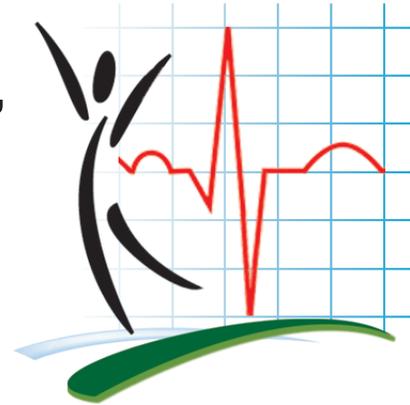


Article

Cancer in Canada: Focus on Lung, Colorectal, Breast and Prostate

by Tanya Navaneelan and Teresa Janz



December 2011



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HTML version published: December 2011.

PDF version published: December 2011.

Frequency: Irregular

ISSN 1925-6493



Health at a Glance

Statistics Canada - Catalogue no. 82-624-X

by Tanya Navaneelan and Teresa Janz

Highlights

- Prostate cancer accounts for the largest number of newly diagnosed cases. However, compared to lung, colorectal and breast cancers, it causes the fewest deaths.
- Lung cancer is the most common cause of cancer-related death. Although men are more likely to be diagnosed with lung cancer than women, rates among men are declining.
- Breast cancer is the most commonly diagnosed cancer in women. However, over time rates have been relatively stable.
- Colorectal cancer affects both sexes, with incidence rates being higher among men.

Introduction

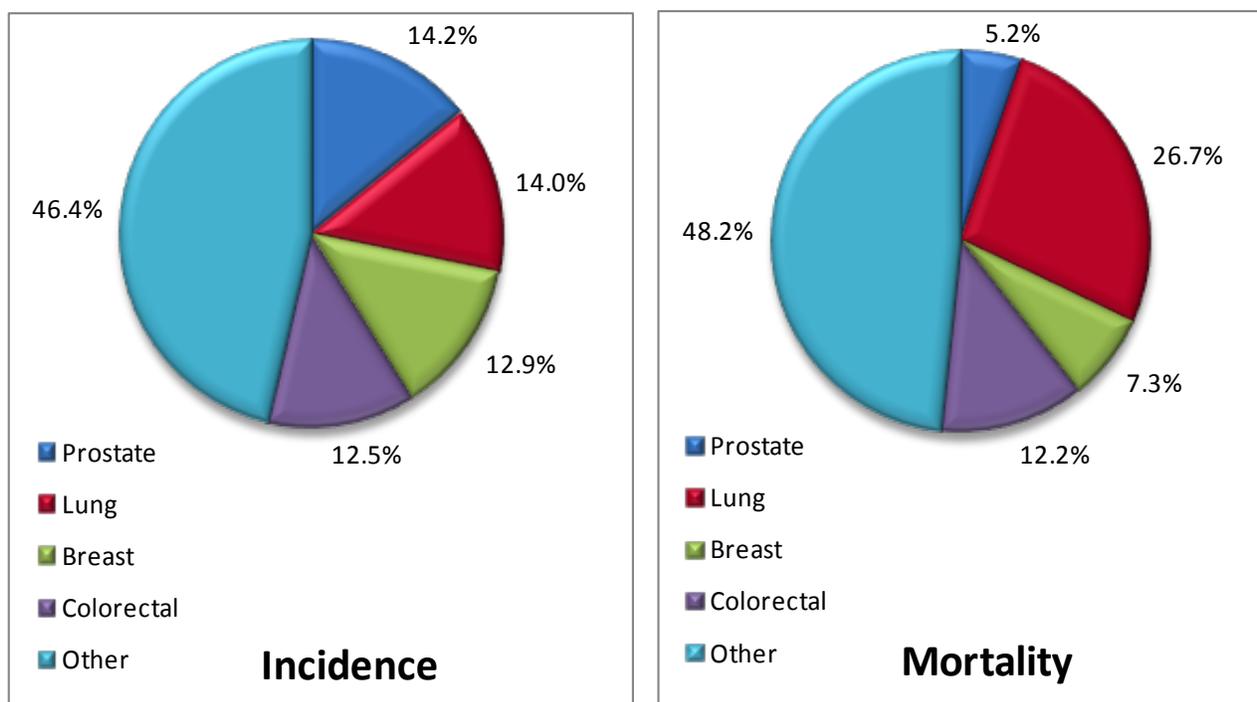
Cancer is not one disease, but a general term that represents many diseases, each one with its own distinct characteristics and outcomes. The risk of being diagnosed with cancer increases with age: 87% of all new cases occur in people aged 50 and older. In 2007, there were 163,604 new cases of cancer— an incidence rate of 496.8 per 100,000 people. During the same year, cancer became the leading cause of mortality in Canada, surpassing heart disease for the first time and causing 69,595 deaths.

While all types of cancer are important (see Appendix 1 for statistics on other cancers), this article examines some basic trends in the four most commonly diagnosed types of cancer in Canada: lung, colorectal, breast and prostate. These four cancers were selected because together they account for more than half of the diagnosed cancers (53.6% in 2007; Chart 1).

The distributions of incidence and mortality in Chart 1 show that while prostate (14.2%), lung (14.0%), breast (12.9%) and colorectal (12.5%) cancers have similar incidence rates, lung cancer causes more deaths than the other three combined.

The cancer data featured in this article are from the Canadian Cancer Registry (CCR). The CCR is a dynamic, person-oriented, population-based database maintained by Statistics Canada, which contains information from 1992 forward. These data are provided by provincial and territorial cancer registries.

Chart 1: Percentage distribution of cancer incidence and mortality of the four most commonly diagnosed cancers versus all other types, Canada, 2007



Source for incidence: Statistics Canada, Canadian Cancer Registry (CCR) Database (July 2011 file) (CANSIM table 103-0550). New cases for ICD-O-3 primary sites of cancer, by age group and sex, Canada, provinces and territories, annual.

Source for mortality: Statistics Canada, CANSIM table 102-0522. Deaths, by cause, Chapter II, Neoplasms (C00 to D48), age group and sex, Canada, annual.

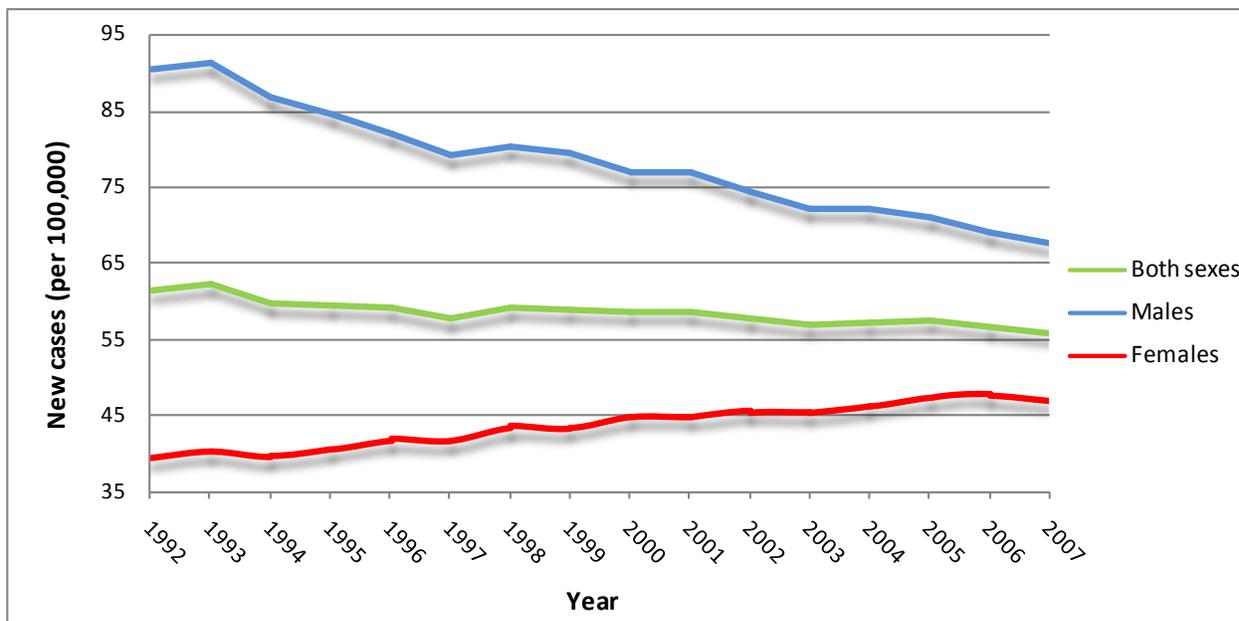
Lung cancer

In Canada, lung cancer was diagnosed second-most often in both men and women in 2007—after prostate in men and breast in women. There were 22,865 new lung cancer cases, or 69.4 new cases per 100,000 people.

Men tend to outnumber women in terms of lung cancer rates (Charts 2 and 3). In 2007, the rate of lung cancer in men was 76.4 per 100,000 compared with 62.6 per 100,000 in women. Most lung cancers (80% to 90%) are caused by tobacco use.¹ Men are more likely to develop lung cancer in part because, historically, they have been more likely to smoke and to start smoking at a younger age².

Other research indicates that after a long period of rising rates, lung cancer in men has been steadily decreasing since the mid-1980s.³ Lung cancer in women, however, has been increasing since 1980, although this increase has slowed over the last decade. These patterns reflect sex differences in smoking behaviour. While men started to decrease their tobacco use in the mid-1960s, women did not decrease their use until the mid-1980s.⁴ Since female smoking rates never reached the same high level as male rates, lung cancer in women is not expected to peak at the high rate that it did in men².

Chart 2: Lung cancer, age-standardized incidence rates per 100,000, by year and sex, Canada, 1992 to 2007



Note: Lung cancer includes bronchial cancer, and is defined as ICD-O-3 primary sites C34.0-C34.9.

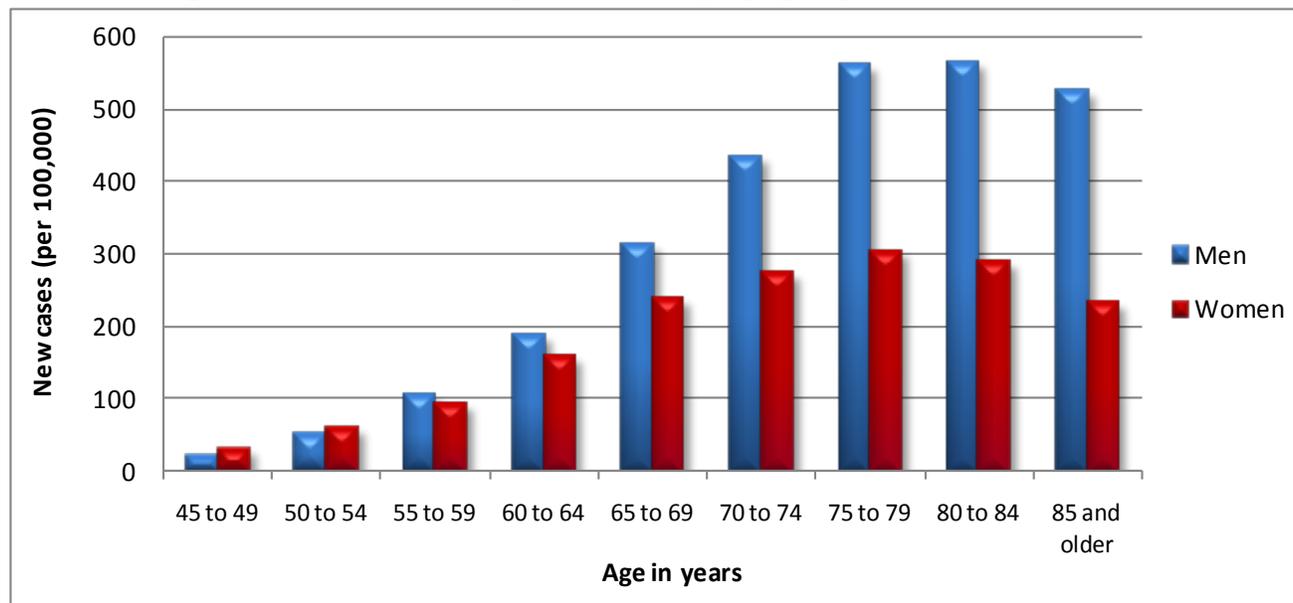
Source: Statistics Canada, Canadian Cancer Registry (CCR) Database (July 2011 file) (CANSIM table 103-0553). Age standardized rates for ICD-O-3 primary sites of cancer, by sex, Canada, provinces and territories, annual.

Data in this article show that the annual **age-standardized** lung cancer incidence rate has been decreasing since 1992; but trends differ for men and women (Chart 2). While rates for males have been steadily declining since 1992, the rates for females are slowly increasing.

Lung cancer mostly affects people aged 50 and older: 95.5% of new cases in 2007 occurred in this age group (Chart 3). The peak age for diagnosis is 75 years and older. Age is associated with increased risk for both men and women, although the rate of increase is greater for men. While men are generally more likely to develop lung cancer, prior to age 55 the rate is actually higher in women. Around age 55, men with lung cancer begin to outnumber women, and this continues for older age groups.

Age-standardized rates are used in this article when comparing cancer rates over time to remove the effects that an aging population has on the rates. The population age structure of Canada's 1991 Census was used.

Throughout this article, however, the actual rate (not the age-standardized rate) will be used when presenting statistics for a particular point in time, such as the year 2007. For this reason, the numbers cited in the text and in single-year charts (actual rates) may not match the numbers used in charts that display trends over time (age-standardized rates).

Chart 3: Lung cancer, incidence rate per 100,000, by age group and sex, Canada, 2007

Note: Lung cancer includes bronchial cancer, and is defined as ICD-O-3 primary sites C34.0-C34.9.

Source: Statistics Canada, Canadian Cancer Registry (CCR) Database (July 2011 file) (CANSIM table 103-0550). Rates for ICD-O-3 primary sites of cancer, by age group and sex, Canada, provinces and territories, annual.

Lung cancer survival and mortality

Lung cancer is the number one cause of cancer-related death for both men and women in Canada. In 2007, 18,550 deaths were caused by lung cancer, resulting in a mortality rate of 56.3 per 100,000. Lung cancer accounts for 26.7% of all deaths from cancer and 6.5% of all mortality.

People diagnosed with lung cancer have a 17% likelihood of living for five years or longer compared with the general population. The survival ratio for women (21%) is better than the ratio for men (14%).⁵ Lung cancer has a relatively low survival⁶ compared with the other three cancers because of a number of issues, including the fact that most lung cancers are diagnosed at an advanced stage when treatment options are limited.⁷ In addition, the majority of lung cancer patients are current or former smokers, who are more likely to have other smoking-related conditions such as cardiovascular disease and chronic obstructive pulmonary disease (COPD).^{3,8}

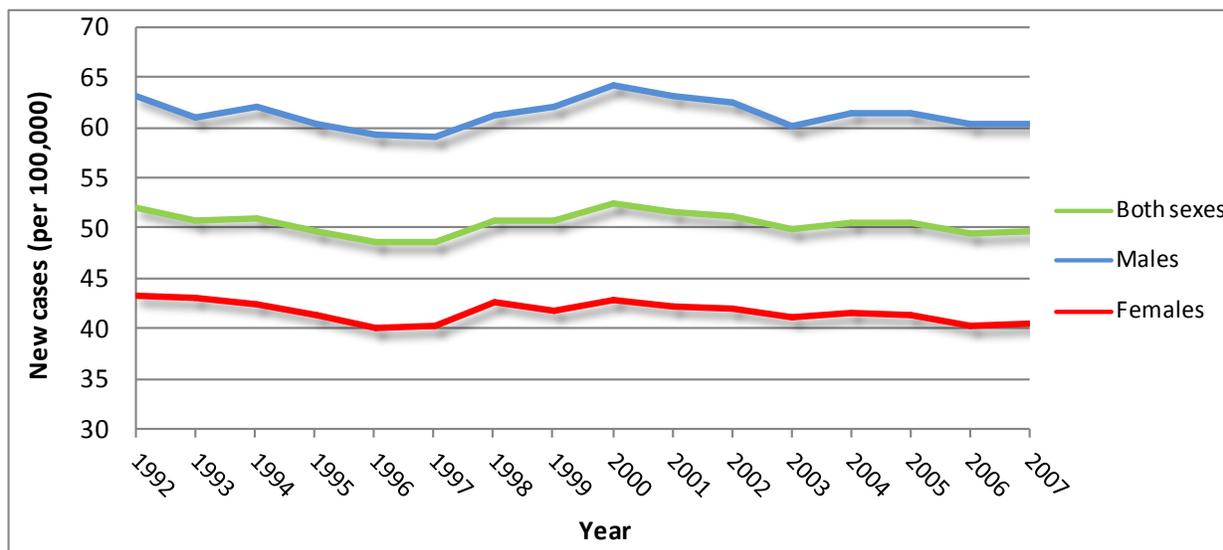
Colorectal cancer

Colorectal cancer is the fourth-most common type of cancer in Canada. There were 20,483 new colorectal cancer cases reported in 2007 (or 62.2 per 100,000 people).

After years of increasing rates of colorectal cancer, the age-standardized incidence rate began declining in the mid 1980s.⁹ By 1992, the rates became relatively stable with periodic fluctuations over the years (Chart 4). Changes in rates over time are partly influenced by the implementation and use of **colorectal cancer screening** tests.^{10,11}

It is recommended that men and women age 50 to 74 undergo regular **colorectal cancer screening**. Screening usually involves a stool test (fecal occult blood test or fecal immunochemical test). A positive test may result in the need for further tests such as a colonoscopy or barium enema.

Chart 4: Colorectal cancer, age-standardized incidence rates per 100,000, by year and sex, Canada, 1992 to 2007



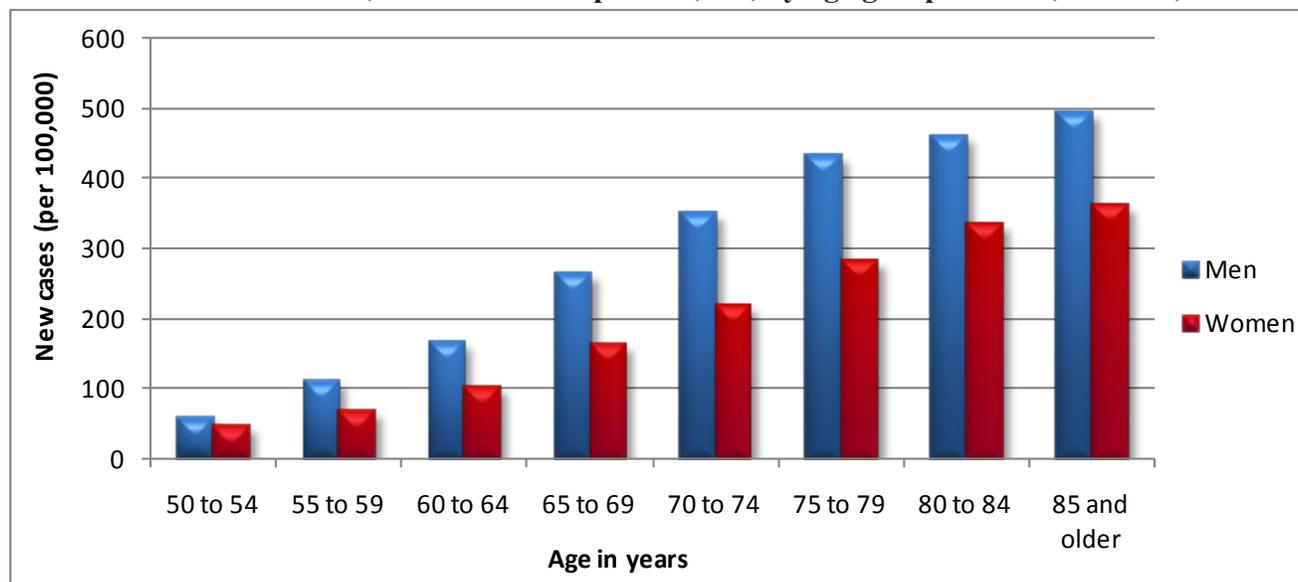
Note: Colorectal cancer is defined as ICD-O-3 primary sites C18.0 -18.9, C19.9, C20.9, C26.0 (excluding morphology types M-9050 to M-9055; M-9140; M-9590 to M-9989).

Source: Statistics Canada, Canadian Cancer Registry (CCR) Database (July 2011 file) (CANSIM table 103-0553). Age-standardized rate for ICD-O-3 primary sites of cancer by sex, Canada, provinces and territories, annual.

Overall, the rates for men are higher than those for women; however, the gap between the sexes is wider in older age groups (Chart 5). For example, in the 50 to 54 age group there is a very small difference in the rates for men and women, but in the 70 to 74 age

group the rate is about 1.5 times larger for men. The reasons why colorectal cancer is more common in men than women are not completely clear; however, there may be links between diet, body size, physical activity, hormones and family history.^{3,12}

Chart 5: Colorectal cancer, incidence rates per 100,000, by age group and sex, Canada, 2007



Source: Statistics Canada, Canadian Cancer Registry (CCR) Database (July 2011 file) (CANSIM table 103-0550). Rates for ICD-O-3 primary sites of cancer, by age group and sex, Canada, provinces and territories, annual.

Colorectal cancer survival and mortality

Even though mortality rates for colorectal cancer have been declining since the late 1990s, it remains the second-most common cause of cancer-related death in Canada (after lung cancer). Colorectal cancer caused 8,515 deaths in 2007, a mortality rate of 25.8 deaths per 100,000.

Men and women diagnosed with colorectal cancer have a 64% likelihood of living for five years or longer compared with the general population.⁵

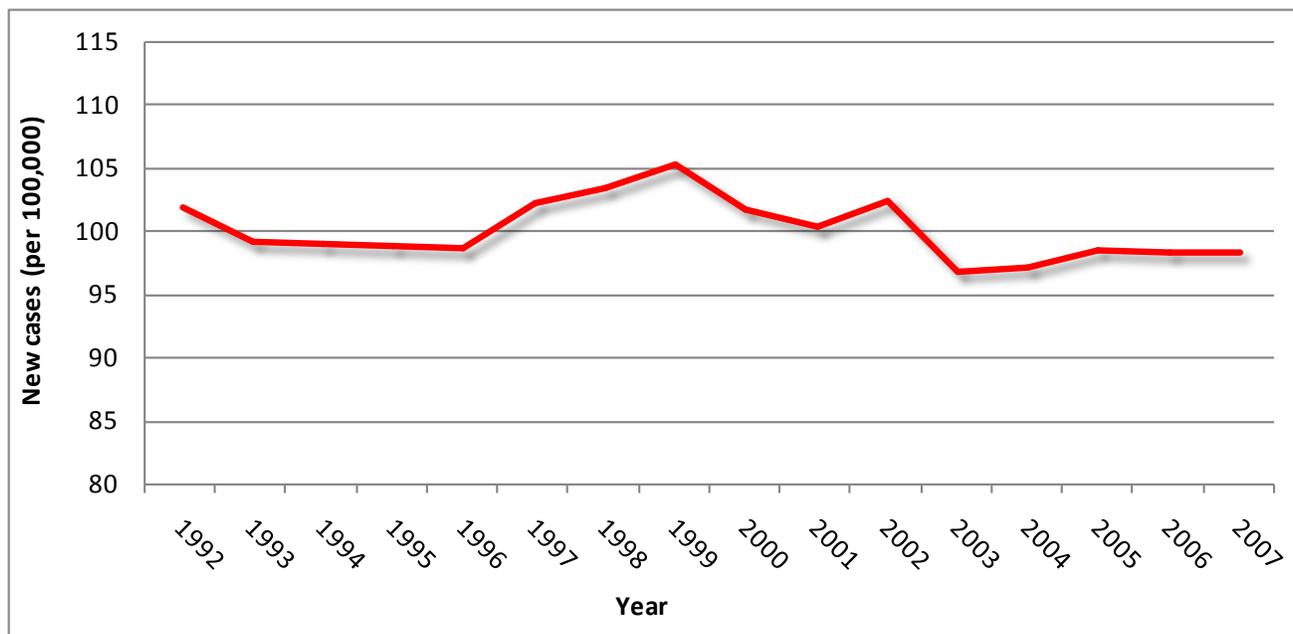
Breast cancer

There were 21,006 new breast cancer¹³ cases in 2007, an incidence rate of 126.5 per 100,000 women, making it the most commonly diagnosed cancer among women in Canada.

The age-standardized incidence rates of breast cancer rose steadily from 1982 to the early 1990s. This was partly because of the increased use of **breast cancer screening**¹⁴ (mammography), which allowed for earlier detection of the disease. Since the early 1990s, breast cancer rates have remained fairly constant with small fluctuations over time (Chart 6). The reasons for these fluctuations are unclear, but they may be related to changes in the use of mammograms and hormone replacement therapy.^{3,15}

Breast cancer screening guidelines may vary based on risk factors such as age, family history and the province or territory where a woman lives. General recommendations are that women aged 50-69 should have a mammogram at least once every two years.

Chart 6: Breast cancer, age-standardized incidence rates per 100,000, by year, Canada, 1992 to 2007



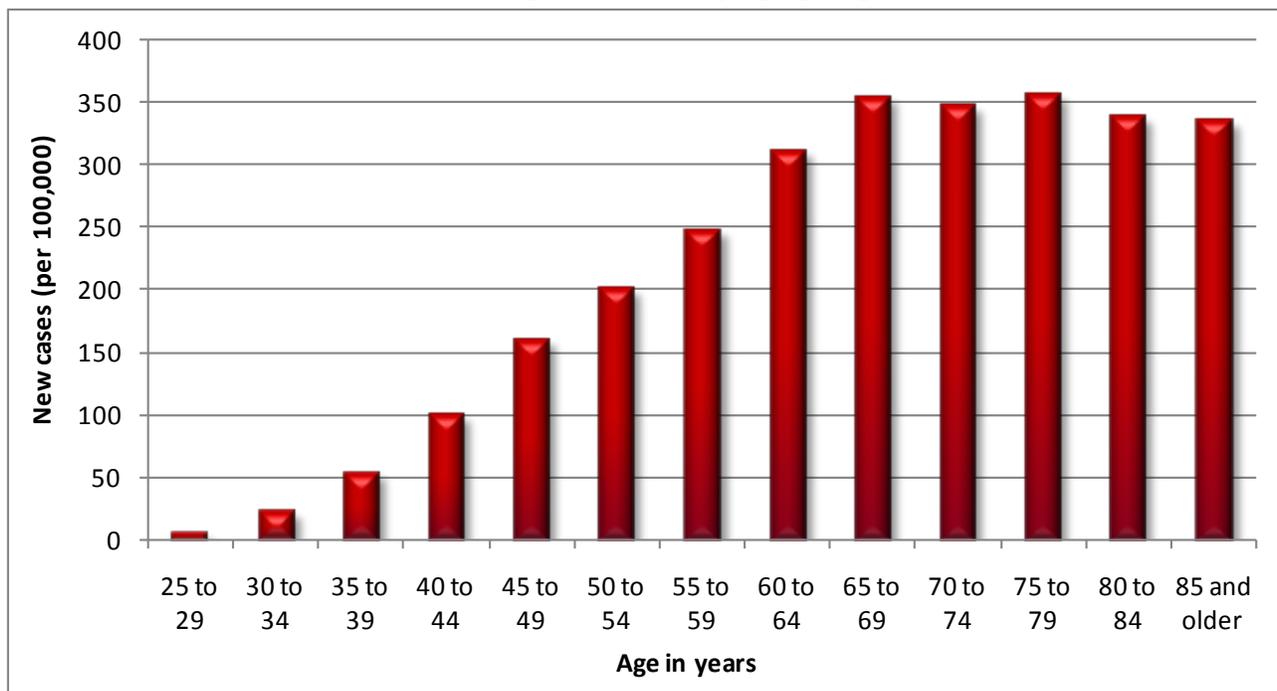
Note(s): Breast cancer refers to female breast cancer only. Although it can occur in men it is very rare. Less than 1% of breast cancers occur in males. Breast cancer is defined as ICD-O-3 primary sites C50.0 – C50.9 (excluding morphology types M-9050 to M-9055; M-9140; M-9590-0089).

Source: Statistics Canada, Canadian Cancer Registry (CCR) Database (July 2011 file) (CANSIM table 103-0553). Age standardized rates for ICD-O-3 primary sites of cancer, by sex, Canada, provinces and territories, annual.

The risk of breast cancer increases considerably with age (Chart 7). More than half of all new breast cancer cases occur in women aged 50 to 69. Breast

cancer does occur in young women, with about 11% of diagnosed cases occurring in women younger than 45.

Chart 7: Breast cancer, incidence rates per 100,000, by age group, Canada, 2007



Note(s): Breast cancer refers to female breast cancer only. Although it can occur in men it is very rare. Less than 1% of breast cancers occur in males. Breast cancer is defined as ICD-O-3 primary sites C50.0 – C50.9 (excluding morphology types M-9050 to M-9055; M-9140; M-9590-0089).

Source: Statistics Canada, Canadian Cancer Registry (CCR) Database (July 2011 file) (CANSIM table 103-0550). Rates for ICD-O-3 primary sites of cancer, by sex, Canada, provinces and territories, annual.

Breast cancer survival and mortality

There were 5,066 deaths caused by breast cancer in Canada in 2007, resulting in a mortality rate of 30.4 deaths per 100,000 women. Breast cancer accounts for 7.3% of cancer-related deaths (15.3% of female cancer deaths) and 2.2% of all mortality (4.3% of all

female mortality). Mortality rates for breast cancer have been declining since they peaked in the mid-1980s, likely because of increased use of screening and more effective treatments.¹⁶ Women diagnosed with breast cancer have a relatively high five-year survival (88%).⁵

Prostate cancer

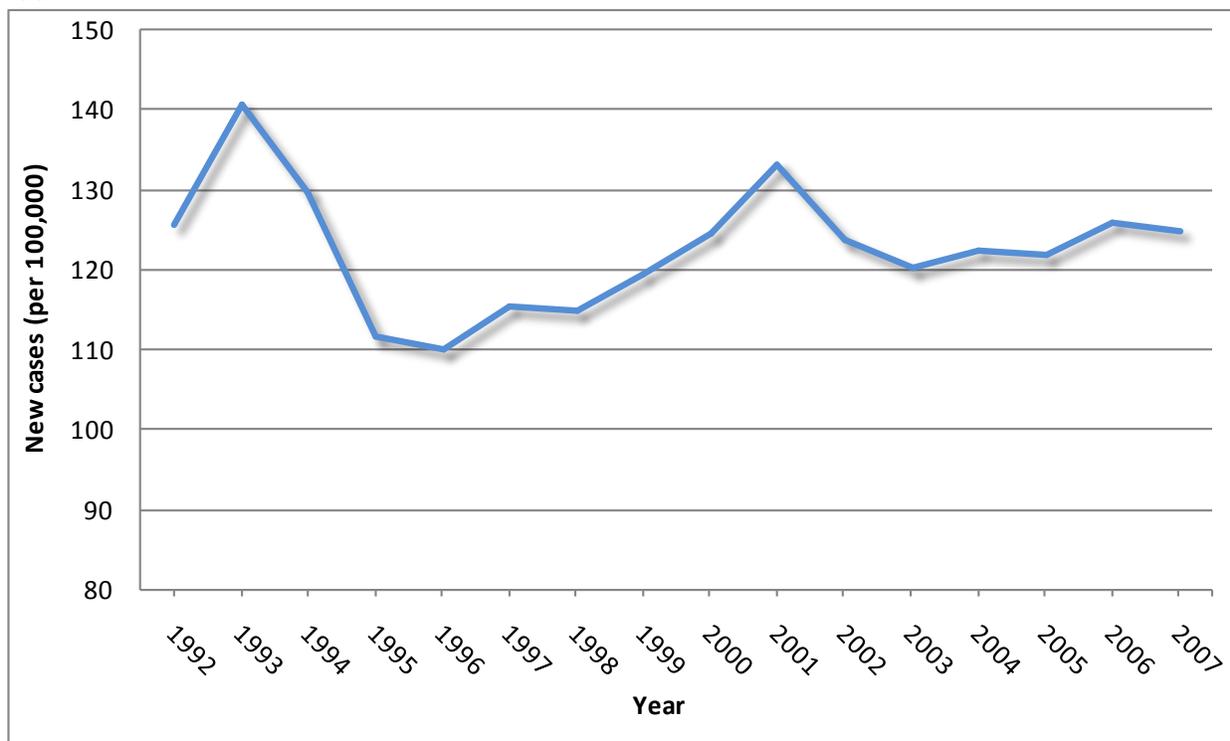
Despite only occurring in the male population, prostate cancer is the most commonly diagnosed cancer in Canada: 23,231 new cases were reported in 2007, or 142.3 cases per 100,000 men.

Over the past twenty years the age-standardized rate of diagnosed prostate cancer cases has had a gradual upward trend with fluctuations over time.³ Rates peaked in 1993, at 140.7 cases per 100,000 men, mainly caused by the introduction of **prostate cancer screening**¹⁷ which enabled greater detection of the disease. Cases spiked again in 2001, which may have been related to greater public

awareness of the availability of the PSA test.¹⁸ Since then, rates have remained fairly stable in the range of 120.4 to 126.1 cases per 100,000 (Chart 8).

Prostate cancer screening uses two tests: the prostate-specific antigen (PSA) blood test and the digital rectal examination (DRE) test. Routine prostate screening using PSA is not recommended for those at average risk because there is no definitive evidence that screening such men without symptoms reduces deaths from prostate cancer. The DRE however is often performed as part of an annual health examination in men over the age of 50.

Chart 8: Prostate cancer, age-standardized incidence rates per 100,000, by year, Canada, 1992 to 2007



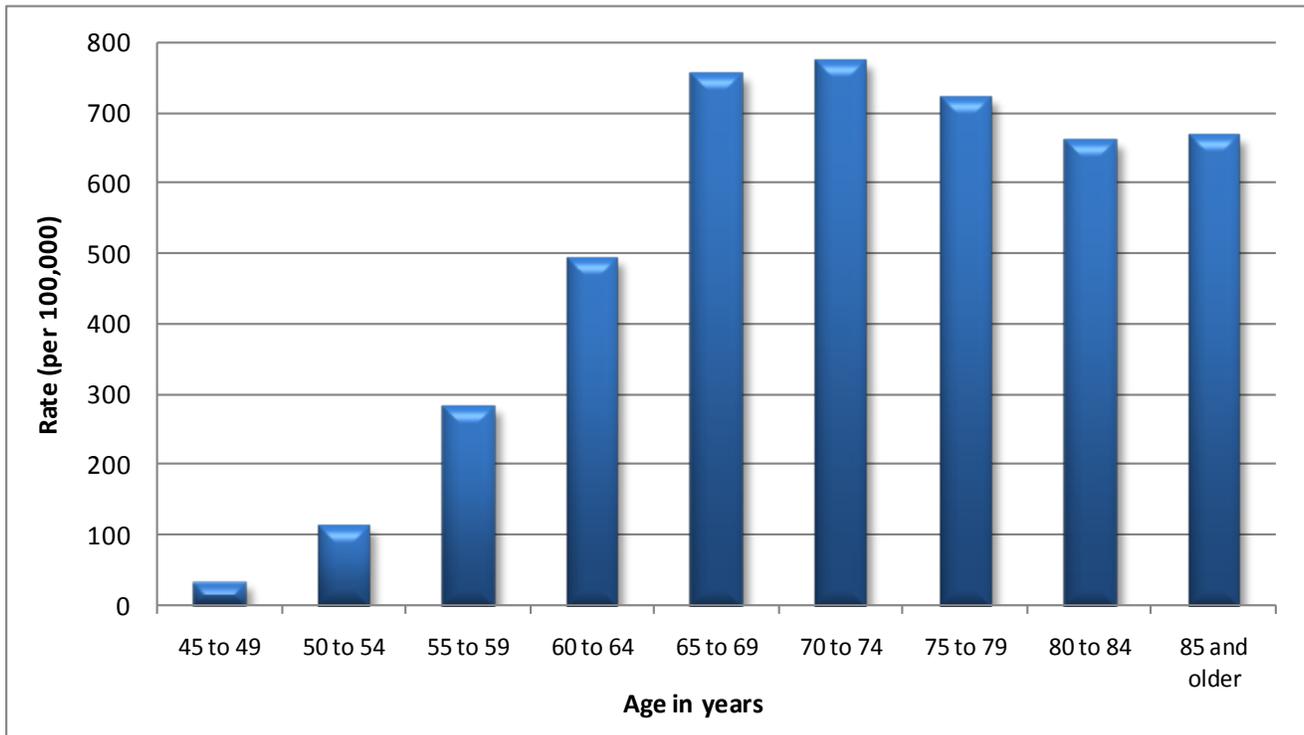
Note: Prostate cancer is defined as ICD-0-3 primary sites C61.9 (excluding morphology types M-9050 to M-9055; M-9140; M-9590 to M-9989).

Source: Statistics Canada, Canadian Cancer Registry (CCR) Database (July 2011 file) (CANSIM table 103-0553). Age-standardized rate for ICD-O-3 primary sites of cancer, by sex, Canada, provinces and territories, annual.

Most prostate cancer cases (97.8%) occur in men aged 50 and older (Chart 9). Incidence rises steeply with age, more so than with any other major cancer. Among men younger than 40, prostate cancer is

very rare: less than 1% of cases occur in men in this age group, and these are usually the result of genetic factors.¹⁹

Chart 9: Prostate cancer, incidence rates per 100,000, by age group, Canada, 2007



Note: Prostate cancer is defined as ICD-0-3 primary sites C61.9 (excluding morphology types M-9050 to M-9055; M-9140; M-9590 to M-9989).

Source: Statistics Canada, Canadian Cancer Registry (CCR) Database (July 2011 file) (CANSIM table 103-0550). Rates for ICD-O-3 primary sites of cancer, by sex, Canada, provinces and territories, annual.

Prostate cancer survival and mortality

In 2007, 3,632 deaths were caused by prostate cancer in Canada, resulting in a mortality rate of 22.2 per 100,000 men. Prostate cancer accounts for 5.2% of all cancer-related deaths (9.9% of all male cancer deaths) and 1.5% of all mortality (3.1% of all male mortality). Although prostate cancer is the third-most common cause of cancer-related death in Canadian men, mortality caused by prostate cancer

has been declining since 1993. These decreases are most likely because of earlier diagnosis and better treatment for prostate cancer.¹⁸

The relative survival of prostate cancer patients has been rising since the mid-1980s and is now very high. Men diagnosed with prostate cancer have a 97% likelihood of living for five years or longer compared with their counterparts in the general population.⁵



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The authors wish to thank the cancer subject matter team at Statistics Canada, especially Kim Boyuk, Hollie Anderson, Patricia Murison and Larry Ellison for their input.

1. Ruano-Ravina A, Figuerias A, Barros-Dios JM. Lung cancer and related risk factors: an update of the literature. *Public Health*. 2003;117(3):149–56.
2. Alberg AJ, Samet JM. Epidemiology of lung cancer. *Chest*. 2003;123(suppl 1):21S–49S.
3. Canadian Cancer Society, Steering Committee on Cancer Statistics. *Canadian Cancer Statistics 2011*. Toronto, ON: Canadian Cancer Society; 2011.
4. Kort EJ, Paneth N, Vande Woude GF. The decline in U.S. cancer mortality in people born since 1925. *Cancer Res*. 2009;69(16):6500–6505.
5. Special tabulation for estimated five-year relative survival ratios for 2007 (Canada excluding Quebec) using data from the Canadian Cancer Registry and the period method. For information on the method, see Ellison EF, Wilkins K. An update on cancer survival. *Health Rep (Statistics Canada Catalogue no. 82-003-X)*. 2010;21(3):55–60.
6. Survival estimates reflect the average survival of large groups of people and do not necessarily reflect an individual's chances of survival.
7. Salomaa ER, Sallinen S, Hiekkanen H, Liippo K. Delays in the diagnosis and treatment of lung cancer. *Chest*. 2005;128(4):2282–88.
8. Youlten DR, Cramb SM, Baade PD. The international epidemiology of lung cancer: geographical distribution and secular trends. *J Thorac Oncol*. 2008;3(8):819–31.
9. Gibbons L, Waters C, Mao Y, Ellison L. Trends in colorectal cancer incidence and mortality. *Health Rep (Statistics Canada Catalogue no. 82-003-X)*. 2001;12(2):41–55.
10. Bryant HE, Fekete SV, Major DH. Pan-Canadian initiatives in colorectal cancer screening: adopting knowledge translation tools to accelerate uptake and impact. *Curr Oncol*. 2011;18(3):111–18.
11. Canadian Cancer Society. Colorectal cancer web page. Updated Dec 15, 2010. Accessed July 11, 2011. Available from http://www.cancer.ca/Canada-wide/Prevention/Getting%20checked/Colorectal%20cancer%20NEW.aspx?sc_lang=en.
12. Decosse JJ, Ngoi SS, Jacobsen JS, Cennerazzo WJ. Gender and colorectal cancer. *Eur J Cancer Prev*. 1993;2(2):105–15.
13. In this article, breast cancer refers to female breast cancer only. Although breast cancer can occur in men, it is very rare. Less than 1% of breast cancers occur in males.
14. Health Canada. It's Your Health: Breast Cancer. Updated 2004. Accessed July 11, 2011. Available from <http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/diseases-maladies/breast-sein-eng.php>.
15. Gompel A, Plu-Bureau G. Is the decrease in breast cancer incidence related to a decrease in postmenopausal hormone therapy? *Ann N Y Acad Sci*. 2010;1205:268–76.
16. Wadden N, Doyle GP. Breast cancer screening in Canada: a review. *Can Assoc Radiol J*. 2005;56(5):271–75.
17. Public Health Agency of Canada. What Should I Know About Prostate Cancer? No longer available. Accessed July 11, 2011.
18. Fradet Y, Klotz L, Trachtenberg J, Zlotta A. The burden of prostate cancer in Canada. *Can Urol Assoc J*. 2009;3(3 suppl 2):S92–S100.
19. McCormak M, Saad F. *Understanding Prostate Cancer*. Montreal, QC: Rogers Media Publishing; 2004.

Appendix 1: The top 15 most common cancers, by sex, Canada, 2007

Rank	Primary site of cancer	Number of new cases	Incidence rate per 100,000
	Both sexes		
1	Prostate	23231	70.5
2	Lung and bronchus	22865	69.4
3	Breast	21169	64.3
4	Colorectal	20483	62.2
5	Non-Hodgkin's lymphomas	6770	20.6
6	Bladder (including in situ)	6730	20.4
7	Melanomas of the skin	4834	14.7
8	Kidney and renal pelvis	4821	14.6
9	Corpus uteri	4353	13.2
10	Thyroid	4172	12.7
11	Pancreas	3912	11.9
12	Stomach	3030	9.2
13	Ovary	2435	7.4
14	Brain	2423	7.4
15	Chronic lymphocytic leukemia	2088	6.3
	Males		
1	Prostate	23231	142.3
2	Lung and bronchus	12465	76.4
3	Colorectal	11211	68.7
4	Bladder (including in situ)	4932	30.2
5	Non-Hodgkin's lymphomas	3760	23
6	Kidney and renal pelvis	2874	17.6
7	Melanomas of the skin	2558	15.7
8	Pancreas	1954	12
9	Stomach	1931	11.8
10	Brain	1390	8.5
11	Chronic lymphocytic leukemia	1269	7.8
12	Liver	1191	7.3
13	Esophagus	1186	7.3
14	Multiple myeloma	1071	6.6
15	Thyroid	943	5.8

Source: Statistics Canada Canadian Cancer Registry (CCR) Database (July 2011 file) (CANSIM table 103-0550). New cases for ICO-O-3 primary sites of cancer (based on the July 2011 CCR tabulation file), by age group and sex, Canada, provinces and territories, annual.

continued...

Appendix 1: The top 15 most common cancers, by sex, Canada, 2007 - continued

Rank	Primary site of cancer	Number of new cases	Incidence rate per 100,000
Females			
1	Breast	21006	126.5
2	Lung and bronchus	10400	62.6
3	Colorectal	9272	55.8
4	Corpus uteri	4353	26.2
5	Thyroid	3229	19.4
6	Non-Hodgkin's lymphomas	3010	18.1
7	Ovary	2435	14.7
8	Melanomas of the skin	2276	13.7
9	Pancreas	1958	11.8
10	Kidney and renal pelvis	1947	11.7
11	Bladder (including in situ)	1798	10.8
12	Cervix uteri	1396	8.4
13	Stomach	1099	6.6
14	Brain	1033	6.2
15	Multiple myeloma	919	5.5

Source: Statistics Canada Canadian Cancer Registry (CCR) Database (July 2011 file) (CANSIM table 103-0550). New cases for ICO-O-3 primary sites of cancer (based on the July 2011 CCR tabulation file), by age group and sex, Canada, provinces and territories, annual.