

Risk Factor Information for Leukemia – Chronic Lymphocytic Leukemia (CLL)

How to Use this Factsheet

This risk factor summary was developed to serve as a general fact sheet. It is an overview and should not be considered exhaustive. For more information on other possible risk factors and health effects being researched, please see the References section.

A risk factor is anything that increases a person's chance of developing cancer. Some risk factors can be controlled while others cannot. Risk factors can include *hereditary conditions, medical conditions or treatments, infections, lifestyle factors, or environmental exposures*. Although risk factors can influence the development of cancer, most do not directly cause cancer. An individual's risk for developing cancer may change over time due to many factors, and it is likely that multiple risk factors influence the development of most cancers. Knowing the risk factors that apply to specific concerns and discussing them with your health care provider can help to make more informed lifestyle and health care decisions.

For those cancer types with environmentally-related risk factors, an important factor in evaluating cancer risk is the route of exposure. This is particularly relevant when considering exposures to chemicals in the environment. For example, a particular chemical may have the potential to cause cancer if it is inhaled, but that same chemical may not increase the risk of cancer through skin contact. In addition, the dose and duration of time one might be exposed to an environmental agent is important in considering whether an adverse health effect could occur.

Gene-environment interactions are another important area of cancer research. An individual's risk of developing cancer may depend on a complex interaction between their genetic makeup and exposure to an environmental agent (for example, a virus or a chemical contaminant). This may explain why some individuals have a fairly low risk of developing cancer as a result of an environmental factor or exposure, while others may be more vulnerable.

Key Statistics

The American Cancer Society estimates that approximately 54,270 individuals will be diagnosed with leukemia in the United States in 2015: 30,900 males and 23,370 females.¹ Of these individuals, an estimated 14,620 will be diagnosed with chronic lymphocytic leukemia (CLL).^{1, 3} In Massachusetts, leukemia accounted for approximately 2.5% of all cancers diagnosed between 2007-2011.⁶

CLL is the most common subtype of leukemia diagnosed in adults.^{4, 5} The average age at diagnosis is about 72 years.³ The risk is slightly higher among men than women. CLL is extremely rare in children and adolescents.^{3, 7}

Types of Leukemia

The term "cancer" is used to describe a variety of diseases associated with abnormal cell and tissue growth. Cancers are classified by the location in the body where the disease originated (the primary site) and the tissue or cell type of the cancer (histology).

Leukemia is a cancer of the bone marrow and blood. The types of leukemia are grouped according to how quickly the disease develops and progresses and what type of white blood cell is affected. Leukemia can arise in lymphoid (white blood cells called lymphocytes) or myeloid cells (red blood cells, platelet-making cells, or white blood cells other than lymphocytes).^{3, 4, 7} Leukemia that affects lymphoid cells is called lymphocytic leukemia. Leukemia that affects myeloid cells is called myeloid or myelogenous leukemia. Leukemia can be acute or chronic. Acute forms of leukemia progress more rapidly than chronic forms of leukemia, leading to different approaches to diagnosis and treatment.^{3, 4, 7}

Leukemia is generally divided into four major subtypes: acute lymphocytic leukemia (ALL), acute myeloid leukemia (AML), chronic lymphocytic leukemia (CLL), and chronic myeloid leukemia (CML). There are also a few rare types, such as hairy cell leukemia. In U.S. adults, the most common types are CLL and AML. CLL is expected to account for approximately 27% of all leukemia diagnoses in 2015.³

Established Risk Factors

Despite ongoing research, little is known about the causes of CLL. At present, there are no established risk factors for CLL.

Possible Risk Factors

Hereditary Conditions

It is thought that individuals with a close family member (parent, sibling, child) diagnosed with CLL may be more likely to develop the disease. CLL is more common in people of Russian and European descent, and virtually never occurs in people from China, Japan, or Southeast Asian countries.^{3,4,8} The reason(s) for this geographic difference is not known, but most experts think this is due to genetic factors because people maintain the same risk when they move from one area to another.³

Environmental Exposures

Some studies have shown an increased risk in individuals exposed to Agent Orange, an herbicide used during the Vietnam War.³ Some studies have identified an increased risk of developing CLL among farmers due to long-term exposure to herbicides and/or pesticides.^{3,7}

Other Risk Factors That Have Been Investigated

Little is known about the risk factors for CLL. The risk of developing CLL does not seem to be affected by smoking, diet, exposure to radiation, hair dyes or infections.^{3,8}

CLL in Children

Leukemia is the most common type of childhood cancer, accounting for about 31% of all cancers diagnosed in children under 15 years old.⁴ The majority (84%) of these diagnoses are ALL.² CLL is most common in older adults, is rare in young adults, and virtually never occurs in children. About 90% of people diagnosed with CLL are over age 50.⁴

For More Information / References

Much of the information contained in this summary has been taken directly from the following sources. This material is provided for informational purposes only and should not be considered as medical advice. Persons with questions regarding a specific medical problem or condition should consult their physician.

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2. ACS. 2014. Detailed Guide: Childhood Leukemia.
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5. ASCO. 2014. Leukemia – Chronic Lymphocytic – CLL.

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