

## **Summary Report on Cancer Statistics in Alberta**

**November 2009**

*Surveillance - Cancer Bureau  
Health Promotion, Disease and Injury Prevention*

## Purpose of the Report

The Surveillance Department-Cancer Bureau; Health Promotion, Disease and Injury Prevention; Alberta Health Services is dedicated to Alberta Health Services' strategic plan of quality (responsive to communities and improving population health), access (supporting research commitments) and sustainability. Specifically, the Surveillance Department contributes to the common goal of reducing the burden of cancer by conducting cancer surveillance through the collection, integration, analysis and dissemination of cancer related information.

This report is designed to provide comprehensive and detailed information regarding cancer in Alberta. This document will help support health professionals, researchers and policy makers in the planning, monitoring and evaluation of cancer-related health programs. It will also be a useful education tool for the general public and media.

## Navigating the Report

This document provides a summary of cancer statistics in Alberta. Details about individual cancer types are available within separate documents.

## Data Clarifications

In this document, the term "cancer" refers to invasive cancers unless otherwise specified. It is important to note that this document contains both actual and estimated data; distinctions are made where applicable. The numbers published in this report should be considered provisional, as a few cases and deaths may be registered in subsequent years. The data in this report reflect the state of the Alberta Cancer Registry as of June 1, 2009.

Incidence rates presented in this document exclude non-melanoma skin cancer (NMSC) cases. Although approximately 30% of the malignant cancers diagnosed among Albertans each year are NMSC, these tumours are generally not life-threatening and are usually reported and coded inconsistently across registries; therefore NMSC are rarely included in cancer registry reports.

For detailed descriptions about data sources and how they affect data presented in this report, please see the **Data Sources and Quality** section.

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## Cancer in Alberta

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- In 2006, there were **13,539** new cancer cases diagnosed in Alberta and **5,472** Albertans died from the disease.
- Cancer is the leading cause of death in Alberta, accounting for **29%** of deaths in the province for all ages in 2006. It accounts for **37%** of deaths in the 35-64 age group which is more than cardiovascular disease, stroke, infectious diseases and accidental injuries combined.
- In 2006, cancer was the leading contributor to potential years of life lost (PYLL) for men and women, representing **28%** of the PYLL resulting from all causes of death in Alberta.
- Approximately **1 in 2** Albertans will develop cancer in their lifetime and **1 in 4** will die from cancer.
- As of December 31, 2006, approximately **93,500** Albertans were alive who had previously been diagnosed with cancer.
- The most common cancers in Alberta in 2006 were prostate, breast, lung and colorectal. These four cancers accounted for **55%** of new cancer cases and about half of cancer deaths.

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## Prostate Cancer

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- Approximately **1 in 6** men will develop invasive prostate cancer within their lifetime and **1 in 26** will die from the disease.
- In 2006, **3,043** potential years of life were lost due to prostate cancer.
- As of December 31, 2006, approximately **16,860** Albertans were alive who had previously been diagnosed with prostate cancer.
- From 2001 to 2006\*, prostate cancer **incidence rates have decreased**.
- From 1995 to 2006\*, prostate cancer **mortality rates have decreased**.
- In 2006, there were **2,114** new cases of prostate cancer in Alberta and **337** deaths due to the disease.
- If current trends continue, approximately **2,500** cases of prostate cancer are expected to be diagnosed in 2011.
- The five-year relative survival for prostate cancer in Alberta is approximately **96%** for those diagnosed between 2004 and 2006

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## Breast Cancer

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- Approximately **1 in 9** women will develop invasive breast cancer within their lifetime and **1 in 32** will die from the disease.
- In 2006, **7,538** potential years of life were lost due to breast cancer.
- As of December 31, 2006, approximately **20,200** female Albertans were alive who had previously been diagnosed with breast cancer.
- From 1986 to 2006\*, female breast cancer **incidence rates have increased**.
- From 1986 to 2006\*, female breast cancer **mortality rates have decreased**.
- In 2006, there were **1,902** new cases of breast cancer in Albertan women and **381** deaths due to the disease.
- If current trends continue, approximately **2,090** cases of breast cancer are expected to be diagnosed in 2011.

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\* Year range represents the period over which the most recent significant trend was observed.

- The five-year relative survival for breast cancer in Alberta is approximately **89%** for those diagnosed between 2004 and 2006.

## Lung Cancer

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- Approximately **1 in 13** men and **1 in 15** women will develop invasive lung cancer within their lifetime.
- In 2006, **20,650** potential years of life were lost due to lung cancer.
- As of December 31, 2006, approximately **3,070** Albertans were alive who had previously been diagnosed with lung cancer.
- From 1986 to 2006\*, **male lung cancer incidence rates have decreased** while **female lung cancer incidence rates have increased** over the same period.
- From 1990 to 2006\*, **male lung cancer mortality rates have decreased** while **female lung cancer mortality rates have increased** over the period 1989 to 2006\*.
- In 2006, there were **1,752** new cases of lung cancer in Alberta and **1,357** deaths due to the disease.
- If current trends continue, approximately **1,030** male and **1,070** female cases of lung cancer are expected to be diagnosed in 2011.
- The five-year relative survival for lung cancer in Alberta is approximately **13%** for those diagnosed between 2004 and 2006.

## Colorectal Cancer

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- Approximately **1 in 14** men and **1 in 17** women will develop invasive colorectal cancer within their lifetime.
- In 2006, **8,481** potential years of life were lost due to colorectal cancer.
- As of December 31, 2006, approximately **6,560** Albertans were alive who had previously been diagnosed with colorectal cancer.
- From 1986 to 2006\*, both **male and female colorectal cancer incidence rates have increased**.
- From 1986 to 2006\*, **male colorectal cancer mortality rates have remained stable**. Similarly, **female colorectal cancer mortality rates have remained stable** over the period 1989 to 2006\*.
- In 2006, there were **1,636** new cases of colorectal cancer in Alberta and **606** deaths due to the disease.
- If current trends continue, approximately **1,120** male case and **850** female cases of colorectal cancer are expected to be diagnosed in 2011.
- The five-year relative survival for colorectal cancer in Alberta is approximately **62%** for those diagnosed between 2004 and 2006.

## Non-Hodgkin Lymphoma

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- Approximately **1 in 45** men and **1 in 52** women will develop invasive non-Hodgkin lymphoma within their lifetime.
- In 2006, **2,807** potential years of life were lost due to non-Hodgkin lymphoma.

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\* Year range represents the period over which the most recent significant trend was observed.

- As of December 31, 2006, approximately **3,410** Albertans were alive who had previously been diagnosed with non-Hodgkin lymphoma.
- From 1986 to 2006\*, both **male and female** non-Hodgkin lymphoma **incidence rates have increased**.
- From 1986 to 2006\*, both **male and female** non-Hodgkin lymphoma **mortality rates have remained stable**.
- In 2006, there were **552** new cases of non-Hodgkin lymphoma in Alberta and **200** deaths due to the disease.
- If current trends continue, approximately **400** male cases and **300** female cases of non-Hodgkin lymphoma are expected to be diagnosed in 2011.
- The five-year relative survival for non-Hodgkin lymphoma in Alberta is approximately **65%** for those diagnosed between 2004 and 2006.

## Melanoma of the Skin

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- Approximately **1 in 60** men and **1 in 74** women will develop invasive melanoma of the skin within their lifetime.
- As of December 31, 2006, approximately **5,520** Albertans were alive who had previously been diagnosed with melanoma of the skin.
- From 1986 to 2006\*, **male** melanoma **incidence rates have increased** while female melanoma **incidence rates have remained stable** over the period 1996 to 2006\*.
- From 1986 to 2006\*, **male** melanoma **mortality rates have increased** while **female** melanoma **incidence rates have remained stable** over the same period.
- As of December 31, 2006, approximately **5,520** Albertans were living with melanoma of the skin.
- In 2006, there were **482** new cases of melanoma of the skin in Alberta and **70** deaths due to the disease.
- If current trends continue, approximately **320** male cases and **260** female cases of melanoma of the skin are expected to be diagnosed in 2011.
- The five-year relative survival for melanoma of the skin in Alberta is approximately **89%** for those diagnosed between 2004 and 2006.

## Leukemia

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- Approximately **1 in 59** men and **1 in 64** women will develop invasive leukemia within their lifetime.
- In 2006, **3,213** potential years of life were lost due to leukemia.
- As of December 31, 2006, approximately **2,740** Albertans were alive who had previously been diagnosed with leukemia.
- From 1986 to 2006\*, **male** leukemia **incidence rates have remained stable** while **female** leukemia **incidence rates have increased** over the same period.
- From 1986 to 2006\*, both **male and female** leukemia **mortality rates have remained stable**.
- In 2006, there were **447** new cases of leukemia in Alberta and **184** deaths due to the disease.

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\* Year range represents the period over which the most recent significant trend was observed.

- If current trends continue, approximately **300** male cases and **200** female cases of leukemia are expected to be diagnosed in 2011.
- The five-year relative survival for leukemia in Alberta is approximately **65%** for those diagnosed between 2004 and 2006.

## Kidney Cancer

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- Approximately **1 in 60** men and **1 in 93** women will develop invasive kidney cancer within their lifetime.
- In 2006, **1,713** potential years of life were lost due to kidney cancer.
- As of December 31, 2006, approximately **2,510** Albertans were alive who had previously been diagnosed with kidney cancer.
- From 1986 to 2006\*, both **male and female** kidney cancer **incidence rates have remained stable**.
- From 1986 to 2006\*, both **male and female** kidney cancer **mortality rates have remained stable**.
- In 2006, there were **401** new cases of kidney cancer in Alberta and **109** deaths due to the disease.
- If current trends continue, approximately **280** male cases and **160** female cases of kidney cancer are expected to be diagnosed in 2011.
- The five-year relative survival for kidney cancer in Alberta is approximately **68%** for those diagnosed between 2004 and 2006.

## Pancreatic Cancer

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- Approximately **1 in 79** men and **1 in 61** women will develop invasive pancreatic cancer within their lifetime.
- In 2006, **4,488** potential years of life were lost due to pancreatic cancer.
- As of December 31, 2006, approximately **290** Albertans were alive who had previously been diagnosed with pancreatic cancer.
- From 1986 to 2006\*, **male** pancreatic cancer **incidence rates have decreased** while **female** pancreatic cancer **incidence rates have remained stable** over the same period.
- From 1986 to 2006\*, **male** pancreatic cancer **mortality rates have decreased** while **female** pancreatic cancer **mortality rates have remained stable** over the same period.
- In 2006, there were **329** new cases of pancreatic cancer in Alberta and **312** deaths due to the disease.
- If current trends continue, approximately **200** male cases and **210** female cases of pancreatic cancer are expected to be diagnosed in 2011.
- The five-year relative survival for pancreatic cancer in Alberta is approximately **3%** for those diagnosed between 2004 and 2006.

## Cervical Cancer

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- Approximately **1 in 127** women will develop cervical cancer within their lifetime and **1 in 394** will die from the disease.
- In 2006, **1,283** potential years of life were lost due to cervical cancer.

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\*Year range represents the period over which the most recent significant trend was observed.

- As of December 31, 2006, approximately **2,470** Albertans were living with cervical cancer.
- From 1986 to 2006\*, cervical cancer **incidence rates have remained stable**.
- From 1986 to 2006\*, cervical cancer **mortality rates have decreased**.
- In 2006, there were **157** new cases of cervical cancer in Alberta and **43** deaths due to the disease.
- If current trends continue, approximately **180** cases of cervical cancer are expected to be diagnosed in 2011.
- The five-year relative survival for cervical cancer in Alberta is approximately **75%** for those diagnosed between 2004 and 2006.

## Childhood Cancer

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- In 2006, **104** children aged 0 to 14 years old were diagnosed with cancer in Alberta. The most common cancers were **leukemias** (35%) followed by **central nervous system tumors** (19%), **lymphomas** (13%) and **neuroblastomas** (8%).
- In 2006, **27** children aged 0 to 14 years died from childhood cancer in Alberta. The most common cancer causes of death in children were **central nervous system tumors** (31%) followed by **leukemias** (30%), **neuroblastomas** (14%) and **bone tumors** (7%).
- As of December 31, 2006, approximately **610** children aged 0 to 14 years were alive who had previously been diagnosed with cancer in Alberta and **1,826** Albertans were survivors of childhood cancer.
- From 1986 to 2006\*, childhood cancer **incidence rates have increased** for boys and girls.
- From 1986 to 2006\*, childhood cancer **mortality rates have decreased** for boys and girls.
- Five-year relative survival for all childhood cancers in Alberta is approximately **83%**. About **7%** of patients will die within the first year of their diagnosis.
- Childhood cancer incidence rates are highest in the first five years of life (between ages 0-4).
- Among infants (0-1 year old), the most common malignant cancers are **neuroblastomas**, followed by **leukemias** and **central nervous system tumors**.
- The most common malignant tumors for children between the ages of one and four are **leukemias**, **central nervous system tumors** and **neuroblastomas**.
- Most neuroblastomas are diagnosed before the age of four. As children get older, lymphomas and central nervous system tumors become more common and the risk of leukemia decreases.

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\*Year range represents the period over which the most recent significant trend was observed.

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## Further Information

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### Data Sources and Quality

The data presented within this report are derived from the Alberta Cancer Registry (ACR). The ACR is responsible for recording and maintaining data on all new primary cancers, as well as all cancer deaths occurring within the province of Alberta, as mandated by the Regional Health Authorities (RHA) Act of Alberta.<sup>1</sup>

The quality of data collected by any registry is dependent on three factors: comparability, completeness and validity. Firstly, comparability is accomplished by applying standard practices regarding classification and coding of new cases and by using consistent definitions, such as the coding of multiple primaries. To achieve comparability, the ACR employs the International Classification for Oncology (ICD-O-2 for 1986-2000 data and ICD-O-3 for 2001 onwards) to classify all cancers by site and morphology. Cancer deaths are coded using the International Statistical Classification of Diseases and Related Health Problems (ICD-9 for 1986-2000 data and ICD-10 for 2001 onwards).

Secondly, completeness refers to the extent to which all the cancers in Alberta are accurately captured by the ACR. The ACR is notified of new cancers by doctors and laboratories throughout the province, who are mandated to report such information<sup>1</sup>. Cancer-related deaths are recorded and validated by the ACR using registry and Alberta Vital Statistics information. Over the years, the ACR has achieved a completeness of over 95%.

Lastly, validity depends on the documentation available and the level of expertise in the abstracting, coding and recording of data within a registry. The ACR has numerous data edits to ensure all information is input as accurately as possible. For example, date of diagnosis of cancer must be after the date of birth. There are additional data quality reviews performed on ACR data by the Canadian Cancer Registry and the North American Association of Central Cancer Registries (NAACCR).

Confidentiality and security of personal information are protected by the Regional Health Authorities (RHA) Act and the Health Information Act (HIA). The Alberta Cancer Registry maintains the trust of the public, the government, the data provider, and the general public by requiring rigorous confidentiality and security practices, in accordance with the RHA Act and HIA, to access the Registry database. Formal policies on information disclosure are available on request from the Alberta Cancer Registry.

By recording information on cancer cases and cancer-related deaths over the past few decades, the Alberta Cancer Registry has been able to compare cancer statistics in Alberta with other provinces and countries. The Registry also provides information to health care stakeholders throughout the province so that they can plan effective cancer control activities including prevention, treatment and research programs.

For many years, the Alberta Cancer Registry has been certified by NAACCR and has achieved a Gold Standard for completeness of the data, timely reporting and other measures that judge data quality.



## Glossary of Terms

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**Age-specific rates:**

The number of new cancer cases or cancer deaths per 100,000 people per year within a given age group.

**Age-standardized (incidence/mortality) rates:**

A weighted average of age-specific rates using a standard population distribution. They reflect the overall rates that would be expected if the population of interest had an age structure identical to the standard population they used to compare cancer rates among populations or identify trends over time.

**Benign:**

A tumour that is not malignant (i.e. does not spread).

**Carcinoma:**

A tumour that begins in the skin or in tissues that line or cover body organs.

**Childhood cancer:**

Cancers diagnosed and cancer deaths in 0-14 year olds.

**Confidence intervals:**

An indication of the reliability of an estimate. A wide confidence interval indicates less precision and occurs when a population size is small.

**Count:**

Count refers to the number of cases (primaries) or deaths in a given time period. One patient may have multiple primaries.

**Incidence count:**

The frequency of new cancer cases during a period of time; often the number of new invasive cases diagnosed in a year.

**Invasive cancer:**

Cancer with the ability to spread beyond its point of origin.

**Life table:**

A life table estimates, for people at a certain age, what the probability is that they die before their next birthday. From this starting point, a number of statistics can be derived and thus also included in

the table: a) the probability of surviving any particular year of age; b) remaining life expectancy for people at different ages; c) the proportion of the original birth cohort still alive. They are usually constructed separately for males and females because of their substantially different mortality rates.

**Lymphatic system:**

A system of vessels that carry lymph between lymph nodes located throughout the body.

**Malignant:**

Refers to a tumour that invades and destroys surrounding tissues, may spread elsewhere in the body, and is likely to recur after removal; a cancerous tumour.

**Median Age:**

The age at which half of the population is older and half is younger.<sup>2</sup>

**Metastasis:**

Refers to the spread of the original tumour to other parts of the body.

**Mortality count:**

The number of deaths due to cancer during a period of time.

**Potential years of life lost (PYLL):**

PYLL is the total number of years of life lost obtained by multiplying, for each age group, the number of deaths by the life expectancy of survivors. The indicator was calculated by obtaining the number of deaths and mean life expectancy for each age group.<sup>3</sup>

**Prevalence:**

The number of people alive at a specific point in time with cancer. Complete prevalence is the number of people alive today who have ever been diagnosed with cancer. In this document, we report complete prevalence.

**Primary Site of Cancer:**

The tissue or organ in which the cancer originates.<sup>4</sup>

**Probability of developing/dying of cancer:**

The risk of an individual in a given age range developing/dying of cancer in a given time period, and is conditional on the person being cancer-free prior to the beginning of that age range.

**Prognosis:**

A prediction about the outcome or likelihood of recovering from a given cancer.

**Projection:**

An estimate of cancer incidence or mortality in the future, based on recent historical trends.

**Rate:**

The number of cancer cases or deaths occurring in a specified time period.

**Relative survival:**

The survival of cancer patients relative to that of the general population, assuming cancer was the only cause of death. It is the ratio of observed survival in a group of cancer patients relative to the expected survival of a similar group of people in the general public, matched by age and sex in Alberta.

**Stage of cancer:**

Refers to the degree of cancer progression and the size of tumor at the time of diagnosis. If the cancer has spread, the stage describes how far it has spread from the original site to other parts of the body.<sup>2</sup>

**Surveillance:**

Cancer surveillance includes the collection of data, and the review, analysis and dissemination of findings on incidence (new cases), prevalence, morbidity, survival and mortality. Surveillance also serves to collect information on the knowledge, attitudes and behaviours of the public with respect to practices that prevent cancer, facilitate

screening, extend survival and improve quality of life.<sup>5</sup>

**Survival - Cohort method:**

The cohort method provides survival estimates of cases having complete follow-up for the number of years of survival of interest. For example, cases diagnosed in 2001, for which vital status data are available to the end of year 2006, the cohort method may be used to obtain an estimate of five-year survival. The cohort survival represents the actual survival experience of individuals.

**Survival - Period analysis:**

The period method provides up-to-date survival estimate of recently diagnosed cases considering the survival experience of those cases within the most recent calendar period that allows for the estimation of a given period of survival. For example, to estimate the five year survival for cases diagnosed in 2004-2006, this method considers zero to one year survival experience for cases diagnosed in 2004-2006, one to two year survival experience for cases diagnosed in 2003-2005 who survived at least one year, and so on up to four to five year survival experience for cases diagnosed in 2000-2002 who survived at least four years.

**Three-year moving average:**

Three-year moving averages are used to smooth out year-to-year fluctuations in age-standardized rates so that the underlying trend may be more easily observed. They are calculated based on aggregating three years of data.

**Tumour:**

An abnormal mass of tissue that is not inflammatory, arises without obvious cause from cells of pre-existent tissue, and possesses no physiologic function.

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## References

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5. Public Health Agency of Canada [Internet]. Canada. Government of Canada; c2009-10-07.Cancer Surveillance On-Line. Glossary; 2004 [cited 2009 Oct 7]; Available from: [http://dsol-smed.phac-aspc.gc.ca/dsol-smed/cancer/glossa\\_e.html](http://dsol-smed.phac-aspc.gc.ca/dsol-smed/cancer/glossa_e.html)

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## Contact Information

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If further information is required, please contact the Surveillance Department - Cancer Bureau, Alberta Health Services as follows:



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