Alberta Health Services

Report on Cancer Statistics in Alberta

Childhood Cancer

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 childhood 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 information on childhood cancer statistics in Alberta. Details about other individual cancer types are available within separate documents. The words highlighted in ***dark blue*** are terms described in detail within the **Glossary**.

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.

Summary

- 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 old 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.
- Since 1986, childhood cancer **incidence rates have increased** for boys and girls.
- Since 1986, 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.

Childhood Cancer in Alberta

Childhood cancers are relatively rare in Alberta. In this report, childhood cancers are defined as invasive cancers that affect children up to and including the age of 14. Childhood cancers account for 0.5% of all new cancer cases (excluding non melanoma skin cancer) diagnosed in Alberta in 2006. Although childhood cancers are rare, they have a profound impact on families and communities. In addition, childhood cancer survivors are more likely to develop additional cancers as they age.[1]

Childhood cancers are classified differently than adult cancers. As with adults, the classification of childhood cancer is based both on tumor morphology and cancer site. However, greater emphasis is placed on morphology rather than site, as compared to adults where greater emphasis is placed on site. In this report, childhood cancers are classified according to the International Classification of Childhood Cancer, third edition[2], whereas adult cancers are classified according to the International Classification of Diseases for Oncology (ICD-O-3), third edition.[3]

The following table provides an overview of childhood cancers in Alberta. Explanations and further details on New Cases, Age-Standardized Incidence Rates, Deaths, Age-Standardized Mortality Rates and 5-Year Relative Survival can be found in relevant sections of this report.

Table 13-1: New Cases and Deaths, Average Annual Age-Standardized Incidence Rates (ASIRs)[*†] and Mortality Rates (ASMRs)[†‡], Ages 0-14, Alberta, 2002-2006.

Diagnostic Group	New Cases	ASIRs	Deaths	ASMRs
Total (5 years)	452	143.7	84	30.9
I. Leukemia	156	48.6	25	8.1
a. Lymphoid	128	40.6	15	4.8
b. Acute Myeloid	14	4.2	4	1.7
II. Central Nervous System	85	25.4	26	10.9
a. Ependymoma	11	3.3	6	2.8
b. Astrocytoma	46	13.3	9	3.2
c. Intracranial & Intraspinal Embryonal	20	6.4	8	3.2
III. Lymphoma	59	21.2	3	1.1
a. Hodgkin Lymphoma	24	8.4	1	0
b. Burkitt Lymphoma	11	4.2	1	0
c. Non-Hodgkin Lymphoma	20	8.0	1	0
IV. Neuroblastoma & Other PNC	36	13.1	12	3.3
a. Neuroblastoma & Ganglioneuroblastoma	36	13.1	12	3.3
V. Soft Tissue	28	8.0	3	1.6
a. Rhabdomyosarcoma	13	3.8	2	1.0
VI. Renal Tumours	26	7.6	5	2.7
a. Nephroblastoma	25	7.6	4	2.2
VII. Malignant Bone	20	6.6	6	1.6
VIII. Other Malignant Epithelial	12	4.6	2	1.0
IX. Germ Cell Tumours and Other Gonadal	13	4.6	1	0

[†] Standardized to 1991 Canadian Population
[‡] ASIR and ASMRs are rates per 1,000,000 not 100,000

The number of diagnoses, the number of deaths, incidence rates and mortality rates are presented for the main childhood cancer categories (**Table 13-1**).

Prevalence

The ***prevalence*** of a disease is defined as the number of people currently living with that disease. In this section of the report, the cancer prevalence presented describes the number of children (0-14 years old) alive as of December 31, 2006 who had ever been diagnosed with cancer.

Prevalence is a useful indicator of the impact of cancer on individuals, the healthcare system and the community as a whole. Although many cancer survivors lead healthy and productive lives, the experience can have a strong impact on the physical and emotional well-being of individuals and their families. The cancer experience can also result in the continued use of the healthcare system through rehabilitation or support services, as well as loss of work productivity that can affect the whole community.

The total number of children living in Alberta is approximately 641,000[4], or about one fifth of the Alberta population. As of December 31, 2006, approximately **610** children (0-14 years old) were alive who had previously been diagnosed with cancer and 1826 Albertans had survived a childhood cancer.

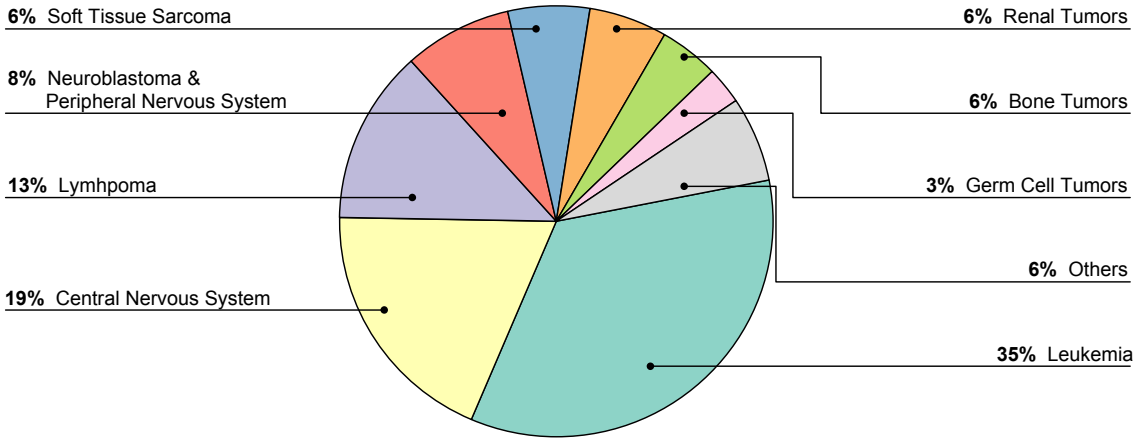
Incidence and Mortality Counts

Incidence counts are the number of new cancer cases diagnosed during a specific time period in a specific population. In this section of the report, incidence counts refer to the number of new childhood cancers (children aged 0-14) diagnosed in Alberta between 2002 and 2006.

Mortality counts describe the number of deaths attributed to childhood cancer during a specified period of time in a specific population. In this section of the report, mortality counts refer to the number of deaths due to childhood cancer (children aged 0-14) in Alberta between 2002 and 2006, regardless of date of diagnosis.

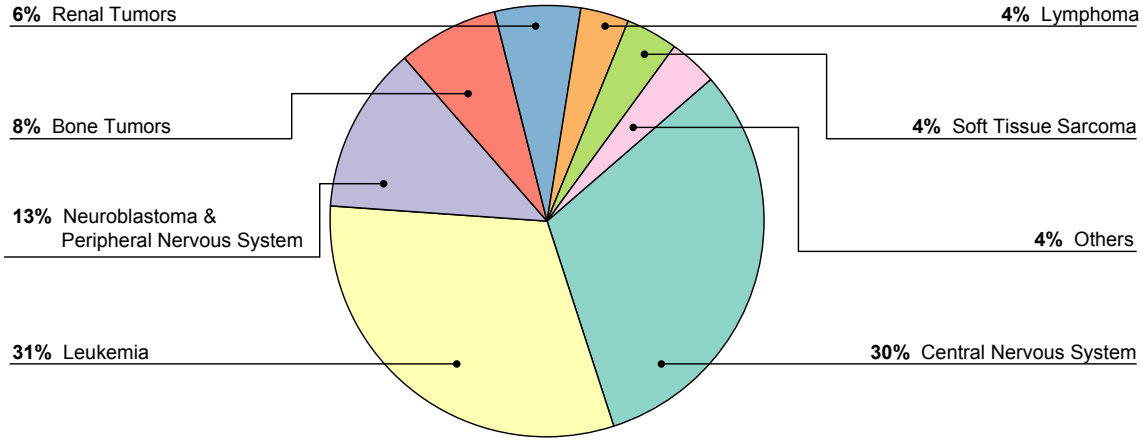
The following two figures illustrate the proportion of new cancer cases and cancer deaths by cancer type.

Figure 13-1: New Cancer Cases, Ages 0-14, Alberta, 2002-2006



Between 2002 and 2006, in total 452 childhood cancer cases were diagnosed in Alberta. The most commonly diagnosed childhood cancers were leukemia (35%), brain cancer (19%), and lymphoma (13%); these cancers accounted for 67% of all childhood cancers (**Figure 13-1)**. Of the 156 childhood leukemia diagnoses, 128 cases (82%) were lymphoid leukemia and 14 cases (9 %) were acute myeloid leukemia. Of the 59 children diagnosed with lymphoma, 24 cases (41%) were Hodgkin lymphoma, 11 cases (19%) were Burkitt lymphoma, and 20 cases (34%) were non-Hodgkin lymphoma.

Figure 13-2: Childhood Cancer Deaths, Ages 0-14, Alberta, 2002-2006



Of the 80 childhood cancer deaths between 2002 and 2006, 31% were attributable to central nervous system cancers, 31% to leukemia and 13% to neuroblastoma (**Figure 13-2**). These three cancers account for 75% of all childhood cancer deaths.

Incidence and Mortality Rates

Incidence counts are the number of new cancer cases diagnosed during a specific time period in a specific population. In this section of the report, incidence counts refer to the number of new childhood cancer diagnoses in Alberta in a calendar year. Incidence rates are the number of new cancer cases diagnosed per 1,000,000 population in a specific time period.

Mortality counts describe the number of deaths attributed to cancer during a specific period of time in a specific population. In this section of the report, mortality counts refer to the number of deaths due to childhood cancer in Alberta in a calendar year, regardless of date of diagnosis. Mortality rates are the number of deaths per 1,000,000 population in a specific time period.

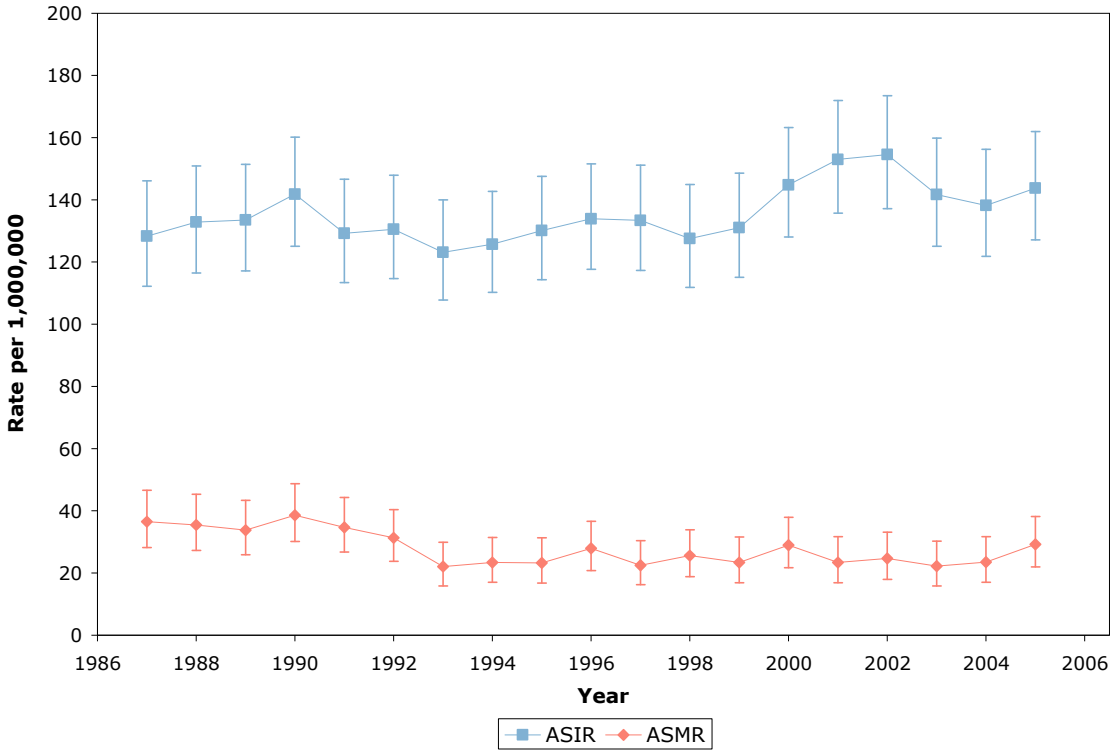
In order to compare cancer incidence or cancer mortality over time or between populations, ***age-standardized incidence rates (ASIRs)*** or ***age-standardized mortality rates (ASMRs)*** are presented. These are weighted averages of ***age-specific rates*** using a standard population. These rates are useful because they are adjusted for differences in age distributions in a population over time, which permit comparisons of cancer incidence or mortality among populations that differ in size, structure or time period. ASIRs and ASMRs give the overall incidence and mortality rates that would have occurred if the population of Alberta had been the same as the standard population. In this report the Canadian 1991 population is used as the standard population.

Three-year moving averages are used to smooth out year-to-year fluctuations so that the underlying trend may be more easily observed. They are calculated based on aggregating three years of data. Age-standardized incidence rates (ASIRs) and age-standardized mortality rates (ASMRs) are presented as three-year moving averages. This smoothing of trends is especially important when the number of cancer cases per year is relatively small, where year-to-year variability can be quite large.

Incidence and mortality can be affected by the implementation of public health prevention or screening strategies that either prevent disease or find cancer in its early ***stages*** when treatment is generally more successful, the development of cancer treatment programs that may impact chances of survival, and research innovations.

The following figures show incidence and mortality trends in Alberta. Separate analyses for both incidence and mortality are shown in subsequent sections. Significant increases or decreases were detected using JoinPoint[5] and are described in the text accompanying each graph. JoinPoint models are based on yearly rates; hence there may be slight differences in the rates presented in the text (from JoinPoint model) and the graphs (where ASIRs and ASMRs are shown as three-year moving averages).

Figure 13-3: Age-Standardized Incidence Rates (ASIRs)[*†‡] and Mortality Rates (ASMRs)[*†‡] for Childhood Cancer, Ages 0-14, Both Sexes, Alberta, 1986-2006

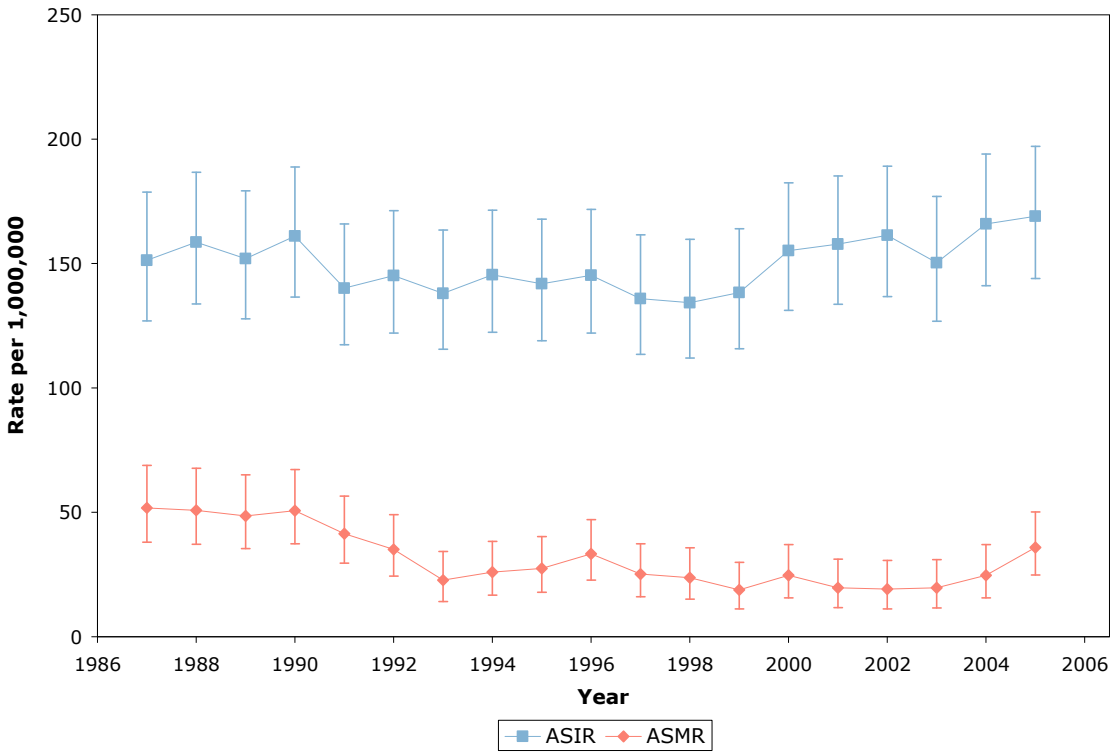


[*] Three year moving averages
[†] Standardized to 1991 Canadian Population
[‡] ASIRs and ASMRs are rates per 1,000,000 not 100,000

Childhood cancer ASIRs have increased since 1986 (**Figure 13-3**). In 2005, the three-year moving average ASIR for childhood cancer was around 143.7 per 1,000,000. From 1986 to 2006, childhood cancer ASIRs have increased 14% with an annual average increase rate of 0.7% in Alberta.

Childhood cancer ASMRs have decreased since 1986 (**Figure 13-3**). The three-year moving average ASMR for childhood cancer was 29.3 per 1,000,000 in 2005. The mortality rate has declined 30% since 1986 with an average annual reduction of 1.7% in Alberta.

Figure 13-4: Age-Standardized Incidence Rates (ASIRs)*†‡ and Mortality Rates (ASMRs)*†‡ for Childhood Cancer, Ages 0-14, Males, Alberta, 1986-2006

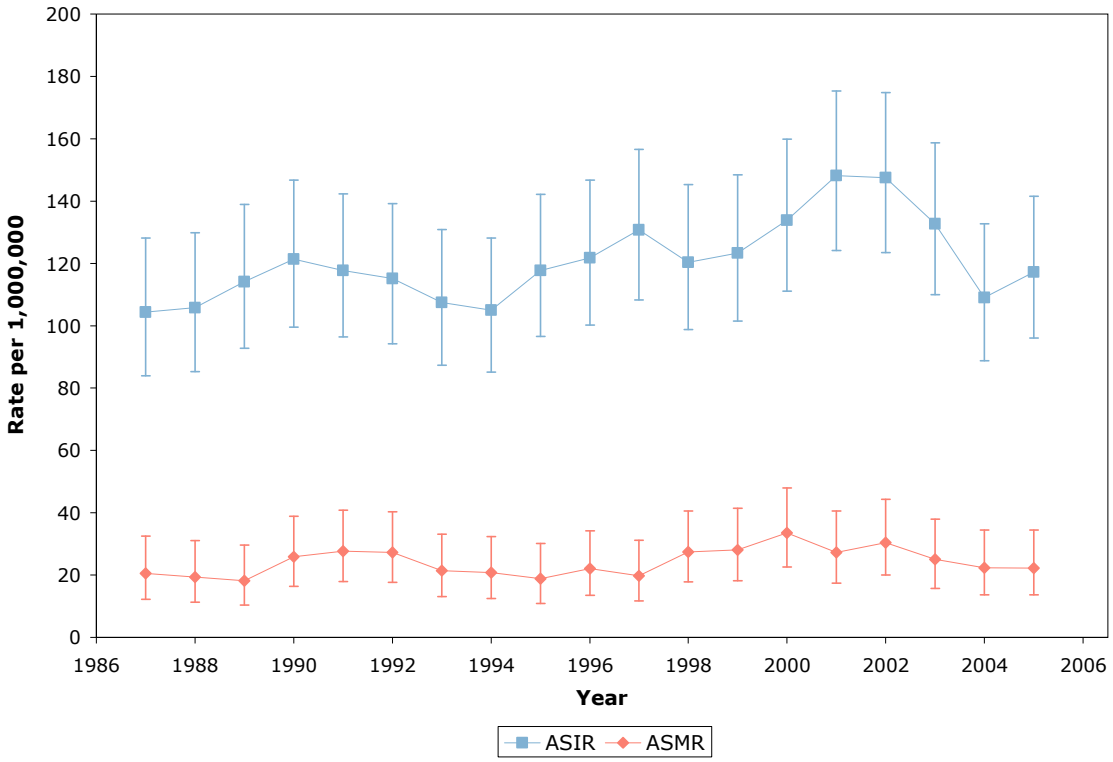


* Three year moving averages
† Standardized to 1991 Canadian Population
‡ ASIRs and ASMRs are rates per 1,000,000 not 100,000

Childhood cancer ASIRs for boys have increased since 1986 (**Figure 13-4**). The three-year moving average ASIR for childhood cancer in boys was 168.9 per 1,000,000 in 2005. From 1986 to 2006, childhood cancer ASIRs in boys have increased 8% with an average annual increase of 0.4% in Alberta.

Childhood cancer ASMRs in boys decreased from 1986 to 2003; however ASMRs increased after 2003 (**Figure 13-4**). The three-year moving average ASMR for childhood cancer in boys was 35.9 per 1,000,000 in 2005. The ASMRs for boys have declined 70% with an average annual reduction of 6.8% from 1986 to 2003, whereas between 2003 and 2006, ASMRs for boys have increased 168% with an average annual increase of 38.9% in Alberta.

Figure 13-5: Age-Standardized Incidence Rates (ASIRs)[*†‡] and Mortality Rates (ASMRs)[*†‡] for Childhood Cancer, Ages 0-14, Females, Alberta, 1986-2006

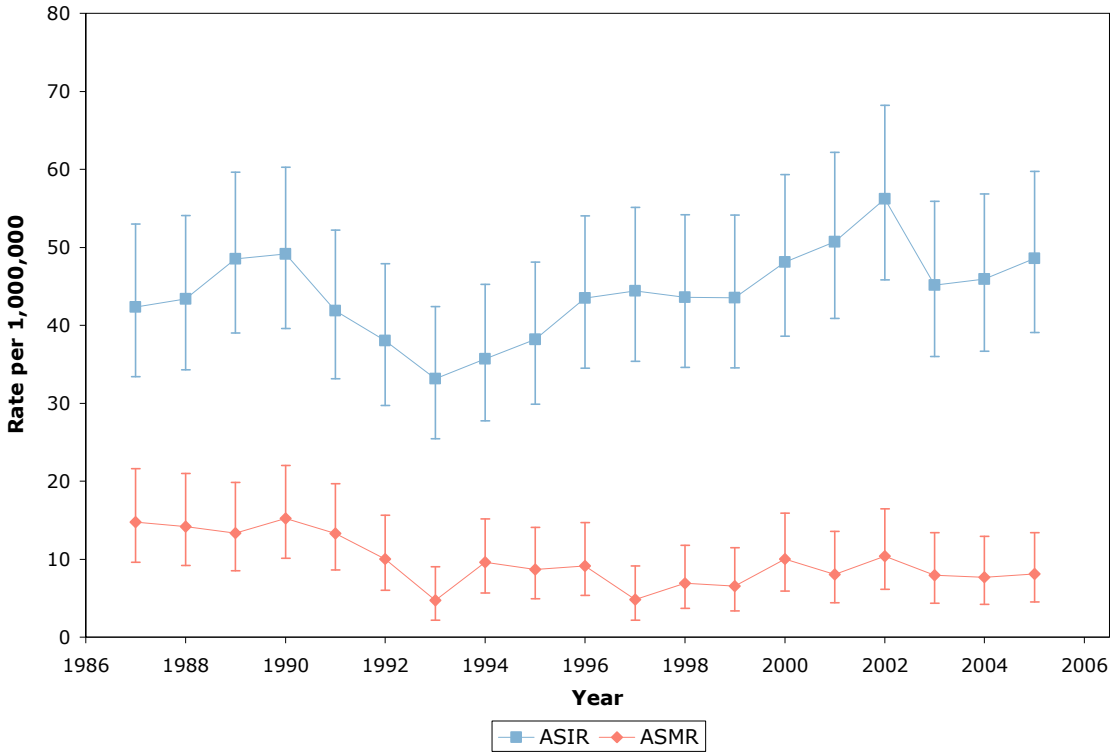


[*] Three year moving averages
[†] Standardized to 1991 Canadian Population
[‡] ASIRs and ASMRs are rates per 1,000,000 not 100,000

Childhood cancer ASIRs for girls have increased since 1986 (**Figure 13-5**). The three-year moving average ASIR for childhood cancer in girls was 117.2 per 1,000,000 in 2005. From 1986 to 2006, childhood cancer ASIRs have increased 24.5% with an average annual increase of 1.1% in Alberta.

Childhood cancer ASMRs for girls have increased (**Figure 13-5**). The three-year moving average ASMR for childhood cancer in girls was 22.3 per 1,000,000 in 2005. From 1986 to 2006, childhood cancer ASMRs for girls have increased 27% with an average annual increase rate of 1.2% in Alberta

Figure 13-6: Age-Standardized Incidence Rates (ASIRs)[*†‡] and Mortality Rates (ASMRs)[*†‡] for Childhood Leukemia, Ages 0-14, Both Sexes, Alberta, 1986-2006

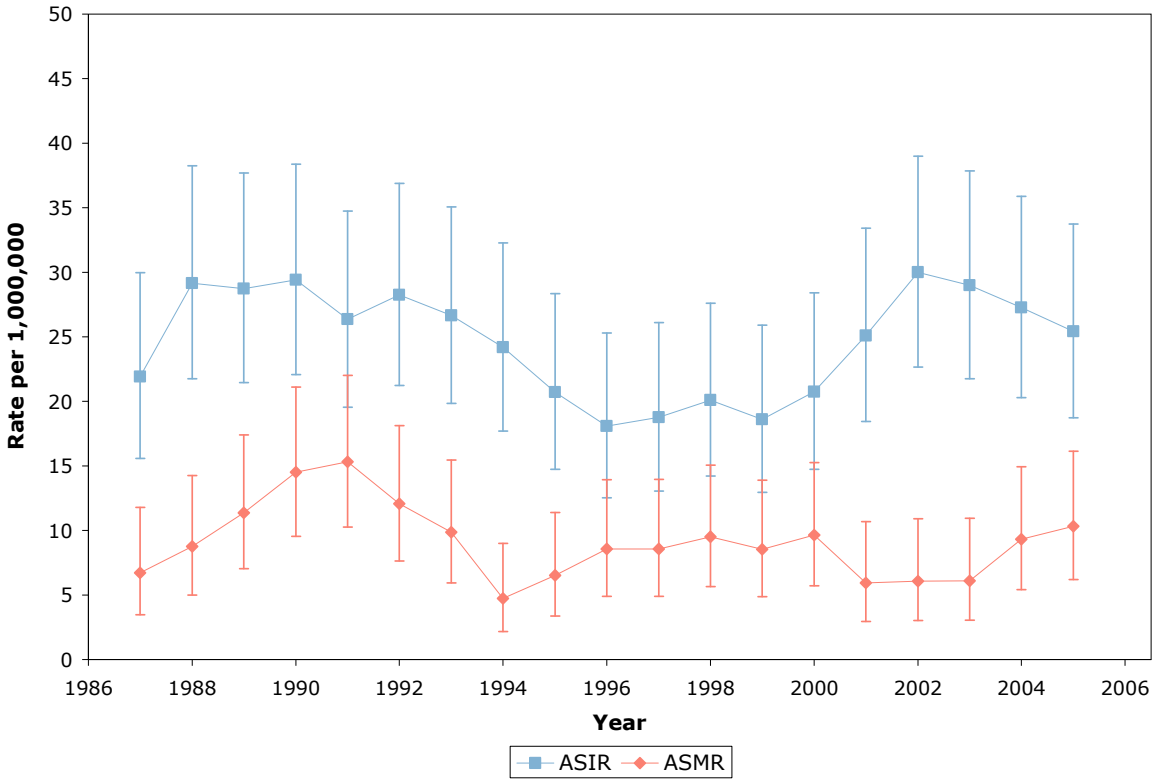


[*] Three year moving averages
[†] Standardized to 1991 Canadian Population
[‡] ASIRs and ASMRs are rates per 1,000,000 not 100,000.

Childhood leukemia ASIRs have increased significantly since 1986, whereas ASMRs have decreased significantly since 1986 (**Figure 13-6**).

In 2005, the three-year average ASIR for childhood leukemia was 48.6 per 1,000,000 and the three-year average ASMR for childhood leukemia was 8.1 per 1,000,000. From 1986 to 2006 childhood leukemia ASIRs have increased 25% since 1986 with an average annual increase of 1.1% in Alberta. For the same period, childhood leukemia ASMRs have declined 49% with an average annual reduction of 3.3% in Alberta (**Figure 13-6**).

Figure 13-7: Age-Standardized Incidence Rates (ASIRs)[*†‡] and Mortality Rates (ASMRs)[*†‡] for Childhood Cancers of the Central Nervous System, Ages 0-14, Both Sexes, Alberta, 1986-2006



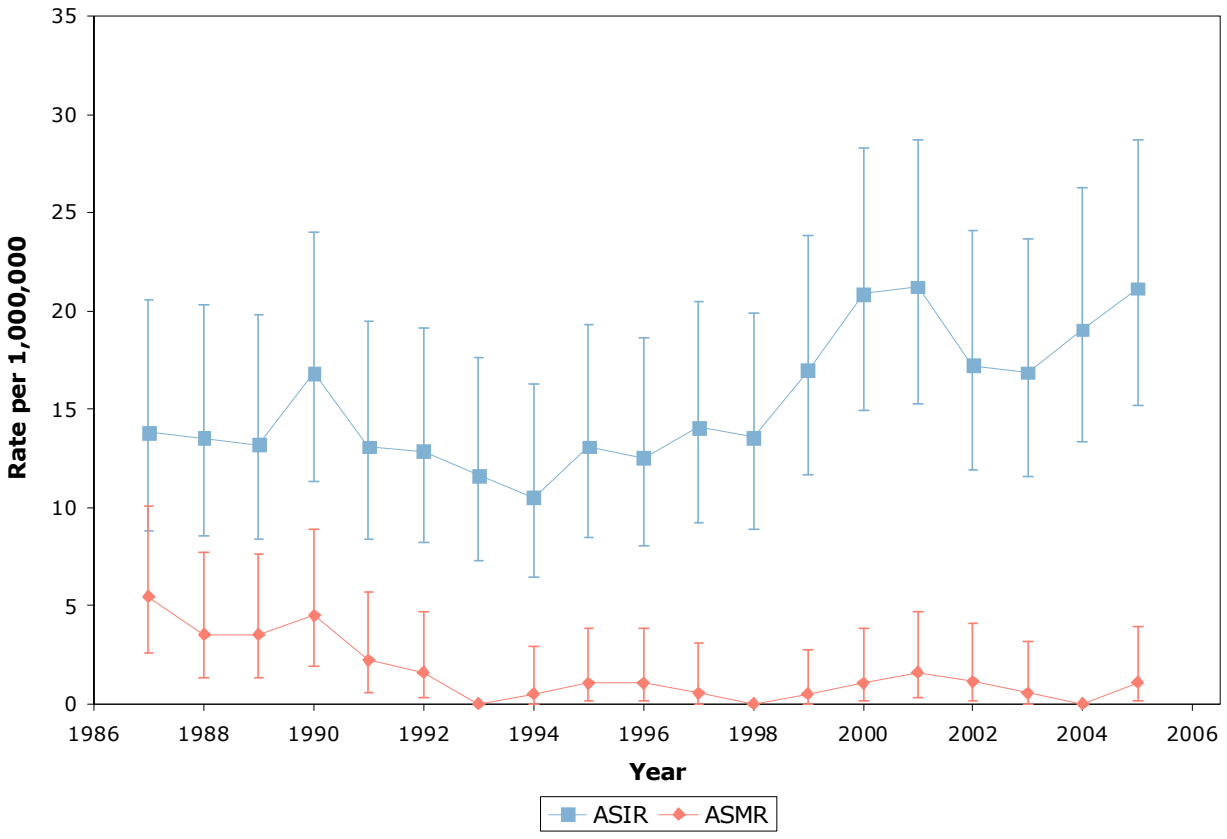
[*] Three year moving averages
[†] Standardized to 1991 Canadian Population
[‡] ASIRs and ASMRs are rates per 1,000,000 not 100,000.

Childhood ASIRs for cancers of the central nervous system (CNS) have remained relatively stable since 1986 while ASMRs have decreased over the same period (**Figure 13-7**).

In 2005, the three-year average ASIR for childhood CNS cancers was 25.4 per 1,000,000 and the three-year average ASMR for childhood CNS cancers was 10.3 per 1,000,000. From 1986 to 2006, ASMRs for childhood CNS cancers have declined 34%, with an average annual reduction of 2.1% per year in Alberta (**Figure 13-7**).

Both the ASIRs and ASMRs for childhood CNS cancers have varied between 1986 and 2006.

Figure 13-8: Age-Standardized Incidence Rates (ASIRs)[*†‡] and Age-Standardized Mortality Rates (ASMRs)[*†‡] for Childhood Lymphoma, Ages 0-14, Both Sexes, Alberta, 1986-2006



[*] Three year moving averages
[†] Standardized to 1991 Canadian Population
[‡] ASIRs and ASMRs are rates per 1,000,000 not 100,000

Childhood lymphoma ASIRs have increased since 1986 (**Figure 13-8**). In 2005, the three-year average ASIR for childhood lymphoma was 21.2 per 1,000,000. From 1986 to 2006, childhood lymphoma ASIRs have increased 29% with an average annual increase of 1.3% (**Figure 13-8**).

Childhood lymphoma ASMRs have decreased since 1986 (**Figure 13-8**). In 2005, the three-year average ASMR for childhood lymphoma was 1.1 per 1,000,000 population. From 1986 to 2006, childhood lymphoma ASMRs have decreased 80% with an average annual reduction of 3.6% (**Figure 13-8**).

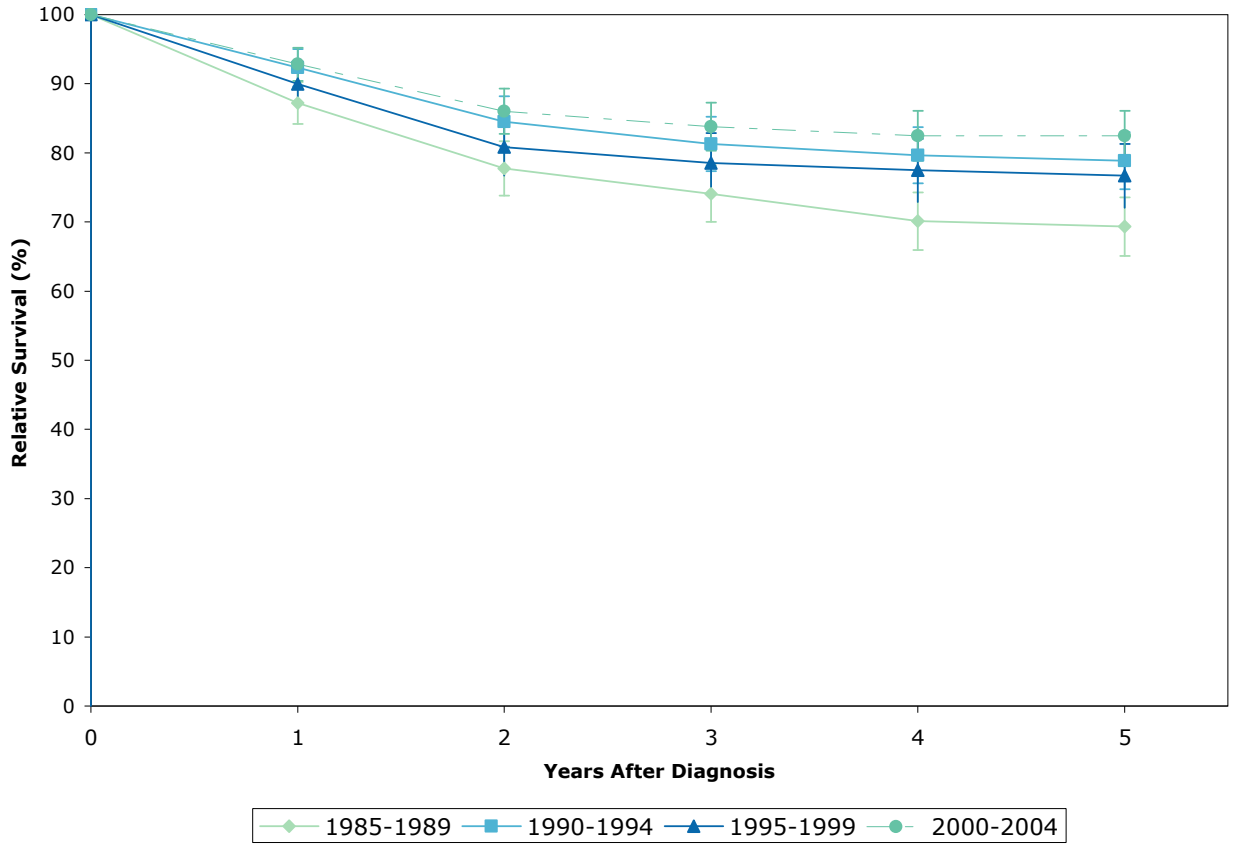
Childhood Cancer Survival

Cancer survival ratios indicate the proportion of people who will be alive at a given time after they have been diagnosed with cancer. Survival is an important outcome measure and is used for evaluating the effectiveness of cancer control programs.

Survival depends on several factors including the cancer type (most importantly site, stage and morphology at diagnosis), sex, age at diagnosis, health status and available treatments for that cancer. While ***relative survival ratios*** give a general expectation of survival over the whole province, these ratios may not apply to individual cases. Individual survival outcomes depend on the stage of diagnosis, treatment and other individual circumstances.

The ***observed survival*** proportion (OSP) describes the proportion of children diagnosed with a specific cancer who survived through the specific time period. Observed Survival Proportions are estimated by the ***cohort method*** (solid line) when complete follow-up data (e.g., at least five years of follow-up to estimate five-year rate) after diagnosis are available. For recently diagnosed cases, whose complete follow-up data are not available, the up-to-date estimates are computed using the ***period analysis method*** (dashed line). Only survival following first primary tumors is estimated. Children whose cancer was only identified through death certificate were excluded from the calculation.

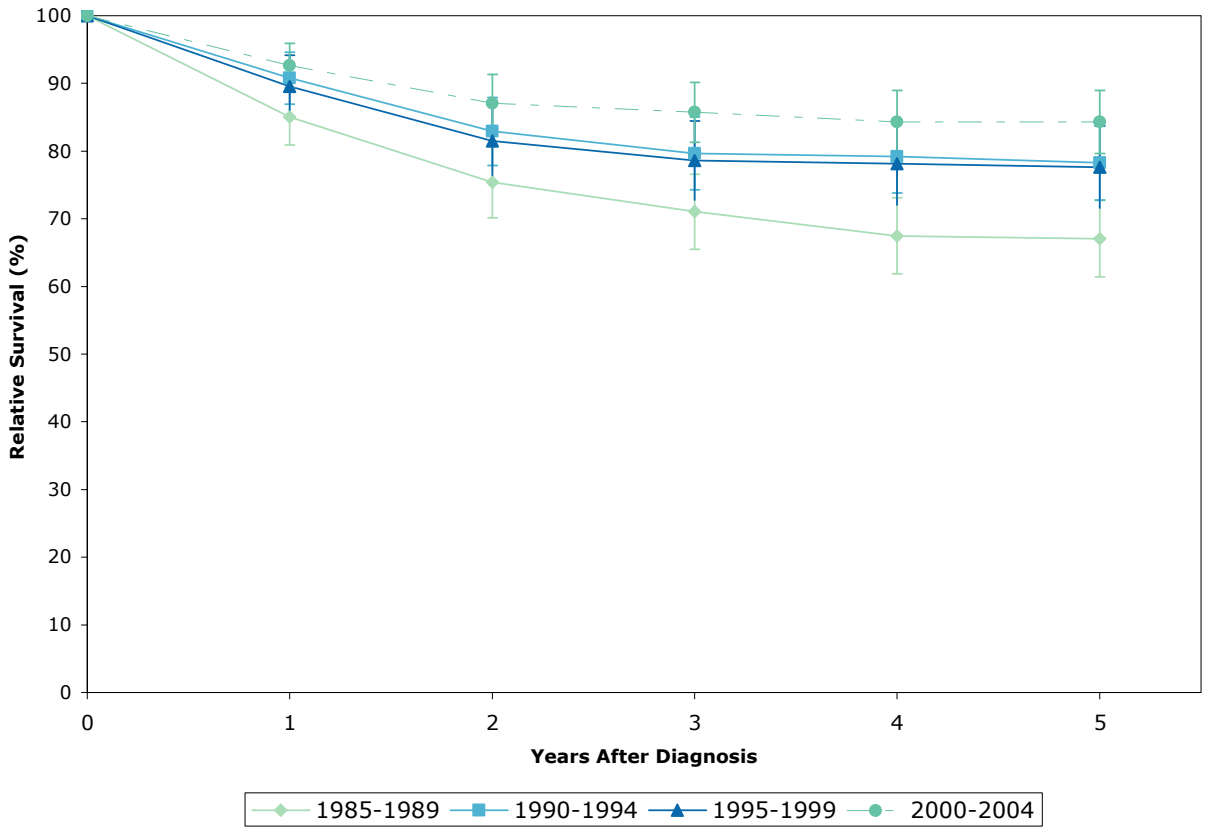
Figure 13-9: Observed Survival Trends for Childhood Cancer, Both Sexes, Ages 0-14, Alberta, 1985-1989, 1990-1994, 1995-1999, 2000-2004



—— (solid line): Ratios calculated by cohort method, where complete follow-up data are available
------ (dashed line): Ratios calculated by period method, where complete follow-up data are not available

Five-year observed survival ratios for Alberta children diagnosed with cancer have improved dramatically since 1985. Five year relative survival increased from around 70% in 1985-1990 to 83% in 2000-2004 (**Figure 13-9**).

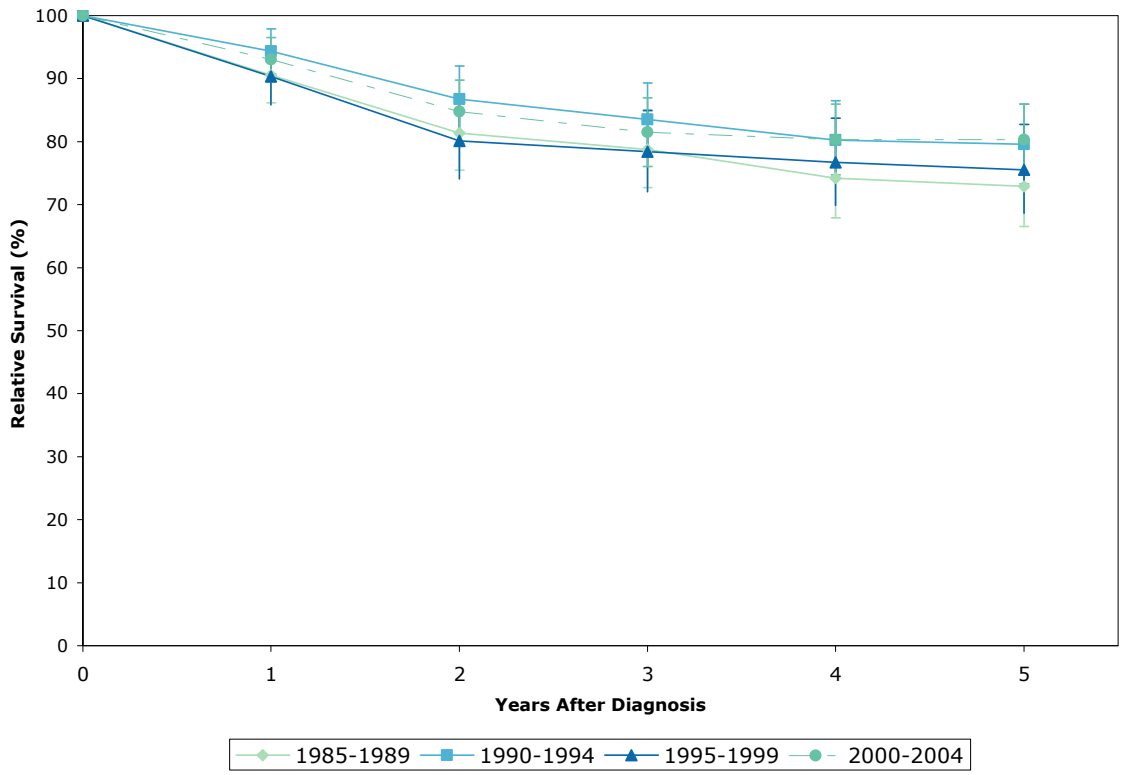
Figure 13-10: Observed Survival Trends for Childhood Cancer, Males, Ages 0-14, Alberta, 1985-1989, 1990-1994, 1995-1999, 2000-2004



—— (solid line): Ratios calculated by cohort method, where complete follow-up data are available
------ (dashed line): Ratios calculated by period method, where complete follow-up data are not available

Five-year relative survival ratios for boys diagnosed with childhood cancer have increased from around 67% in 1985-89 to 84% in 2000-04 (**Figures 13-10**).

Figure 13-11: Observed Survival Trends for Childhood Cancer, Females, Ages 0-14, Alberta, 1985-1989, 1990-1994, 1995-1999, 2000-2004



—— (solid line): Ratios calculated by cohort method, where complete follow-up data are available
------ (dashed line): Ratios calculated by period method, where complete follow-up data are not available

The observed survival for girls with childhood cancer has also improved since 1985 but not as much as for boys (**Fig 13-11**). Observed survival increased from around 73% for girls diagnosed in 1985-89 to 80% for girls diagnosed in 2004-06.

Further Information

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.[6]

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).

Childhood cancer is coded using the International Classification of Childhood Cancers (ICCC). ICCC classification is based on tumour morphology and cancer site with more emphasis on morphology. ICCC classifications are available from Surveillance, Epidemiology and End Results program (SEER): http://seer.cancer.gov/publications/childhood/iccc.pdf

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. 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 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 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

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 children aged 0-14.

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.[9]

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.

Observed survival
Observed survival is an estimate of the probability of surviving all causes of death for a specified time interval calculated from the cohort of cancer cases.[7]

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.[8]

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.[11]

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 disease.

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

Rate:
The number of 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.[9]

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.[10]

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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Contact Information

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

Mailing Address: **Alberta Health Services**
Health Promotion, Disease and Injury Prevention
Surveillance Department-Cancer Bureau
1400 - 10123 99 Street
Edmonton, AB, Canada
T5J 3H1

Phone: 780-643-4496
Fax: 780-643-4380
Email: ACB.surveillance@albertahealthservices.ca