

Cancer Incidence and Mortality Among Children in Kansas

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BACKGROUND

Cancer types among children are different from those among adults. The common adult cancers are prostate, breast, lung, colorectum, uterus, and ovary. All of these types arise from cells that line cavities or glands. In contrast, childhood cancers are almost entirely leukemias, lymphomas, sarcomas, and cancers of the central nervous system, primarily neoplasms that arise from non-ectodermal tissue such as bone marrow, lymph glands, bone, and muscle. Similar to cancer incidence among children, the leading causes of deaths due to cancer among children are different from adults. Although the leading causes of cancer death among adults are due to lung and bronchus, colorectal, female breast, and prostate cancers, the leading causes of cancer death among children are due to brain cancer, leukemia, and Non-Hodgkin's lymphoma.



The aims of the current work were to (1) present the most commonly diagnosed types of cancer as well as the most common causes of cancer death among children less than 18 years of age in Kansas, and (2) examine the trend of cancer incidence and mortality rates among children in Kansas over the last 20 years.

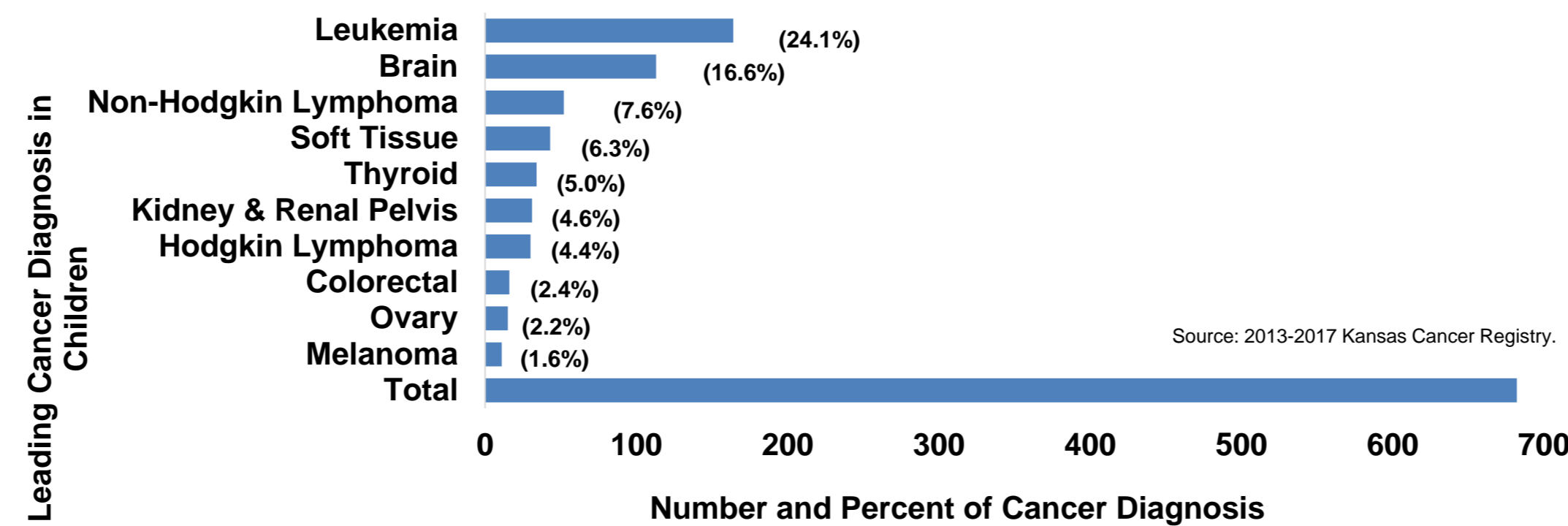
METHODS

- 1998-2017 Kansas Cancer Registry data were analyzed to calculate cancer incidence among children.
- Cancer cases were identified using codes from the National Cancer Institute's Surveillance and Epidemiology End Results (SEER) Program.
- Death Registration data from the Kansas Department of Health and Environment Office of Vital Statistics was analyzed to assess cancer mortality.
- The International Classification of Diseases, 10th Revision (ICD-10) code, was used to identify deaths from cancer.
- The incidence and mortality rates were calculated using PROC STDRATE procedure in SAS 9.4 and adjusted to U.S. 2000 standard population using direct method.

RESULTS

Cancer Incidence in Kansas Children

Figure 1. Top 10 Cancer Diagnoses Among Children Less than 18 years, Kansas 2013-2017



The most commonly diagnosed cancers among Kansas children less than 18 years old during the time period 2013-2017 were leukemia (24.1%), brain (16.6%), and thyroid (7.6%) cancer.

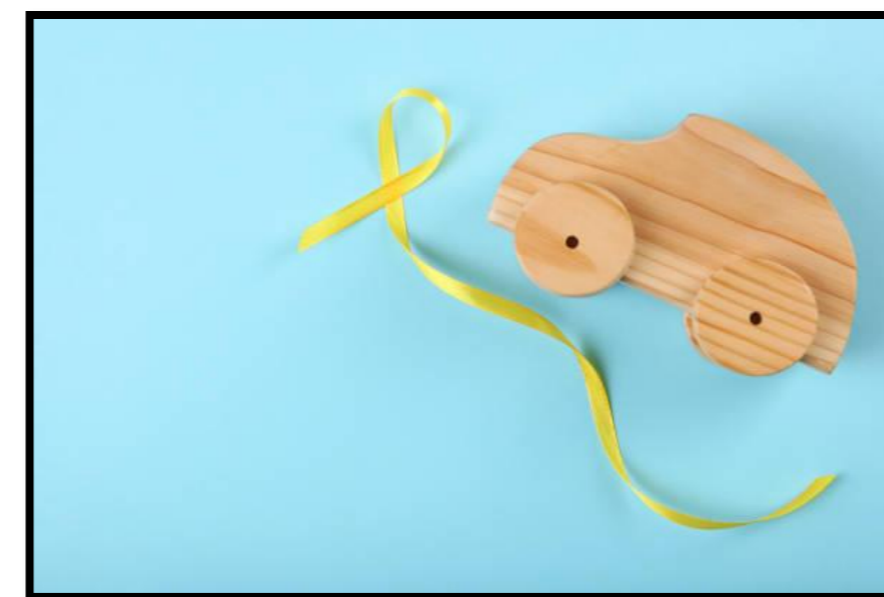


Table 1. Five-Year Trend in Age-adjusted Overall Cancer Incidence Rates among Children less than 18 years old, 1998-2017 Kansas

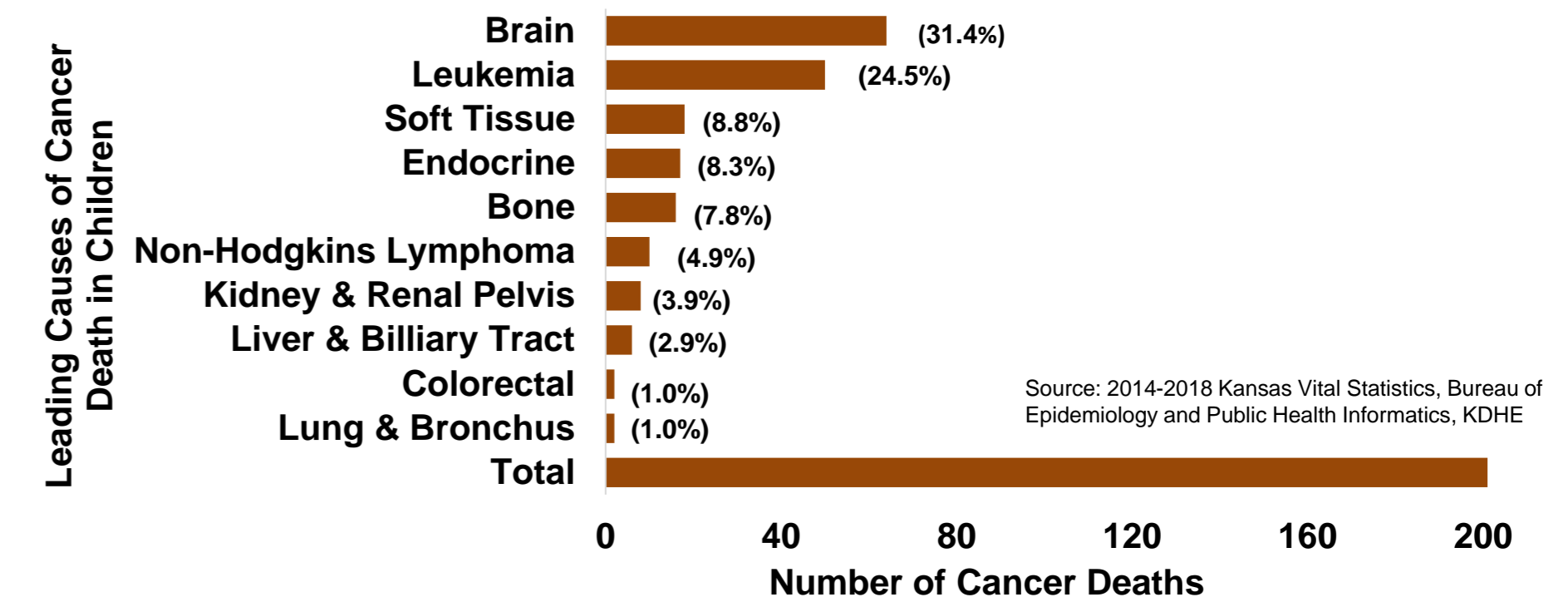
5-Year Interval	Age-adjusted Rate	Lower CL	Upper CL	Standard Error
1998-2002	14.9	13.7	16.2	0.6
2003-2007	16.4	15.1	17.8	0.7
2008-2012	17.8	16.5	19.2	0.7
2013-2017	18.9	17.5	20.3	0.7

The age-adjusted incidence rates for overall cancer among children less than 18 years during the period 2008-2017 were significantly higher than the rate during the period 1998-2002. The most recent data for Kansas shows a rate of 18.9 cases per 100,000 population (95% confidence interval (CI): 17.5 to 20.3). In the US, the most recent data (2013-2017) show a rate of 18.9 cases per 100,000 population (95% CI: 18.8 to 19.0) among children 0-19 years.

RESULTS (CONTINUED)

Cancer Deaths in Kansas Children

Figure 2. Top 10 causes of cancer deaths among children less than 18 years, Kansas 2014-2018



Brain cancer (31.4%) and leukemia (24.5%) constitute more than half of cancer-related deaths among Kansas children less than 18 years during the period 2014-2018

Table 2. Five-Year Trend in Age-Adjusted Overall Cancer Mortality Rates among Children less than 18 years old, 1999-2018 Kansas

5-Year Interval	Age-adjusted Rate	Lower CL	Upper CL	Standard Error
1999-2003	2.0	1.6	2.5	0.2
2004-2008	2.4	1.9	2.9	0.3
2009-2013	2.6	2.1	3.2	0.3
2014-2018	2.5	2.0	3.0	0.3

The age-adjusted mortality rate for all cancers among children less than 18 years old has not significantly changed between 1999 and 2018. The most recent data for Kansas shows a rate of 2.5 deaths per 100,000 population (95% CI: 2.0 to 3.0). In the US, the most recent data (2013-2017) shows a rate of 2.3 deaths per 100,000 population (95% CI: 2.2 to 2.3) among children 0-19 years.

CONCLUSIONS

- The most commonly diagnosed cancers among Kansas children during the period 2013-2017 were leukemia (20.5%), brain (17.5%), and thyroid (7.8%).
- The age-adjusted incidence rates for overall cancer among children during the period 2008-2017 were significantly higher than the rate during the period 1998-2002.
- Brain cancer (31.4%) and leukemia (24.5%) constitute more than half of cancer-related deaths among Kansas children during the period 2014-2018.
- The age-adjusted mortality rate for all cancers among children has not significantly changed between 1999 and 2018.