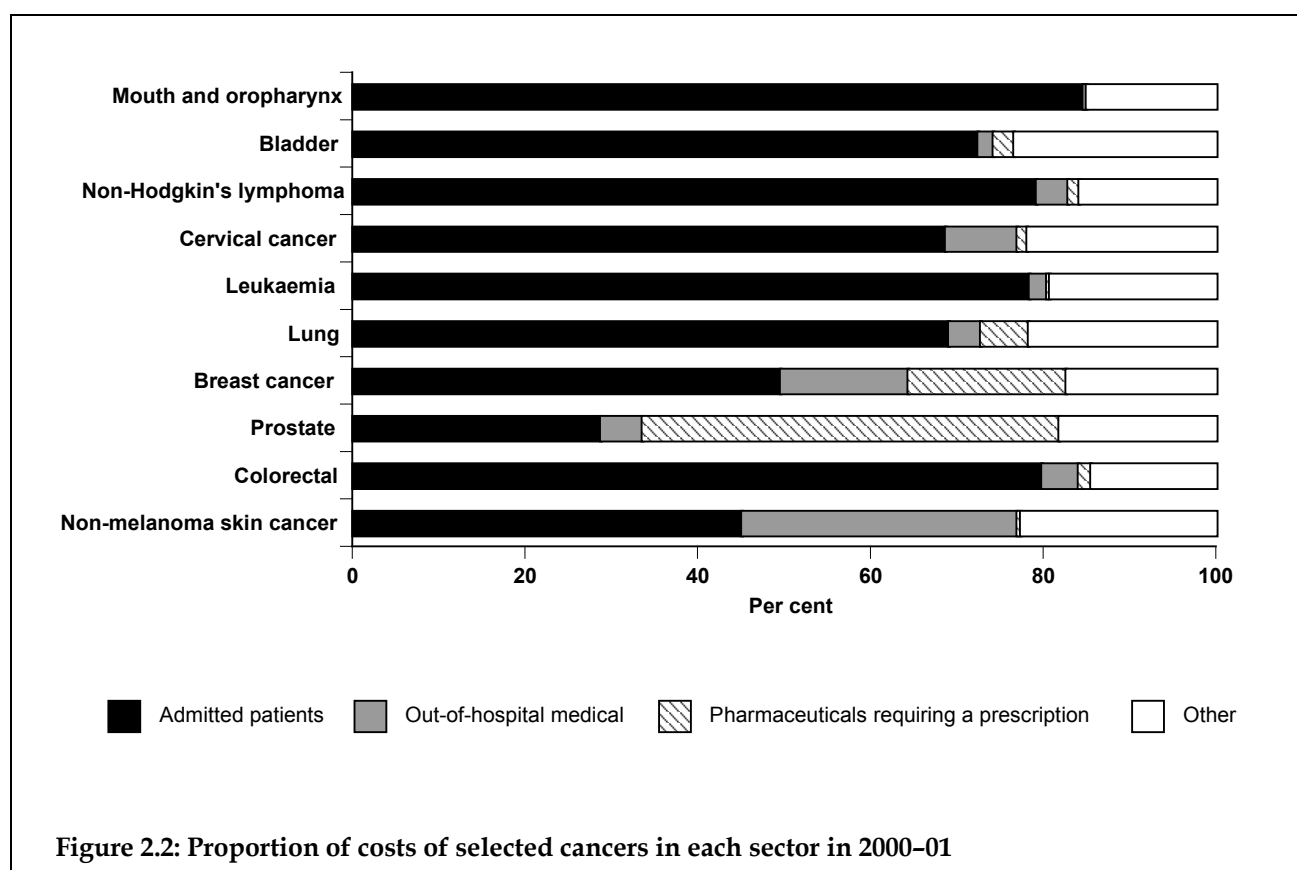


Table 2.5 shows an approximate total lifetime cost of treatment for each new cancer case. Treatment costs for cancers in 2000-01 were divided by the number of new cases in 2001 to give an estimate of lifetime treatment costs per incident case. These approximations are based on the assumptions that incidence and mortality rates are steady over time. The estimates will be an overestimate for cancers where the incidence rate or survival rate is increasing and an underestimate if the converse is true.

There was significant variation in the estimates of lifetime treatment costs. They range from around \$51,000 for leukaemia to \$3,300 for melanomas. The average lifetime treatment cost for cancer was \$21,900. The most common cancers were below

the average, with colorectal and prostate cancers at around \$18,000, lung cancer at \$16,000, breast cancer at \$12,000 and melanoma at \$3,300.

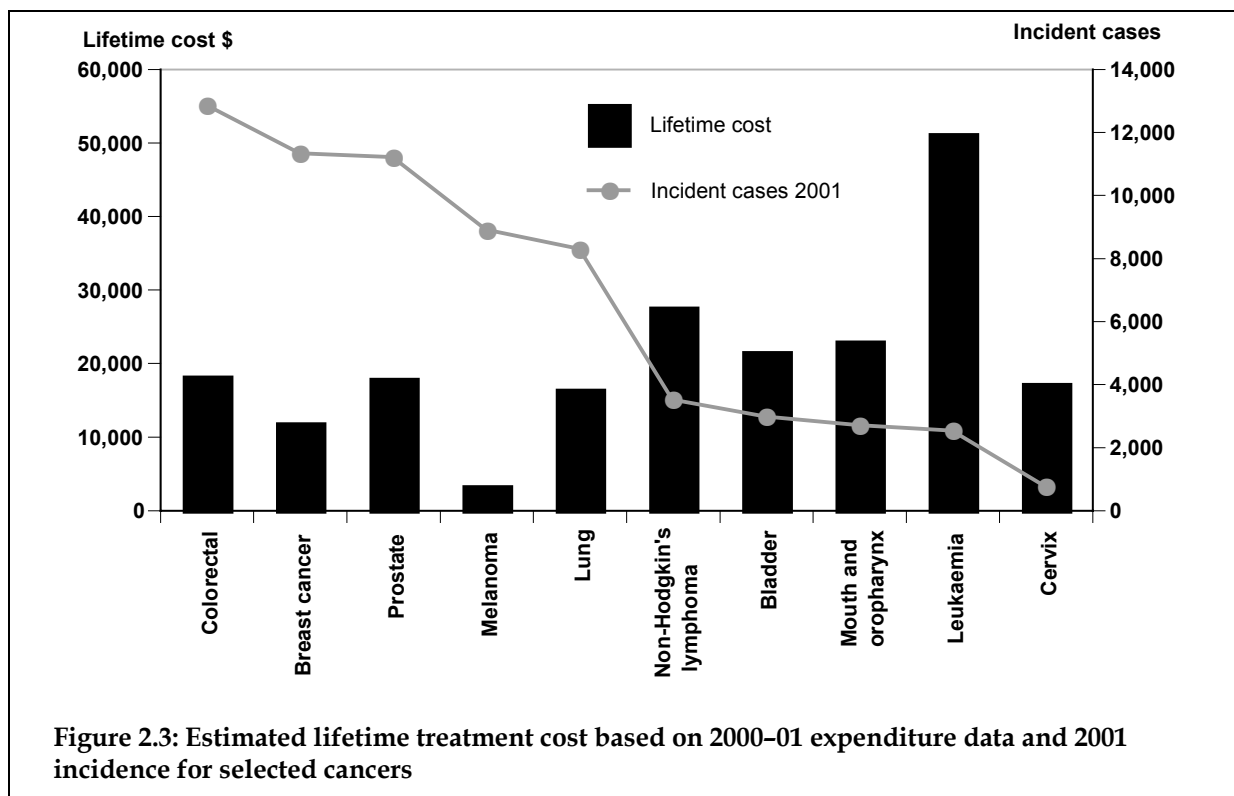
**Table 2.5: Estimated lifetime treatment cost of each cancer, 2000–01**

	Lifetime cost of cancer (\$) <sup>(a)</sup>
Leukaemia	51,196
Brain	40,732
Multiple myeloma	37,068
Larynx	34,413
Oesophagus	30,808
Bone and connective tissue	29,593
Non-Hodgkin's lymphoma	27,620
Mouth and oropharynx cancer	22,996
Bladder	22,915
Stomach	21,573
Ovarian cancer	19,677
Hodgkin's disease	18,998
Colorectal	18,246
Pancreatic	18,204
Gall bladder	18,141
Liver	18,046
Prostate	17,942
Cervical cancer	17,240
Lung	16,476
Kidney	15,892
Breast cancer	11,897
Uterine cancer	11,867
Thyroid	8,792
Testicular	5,805
Melanoma	3,341

(a) Total average cost of treatment across an entire lifetime. Total treatment cost in 2000–01 divided by new cases in 2001 gives an approximate estimate of lifetime costs per incident case where treatment costs, incidence and mortality rates have been steady over time.

For non-melanoma skin cancer, a lifetime cost of treating this cancer cannot be calculated precisely. True incidence data for NMSC are not available because it is not a registrable cancer. The only data we have are an estimate of the people who had non-melanoma skin cancers removed in a year, which was 364,100 in 2000–01. From this we can estimate a cost per NMSC removal of around \$700. But in later years some of these people will come back to have newly emerging skin cancers removed, so 364,100 is not a true incidence.

Figure 2.3 shows the lifetime costs per new case and 2001 incidence for selected cancers.



## 2.3 Preventive and treatment expenditures

Table 2.6 shows a breakdown of expenditure by prevention and treatment and includes public health expenditure on screening programs. Prevention in this context includes screening programs which are preventing more aggressive cancers by detecting neoplasms at an earlier stage.

Expenditure on treatment for cancer and other neoplasms was \$2.6 billion. This was 90% of total expenditure on cancer and other neoplasms (Table 2.6). Total expenditure for prevention, including Australian Government and state and territory funding for breast and cervical screening, was \$289 million. Cervical cancer and carcinoma in situ (\$126 million or 83% of expenditure), breast cancer (\$106 million or 44% of expenditure) and testicular cancer (\$1 million or 13% of expenditure) were the only cancers found to have more than 10% of their total expenditure spent on prevention/screening. General cancer and other neoplasms prevention expenditure which could not be allocated by cancer site was \$51 million.



**Table 2.6: Expenditure on cancer and other neoplasms, preventive and treatment expenditures, 2000–01 (\$ million)**

	Prevention			Treatment	Total
	Medical and hospitals	Public health programs <sup>(a)</sup>	Total		
Mouth and oropharynx	—	—	—	62	62
Oesophagus	—	—	—	33	33
Stomach	0	—	0	44	44
Colorectal	1	—	1	234	235
Liver	—	—	—	15	15
Pancreatic	—	—	—	34	34
Lung	0	—	0	136	136
Melanoma	0	—	0	30	30
Non-melanoma skin cancer	—	—	—	264	264
Breast cancer	11	96	106	135	241
Cervical cancer and carcinoma in situ	38	88 <sup>(b)</sup>	126	27	153
Uterine cancer	—	—	—	18	18
Ovarian cancer	—	—	—	25	25
Prostate	0	—	0	201	201
Bladder	0	—	0	64	64
Kidney	—	—	—	39	39
Brain	—	—	—	55	55
Non-Hodgkin's lymphoma	—	—	—	97	97
Hodgkin's disease	—	—	—	8	8
Multiple myeloma	—	—	—	44	44
Leukaemia	—	—	—	129	129
Larynx	0	—	0	20	20
Gall bladder	—	—	—	11	11
Thyroid	—	—	—	10	10
Testicular	1	—	1	4	4
Bone and connective tissue	—	—	—	21	21
Other	4	—	4	344	348
Prevention <sup>(c)</sup>	51	—	51	—	51
Other benign, in situ and unspecified neoplasms	—	—	—	527	527
<b>Total</b>	<b>104</b>	<b>184</b>	<b>289</b>	<b>2,630</b>	<b>2,919</b>

(a) Total public health expenditure on cancer screening by the Australian Government and states and territories.

(b) Includes \$54.4 million for Pap smears carried out by GPs and associated pathology.

(c) General cancer preventive interventions by GPs which cannot be allocated by cancer site.

# 3 Expenditure for cancer and other neoplasms by age and sex group

Section 3.1 allocates all cancer and other neoplasms expenditure (\$2,919 million) by age groups and compares this expenditure to expenditure for all other conditions and burden of disease chapters. From section 3.2, this chapter deals with treatment (\$2,089 million) and prevention (\$67 million) expenditure for cancer (malignant neoplasms) including non-melanoma skin cancer (NMSC) but excluding the \$96 million spent on organised mammography. The \$67 million prevention expenditure is mostly general preventive interventions by GPs which cannot be allocated by cancer site. Total expenditure for cancer (excluding organised mammography) was \$2,156 million. The figures in this section examine treatment expenditure per case and do not include prevention expenditure

## 3.1 Expenditure for cancer and other neoplasms by age group

Figure 3.1 shows a comparison of the age distribution of expenditure between cancer and other neoplasms and all other conditions. Expenditure for cancer and other neoplasms increases with age, until it peaks in the 65–74 age group where the amount spent is approximately a quarter of the total. The age pattern for cancer and other neoplasms expenditure is different from that for the category ‘All other conditions’. Compared to ‘All other conditions’ the proportion of expenditure is lower in the age groups 0–44 and 85 and over, and higher in the age group 45–74. These differences partly reflect a different age pattern of incidence of disease for cancer and other neoplasms compared to other diseases, i.e. the incidence of cancer and other neoplasms relative to other diseases is lower for younger people than for older people. The difference in the 85 and over age group reflects the fact that 44% of health expenditure for that age group is in residential aged care, but less than 1% of expenditure for people using residential aged care is attributed to cancer or other neoplasm as the major reason for care. So although for health care apart from residential aged care, cancer and other neoplasms represent 7% of expenditure for the 85 and over, the low ranking of cancer and other neoplasms in residential aged care expenditure brings down the relative overall health spending for cancer and other neoplasms among those aged 85 and over to 4%.

Figure 3.2 shows expenditure by age group for cancer and other neoplasms compared to some other burden of disease chapters. Table 3.1 gives a breakdown by age and sex of expenditure for selected burden of disease chapters. Expenditure on cancer and other neoplasms was similar for both males and females (\$145 and \$158 per person). However the age pattern was slightly different with higher per person expenditure for males in the youngest age group and in the 55+ age groups.

Figure 3.1: Health system expenditure on cancer and other neoplasms by age in comparison to expenditure by age for all other conditions, 2000-01

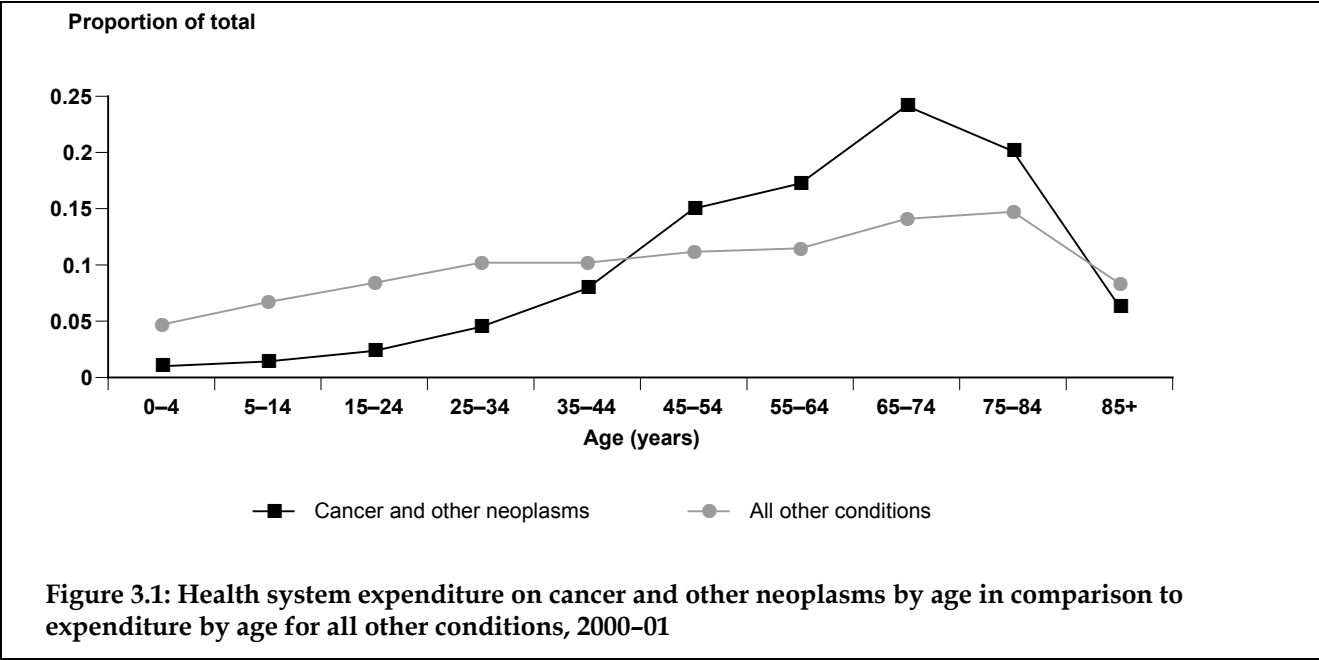


Figure 3.1: Health system expenditure on cancer and other neoplasms by age in comparison to expenditure by age for all other conditions, 2000-01

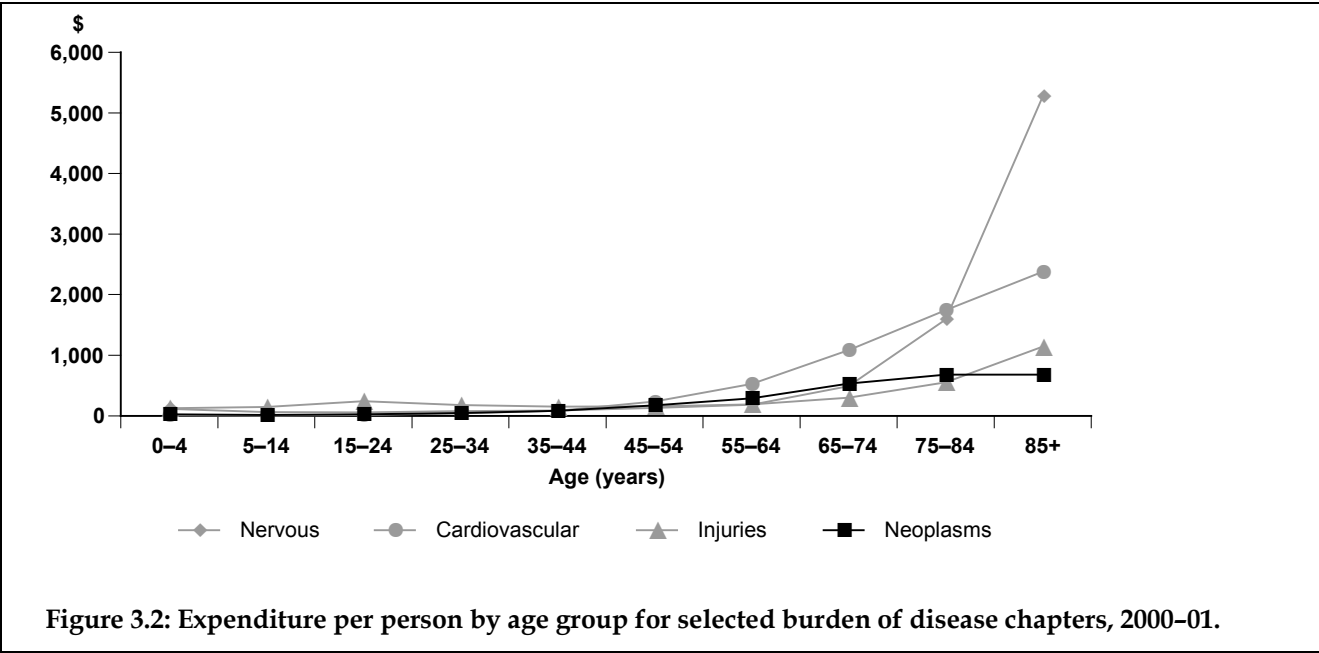


Figure 3.2: Expenditure per person by age group for selected burden of disease chapters, 2000-01.

**Table 3.1: Allocated health expenditure per person by age, sex and burden of disease chapter, Australia, 2000-01 (\$)**

Burden of disease chapter and sex	Age (years)										All ages
	0-4	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85+	
<b>Cardiovascular</b>											
All persons	11	6	15	39	83	236	524	1,086	1,745	2,378	284
Male	13	7	17	36	95	262	619	1,301	1,954	2,401	296
Female	9	4	13	41	70	210	426	886	1,595	2,367	272
<b>Cancer and other neoplasms</b>											
All persons	22	15	26	47	80	174	288	529	680	679	151
Male	25	12	17	25	42	120	277	639	956	1,089	145
Female	19	18	36	68	117	228	299	426	482	497	158
<b>Musculoskeletal</b>											
All persons	26	36	80	139	185	259	391	578	933	1,656	240
Male	24	42	84	154	187	242	355	500	695	912	204
Female	29	29	77	124	183	276	428	652	1,103	1,987	276
<b>Nervous system</b>											
All persons	112	59	58	78	87	132	185	486	1,590	5,273	256
Male	129	62	48	69	82	123	181	453	1,340	3,597	190
Female	95	56	69	87	92	142	189	518	1,769	6,019	322
<b>Injuries</b>											
All persons	127	146	238	176	148	154	186	296	553	1,142	208
Male	151	160	337	234	172	164	207	295	503	1,051	231
Female	101	131	136	120	125	145	165	298	589	1,183	186
<b>Maternal conditions</b>											
Female	0	1	236	535	150	2	0	0	0	0	135
<b>Other causes<sup>(a)</sup></b>											
All persons	1,409	926	1,015	999	1,076	1,240	1,726	2,591	3,443	4,598	1,393
Male	1,515	836	821	784	883	1,054	1,571	2,502	3,535	5,137	1,224
Female	1,296	1,019	1,217	1,211	1,267	1,425	1,885	2,674	3,378	4,357	1,559
<b>Total</b>											
All persons	<b>1,714</b>	<b>1,187</b>	<b>1,549</b>	<b>1,746</b>	<b>1,734</b>	<b>2,196</b>	<b>3,299</b>	<b>5,567</b>	<b>8,944</b>	<b>15,725</b>	<b>2,602</b>
Male	<b>1,864</b>	<b>1,120</b>	<b>1,325</b>	<b>1,302</b>	<b>1,461</b>	<b>1,965</b>	<b>3,210</b>	<b>5,689</b>	<b>8,983</b>	<b>14,186</b>	<b>2,291</b>
Female	<b>1,556</b>	<b>1,258</b>	<b>1,782</b>	<b>2,186</b>	<b>2,004</b>	<b>2,428</b>	<b>3,391</b>	<b>5,453</b>	<b>8,917</b>	<b>16,411</b>	<b>2,908</b>
Female (excl. maternal)	<b>1,548</b>	<b>1,257</b>	<b>1,546</b>	<b>1,651</b>	<b>1,854</b>	<b>2,426</b>	<b>3,391</b>	<b>5,453</b>	<b>8,917</b>	<b>16,411</b>	<b>2,773</b>

(a) 'Other causes' includes infectious and parasitic, respiratory, neonatal causes, diabetes mellitus, endocrine, nutritional and metabolic, mental disorders, digestive system, genitourinary, skin diseases, congenital anomalies, and signs, symptoms, ill-defined conditions and other contact with health system.

## 3.2 The ten most expensive cancers for males, females and all persons

Tables 3.2a, b and c show the ten most expensive cancers in 2000–01 for males, females and all persons ranked by health sector expenditure (excluding public health expenditure).

**Table 3.2a: Expenditure for top ten cancers, males, by area of expenditure, 2000–01, and number of new cases and deaths in 2001**

	Admitted patients (\$m)	Out-of-hospital medical (\$m)	Pharmaceuticals requiring a prescription (\$m)	Other (\$m)	Total expenditure (\$m)	Number of new cases in 2001	Number of deaths in 2001
<b>Male</b>							
<b>All cancers</b>	<b>787</b>	<b>78</b>	<b>121</b>	<b>228</b>	<b>1,215</b>	<b>257,147</b>	<b>20,817</b>
<b>All cancers (excl. NMSC)</b>	<b>718</b>	<b>33</b>	<b>120</b>	<b>190</b>	<b>1,061</b>	<b>47,820</b>	<b>20,522</b>
<b>Prostate</b>	58	10	97	37	201	11,191	2,985
<b>NMSC</b>	69	45	1	38	153	209,327	295
<b>Colorectal</b>	103	5	2	20	130	6,961	2,876
<b>Lung</b>	60	3	4	19	86	5,384	5,102
<b>Leukaemia</b>	61	2	—	9	73	1,465	886
<b>Non-Hodgkin's lymphoma</b>	41	1	1	8	51	1,923	875
<b>Bladder</b>	34	1	1	12	48	2,258	692
<b>Mouth and oropharynx</b>	37	—	—	7	44	1,878	569
<b>Brain</b>	25	1	1	5	32	786	698
<b>Stomach</b>	23	—	—	5	28	1,202	825
<b>Other</b>	276	10	15	68	369	14,772	5,014
<b>Top ten as per cent of total</b>	<b>65%</b>	<b>87%</b>	<b>88%</b>	<b>70%</b>	<b>70%</b>	<b>n.a.</b>	<b>76%</b>

— zero or less than \$500,000.

Source: AIHW disease expenditure database and AIHW and Australasian Association of Cancer Registries (AACR) cancer database. Non-melanoma skin cancer incidence estimated from the 2002 National Non-melanoma Skin Cancer Survey (National Cancer Control Initiative 2003).

Total expenditure on cancers for males in 2000–01 was \$1.22 billion (Table 3.2a). There were more than 257,000 new cancer cases (48,000 excluding NMSC) and nearly 21,000 deaths due to cancer for males in the same period. The ten most expensive cancers accounted for 70% of expenditure and 76% of deaths in 2000–01. Prostate cancer headed the list with total expenditure of \$201 million (17% of total cancer expenditure). This was followed by NMSC, colorectal cancer and lung cancer. Non-hospital pharmaceuticals accounted for 48% of prostate cancer expenditure.

For females, total expenditure on cancers in 2000–01 was \$0.9 billion with more than 195,000 cases (40,500 new cases excluding NMSC) and more than 16,000 deaths (Table 3.2b). The ten most expensive cancers for females in 2000–01 accounted for 64% of cancer expenditure, and 72% of deaths. Breast cancer was the most expensive cancer for women (\$145 million and 17% of deaths) followed by NMSC, colorectal cancer and leukaemia.

**Table 3.2b: Expenditure for top ten cancers, females, by area of expenditure, 2000–01, and number of new cases and deaths in 2001**

	Admitted patients (\$m)	Out-of-hospital medical (\$m)	Pharmaceuticals requiring a prescription (\$m)	Other (\$m)	Total expenditure (\$m)	Number of new cases in 2001	Number of deaths in 2001
<b>All cancers</b>	<b>638</b>	<b>85</b>	<b>44</b>	<b>175</b>	<sup>(a)</sup> <b>941</b>	<b>195,390</b>	<b>16,048</b>
<b>All cancers (excl. NMSC)</b>	<b>588</b>	<b>46</b>	<b>43</b>	<b>153</b>	<b>830</b>	<b>40,578</b>	<b>15,912</b>
<b>Breast cancer</b>	72	21	27	25	<sup>(b)</sup> 145	11,314	2,843
<b>NMSC</b>	50	39	—	22	111	154,812	136
<b>Colorectal</b>	84	5	2	14	105	5,883	2,365
<b>Leukaemia</b>	40	1	—	15	56	1,051	648
<b>Lung</b>	34	2	3	10	50	2,891	2,638
<b>Non-Hodgkin's lymphoma</b>	36	2	1	7	46	1,576	798
<b>Ovarian cancer</b>	19	1	2	4	25	1,295	933
<b>Brain</b>	19	—	—	3	23	562	493
<b>Multiple myeloma</b>	15	—	—	3	19	506	370
<b>Uterine cancer</b>	14	1	—	3	18	1,542	324
<b>Other</b>	256	11	9	67	343	13,958	4,500
<b>Top ten as per cent of total</b>	<b>60%</b>	<b>87%</b>	<b>80%</b>	<b>61%</b>	<b>64%</b>		<b>72%</b>

(a) Includes \$68m of preventative expenditure and \$873m of treatment expenditure.

(b) Includes \$11m of preventative expenditure and \$135m of treatment expenditure.

— zero or less than \$500,000.

Source: AIHW disease expenditure database and AIHW and Australasian Association of Cancer Registries (AACR) cancer database. Non-melanoma skin cancer incidence estimated from the 2002 National Non-melanoma Skin Cancer Survey (National Cancer Control Initiative 2003).

For males and females combined, total expenditure on cancers in 2000–01 was \$2.16 billion with 453,000 cases (88,000 new cases excluding NMSC) and more than 36,000 deaths (Table 3.2c). The ten most expensive cancers in 2000–01 accounted for 64% of cancer expenditure, and 69% of deaths. NMSC was the most expensive cancer (\$264 million) followed by colorectal cancer, prostate cancer and breast cancer. The ten most expensive cancers accounted for 48% of total expenditure on cancer in 2000–01.

**Table 3.2c: Expenditure for top ten cancers, all persons, by area of expenditure, 2000–01, and number of new cases and deaths in 2001**

	Admitted patients (\$m)	Out-of-hospital medical (\$m)	Pharmaceuticals requiring a prescription (\$m)	Other (\$m)	Total expenditure (\$m)	Number of new cases in 2001	Number of deaths in 2001
<b>All cancers</b>	<b>1,425</b>	<b>163</b>	<b>165</b>	<b>403</b>	<b>2,156</b>	<b>452,537</b>	<b>36,865</b>
<b>All cancers (excl. NMSC)</b>	<b>1,306</b>	<b>79</b>	<b>163</b>	<b>343</b>	<b>1,891</b>	<b>88,398</b>	<b>36,434</b>
NMSC	119	84	1	60	264	364,139	431
Colorectal	188	10	3	34	235	12,844	5,241
Prostate	58	10	97	37	201	11,191	2,985
Breast cancer	72	21	27	25	145	11,314	2,843
Lung	94	5	8	30	136	8,275	7,740
Leukaemia	101	3	—	25	129	2,516	1,534
Non-Hodgkin's lymphoma	77	4	1	15	97	3,499	1,673
Bladder	46	1	2	15	64	2,954	1,000
Mouth and oropharynx	52	—	—	9	62	2,686	801
Brain	44	1	1	8	55	1,348	1,192
Other cancer	575	24	25	144	768	31,771	11,426
<b>Top ten as per cent of total cancer</b>	<b>60</b>	<b>85</b>	<b>85</b>	<b>64</b>	<b>64</b>	<b>n.a.</b>	<b>69</b>
<b>Total expenditure on cancer and other neoplasms<sup>(a)</sup></b>	<b>1,716</b>	<b>343</b>	<b>167</b>	<b>693</b>	<b>2,919</b>	<b>n.a.</b>	<b>36,865</b>

(a) Total expenditure includes cancers (malignant neoplasms) and other neoplasms including benign, in situ and unspecified neoplasms, and includes treatment, preventive and screening expenditures.

— zero or less than \$500,000.

Source: AIHW disease expenditure database and AIHW and Australasian Association of Cancer Registries (AACR) cancer database. Non-melanoma skin cancer incidence estimated from the 2002 National Non-melanoma Skin Cancer Survey (National Cancer Control Initiative 2003).

### 3.3 The five most expensive cancers for children 0 to 14 years

Table 3.3 shows the five most expensive cancers ranked by health system expenditure for children with cancer in 2000–01. Total cancer-related expenditure for children was \$46 million with boys accounting for just over half of this amount. Expenditure on leukaemia was 40% of the total. The most expensive five cancers accounted for 70% of the total expenditure. There were 603 new cases in 2001, 75% of which were in the five most expensive cancers. These cancers accounted for 95% of deaths due to cancer in this age group.

The story for both boys and girls is similar with the same five cancers appearing in the top five. These cancers (leukaemia, brain cancer, non-Hodgkin's lymphoma, bone and connective tissue cancer and kidney cancer) accounted for 67% of male expenditure and 73% of female expenditure. They were responsible for 93% of deaths and 75% of new cases in boys, and 98% of deaths and 74% of new cases in girls.

**Table 3.3: Health system expenditures (\$ million) in 2000–01 for children aged 0–14 years with cancer by area of expenditure, five most expensive cancers, boys, girls and all children, number of new cases and deaths in 2001**

	Admitted patients (\$m)	Out-of-hospital medical <sup>(b)</sup> (\$m)	Pharmaceuticals requiring a prescription (\$m)	Other <sup>(a)</sup> (\$m)	Total expenditure (\$m)	Number of new cases in 2001	Number of deaths in 2001
<b>Boys</b>							
<b>All cancers</b>	<b>18.68</b>	<b>0.41</b>	<b>1.31</b>	<b>4.70</b>	<b>25.11</b>	<b>324</b>	<b>75</b>
<b>All cancers (excluding NMSC)</b>	<b>18.63</b>	<b>0.15</b>	<b>1.31</b>	<b>4.67</b>	<b>24.77</b>	<b>324</b>	<b>75</b>
Leukaemia	9.01	0.13	—	0.76	9.90	122	28
Brain	3.08	0.01	0.04	0.26	3.40	59	30
Bone and connective tissue	1.58	—	—	0.13	1.72	22	5
Non-Hodgkin's lymphoma	1.04	0.01	0.04	0.09	1.18	29	5
Kidney	0.56	—	—	0.05	0.60	12	2
Other cancers	3.41	0.26	1.23	3.40	8.31	80	5
<b>Per cent of total<sup>(c)</sup></b>	<b>82%</b>	<b>36%</b>	<b>7%</b>	<b>28%</b>	<b>67%</b>	<b>75%</b>	<b>93%</b>

(continued)



**Table 3.3 (continued): Health system expenditures (\$ million) in 2000–01 for children aged 0–14 years with cancer by area of expenditure, five most expensive cancers, boys, girls and all children, number of new cases and deaths in 2001**

	Admitted patients (\$m)	Out-of-hospital medical <sup>(b)</sup> (\$m)	Pharmaceuticals requiring a prescription (\$m)	Other <sup>(a)</sup> (\$m)	Total expenditure (\$m)	Number of new cases in 2001	Number of deaths in 2001
<b>Girls</b>							
<b>All cancers</b>	<b>14.16</b>	<b>0.43</b>	<b>0.53</b>	<b>5.71</b>	<b>20.83</b>	<b>279</b>	<b>46</b>
<b>All cancers (excluding NMSC)</b>	<b>14.12</b>	<b>0.25</b>	<b>0.53</b>	<b>5.59</b>	<b>20.48</b>	<b>279</b>	<b>46</b>
Leukaemia	6.27	0.02	0.01	1.68	7.98	103	14
Brain	2.62	—	—	0.49	3.12	41	22
Non-Hodgkin's lymphoma	1.19	0.02	0.21	0.27	1.69	14	3
Bone and connective tissue	1.13	—	—	0.47	1.60	29	5
Kidney	0.65	—	—	0.15	0.80	20	1
Other cancers	2.31	0.39	0.31	2.64	5.66	72	1
<b>Per cent of total<sup>(c)</sup></b>	<b>84%</b>	<b>8%</b>	<b>41%</b>	<b>54%</b>	<b>73%</b>	<b>74%</b>	<b>98%</b>
<b>All children</b>							
<b>All cancers</b>	<b>32.85</b>	<b>0.84</b>	<b>1.85</b>	<b>10.41</b>	<b>45.94</b>	<b>603</b>	<b>121</b>
<b>All cancers (excluding NMSC)</b>	<b>32.75</b>	<b>0.40</b>	<b>1.84</b>	<b>10.26</b>	<b>45.26</b>	<b>603</b>	<b>121</b>
Leukaemia	15.28	0.15	0.01	2.45	17.88	225	42
Brain	5.71	0.01	0.04	0.75	6.51	100	52
Bone and connective tissue	2.71	—	0.01	0.60	3.32	51	10
Non-Hodgkin's lymphoma	2.23	0.02	0.25	0.36	2.86	43	8
Kidney	1.20	—	—	0.19	1.40	32	3
Other	5.72	0.66	1.54	6.05	13.96	152	6
<b>Per cent of total<sup>(c)</sup></b>	<b>83%</b>	<b>22%</b>	<b>17%</b>	<b>42%</b>	<b>70%</b>	<b>75%</b>	<b>95%</b>

(a) 'Other' includes non-admitted patients, aged care homes, optometry, over-the-counter drugs, other health professionals, dental and research.

(b) 'Out-of-hospital medical' includes unreferred attendances, imaging, pathology and other medical services.

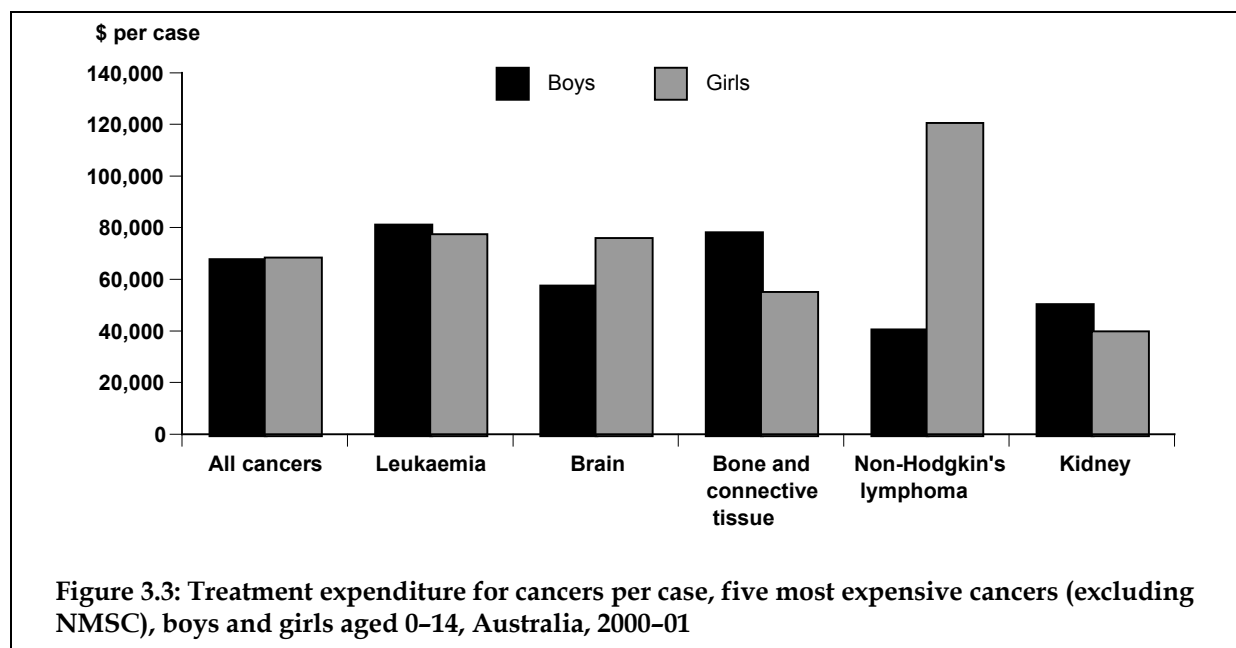
(c) Expenditure on the five most expensive cancers as per cent of expenditure on all cancers.

— represents zero or less than \$5,000.

Source: AIHW disease expenditure database and AIHW and Australasian Association of Cancer Registries (AACR) cancer database. Non-melanoma skin cancer incidence estimated from 2002 National Non-melanoma Skin Cancer Survey (National Cancer Control Initiative 2003).

Figure 3.3 shows treatment expenditure per case for boys and girls aged 0–14 for the five most expensive cancers. Treatment costs for cancers in children reflect relatively few cases but with a high average expenditure per case for both males and females at about \$68,000 per case. For three of the five most expensive cancers (leukaemia, bone and connective tissue, and kidney) expenditure per case was higher for males than

females in this age group, the exceptions being non-Hodgkin's lymphoma and brain cancer.



### 3.4 The five most expensive cancers for persons 15 to 24 years

Table 3.4 shows the five most expensive cancers ranked by health system expenditure for people aged 15-24 with cancer in 2000-01. Total cancer-related expenditure for this age group was \$28 million with males accounting for 55% of this amount. Expenditure on leukaemia was approximately 33% of the total. The five most expensive cancers accounted for 60% of total expenditure. There were 851 new cases in 2001, 38% of which were in the five most expensive cancers. These five cancers accounted for 72% of deaths due to cancer in this age group.

The hormone-dependent cancers of testicular cancer and breast cancer were listed in the top five for the appropriate gender. Leukaemia, bone and connective tissue cancer and non-Hodgkin's lymphoma are common to both lists and brain cancer was the fourth most expensive for males in this age group.

The five most expensive cancers account for 67% of expenditure for males and 54% for females. They were responsible for 54% of new cases and 72% of deaths in males, and 32% of new cases and 47% of deaths in females.

**Table 3.4: Health system expenditures (\$ million) in 2000–01 for persons 15 to 24 years with cancer by area of expenditure, five most expensive cancers, males and females, number of new cases and deaths in 2001**

	Admitted patients (\$m)	Out-of-hospital medical <sup>(b)</sup> (\$m)	Pharmaceuticals requiring a prescription (\$m)	Other <sup>(a)</sup> (\$m)	Total expenditure (\$m)	Number of new cases in 2001	Number of deaths in 2001
<b>Male</b>							
<b>All cancers</b>	<b>11.61</b>	<b>0.75</b>	<b>0.62</b>	<b>2.15</b>	<b>15.13</b>	<b>1053</b>	<b>71</b>
<b>All cancers (excluding NMSC)</b>	<b>11.53</b>	<b>0.62</b>	<b>0.61</b>	<b>2.19</b>	<b>14.95</b>	<b>466</b>	<b>71</b>
Leukaemia	5.22	—	—	0.44	5.66	41	16
Bone and connective tissue	1.23	0.17	—	0.12	1.52	35	11
Non-Hodgkin's lymphoma	1.02	0.14	—	0.10	1.26	37	9
Brain	0.66	0.09	0.07	0.07	0.89	32	13
Testicular	0.72	—	—	0.06	0.79	108	2
Other	2.75	0.36	0.55	1.37	5.03	213	20
<b>Per cent of total<sup>(c)</sup></b>	<b>76%</b>	<b>53%</b>	<b>12%</b>	<b>36%</b>	<b>67%</b>	<b>n.a.</b>	<b>72%</b>
<b>Female</b>							
<b>All cancers</b>	<b>7.55</b>	<b>1.00</b>	<b>0.47</b>	<b>4.01</b>	<b>13.04</b>	<b>385</b>	<b>49</b>
<b>All cancers (excluding NMSC)</b>	<b>7.39</b>	<b>0.70</b>	<b>0.47</b>	<b>3.88</b>	<b>12.44</b>	<b>385</b>	<b>49</b>
Leukaemia	3.05	0.01	—	0.62	3.68	22	10
Bone and connective tissue	1.19	—	—	0.16	1.36	26	17
Non-Hodgkin's lymphoma	0.54	—	—	0.15	0.70	23	3
Breast cancer	0.05	0.45	0.03	0.12	0.66	6	1
Hodgkin's disease	0.51	—	—	0.14	0.64	47	2
Other	2.21	0.54	0.43	2.81	5.99	261	16
<b>Per cent of total<sup>(c)</sup></b>	<b>71%</b>	<b>46%</b>	<b>9%</b>	<b>30%</b>	<b>54%</b>	<b>n.a.</b>	<b>47%</b>

(continued)

**Table 3.4 (continued): Health system expenditures (\$ million) for persons 15 to 24 years with cancer in 2000–01 by area of expenditure, five most expensive cancers, males and females, number of new cases and deaths in 2000–01**

	Admitted patients (\$m)	Out-of-hospital medical <sup>(b)</sup> (\$m)	Pharmaceuticals requiring a prescription (\$m)	Other <sup>(a)</sup> (\$m)	Total expenditure (\$m)	Number of new cases in 2001	Number of deaths in 2001
<b>All persons</b>							
<b>All cancers</b>	<b>19.16</b>	<b>1.76</b>	<b>1.10</b>	<b>6.16</b>	<b>28.17</b>	<b>1438</b>	<b>120</b>
<b>All cancers (excluding NMSC)</b>	<b>18.92</b>	<b>1.32</b>	<b>1.09</b>	<b>6.06</b>	<b>27.39</b>	<b>851</b>	<b>120</b>
Leukaemia	8.26	0.01	—	1.06	9.33	63	26
Bone and connective tissue	2.42	0.17	0.01	0.28	2.88	61	28
Non-Hodgkin's lymphoma	1.57	0.14	—	0.25	1.96	60	12
Brain	1.09	0.09	0.07	0.15	1.40	47	18
Hodgkin's disease	1.08	—	—	0.18	1.27	94	2
Other	4.74	1.35	1.01	4.23	11.33	526	34
<b>Per cent of total<sup>(c)</sup></b>	<b>75%</b>	<b>23%</b>	<b>8%</b>	<b>31%</b>	<b>60%</b>	<b>n.a.</b>	<b>72%</b>

(a) 'Other' includes non-admitted patients, aged care homes, over-the-counter drugs, other health professionals, dental and research.

(b) 'Out-of-hospital medical' includes unreferred attendances, imaging, pathology and other medical services.

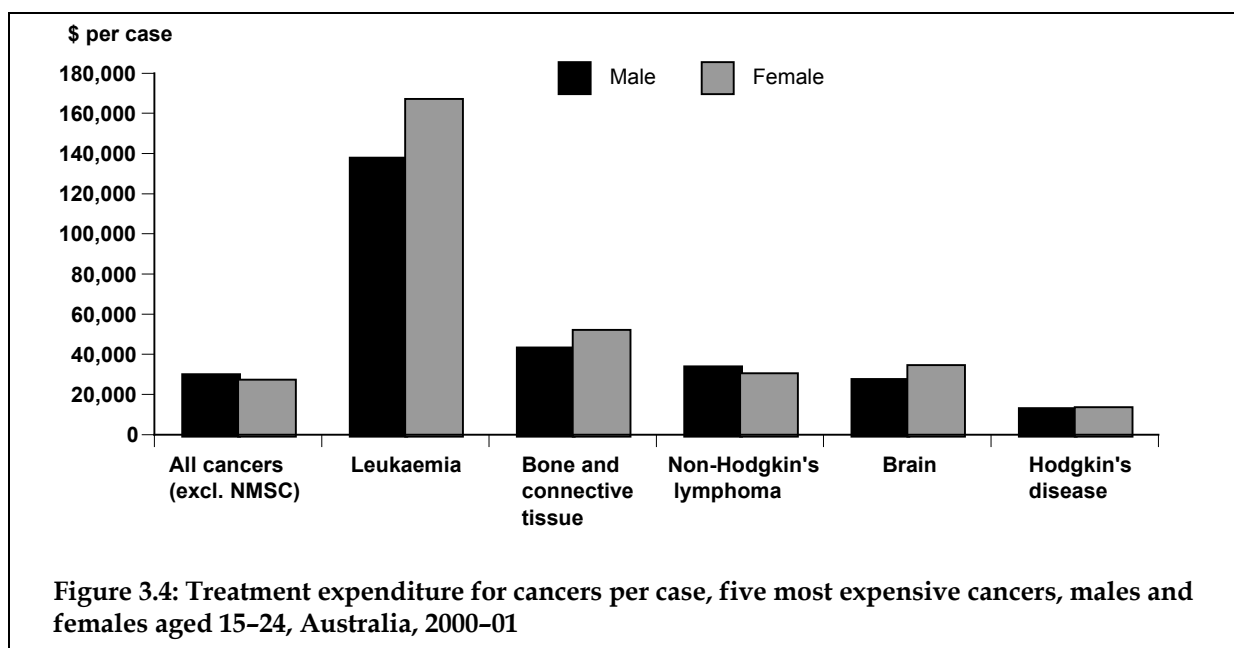
(c) Expenditure on the five most expensive cancers as per cent of expenditure on all cancers.

— represents zero or less than \$5,000.

Source: AIHW disease expenditure database and AIHW and Australasian Association of Cancer Registries (AACR) cancer database. Non-melanoma skin cancer incidence estimated from the 2002 National Non-melanoma Skin Cancer Survey (National Cancer Control Initiative 2003).

Figure 3.4 shows treatment expenditure per case for males and females aged 15–24 for the five most expensive cancers. Average treatment costs for cancer in this group were about \$31,000 for males and \$26,000 for females. Leukaemia was by far the most expensive cancer to treat in this age group at about \$138,000 per case for males and \$167,000 per case for females.

Figure 3.4: Treatment expenditure for cancers per case, five most expensive cancers, males and females aged 15–24, Australia, 2000–01



### 3.5 The five most expensive cancers for persons 25 to 64 years

Table 3.5 shows the five most expensive cancers ranked by health system expenditure for people aged 25–64 with cancer in 2000–01. Total cancer-related expenditure for people in this group was \$835 million, with females accounting for 49% of this amount (\$411 million). The five most expensive cancers accounted for 44% of total expenditure (\$368 million). There were 219,000 new cases in 2001, nearly 183,000 of which were non-melanoma skin cancers. The five most expensive cancers were responsible for 3,419 (30%) of the 9,852 deaths due to cancer in this age group. Leukaemia, colorectal, non-melanoma skin cancer and non-Hodgkin’s lymphoma were common to both the male and female five most expensive cancers. Prostate cancer and breast cancer were also in the five most expensive cancers for males and females respectively.

The five most expensive cancers accounted for 45% of expenditure for males and 51% of expenditure for females. They were responsible for 28% of deaths due to cancer in males and 47% of deaths due to cancer in females in this age group.

**Table 3.5: Health system expenditures (\$ million) in 2000–01 for persons 25 to 64 years with cancer by area of expenditure, five most expensive cancers, males, females and all persons, 2000-01, number of new cases and deaths in 2001**

	Admitted patients	Out-of-hospital medical <sup>(b)</sup>	Pharmaceuticals requiring a prescription	Other <sup>(a)</sup>	Total expenditure	Number of new cases in 2001	Number of deaths in 2001
<b>Male</b>							
<b>All cancers</b>	<b>297.6</b>	<b>30.6</b>	<b>21.0</b>	<b>74.0</b>	<b>423.2</b>	<b>122,765</b>	<b>5,387</b>
<b>All cancers (excluding NMSC)</b>	<b>275.9</b>	<b>11.7</b>	<b>20.8</b>	<b>61.4</b>	<b>369.9</b>	<b>17,300</b>	<b>5,343</b>
NMSC	21.7	18.9	0.2	12.6	53.4	105,465	44
Colorectal	33.6	2.3	0.6	6.8	43.4	2,362	795
Leukaemia	31.4	0.7	0.1	4.8	37.0	489	219
Prostate	14.8	1.6	10.7	4.8	31.9	1,508	212
Non-Hodgkin's lymphoma	20.8	0.5	0.2	4.1	25.5	892	276
Other	175.4	6.6	9.1	40.9	232.0	12,941	3,841
<b>Per cent of total<sup>(c)</sup></b>	<b>41%</b>	<b>79%</b>	<b>56%</b>	<b>45%</b>	<b>45%</b>	<b>n.a.</b>	<b>28%</b>
<b>Female</b>							
<b>All cancers</b>	<b>263.1</b>	<b>45.8</b>	<b>21.0</b>	<b>81.5</b>	<b>411.4</b>	<b>96,394</b>	<b>4,465</b>
<b>All cancers (excluding NMSC)</b>	<b>247.7</b>	<b>27.5</b>	<b>20.8</b>	<b>71.6</b>	<b>367.6</b>	<b>19,042</b>	<b>4,454</b>
Breast cancer	43.8	15.3	14.0	16.2	89.3	7,121	1,234
NMSC	15.4	18.4	0.2	9.8	43.8	77,352	11
Colorectal	23.3	2.2	0.5	5.0	30.9	1,744	537
Leukaemia	19.6	0.1	0.1	3.7	23.5	350	152
Non-Hodgkin's lymphoma	14.9	1.6	0.2	3.6	20.4	623	151
Other	146.1	8.3	6.1	43.1	203.5	9,827	2,380
<b>Per cent of total<sup>(c)</sup></b>	<b>44%</b>	<b>82%</b>	<b>71%</b>	<b>47%</b>	<b>51%</b>	<b>n.a.</b>	<b>47%</b>

*(continued)*

**Table 3.5 (continued): Health system expenditures (\$ million) in 2000–01 for persons 25 to 64 years with cancer by area of expenditure, five most expensive cancers, males, females and all persons, 2000–01, number of new cases and deaths in 2001**

	Admitted patients	Out-of-hospital medical <sup>(b)</sup>	Pharmaceuticals requiring a prescription	Other <sup>(a)</sup>	Total expenditure	Number of new cases in 2001	Number of deaths in 2001
<b>Persons</b>							
<b>All cancers</b>	<b>560.7</b>	<b>76.5</b>	<b>42.0</b>	<b>155.5</b>	<b>834.6</b>	<b>219,159</b>	<b>9,852</b>
<b>All cancers (excluding NMSC)</b>	<b>523.6</b>	<b>39.2</b>	<b>41.6</b>	<b>133.0</b>	<b>737.4</b>	<b>36,342</b>	<b>9,797</b>
NMSC	37.1	37.3	0.4	22.5	97.2	182,817	55
Breast cancer	43.8	15.3	14.0	16.2	89.3	7,121	1,234
Colorectal	56.9	4.5	1.1	11.8	74.3	4,106	1,332
Leukaemia	51.0	0.8	0.2	8.5	60.5	839	371
Non-Hodgkin's lymphoma	35.7	2.1	0.4	7.7	45.9	1,515	427
Other	336.2	16.5	25.9	88.9	467.5	24,276	6,860
<b>Per cent of total<sup>(c)</sup></b>	<b>40%</b>	<b>78%</b>	<b>38%</b>	<b>43%</b>	<b>44%</b>	<b>n.a.</b>	<b>30%</b>

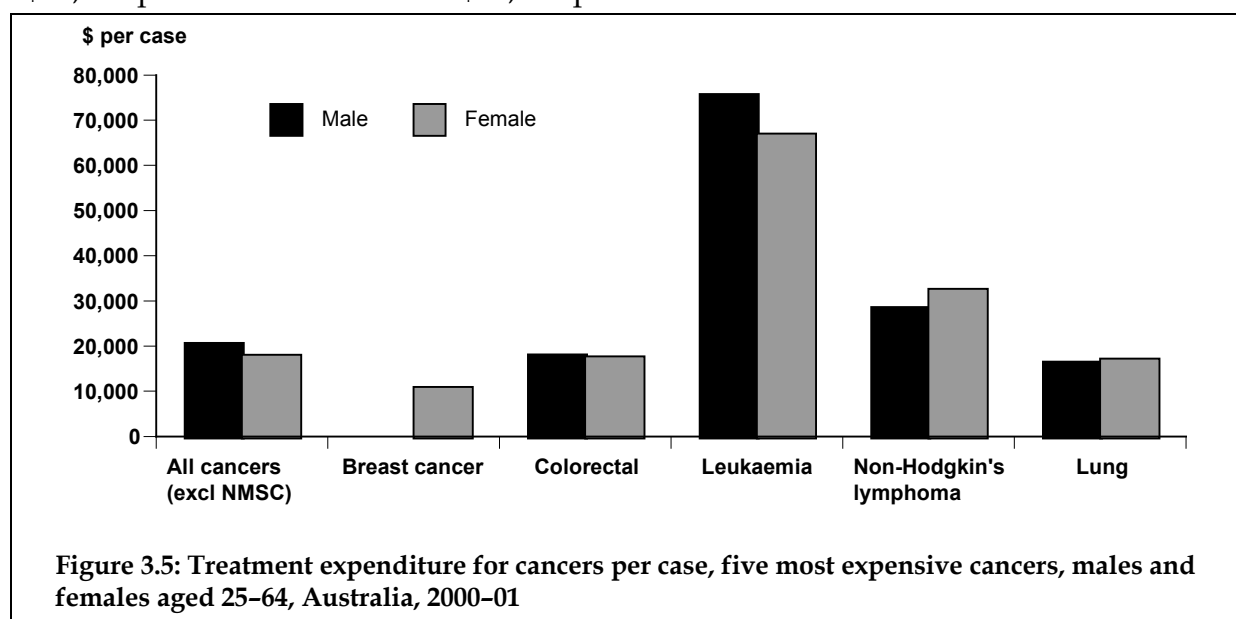
(a) 'Other' includes non-admitted patients, aged care homes, over-the-counter drugs, other health professionals, dental and research.

(b) 'Out-of-hospital medical' includes unreferral attendances, imaging, pathology and other medical services.

(c) Expenditure on the five most expensive cancers as per cent of expenditure on all cancers.

Source: AIHW disease expenditure database and AIHW and Australasian Association of Cancer Registries (AACR) cancer database. Non-melanoma skin cancer incidence estimated from the 2002 National Non-melanoma Skin Cancer Survey (National Cancer Control Initiative 2003).

Figure 3.5 shows treatment expenditure per case for males and females aged 25–64 for the five most expensive cancers. Average treatment costs for cancer in this group were about \$20,000 for males and \$18,000 for females. Leukaemia was by far the most expensive cancer to treat for both males and females in this age group at about \$76,000 per case for males and \$67,000 per case for females.



**Figure 3.5: Treatment expenditure for cancers per case, five most expensive cancers, males and females aged 25–64, Australia, 2000–01**

### **3.6 The five most expensive cancers for persons 65 years and over**

Table 3.6 shows the five most expensive cancers ranked by health system expenditure for people aged 65 and over with cancer in 2000-01. Total cancer-related expenditure for people in this group was \$1,247 million, with males accounting for 60% of this amount. People aged 65 and over accounted for 45% of total expenditure on cancer and 48% of instances (more than 200,000 instances) of cancer in 2000-01. There were 50,602 new cases of cancer excluding NMSC and this age group accounted for 58% of these cancers.

The five most expensive cancers accounted for 52% of total expenditure in this age group, and were responsible for 54% of the 26,772 deaths due to cancer in this group. Colorectal cancer, lung cancer and non-melanoma skin cancer were common to both the male and female five most expensive cancers. Non-Hodgkin's lymphoma and breast cancer were included in the top five for females, and prostate cancer and bladder cancer were in the top five for males.

The five most expensive cancers accounted for 60% of expenditure for males and 51% of expenditure for females. These cancers were responsible for 62% of deaths due to cancer in males and 53% of deaths due to cancer in females in this age group.



**Table 3.6: Health system expenditures (\$ million) in 2000–01 for persons 65 years and over with cancer for by area of expenditure, five most expensive cancers, males, females and all persons, 2000-01, number of new cases and deaths in 2001**

	Admitted patients	Out-of-hospital medical <sup>(b)</sup>	Pharmaceuticals requiring a prescription	Other <sup>(a)</sup>	Total expenditure	Number of new cases in 2001	Number of deaths in 2001
<b>Male</b>							
<b>All cancers</b>	<b>459.4</b>	<b>46.3</b>	<b>98.0</b>	<b>147.5</b>	<b>751.3</b>	<b>133,006</b>	<b>15,285</b>
<b>All cancers (excluding NMSC)</b>	<b>411.9</b>	<b>20.2</b>	<b>97.6</b>	<b>122.2</b>	<b>651.8</b>	<b>29,730</b>	<b>15,034</b>
Prostate	42.8	8.1	86.2	31.8	168.9	8,140	2,773
NMSC	47.5	26.2	0.4	25.3	99.5	72,424	251
Colorectal	69.7	2.7	1.0	13.2	86.6	4,589	2,078
Lung	42.2	2.1	2.9	14.2	61.4	3,870	3,796
Bladder	26.8	0.7	0.9	9.1	37.5	1,732	614
Other	230.4	6.6	6.6	53.8	297.4	13,131	5,773
<b>Per cent of total<sup>(c)</sup></b>	<b>50%</b>	<b>86%</b>	<b>93%</b>	<b>64%</b>	<b>60%</b>	<b>n.a.</b>	<b>62%</b>
<b>Female</b>							
<b>All cancers</b>	<b>353.1</b>	<b>37.4</b>	<b>21.6</b>	<b>83.8</b>	<b>495.9</b>	<b>98,333</b>	<b>11,488</b>
<b>All cancers (excluding NMSC)</b>	<b>319.0</b>	<b>17.3</b>	<b>21.4</b>	<b>71.8</b>	<b>429.5</b>	<b>20,872</b>	<b>11,363</b>
Colorectal	60.6	2.7	1.3	9.1	73.8	4,124	1,827
NMSC	34.1	20.1	0.2	11.9	66.4	77,461	125
Breast cancer	28.0	5.6	12.4	9.0	54.9	4,187	1,608
Lung	22.9	1.2	1.8	7.5	33.4	1,939	1,920
Non-Hodgkin's lymphoma	19.0	0.6	0.3	3.1	23.0	916	640
Other	188.5	7.2	5.6	43.1	244.4	9,706	5,368
<b>Per cent of total<sup>(c)</sup></b>	<b>47%</b>	<b>81%</b>	<b>74%</b>	<b>49%</b>	<b>51%</b>	<b>n.a.</b>	<b>53%</b>

*(continued)*

**Table 3.6 (continued): Health system expenditures (\$ million) in 2000–01 for persons 65 years and over with cancer for by area of expenditure, five most expensive cancers, males, females and all persons, 2000–01, number of new cases and deaths in 2001**

	Admitted patients	Out-of-hospital medical <sup>(b)</sup>	Pharmaceuticals requiring a prescription	Other <sup>(a)</sup>	Total expenditure	Number of new cases in 2001	Number of deaths in 2001
<b>Persons</b>							
<b>All cancers</b>	<b>812.6</b>	<b>83.7</b>	<b>119.6</b>	<b>231.3</b>	<b>1,247.1</b>	<b>231,338</b>	<b>26,772</b>
<b>All cancers (excl NMSC)</b>	<b>788.5</b>	<b>83.4</b>	<b>119.4</b>	<b>226.7</b>	<b>1218.0</b>	<b>50,602</b>	<b>26,396</b>
Prostate	42.8	8.1	86.2	31.8	168.9	8,140	2,773
NMSC	81.7	46.2	0.7	37.3	165.8	149,885	376
Colorectal	130.3	5.4	2.3	22.3	160.4	8,713	3,905
Lung	65.0	3.3	4.7	21.8	94.9	5,809	5,716
Breast cancer	28.0	5.6	12.4	9.0	54.9	4,187	1,608
Other	464.7	15.1	13.3	109.1	602.3	23,753	12,394
<b>Per cent of total<sup>(c)</sup></b>	<b>43%</b>	<b>82%</b>	<b>89%</b>	<b>53</b>	<b>52%</b>	<b>n.a.</b>	<b>54%</b>

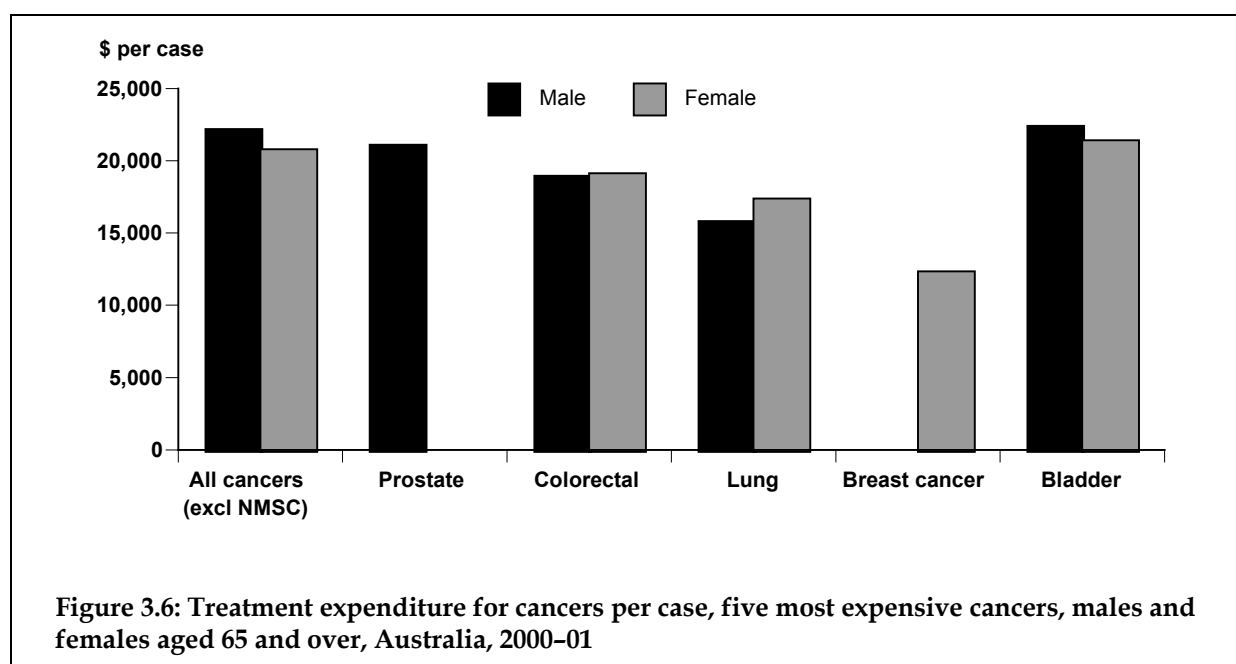
(a) 'Other' includes non-admitted patients, aged care homes, over-the-counter drugs, other health professionals, dental and research.

(b) 'Out-of-hospital medical' includes unreferred attendances, imaging, pathology and other medical services.

(c) Expenditure on the five most expensive cancers as per cent of expenditure on all cancers.

Source: AIHW disease expenditure database and AIHW and Australasian Association of Cancer Registries (AACR) cancer database. Non-melanoma skin cancer incidence estimated from National Non-melanoma Skin Cancer Survey (National Cancer Control Initiative 2003).

Figure 3.6 shows treatment expenditure per case for males and females aged 65 and over for the five most expensive cancers. Average treatment costs for cancer in this group (excluding NMSC) were about \$21,000 for both males and females.



**Figure 3.6: Treatment expenditure for cancers per case, five most expensive cancers, males and females aged 65 and over, Australia, 2000–01**

# 4 Utilisation of health services for cancer and other neoplasms

## 4.1 Utilisation of health services for the different cancers and other neoplasms, 2001

Table 4.1 shows health service usage for selected cancers and other neoplasms in 2000–01 for different sectors of the health system. There were 476,000 hospital admissions for cancer in 2000–01, and of these 14% (65,000) were for non-melanoma skin cancer. (Strictly speaking, data in this publication refer to separations from hospital, but as people have to be admitted to hospital before they can be separated, ‘admissions’ is used as a synonym for ‘separations’.) Non-melanoma skin cancer also contributed 11% (169,000) of the total non-admitted patient service usage for cancers of 1.5 million.

Out-of-hospital medical services are made up of unreferral attendances, and all other out-of-hospital medical services. In this chapter, the other medical services category includes imaging, pathology and specialist medical services. Of the 7.6 million medical services provided outside a hospital, 2.9 million (39%) were unreferral attendances, i.e. attendances by a GP. The majority of these unreferral attendances were for screening and treatment for cervical carcinomas (960,000), non-melanoma skin cancer (535,000) and breast cancer (182,000). These three cancers also accounted for the majority of other out-of-hospital medical services (cervical 1.8 million, non-melanoma skin cancer 1 million, and breast cancer 160,000).

Just over 3 million prescriptions for community pharmaceuticals were cancer-related in 2000–01. Breast cancer (258,000), prostate cancer (241,000) and lung cancer (113,000) were the conditions for which pharmaceuticals were most frequently prescribed in a community setting.

**Table 4.1: Health service usage for selected cancers and other neoplasms, 2000–01**

	Hospitals		Out-of-hospital medical services			
	Admitted patient separations	Non-admitted patients occasions of service	Unreferred attendances	Other medical services <sup>(b)</sup>	Pharmaceuticals requiring a prescription	Other health professional attendances
Mouth and oropharynx	5,236	19,733	1,470	2,681	0	36,995
Oesophagus	4,453	13,313	7,721	4,482	16,785	27,100
Stomach	5,565	18,665	5,546	6,481	10,457	7,012
Colorectal	24,990	83,191	69,296	114,678	105,009	49,566
Liver	1,993	5,545	5,013	338	8,580	11,165
Pancreatic	3,927	12,887	14,491	5,048	28,262	7,398
Lung	16,919	74,997	55,384	33,881	113,280	150,379
Melanoma	7,623	16,416	41,881	63,616	11,235	3,789
NMSC	64,948	169,250	534,529	1,053,319	53,992	142,552
Breast cancer	20,182	75,200	181,793	160,094	258,679	34,371
Cervix <sup>(a)</sup>	8,096	33,526	965,207	1,842,541	6,732	7,135
Uterine cancer	2,939	11,621	6,351	5,373	2,726	0
Ovarian cancer	3,541	10,581	10,103	11,810	50,130	0
Prostate	13,561	71,907	132,278	148,573	241,240	48,758
Bladder	16,218	58,739	14,440	16,111	23,279	0
Kidney	4,191	12,829	12,321	14,048	13,243	5,699
Brain	4,376	14,517	9,671	11,074	37,443	0
Non-Hodgkin's lymphoma	15,822	43,874	36,126	50,223	51,064	12,281
Hodgkin's disease	1,359	4,755	3,618	8,700	5,565	1,928
Multiple myeloma	13,201	17,031	16,245	14,862	23,625	5,271
Leukaemia	16,605	45,350	32,086	53,533	15,186	0
Larynx	1,464	5,921	1,824	750	2,944	0
Gall bladder	1,134	n.a.	1,798	601	5,858	n.a.
Thyroid	2,237	n.a.	6,500	9,321	15,241	n.a.
Testicular	1,161	1,206	3,333	13,904	626	0
Bone and connective tissue	2,770	7,948	5,838	9,760	14,312	7,421
Prevention	33,699	0	2,851	3,306	3,288	0
Uterine myomas	16,507	n.a.	38,133	75,970	7,781	n.a.
Brain and CNS	1,560	n.a.	3,984	3,474	5,190	n.a.
Other neoplasms	159,243	681,263	771,812	908,378	282,348	269,393
<b>Total</b>	<b>475,519</b>	<b>1,510,266</b>	<b>2,991,642</b>	<b>4,646,928</b>	<b>3,020,368</b>	<b>1,291,644</b>

n.a. Data for non-admitted patients and other professionals is not available for gall bladder cancer, thyroid cancer, uterine myomas or brain and CNS separately. This information is included in other neoplasms.

(a) Includes cervical cancer and carcinoma in situ of cervix uteri. The majority of these out-of-hospital medical services are for cervical screening.

## 4.2 Utilisation of health services for the different cancers by age group, 2001

Table 4.2 shows the health service utilisation for cancers by children aged between 0 and 14. There were 56 hospital encounters per 100,000 children in 2000–01. Of these, 17 were admissions to hospital and the remaining 39 were non-admitted patient services.

**Table 4.2: Health service usage per person and treatment services per case for different cancers, 0–14 years, 2000–01**

	All cancer	Leukaemia	Brain	Bone and connective tissue	Non-Hodgkin's lymphoma	Kidney	Other cancer
<b>Population aged 0–14</b>							
3,987,198							
<b>Type of service</b>							
<b>Per 100,000 population</b>							
Admitted patient separations	17	7	2	2	1	1	4
Non-admitted patient occasions of service	39	16	4	5	2	1	11
Unreferred medical services	18	6	1	0	3	0	9
Other out-of-hospital medical services	31	8	—	0	—	0	23
Pharmaceuticals requiring a prescription	53	1	3	—	21	—	26
Other health professional attendances	0	0	0	0	0	0	0
<b>Incidence</b>	<b>603</b>	<b>225</b>	<b>100</b>	<b>51</b>	<b>43</b>	<b>32</b>	<b>152</b>
<b>Type of service</b>							
<b>Treatment per incident case<sup>(a)</sup></b>							
Admitted patient separations	10	12	9	12	10	7	7
Non-admitted patient occasions of service	26	28	15	40	20	16	20
Unreferred medical services	10	11	3	0	24	0	2
Other out-of-hospital medical services	17	15	—	0	—	0	0
Pharmaceuticals requiring a prescription	35	2	14	1	n.a.	—	37
Other health professional attendances	0	0	0	0	0	0	0

(a) Health service usage for treatment only.

— rounded to zero

On average, each child with cancer was admitted to hospital 10 times, used outpatient and accident and emergency services 26 times, visited a GP 10 times, used other medical services outside of hospital 17 times and used 35 prescriptions for drugs. (These calculations, and the calculations for other age groups later in this

chapter, assume that there is no significant change in the incidence rates and treatment regimes for cancer for this age group in the 5 years around 2000–01. If there were a change to greater treatment intensity, the numbers would increase somewhat.)

Table 4.3 shows the health service utilisation for cancers by people aged between 15 and 24. There were 138 hospital encounters per 100,000 people in 2000–01. Of these, 37 were admissions to hospital and the remaining 101 were non-admitted patients.

**Table 4.3: Health service usage per person and treatment services per case for different cancers, 15–24 age group, 2000–01**

	All cancer	Leukaemia	Bone and connective tissue	Non-Hodgkin's lymphoma	Brain	Hodgkin's disease	Other cancer
<b>Population aged 15–24</b>	2,655,157						
<b>Type of service</b>	<b>Per 100,000 population</b>						
Admitted patient separations	37	4	2	1	—	1	29
Non-admitted patient occasions of service	101	8	1	2	1	2	87
Unreferred medical services	824	1	4	1	1	0	817
Other out-of-hospital medical services	1,101	—	4	10	2	0	1,085
Pharmaceuticals requiring a prescription	105	—	—	1	9	—	95
Other health professional attendances	24	0	0	0	0	0	24
<b>Incidence</b>	<b>851</b>	<b>63</b>	<b>61</b>	<b>60</b>	<b>47</b>	<b>94</b>	<b>526</b>
<b>Type of service</b>	<b>Treatment per incident case<sup>(a)</sup></b>						
Admitted patient separations	11	16	8	4	3	4	1
Non-admitted patient occasions of service	32	32	6	10	6	5	3
Unreferred medical services	127	4	16	6	8	0	3
Other out-of-hospital medical services	127	—	16	45	11	0	2
Pharmaceuticals requiring a prescription	33	—	1	4	50	—	20
Other health professional attendances	8	0	0	0	0	0	0

(a) Health service usage for treatment only.

— rounded to zero

On average, each person with cancer was admitted to hospital 11 times, used outpatient and accident and emergency services 32 times, visited a GP 127 times, used other medical services outside a hospital 127 times and used 33 prescriptions for drugs.

Table 4.4 shows the health service utilisation for cancers by people aged between 25 and 64. There were 936 hospital encounters per 100,000 people in 2000–01. Of these, 196 were admissions to hospital and the remaining 740 were non-admitted patients. On average, each person with cancer was admitted to hospital 5 times, used outpatient and accident and emergency services 21 times, visited a GP 26 times, used other medical services outside a hospital 36 times and had 14 prescriptions for drugs.

**Table 4.4: Health service usage per person and treatment services per case for different cancers, 25–64 age group, 2000–01**

	All cancer	Non-melanoma skin cancer	Breast cancer	Colorectal	Leukaemia	Non-Hodgkin's lymphoma	Other cancer
<b>Population aged 25–64</b>							
10,335,351							
<b>Type of service</b>	<b>Per 100,000 population</b>						
Admitted patient separations	196	13	9	7	7	6	154
Non-admitted patient occasions of service	740	65	52	32	21	22	549
Unreferred medical services	1,771	226	125	30	10	16	1,363
Other out-of-hospital medical services	2,867	445	107	47	12	25	2,231
Pharmaceuticals requiring a prescription	508	18	133	28	8	19	302
Other health professional attendances	255	32	2	8	0	9	204
<b>Incidence</b>	<b>36,342<sup>(a)</sup></b>	<b>182,817</b>	<b>7,121</b>	<b>4,106</b>	<b>839</b>	<b>1,515</b>	<b>22,761</b>
<b>Type of service</b>	<b>Treatment per incident case<sup>(b)</sup></b>						
Admitted patient separations	5	—	2	2	8	5	1
Non-admitted patient occasions of service	21	—	7	8	25	15	4
Unreferred medical services	26	1	7	7	13	11	1
Other out-of-hospital medical services	36	3	6	11	15	17	1
Pharmaceuticals requiring a prescription	14	—	19	7	10	13	3
Other health professional attendances	7	—	—	2	0	6	1

(a) incidence for all cancers excluding non-melanoma skin cancer.

(b) Health service usage for treatment only. In the case of NMSC it is treatment use per treated case rather than incident case.

— rounded to zero

Table 4.5 shows the health service utilisation for cancers by people aged 65 and over. There were 3,733 hospital encounters per 100,000 people aged 65 and over in 2000–01. Of these, 936 were admissions to hospital and the remaining 2,797 were non-admitted patients.

On average, each person with cancer was admitted to hospital 4 times, used outpatient and accident and emergency services 13 times, visited a GP 15 times, used other medical services outside a hospital 38 times and used 16 prescriptions for drugs.

**Table 4.5: Health service usage per person and treatment services per case for different cancers, 65 and over age group, 2000–01**

	All cancer	Prostate	Non-melanoma skin cancer	Colorectal	Lung	Breast cancer	Other cancer
<b>Population aged 65+</b> 2,435,534							
<b>Type of service</b>	<b>Per 100,000 population</b>						
Admitted patient separations	936	41	164	63	44	26	596
Non-admitted patient occasions of service	2,797	251	413	206	201	88	1,637
Unreferred medical services	3,437	457	1,214	157	151	184	1,273
Other out-of-hospital medical services	5,193	523	2,391	268	83	180	1,749
Pharmaceuticals requiring a prescription	3,382	871	140	308	296	491	1,277
Other health professional attendances	2,294	186	450	170	617	133	738
<b>Incidence</b>	<b>50,602<sup>(a)</sup></b>	<b>8,140</b>	<b>180,736</b>	<b>8,713</b>	<b>5,809</b>	<b>4,187</b>	<b>23,753</b>
<b>Type of service</b>	<b>Treatment per incident case<sup>(b)</sup></b>						
Admitted patient separations	4	1	—	2	2	2	1
Non-admitted patient occasions of service	13	8	1	6	8	5	5
Unreferred medical services	15	14	2	4	6	8	2
Other out-of-hospital medical services	38	29	5	12	10	16	3
Pharmaceuticals requiring a prescription	16	26	—	9	12	28	4
Other health professional attendances	11	6	1	5	26	8	1

(a) Incidence for all cancers excluding non-melanoma skin cancer.

(b) Health service usage for treatment only. In the case of NMSC it is treatment use per treated case rather than incident case.

— rounded to zero

Figure 4.1 shows use of health services for all cancers by age group for 2000–01. The pattern for all sectors shows an increase in usage with age. Significant usage in the 15–24 and 25–64 age groups reflects cancer-screening programs carried out by GPs and the subsequent pathology.



Figure 4.1: Health service usage per person for all cancers, by age group, 2000-01

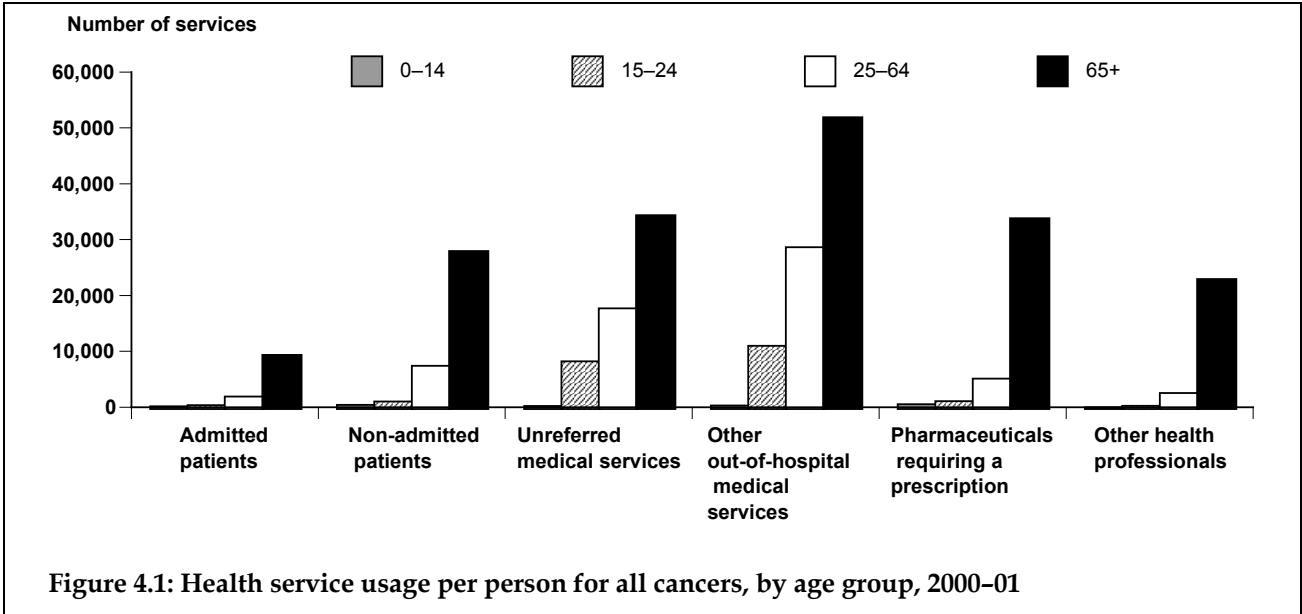
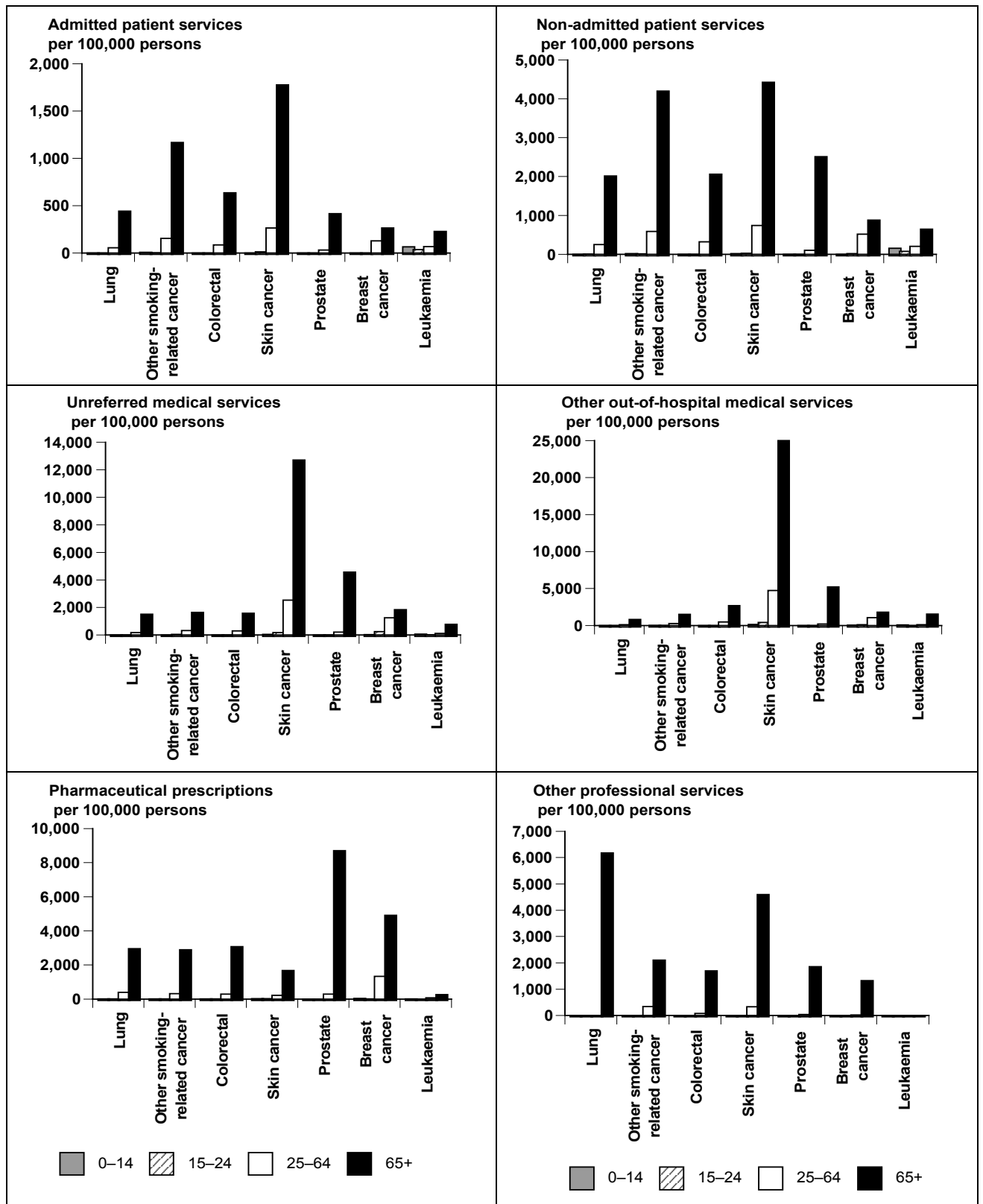


Figure 4.2 shows the age breakdown for health service use for selected cancers by health system sector. The pattern shows an increase with age for lung, other smoking-related, colorectal, skin, prostate and breast cancers. Other smoking-related cancers includes mouth and oropharynx cancer, oesophagus cancer, kidney cancer, pancreatic cancer, bladder cancer, larynx cancer, stomach cancer, cervical cancer and uterine cancer. In general leukaemia still increased with age but had a more even expenditure across all age groups.

Figure 4.2: Health service usage per person for selected cancers, by age group and sector, 2000–01



Skin cancer included melanoma and non-melanoma skin cancers.

Other smoking-related cancer includes mouth and oropharynx cancer, oesophagus cancer, kidney cancer, pancreatic cancer, bladder cancer, larynx cancer, stomach cancer, cervical cancer and uterine cancer.

Other out-of-hospital medical services included imaging, pathology and other medical services.

# 5 Change in expenditures for cancer, 1993–94 to 2000–01 for different cancers

This chapter deals with changes in treatment expenditure for cancer (malignant neoplasms) including non-melanoma skin cancer (NMSC) between 1993–94 and 2000–01. Total expenditure for this group of cancers in 2000–01 was \$2,089 million.

## 5.1 Change in treatment expenditures between 1993–94 and 2000–01 for the different cancers

Table 5.1 shows the change in treatment expenditure for cancers in 2000–01 dollars between 1993–94 and 2000–01. An additional \$412 million (in 2000–01 dollars) was spent on cancers in 2000–01 compared to 1993–94. This is an increase of 24% in total expenditure and an increase of 10% per case (excluding NMSC). Large increases were found for prostate cancer (\$97 million), colorectal cancer (\$73 million), NMSC (\$51 million) and breast cancer (\$42 million). Prostate cancer showed a 25% increase in expenditure per case, reflecting an increase in pharmaceutical treatments.

There was a reduction of \$96 million (2000–01 dollars) in expenditure for other cancers between 1993–94 and 2000–01. Part of this reflects better classification of cancers by site in 2000–01, so there was less expenditure in 2000–01 against other cancers and more expenditure against the site-specific cancers. This in turn means that a substantial portion of the increase in expenditure per case for conditions such as colorectal, oesophagus and brain cancers is due to better classification, and the real increase is lower than the number shown in the table.

Caution must be used in interpreting changes in expenditure for conditions such as Hodgkin's disease, cervix and liver cancers where the overall expenditure is fairly small, so the accuracy of estimates of change in expenditure is lower.

**Table 5.1: Change in treatment expenditures for cancers between 1993–94 and 2000–01 for the different cancers, 2000–01 dollars**

Conditions	1993–94 <sup>(a)</sup>		2000–01		Change		
	Expense per case (\$000)	Total (\$ million)	Expense per case (\$000)	Total (\$ million)	\$ million	% per case	% total
Mouth and oropharynx	13.2	33.8	23.0	61.8	28.0	74	83
Oesophagus	22.2	21.2	30.8	33.2	12.0	39	56
Stomach	17.3	31.9	22.9	43.6	11.7	33	37
Colorectal	15.6	162.5	18.3	235.1	72.6	18	45
Liver	17.9	9.4	18.0	15.4	6.0	1	63
Pancreatic	15.7	25.0	18.2	33.8	8.9	16	36
Lung	14.2	109.3	16.5	136.3	27.1	16	25
Melanoma	2.8	19.1	3.4	29.8	10.7	21	56
Non-melanoma skin cancer	n.a.	213.7	n.a.	264.5	50.7	n.a.	24
Breast cancer	10.6	103.2	12.8	145.1	41.9	21	41
Cervical	9.5	10.7	17.2	12.7	2.0	82	18
Uterus	11.1	15.0	11.9	18.3	3.3	7	22
Ovary	13.6	14.9	19.7	25.5	10.6	45	71
Prostate	8.0	104.0	17.9	200.8	96.8	125	93
Bladder	20.1	51.9	21.6	63.7	11.8	8	23
Kidney	14.3	26.5	15.9	39.1	12.6	11	47
Brain	24.9	30.2	40.7	54.9	24.7	64	82
Non-Hodgkin's lymphoma	24.3	66.7	27.6	96.6	30.0	14	45
Hodgkin's disease	21.7	7.9	19.0	7.6	-0.3	-13	-3
Multiple myeloma	25.9	22.3	37.1	44.4	22.1	43	99
Leukaemia	46.3	103.2	51.2	128.8	25.6	11	25
Other cancers	65.5	507.7	43.0	411.2	-96.5	-34	-19
<b>Total</b>	<b>n.a.</b>	<b>1,690.1</b>	<b>n.a.</b>	<b>2,102.2</b>	<b>412.0</b>	<b>n.a.</b>	<b>24</b>
<b>Total excluding NMSC</b>	<b>18.8</b>	<b>1,476.4</b>	<b>20.8</b>	<b>1,837.7</b>	<b>361.3</b>	<b>10</b>	<b>24</b>

(a) 1993–94 expenditure expressed in terms of 2000–01 dollars. Health prices increased 20% between 1993–94 and 2000–01. The original 1993–94 expenditure has been increased by 20% to convert it to 2000–01 prices.

Table 5.2 shows the change in treatment expenditure for cancers excluding NMSC between 1993–94 and 2000–01 by age and sex. Expenditure over the period has shown a shift to older ages. Expenditure for males aged 65 and over has increased by 38% and by 25% for females in this period. Expenditure in the younger age groups (0–14 and 15–24) has decreased for males, by 2% (0–14) and 13% (15–24). Expenditure for females has increased in the youngest age group by 9% but decreased by 14% in the 15–24 age group. The 13% decline in expenditure for 15–24 year olds has been driven by a decline in cost per case of 14%.

**Table 5.2: Change in treatment expenditures for cancer (excluding NMSC) between 1993–94 and 2000–01 by age and sex, 2000–01 dollars**

	1993–94 <sup>(a)</sup>		2000–01		Change			
	Expense per case (\$000)	Total (\$m)	Expense per case (\$000)	Total (\$m)	\$m	Cases (%)	Expense per case (%)	Total expenditure (%)
<b>Male</b>								
0–14	66	22	67	22	0	–3	1	–2
15–24	35	16	30	14	–2	4	–16	–13
25–64	20	301	21	360	59	13	6	20
65+	16	463	21	637	174	5	31	38
<b>All</b>	<b>18</b>	<b>802</b>	<b>22</b>	<b>1,032</b>	<b>230</b>	<b>8</b>	<b>20</b>	<b>29</b>
<b>Female</b>								
0–14	71	17	67	19	2	15	–5	9
15–24	29	11	26	10	–2	–2	–12	–14
25–64	20	311	18	345	34	22	–9	11
65+	19	336	20	419	83	18	6	25
<b>All</b>	<b>20</b>	<b>675</b>	<b>20</b>	<b>792</b>	<b>118</b>	<b>20</b>	<b>–2</b>	<b>17</b>
<b>Person</b>								
0–14	68	39	67	40	1	5	–2	3
15–24	32	27	28	24	–4	1	–14	–13
25–64	20	611	19	704	93	18	–2	15
65+	17	798	21	1,056	257	10	20	32
<b>All</b>	<b>19</b>	<b>1,476</b>	<b>21</b>	<b>1,824</b>	<b>348</b>	<b>13</b>	<b>10</b>	<b>24</b>

(a) 1993–94 expenditure expressed in terms of 2000–01 dollars. Health prices increased 20% between 1993–94 and 2000–01. The original 1993–94 expenditure is increased by 20% to convert it to 2000–01 prices.

Changes in expenditure on prostate cancer have had an impact on the overall cancer picture. Table 5.3 shows the change in expenditure for prostate cancer, and for all cancers excluding prostate cancer and NMSC. There was a 93% increase in total expenditure for prostate cancer between 1993–94 and 2000–01 and a 125% increase from \$8,000 to \$18,000 per case (all in 2000–01 dollars) in the same period. The impact on overall expenditure can be seen by comparing the change in expenditure for cancer excluding NMSC (Table 5.2) with the change in expenditure for cancers excluding NMSC and prostate cancer (Table 5.3). There was a 6 percentage points increase, from 18% to 24%, in the change in total expenditure when prostate cancer was included. There was also a 10% greater change in expense per case when prostate cancer was included. The main driver of the change in prostate cancer expenditure per case is the greater use of pharmaceuticals outside hospitals, and in particular an increase in use of the drug goserelin.

**Table 5.3: Change in treatment expenditures between 1993–94 and 2000–01, for prostate cancer and for cancer excluding NMSC and prostate cancer**

	1993–94		2000–01		Change			
	Expense per case (\$000)	Total (\$million)	Expense per case (\$000)	Total (\$million)	\$million	Cases (%)	Expense per case (%)	Total expenditure (%)
<b>Prostate cancer</b>								
0–14	—	—	—	—	—	—	—	—
15–24	—	—	—	—	—	—	—	—
25–64	6	16	10	32	16	17	67	96
65+	8	88	21	169	81	–22	146	93
<b>All males</b>	<b>8</b>	<b>104</b>	<b>18</b>	<b>201</b>	<b>97</b>	<b>–14</b>	<b>125</b>	<b>93</b>
<b>All cancer excluding NMSC and prostate cancer</b>								
0–14	68	39	67	40	1	4	–2	3
15–24	32	27	28	24	–4	1	–14	–13
25–64	21	595	20	673	78	15	–4	13
65+	20	711	21	887	176	16	5	25
<b>All persons</b>	<b>21</b>	<b>1,372</b>	<b>21</b>	<b>1,623</b>	<b>251</b>	<b>15</b>	<b>0</b>	<b>18</b>

The contributions to the change in treatment expenditure for cancers by age group are shown in Table 5.4. Most of the increase occurred in the oldest age group – in prostate cancer, 84% of the change was in the group aged 65 and over. Similarly, for colorectal cancer, 74% of the change was in the oldest age group. The change in breast cancer treatment expenditure occurred mainly in the 25–64 age group with an increase of \$24 million (77%). For all cancer treatment, 64% of the increase (\$257 million) was for males and 36% (\$141 million) for females, but if prostate is excluded, 53% of the increase was for males. Overall, 27% of the increase in treatment expenditure (\$110 million) was in the 25–64 age group and 72% (\$290 million) in the 65+ age group.

**Table 5.4: Contribution to change in treatment expenditures for cancer between 1993–94<sup>(a)</sup> and 2000–01 by age–sex–type of cancer component, \$ million**

	Change in treatment expenditure by sex			Change in treatment expenditure by age group			
	Male	Female	Person	0–14	15–24	25–64	65+
Mouth and oropharynx	20	8	28	0.16	0.07	16.24	11.49
Oesophagus	9	3	12	–0.00	0.00	4.51	7.48
Stomach	7	5	12	0.02	–0.01	3.96	7.70
Colorectal	42	30	72	0.05	0.25	18.63	52.92
Liver	4	2	6	0.33	–0.01	2.97	2.67
Pancreas	4	5	9	0.01	–0.01	3.07	5.80
Lung	11	16	27	0.06	0.01	7.13	19.86
Melanoma	6	5	11	–0.26	–0.64	4.83	6.66
NMSC	27	24	51	0.44	0.01	16.61	33.67
Breast cancer	3	29	31	0.15	–0.12	24.19	7.18
Cervical cancer	0	2	2	0.00	–0.06	1.08	0.94
Uterine cancer	0	3	3	0.00	–0.01	1.79	1.48
Ovarian cancer	0	11	11	0.08	–0.04	4.90	5.62
Prostate	97	0	97	–0.00	–0.02	15.64	81.17
Bladder	8	4	12	0.06	–0.01	2.55	9.21
Kidney	7	5	13	0.67	0.05	3.18	8.67
Brain	15	10	25	4.17	0.22	10.14	10.19
Non-Hodgkin's lymphoma	14	16	30	1.05	0.30	12.67	15.95
Hodgkin's disease	0	–0	–0	–0.09	0.17	–0.50	0.16
Multiple myeloma	14	8	22	0.06	0.02	10.40	11.61
Larynx	8	2	10	–0.06	–0.00	4.42	5.45
Leukaemia	15	11	26	0.10	–1.12	13.48	13.11
Testicular	–1	0	–1	0.00	0.13	–0.77	0.02
Bone and connective tissue	4	4	8	1.44	1.61	2.58	2.36
Other cancers	–56	–59	–116	–6.93	–4.38	–73.91	–30.53
<b>Total</b>	<b>257</b>	<b>141</b>	<b>399</b>	<b>1.50</b>	<b>–3.57</b>	<b>109.81</b>	<b>290.85</b>
<b>Total excluding NMSC</b>	<b>230</b>	<b>118</b>	<b>348</b>	<b>1.06</b>	<b>–3.59</b>	<b>93.20</b>	<b>257.18</b>

(a) 1993–94 expenditure expressed in terms of 2000–01 dollars. Health prices increased 20% between 1993–94 and 2000–01. Thus the original 1993–94 expenditure is increased by 20% to convert it to 2000–01 prices.

## 6 Conclusion

This is the second comprehensive national report on health expenditures for cancer in Australia. Its aim is to provide a systematic, comprehensive analysis of the total health system costs of cancer and other neoplasms in Australia during 2000–01, based on the best possible estimates of health system resources directed at the prevention and treatment of diseases and injuries.

Cancer and other neoplasms are a complex set of disorders with differing disease courses, treatments and outcomes. This project uses data from the AIHW disease expenditure database to provide estimates of the contribution of the different sectors of the health system to the treatment and prevention of these different cancers in Australia. In addition, these data are combined with epidemiological information from the cancer registries to indicate how much is being spent per new case of cancer, and how this has changed over time.

Cost-of-illness studies such as this provide estimates of the impact of a disease on health system expenditures. But as they describe only the monetary burden of treating and/or preventing a disease, they do not provide a measure of the full extent of the burden from disease; nor will these estimates describe exactly the cost savings if, say, 50% of the disease is eliminated. The costs saved may be less or more than 50% of existing expenditures, depending on time lags, marginal costs and the distribution of existing expenditure between treatment and prevention.

Expenditure by type of cancer gives a picture of expenditure that is more relevant than expenditure split only by administrative category: the administrative category view of expenditure is subject to the vagaries of the way the health system happens to be organised at a particular point in time.

Expenditure data, output data and burden of disease data together can be used to answer 'what if?' questions. For example, expenditure on treatment for smoking-related cancers over time can be compared with the changes in smoking prevalence to reveal the impact of smoking-related interventions. This can then be used to assess the impact of public health activities to reduce smoking.

Information on disability and death due to cancer will be published as part of the Australian burden of disease project. The burden of disease was first estimated for Australia for 1996 – see AIHW: Mathers et al.(1999). These estimates are now being updated through joint work by the University of Queensland and the Australian Institute of Health and Welfare, and will be released progressively during the next 12 months.



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# Appendixes

## Appendix A: Health system expenditures and services for the ten most expensive cancers by age, sex and health sector, 2000–01

- Table A1a: Admitted patient<sup>(a)</sup> expenditure for the ten most expensive cancers by age and sex, 2000–01 (\$million)
- Table A1b: Admitted patient<sup>(a)</sup> services for the ten most expensive cancers by age and sex, 2000–01 ('000)
- Table A2a: Out-of-hospital medical<sup>(b)</sup> expenditure for the ten most expensive cancers by age and sex, 2000–01 (\$million)
- Table A2b: Out-of-hospital medical<sup>(b)</sup> services for the ten most expensive cancers by age and sex, 2000–01 ('000)
- Table A3a: Unreferred attendance expenditure for the ten most expensive cancers by age and sex, 2000–01 (\$million)
- Table A3b: Unreferred patient services for the ten most expensive cancers by age and sex, 2000–01 ('000)
- Table A4a: Other out-of-hospital medical services expenditure for the ten most expensive cancers by age and sex, 2000–01 (\$million)
- Table A4b: Other out-of-hospital medical services for the ten most expensive cancers by age and sex, 2000–01 ('000)
- Table A5a: Pharmaceutical prescriptions<sup>(c)</sup> expenditure for the ten most expensive cancers by age and sex, 2000–01 (\$million)
- Table A5b: Pharmaceutical prescriptions<sup>(c)</sup> for the ten most expensive cancers by age and sex, 2000–01 ('000)

### Notes for appendix tables:

- (a) Includes admitted patient expenditure and services in public hospitals.
- (b) Includes unreferred attendances, imaging, pathology and specialist consultations.
- (c) Includes all pharmaceuticals for which a prescription is needed, including private prescriptions and under-copayment prescriptions.

Table A1a: Admitted patient expenditure for the ten most expensive cancers by age and sex, 2000–01 (\$ million)

Expenditure	Non-melanoma skin cancer	Colorectal cancer	Prostate cancer	Breast cancer	Lung cancer	Leukaemia	Hodgkin's Lymphoma	Non-Hodgkin's Lymphoma	Bladder cancer	Mouth and oropharynx cancer	Brain cancer	Other cancers	All cancers
Male													
0–4	—	—	—	n.a.	—	3.2	0.1	0.1	—	—	1.4	3.34	8.15
5–14	—	—	—	n.a.	—	5.8	0.9	0.9	—	—	1.7	2.00	10.53
15–24	0.1	—	—	n.a.	—	5.2	1.0	1.0	—	0.1	0.7	4.41	11.61
25–34	0.8	0.6	—	n.a.	0.2	5.6	1.7	1.7	0.1	0.2	1.4	6.15	16.61
35–44	2.5	2.5	0.1	n.a.	1.3	5.3	3.5	3.5	0.5	1.9	2.4	13.86	33.88
45–54	7.0	8.5	2.7	n.a.	3.8	10.4	6.0	6.0	1.6	8.2	4.9	34.05	87.29
55–64	11.3	22.0	12.0	n.a.	12.5	10.1	9.5	9.5	4.7	9.9	4.6	63.24	159.81
65–74	17.4	33.8	17.5	n.a.	22.4	9.7	9.8	9.8	11.1	10.8	5.7	90.16	228.29
75+	30.1	35.9	25.4	n.a.	19.8	6.0	8.2	8.2	15.6	6.0	2.6	81.49	231.15
<b>Total</b>	<b>69.3</b>	<b>103.4</b>	<b>57.6</b>	<b>n.a.</b>	<b>60.0</b>	<b>61.3</b>	<b>40.8</b>	<b>40.8</b>	<b>33.8</b>	<b>37.1</b>	<b>25.3</b>	<b>298.70</b>	<b>787.32</b>
Female													
0–4	—	—	n.a.	—	—	2.3	0.3	0.3	—	—	1.0	2.08	5.74
5–14	—	—	n.a.	—	—	4.0	0.9	0.9	—	0.1	1.6	1.87	8.42
15–24	0.2	0.2	n.a.	0.1	—	3.0	0.5	0.5	—	—	0.4	3.02	7.55
25–34	0.8	0.6	n.a.	1.4	0.1	3.3	0.7	0.7	—	0.5	0.9	6.66	14.93
35–44	2.6	2.5	n.a.	7.8	1.0	5.1	2.1	2.1	0.2	1.0	1.7	17.96	42.13
45–54	5.4	7.0	n.a.	17.2	3.2	5.7	4.7	4.7	0.6	2.5	3.0	38.88	88.22
55–64	6.6	13.2	n.a.	17.3	6.8	5.5	7.4	7.4	1.8	2.8	3.3	53.08	117.80
65–74	9.9	22.4	n.a.	14.6	12.0	5.6	8.8	8.8	3.4	3.5	4.3	68.35	152.96
75+	24.2	38.2	n.a.	13.4	10.8	5.0	10.2	10.2	6.3	4.8	2.8	84.41	200.17
<b>Total</b>	<b>49.7</b>	<b>84.2</b>	<b>n.a.</b>	<b>71.8</b>	<b>34.1</b>	<b>39.6</b>	<b>35.7</b>	<b>35.7</b>	<b>12.3</b>	<b>15.1</b>	<b>19.1</b>	<b>276.31</b>	<b>637.92</b>

— represents zero or less than \$50,000 of expenditure.

Table A1b: Admitted patient services for the ten most expensive cancers by age and sex, 2000–01 ('000)

Services	Non-melanoma skin cancer	Colorectal cancer	Prostate cancer	Breast cancer	Lung cancer	Leukaemia	Hodgkin's Lymphoma	Bladder cancer	Mouth and oropharynx cancer	Brain cancer	Other cancers	All cancers
Male												
0–4	—	—	—	n.a.	—	—	—	—	—	—	—	—
5–14	—	—	—	n.a.	—	—	—	—	—	—	—	—
15–24	—	—	—	n.a.	—	—	—	—	—	—	—	—
25–34	—	—	—	n.a.	—	—	—	—	—	—	—	5.7
35–44	—	—	—	n.a.	—	—	—	—	—	—	7.8	12.1
45–54	—	—	—	n.a.	—	—	—	—	—	—	15.9	27.8
55–64	6.7	—	—	n.a.	—	—	—	—	—	—	24.9	46.7
65–74	9.6	—	—	n.a.	—	—	—	—	—	—	33.0	64.6
75+	14.8	—	5.7	n.a.	—	—	—	5.3	—	—	31.0	68.0
<b>Total</b>	<b>37.8</b>	<b>13.5</b>	<b>13.2</b>	<b>n.a.</b>	<b>10.9</b>	<b>9.6</b>	<b>8.6</b>	<b>12.0</b>	<b>—</b>	<b>—</b>	<b>122.9</b>	<b>234.6</b>
Female												
0–4	—	—	n.a.	—	—	—	—	—	—	—	—	—
5–14	—	—	n.a.	—	—	—	—	—	—	—	—	—
15–24	—	—	n.a.	—	—	—	—	—	—	—	5.3	6.0
25–34	—	—	n.a.	—	—	—	—	—	—	—	9.9	11.7
35–44	—	—	n.a.	—	—	—	—	—	—	—	14.3	20.8
45–54	—	—	n.a.	5.4	—	—	—	—	—	—	20.8	34.1
55–64	—	—	n.a.	—	—	—	—	—	—	—	22.9	39.0
65–74	5.4	—	n.a.	—	—	—	—	—	—	—	25.3	43.7
75+	10.2	—	n.a.	—	—	—	—	—	—	—	27.4	51.6
<b>Total</b>	<b>25.7</b>	<b>10.9</b>	<b>n.a.</b>	<b>19.7</b>	<b>5.7</b>	<b>6.6</b>	<b>6.9</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>129.8</b>	<b>212.4</b>

— represents zero or less than 5,000 occasions of service.

Table A2a: Out-of-hospital medical expenditure for the ten most expensive cancers by age and sex, 2000–01 (\$ million)

Expenditure	Non-melanoma skin cancer	Colorectal cancer	Prostate cancer	Breast cancer	Lung cancer	Leukaemia	Non-Hodgkin's Lymphoma	Bladder cancer	Mouth and oropharynx cancer	Brain cancer	Other cancers	All cancers
Male												
0–4	0.2	—	—	n.a.	—	0.1	—	—	—	—	—	0.4
5–14	—	—	—	n.a.	—	—	—	—	—	—	—	—
15–24	0.1	—	—	n.a.	—	—	0.1	—	—	0.1	0.4	0.8
25–34	1.2	—	—	n.a.	—	—	—	—	—	—	0.7	2.0
35–44	2.4	0.3	—	n.a.	—	0.1	0.1	—	—	0.1	0.9	3.9
45–54	6.8	0.4	0.2	n.a.	0.2	0.3	0.4	—	0.1	—	1.3	9.7
55–64	8.5	1.7	1.3	n.a.	0.4	0.4	—	0.1	0.1	0.1	2.4	15.0
65–74	13.0	1.7	3.3	n.a.	1.0	0.5	0.3	0.2	—	—	2.8	22.7
75+	13.2	1.0	4.8	n.a.	1.2	0.3	0.4	0.5	—	0.2	2.1	23.6
<b>Total</b>	<b>45.4</b>	<b>5.0</b>	<b>9.7</b>	<b>n.a.</b>	<b>2.7</b>	<b>1.6</b>	<b>1.4</b>	<b>0.9</b>	<b>0.2</b>	<b>0.5</b>	<b>10.7</b>	<b>78.1</b>
Female												
0–4	0.2	—	n.a.	0.1	—	—	—	—	—	—	—	0.4
5–14	—	—	n.a.	—	—	—	—	—	—	—	—	0.1
15–24	0.3	—	n.a.	0.5	—	—	—	—	—	—	0.2	1.0
25–34	1.3	0.2	n.a.	1.1	—	—	0.4	—	—	—	1.2	4.3
35–44	3.0	—	n.a.	4.5	0.1	—	—	—	—	0.1	1.1	8.9
45–54	5.6	0.9	n.a.	5.5	0.4	—	0.1	—	—	0.2	2.2	14.9
55–64	8.5	1.1	n.a.	4.2	0.7	0.1	1.0	—	—	—	2.2	17.8
65–74	6.7	0.8	n.a.	2.9	0.6	0.3	0.3	0.1	—	—	2.7	14.5
75+	13.4	1.9	n.a.	2.7	0.6	0.6	0.3	0.1	—	0.1	3.4	22.9
<b>Total</b>	<b>38.9</b>	<b>4.9</b>	<b>n.a.</b>	<b>21.4</b>	<b>2.3</b>	<b>1.0</b>	<b>2.2</b>	<b>0.2</b>	<b>—</b>	<b>0.5</b>	<b>13.1</b>	<b>84.6</b>

— represents zero or less than \$50,000 of expenditure.

Table A2b: Out-of-hospital medical services for the ten most expensive cancers by age and sex, 2000–01 ('000)

Services	Non-melanoma skin cancer	Colorectal cancer	Prostate cancer	Breast cancer	Lung cancer	Leukaemia	Hodgkin's Lymphoma	Bladder cancer	Mouth and oropharynx cancer	Brain cancer	Other cancers	All cancers
Male												
0–4	—	—	—	n.a.	—	—	—	—	—	—	5.7	14.0
5–14	—	—	—	n.a.	—	—	—	—	—	—	29.8	31.8
15–24	—	—	—	n.a.	—	—	—	—	—	—	91.7	98.5
25–34	21.5	—	—	n.a.	—	—	—	—	—	—	116.2	141.1
35–44	50.2	5.1	—	n.a.	—	—	—	—	—	—	126.1	188.6
45–54	125.6	7.4	6.5	n.a.	—	6.5	11.2	—	—	—	111.6	276.6
55–64	173.7	27.4	34.2	n.a.	8.1	9.7	—	—	—	—	119.2	381.8
65–74	250.5	33.9	102.7	n.a.	18.1	17.2	12.0	—	—	—	127.7	566.2
75+	251.2	19.0	135.9	n.a.	19.1	10.2	10.6	14.5	—	—	83.8	547.3
<b>Total</b>	<b>880.4</b>	<b>93.4</b>	<b>280.9</b>	<b>n.a.</b>	<b>48.6</b>	<b>51.4</b>	<b>40.1</b>	<b>24.6</b>	<b>—</b>	<b>11.3</b>	<b>811.8</b>	<b>2,245.9</b>
Female												
0–4	—	—	n.a.	—	—	—	—	—	—	—	12.9	19.9
5–14	—	—	n.a.	—	—	—	—	—	—	—	42.8	44.4
15–24	5.5	—	n.a.	9.7	—	—	—	—	—	—	397.2	412.5
25–34	21.6	—	n.a.	22.8	—	—	—	—	—	—	952.4	1,005.6
35–44	51.3	—	n.a.	63.7	—	—	—	—	—	—	973.8	1,093.1
45–54	97.1	16.0	n.a.	89.0	6.5	—	—	—	—	—	764.0	979.7
55–64	152.6	20.3	n.a.	64.9	13.1	—	20.5	—	—	—	451.4	727.8
65–74	133.9	14.5	n.a.	47.0	9.8	8.4	8.7	—	—	—	239.4	465.0
75+	242.5	36.2	n.a.	41.7	9.9	20.7	8.4	—	—	—	160.2	523.2
<b>Total</b>	<b>707.5</b>	<b>90.6</b>	<b>n.a.</b>	<b>341.9</b>	<b>40.7</b>	<b>34.3</b>	<b>46.2</b>	<b>5.9</b>	<b>—</b>	<b>9.5</b>	<b>3,994.0</b>	<b>5,271.1</b>

— represents zero or less than 5,000 occasions of service.

Table A3a: Unreferred attendance expenditure for the ten most expensive cancers by age and sex, 2000-01 (\$ million)

Expenditure	Non-melanoma skin cancer	Colorectal cancer	Prostate cancer	Breast cancer	Lung cancer	Leukaemia	Non-Hodgkin's Lymphoma	Bladder cancer	Mouth and oropharynx cancer	Brain cancer	Other cancers	All cancers
Male												
0-4	—	—	—	n.a.	—	—	—	—	—	—	—	0.1
5-14	—	—	—	n.a.	—	—	—	—	—	—	—	—
15-24	—	—	—	n.a.	—	—	—	—	—	—	0.1	0.2
25-34	0.2	—	—	n.a.	—	—	—	—	—	—	0.2	0.5
35-44	0.6	0.1	—	n.a.	—	—	—	—	—	0.1	0.3	1.2
45-54	1.3	0.1	0.2	n.a.	0.1	0.2	0.2	—	—	—	0.7	2.9
55-64	1.8	0.5	0.6	n.a.	0.3	0.1	—	0.1	—	0.1	0.9	4.4
65-74	2.4	0.5	1.6	n.a.	0.5	0.2	0.1	0.1	—	—	1.1	6.4
75+	2.4	0.3	2.5	n.a.	0.4	0.1	0.2	0.3	—	—	0.9	7.2
<b>Total</b>	<b>8.9</b>	<b>1.6</b>	<b>4.9</b>	<b>n.a.</b>	<b>1.2</b>	<b>0.7</b>	<b>0.6</b>	<b>0.4</b>	<b>—</b>	<b>0.2</b>	<b>4.2</b>	<b>22.8</b>
Female												
0-4	—	—	n.a.	—	—	—	—	—	—	—	—	0.1
5-14	—	—	n.a.	—	—	—	—	—	—	—	—	—
15-24	0.1	—	n.a.	0.3	—	—	—	—	—	—	0.1	0.4
25-34	0.2	—	n.a.	0.7	—	—	0.1	—	—	—	0.4	1.4
35-44	0.7	—	n.a.	1.7	—	—	—	—	—	—	0.4	2.9
45-54	1.2	0.2	n.a.	1.9	0.1	—	0.1	—	—	0.1	0.9	4.3
55-64	1.2	0.2	n.a.	1.3	0.3	0.1	0.3	—	—	—	0.9	4.3
65-74	1.6	0.3	n.a.	0.9	0.3	0.1	0.1	0.1	—	—	0.9	4.3
75+	2.3	0.5	n.a.	0.8	0.3	0.2	0.2	0.1	—	—	1.1	5.6
<b>Total</b>	<b>7.3</b>	<b>1.3</b>	<b>n.a.</b>	<b>7.6</b>	<b>1.1</b>	<b>0.5</b>	<b>0.7</b>	<b>0.2</b>	<b>—</b>	<b>0.2</b>	<b>4.6</b>	<b>23.3</b>

— represents zero or less than \$50,000 of expenditure.



Table A3b: Unreferred patient services for the ten most expensive cancers by age and sex, 2000–01 ('000)

Services	Non-melanoma skin cancer	Colorectal cancer	Prostate cancer	Breast cancer	Lung cancer	Leukaemia	Hodgkin's Lymphoma	Bladder cancer	Mouth and oropharynx cancer	Brain cancer	Other cancers	All cancers
Male												
0–4	—	—	—	n.a.	—	—	—	—	—	—	—	6.1
5–14	—	—	—	n.a.	—	—	—	—	—	—	20.3	22.0
15–24	—	—	—	n.a.	—	—	—	—	—	—	41.1	43.6
25–34	6.6	—	—	n.a.	—	—	—	—	—	—	48.9	57.9
35–44	18.6	—	—	n.a.	—	—	—	—	—	—	54.8	79.7
45–54	43.4	—	—	n.a.	—	—	—	—	—	—	62.8	127.9
55–64	59.3	11.7	15.6	n.a.	6.6	—	—	—	—	—	57.8	158.2
65–74	83.8	12.5	43.6	n.a.	11.6	—	—	—	—	—	61.1	222.4
75+	84.5	6.9	67.6	n.a.	10.4	—	5.8	6.3	—	—	42.1	227.9
<b>Total</b>	<b>299.3</b>	<b>38.4</b>	<b>132.3</b>	<b>n.a.</b>	<b>30.8</b>	<b>17.7</b>	<b>16.3</b>	<b>10.9</b>	<b>—</b>	<b>5.3</b>	<b>393.3</b>	<b>945.7</b>
Female												
0–4	—	—	n.a.	—	—	—	—	—	—	—	6.8	8.3
5–14	—	—	n.a.	—	—	—	—	—	—	—	25.1	26.6
15–24	—	—	n.a.	6.5	—	—	—	—	—	—	167.1	175.2
25–34	7.1	—	n.a.	16.4	—	—	—	—	—	—	330.0	357.7
35–44	21.3	—	n.a.	36.7	—	—	—	—	—	—	363.1	422.7
45–54	34.3	—	n.a.	43.0	—	—	—	—	—	—	269.7	357.6
55–64	43.4	5.9	n.a.	33.2	6.1	—	7.0	—	—	—	169.9	269.0
65–74	51.9	6.5	n.a.	23.4	6.9	—	—	—	—	—	101.3	198.8
75+	75.6	12.4	n.a.	21.5	7.9	6.4	5.3	—	—	—	56.3	188.0
<b>Total</b>	<b>235.2</b>	<b>30.9</b>	<b>n.a.</b>	<b>181.8</b>	<b>24.6</b>	<b>14.3</b>	<b>19.9</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>1,489.2</b>	<b>2,003.9</b>

— represents zero or less than 5,000 occasions of service.

Table A4a: Other out-of-hospital medical services expenditure for the ten most expensive cancers by age and sex, 2000–01 (\$ million)

Expenditure	Non-melanoma skin cancer	Colorectal cancer	Prostate cancer	Breast cancer	Lung cancer	Leukaemia	Hodgkin's Lymphoma	Non-Hodgkin's Lymphoma	Bladder cancer	Mouth and oropharynx cancer	Brain cancer	Other cancers	All cancers
Male													
0–4	0.2	—	—	n.a.	—	0.1	—	—	—	—	—	—	0.3
5–14	—	—	—	n.a.	—	—	—	—	—	—	—	—	—
15–24	—	—	—	n.a.	—	—	0.1	—	—	—	0.1	0.3	0.5
25–34	1.0	—	—	n.a.	—	—	—	—	—	—	—	0.5	1.5
35–44	1.8	0.2	—	n.a.	—	—	—	—	—	—	—	0.6	2.7
45–54	5.4	0.2	—	n.a.	0.2	0.1	0.2	—	—	0.1	—	0.7	6.9
55–64	6.7	1.2	0.7	n.a.	0.1	0.3	—	—	0.1	—	—	1.5	10.6
65–74	10.5	1.2	1.7	n.a.	0.5	0.3	0.2	0.2	0.1	—	—	1.7	16.3
75+	10.8	0.7	2.3	n.a.	0.7	0.2	0.2	0.2	0.2	—	0.2	1.2	16.4
<b>Total</b>	<b>36.5</b>	<b>3.5</b>	<b>4.8</b>	<b>n.a.</b>	<b>1.5</b>	<b>0.9</b>	<b>0.7</b>	<b>0.7</b>	<b>0.4</b>	<b>0.1</b>	<b>0.3</b>	<b>6.5</b>	<b>55.3</b>
Female													
0–4	0.2	—	n.a.	0.1	—	—	—	—	—	—	—	—	0.3
5–14	—	—	n.a.	—	—	—	—	—	—	—	—	—	—
15–24	0.3	—	n.a.	0.2	—	—	—	—	—	—	—	0.2	0.6
25–34	1.0	0.1	n.a.	0.4	—	—	0.4	—	—	—	—	0.9	2.9
35–44	2.3	—	n.a.	2.8	—	—	—	—	—	—	0.1	0.7	6.0
45–54	4.5	0.7	n.a.	3.6	0.2	—	0.1	—	—	—	0.1	1.3	10.6
55–64	7.2	0.8	n.a.	2.8	0.4	—	0.7	—	—	—	—	1.4	13.5
65–74	5.1	0.5	n.a.	2.0	0.3	0.1	0.2	0.1	0.1	—	—	1.8	10.2
75+	11.1	1.4	n.a.	1.8	0.3	0.4	0.1	—	—	—	—	2.3	17.3
<b>Total</b>	<b>31.6</b>	<b>3.7</b>	<b>n.a.</b>	<b>13.8</b>	<b>1.3</b>	<b>0.5</b>	<b>1.5</b>	<b>0.1</b>	<b>0.1</b>	<b>—</b>	<b>0.3</b>	<b>8.5</b>	<b>61.3</b>

— represents zero or less than \$50,000 of expenditure.

Table A4b: Other out-of-hospital medical services for the ten most expensive cancers by age and sex, 2000–01 ('000)

Services	Non-melanoma skin cancer	Colorectal cancer	Prostate cancer	Breast cancer	Lung cancer	Leukaemia	Hodgkin's Lymphoma	Bladder cancer	Mouth and oropharynx cancer	Brain cancer	Other cancers	All cancers
Male												
0–4	—	—	—	n.a.	—	—	—	—	—	—	—	7.8
5–14	—	—	—	n.a.	—	—	—	—	—	—	9.5	9.8
15–24	—	—	—	n.a.	—	—	—	—	—	—	50.6	54.9
25–34	14.9	—	—	n.a.	—	—	—	—	—	—	67.3	83.2
35–44	31.6	—	—	n.a.	—	—	—	—	—	—	71.3	108.9
45–54	82.2	—	—	n.a.	—	—	7.5	—	—	—	48.8	148.7
55–64	114.4	15.7	18.5	n.a.	—	7.3	—	—	—	—	61.4	223.5
65–74	166.7	21.4	59.1	n.a.	6.5	12.4	8.4	—	—	—	66.7	343.9
75+	166.7	12.0	68.3	n.a.	8.7	6.6	—	8.2	—	—	41.7	319.4
<b>Total</b>	<b>581.1</b>	<b>55.0</b>	<b>148.6</b>	<b>n.a.</b>	<b>17.8</b>	<b>33.6</b>	<b>23.8</b>	<b>13.8</b>	<b>—</b>	<b>5.9</b>	<b>418.5</b>	<b>1,300.2</b>
Female												
0–4	—	—	n.a.	—	—	—	—	—	—	—	6.0	11.6
5–14	—	—	n.a.	—	—	—	—	—	—	—	17.7	17.9
15–24	—	—	n.a.	—	—	—	—	—	—	—	230.1	237.3
25–34	14.6	—	n.a.	6.4	—	—	—	—	—	—	622.4	647.8
35–44	30.1	—	n.a.	27.0	—	—	—	—	—	—	610.7	670.4
45–54	62.9	11.2	n.a.	46.0	—	—	—	—	—	—	494.3	622.0
55–64	109.3	14.3	n.a.	31.6	6.9	—	13.5	—	—	—	281.5	458.8
65–74	82.0	8.0	n.a.	23.6	—	—	5.6	—	—	—	138.1	266.2
75+	166.9	23.8	n.a.	20.1	—	14.3	—	—	—	—	103.9	335.2
<b>Total</b>	<b>472.2</b>	<b>59.7</b>	<b>n.a.</b>	<b>160.1</b>	<b>16.1</b>	<b>19.9</b>	<b>26.4</b>	<b>—</b>	<b>—</b>	<b>5.1</b>	<b>2,504.8</b>	<b>3,267.3</b>

— represents zero or less than 5,000 occasions of service.

Table A5a: Pharmaceutical prescription expenditure for the ten most expensive cancers by age and sex, 2000–01 (\$ million)

Expenditure	Non-melanoma skin cancer	Colorectal cancer	Prostate cancer	Breast cancer	Lung cancer	Leukaemia	Non-Hodgkin's Lymphoma	Bladder cancer	Mouth and oropharynx cancer	Brain cancer	Other cancers	All cancers
Male												
0–4	—	—	—	n.a.	—	—	—	—	—	—	1.2	1.2
5–14	—	—	—	n.a.	—	—	—	—	—	—	0.1	0.1
15–24	—	—	—	n.a.	—	—	—	—	—	0.1	0.5	0.6
25–34	—	0.1	1.2	n.a.	—	—	—	—	—	0.1	1.0	2.4
35–44	—	—	0.5	n.a.	0.1	—	—	—	—	0.3	1.1	2.1
45–54	0.1	0.2	2.3	n.a.	0.3	0.1	—	—	—	0.1	1.7	4.8
55–64	0.1	0.3	6.7	n.a.	1.2	—	0.1	0.2	—	—	3.0	11.7
65–74	0.2	0.6	31.3	n.a.	1.6	—	0.1	0.3	—	—	3.0	37.1
75+	0.2	0.5	54.9	n.a.	1.3	0.1	0.2	0.6	—	—	3.1	60.9
<b>Total</b>	<b>0.7</b>	<b>1.7</b>	<b>96.9</b>	<b>n.a.</b>	<b>4.5</b>	<b>0.2</b>	<b>0.5</b>	<b>1.1</b>	<b>—</b>	<b>0.6</b>	<b>14.8</b>	<b>120.9</b>
Female												
0–4	—	—	n.a.	0.1	—	—	0.2	—	—	—	0.1	0.4
5–14	—	—	n.a.	—	—	—	—	—	—	—	0.1	0.1
15–24	—	—	n.a.	—	—	—	—	—	—	—	0.4	0.5
25–34	—	0.1	n.a.	0.1	0.1	—	—	—	—	—	0.5	0.9
35–44	—	0.1	n.a.	2.0	0.1	—	—	—	—	0.1	0.8	3.1
45–54	0.1	0.1	n.a.	5.7	0.5	—	0.1	—	—	0.1	1.4	8.0
55–64	—	0.2	n.a.	6.1	0.6	—	0.2	—	—	0.2	1.7	9.0
65–74	0.1	0.6	n.a.	5.0	1.0	—	0.1	0.2	—	0.1	2.1	9.2
75+	0.1	0.7	n.a.	7.4	0.8	0.1	0.2	0.2	—	—	2.9	12.4
<b>Total</b>	<b>0.4</b>	<b>1.7</b>	<b>n.a.</b>	<b>26.5</b>	<b>3.1</b>	<b>0.2</b>	<b>0.7</b>	<b>0.4</b>	<b>—</b>	<b>0.5</b>	<b>10.0</b>	<b>43.6</b>

— represents zero or less than \$50,000 of expenditure.

Table A5b: Pharmaceutical prescriptions for the ten most expensive cancers by age and sex, 2000-01 ('000)

Services	Non-melanoma skin cancer	Colorectal cancer	Prostate cancer	Breast cancer	Lung cancer	Leukaemia	Hodgkin's Lymphoma	Bladder cancer	Mouth and oropharynx cancer	Brain cancer	Other cancers	All cancers
Male												
0-4	—	—	—	n.a.	—	—	—	—	—	—	—	—
5-14	—	—	—	n.a.	—	—	—	—	—	—	—	—
15-24	—	—	—	n.a.	—	—	—	—	—	—	11.2	14.4
25-34	—	—	—	n.a.	—	—	—	—	—	—	15.1	26.7
35-44	—	—	—	n.a.	—	—	—	—	—	8.6	12.5	27.5
45-54	—	6.0	6.8	n.a.	—	—	—	—	—	—	29.5	56.6
55-64	5.4	9.8	16.8	n.a.	18.4	—	—	—	—	—	51.9	110.8
65-74	9.9	17.8	75.8	n.a.	20.5	—	—	—	—	—	55.3	187.3
75+	12.9	15.1	136.2	n.a.	21.9	—	9.6	9.1	—	—	65.5	273.5
<b>Total</b>	<b>34.9</b>	<b>51.3</b>	<b>241.2</b>	<b>n.a.</b>	<b>64.1</b>	<b>8.8</b>	<b>20.6</b>	<b>15.6</b>	<b>—</b>	<b>21.0</b>	<b>248.7</b>	<b>706.2</b>
Female												
0-4	—	—	n.a.	—	—	—	8.4	—	—	—	—	12.8
5-14	—	—	n.a.	—	—	—	—	—	—	—	—	—
15-24	—	—	n.a.	—	—	—	—	—	—	—	12.6	13.6
25-34	—	—	n.a.	—	—	—	—	—	—	—	15.0	23.6
35-44	—	—	n.a.	19.8	—	—	—	—	—	—	18.7	44.6
45-54	—	—	n.a.	56.0	9.4	—	—	—	—	—	29.1	108.4
55-64	—	—	n.a.	59.9	7.5	—	8.0	—	—	5.2	39.4	127.1
65-74	5.0	17.6	n.a.	45.8	13.7	—	—	—	—	—	59.0	153.5
75+	6.2	24.5	n.a.	73.6	16.0	—	7.2	—	—	—	75.8	209.3
<b>Total</b>	<b>19.1</b>	<b>53.7</b>	<b>n.a.</b>	<b>258.7</b>	<b>49.2</b>	<b>6.4</b>	<b>30.4</b>	<b>7.7</b>	<b>—</b>	<b>16.4</b>	<b>253.3</b>	<b>694.9</b>

— represents zero or less than 5,000 occasions of service.

## **Appendix B: Health system expenditures and services for selected cancers by age, sex and health sector, 2000–01**

Detailed tables for admitted patient, (where applicable) out-of-hospital medical and prescribed pharmaceuticals for the following cancer sites are at [www.aihw.gov.au](http://www.aihw.gov.au)

Mouth and oropharynx  
Oesophagus  
Stomach  
Colorectal  
Liver  
Pancreatic  
Lung  
Melanoma  
Non-melanoma skin cancer  
Breast cancer  
Cervical cancer  
Uterine cancer  
Ovarian cancer  
Prostate  
Bladder  
Kidney  
Brain  
Non-Hodgkin's lymphoma  
Hodgkin's disease  
Multiple myeloma  
Leukemia  
Larynx  
Gall bladder  
Thyroid  
Testicular  
Bone and connective tissue  
Other  
Prevention

Also included are data on prevention expenditure by age, sex and cancer site.

## Appendix C: Technical notes and abbreviations

Table C1: Burden of disease categories, ICPC 2+ codes and ICD 10 AM principle diagnosis codes

BoD codes	BoD code names	ICPC 2+	ICD 10 AM – PDIAG
FP	Primary malignant neoplasms — prevention	A21, A26	
F01T	Mouth and oropharynx cancers	D77005, D77011, D77014	C00 – C14~
F02T	Oesophagus cancer	D77002, D77008	C15 – C15~
F03T	Stomach cancer	D74	C16 – C16~
F04T	Colorectal cancer	D75	C18 - C21~
F04P	Colorectal cancer — prevention	D26	
F05T	Liver cancer — prevention	D77001, D77012	C22 - C22~ - C22 - C22~
F06T	Gall bladder cancer	D77013	C23 - C24~
F07T	Pancreas cancer	D76	C25 - C25~
F08T	Lung cancer	R84	C33 - C34~
F08P	Lung cancer — prevention	R26	Z122 - Z122~
F09T	Bone and connective tissue cancers	L71	C40 - C41~ - C49 - C49~
F09P	Bone and connective tissue cancers — prevention	L26	
F10T	Melanoma	S77003	C43 - C43~
F10P	Melanoma — prevention	S26	
F11T	Non-melanoma skin cancers	S77001, S77004, S77005, S77006, S77007, S77008, S77010, S77011	C44 - C44~
F12T	Breast cancer	X76001, X76002, Y78001, Y78004	C50 - C50~
F12P	Breast cancer — prevention	X26, X27001, X27003, X31001, X31005, X45004	
F13T	Cervix cancer	X75001, X75002, X75003, X75009, X75010, X75011, X75012, X75016	C53 - C53~
F13P	Cervix cancer — prevention	X25	Z124 - Z124~
F14T	Uterus cancer	X77001, X77003	C54 - C55~
F15T	Ovary and other uterine adnexa	X77002, X77006	C56 - C56~ - C570 - C574~
F16T	Prostate cancer	Y77	C61 - C61~
F17T	Testicular cancer	Y78002, Y78003, Y78007	C62 - C62~
F17P	Testicular cancer — prevention	Y26	
F18T	Bladder cancer	U76	C67 - C67~
F19T	Kidney cancer	U75	C64 - C66~ - C68 - C68~
F20T	Brain cancer	N74001, N74002, N74006, N74007, N74008, N74012	C71 - C71~
F21T	Thyroid cancer	T71	C73 - C73~
F22P	Lymphoma	B26002	

(continued)

**Table C1 (continued): Burden of disease categories, ICPC 2+ codes and ICD 10 AM principle diagnosis codes**

<b>BoD codes</b>	<b>BoD code names</b>	<b>ICPC 2+</b>	<b>ICD 10 AM - PDIAG</b>
F22aT	Non-Hodgkin's lymphoma	B72002, B72006, B74002	C82 - C85~ - C96 - C96~
F22bT	Hodgkin's disease	B72001, B72003, B72004	C81 - C81~
F23T	Multiple myeloma	B74003, B74015	C88 - C88~ - C90 - C90~
F24T	Leukaemia	B73	C91 - C95~
F24P	Leukaemia — prevention	B26001, B26003	
F25T	Larynx cancer	R85005, R85009	C32 - C32~
		A79, B74001, B74004, B74005, B74006, B74007, B74009, B74010, B74011, B74012, B74013, B74014, D77003, D77004, D77007, D77009, D77010, D77015, D77016, F74002, F74003, H75002, H75003, K72002, K72003, N74003, N74004, N74005, N74009, N74010, N74011, R85001, R8	C17 - C17~ - C26 - C31~ - C37 - C39~ - C45 - C48~ - C51 - C52~ - C575 - C58~ - C60 - C60~ - C63 - C63~ - C69 - C70~ - C72 - C72~ - C74 - C76~ - C80 - C86 - C87~ - C89 - C89~ - C97 - C97~
F26T	Other malignant neoplasms		
F26P	Other malignant neoplasms — prevention	N26, T26, U26	Z121 - Z121~

**Table C2: Abbreviations used in this publication**

<b>Symbol</b>	<b>Meaning</b>
GDP	Gross Domestic Product
—(em dash)	represents expenditure less than \$50,000 or less than 5,000 occasions of service
0	Zero
n.a.	Not applicable
\$m	\$ million