



Cancer in Children in Canada (0-14 years)

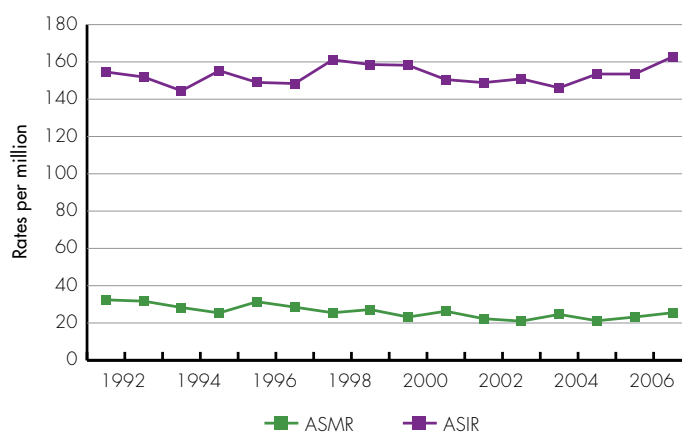
OVERVIEW

- Each year, on average 880 children under the age of 15 are diagnosed with cancer and 150 die from the disease.^{1, 2}
- Although this makes cancer the second leading cause of death by disease among Canadian children², cancer is still relatively rare in this age group.
- Among Canadian children, leukemia is the most commonly occurring type of cancer (33%), followed by brain and nervous system cancers (20%) and lymphomas (11%).¹
- Over the last 30 years childhood cancer survival rates have improved substantially, from 71% in the late 1980s to 82% in the early 2000s; 5-year survival rates have increased for several types of childhood cancers.⁵

INCIDENCE AND MORTALITY

- Incidence of childhood cancer has remained relatively stable since 1992 but mortality has decreased over time due to improvements in cancer treatment (Figure 1).
- Based on the latest statistics, the average age-standardised incidence rate for childhood cancer is 153 cases per 1,000,000 children; Average age-standardised mortality rate is 26 cases per 1,000,000 children.¹
- Incidence of childhood cancer is highest among infants under the age of one (248 per 1,000,000), and lowest among children between 10-14 years (123 per 1,000,000).¹
- Childhood cancer is more common among males than females with 1.2 males being diagnosed for every female.¹

Figure 1: Age-standardised incidence rates (ASIR, 1992-2007) and age-standardised mortality rates (ASMR, 1992-2006) for all cancers among children, 0-14 years, Canada.



Source: The Canadian Cancer Registry and the Canadian Vital Statistics Death Database, Statistics Canada.



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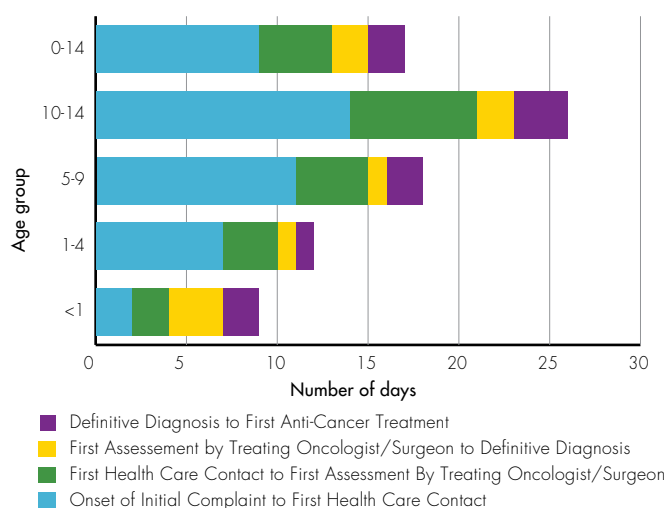
RISK FACTORS

- Little is known about what causes childhood cancer which limits the opportunities for prevention. Some established risk factors include exposure to ionizing radiation, exposure to diethylstilbesterol during pregnancy, and certain genetic conditions such as Down's syndrome. However, these risk factors account for only a small percentage of cases.
- Several studies are examining suspected or possible risk factors for childhood cancers, including infections during childhood; parental, fetal, or childhood exposures to environmental toxins such as pesticides, solvents, or other household chemicals; parental occupational exposures to radiation or chemicals; maternal diet during pregnancy; early postnatal feeding patterns and diet; and maternal reproductive history.^{3, 4}

TREATMENT

- Treatment for childhood cancer is available at 17 pediatric cancer centres across Canada.
- Between 1995 and 2000 the median time between first contact with a health care professional and the start of treatment was 17 days (Figure 2).
- Children are most commonly treated with intensive multimodal therapy: a combination of chemotherapy, radiotherapy, and surgery.
- For many types of childhood cancer, treatment based on a clinical trial protocol gives a survival advantage. In Canada, approximately 80% of children living with cancer are either enrolled in a clinical trial or receiving treatment according to a registered protocol.⁵

Figure 2: Median Time Between Consecutive Events to Diagnosis and Initiation of Treatment by Age Group, 1995-2000, Canada



Note: Data presented are for consenting patients. Ontario cases were excluded (due to differences in data collection processes) except for results involving the time from diagnosis to initiation of treatment.

Source: The Canadian Childhood Cancer Surveillance and Control Program.

SURVIVAL

- Advances in treatment now mean that over 82% of children will survive at least 5 years after diagnosis. This is a significant improvement in survival compared to the late 1980's when 71% of children survived 5 years after their initial diagnosis.
- Survival rates vary by diagnosis, with the highest 5-year rates of survival among children with retinoblastoma (99%) and the lowest among children with malignant bone tumours (66%).
- The biggest improvements in survival rates have occurred among children with hepatic tumours, leukemias, and brain and nervous system cancers.^{5, 6}



LATE EFFECTS

- The damage from cancer treatments on growing bodies can range from mild to serious.
- Approximately two-thirds of childhood cancer survivors experience adverse effects related to treatment later in life known as late effects, which may include cardiopulmonary, endocrine, renal or hepatic dysfunction, reproductive difficulties, neurocognitive impairment, psychosocial difficulties and the development of subsequent cancers.
- It is important to monitor the impacts of these adverse effects as they have long-term effects on the quality of life of childhood cancer survivors.^{7, 8}

SURVEILLANCE

Formerly known as the Canadian Childhood Cancer Surveillance and Control Program, the Cancer in Young People in Canada Program (CYP-C) aims to fill gaps in knowledge and ultimately reduce the burden of childhood cancer in Canada. CYP-C is a partnership between the Public Health Agency of Canada and the C¹⁷ Council, a network of all the seventeen pediatric cancer centers across the country. For more information, please contact the manager of the CYP-C program at cypc-ccjc@phac-aspc.gc.ca.⁹

REFERENCES

1. The Canadian Cancer Registry. Statistics Canada. Custom tabulation (1992-2007), February 16, 2011.
2. The Canadian Vital Statistics Death Database. Statistics Canada. Custom tabulation (1992-2006), February 16, 2011.
3. Malkin D. Cancers of childhood. In: DeVita VT Jr., Hellman S, Rosenberg SA, eds. *Cancer: Principles and Practices of Oncology*, fifth edition, New York, Lippincott-Raven, 1997 pp. 2083-2091.
4. Zahm SH, Devesa S. Childhood cancer: overview of incidence trends and environmental carcinogens. *Environ Health Perspect.* 1995;103(Suppl 6):177-184.
5. Ellison L, Pogany L, Mery L. Canadian cancer statistics at a glance: cancer in children. *CMAJ*; 2009; 180 (4): 422-424.
6. Ellison LF, Pogany L, Mery L. Childhood and adolescent cancer survival: a period analysis of data from the Canadian Cancer Registry. *Eur J Cancer.* 2007; 43:1967-1975.
7. Oeffinger KC, Eshelman DA, Tomlinson GE, Buchanan GR, Foster BM. Grading of late effects in young adult survivors of childhood cancer followed in an ambulatory adult setting. *Cancer.* 2000; 88:1687-1695.
8. Bottomley SJ, Kassner E. Late effects of childhood cancer therapy. *J Pediatr Nurs.* 2003; 18(2):126-133.
9. Canadian Childhood Cancer Surveillance and Control Program. *Diagnosis and Initial Treatment of Cancer in Canadian Children 0-14 Years, 1995-2000*, Ottawa, Canada, 2003.