

Cancer incidence and mortality, 1997

Steering Committee for Canadian Cancer Statistics: John R. McLaughlin, Anthony L.A. Fields, Jane F. Gentleman, Isra Levy, Barbara Whyllie, Heather Whittaker, Rod Riley, and Judy Lee; and B. Ann Coombs and Leslie A. Gaudette*

Abstract

In 1997, there will be an estimated 130,800 new cases of cancer and 60,700 deaths from the disease, an increase of one third and one quarter, respectively, over 1987. These increases are due mainly to the growth and aging of the population. (All figures exclude non-melanoma skin cancer.)

In 1997, three types of cancer will account for at least half of all new cases in men and women: prostate, lung and colorectal cancer for men; breast, lung and colorectal cancer for women. Lung cancer will be the leading cause of cancer death in 1997, resulting in one-third of cancer deaths for men and almost one-quarter of cancer deaths for women.

Among women, overall trends in age-standardized rates of cancer incidence and mortality have remained relatively stable since 1985, as large increases in the rate of lung cancer have been offset by declining or stable rates for most other forms. Among men, the overall incidence rate is rising slightly as a result of the sharp increase in the incidence of prostate cancer. The mortality rate for men peaked in 1988 and has since declined, because of decreases in the rates for lung, colorectal and some other cancers.

This article presents information on trends since the mid-1980s in cancer incidence and mortality, adapted from Canadian Cancer Statistics 1997.

Key words: neoplasms, incidence, mortality, registries

* John R. McLaughlin, Committee Chair (416-978-7525), is with the Department of Preventive Medicine and Biostatistics, University of Toronto, Toronto, Ontario; Anthony L.A. Fields (403-432-8763) is with the Cross Cancer Institute, Edmonton, Alberta; Isra Levy (613-954-3702) and B. Ann Coombs (613-954-0383) are with the Cancer Bureau, Health Canada; Barbara Whyllie (416-961-7223) is with the Canadian Cancer Society and National Cancer Institute of Canada, Toronto, Ontario; Heather Whittaker (204-787-4187) is with the Manitoba Cancer Treatment and Research Foundation, Winnipeg, Manitoba; Jane F. Gentleman (613-951-8553), Rod Riley (613-951-1641), Judy Lee (613-951-1775) and Leslie A. Gaudette (613-951-1740) are with the Health Statistics Division at Statistics Canada, Ottawa, Ontario K1A 0T6.

Cancer is the leading cause of death for Canadian women, and after heart disease (excluding stroke), the second leading cause of death for Canadian men.

Among women, the age-standardized incidence rate of cancer has been relatively stable since 1987, whereas among men, it has been rising slightly, largely because of an increase in prostate cancer rates. During that period, the number of new cases and the number of deaths from cancer have increased substantially for both sexes, mainly because of the growing and aging Canadian population. Cancer tends to affect older Canadians, with 72% of new cases and 81% of deaths occurring among those aged 60 and over.

The most common cancer sites continue to be breast cancer for women and prostate cancer for men. However, among women, the incidence rate of lung cancer has been rising rapidly and is now estimated to be a third higher than a decade ago. Among men, lung cancer rates levelled off in the mid-1980s and have since consistently declined.

Lung cancer will be the leading cause of cancer death among women in 1997, followed by breast cancer. But while lung cancer mortality rates among women are rising, breast cancer mortality rates have declined slightly over the past decade. For men, although the incidence of prostate cancer continues to rise, at least partly reflecting the use of earlier detection techniques, lung cancer will remain the leading cause of cancer death in 1997, far surpassing deaths from prostate cancer, which ranks second.

Methods

Data source

This article has been adapted from *Canadian Cancer Statistics 1997*.¹ *Canadian Cancer Statistics* is published annually by the National Cancer Institute of Canada. Limited copies of the 1997 edition are available from the Canadian Cancer Society (Suite 200, 10 Alcorn Avenue, Toronto, Ontario M4V 3B1; telephone 416-961-7223), the Health Statistics Division of Statistics Canada (613-951-1746), local offices of the Canadian Cancer Society, and Statistics Canada's Regional Reference Centres. The publication is also available on the following websites: National Cancer Institute of Canada (www.cancer.ca/stats), Statistics Canada (www.statcan.ca, then click on the following series of choices: English; Products and Services; and Downloadable Publications; Index of Downloadable Publications), and Health Canada (www.hwc.ca/hpb/lcdc/bc/stats.html).

Information on cancer cases and deaths comes from the provincial and territorial cancer registries and offices of vital statistics, respectively, which send their data to Statistics Canada for compilation at the national level. The process of collecting complete information about cancer cases in each province and then compiling it results in a considerable delay before reliable national data for a particular year are available. Therefore, Statistics Canada provides estimates of current incidence and mortality, using up to 10 years of the most recent actual data.

Analytical techniques

This article contains actual rates and frequencies up to the most recent year for which complete data are available (1992 for incidence, 1994 for mortality) and estimated values for subsequent years up to 1997. It is important to emphasize that the figures provided for 1997 are estimates rather than actual data.

Estimates are developed as follows: time trends in the known rates are examined; these trends are projected to the present time to obtain current rate estimates; and these rate estimates for the current year are applied to current population estimates.

The average annual percent change (AAPC) values were calculated for each cancer site by fitting a model that assumed a constant rate of change over time in the age-standardized incidence rates (ASIRs) or age-standardized mortality rates (ASMRs). That is, a linear model was applied to the ASIRs and ASMRs after logarithmic transformation. The AAPC is equal to $100(e^b - 1)$, where b is the slope of that model. Data from 1985 to 1992 were used for incidence and mortality. These series were long enough to create estimates of AAPCs that were both reliable and current.

Probabilities of developing/dying from cancer were calculated based on the age- and sex-specific cancer incidence and mortality rates for Canada in 1992, and on life tables based on 1991-1993 all-cause mortality rates. The methodology used was that of Zdeb² and Seidman et al.³ The life table procedures

assumed that the rate of cancer incidence for various age groups in a given period will prevail throughout the future lifetimes of persons as they age. Since these may not be the rates that will prevail at the time a given age is attained, the probabilities should be regarded only as approximations.

The probability of dying from cancer represents the proportion of persons dying from cancer in a cohort subjected to the mortality conditions prevailing in the population at large in 1994. The indicator was calculated by determining the proportion of deaths attributed to specific types of cancer for each sex and age group, multiplying this proportion by the corresponding number of deaths in the life table, summing the life table deaths over all sex and age groups, and dividing by the number of survivors at birth to obtain the probability of dying from each cause.

Potential years of life lost (PYLL) was calculated by obtaining deaths for ages <1, 1-4, 5-9, ..., 90+ for Canada in 1994, and life expectancy at the midpoints of the age groups. The PYLL is the total number of years of life lost obtained by summing over all age groups the number of deaths multiplied by the life expectancy of survivors.⁴

All results in this article exclude non-melanoma skin cancer, an estimated 61,000 cases of which will occur in 1997.

Definitions

Incidence: The number of new cases of a given type of cancer diagnosed during the year.

Mortality: The number of deaths during the year that are attributed to a particular type of cancer, based on the underlying cause of death.

Crude rate: The number of new cases of cancer or cancer deaths during the year, expressed as a rate per 100,000 persons in the population.

Age-specific rate: The number of new cases of cancer or cancer deaths during the year, expressed as a rate per 100,000 persons in a given age group.

Age-standardized rate: The number of new cases or cancer deaths per 100,000 that would have occurred in the standard population (1991 Canadian population) if the actual age-specific rates observed in a given population had prevailed in the standard population.

Deaths to new cases ratio: The number of deaths divided by the number of new cases during the same year.

This article presents information on trends since the mid-1980s in cancer incidence and mortality (see *Methods*). It has been adapted from *Canadian Cancer Statistics 1997*, an annual publication developed by a steering committee reporting to the Advisory Committee on Cancer Control of the National Cancer Institute of Cancer.¹ The committee includes representatives of the National Cancer Institute of Canada, the Canadian Cancer Society, Statistics Canada, Health Canada, the Canadian Council of Cancer Registries, and university-based cancer researchers.

Planning for the future

In 1997, there will be an estimated 130,800 new cases of cancer and 60,700 deaths from the disease,

a rise of one third and one quarter, respectively, over 1987. During this period, incidence will have increased 39% for men and 32% for women, and the number of deaths, 22% and 29%, respectively. Although in 1997 men outnumber women in the estimated number of both deaths and new cases, the deaths to new cases ratio is the same for each sex (0.46) (Table 1).

Cancer incidence and mortality are increasing mainly because of the growth and aging of the population. The numbers of new cases and deaths are an important measure of the cancer burden on the Canadian population and health care system, and can be used to plan patient services and health care facilities needed to meet the growing demand.

Table 1

Estimated new cases and deaths, selected cancer sites, by sex, Canada, 1997

	New Cases			Deaths			Deaths/Cases ratio		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
All cancers	130,800	70,200	60,600	60,700	32,600	28,100	0.46	0.46	0.46
Lung	20,300	12,500	7,800	16,900	10,600	6,300	0.83	0.85	0.81
Prostate	19,800	19,800	...	4,100	4,100	...	0.21	0.21	...
Female breast	18,400	...	18,400	5,100	...	5,100	0.28	...	0.28
Colorectal	16,400	8,900	7,500	5,900	3,200	2,700	0.36	0.36	0.36
Non-Hodgkin's lymphoma	5,300	2,900	2,400	2,300	1,200	1,100	0.43	0.41	0.46
Bladder	4,500	3,400	1,100	1,350	910	440	0.30	0.27	0.40
Kidney	3,900	2,400	1,500	1,310	810	500	0.34	0.34	0.33
Leukemia	3,300	1,850	1,450	1,910	1,050	860	0.58	0.57	0.59
Melanoma	3,200	1,700	1,500	660	410	250	0.21	0.24	0.17
Oral	3,170	2,200	970	1,000	710	290	0.32	0.32	0.30
Body of uterus	3,000	...	3,000	580	...	580	0.19	...	0.19
Pancreas	2,900	1,350	1,550	2,850	1,350	1,500	0.98	1.00	0.97
Stomach	2,800	1,750	1,050	1,770	1,050	720	0.63	0.60	0.69
Ovary	2,200	...	2,200	1,350	...	1,350	0.61	...	0.61
Brain	2,170	1,200	970	1,380	770	610	0.64	0.64	0.63
Multiple myeloma	1,550	830	720	1,100	580	520	0.71	0.70	0.72
Thyroid	1,520	370	1,150	135	45	90	0.09	0.12	0.08
Cervix	1,300	...	1,300	390	...	390	0.30	...	0.30
Larynx	1,290	1,050	240	530	440	90	0.41	0.42	0.38
Esophagus	1,250	880	370	1,260	910	350	1.01 [†]	1.03 [†]	0.95
Hodgkin's Disease	820	430	390	120	70	50	0.15	0.16	0.13
Testis	760	760	...	30	30	...	0.04	0.04	...
Other sites	10,970	5,930	5,040	8,675	4,365	4,310	0.79	0.73	0.86

Source: National Cancer Institute of Canada: *Canadian Cancer Statistics 1997*

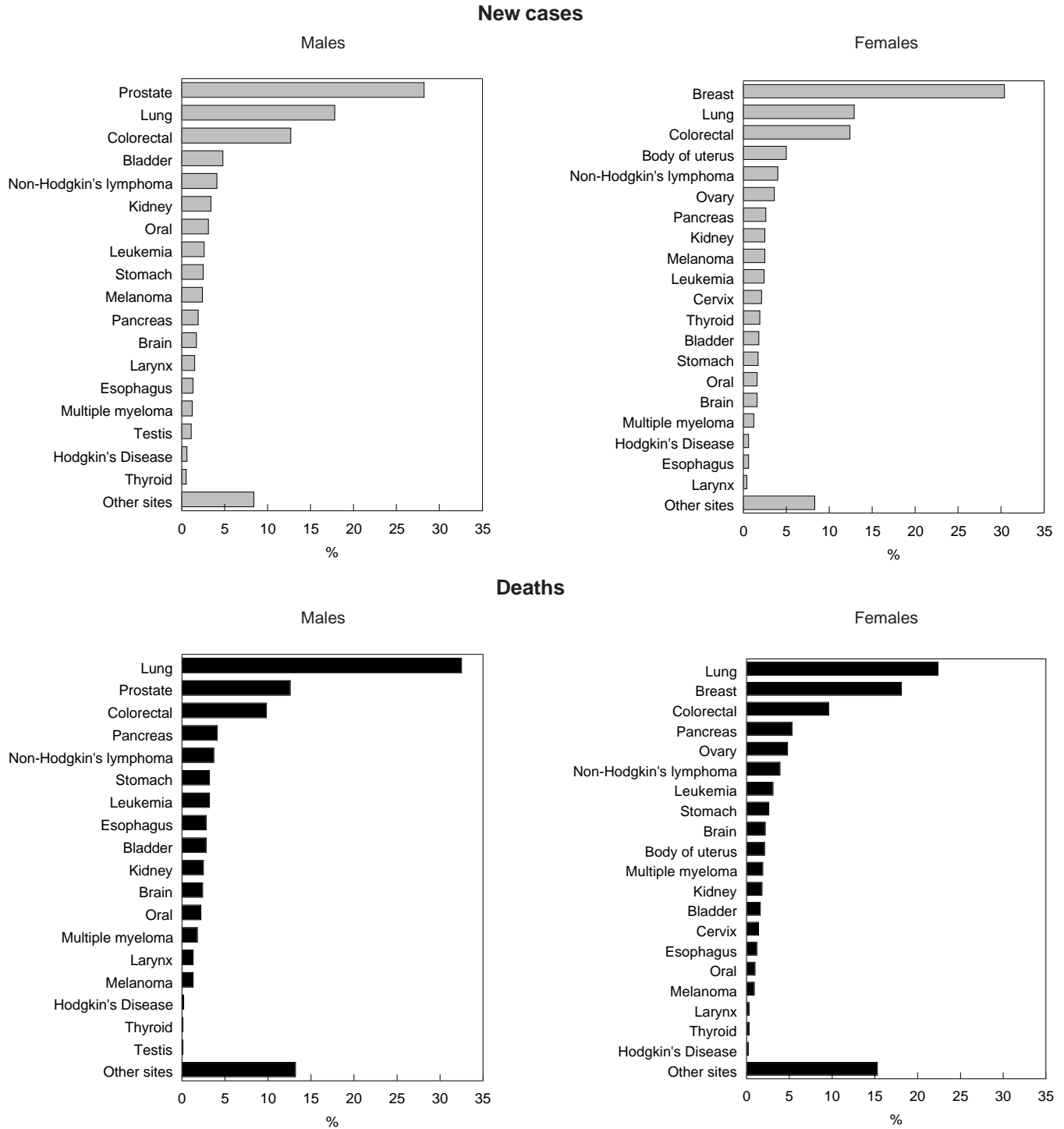
Note: Incidence figures exclude the estimated 61,000 new cases of non-melanoma skin cancer (ICD-9 173).

[†] The high ratio (in excess of 1.0) may result from incomplete registration of this cancer before death, or may be due to incorrect reporting of this cancer on death certificates.

... Figures not appropriate or not applicable

Chart 1

Percentage distribution of estimated new cases and deaths, selected cancer sites, by sex, Canada, 1997



Source: National Cancer Institute of Canada: Canadian Cancer Statistics 1997

Note: Incidence figures exclude the estimated 61,000 new cases of non-melanoma skin cancer (ICD-9 173).

Leading types of cancer and their prognoses

In 1997, three types of cancer will account for at least half of all new cases in men and women: prostate, lung and colorectal cancer for men; breast, lung and colorectal cancer for women. Prostate cancer is, by far, the most common among men, as is breast cancer among women (Chart 1).

Lung cancer will be the leading cause of cancer death in 1997, resulting in an estimated 10,600 deaths for men and 6,300 for women. Prostate cancer, with an estimated 4,100 deaths, and breast cancer, with 5,100 deaths, are the next leading causes of cancer death among men and women, respectively. For each sex, colorectal cancer will be the third leading cause of cancer death (3,200 deaths among men and 2,700 deaths among women).

Cancer sites can be classified into three groups on the basis of the deaths to new cases ratio: those with a very good prognosis (ratio of 0.3 or less—breast, prostate, bladder, melanoma, body of the uterus, cervix, Hodgkin's disease, testis, and male bladder); those with a fairly good prognosis (ratio greater than 0.3 but less than or equal to 0.5—colorectal, non-Hodgkin's lymphoma, kidney, oral, larynx, and female bladder); and those with a poor prognosis (ratio greater than 0.5—lung, stomach, adult leukemia, pancreas, ovary, brain, and multiple myeloma).

Prostate cancer in men and lung cancer in women: unwelcome trends

Among women, overall trends in age-standardized rates of cancer incidence and mortality have remained relatively stable since 1985, as large increases in the rate of lung cancer have been offset by declining or stable rates for most other forms. Among men, however, the overall incidence rate is rising slightly as a result of the sharp increase in the incidence of prostate cancer. The mortality rate for men peaked in 1988 and has since declined, because of decreasing rates for lung, colorectal and a number of other cancers (Charts 2 and 3).

While, age-standardized incidence rates and mortality rates for many cancer sites have stabilized or fallen during the past decade, there are some notable exceptions, including lung cancer incidence and mortality for women, breast cancer incidence for women, and prostate cancer incidence for men.

Among women, from 1985 to 1992, the age-standardized incidence rate of lung cancer increased by an average of 3.4% per year, and from 1985 to 1994, the age-standardized mortality rate rose at an annual average of 3.5%. By contrast, among men, lung cancer rates levelled off in the mid-1980s and have since consistently declined, reflecting the drop in men's tobacco consumption since the mid-1960s. Women's smoking rates have fallen only slightly in the past three decades. As a result, while men's lung cancer incidence and mortality rates are still twice those of women, the gap has narrowed.

The age-standardized incidence rate of breast cancer rose steadily over the past decade, possibly reflecting increased detection through mammographic examinations. Breast cancer mortality rates, however, have declined slightly since the mid-1980s, and particularly since 1990. Similar reductions in mortality rates are occurring in the United States, the United Kingdom, and Australia.⁵ It is not clear whether the changes are a result of early detection, improved treatment, or changes in risk or protective factors.

Since 1985, the age-standardized incidence rate of prostate cancer has increased at an annual average of 5.3%. After years of steady increases, the rate has risen particularly sharply since 1989. The increases before 1990 were at least partly due to greater detection of cancers through the use of trans-urethral resection of the prostate for suspected benign prostatic hypertrophy.⁶ The sharp rise in recent years is mainly the result of increased PSA (prostate specific antigen) testing.⁷ No risk factors or protective factors have yet been implicated in the incidence changes. Mortality rates for prostate cancer have risen, though relatively slowly, since 1985; the increases appear to have stabilized in the early 1990s.

Two other types of cancer whose incidence rates increased between 1985 and 1992 are cancer of the kidney in men (average annual percent change of 2.1%), and non-Hodgkin's lymphoma in both sexes (average annual percent change of 1.7% among men and 1.5% among women). (The increase in the latter is at least partly related to HIV infection.)

For most cancers, incidence rates and death rates have declined

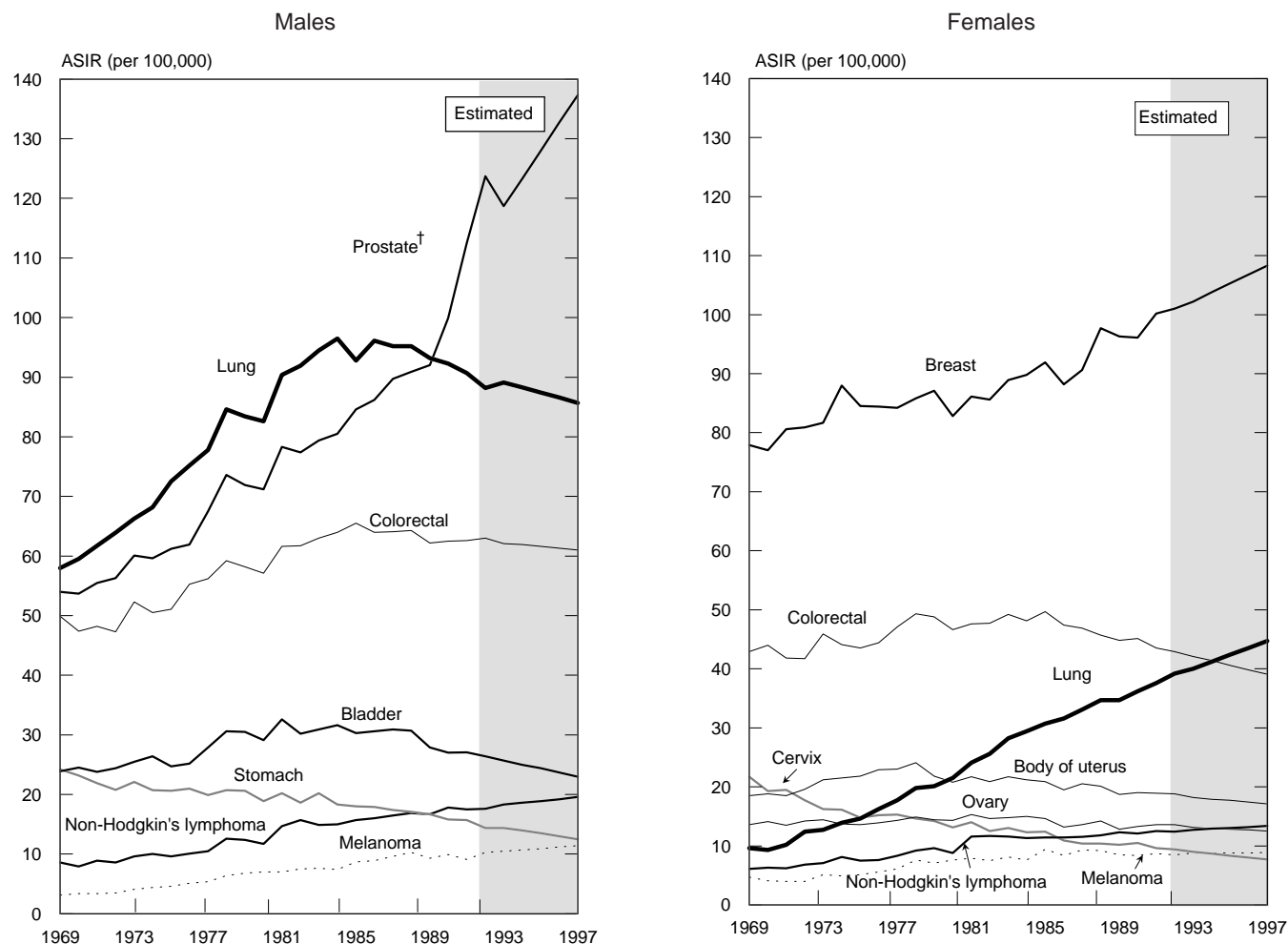
Rates for many other cancer sites have generally declined. For example, incidence and mortality rates for colorectal cancer continue to decrease, particularly

among women. Research in the United States suggests that more widespread use of early detection methods may have made more effective treatment possible at earlier stages, notably among elderly patients. Lifestyle changes, such as a healthier diet, may also have contributed to the decline.^{8,9}

Between 1985 and 1992, bladder cancer incidence rates decreased, on average, by 2.4% per year for men and 2.7% per year for women. Between 1985 and 1994, bladder cancer mortality rates for men fell by 1.4% per year, while rates among women were stable. The reason for the downturn in incidence rates is partly a change in reporting procedures for at least one

Chart 2

Age-standardized incidence rates (ASIR), selected cancer sites, by sex, Canada, 1969-1997



Source: National Cancer Institute of Canada: Canadian Cancer Statistics 1997

Note: Rates standardized to age distribution of 1991 Canadian population.

† Current rates for prostate cancer are possibly underestimated because they do not fully account for the impact of PSA testing in the 1990s.

registry,¹⁰ but the declining mortality rate may suggest improved survival among men, or possibly, a true decline in incidence.

Mortality rates have dropped dramatically for testicular cancer and Hodgkin's disease as a result of improved treatment methods. Continuing large reductions in stomach cancer incidence and mortality rates may be at least partly due to improved diets. Lower rates of invasive cervical cancer reflect, to some extent, the impact of early detection through Pap smear screening programs.

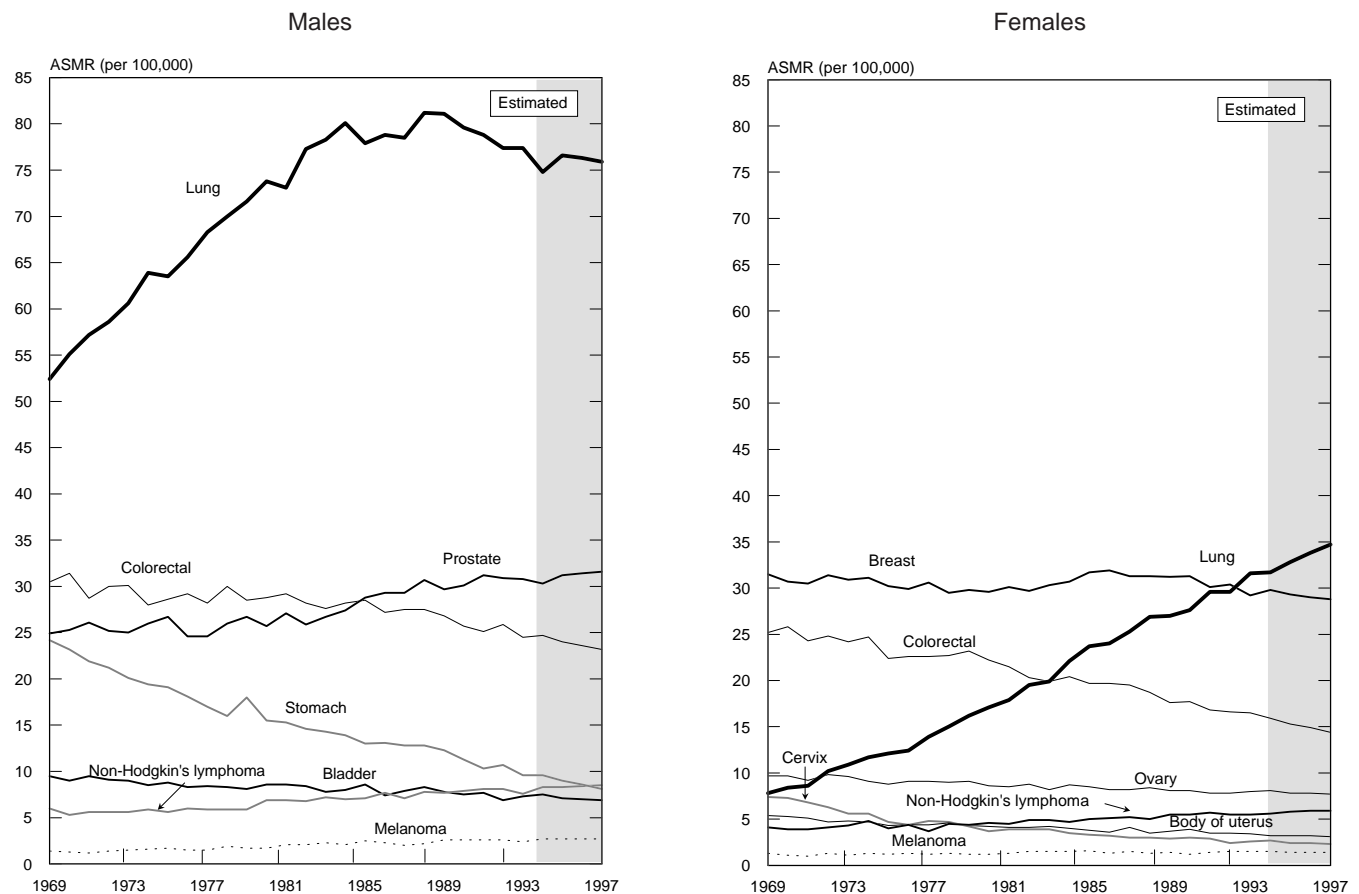
Cancer affects older people most

Cancer tends to be a disease of the elderly (Table 2). For 1997, a total of 59,600 new cases (46%) and 34,500 cancer deaths (57%) are estimated to occur in Canadians aged 70 and over, and another 34,300 new cases (26%) and 14,700 deaths (24%) in those aged 60-69. By contrast, only 1% of new cases and 0.3% of deaths will occur among people younger than age 20.

Close to 50% or more of all newly diagnosed cancers of the lung, prostate, colon and rectum occur among people aged 70 and over (Table 3). Prostate cancer, in particular, is linked with age: 62% of new cases and 83% of deaths occur in men aged 70 and over.

Chart 3

Age-standardized mortality rates (ASMR), selected cancer sites, by sex, Canada, 1969-1997



Source: National Cancer Institute of Canada: Canadian Cancer Statistics 1997

Note: Rates standardized to age distribution of 1991 Canadian population.

Table 2**Estimated new cases of cancer and cancer deaths, by age group and sex, Canada, 1997**

	New cases			Deaths		
	Total	Male	Female	Total	Male	Female
All ages	130,800	70,200	60,600	60,700	32,600	28,100
0-19	1,390	730	660	210	120	90
20-29	1,690	820	870	250	130	120
30-39	4,750	1,850	2,900	960	380	580
40-49	10,700	3,800	6,900	3,150	1,350	1,800
50-59	18,500	9,000	9,500	6,900	3,600	3,300
60-69	34,300	20,300	14,000	14,700	8,600	6,100
70-79	38,700	22,800	15,900	19,400	10,900	8,500
80+	20,900	10,900	10,000	15,100	7,500	7,600

Source: National Cancer Institute of Canada: *Canadian Cancer Statistics 1997*

Note: Incidence figures exclude the estimated 61,000 new cases of non-melanoma skin cancer (ICD-9 173). Totals may not add due to rounding.

Table 3**Estimated new cases and deaths, selected cancer sites, by age group and sex, Canada, 1997**

	Lung			Colorectal			Prostate	Breast	
	Total	Male	Female	Total	Male	Female	Male	Female	
New cases									
All ages	20,300	12,500	7,800	16,400	8,900	7,500	19,800	18,400	
0-19	10	5	5	5	--	5	..	..
20-29	25	15	10	45	20	25	..	70	
30-39	180	70	110	210	100	110	5	900	
40-49	1,050	480	570	900	500	400	90	3,200	
50-59	3,100	1,800	1,300	2,300	1,400	900	1,300	3,600	
60-69	6,600	4,200	2,400	4,400	2,700	1,700	6,000	4,400	
70-79	6,700	4,200	2,500	5,200	2,800	2,400	8,400	4,300	
80+	2,630	1,650	980	3,400	1,450	2,000	3,900	2,100	
Deaths									
All ages	16,900	10,600	6,300	5,900	3,200	2,700	4,100	5,100	
0-19	10	5	5	..	..	..	..	..
20-29	5	5	..	5	..	5	..	10	
30-39	115	40	75	55	30	20	..	180	
40-49	720	370	350	230	120	100	10	570	
50-59	2,100	1,200	900	630	400	240	95	810	
60-69	5,200	3,400	1,800	1,340	840	540	650	1,050	
70-79	5,900	3,800	2,100	1,840	1,050	860	1,550	1,300	
80+	2,850	1,800	1,050	1,790	740	1,100	1,850	1,200	

Source: National Cancer Institute of Canada: *Canadian Cancer Statistics 1997*

Notes: Incidence figures exclude the estimated 61,000 new cases of non-melanoma skin cancer (ICD-9 173). Totals may not add due to rounding.

Incidence rates for breast cancer are highest in older women, peaking at ages 70-79. However, because breast cancer also occurs frequently in younger women, and because there is a large number of such women in the population, women under age 60 account for a relatively large proportion of cases.

Actual and estimated age-specific incidence and mortality rates from 1969 to 1997 indicate that at ages 20-59, incidence rates for all cancers combined are somewhat higher among women than men, largely because of the high incidence of cancers of the breast and genital organs among women of reproductive age. At age 60 and over, the incidence of most types of cancer is higher among men than women.

Since 1984, increases in cancer incidence have occurred primarily among people aged 60-79, whereas mortality rates have remained relatively stable in this age group. For those aged 80 and over, both incidence and mortality rates have been stable since 1984. Among Canadians in all age groups under 60, mortality rates have declined steadily since 1969.

What are the chances?

Many people who develop cancer will survive it. For males, 41 in 100 will develop cancer at some point in their lives (excluding non-melanoma skin cancer) (Table 4). However, only 27 of the 41 males affected will die from cancer. Females' lifetime probability of developing cancer is 36 out of 100, and 23 of them will die from it.

The relative extent to which the lifetime probability of developing a cancer exceeds the lifetime probability of dying from it reflects the prognosis for that cancer (Chart 4). For both men and women, lung cancer has a poor prognosis: the probabilities of developing and dying from the disease are close. By contrast, for prostate cancer and breast cancer, and for colorectal cancer in both sexes, the probability of developing the cancer far exceeds the probability of dying from it, indicating a better prognosis.

Among men, the chance of developing prostate cancer by age 60 is small (0.7%), but by age 70, it has increased to about 4%, and by age 90, to 12%. Over a lifetime, 1 in 8 men will develop prostate cancer, but only 1 in 27 will die from it. By contrast, 1 in 11 men will develop lung cancer, and 1 in 12 will die from the disease.

During their lifetime, approximately 1 in 9 women is expected to develop breast cancer, but just 1 in 25 will die from it. Fewer women—1 in 21—will develop lung cancer, but almost as many—1 in 24—will die from it.

Leading cause of years of life lost

Cancer is the leading cause of potential years of life lost (PYLL), a measure of premature death, for both males and females. In 1994, 891,000 potential years of life were lost to cancer, representing 29% of the PYLL resulting from all causes of death (Table 5). Heart disease ranked second, causing 636,000 PYLL. Although more males than females die of cancer each year, the PYLL figure for females slightly exceeds that for males. This is because females generally live longer than males, and because the cancer death rate at ages 30-49 is higher among women than among men.

Table 4

Probability of developing cancer by specific age and lifetime probability of developing and dying from cancer, by sex, Canada

	Probability (as a %) of developing cancer by age:							Lifetime probability of:			
	30	40	50	60	70	80	90	Developing†		Dying†	
								%	One in:	%	One in:
Male											
All cancers	0.7	1.3	2.9	8.2	20.1	34.0	40.2	41.2	2.4	27.0	3.7
Prostate	--	--	--	0.7	4.2	9.5	12.0	12.4	8.1	3.8	26.5
Lung	--	0.1	0.3	1.5	4.3	7.6	9.0	9.1	10.9	8.3	12.0
Colorectal	--	0.1	0.3	1.1	2.8	5.0	6.2	6.4	15.7	2.8	35.2
Bladder	--	--	0.1	0.4	1.1	2.1	2.6	2.7	36.5	0.9	109.9
Lymphoma	0.2	0.3	0.5	0.9	1.4	2.1	2.5	2.5	39.7	1.5	69.0
Oral	--	0.1	0.2	0.5	1.0	1.4	1.6	1.6	61.7	0.6	175.4
Stomach	--	--	0.1	0.2	0.6	1.1	1.5	1.5	66.7	1.1	90.1
Kidney	--	--	0.1	0.4	0.8	1.3	1.5	1.5	67.1	0.6	163.9
Leukemia	0.1	0.2	0.2	0.3	0.6	1.0	1.3	1.3	75.8	0.9	109.9
Pancreas	--	--	0.1	0.2	0.5	0.9	1.1	1.1 [‡]	90.1	1.2 [‡]	81.3
Melanoma	--	0.1	0.2	0.4	0.6	0.8	0.9	0.9	107.5	0.3	370.4
Female											
All cancers	0.7	1.8	4.8	10.4	18.9	28.5	34.2	35.5	2.8	22.5	4.5
Breast	--	0.4	1.7	3.8	6.5	9.3	10.7	11.0	9.1	4.1	24.6
Colorectal	--	0.1	0.3	0.8	2.1	3.9	5.4	5.7	17.5	2.7	37.3
Lung	--	0.1	0.3	1.1	2.5	4.0	4.6	4.8	21.0	4.2	23.8
Lymphoma	0.1	0.2	0.3	0.6	1.1	1.7	2.2	2.3	44.4	1.3	78.1
Body of uterus	--	--	0.2	0.6	1.3	1.9	2.2	2.2	45.0	0.5	204.1
Ovary	--	0.1	0.3	0.5	0.9	1.3	1.5	1.5	65.4	1.1	92.6
Pancreas	--	--	--	0.1	0.4	0.8	1.1	1.1 [‡]	88.5	1.3 [‡]	76.3
Leukemia	0.1	0.1	0.2	0.3	0.4	0.7	1.0	1.0	97.1	0.7	140.8
Kidney	--	--	0.1	0.3	0.5	0.7	0.9	0.9	106.4	0.4	250.0
Stomach	--	--	0.1	0.1	0.3	0.6	0.8	0.9	109.9	0.8	133.3
Bladder	--	--	--	0.1	0.3	0.6	0.8	0.9	113.6	0.4	227.3
Cervix	0.1	0.2	0.3	0.5	0.6	0.8	0.8	0.8	120.5	0.3	322.6
Melanoma	0.1	0.1	0.3	0.4	0.6	0.7	0.8	0.8	122.0	0.2	555.6

Source: National Cancer Institute of Canada: Canadian Cancer Statistics 1997

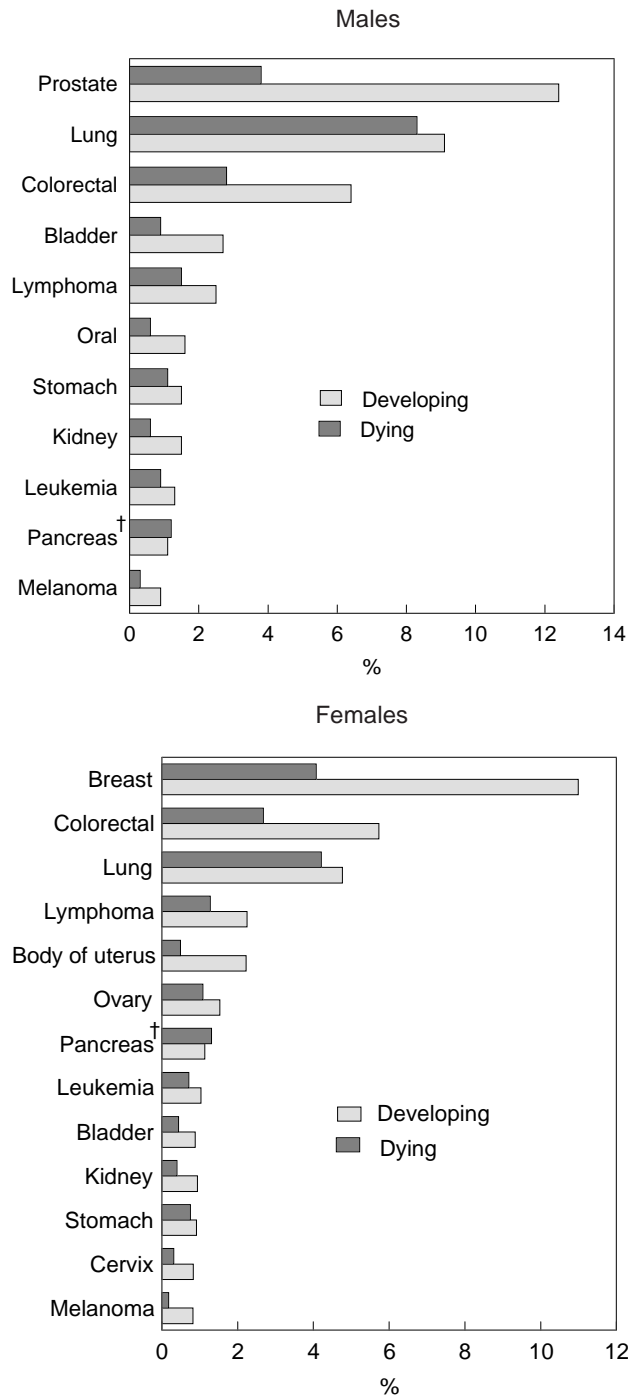
[†] The probability of developing cancer is based on 1991-1993 data and calculated by selected age groups; the probability of dying from cancer is based on 1994 data. The probability for all ages is calculated from birth to the end of life. Non-melanoma skin cancer is excluded from the calculations.

[‡] These probabilities are approximations and are based on cross-sectional data, which may explain the greater apparent likelihood of dying from cancer of the pancreas than of developing it.

-- Amount too small to be expressed

Chart 4

Lifetime probability of developing (1991-1993) and dying (1994) from cancer, selected sites, by sex, Canada



Source: National Cancer Institute of Canada: Canadian Cancer Statistics 1997

Note: Life probabilities are calculated from birth to the end of life, based on cancer incidence rates for 1991-1993.

† These probabilities are approximations and are based on cross-sectional data, which may explain the greater apparent likelihood of dying from cancer of the pancreas than of developing it.

Lung, colorectal and prostate cancer, the three leading cancers in men, accounted for 49% of male PYLL due to cancer. Breast, lung and colorectal cancer in women accounted for 51% of female PYLL due to cancer. These rankings have been consistent in recent years. For women, however, the PYLL due to lung cancer, which almost equals that of breast cancer, reflects the increasing rates of lung cancer mortality in women aged 50-79.

The more common the cancer and the more quickly it leads to death, the higher the premature mortality that results. The potential years of life lost because of breast cancer, at 99,000 years, far exceed those lost because of prostate cancer, at 33,000 years, an effect of the relatively young age at which some women die from breast cancer. By contrast, for Hodgkin's Disease, a cancer that is less common and relatively curable, the PYLL is 3,000.

Table 5

Potential years of life lost because of cancer, Canada, 1994

	Potential years of life lost (PYLL)					
	Total		Males		Females	
	'000	%	'000	%	'000	%
All cancers	891	100.0	431	100.0	460	100.0
Lung	234	26.2	138	32.0	96	20.8
Breast	99	11.2	...	...	99	21.6
Colorectal	83	9.3	42	9.8	41	8.9
Pancreas	41	4.6	19	4.5	22	4.7
Non-Hodgkin's lymphoma	35	4.0	19	4.3	17	3.6
Leukemia	33	3.8	18	4.2	15	3.3
Prostate	33	3.8	33	7.8	...	...
Brain	32	3.6	17	4.0	15	3.3
Stomach	28	3.2	16	3.8	12	2.6
Ovary	26	2.9	...	...	26	5.6
Kidney	18	2.1	11	2.6	7	1.6
Oral	16	1.8	12	2.7	5	1.0
Bladder	15	1.7	10	2.3	5	1.1
Multiple myeloma	15	1.6	7	1.7	7	1.5
Melanoma	13	1.5	7	1.7	6	1.2
Cervix	11	1.3	...	...	11	2.4
Body of uterus	9	1.0	...	...	9	1.9
Larynx	8	0.9	6	1.4	2	0.3
Hodgkin's Disease	3	0.4	2	0.5	1	0.2
Testis	2	0.2	2	0.4	...	...

Source: National Cancer Institute of Canada: Canadian Cancer Statistics 1997

Note: Figures are ranked in order of total PYLL for both sexes combined and are calculated based on life expectancy. Count and percentage totals may not add because of rounding and the exclusion of other sites. All figures exclude non-melanoma skin cancer (ICD-9 173).

... Figures not appropriate or not applicable

Acknowledgments

Many people helped to produce *Canadian Cancer Statistics 1997* and this article. In particular, we thank the staff at the provincial and territorial cancer registries; Michel Beaupré of the Fichier des tumeurs du Québec; Marek Wysocki and Carole Morin of Statistics Canada; Chris Waters, Robert Semenciw, and Don Wigle of Health Canada; and Mary McBride of the British Columbia Cancer Agency. The text for this article was adapted from *Canadian Cancer Statistics 1997* by Marion Pogson of StepSoft Inc.

References

1. National Cancer Institute of Canada. *Canadian Cancer Statistics 1997*. Toronto: National Cancer Institute of Canada, 1997.
2. Zdeb MS. The probability of developing cancer. *American Journal of Epidemiology* 1977; 106: 6-16.
3. Seidman H, Silverberg BS, Bodden A. Probabilities of eventually developing and dying of cancer. Risk among persons previously undiagnosed with the cancer. *CA - A Cancer Journal for Clinicians* 1978; 28: 33-46.
4. Péron Y, Stromenger C. *Demographic and Health Indicators* (Statistics Canada, Catalogue 82-543E) Ottawa: Minister of Supply and Services Canada, 1985.
5. Gaudette LA, Silberberger C, Altmayer CA, et al. Trends in breast cancer incidence and mortality. *Health Reports* (Statistics Canada, Catalogue 82-003) 1996; 8(2): 29-37.
6. Levy IG, Gibbons L, Collins JP. Prostate cancer trends in Canada: Rising incidence or increased detection? *Canadian Medical Association Journal* 1993; 149: 617-24.
7. Levy IG. Prostate cancer: the epidemiologic perspective. In: Fradet Y, Meyer (editors). *Canadian Workshop on Screening for Prostate Cancer Proceedings*, March 24-27; Quebec City. *Canadian Journal of Oncology* 1994; 4(Suppl): 4-7.
8. Chu KC, Tarone RE, Chow W-H, et al. Temporal patterns in colorectal cancer incidence, survival and mortality from 1950 through 1990. *Journal of the National Cancer Institute* 1994; 86: 997-1006.
9. Miller BA, Ries LAG, Hankey BF, et al (editors). *SEER Cancer Statistics Review 1973-1990* (NIH Pub. No. 93-2789) Bethesda, Maryland: National Cancer Institute, 1993.
10. Statistics Canada. *Cancer in Canada* (Annual) (Catalogue 82-218) Ottawa: Health Statistics Division, Statistics Canada.

