National Cancer Institute

A Snapshot of

Leukemia

Incidence and Mortality Rate Trends

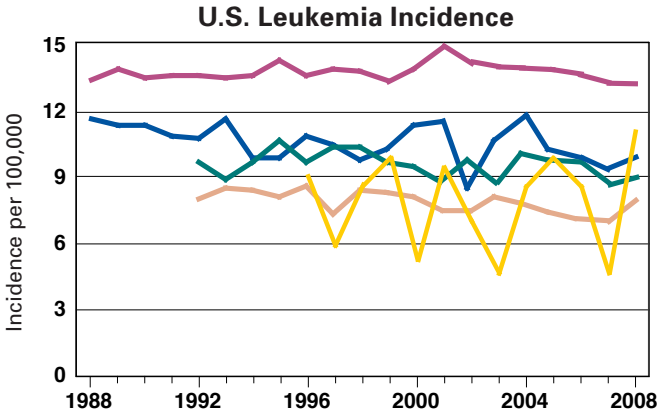
Leukemia, the most common blood cancer, includes several diseases. The four major types are acute lymphocytic leukemia (also called acute lymphoblastic leukemia, ALL), chronic lymphocytic leukemia (CLL), acute myelogenous leukemia (AML), and chronic myelogenous leukemia (CML). Although affecting approximately 10 times more adults than children, leukemia is the most common cancer among children, with ALL accounting for approximately 75 percent of all childhood leukemias. The most common type of leukemia in adults is AML, followed by CLL, CML, and ALL.

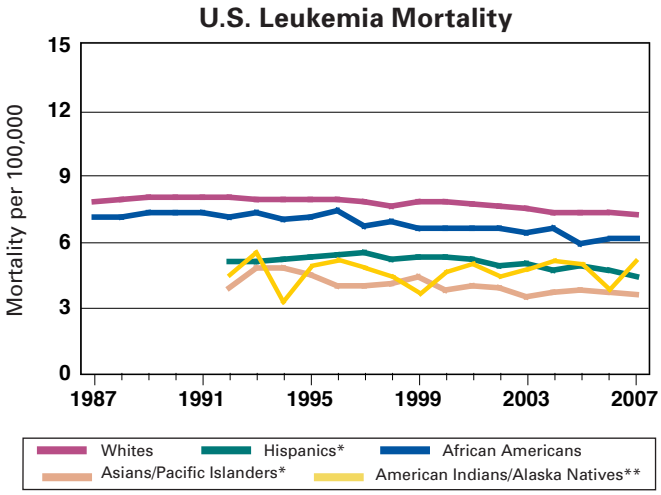
The incidence and mortality rates for leukemia have decreased slightly over the last 20 years and are higher in whites than in people of other racial and ethnic groups. Overall, men are more likely to develop leukemia than women, though since 1992, incidence rates have remained stable in men but have increased slightly in women.

It is estimated that approximately $4.5 billion[1] is spent in the United States each year on leukemia treatment.

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/.

[1] Cancer Trends Progress Report (http://progressreport.cancer.gov), in 2006 dollars.





* Incidence and mortality data not available before 1992.
** Incidence data not available before 1996; mortality data not available before 1992.

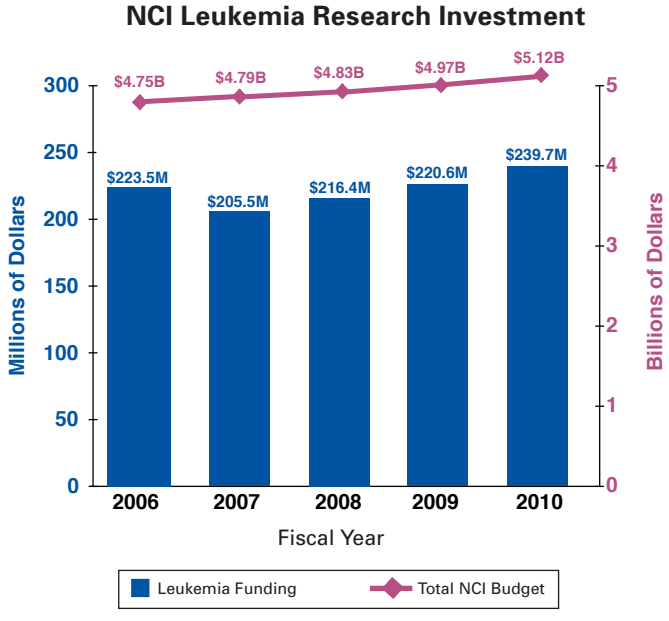
Trends in NCI Funding for Leukemia Research

The National Cancer Institute's (NCI) investment[2] in leukemia research increased from $223.5 million in fiscal year (FY) 2006 to $239.7 million in FY 2010. In addition, NCI supported $53.1 million in leukemia research in FY 2009 and 2010 using funding from the American Recovery and Reinvestment Act (ARRA).[3]

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

[2] 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/.

[3] For more information regarding ARRA funding at NCI, see http://www.cancer.gov/aboutnci/recovery/recoveryfunding.



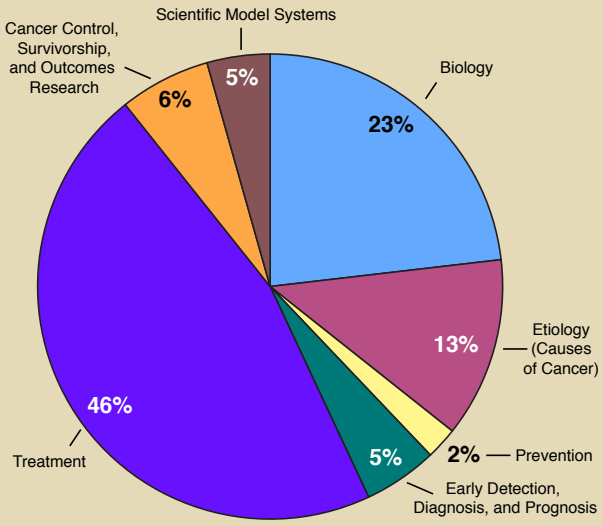
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

Examples of NCI Activities Relevant to Leukemia

- NCI's **Familial Chronic Lymphocytic Leukemia** program is studying families with several cases of CLL to find the gene or genes that cause CLL in families; to determine whether families prone to CLL are at greater risk for other kinds of leukemia or cancer; and to identify markers of risk in family members. http://dceg.cancer.gov/geb/research/activeclinical/blood/cll-info
- The **Leukemia/Lymphoma Molecular Profiling Project** examines gene expression profiles of lymphoid malignancies to redefine their classification. Gene expression data will also be used to improve prognosis and select treatment options. http://llmpp.nih.gov/
- The **Childhood Leukemia International Consortium** coordinates collaborative research on the role of infectious, environmental, and genetic risk factors in the etiology of childhood leukemia. The **Chronic Lymphocytic Leukemia Research Consortium** is a multi-institutional project that coordinates research into new treatments for CLL. http://epi.grants.cancer.gov/Consortia/tables/leukemia.html
- The **Blood and Marrow Clinical Trials Network** conducts large multi-institutional trials that address important issues in hematopoietic stem cell transplantation to further understanding of the best treatment approaches. http://ctep.cancer.gov/MajorInitiatives/Collaboration_with_NHLBI.htm and https://web.emmes.com/study/bmt2/
- The **Special Translational Research Acceleration Projects (STRAP)** initiative provides funding and project coordination to expedite studies to the point of early clinical trial testing, including the first multicenter trial studying adoptive immunotherapy of cancer with IL-12-secreting tumor-targeted T-cells. http://ccct.cancer.gov/STRAP_Program
- Two leukemia-specific **Specialized Programs of Research Excellence (SPOREs)** are identifying novel targets for leukemia therapy, causes of resistance to chemotherapy, and genetic risk factors for CLL and AML. http://trp.cancer.gov/spores/leukemia.htm
- The **What You Need to Know About™ Leukemia** booklet contains information about leukemia diagnosis, treatment options, supportive care, and participation in research studies. Information specialists can also answer questions about cancer at 1-800-4-CANCER. http://www.cancer.gov/cancertopics/wyntk/leukemia
- The **NCI Leukemia Home Page** directs visitors to up-to-date information on leukemia treatment, prevention, genetics, causes, and other related topics. http://www.cancer.gov/cancertopics/types/leukemia

NCI Leukemia Research Portfolio



Percentage of Total Dollars by Scientific Area
Fiscal Year 2010

Data source: The NCI Funded Research Portfolio. Only projects with assigned scientific area codes are included. A description of relevant research projects can be found on the NCI Funded Research Portfolio Web site at http://fundedresearch.cancer.gov

Selected Advances in Leukemia Research

- Researchers have found that **mutations in the gene encoding the transcriptional regulator CREBBP** are associated with ALL relapse and may play a role in resistance to therapy. http://www.ncbi.nlm.nih.gov/pubmed/21390130
- Whole-genome sequencing has identified a single gene mutation that is associated with **treatment failure in a significant number of patients with AML** and could inform treatment strategies for these patients. http://www.cancer.gov/newscenter/pressreleases/2010/AMLwholeGenome and http://www.ncbi.nlm.nih.gov/pubmed/21067377
- A new mouse model provides insight into the **potential molecular origins of AML**. http://home.ccr.cancer.gov/inthejournals/bies.asp and http://www.ncbi.nlm.nih.gov/pubmed/20457873
- Results from a case-control study have shown an association between **occupational exposure to formaldehyde** and chromosome changes typical of those observed in myeloid leukemia. http://dceg.cancer.gov/newsletter/jul10/710_scientifichighlights.shtml and http://www.ncbi.nlm.nih.gov/pubmed/20056626