

1 Introduction

Cancer is a notifiable disease in all States and Territories and is the only major disease category for which an almost complete coverage of incidence data is available. Cancer is also a major cause of death in Australia, with the number of deaths due to many of the most common cancers continuing to increase as the population grows and ages. If this situation is to be changed, good information on the occurrence of different types of cancer, on characteristics of patients, and on survival and mortality is essential. Such information facilitates the monitoring of trends and the impact of interventions, and provides a sound basis for epidemiological studies and the initiation of prevention and treatment programs.

What is cancer?

Cancer describes a range of diseases in which abnormal cells proliferate and spread out of control. Other terms for cancer are tumours and neoplasms, although these terms can also be used for non-cancerous growths.

Normally, cells grow and multiply in an orderly way and have a specific function in the body. Occasionally, however, they multiply in an uncontrolled way after being affected by a carcinogen or developing from a random mutation, and form a lump which is called a tumour or neoplasm. Tumours can be benign (not a cancer) or malignant (a cancer). Benign tumours do not invade other tissues or spread to other parts of the body, although they can expand to interfere with healthy structures.

The main features of a malignant tumour (cancer) are its ability to grow in an uncontrolled way and to invade and spread to other parts of the body (metastasise). Invasion occurs when cancer cells push between and break through other surrounding cells and structures. Spread to other parts of the body occurs when some cancer cells are carried by the bloodstream or the lymphatic system and lodge some distance away. They can then start a new tumour (a secondary cancer) and begin invading again. They can cause serious damage by destruction, crushing or blocking.

Cancer can develop from most types of cells in different parts of the body, and each cancer has its own pattern of growth and spread. Some cancers remain in the body for years without showing any symptoms. Others can grow, invade and spread rapidly and are fatal less than a year after detection. Apart from the cancer's natural behaviour, its effects can also depend on how much room it has before it damages nearby structures, and whether it starts in a vital organ or is close to other vital organs.

Although a number of cancers share risk factors, most cancers have a unique set of risk factors that are responsible for their onset. It is estimated that 30% of cancers occur as a direct result of smoking, 30% are due to dietary influences, 5–15% to infectious agents, 2% to radiation exposure, and the remainder to other causes (e.g. inherited genetic faults) (Trichopoulos et al. 1996). It should be noted that for some cancers the causes are unknown. While some of the causes are modifiable through lifestyle changes, some others are inherited and cannot be avoided. However, the risk of death due to particular cancers may be reduced through intense monitoring of individuals, reducing other risk factors, and detecting and treating cancers early in their development.

Many cancers can be serious and even fatal. However, medical treatment is often successful if the cancer is detected early. The aim is to destroy the cancer cells and stop them from returning. This can be done by surgery to cut out the growth, or by other methods such as cancer-destroying drugs (chemotherapy), or ray treatment (radiation therapy). The growth of some cancers can also be controlled through hormone therapy.

The treatment approach often combines a number of these methods and uses them in stages. The first line of treatment aims to remove as many cancer cells as possible; the second line, which may go on for a long time, aims to ensure the cancer does not recur.

Each year, approximately 345,000 new cancer cases are diagnosed in Australia. A large proportion of these, approximately 270,000, are non-melanocytic skin cancers which are less life-threatening than most other cancers. Cancer currently accounts for 29% of male deaths and 25% of female deaths, and has been the leading cause of death since 1991, when it became more common than ischaemic heart disease (ABS 1997a).

Cancer surveillance in Australia

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

The only effective method of obtaining cancer incidence data is through universal registration of cancer diagnoses. In Australia, cancer registration is required under State and Territory legislation. The cancer registrations are collated by cancer registries that are supported by a mix of State and Territory government and non-government charity organisations. Some State and Territory cancer registries have been operating for more than 20 years and obtain their information from hospital, pathology, radiotherapy and physician records (Appendix D). It was not until 1982, however, that cancer registration was universal in Australia (data were published in *Cancer in Australia 1982* (Giles et al. 1987)). Before then, there was no registration in some States, and in some others, registries covered only particular areas, hospitals or cancer sites.

The National Cancer Statistics Clearing House

In June 1984 the National Health and Medical Research Council endorsed the concept of a national collection of cancer statistics. In April 1985 the National Committee on Health and Vital Statistics agreed that the National Cancer Statistics Clearing House (NCSCH) should be operated by the then Australian Institute of Health under the supervision of the Australasian Association of Cancer Registries (AACR).

Following the enactment of Commonwealth legislation establishing the then Australian Institute of Health as a statutory body in 1987, and subsequent legislation providing for the protection of confidentiality of records supplied to it, the Institute and the AACR established the NCSCH. This provides a facility for compiling data produced by individual State and Territory registries on a continuing basis, identifying multiple registrations and producing accurate national incidence statistics.

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

- enable computation and publication of national statistics on cancer;
- allow tracking of interstate movement of cancer cases via record linkage;
- facilitate exchange of scientific and technical information between cancer registries and promote standardisation in the collection and classification of cancer data; and
- facilitate cancer research both nationally and internationally.

The NCSCH receives data from individual State and Territory cancer registries on cancer diagnosed in residents of Australia. This commenced with cases first diagnosed in 1982. The data items provided to the NCSCH by the State and Territory cancer registries enable record linkage to be performed and the analysis of cancer by site and behaviour.

The NCSCH produces reports of national incidence and mortality data. Periodically, analyses of cancer histology, differentials in cancer rates by country of birth, geographical variation and trends over time are undertaken on an accumulation of data which permits examination of the data in greater depth. In the future it is anticipated that survival estimates at a national level will be presented in this publication.

The NCSCH is able to make available a broad range of statistical data. Data identifying individuals may only be released by State and Territory cancer registries to bona fide researchers subject to satisfactory scientific and ethical review and approval. General database inquiries and inquiries about the release of statistical data should be addressed to:

Australian Institute of Health and Welfare
National Cancer Statistics Clearing House
Attention: Ms Anne-Marie Waters
GPO Box 570
Canberra ACT 2601.

Structure of this report

This report is divided into five major components:

- an introduction and overview of cancer in Australia in 1991–1994 and the projected rates for the years 1995 to 1999;
- summary tables for all cancer sites for each year over the period 1991–1994;
- a series of data tables for the most common cancer sites, and some less common but topical cancer sites, for 1994;
- appendixes comprising cancer coding system, methods, State and Territory registration features, glossary and reference sections; and
- a floppy disk containing a comprehensive series of data tables by cancer site for each of the years from 1991 to 1994. The floppy disk also contains summary tables for 1994 and tables of projections for 1995–1999.

The overview of cancer in Australia provides a selection of highlights from the data tables. It describes the patterns of cancer incidence and mortality by site, age, sex, and State and Territory. Trends in cancer incidence and mortality are discussed and a series of graphs are provided presenting the most common cancers by sex and age group, and trends in national cancer incidence and mortality for the period 1983–1999.

Summary tables of incidence and mortality for each year from 1991 to 1994 for all cancer sites are provided. These tables list numbers of new cases and deaths, and crude and age-standardised incidence and mortality rates for Australia. Cumulative rates are given for incidence, while the mortality tables provide estimates of the person-years of life lost. Sex ratios are presented in both the incidence and mortality tables.

The series of data tables for the most common or topical cancers in 1994 contain age-specific, crude, and age-standardised incidence and mortality rates for males, females and persons for each cancer site. The order of the tables is based on the International Classification of Diseases (World Health Organization 1977). All rates are expressed per 100,000 population and, at the Australian level, are directly age-standardised to both the total estimated resident population of Australia at 30 June 1991 and the World Standard Population. Included in these tables are estimates of the lifetime risk of contracting each cancer, the person-years of life lost, and the numbers of each cancer as a proportion of the total (excluding non-melanocytic skin cancers).

The data tables also include average annual numbers of new cancer cases and deaths, and age-standardised incidence and mortality rates for each State and Territory. **It should be noted that the State and Territory incidence and mortality rates have been directly age-standardised to the total estimated resident population of Australia at 30 June 1991. Therefore, particular care should be taken not to compare these State and Territory rates with those in previous issues of *Cancer in Australia* where age-standardisation used the World Standard Population.** The total estimated resident population of Australia at 30 June 1991 will be used as the standard population from this issue onwards. The NCSCCH is able to provide State and Territory rates that have been age-standardised to the World Standard Population on request.

The appendixes include the International Classification of Diseases coding system; a methods section providing formulae, explanations and examples of the techniques used to present the data in the report; population data for Australia during 1991–1999; and a summary table of State and Territory cancer registry characteristics.

The floppy disk enclosed at the back of this report is an IBM-formatted disk that contains compressed executable Microsoft® Excel files (Version 5). There are five files:

- Publication tables 1991.exe– tables for all cancer sites for 1991;
- Publication tables 1992.exe– tables for all cancer sites for 1992;
- Publication tables 1993.exe– tables for all cancer sites for 1993;
- Publication tables 1994.exe– tables for all cancer sites for 1994; and
- Summary tables.exe– summary tables for 1994 and tables of projections for 1995–1999.

The files on floppy disk include tables in the same format as the published tables as described above. A list of the tables included on the disk can be found in Appendix E.

This report and the Excel tables on floppy disk will also be available on the Institute's Internet web site at the following address:

<http://www.aihw.gov.au>

If you are unable to access these data via computer then contact the Australian Institute of Health and Welfare for a hard copy.

It should be noted that Queensland was not able to provide unit record data for this publication for each of the years between 1991 and 1994 as did other States and Territories. To compensate for the missing data, two different types of estimates were used to compile

the national and State-specific estimates. National estimates were derived by the AIHW for single years (Tables 1, 4–33 and Figures 1–6 and 8–14) using an extrapolation of Queensland 1990 data (see Appendix B for details). Queensland-specific estimates in Tables 14–33 and Figure 7 for the combined years 1990–1994 are preliminary aggregate data provided by the cancer registry. The Queensland data for 1987–1991, 1988–1992 and 1989–1993 were unavailable.