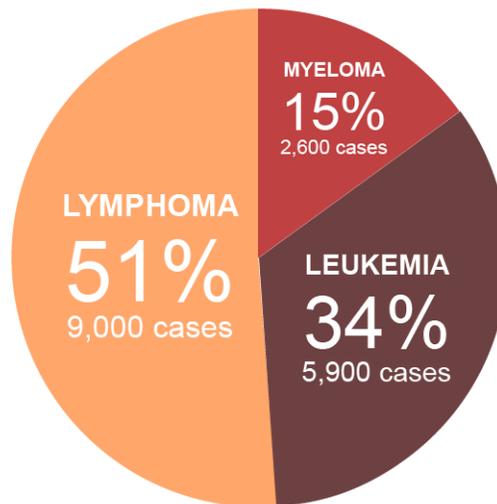


ABOUT BLOOD CANCERS

Leukemia, Hodgkin lymphoma (HL), non-Hodgkin lymphoma (NHL), myeloma, myelodysplastic syndromes (MDS) and myeloproliferative neoplasms (MPNs) are types of cancer that can affect the bone marrow, the blood cells, the lymph nodes and other parts of the lymphatic system. These diseases are related in the sense that they may all result from acquired mutations to the DNA of a single lymph- or blood-forming stem cell. With blood cancers, abnormal cells multiply and survive without the usual controls that are in place for healthy cells. The accumulation of these cells in the marrow, blood and/or lymphatic tissue interferes with production and functioning of red cells, white cells and platelets. The disease process can lead to severe anemia, bleeding, an impaired ability to fight infection, or death.

Estimated New Cases of Leukemia, Lymphoma, Myeloma 2014



HIGHLIGHTS

An estimated 110,000 people in Canada are living with, or are in remission from, leukemia, lymphoma or myeloma.

NEW CASES

Approximately every 25 minutes one person in Canada is diagnosed with a blood cancer.

- An estimated combined total of 21,000 people in Canada are expected to be diagnosed with a blood cancer in 2014.

- New cases of leukemia, lymphoma and myeloma are expected to account for 10 percent of the estimated 191,300 new cancer cases diagnosed in Canada in 2014.
- Blood cancers are the fourth most frequent cancer diagnosis in Canada (in men prostate, colorectal, lung, **blood cancers**; in women breast, lung, colorectal, **blood cancers**).

INCIDENCE

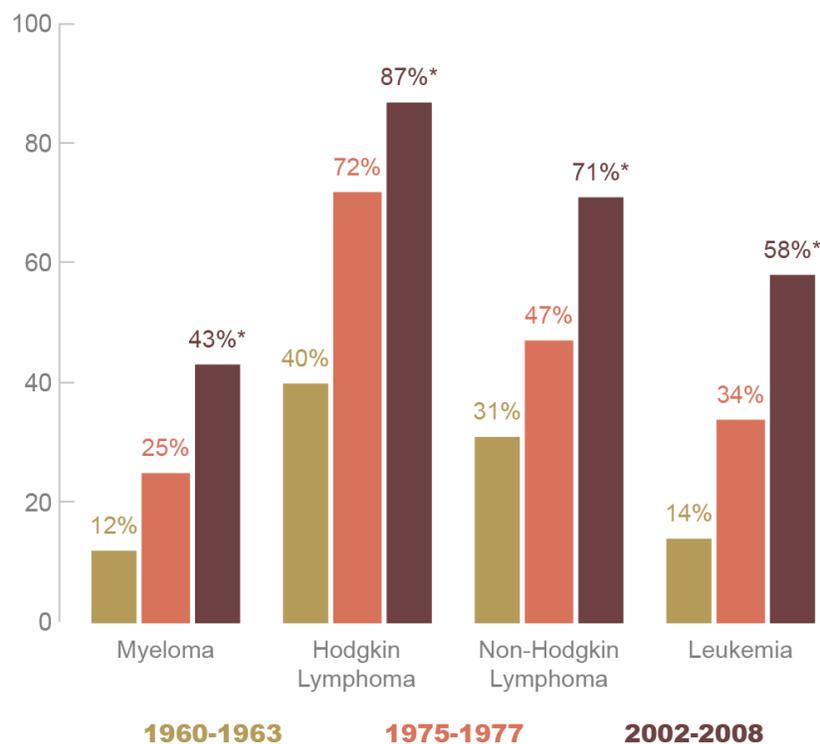
Incidence rates are the number of new cases in a given year, not counting the preexisting cases. The incidence rates are usually presented as a specific number per 100,000 population.

Overall incidence rates per 100,000 population reported in 2014 for leukemia, lymphoma and myeloma are: leukemia 13; non-Hodgkin lymphoma (NHL) 17; Hodgkin lymphoma (HL) 3; myeloma 5.

SURVIVAL

Relative survival compares the survival rate of a person diagnosed with a disease to that of a person without the disease. The most recent survival data available may not fully represent the outcomes of all current therapies and, as a result, may underestimate survival to a small degree.

Five-year relative survival rates for leukemia, lymphoma and myeloma during 1960-1963, 1975-1977 and 2002-2008



DEATHS

- Approximately every 75 minutes, someone in Canada dies from a blood cancer. This statistic represents 19 people each day.
- Leukemia, lymphoma and myeloma are expected to cause the deaths of an estimated 7,000 people in Canada in 2014. Blood cancers are the third leading cause of cancer death in Canada, after lung & colorectal.
- These diseases are expected to account for 9 percent of the deaths from cancer in 2014, based on the estimated total of 76,600 cancer deaths.
- In general, the likelihood of dying from most types of leukemia, lymphoma or myeloma decreased from 2000 to 2010.

LEUKEMIA

- In 2014, 5,900 people are expected to be diagnosed with leukemia.
- In 2014, 2,700 people are expected to die from leukemia.
- More males than females are diagnosed with leukemia and die of leukemia. One in 54 males will develop leukemia in their lifetime and one in 93 will die. One in 72 females will develop leukemia in their lifetime and one in 123 will die.
- Most cases of leukemia occur in older adults; the median age at diagnosis is 66 years.
- In 2014, leukemia is expected to strike approximately 12 times as many adults as children age 0-14 years.
- The most common types of leukemia in adults are AML and CLL.

“Leukemia” is the term used to describe the four major types of leukemia.

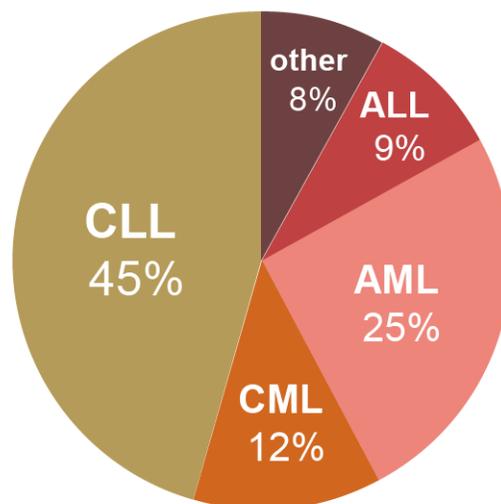
FOUR MAJOR TYPES OF LEUKEMIA	
Acute Lymphoblastic Leukemia (ALL)	Chronic Lymphocytic Leukemia (CLL)
Acute Myeloid Leukemia (AML)	Chronic Myeloid Leukemia (CML)

The terms “myeloid” or “myelogenous” and “lymphoid,” “lymphocytic” or “lymphoblastic” denote the cell types involved. In general, leukemia is characterized by the uncontrolled accumulation of blood cells. However, the natural history of each type, and the therapies used to treat people with each type, are different.

ALL and AML are diseases that progress rapidly without treatment. They result in the accumulation of immature, nonfunctional cells in the marrow and blood. The marrow often stops producing enough normal platelets, red cells and white cells. Anemia, a deficiency of red cells, develops in virtually all people who have leukemia. The lack of normal white cells impairs the body's ability to fight infections. A shortage of platelets results in bruising and easy bleeding.

CLL and CML usually progress slowly compared to acute types of leukemia. The slower disease progression allows greater numbers of more mature, functional cells to be made.

Estimated Proportion of New Cases of Leukemia Latest Data is from 2010



LYMPHOMA

- In 2014, there are expected to be 9,000 new cases of lymphoma diagnosed in Canada (1,000 cases of Hodgkin lymphoma - HL, 8,000 cases of non-Hodgkin lymphoma - NHL).
- In 2014, 2,700 people are expected to die from lymphoma (100 from HL, 2,600 from NHL).
- NHL is the sixth most common cancer in Canada.

“Lymphoma” is a general term for many blood cancers that originate in the lymphatic system. Lymphoma results when a lymphocyte (a type of white cell) undergoes a malignant change and multiplies out of control. Eventually, healthy cells are crowded out and malignant lymphocytes amass in the lymph nodes, liver, spleen and/or other sites in the body.

Hodgkin Lymphoma (HL) has characteristics that distinguish it from other diseases classified as lymphoma, including the presence of the Reed-Sternberg cell, a large, malignant cell found in HL lymphoma tissues.

Non-Hodgkin Lymphoma (NHL) represents a diverse group of diseases that are distinguished by the characteristics of the cancer cells associated with each disease type. The designations “indolent” and “aggressive” are often applied to types of NHL. Each type is associated with factors that categorize the prognosis as either more or less favorable.

MYELOMA

- In 2014, 2,600 people are expected to be diagnosed with myeloma.
- The median age at diagnosis is 69 years; myeloma rarely occurs in people under age 45.
- In 2014, approximately 1,400 people are expected to die from myeloma.
- Overall, mortality from myeloma has been decreasing from 1995 to 2010 (the most recent data available).

Myeloma is a cancer of the plasma cells (a type of white cell). Plasma cells are found primarily in the marrow. About 90 percent of people with myeloma have disease involving multiple sites at the time of diagnosis. Some individuals have myeloma that progresses very slowly (sometimes referred to as “smoldering” or “indolent” myeloma). In myeloma, a B lymphocyte (the cell type that forms plasma cells) becomes malignant. Eventually, malignant plasma cells (myeloma cells) amass in the marrow and sometimes other sites in the body. The myeloma cells disrupt normal blood production, destroy normal bone tissue and cause pain. Healthy plasma cells produce immunoglobulins (antibodies) that protect the body against certain types of infection. The onset of myeloma interferes with antibody production, making people with myeloma susceptible to infection and other serious complications.

MYELOYDYSPLASTIC SYNDROMES

- There were an estimated 1,400 new cases of myelodysplastic syndromes (MDS) diagnosed each year from 2006 to 2010.
- The estimated overall incidence rate of MDS is 4.8 cases per 100,000 population.
- A possible cause of MDS (and acute myeloid leukemia) is repeated exposure to benzene.

Myelodysplastic syndromes (MDS) are a group of diseases of the blood and marrow, with varying degrees of severity and life expectancy. MDS begins with a change to a normal stem cell in the marrow. The marrow becomes filled with an increased number of developing blood cells. However, the blood is usually deficient in cells because the cells in the marrow die before

they can be released into the blood. Normally, immature cells known as “blasts” make up less than 5 percent of all cells in the marrow. In MDS, blasts often constitute more than 5 percent of the cells. (A person with acute myeloid leukemia [AML] has more than 20 percent blasts in the marrow.) MDS has been known as “smoldering leukemia” or “preleukemia.” These terms may be misleading because they imply that MDS is only serious and problematic if it evolves into AML; this is not the case.

MYELOPROLIFERATIVE NEOPLASMS

Myeloproliferative neoplasms (MPN) are types of blood cancer that begin with an abnormal mutation (change) in a stem cell in the bone marrow. The change leads to an overproduction of any combination of white cells, red cells and platelets.

This group of blood disorders includes polycythemia vera, essential thrombocythemia and myelofibrosis.

POLYCYTHEMIA VERA

- The incidence rate of polycythemia vera (PV) varies worldwide, ranging from approximately 0.5 to 2.5 new cases per 100,000 people each year.
- The average age at which PV is diagnosed is about 60 to 65 years old.
- PV is uncommon in individuals younger than 30 years old.

PRIMARY THROMBOCYTHEMIA

- There are an estimated 0.1 to 2.4 new cases of primary thrombocythemia (PT) per 100,000 people each year.
- PT occasionally occurs in older children but is diagnosed mostly in adult men and women.

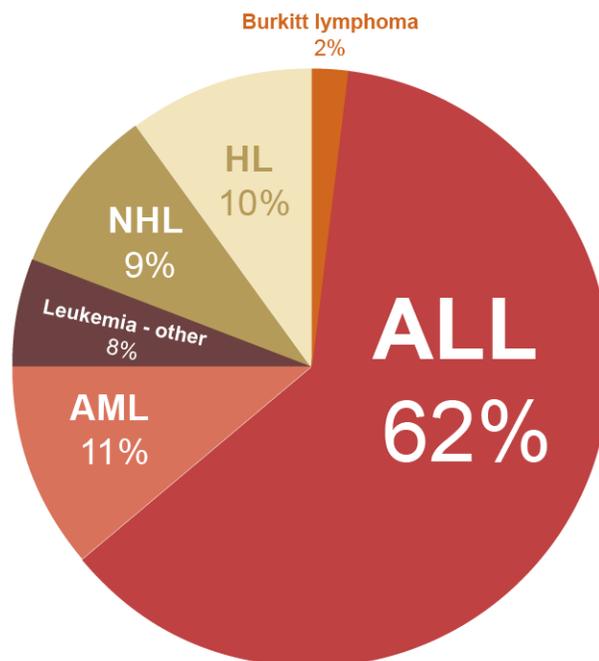
MYELOFIBROSIS

- Myelofibrosis affects about two in one million people.
- The average age at which myelofibrosis is diagnosed is between 50 and 80 years, but it can occur at any age.

PEDIATRIC BLOOD CANCERS (CHILDREN AGE 0-14)

- Approximately 1,500 children in Canada will be diagnosed with cancer in 2014, which is less than 1% of all new cancer cases in Canada.
- Leukemia (32 percent), neoplasms of the brain and other nervous tissue (19 percent) and lymphoma (11 percent) are the most common types of cancer in children younger than 14 years.
- The most common type of leukemia in children age 0-14 years is acute lymphoblastic leukemia (ALL).
- In 2010, the latest year for which data is available, ALL accounted for approximately 75 percent of the new leukemia cases in children age 0-14 years. Approximately 400 Canadian children will be diagnosed with ALL in 2014.
- Death rates for all types of childhood and adolescent cancers combined declined steadily from 1975 to 2010, with the steepest declines occurring in HL, NHL and ALL.
- In general, overall survival for childhood cancer is higher than it is among adults.
- Observed survival for children age 0-14 years with ALL is over 90%.
- Observed survival for children age 0-14 years with AML is over 70%.
- The overall survival for pediatric lymphoma is over 90% (92% for Hodgkin lymphoma; 92% for Burkitt lymphoma; 88% for non-Hodgkin lymphoma excluding Burkitt's).

New Cases of Blood Cancers by Percentage in Children Age 0-14



YOUNG & YOUNG ADULTS BLOOD CANCERS (AGE 15-29)

- 1.5% of all new cancer cases diagnosed in Canada occur in youth & young adults age 15-29.
- 18% of cancers in youth & young adults age 15-29 are lymphomas – 12% is Hodgkin lymphoma and 6% is non-Hodgkin lymphoma
- Hodgkin lymphoma has a survival rate of over 95% in youth & young adults.
- Leukemia accounts for 6% of cancers in youth & young adults.

New Cases of Blood Cancers by Percentage in Youth & Young Adults Age 15-29

