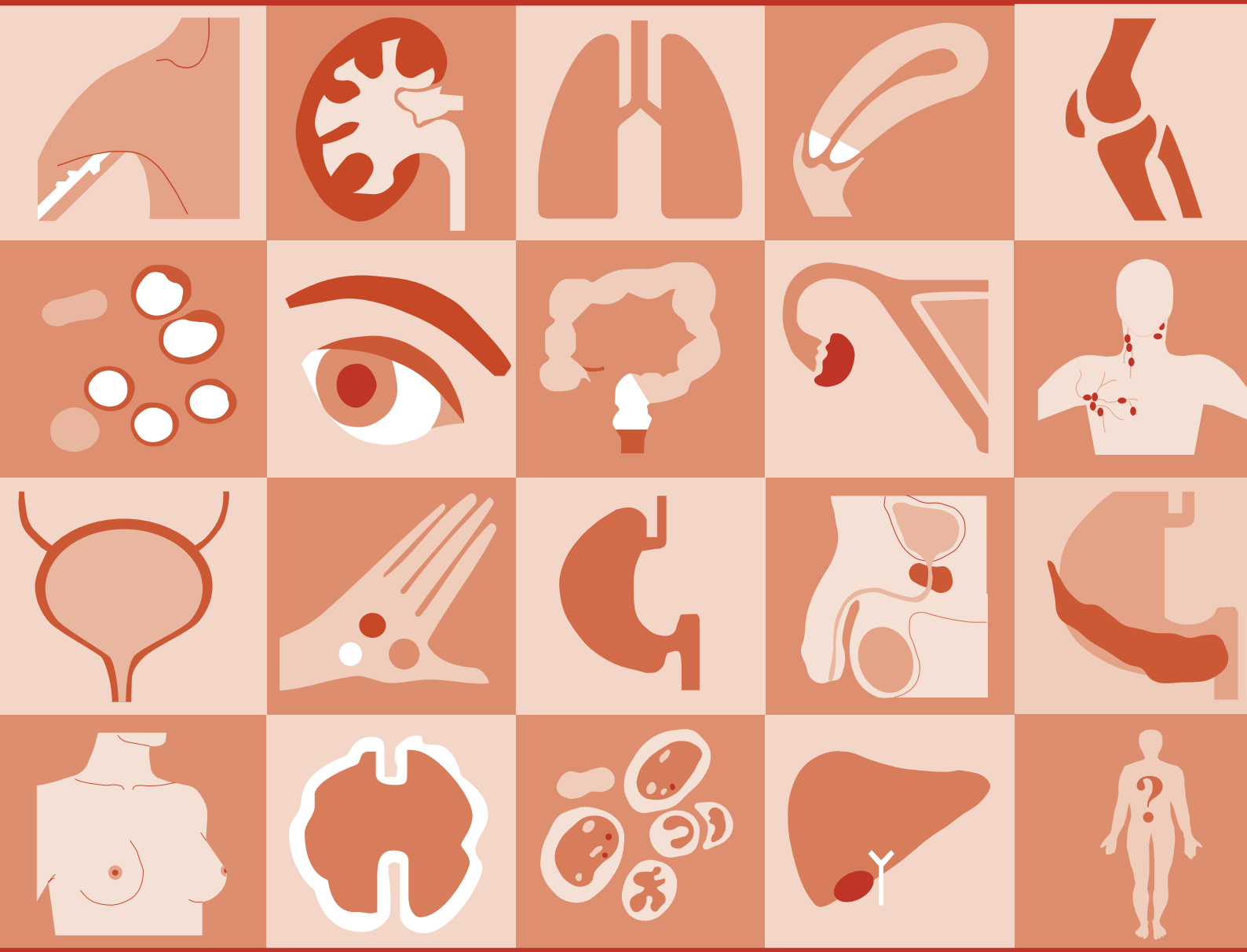


# Second Primary Cancers in Victoria





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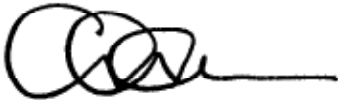
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# Acknowledgements

This report has been made possible by the collaboration of numerous persons and institutions within Victoria and across Australia. Without the data supplied by each notifying body it would be impossible to describe the overall picture of cancer survival for Victorians. The regularity and completeness of the contributions of all Victorian hospitals and pathology laboratories is deeply appreciated. Thanks must also go to the Registrar of Births, Deaths and Marriages for their continued and valued assistance in supplying details of deaths.

Over the years, many people too numerous to mention individually have worked to develop the population registry database and the data it contains. I would like to express my warm appreciation to present and past registry staff for their sustained efforts to produce data of a high quality and completeness.

A handwritten signature in black ink, appearing to read 'G. Giles', with a long horizontal line extending to the right.

Graham G. Giles PhD, Director

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# Overview

This monograph has been produced to describe the risk of developing a second primary invasive cancer after the diagnosis of the first.

There are several reasons for looking at this phenomenon.

The first reason relates to **patient care**. It is of interest to doctors to know the size of the risk, and also the timing of, and type of, second cancers that are likely to occur so that they can inform their patients and provide appropriate follow-up. Another practical question is to what extent the diagnosis of second cancers might affect longevity.

The second reason relates to the **study of cancer causes**. People who develop a particular primary cancer may be at increased risk of specific second cancers because of either their constitution (e.g. genetic predisposition), their behaviour (e.g. mammographic screening frequency) or their environmental exposures (e.g. smoking, diet).

We are beginning to understand how certain genetic mutations predispose a small minority of women to increased breast and ovarian cancer risk. It would be expected, therefore, to see an excess of ovarian cancer when following up a series of breast cancers, and vice versa.

People who have a cancer diagnosed may subsequently change their health behaviours. In this way, cancers that are detectable by screening (such as breast or cervix) may appear to be in excess as second cancers especially in the few years after the first diagnosis.

On the other hand, people with cancer may also change their lifestyle, such as giving up smoking, so as to reduce their risk of a second cancer.

The third reason relates to **possible negative outcomes of treatments with radiation or with cytotoxic drugs**.

For example, we know that treating Hodgkin lymphoma with cocktails of cytotoxic drugs increases the risk of myeloid leukaemia in later years. This might also be true for other primary cancers and for other therapies.

These are some of the main reasons for examining the occurrence of second primary cancers. It is not a new idea - this sort of work has been done before. There is a problem, however, in translating estimates based on the findings from other populations that have different profiles of cancer, and that cover different time periods when cancer risk factor profiles and available treatments were not the same.

This volume describes the experience of people in Victoria who were diagnosed with their first cancer between 1982 and 2004 and who developed a second cancer before 1st January 2005.

All major reports on second primary cancers have relied on the standardised incidence ratio (SIR) to measure the excess risk following a diagnosis of cancer. The exact methods that we have used are described in Appendix II. Our approach has been to perform analyses within strictly defined follow-up times so as to facilitate comparisons with the literature and with other studies in the future.

Caution is required when comparing SIRs for different groups of patients. Thus, although we have computed and compared SIRs for patients diagnosed at less than 65 years of age and 65 years and older, these comparisons may be biased as discussed in the appendix. However, it is unlikely that any biases could account for the size of the differences generally seen for patients diagnosed at younger compared with older ages.

# Guide to this report

**T**he first part of this report is based on analyses of 23 common cancer types in Victoria and also for 'all cancers' combined.

Each of these is presented in a 2-page section starting with 'all cancers' and proceeding in the order of the International Classification of Diseases for Oncology<sup>1</sup>.

These pages are supplemented by detailed tables that form the second part of the report. Salient points from the tables are noted in each section.

All tables and figures are numbered in the form XX.Y where XX is a number from 1 to 24 indicating the cancer to which the table/figure applies. Numbers correspond to those listed, with common abbreviations, on page 6 - for example, 1=all cancer, 5= rectum, 24=Chronic myeloid leukaemia. Y describes the nature of the table/figure relating to cancer XX as per descriptions below.

Each cancer type specific section contains two tables and two figures as follows:

The first table (**Tables 1.1 to 24.1**) describes the cohort of primary cancers in terms of age at diagnosis, person years accumulated by age group (< 65 and 65 plus) and histopathology.

It gives the number of second primary cancers that have been detected during follow-up and also those that were diagnosed simultaneously (within two months) with the first primary cancer.

The second table (**Tables 1.2 to 24.2**) gives the cumulative risks, expressed in percentages, of the most common second cancers at 1, 5, 10, 15, 20 and 23 years following the diagnosis of the first primary cancer. This is limited to second cancers that have a 10-year cumulative risk of at least 0.5% for at least one sex.

For example, in the section on "all cancers" we see that, after their first cancer diagnosis, males have a 9.7% chance of developing a second primary cancer in 10 years (about 1 in 10).

The first figure (**Figures 1.1 to 24.1**) plots separately the incidence of first and second primary cancers by age, on a semi-logarithmic graph. The denominator for the first primary cancer incidence rate is the general population, whilst the denominator for the second primary cancer rate is the series of first primary cancers.

These graphs show how the incidence of the second primary cancers varies with age relative to the first primary.

The second figure (**Figures 1.2 to 24.2**) illustrates trends in the standardised incidence ratio (SIR) with increasing follow-up time up to a maximum of 15 years. Separate trends are given for people whose first cancer diagnosis occurred either before 65 or after age 65 years. These trends are plotted as three-year moving averages to smooth them for easier interpretation.

The tables and figures are accompanied by text that highlights interesting findings and discusses them with respect to possible epidemiological and clinical factors.

The detailed tables section starts on Page 56 with **Table 1.3** which gives for males (pages 56-57) and females (58-59) the overall risks of second primary cancers within 23 years by type of first and second cancer type.

Following these, pages 60-107 contain 2 facing pages for each cancer site.

The first page (**Tables 1.4 to 24.4**) shows, for each cancer, second primary cancers by sex, type of cancer and period of follow-up (<1 year, 1 to 5 years, 5 to 10 years, 10 to 15 years and 15 to 23 years).

The second page (**Tables 1.5 to 24.5**) shows, for each cancer, second primary cancers by sex and cancer type for persons aged less than or greater than or equal to 65 years at diagnosis of their first cancer.

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## Cancer site numbers used for tables & figures

Table no.	Cancer site
1	All cancers
2	Pharynx
3	Stomach
4	Colon
5	Rectum
6	Colorectum
7	Larynx
8	Lung
9	Melanoma
10	Breast
11	Cervix
12	Uterus
13	Ovary
14	Prostate
15	Testis
16	Kidney
17	Renal pelvis
18	Bladder
19	Thyroid
20	Hodgkin lymphoma
21	Non-Hodgkin lymphoma
22	Multiple myeloma
23	Chronic lymphocytic leukaemia
24	Chronic myeloid leukaemia

## Common abbreviations used in publication

Cancer site	Abbreviation
Hodgkin lymphoma	HL
Non-Hodgkin lymphoma	NHL
Acute lymphocytic leukaemia	ALL
Chronic lymphocytic leukaemia	CLL
Acute myeloid leukaemia	AML
Chronic myeloid leukaemia	CML