

# Pediatric Cancers

## Incidence and Mortality Rate Trends

Cancer is the leading cause of death by disease among U.S. children between infancy and age 15. Approximately 11,210 new cases of pediatric cancer are expected to be diagnosed in children 0–14 years of age in 2011. Among the major types of childhood cancers, leukemias (blood cell cancers) and brain and other central nervous system (CNS) tumors account for more than half of new cases. White children are more likely than children from any other racial or ethnic group to develop cancer.

Although the incidence of invasive cancer in children has increased slightly over the past 30 years, mortality rates have declined by more than 50 percent for many childhood cancers.<sup>1</sup> The combined 5-year survival for all childhood cancers has improved from less than 50 percent before the 1970s to 80 percent today. The progress in survival rates is largely attributable to improvements in treatment and the high proportion of patients participating in clinical trials.

Source for incidence and mortality data: Surveillance, Epidemiology, and End Results (SEER) Program and the National Center for Health Statistics. Additional statistics and charts are available at <http://seer.cancer.gov/>.

<sup>1</sup> Incidence and mortality data reflect cancers in children 0–18 years of age.

## Trends in NCI Funding for Pediatric Cancers<sup>2</sup> Research

The National Cancer Institute's (NCI) investment<sup>3</sup> in pediatric cancers research increased from \$179.6 million in fiscal year (FY) 2006 to \$197.1 million in FY 2010. In addition, NCI supported \$60.4 million in pediatric cancers research in FY 2009 and 2010 using funding from the American Recovery and Reinvestment Act (ARRA).<sup>4</sup>

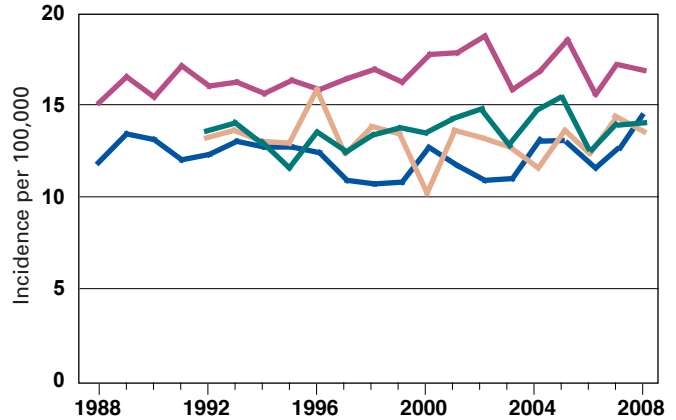
Source: NCI Office of Budget and Finance (<http://obf.cancer.gov/>).

<sup>2</sup> Includes cancers in children 0–18 years of age. Does not include research on pediatric AIDS, infant mortality, science enrichment, or anti-smoking.

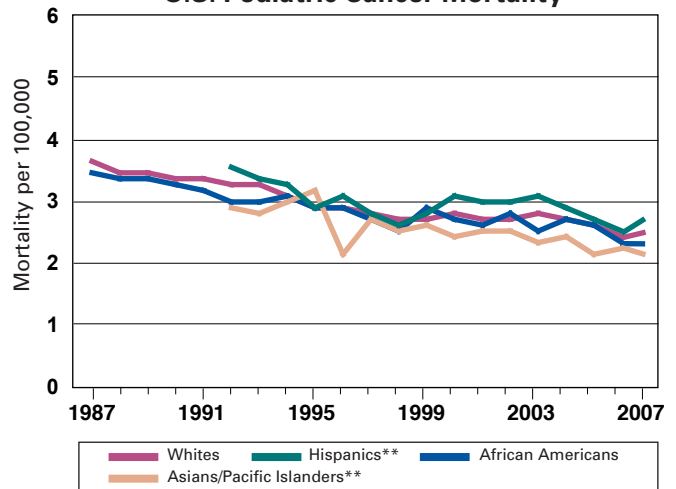
<sup>3</sup> The estimated NCI investment is based on funding associated with a broad range of peer-reviewed scientific activities. For additional information on research planning and budgeting at the National Institutes of Health (NIH), see <http://www.nih.gov/about/>.

<sup>4</sup> For more information regarding ARRA funding at NCI, see <http://www.cancer.gov/aboutnci/recovery/recoveryfunding>.

U.S. Pediatric Cancer Incidence

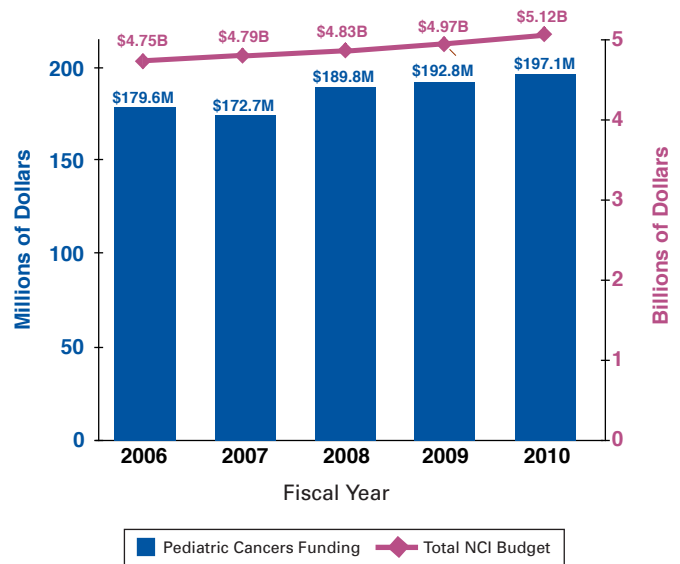


U.S. Pediatric Cancer Mortality



\* Insufficient data available for time trend analysis for American Indians/Alaska Natives.  
\*\* Incidence and mortality data not available before 1992.

NCI Pediatric Cancers Research Investment

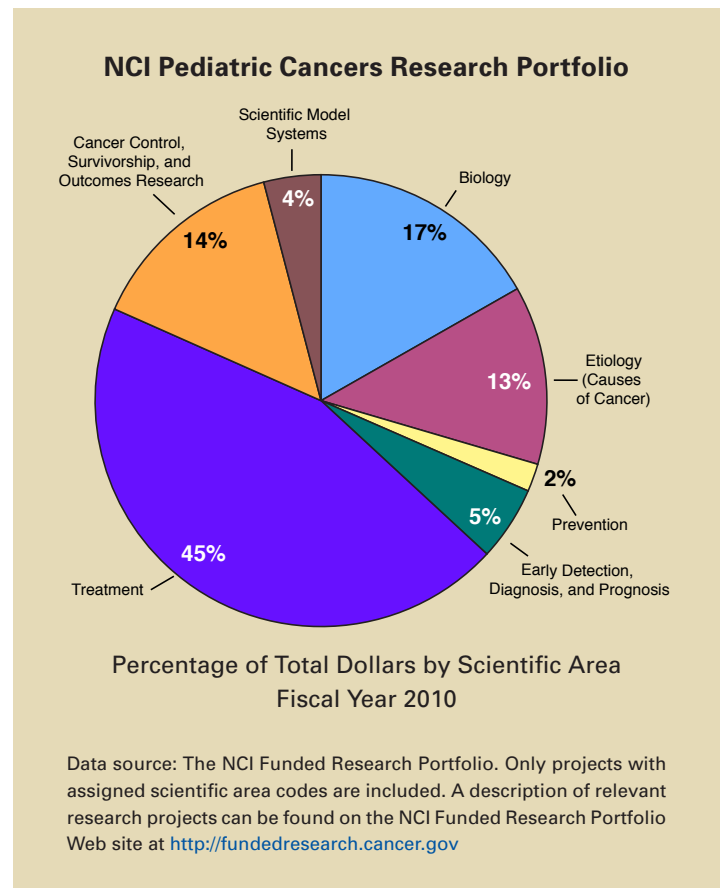


## Examples of NCI Activities Relevant to Pediatric Cancers

- The **Childhood Cancer Therapeutically Applicable Research to Generate Effective Treatments (TARGET)** initiative is identifying and validating therapeutic targets to develop new, more effective treatments for pediatric cancers. <http://target.cancer.gov/>
- The **Pediatric Preclinical Testing Program (PPTP)** evaluates new agents against childhood solid tumor and leukemia models. <http://pptp.nchresearch.org/>
- The NCI-supported **Childhood Cancer Survivor Study (CCSS)** followed more than 14,000 childhood cancer survivors, with approximately 3,700 siblings of survivors serving as control subjects, to assess mortality rates, to determine risks of developing subsequent cancers, and to better understand long-term effects of cancer treatments on the heart, the lungs, and fertility. <http://www.cancer.gov/cancertopics/coping/ccss> and <http://ccss.stjude.org/>
- The Center for Cancer Research's **Pediatric Oncology Branch** conducts translational research studies aimed at improving outcomes for children with cancer and genetic tumor predisposition syndromes. <http://pediatrics.cancer.gov/>
- In collaboration with the Children's Oncology Group, NCI is conducting a number of studies of **Genetic Modifiers of Osteogenic Sarcoma** to identify genetic variants linked to the risk of developing this bone cancer, whose incidence peaks in early adolescence and again late in life. <http://dceg.cancer.gov/cgb/research/osteosarcoma>
- NCI's Epidemiology and Genetics Research Program supports three **Childhood Cancer Epidemiology Consortia** that conduct multidisciplinary research on childhood cancer risk factors and new therapies. <http://epi.grants.cancer.gov/Consortia/tables/childhood.html>

## Selected Advances in Pediatric Cancers Research

- A clinical trial has found that **adding an immunotherapy to standard therapy** improves outcomes in patients with high-risk neuroblastoma who had responded to myeloablative therapy. <http://www.cancer.gov/newscenter/pressreleases/2010/NeuroblastomaImmunology>, <http://www.cancer.gov/ncicancerbulletin/100510/page5>, and <http://www.ncbi.nlm.nih.gov/pubmed/20879881>
- Results from a phase III clinical trial show that in children and young adults with a high-risk form of **acute lymphoblastic leukemia, treatment with a high-dose schedule of the drug methotrexate increased 5-year event-free survival** compared with an escalating standard-dose methotrexate regimen. [http://www.asco.org/ASCOv2/Meetings/Abstracts?&vmview=abst\\_detail\\_view&confID=102&abstractID=83893](http://www.asco.org/ASCOv2/Meetings/Abstracts?&vmview=abst_detail_view&confID=102&abstractID=83893)
- Results of preclinical testing indicate that a drug called **perifosine slows neuroblastoma cell growth** in laboratory cell culture and in animal tumor models. <http://www.ncbi.nlm.nih.gov/pubmed/20463309>
- Researchers have determined that a type of gastrointestinal stromal tumor (GIST) that is common in pediatric patients **is characterized by alterations in succinate dehydrogenase**, an enzyme critical for cellular energy generation. [http://www.cancer.gov/newscenter/pressreleases/2010/PediatricGIST\\_NICHD](http://www.cancer.gov/newscenter/pressreleases/2010/PediatricGIST_NICHD) and <http://www.ncbi.nlm.nih.gov/pubmed/21173220>



- The **Childhood Cancers Fact Sheet** provides information about the most common types of childhood cancers, incidence and survival rates, causes, and research related to childhood cancers. Information specialists can also answer questions about cancer at 1-800-4-CANCER. <http://www.cancer.gov/cancertopics/factsheet/Sites-Types/childhood>
- The **NCI Childhood Cancers Home Page** directs visitors to up-to-date information on childhood cancer treatment, genetics, causes, and other related topics. <http://www.cancer.gov/cancertopics/types/childhoodcancers>