Chapter 1
Overview

1.1 Profile of cancer

Cancer is a diverse group of diseases characterised by the proliferation and spread of abnormal cells, which cannot be regulated by normal cellular mechanisms and grow in an uncontrolled manner. These cells can invade and destroy surrounding tissue and spread (metastasise) to distant parts of the body. Cancer can develop from most types of cells and each cancer has its own pattern of behaviour and metastasis. While some cancers share common causes or risk factors, it is believed that most cancers have a unique set of factors responsible for their initiation. The incidence of cancer continues to increase and, while the overall death rate has begun to fall, the death rate from many of the most common cancers is either stable or increasing.

The impact of cancer on the Australian community is significant. Figure 1.1 illustrates the incidence and mortality of leading cancers in Australia. On average, one in three men and one in four women are likely to develop cancer before the age of 75. The latest national incidence information indicates that there were 75,498 new cases of cancer diagnosed in Australia in 1994. This excludes non-melanocytic skin cancers (at least another 250,000–300,000 new cases). In 1996, there were 34,302 cancer deaths.
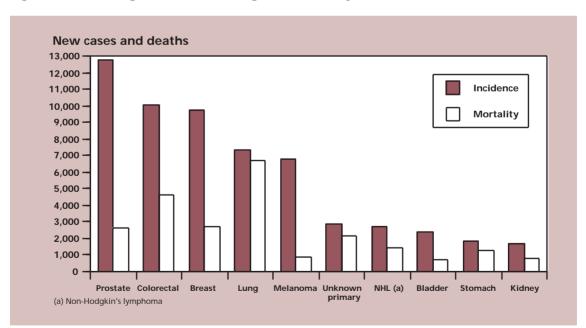
Figure 1.1   Leading cancers (excluding non-melanocytic skin cancer), Australia, 1994

Mortality rates for all cancers in both males and females were stable for the period 1921–35 (at 180 for males and 150 for females per 100,000), after which female mortality rates declined slowly to the current level of 139 per 100,000. All cancer mortality rates for males climbed to a high in 1985 (248 per 100,000), after which they have shown a slight decline to 231 per 100,000 (1996). These changes reflect variations in patterns of risk factors as well as improvements in treatment and early detection techniques.

Projections of cancer incidence rates suggest that Australia will have approximately 76,000 new cancer cases per annum diagnosed by 1999. The total annual number of cases of cancer has been steadily increasing since national incidence data were first collected in 1982. Many of these new cases are due to population growth and, importantly, to the aging of the population. Better diagnosis has also contributed to the recorded increased incidence. The risk of cancer increases with age, with 30 per cent of cases diagnosed in those aged 45–64 and 59 per cent of cases diagnosed in those over the age of 65.

In general, cancer develops over many years (up to 20 years). It is estimated that 30 per cent of cancers are a direct result of smoking, 30 per cent are due to dietary influences, 2 per cent are due to radiation exposure, 5–15 per cent to infectious agents and the remainder to other causes (Trichopoulos et al 1996). Some of the causes can be reduced through lifestyle changes, while others are inherited and are difficult to modify. The risk of death from certain cancers may be reduced through intensive monitoring of individuals, reducing additional risk factors and treating newly diagnosed cancers early in their development.

The keys to cancer control are prevention, screening and early detection and effective treatment. These have differing degrees of effectiveness depending on the cancer type.

Primary prevention

Environmental or lifestyle factors play an important role in the initation and development of cancer. Much of this exposure is potentially preventable. At least a third of cases can be prevented, if existing knowledge is used to encourage behavioural change (Parkin et al 1994; Potter et al 1997).

For cancers, where there are known modifiable risk factors, primary prevention is the main focus of cancer control. The risk factors most amenable to primary prevention measures are smoking, exposure to sunlight and, to some degree, diet. Proven preventive activities include measures such as smoking and tobacco control to reduce lung cancer, and 'sun smart' activities to reduce skin cancer. Diet is thought to be associated with the onset of certain cancers, including colorectal cancer, although the relationship is not fully understood. Little is known at this stage about risk factors for cancers of the breast and prostate, so there are limited opportunities for primary prevention at present.

Screening and early detection

Screening and early detection are based on the understanding that the earlier in their development most cancers are treated, the greater the likelihood of an acceptable outcome. Population-based screening can be used for breast cancer, where tumours can be detected early, and cancer of the cervix, where precancerous

changes can be detected. For some other cancers (eg melanoma), early detection through opportunistic screening by general practitioners or targeting high-risk groups may be more effective.

Treatment of cancer

Cancer treatment aims to cure the disease, prolong life and improve the quality of life. The main treatment modalities for cancer are surgery, radiotherapy, chemotherapy, hormone therapy or a combination of these. Rehabilitation and supportive care play an important role in maximising the effectiveness of these treatments.

It is increasingly recognised that the major modalities of cancer therapy can interact to improve cancer control (Selby et al 1996). Multimodal therapy is now used for the management of some primary tumours and to improve survival following apparently successful surgical excision but has a variable role in the management of advanced disease. A good example is oesophageal cancer. For this cancer, neo-adjuvant or pre-operative chemotherapy and radiotherapy shrink tumours and allow surgery to be used more effectively (Law & Wong 1997). The challenge for cancer control is to develop systems to allow effective and efficient multidisciplinary management.

As cure rates for cancer rise, the rehabilitation of cancer survivors will assume increasing importance. Significant issues include physical adaptation to the side effects of cancer treatment, psychological adjustment and social relocation. Costs and quality of prostheses, travel and accommodation for rural residents, cultural issues for people from non-English speaking and Indigenous backgrounds and access issues for reconstructive surgery and supportive services are central to effective rehabilitation.

Palliative care is the care of people whose disease is not responsive to curative treatment. Care is delivered by coordinated medical, nursing and allied health services which are provided, where possible, in the environment of the person's choice. Control of pain, of other symptoms and provision of psychological, social, emotional and spiritual support is paramount. Approximately 80–90% of people who use palliative care services have a diagnosis of cancer (Kasap and Associates, 1996).

Palliative care aims for the achievement of the best possible quality of life for patients and their families and friends. Many aspects of palliative care are also applicable earlier in the course of the illness in conjucntion with treatment aimed at cure.

Costs of cancer

In 1993–94, the estimated total direct health system costs of cancer in Australia were $1,361 million. These include costs for hospital inpatient and outpatient services, nursing homes, medical services, pharmaceuticals, allied health services, research, other institutional and administration but do not include the cost of ambulance services, community health services, or medical aids and appliances. Indirect costs such as those associated with lost productivity due to sickness and premature death, and intangible costs such as those due to pain, suffering, anxiety and bereavement, are not included.

Cancer costs accounted for 4 per cent of the total direct costs of all diseases ($31,397 million) in 1993–94. These rank eighth in terms of direct costs, behind diseases of the digestive system (12 per cent), cardiovascular disease (12 per cent), musculoskeletal conditions (10 per cent), mental disorders (8 per cent), injury and poisoning (8 per cent), respiratory disease (8 per cent), and diseases of the nervous system and sense organs (7 per cent).

National Health Priority Areas cancers

The most common cancer in Australia in both males and females is the non-melanocytic skin cancer. There are no national data but surveys have shown that the rate of treated non-melanocytic skin cancer is approximately six times that of the next most common cancer (Marks et al 1993). The next most common cancers in males are cancers of the prostate, colon and rectum, lung, melanoma of the skin and bladder. Common cancers in females are those of the breast, colon and rectum, melanoma of the skin and lung. Figures 1.2 and 1.3 illustrate the most common cancers in Australia.

Excluding non-melanocytic skin cancer, NHPA cancers account for 63 per cent of all cancers and almost 50 per cent of the total direct costs of cancer in 1993–94. Non-melanocytic skin cancer was the biggest contributor to cancer costs in 1993–94 with a total direct cost of $190 million. The direct costs of colorectal cancer were $152 million, of lung cancer were $103 million, of prostate cancer were $95 million, of female breast cancer were $93 million, of melanoma were $17 million, and of cancer of the cervix were $10 million.

Colorectal cancer has the highest costs per new case ($15,182). Lung cancer ranks second with a cost of $14,075 per new case, followed by female breast cancer ($9,632), cancer of the cervix ($9,052), prostate cancer ($7,459), and melanoma ($2,557).

Due to their significant impact on the Australian community, lung cancer, skin cancer (both melanoma and non-melanocytic skin cancer), cancer of the cervix, breast cancer, colorectal cancer and prostate cancer are the focus of the NHPA on cancer control. There are good prospects for primary, secondary and tertiary preventive intervention. However, it should be noted that these are not the only cancer types which offer good prospects for reduction in morbidity and mortality.

The *First Report on National Health Priority Areas 1996* (AIHW & DHFS 1997) provide baseline data and underlying trends of the mortality and incidence of each NHPA cancer. This disease-specific focus is supplemented by the identification of three process indicators. The first two relate to cervical and breast cancer screening and the last to the establishment of hospital-based cancer registries. Table 1.1 lists the priority indicators which are reported in Chapter 2.

Figure 1.2 Leading cancers (excluding non-melanocytic skin cancer), males, Australia, 1994
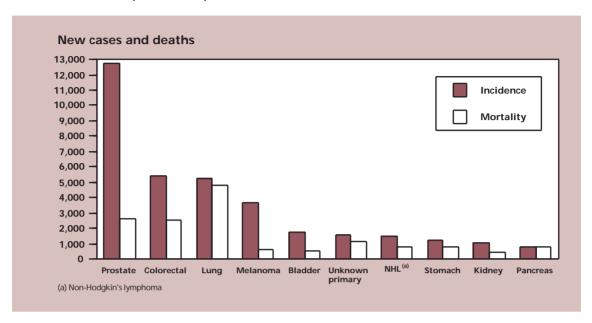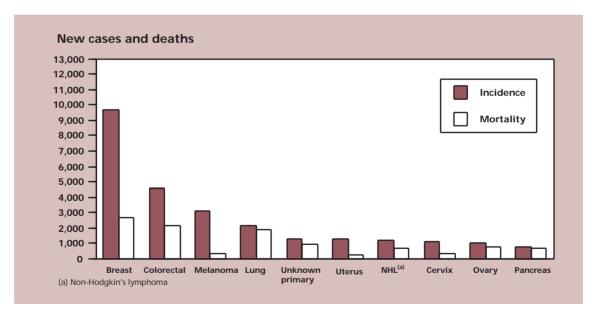
New cases and deaths

(a) Non-Hodgkin's lymphoma

Figure 1.3 Leading cancers (excluding non-melanocytic skin cancer), females, Australia, 1994

New cases and deaths

(a) Non-Hodgkin's lymphoma

Overview

Table 1.1   Priority cancer indicators*

Reported in First Report on National Health Priority Areas 1996	Updated for current report
Incidence of lung cancer (1990 data)	1994
Death rate for lung cancer (1994 data)	1996
Incidence of melanoma of the skin (1990 data)	1994
Death rate for melanoma of the skin (1994 data)	1996
Incidence of (treated) non-melanocytic skin cancer (1990 data)	No further data available
Death rate for non-melanocytic skin cancer (1994 data)	1996
Incidence of cancer of the cervix (females aged 20-74) (1990 data)	1994
Death rate for cancer of the cervix (females aged 20-74) (1994 data)	1996
Incidence of breast cancer (females aged 50-74) (1990 data)	1994 (semi-national to 1996)
Death rate for breast cancer (females aged 50-74) (1994 data)	1996
Incidence of colorectal cancer (1990 data)	1994
Death rate for colorectal cancer (1994 data)	1996
Incidence of prostate cancer (1990 data)	1994 (semi-national to 1996)
Death rate for prostate cancer (1994 data)	1996
Proportion of females aged 50-69 screened for breast cancer (1994/95 data)	No further data available
Proportion of females aged 20-69 screened within specified intervals for cancer of the cervix (1992-94 data)	No further data available

*   Priority indicators for which data were not available to report against are listed in Appendix 2.

The breast and cervical cancer screening indicators (Table 1.1) examine the proportion of women attending for screening within a defined target population. These are reported for 1994–95 for the breast cancer program and for 1992–94 for the cervical screening program. More recent data related to these screening programs has not been collected at a national level since the publication of the first NHPA report. To address this situation, the AIHW has been contracted by the Department of Health and Family Services to work with the State and Territory screening programs to collect these data and report on them in a standardised way, together with a range of other screening indicators. This process is currently underway and is expected to deliver its first results in 1998.