



## What is the Impact on Indiana Residents?

Table 7. Burden of Cancer among Children Ages 0–19 Years — Indiana, 2008–2012

	Average number of cases per year (2008–2012)	Rate per 100,000 children* (2008–2012)	Number of cases (2012)	Rate per 100,000 children* (2012)
<b>Indiana Incidence</b>	368	20.5	378	21.1
<b>Indiana Deaths</b>	42	2.3	46	2.6

\* Age-specific

Source: Indiana State Cancer Registry

# CHILDHOOD CANCER

## Bottom Line

The occurrence of cancer during childhood is rare, representing approximately one percent of all new cancer diagnoses in the US.<sup>1</sup> Although uncommon, cancer is the second leading cause of death among children ages five to 14, exceeded only by accidents.<sup>1</sup> Between 2008-2012, 368 cases of cancer and 42 cancer-related deaths occurred each year among Indiana children ages 0–19 [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.

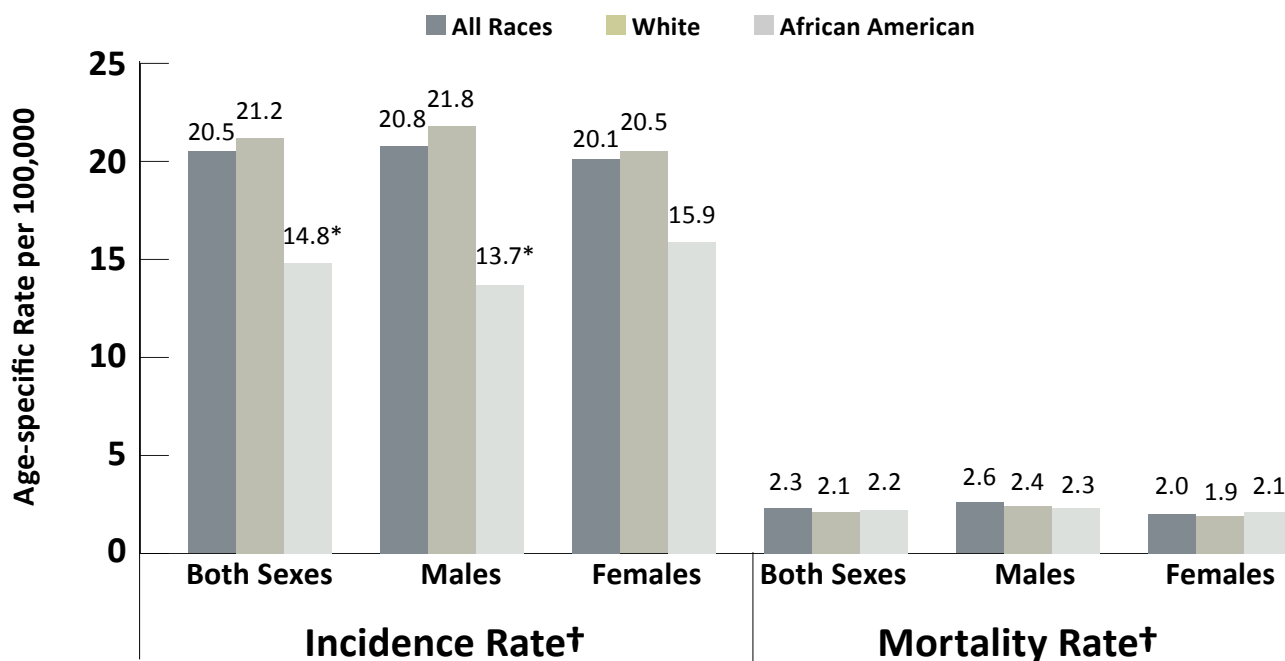
The incidence rate of cancer among Indiana children ages 0–19 during 2008-2012 was 20.5 cases per 100,000 children, which was similar to the national rate of 19.1 cases per 100,000 children for 2007–2011, the most recent years for which national data are available.<sup>2</sup> In Indiana, the childhood cancer mortality rate was 2.3 deaths per 100,000 children compared to the US mortality rate of 2.4 deaths per 100,000 children [Figure 16].<sup>2</sup>

Using the International Classification of Childhood Cancer system, the most common cancer types diagnosed among Indiana children ages 0–14 were leukemias and brain tumors. In children ages 15–19, the most common cancer types were lymphomas and a group of cancers that include 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) and melanoma.

## Who Most Often Gets Childhood Cancer?

- **White children.** During 2008-2012, in Indiana, white children had a significantly higher incidence rate than African American children (21.2 versus 14.8 per 100,000 children, respectively) [Figure 16]. This difference in rates between races is also seen nationally. The reasons for these differences are not known.<sup>1</sup>
- **Children born with certain genetic disorders or familial syndromes.** Children with a familial neoplastic syndrome, inherited immunodeficiency, certain genetic syndromes, and chromosomal abnormalities are at greater risk for developing various types of childhood cancer.<sup>3</sup>
- **Males born with undescended testes.** They are at greater risk for testicular cancer.<sup>3</sup>
- **Additional risk factors include:**<sup>3</sup>
  - Radiation exposure, especially prenatally (includes x-rays);
  - Tanning bed or sun exposure increases the risk of melanoma, one of the more common cancers among teenagers;
  - Prior chemotherapy with an alkylating agent or epipodophyllotoxin;
  - Infection with the Epstein-Barr virus is associated with certain types of lymphoma; and
  - Insecticide exposure, especially prenatally, is associated with leukemia.

**Figure 16. Incidence and Mortality (Death) Rates among Children Ages 0–19 Years by Sex and Race — Indiana, 2008–2012**

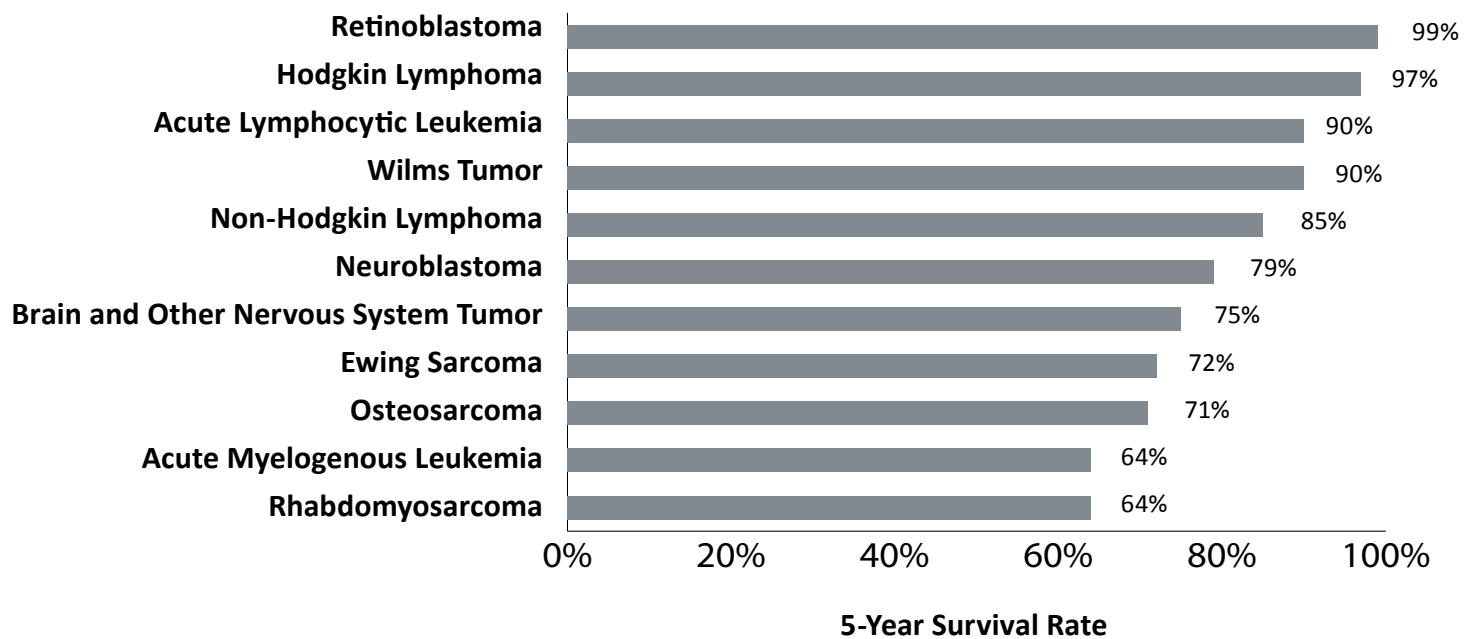


\* Rate is significantly lower ( $P < .05$ ) among African Americans than among whites

† Age-specific rate per 100,000 children

Source: Indiana State Cancer Registry

**Figure 17. Five-year Survival Rates for the Most Common Childhood Cancers — United States, 2003–2009**



Source: American Cancer Society, Childhood Cancer. Atlanta, GA. 2011. Accessed at [www.cancer.org/acs/groups/cid/documents/webcontent/002287-pdf.pdf](http://www.cancer.org/acs/groups/cid/documents/webcontent/002287-pdf.pdf) on June 03, 2013.

### Can Childhood Cancer Be Detected Early? — see “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?

Overall, US childhood deaths due to cancer have dropped more than 50 percent since 1975 because of improved treatment options. The five-year survival rate for childhood

cancers is now 83 percent.<sup>1</sup> However, rates vary considerably depending on cancer type; moreover, within the major categories, cancer subtypes might vary in response to treatment or survival characteristics [Figure 17].

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 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.<sup>1</sup>

Survivors of childhood cancer might experience treatment-related side effects. Information for survivors of childhood cancer is available at [www.survivorshipguidelines.org](http://www.survivorshipguidelines.org).

#### REFERENCES:

- Ward, E., DeSantis, C., Robbins, A., Kohler, B., Jemal, A. (2014). Childhood and adolescent cancer statistics, 2014. *CA Cancer J Clin.*, 64:83-103.
- Howlader, N, Noone, AM, Krapcho, M, Garshell, J, Miller, D, Altekruse, SF, et al. (eds) (April 2014). SEER cancer statistics review, 1975-2011, National Cancer Institute. Bethesda, MD. Accessed at [seer.cancer.gov/csr/1975\\_2011/](http://seer.cancer.gov/csr/1975_2011/).
- McLaughlin, CC.(2008). Childhood cancer. *Fundamentals of Cancer Epidemiology*, 2<sup>nd</sup> ed, Nasca, PC, and Pastides, H. editors. Jones and Bartlet Publishers, Sudbury, MA.

## 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:

- Unusual mass or swelling
- Unexplained paleness or loss of energy
- Sudden tendency to bruise
- Persistent, localized pain
- Prolonged, unexplained fever or illness
- Frequent headaches, often with vomiting
- Sudden eye or vision changes
- Excessive, rapid weight loss

