



CHILDHOOD CANCER

An Excerpt of Indiana Cancer Facts & Figures: 6th Edition



BOTTOM LINE

Childhood cancer is rare, representing approximately 1 percent of all new cancer diagnoses in the US.¹ Although uncommon, cancer is the second leading cause of death among children aged one to 14 years, exceeded only by accidents.² On average, from 2013 to 2017, 375 cases of cancer and 57 cancer deaths occurred each year among Indiana children aged zero to 19 years [Table 7]. In general, childhood cancer trends in Indiana are similar to what is seen nationwide. For most cases of childhood cancer, the cause is unknown.⁶

WHAT IS THE IMPACT ON INDIANA RESIDENTS?



TABLE 7. BURDEN OF CANCER AMONG CHILDREN AGED ZERO TO 19 YEARS*—INDIANA, 2013-2017

*Age-adjusted to the US 2000 Standard Population. Source: Indiana State Cancer Registry

	Average number of cases per year (2013-2017)	Rate per 100,000 children (2013-2017)	Number of cases (2017)	Rate per 100,000 children (2017)
Indiana Incidence	375	21.2	342	19.4
Indiana Deaths	57	3.2	50	2.8

The incidence rate of cancer among Indiana children aged zero to 19 years from 2013 to 2017 was 21.2 cases per 100,000 children, which was similar to the national rate of 18.0 cases per 100,000 children for 2014-2018.^{3,6} Similarly, in Indiana, the childhood cancer mortality rate was 3.2 deaths per 100,000 children, compared to the US mortality rate of 2.2 deaths per 100,000 children.^{3,6}

Using the International Classification of Childhood Cancer system, the most common cancer types diagnosed among Indiana children aged zero to 14 years were leukemias and brain tumors. In children aged 15 to 19 years, the most common cancer types were epithelial cancers (cancers that develop from the cellular covering of internal and external body surfaces or related tissues in the skin, hollow viscera and other organs), brain cancers, and Lymphomas.³

WHO MOST OFTEN GETS CHILDHOOD CANCER?

- White children. During 2013 to 2017, in Indiana, white children had a significantly higher incidence rate than African American children (22.1 versus 15.6 per 100,000 children, respectively) [Figure 17]. This difference in rates between races is also seen nationally. The reasons for these differences are unknown.^{1,6}
- Children born with certain genetic disorders or familial syndromes. Children with a familial cancer predisposition syndrome, inherited immunodeficiency, certain genetic syndromes, and chromosomal abnormalities are at greater risk for developing various types of childhood cancers.⁴
- Males born with undescended testes are at greater risk for testicular cancer.⁴

Additional risk factors include:⁴

- Radiation exposure, especially prenatally (including x-rays).
- Tanning bed or sun exposure increases the risk of melanoma, one of the more common cancers among teenagers.
- Prior chemotherapy with certain agents.
- Infection with the Epstein-Barr virus is associated with certain types of lymphoma.

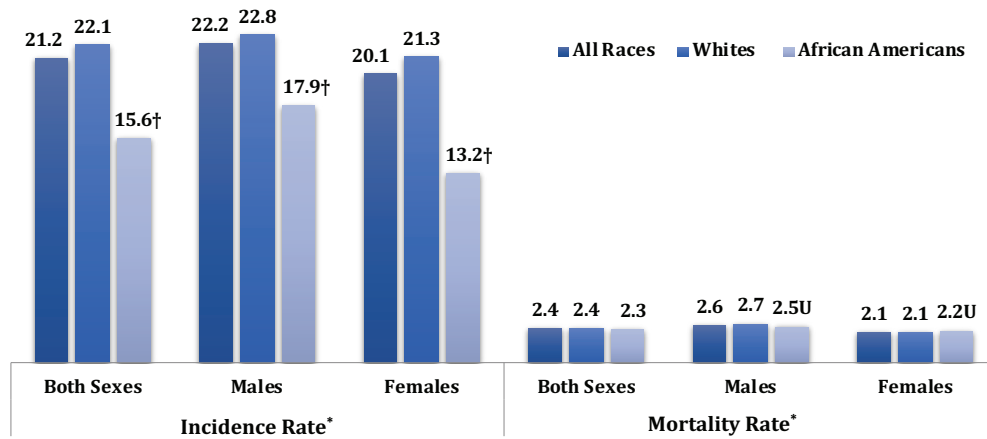




WHAT IS THE IMPACT ON INDIANA RESIDENTS? CONT.

FIGURE 17. INCIDENCE AND MORTALITY (DEATH) RATES AMONG CHILDREN AGED ZERO TO 19 YEARS BY SEX AND RACE*—INDIANA, 2013–2017

*Age-adjusted to the US 2000 Standard Population.
 †Rate is significantly lower (P<.05) among African Americans than among whites
 ‡Rate is unstable due to less than 20 cases
 Source: Indiana State Cancer Registry



CAN CHILDHOOD CANCER BE DETECTED EARLY? *see the "Be Aware" box for additional information.*

Early symptoms are usually nonspecific. Parents should ensure that children have regular medical checkups and should be aware of any unusual symptoms that persist.

WHAT FACTORS INFLUENCE CHILDHOOD CANCER SURVIVAL?

According to the National Cancer Institute, overall, US childhood deaths due to cancer have dropped more than 50 percent since 1975 due to improved treatment options and participation in clinical trials.⁵ The five-year survival rate for childhood cancers is now 84 percent.² However, rates vary considerably depending on cancer type, patient age, and other factors. Moreover, within the major categories, cancer subtypes might vary in response to treatment or survival characteristics [Figure 18].

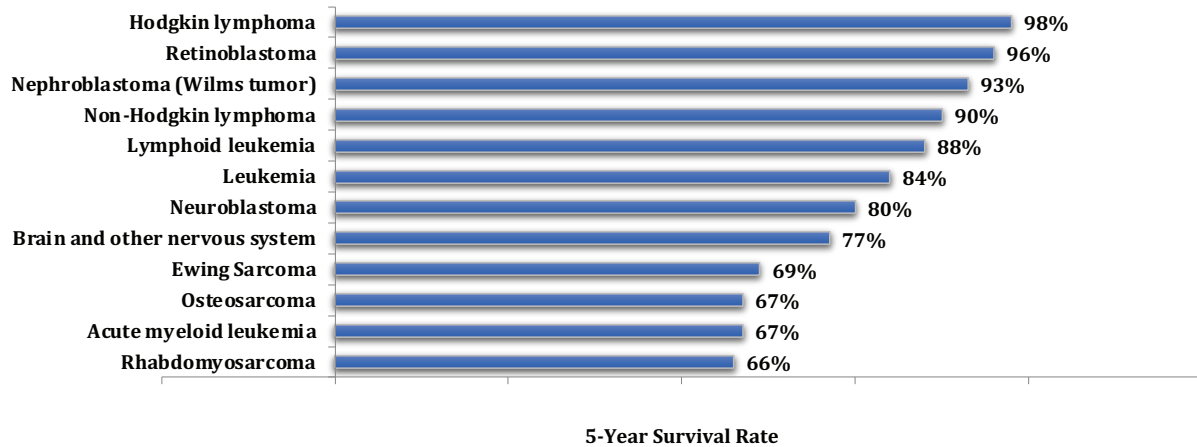


WHAT IS THE IMPACT ON INDIANA RESIDENTS? **CONT.**



FIGURE 18. FIVE-YEAR SURVIVAL RATES FOR THE MOST COMMON CHILDHOOD CANCERS—UNITED STATES, 2010-2016*

Source: American Cancer Society. Cancer Facts and Figures 2018. PDF. Atlanta, GA. 2018.



The earlier a cancer is diagnosed and treated, the better. Childhood cancers can be treated by a combination of therapies (surgery, radiation, and chemotherapy) chosen based on the type and stage of cancer. Treatment is coordinated by a team of experts, including pediatric oncologists, pediatric surgeons, radiation oncologists, pediatric nurses, social workers, psychologists, and others. Because these cancers are uncommon, outcomes are more successful when treatment is managed by a children's cancer center.¹

Survivors of childhood cancer might experience treatment-related side effects. Information for survivors of childhood cancer is available at <https://childrensoncologygroup.org/survivorshipguidelines>.





WHAT IS THE IMPACT ON INDIANA RESIDENTS? **CONT.**

BE AWARE!

COMMON SIGNS AND SYMPTOMS OF CHILDHOOD CANCER

Childhood cancer is rare, but your child should be examined by a health care provider if you notice any of these potential cancer-related signs and symptoms:

- C**ontinued, unexplained weight loss
- H**eadaches, often with early morning vomiting
- I**ncreased swelling or persistent pain in bones, joints, back, or legs
- L**ump or mass, especially in the abdomen, neck, chest, pelvis, or armpits
- D**evelopment of excessive bruising, bleeding, or rash
- C**onstant infections
- A** whitish color behind the pupil
- N**ausea which persists or vomiting without nausea
- C**onstant tiredness or noticeable paleness
- E**ye or vision changes which occur suddenly and persist
- R**ecurrent or persistent fevers of unknown origin



REFERENCES

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3. Howlader N, Noone AM, Krapcho M, et al. (eds). *SEER Cancer Statistics Review, 1975–2017*, National Cancer Institute. Bethesda, MD, https://seer.cancer.gov/csr/1975_2017/, based on November 2019 SEER data submission, posted to the SEER web site, April 2020.
4. McLaughlin, CC.(2008). Childhood cancer. In *Fundamentals of Cancer Epidemiology*, 2nd ed, Nasca, PC, and Pastides, H. editors. Jones and Bartlet Publishers, Sudbury, MA.
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6. Indiana State Cancer Registry, 2021.