



Hematologic Cancer Initiatives



The Centers for Disease Control and Prevention (CDC) funds efforts to improve the awareness, diagnosis, understanding, and treatment of hematologic cancers (cancers of the blood and bone marrow). These efforts

- Offer health care providers the latest information about how to recognize the signs and symptoms of hematologic cancers, and how to treat these diseases.
- Connect the public, people living with hematologic cancers, and their friends and families to resources.

The Burden of Hematologic Cancers

According to the *U.S. Cancer Statistics: 2002 Incidence and Mortality* report, more than 100,000 cases of hematologic cancers were diagnosed in this country in 2002, and 55,756 people died from these cancers that same year (1).^{*} Hematologic cancers include leukemia(s), lymphoma(s), and myeloma, all of which involve the uncontrolled growth of cells that have similar functions and origins.

Leukemia is a cancer of the bone marrow and blood. The two primary types of leukemia are lymphocytic leukemia, which involves an increase of white blood cells called lymphocytes; and myelogenous leukemia (also known as myeloid or myelocytic leukemia), which involves an increase in white blood cells called granulocytes. Leukemia can be acute or chronic. Acute forms of leukemia progress rapidly, whereas chronic forms of leukemia progress slowly, leading to different approaches to diagnosis and treatment.

- The number of new cases of leukemia diagnosed each year (incidence) in the United States increased steadily from 1975–2002, by 0.2% per year (2).
- However, deaths from leukemia decreased by 0.6% per year from 1991–2002. This trend is particularly notable among children, for whom deaths from acute leukemia decreased by 3.1% per year from 1989–2002 (2).

Lymphoma is a general term for a group of cancers that originate in the lymph system. The two primary types of lymphoma are Hodgkin's lymphoma,

which spreads in an orderly manner from one group of lymph nodes to another; and non-Hodgkin's lymphoma, which spreads through the lymphatic system in a non-orderly manner.

- Incidence of non-Hodgkin's lymphoma increased in the United States by 0.5% per year from 1991–2002. This increase is particularly notable among women, for whom the incidence of non-Hodgkin's lymphoma increased 1.2% per year from 1990–2002 (2).
- Conversely, deaths from non-Hodgkin's lymphoma decreased significantly in the United States, by 3.1% per year from 1997–2002 (2).

Myeloma is a cancer of the plasma cells. In myeloma, the cells overgrow, forming a mass, or tumor, that is located in the bone marrow. Bone marrow is the spongy tissue found in the center of the bone, where red and white blood cells and platelets are made.

- Incidence of myeloma in the United States increased by 0.9% per year from 1975–2002 (2). Also during this time, incidence of myeloma increased significantly by 0.8% per year among African Americans (2).
- However, deaths from myeloma in the United States decreased by 0.7% per year from 1995–2002. During this same time period, myeloma deaths among African Americans decreased by 1.4% per year (2).

^{*} Incidence counts cover approximately 93% of the U.S. population. Death counts cover 100% of the U.S. population. Use caution in comparing incidence and death counts.

Risk Factors

Leukemia

Scientists do not fully understand all the causes of leukemia, but research has uncovered many associations. For example, chronic exposure to benzene in the workplace and exposure to large doses of radiation have been shown to cause certain types of leukemia in some cases (3). Additionally, smoking (especially after age 60) may be associated with some types of leukemia in adults (3). Other risk factors for developing certain types of leukemia may include having a family history of chronic leukemia (3). Caucasians are more likely than African Americans to develop acute leukemia (1), but scientists do not know why.

Lymphoma

The main causes of lymphoma are unknown. However, risk factors for adult Hodgkin's lymphoma include (3):

- Being in young or late adulthood.
- Being male.
- Being infected with the Epstein-Barr virus.
- Having a first-degree relative (parent, brother, or sister) with Hodgkin's lymphoma.

Risk factors for adult non-Hodgkin's lymphoma include (3):

- Being older, male, or white.
- Having an inherited immune disorder, an autoimmune disorder, HIV/AIDS, the Epstein-Barr virus, or a history of *Helicobacter pylori* infection.
- Taking immunosuppressant drugs after an organ transplant.
- Being exposed to certain pesticides.
- Eating a diet high in meats and fat.
- Past treatment for Hodgkin's lymphoma.

Myeloma

Age is the most significant risk factor for developing myeloma (3). People under the age of 45 years rarely develop the disease, and most myeloma cases occur in people aged 67 or older (4). Men are more likely than women to have myeloma, and myeloma is about twice as common among African Americans as among white Americans (1). In rare cases, exposure to radiation may be a risk factor for developing myeloma (3). Finally, having a brother or sister who has multiple myeloma may increase a person's risk of developing the disease (3).

Accomplishments

In 2004, Congress encouraged CDC to support the development of interactive, Web-based education for health care providers on the signs of, symptoms of, and current treatments for hematologic cancers.

Through a competitive process, CDC awarded funding to the University of Colorado at Denver and Health Sciences Center to design a Web site about hematologic cancers. The site

- Offers professional training courses free of charge to nurses, pharmacists, primary care physicians,

hematologists, and oncologists, concerning the diagnosis and treatment of hematologic cancers.

- Provides clinical consultation services online.

The Web site, www.hemoncedu.org, is accepting names of potential participants, and the University of Colorado is completing its online curriculum. Continuing medical education (CME) credits also are available free of charge at this Web site.

Ongoing Work

CDC funds public and private, nonprofit and for-profit national organizations to increase awareness of—and education about—hematologic cancers. This project is designed to provide information to patients, their family members, their friends, their caregivers, and their health care providers. Following is a description of nine cooperative agreements funded through this outreach:

- Multiple Myeloma Research Foundation is expanding its existing education and outreach programs designed to reach underserved populations. These efforts target the public and health care providers.
- The Research Triangle Institute is working with the American Cancer Society to develop and test new informational and educational hematologic cancer resources.
- Community Media Productions created *Lion in the House*, a Public Broadcasting System television documentary on childhood cancer, which follows five children of diverse socioeconomic backgrounds.
- National Marrow Donor Program is creating age-specific communication materials about blood and marrow transplants and working to increase patients' access to information about the blood and marrow transplant process.
- The Lymphoma Research Foundation is creating lymphoma-related educational materials appropriate to the culture, language, and reading level of medically underserved minority/immigrant populations, and lower-literacy, English-speaking patients.
- The Patient Advocate Foundation is providing targeted outreach to populations affected by leukemia, lymphoma, and myeloma.
- The Leukemia and Lymphoma Society is providing outreach and education to older adults regarding leukemia, lymphoma, and myeloma.
- The International Myeloma Foundation is expanding its collaborations; offering more educational seminars; increasing distribution of newsletters and news alerts; and sponsoring conferences and workshops to collect the latest information about research, diagnosis, treatment, and management of myeloma.
- The Vox Medica is developing and testing a new curriculum to improve primary care physicians' ability to diagnose blood cancer.

More information about these partners is available at www.cdc.gov/cancer/partners.

Future Directions

In 2006-2007, CDC will collaborate with the National Cancer Institute's Office of Cancer Survivorship to support research into hematologic cancer survivorship. CDC also will work to improve

the quality of hematologic cancer data, and will implement programs to educate the general public about leukemia, lymphoma, and multiple myeloma.

Contact Information

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