LEUKEMIA & LYMPHOMA SOCIETY®

FACTS 2023-2024

UPDATED DATA ON BLOOD CANCERS

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Executive Summary

Facts 2023-2024 is an update of data available for blood cancers (leukemia, lymphoma, myeloma, myelodysplastic syndromes and myeloproliferative neoplasms). Blood cancers are diseases that can affect the bone marrow, the blood cells, the lymph nodes and other parts of the lymphatic system.

Facts 2023-2024 provides updates from the American Cancer Society's *Cancer Facts & Figures 2024* (published online in 2024, https://www.cancer.org/research/cancer-facts-statistics.html) for estimated numbers of new blood cancer cases and estimated numbers of deaths due to blood cancers.

The incidence rates, prevalence and mortality data in *Facts 2023-2024* reflect the statistics from the National Cancer Institute's SEER*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute. [Cited 2024 March]. Available from https://seer.cancer.gov/explorer/.

Incidence rates by state and national incidence counts are calculated from the Centers for Disease Control and Prevention's U.S. Cancer Statistics Public Use Databases (https://www.cdc.gov/united-states-cancer-statistics/public-use/?CDC_AAref_Val=https://www.cdc.gov/cancer/uscs/public-use/).

Throughout this publication, "cases" and "counts" are used interchangeably.

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About Blood Cancers

Leukemia, lymphoma, myeloma, myelodysplastic syndromes (MDS) and myeloproliferative neoplasms (MPNs) are types of blood cancer that can affect the bone marrow, the blood cells, the lymph nodes and other parts of the lymphatic system. These diseases may 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 blood cells, white blood cells and platelets. The disease process can lead to severe anemia, bleeding, an impaired ability to fight infection and/or death.

Highlights from Facts 2023-2024

Prevalence

Prevalence is the estimated number of people alive on a certain date in a population who previously had a diagnosis of a specific disease (see Definitions section for additional details).

An estimated 1,698,339 people in the United States (US) are living with or in remission from leukemia, lymphoma, myeloma, myelodysplastic syndromes (MDS) or myeloproliferative neoplasms (MPNs) (see Table 1).

Approximate US Prevalence of the Six Major Types of Blood Cancers as of January 1, 2020

Type	Prevalence
All blood cancers^*#	**1,698,339**
Myeloma^	168,234
Hodgkin Lymphoma^	165,856
Non-Hodgkin Lymphoma^	750,602
Leukemia^	456,481
Myeloproliferative Neoplasms (MPNs)*	120,761
Myelodysplastic Syndromes (MDS)*	60,041

Table 1. SEER*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute; 2023 Apr 19. [updated: 2023 Nov 16; cited 2024 Feb 21]. Available from: https://seer.cancer.gov/statistics-network/explorer/. Data source(s): U.S. 2020 cancer prevalence estimates are based on 2020 cancer prevalence proportions from the SEER 12 Areas (excluding the Alaska Native Tumor Registry) and 1/1/2020 U.S. population estimates based on the average of 2019 and 2020 population estimates from the U.S. Bureau of the Census.

^ 28-year limited-duration prevalence.

* 19-year limited-duration prevalence. Shorter duration prevalence required due to fewer years of reportability for these cancers.

#The prevalence of all blood cancers does not equal the sum of the six major types listed here because some people have multiple diagnoses.

New Cases

Approximately every 3 minutes, one person in the US is diagnosed with leukemia, lymphoma or myeloma.

- An estimated combined total of 187,740 people in the US are expected to be diagnosed with leukemia, lymphoma or myeloma in 2024 (see Figure 1).
- New cases of leukemia, lymphoma and myeloma are expected to account for 9.4 percent of the estimated 2,001,140 new cancer cases that will be diagnosed in the US in 2024.

Estimated New Cases (%) of Leukemia, Lymphoma and Myeloma, 2024

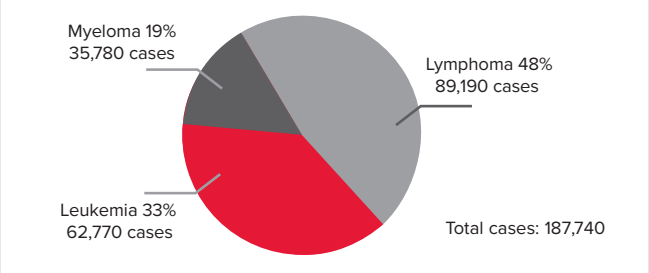

Figure 1. Source: *Cancer Facts & Figures 2024*. American Cancer Society; 2024.

Incidence

Incidence rates are the number of new cases that occur in a given year, not counting the preexisting cases. Incidence rates are usually presented as a specific number per 100,000 population. For large age groups, age-adjusted rates provide more reliable rates for comparison because they reduce the bias of age in the makeup of the populations being compared (see Definitions section for additional details).

Overall age-adjusted incidence rates per 100,000 population reported in 2023 for leukemia, lymphoma and myeloma are close to data reported in 2022: leukemia 14.0 in 2023 vs 14.1 in 2022, non-Hodgkin lymphoma (NHL) 18.7 in 2023 vs 19.0 in 2022, Hodgkin lymphoma (HL) 2.5 in 2023 vs 2.6 in 2022 and myeloma 7.1 in 2023 and 2022.

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 impact of all current therapies and, as a result, may underestimate current survival (see Definitions section for additional details). Figure 2 shows 5-year relative survival rates.

Five-Year Relative Survival Rates by Year of Diagnosis 1975-1977 vs. 1988-1990 vs. 2001-2003 vs. 2013-2019

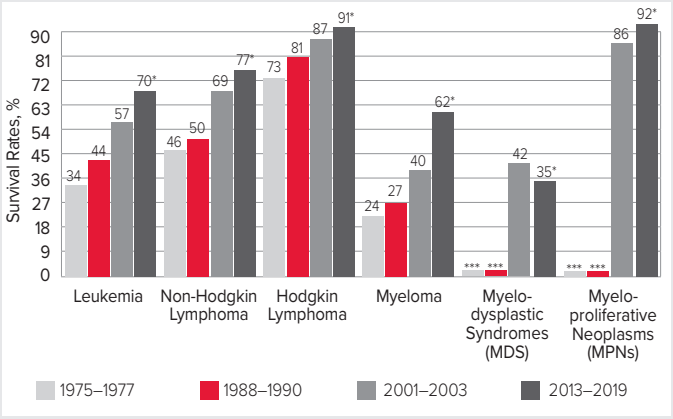

Figure 2. Source: Surveillance, Epidemiology, and End Results (SEER Program (www.seer.cancer.gov) SEER*Stat Database: Incidence - SEER Research Data, 8 Registries, Nov 2022 Sub (1975-2020) - Linked To County Attributes - Total U.S., 1969-2021 Counties, National Cancer Institute, DCCPS, Surveillance Research Program, released April 2023, based on the November 2022 submission.

* The difference in rates between 1975-1977 and 2013-2019 is statistically significant (P < .05).

** The difference in rates between 2001-2003 and 2013-2019 is statistically significant (P < .05).

*** Due to shorter reportablity period, long-term survival statistics are not available.

Deaths

A cancer mortality rate is the number of deaths, with cancer as the underlying cause of death, occurring in a specified population during a year. Cancer mortality is usually expressed as the number of deaths due to cancer per 100,000 population (see Definitions section for additional details).

Approximately every 9 minutes, someone in the US dies from a blood cancer.* This statistic represents approximately 157 people each day or more than six people every hour.

- Leukemia, lymphoma and myeloma are expected to cause the deaths of an estimated 57,260 people in the US in 2024.
- These diseases are expected to account for 9.4 percent of the deaths from cancer in 2024, based on the estimated total of 611,720 cancer deaths.
- Overall, the likelihood of dying from blood cancer decreased from 2000 to 2020 (the most recent data available). During this time, the mortality rate of leukemia decreased by 24.4 percent, lymphoma by 40.6 percent and myeloma by 22.2 percent.

**Data specified for "blood cancer" include leukemia, lymphoma and myeloma, and do not include myelodysplastic syndromes (MDS) or myeloproliferative neoplasms (MPNs) due to lack of available data.*

Leukemia

- An estimated 456,481 people are living with or in remission from leukemia in the US (see Table 1).
- In 2024, 62,770 people are expected to be diagnosed with Leukemia (see Figure 1).
- In 2024, 23,670 people are expected to die from leukemia (see Table 14 on page 12).
- Approximately 35.5 percent more males than females are living with leukemia. More males than females are diagnosed with leukemia and die of leukemia.
- Leukemia is the tenth most common cancer in the US, and the age-adjusted incidence rate increased by 9.4 percent from 1975 (12.71 per 100,000) to 2020 (13.91 per 100,000).

Hodgkin (HL) and Non-Hodgkin Lymphoma (NHL)

- An estimated 912,982 people are living with or in remission from lymphoma^ in the US.
- An estimated 165,856 people are living with or in remission from HL (see Table 1).
- An estimated 750,602 people are living with or in remission from NHL (see Table 1).
- In 2024, 89,190 new cases of lymphoma are expected to be diagnosed in the US (8,570 cases of HL; 80,620 cases of NHL) (see Figure 1).
- In 2024, 21,050 people are expected to die from lymphoma (910 from HL; 20,140 from NHL) (see Table 17 on page 16).
- NHL is the seventh most common cancer in the US, and the age-adjusted incidence rate increased by 63.4 percent from 1975 (11.02 per 100,000 population) to 2020 (18.01 per 100,000 population).

^The number of people living with or in remission from lymphoma does not equal the combined total of NHL and HL because some people have both diagnoses.

Myeloma

- An estimated 168,234 people are living with or in remission from myeloma in the US (see Table 1).
- In 2024, 35,780 people are expected to be diagnosed with Myeloma (see Figure 1).
- In 2024, approximately 12,540 people are expected to die from myeloma (see Table 20 on page 18).
- The age-adjusted incidence rate of myeloma increased by 46.0 percent from 1975 (4.76 per 100,000) to 2020 (6.95 per 100,000).
- The age-adjusted incidence rate of myeloma in non-Hispanic (NH) Black males and females (14.4 per 100,000) was 2.3 times greater than that of NH white males and females (6.4 per 100,000) from 2016 to 2020.

Distribution of Average Annual Blood Cancer Incidence Counts by Sex, 2016-2020, United States

Sex	All blood cancers		Lymphomas		NHL		Hodgkin Lymphoma		Leukemia		Myeloma		MDS		MPN	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Total	190,311		80,483		71,956		8,527		52,680		27,887		15,510		13,871	
Male	106,122	55.8%	44,448	55.2%	39,756	55.3%	4,691	55.0%	30,786	58.4%	15,515	55.6%	9,070	58.5%	6,376	46.0%
Female	84,189	44.2%	36,035	44.8%	32,200	44.7%	3,835	45.0%	21,894	41.6%	12,372	44.4%	6,440	41.5%	7,495	54.0%

Table 2. Source:National Program of Cancer Registries and Surveillance, Epidemiology and End Results Program SEER*Stat Database: NPCR and SEER Incidence - U.S. Cancer Statistics Public Use Research Database, 2022 Submission (2001-2020). United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute. Released June 2023. Accessed at https://www.cdc.gov/united-states-cancer-statistics/public-use/?CDC_AAref_Val=https://www.cdc.gov/cancer/uscs/public-use/

Myelodysplastic Syndromes (MDS)

- An estimated 60,041 people in the US are living with or in remission from MDS (see Table 1).
- An average of 15,529 new cases of MDS were diagnosed in the US each year from 2016 to 2020.
- The estimated overall age-adjusted incidence rate of MDS is 3.9 cases per 100,000 population. Non-Hispanic white males have the highest rate (6.0 per 100,000 population).

Myeloproliferative Neoplasms (MPNs)

- An estimated 120,761 people in the US are living with or in remission from MPNs (see Table 1).
- An average of 13,871 new cases of MPNs were diagnosed in the US each year from 2016 to 2020.
- The estimated overall age-adjusted incidence rate of MPNs is 3.5 cases per 100,000 population. Non-Hispanic white males have the highest rate (4.1 per 100,000 population).

Sex

An estimated 780,382 females and 917,956 males are living with or in remission from a blood cancer. Remission means the signs and symptoms of the disease have disappeared (see Definitions section for additional details).

From 2016-2020, of all blood cancer cases diagnosed, 44.2 percent were diagnosed in females and 55.8 percent in males.

More males than females are diagnosed for each blood cancer type, except for myeloproliferative neoplasms (MPNs). From 2016-2020, 54.0 percent of MPNs were diagnosed in females and 46.0 percent in males (see Table 2).

Age

- The median age at diagnosis for a blood cancer is 68. The median age at diagnosis for Hodgkin lymphoma (HL) is 39 (see Table 3).
- An average of 62,326 new cases of blood cancer among those 75 years and older were diagnosed in the US each year from 2016 to 2020 (see Table 4).
- An estimated 507,568 people in the US ages 75 years and older are living with or in remission from a blood cancer (see Table 5).

Median Age at Diagnosis for the Six Major Types of Blood Cancers, 2016-2020, as of January 1, 2020

Type	Median Age at Diagnosis (in years)
All blood cancers	68
Leukemia	67
Non-Hodgkin Lymphoma	68
Hodgkin Lymphoma	39
Myeloma	69
Myelodysplastic Syndromes (MDS)	77
Myeloproliferative Neoplasms (MPNs)	66

Table 3. SEER 22, 2016-2020, Age Distribution Source: Surveillance, Epidemiology, and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat Database: Incidence - SEER Research Plus Limited-Field Data, 22 Registries, Nov 2022 Sub (2000-2020) - Linked To County Attributes - Total U.S., 1969-2021 Counties, National Cancer Institute, DCCPS, Surveillance Research Program, released April 2023, based on the November 2022 submission.

Average Annual Blood Cancer Incidence Counts by Age at Diagnosis, 2016-2020, United States

Age at Diagnosis	**All blood cancers**	**Lymphomas**	NHL	Hodgkin Lymphoma	**Leukemia**	ALL	CLL	AML	CML	**Myeloma**	**MDS**	**MPN**
All Ages	**190,311**	**80,483**	71,956	8,527	**52,680**	5,418	18,416	15,922	7,239	**27,887**	**15,510**	**13,871**
Ages <15	**4,100**	**961**	617	344	**3,056**	2,426	6	429	68	^	**41**	**44**
Ages 15-39	**13,281**	**8,004**	4,130	3,874	**3,723**	1,102	129	1,307	804	**329**	**174**	**1,069**
Ages 40-64	**58,144**	**26,386**	23,854	2,532	**15,338**	1,030	5,665	4,440	2,464	**9,313**	**2,185**	**4,960**
Ages 65-74	**52,459**	**21,654**	20,661	993	**13,734**	476	5,898	4,289	1,712	**9,075**	**4,264**	**3,761**
Ages 75+	**62,326**	**23,478**	22,695	783	**16,830**	384	6,717	5,457	2,191	**9,168**	**8,846**	**4,038**
Ages <20	**5,886**	**2,022**	1,014	1,009	**3,712**	2,806	8	604	126	**4**	**57**	**96**

Table 4. Source: National Program of Cancer Registries and Surveillance, Epidemiology and End Results Program SEER*Stat Database: NPCR and SEER Incidence - U.S. Cancer Statistics Public Use Research Database, 2022 Submission (2001-2020). United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute. Released June 2023. Accessed at https://www.cdc.gov/united-states-cancer-statistics/public-use/?CDC_AAref_Val=https://www.cdc.gov/cancer/uscs/public-use/
^ Statistic not displayed due to fewer than 16 cases in the 5 year period.
Note: Due to rounding, the total for all ages may not equal the sum of the age groups.

Approximate US Prevalence of Blood Cancers by Age at Prevalence, as of January 1, 2020

Age at Prevalence	All blood cancers^#	Lymphomas^	NHL^	Hodgkin Lymphoma^	Leukemia^	ALL^	CLL^	AML^	CML^	Myeloma^	MDS*	MPN*
All Ages	**1,698,339**	**912,982**	750,602	165,856	**456,481**	85,504	204,226	64,652	63,479	**168,234**	**60,041**	**120,761**
Ages <15	**32,096**	**4,940**	3,654	1,286	**26,703**	22,561	43	2,703	503	**-**	**261**	**219**
Ages 15-39	**175,665**	**95,316**	42,308	53,351	**72,541**	49,079	573	12,731	7,114	**1,440**	**1,274**	**5,685**
Ages 40-64	**534,874**	**320,118**	239,928	81,640	**118,855**	9,908	41,887	25,771	26,880	**51,857**	**9,074**	**39,150**
Ages 65-74	**448,137**	**234,697**	217,160	18,523	**111,365**	2,703	68,634	14,397	15,122	**58,370**	**15,839**	**34,216**
Ages 75+	**507,568**	**257,912**	247,553	11,056	**127,017**	1,252	93,089	9,050	13,859	**56,564**	**33,594**	**41,491**
Ages <20	**54,868**	**11,832**	7,397	4,435	**42,195**	35,488	52	4,395	916	**23**	**438**	**462**
Ages 20-39	**152,893**	**88,423**	38,564	50,202	**57,049**	36,152	564	11,039	6,701	**1,420**	**1,097**	**5,442**

Table 5. Source: U.S. 2020 cancer prevalence estimates are based on 2020 cancer prevalence proportions from the SEER 12 Areas https://seer.cancer.gov/registries/terms.html (excluding the Alaska Native Tumor Registry) and 1/1/2020 U.S. population estimates based on the average of 2019 and 2020 population estimates from the U.S. Bureau of the Census.population estimates from the US Bureau of the Census. The Alaska Native Tumor Registry only includes cases diagnosed among Alaska Natives and is excluded from the analysis to avoid bias in the underlying calculations.
Methodology: Prevalence was calculated using the first invasive tumor for each cancer site diagnosed during the previous 28 years (1992-2019).
^ 287-year limited-duration prevalence.
# Prevalence counts for all blood cancers combined only includes 19-years of incidence for MDS and MPN due to fewer years of reportability for these cancers.
* 19-year limited-duration prevalence. Shorter duration prevalence required due to fewer years of reportability for these cancers.
- Estimates based on less than 16 cases are suppressed and not shown.
Note: Due to rounding, the total for all ages may not equal the sum of the age groups.

Childhood Cancers

- An estimated 32,096 children (less than 15 years old) in the US are living with or in remission from leukemia, lymphoma, myeloma, myelodysplastic syndromes (MDS) or myeloproliferative neoplasms (MPNs) (see Table 5).
- Leukemia is the most common cancer diagnosed in children and accounts for 30.8% percent of all cancer cases in this age-group.
- Acute lymphoblastic leukemia (ALL) is the most common type of leukemia in this age-group.

See Table 6.

From 2016 to 2020, the most recent 5 years for which data are available, leukemia and lymphoma accounted for 40.2% of all cancer types in children.

Leukemia is the second leading cause of cancer deaths (after cancers of the brain and other nervous tissue) among children. This accounts for 25.1% of all cancer-related deaths among this age-group.

Approximate US Prevalence of the Six Major Types of Blood Cancers in Children Younger than 15 Years, as of January 1, 2020

Type	Prevalence
Myeloma^	**-**
Hodgkin Lymphoma^	**1,286**
Non-Hodgkin Lymphoma^	**3,654**
Leukemia^	**26,703**
Myeloproliferative Neoplasms (MPNs)*	**219**
Myelodysplastic Syndromes (MDS)*	**261**

Table 6. Source: SEER*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute; 2023 Apr 19. [updated: 2023 Nov 16; cited 2024 Feb 21]. Available from: https://seer.cancer.gov/statistics-network/explorer/. Data source(s): U.S. 2020 cancer prevalence estimates are based on 2020 cancer prevalence proportions from the SEER 12 Areas (excluding the Alaska Native Tumor Registry) and 1/1/2020 U.S. population estimates based on the average of 2019 and 2020 population estimates from the U.S. Bureau of the Census.
^ 28-year limited-duration prevalence.
* 19-year limited-duration prevalence. Shorter duration prevalence required due to fewer years of reportability for these cancers.
- Statistic not displayed due to fewer than 16 cases in the 5 year period.

Childhood and Adolescent Blood Cancers

- An estimated 54,868 children and adolescents younger than 20 years in the US are living with or in remission from leukemia, lymphoma, myeloma, myelodysplastic syndromes (MDS) or myeloproliferative neoplasms (MPNs) (see Table 5).
- Leukemia is the most common cancer diagnosed in children and adolescents younger than 20 years and accounts for 25.4 percent of all cancer cases in this age-group.
- From 2016 to 2020, the most recent 5 years for which data are available, leukemia and lymphoma accounted for 38.4 percent of all cancer types in children and adolescents younger than 20 years.

- The most common types of cancer in children and adolescents younger than 20 years are leukemia (25.4 percent), cancers of the brain and other nervous tissue (15.9 percent), non-Hodgkin lymphoma (NHL) (6.6 percent), Hodgkin lymphoma (HL) (6.4 percent), and thyroid cancer (6.0 percent).
- The age-adjusted incidence rate of leukemia and lymphoma in children and adolescents younger than 20 years is 7.4 per 100,000 (leukemia, 4.9 and lymphoma, 2.5).
- Leukemia is the second leading cause of cancer deaths (after cancers of the brain and other nervous tissue) among children and adolescents younger than 20 years. This accounts for 24.7 percent of all cancer-related deaths among this age- group.
- From 2016-2020, 4.3 percent of all leukemia and lymphoma cases were diagnosed in children and adolescents younger than 20 years.
- From 2016-2020, 3.1 percent of all blood cancers (leukemia, lymphoma, myeloma, MDS and MPNs*) were diagnosed in children and adolescents younger than 20 years.

See Table 7 below.

** Myeloma, MDS and MPNs are not commonly diagnosed in children and adolescents younger than 20 years.*

Approximate US Prevalence of the Six Major Types of Blood Cancers in Children and Adolescents Younger than 20 Years, as of January 1, 2020

Type	Prevalence
Myeloma^	23
Hodgkin Lymphoma^	4,435
Non-Hodgkin Lymphoma^	7,397
Leukemia^	42,195
Myeloproliferative Neoplasms (MPNs)*	462
Myelodysplastic Syndromes (MDS)*	438

Table 7. Source: SEER*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute; 2023 Apr 19. [updated: 2023 Nov 16; cited 2024 Feb 21]. Available from: https://seer.cancer.gov/statistics-network/explorer/. Data source(s): U.S. 2020 cancer prevalence estimates are based on 2020 cancer prevalence proportions from the SEER 12 Areas (excluding the Alaska Native Tumor Registry) and 1/1/2020 U.S. population estimates based on the average of 2019 and 2020 population estimates from the U.S. Bureau of the Census.
^ 28-year limited-duration prevalence.
* 19-year limited-duration prevalence. Shorter duration prevalence required due to fewer years of reportability for these cancers.

Adolescent and Young Adult Blood Cancers

- An estimated 175,665 adolescents and young adults (ages 15-39 years*) in the US are living with or in remission from leukemia, lymphoma, myeloma, myelodysplastic syndromes (MDS) or myeloproliferative neoplasms (MPNs^) (see Table 5 and Table 8).
- Approximately 10.3 percent of all people living with blood cancers in the US are ages 15-39 years.
- From 2016-2020, 7.0 percent of all blood cancers (leukemia, lymphoma, myeloma, MDS and MPNs^) were diagnosed in adolescents and young adults ages 15-39 years.
- Lymphoma is the most common blood cancer diagnosed in adolescents and young adults ages 15-39 years and accounts for 60.3 percent of all blood cancer cases in this age-group.
- In adolescents and young adults ages 15-39 years, lymphoma (Hodgkin and non-Hodgkin lymphoma combined) is the fourth most frequently occurring type of cancer in all races and ethnicities.
  - Non-Hodgkin lymphoma (NHL) is eighth most frequently occurring
  - Hodgkin Lymphoma (HL) is tenth most frequently occurring
- In adolescents and young adults ages 15-39 years, leukemia is the ninth most frequently occurring type of cancer in all races and ethnicities.
- From 2016 to 2020, the most recent 5 years for which data are available, leukemia and lymphoma accounted for 14.6 percent of all cancer types in adolescents and young adults ages 15- 39 years.
  - Lymphoma accounted for 9.9 percent of all cancer cases in adolescents and young adults ages 15-39 years (NHL, 5.3 percent; HL, 4.6 percent).
  - Leukemia accounted for 4.7 percent of all cancer cases in adolescents and young adults ages 15-39 years.
- Leukemia is the fourth leading cause of cancer deaths among adolescents and young adults ages 15-39 years. This accounts for 9.9 percent of all cancer-related deaths among this age-group.
- NHL is the ninth leading cause of cancer deaths among adolescents and young adults ages 15-39 years. This accounts for 3.9 percent of all cancer-related deaths among this age-group.

**The reporting of adolescent and young adult cancer in this publication includes ages 15 through 39 years, in keeping with other major reporting sources. This grouping intentionally overlaps with the reporting of childhood cancers for ages under 20 years, accounting for a transitional phase between childhood and adult cancer*

^ Myeloma, MDS and MPNs are not commonly diagnosed in adolescents and young adults ages 15-39 years

Approximate US Prevalence of the Six Major Types of Blood Cancers in Adolescents and Young Adults Ages 15-39 Years, as of January 1, 2020

Type	Prevalence
Myeloma^	1,440
Hodgkin Lymphoma^	53,351
Non-Hodgkin Lymphoma^	42,308
Leukemia^	72,541
Myeloproliferative Neoplasms (MPNs)*	5,685
Myelodysplastic Syndromes (MDS)*	1,274

Table 8. Source: SEER*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute; 2023 Apr 19. [updated: 2023 Nov 16; cited 2024 Feb 21]. Available from: https://seer.cancer.gov/statistics-network/explorer/. Data source(s): U.S. 2020 cancer prevalence estimates are based on 2020 cancer prevalence proportions from the SEER 12 Areas (excluding the Alaska Native Tumor Registry) and 1/1/2020 U.S. population estimates based on the average of 2019 and 2020 population estimates from the U.S. Bureau of the Census.
^ 28-year limited-duration prevalence.
* 19-year limited-duration prevalence. Shorter duration prevalence required due to fewer years of reportability for these cancers.

Young Adult Blood Cancers

- An estimated 152,893 young adults (ages 20-39 years*) in the US are living with or in remission from leukemia, lymphoma, myeloma, myelodysplastic syndromes (MDS) or myeloproliferative neoplasms (MPNs^) (see Table 5).
- Approximately 9.0 percent of all people living with blood cancers in the US are ages 20-39 years.

  See Table 9.
- From 2016-2020, 6.0 percent of all blood cancers (leukemia, lymphoma, myeloma, MDS and MPNs) were diagnosed in young adults ages 20-39 years.
- Lymphoma is the most common blood cancer diagnosed in young adults ages 20-39 years and accounts for 60.4 percent of all blood cancer cases in this age-group.
- In young adults ages 20-39 years, lymphoma (Hodgkin and non-Hodgkin lymphoma combined) is the fifth most frequently occurring type of cancer in all races and ethnicities.
  - Non-Hodgkin lymphoma (NHL) is eighth most frequently occurring
  - Hodgkin lymphoma (HL) is tenth most frequently occurring
- In young adults ages 20-39 years, leukemia is the ninth most frequently occurring type of cancer in all races and ethnicities.
- From 2016 to 2020, the most recent 5 years for which data are available, leukemia and lymphoma accounted for 13.4 percent of all cancer types in adolescents and young adults ages 20- 39 years.
  - Lymphoma accounted for 9.3 percent of all cancer cases in young adults ages 20-39 years (NHL, 5.0 percent; HL, 4.3 percent).
  - Leukemia accounted for 4.1 percent of all cancer cases in young adults ages 20-39 years.
- Leukemia is the fifth leading cause of cancer deaths among young adults ages 20-39 years. This accounts for 9.0 percent of all cancer-related deaths among this age-group.
- NHL is the tenth leading cause of cancer deaths among young adults ages 20-39 years. This accounts for 3.9 percent of all cancer-related deaths among this age-group.

**The reporting of adolescent and young adult cancer in this publication includes ages 15 through 39 years, in keeping with other major reporting sources. This grouping intentionally overlaps with the reporting of childhood cancers for ages under 20 years, accounting for a transitional phase between childhood and adult cancer.*

^Myeloma, MDS and MPNs are not commonly diagnosed in adolescents and young adults ages 15-39 years.

Approximate US Prevalence of the Six Major Types of Blood Cancers in Young Adults Ages 20-39 Years, as of January 1, 2020

Type	Prevalence
Myeloma^	**1,420**
Hodgkin Lymphoma^	**50,202**
Non-Hodgkin Lymphoma^	**38,564**
Leukemia^	**57,049**
Myeloproliferative Neoplasms (MPNs)*	**5,442**
Myelodysplastic Syndromes (MDS)*	**1,097**

Table 9. Source: SEER*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute; 2023 Apr 19. [updated: 2023 Nov 16; cited 2024 Feb 21]. Available from: https://seer.cancer.gov/statistics-network/explorer/. Data source(s): U.S. 2020 cancer prevalence estimates are based on 2020 cancer prevalence proportions from the SEER 12 Areas (excluding the Alaska Native Tumor Registry) and 1/1/2020 U.S. population estimates based on the average of 2019 and 2020 population estimates from the U.S. Bureau of the Census.
^ 28-year limited-duration prevalence.
* 19-year limited-duration prevalence. Shorter duration prevalence required due to fewer years of reportability for these cancers.

Race and Ethnicity

- An estimated 1,323,631 non-Hispanic (NH) whites; 163,305 NH Blacks; 159,873 Hispanics; 53,206 NH Asian/Pacific Islanders and 5,213 NH American Indians/Alaska Natives are living with or in remission from blood cancers (see Table 28).
- From 2016-2020, of all blood cancer cases diagnosed, 74.6 percent were diagnosed in NH whites, 10.4 percent in NH Blacks, 9.9 percent in Hispanics, 3.3 percent in NH Asian/Pacific Islanders, and 0.5 percent in NH American Indians/Alaska Natives (see Table 30).
- The age-adjusted incidence rates of all blood cancers combined are higher in NH whites than any other race or ethnicity. The age-adjusted incidence rate of myeloma is highest in NH Blacks (14.4 per 100,000), and was 126 percent greater than that of NH whites (6.4 per 100,000) as shown in Table 29.
- From 2016-2020, of all deaths attributed to blood cancers, 78.2 percent were in NH whites, 10.4 percent in NH Blacks, 7.8 percent in Hispanics, 2.9 percent in NH Asian/Pacific Islanders, and 0.3 percent in NH American Indians/Alaska Natives (see Table 33).
- From 2013-2019 5-year relative survival rates for blood cancers were as follows: 70.1 percent in NH whites, 67.7 percent in Hispanics, 66.6 percent in NH Blacks, 65.1 percent in NH Asian/Pacific Islanders, and 63.7 percent in NH American Indians/Alaska Natives (see Table 31).

See Tables 28-33 on pages 22-24.

Leukemia

"Leukemia" is the umbrella term used to describe the four major types of leukemia* (see Table 10). Visit www.LLS.org/booklets to download or order copies of free booklets about leukemia.

The Four Major Types of Leukemia
Acute Lymphoblastic Leukemia (ALL)
Acute Myeloid Leukemia (AML)
Chronic Lymphocytic Leukemia (CML)
Chronic Myeloid Leukemia (CML)

Table 10. Source: The Leukemia & Lymphoma Society.

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.

Prevalence

An estimated 456,481 people in the United States (US) are living with or in remission from leukemia (see Table 11). Thirty-six percent more males than females are living with leukemia.

Approximate US Prevalence of the Four Major Types of Leukemia, as of January 1, 2020

Type	Prevalence
Leukemia - All Types	**456,481**
Acute Lymphoblastic Leukemia (ALL)	85,504
Chronic Lymphocytic Leukemia (CLL)	204,226
Acute Myeloid Leukemia (AML)	64,652
Chronic Myeloid Leukemia (CML)	63,479

Table 11. Source: SEER*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute; 2023 Apr 19. [updated: 2023 Nov 16; cited 2024 Feb 21]. Available from: https://seer.cancer.gov/statistics-network/explorer/. Data source(s): U.S. 2020 cancer prevalence estimates are based on 2020 cancer prevalence proportions from the SEER 12 Areas (excluding the Alaska Native Tumor Registry) and 1/1/2020 U.S. population estimates based on the average of 2019 and 2020 population estimates from the U.S. Bureau of the Census. 28-year limited-duration prevalence.

Acute lymphoblastic leukemia (ALL) and acute myeloid leukemia (AML) are diseases that progress rapidly without treatment.

They result in the accumulation of immature, nonfunctional cells in the bone marrow and blood. The marrow often stops producing enough normal platelets, red blood cells and white blood cells. Anemia (a deficiency of red blood cells) develops in virtually everybody who has acute leukemia. The lack of normal white blood cells impairs the body's ability to fight infections. A shortage of platelets results in bruising and easy bleeding.

The progression of chronic lymphocytic leukemia (CLL) and chronic myeloid leukemia (CML) is usually slower than that of acute types of leukemia. The slower disease progression of chronic leukemia allows greater numbers of more mature, functional cells to be made.

New Cases

An estimated 62,770 new cases of leukemia are expected to be diagnosed in the US in 2024 (see Figure 3 and Table 12 below). Chronic leukemia is expected to account for 9.6 percent more cases than those of acute leukemia.

- Most cases of leukemia occur in older adults; the median age at diagnosis is 67 years.
- From 2016 to 2020, approximately 13 times as many adults over age 19 years (an average of 48,969 each year) were diagnosed with leukemia as children and adolescents younger than 20 years (an average of 3,712 each year).
- The most common types of leukemia in adults older than 19 years are CLL (37.6% of all new leukemia cases from 2016 to 2020) and AML (31.3% of all new leukemia cases from 2016 to 2020). CML accounted for 14.5 percent of new leukemia cases and ALL accounted for 5.3 percent of new leukemia cases in this age-group from 2016 to 2020.
- Most cases of CML occur in adults. From 2016 to 2020, approximately 98.3 percent of all cases of CML occurred in adults age 20 years and older.

Estimated Proportion of New Cases (%) in 2024 for Types of Leukemia, Adults and Children

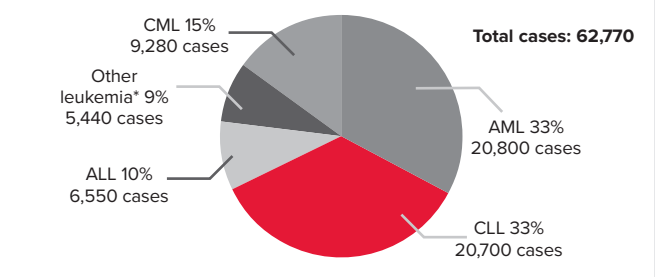

Figure 3. Source: Cancer Facts & Figures, 2024. American Cancer Society; 2024.

** There are other rare subtypes of leukemia, beyond the four main subtypes, which comprise "Other Leukemia."*

Estimated New Cases of Leukemia, by Sex, 2024

Type	Total	Male	Female
Acute Lymphoblastic Leukemia (ALL)	6,550	3,590	2,960
Chronic Lymphocytic Leukemia (CLL)	20,700	12,690	8,010
Acute Myeloid Leukemia (AML)	20,800	11,600	9,200
Chronic Myeloid Leukemia (CML)	9,280	5,330	3,950
Other Leukemia	5,440	3,240	2,200
Total	**62,770**	**36,450**	**26,320**

Table 12. Source: Cancer Facts & Figures 2024. American Cancer Society; 2024.

Incidence

Since 1975, the incidence of leukemia has increased slightly.

In 1975 the incidence rate was 12.7 per 100,000 population and in 2020, it was 13.9 per 100,000 population. See Figure 4 for age-specific rates.

Sex. In 2016-2020, 58.4 percent of the new cases of leukemia occurred in males. Incidence rates for all types of leukemia are higher among males than among females:

- ALL – 2.1 per 100,000 for males, 1.6 per 100,000 for females
- AML – 5.0 per 100,000 for males, 3.4 per 100,000 for females
- CLL – 6.3 per 100,000 for males, 3.3 per 100,000 for females
- CML – 2.5 per 100,000 for males; 1.5 per 100,000 for females.

Race and Ethnicity. Leukemia is the eleventh most frequently occurring type of cancer in all races and ethnicities.

- Age-adjusted incidence of leukemia is highest among non-Hispanic (NH) whites (15.3 per 100,000 population); it is lowest among NH Asian and Pacific Islander populations (8.2 per 100,000 population).
- Leukemia is the tenth most common cancer in NH whites; eleventh most common cancer in NH Blacks, Hispanics and NH American Indian and Alaska Natives; and fifteenth most common cancer in NH Asian and Pacific Islanders.
- In children and adolescents younger than 20 years, leukemia incidence rates are highest among Hispanics (6.1 per 100,000 population) and lowest among NH Blacks (3.1 per 100,000 population). The incidence rate in NH whites is 4.4 per 100,000 population.

Children and Adolescents. From 2016 to 2020, leukemia represented 25.4 percent of all types of cancer occurring among children and adolescents younger than 20 years.

- In 2024, about 2,694 children and adolescents younger than 15 years are expected to be diagnosed with leukemia throughout the US.
- About 30.8 percent of cancer cases in children and adolescents younger than 15 years are leukemia.
- An average of 3,712 children and adolescents younger than 20 years were diagnosed with leukemia each year (including 2,806 diagnosed with ALL) in the US from 2016 to 2020.
- ALL is the most common cancer in children and adolescents younger than 20 years, accounting for 19.2 percent of all cancer cases in this age-group.
- ALL is also the most common type of leukemia in children and adolescents younger than 20 years, accounting for 75.4 percent of all types of new leukemia cases in this age-group from 2016 to 2020.
- From 1975 to 2020, incidence rates increased in children and adolescents younger than 20 years for ALL (2.3 in 1975 vs 3.3 in 2020).
- The highest incidence rates for ALL are seen in children and adolescents younger than 15 years. See Figure 5 on page 10. Within this group, the highest rate is in children ages 1–4 years (7.7 per 100,000 population).
- The incidence of ALL in children ages 1–4 years (7.7 per 100,000 population) is approximately 10 times greater than the rate for young adults ages 30–34 years (0.8 per 100,000 population).
- In children and adolescents younger than 20 years, AML incidence is highest in children under 1 year (1.6 per 100,000 population) and lowest in children ages 5–9 years (0.4 per 100,000 population). See Figure 6 on page 10.
- From 2016 to 2020, among children ages 5–9 years, ALL incidence was nine times greater than that of AML (3.8 per 100,000 for ALL and 0.4 per 100,000 for AML).
- In young adults ages 25–29 years, AML incidence was 37.5 percent greater than that of ALL (1.1 per 100,000 for AML and 0.8 per 100,000 for ALL).

Adults. AML, CLL and CML are most prevalent in the sixth through ninth decades of life. Incidence rates begin to increase notably among people with:

- AML – at age 55 years and older (see Figure 6 on page 10)
- CLL – at age 50 years and older (see Figure 7 on page 10)
- CML – at age 60 years and older (see Figure 8 on page 11).

Age-Specific Incidence Rates for Leukemia, 2016-2020

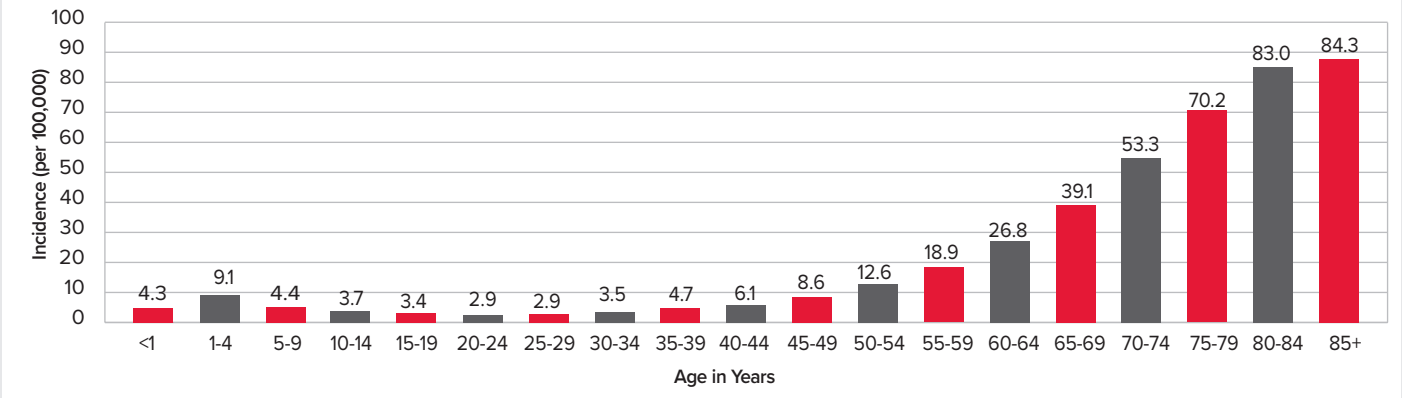

Figure 4. Source: SEER*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute; 2023 Apr 19. [updated: 2023 Nov 16; cited 2024 Feb 21]. Available from: https://seer.cancer.gov/statistics-network/explorer/. Data source(s): SEER Incidence Data, November 2022 Submission (1975-2020), SEER 22 registries.

Age-Specific Incidence Rates for Acute Lymphoblastic Leukemia (ALL), 2016-2020

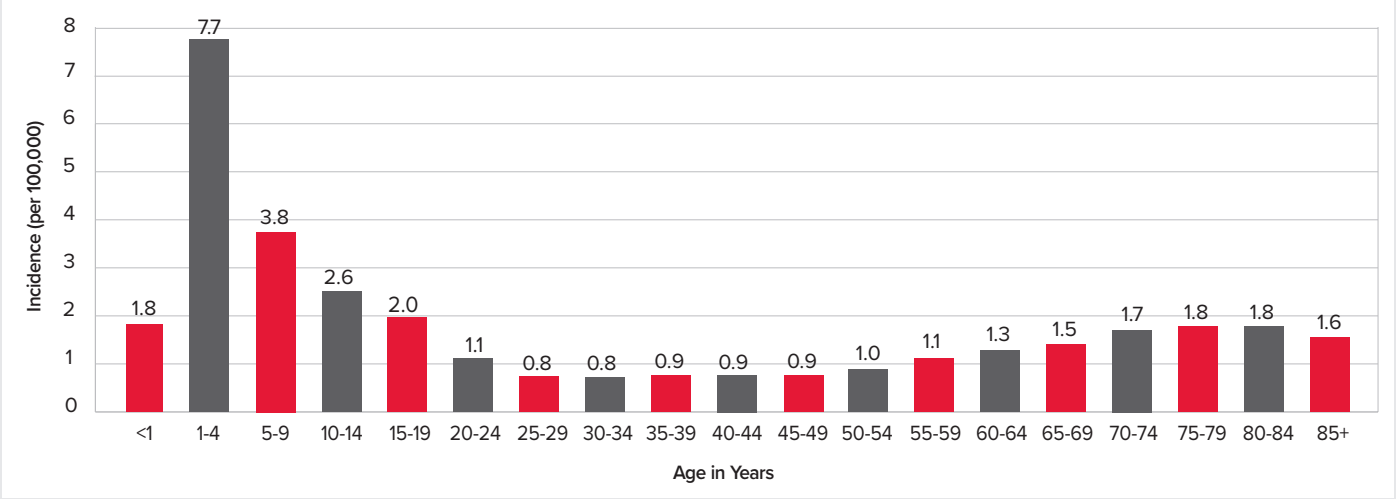

Figure 5. Source: SEER*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute; 2023 Apr 19. [updated: 2023 Nov 16; cited 2024 Feb 21]. Available from: https://seer.cancer.gov/statistics-network/explorer/. Data source(s): SEER Incidence Data, November 2022 Submission (1975-2020), SEER 22 registries.

Age-Specific Incidence Rates for Acute Myeloid Leukemia (AML), 2016-2020

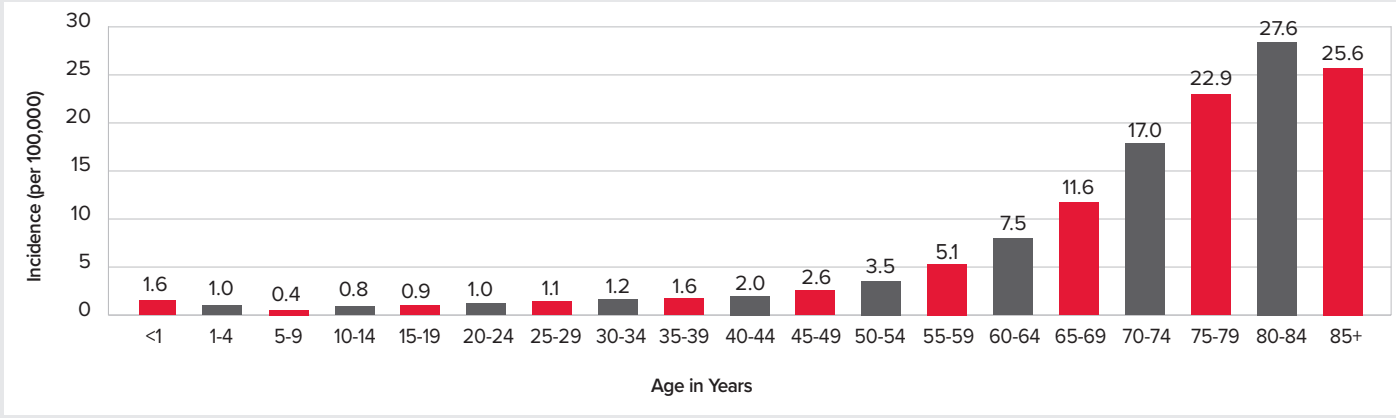

Figure 6. Source: SEER*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute; 2023 Apr 19. [updated: 2023 Nov 16; cited 2024 Feb 21]. Available from: https://seer.cancer.gov/statistics-network/explorer/. Data source(s): SEER Incidence Data, November 2022 Submission (1975-2020), SEER 22 registries.

Age-Specific Incidence Rates for Chronic Lymphocytic Leukemia (CLL), 2016-2020

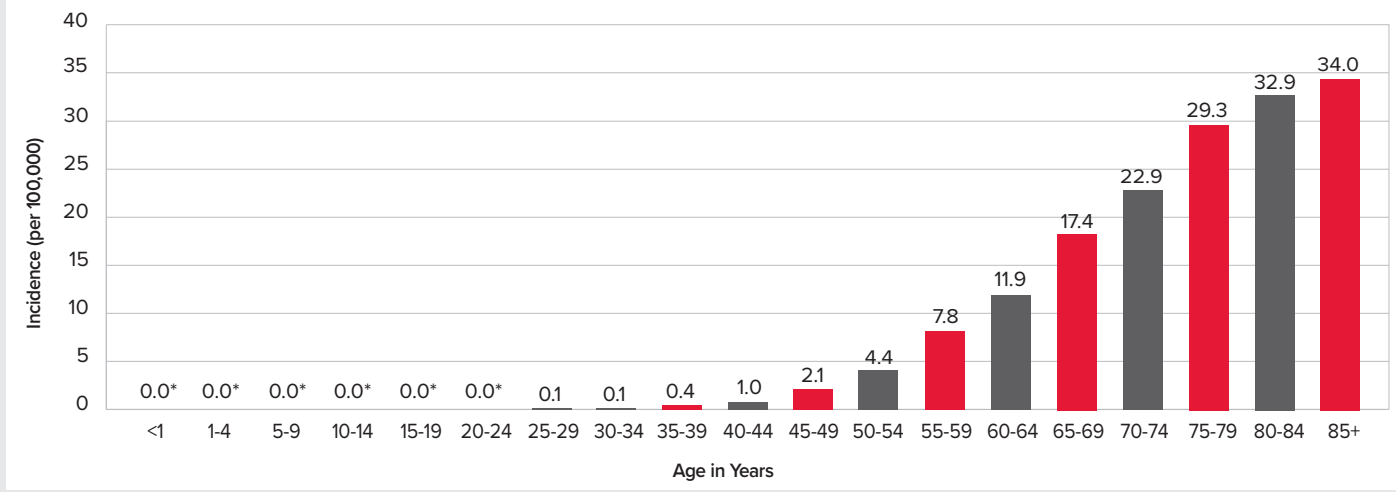

Figure 7. Source: SEER*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute; 2023 Apr 19. [updated: 2023 Nov 16; cited 2024 Feb 21]. Available from: https://seer.cancer.gov/statistics-network/explorer/. Data source(s): SEER Incidence Data, November 2022 Submission (1975-2020), SEER 22 registries.
* Estimates based on less than 16 cases are suppressed and not shown.

Age-Specific Incidence Rates for Chronic Myeloid Leukemia (CML), 2016-2020

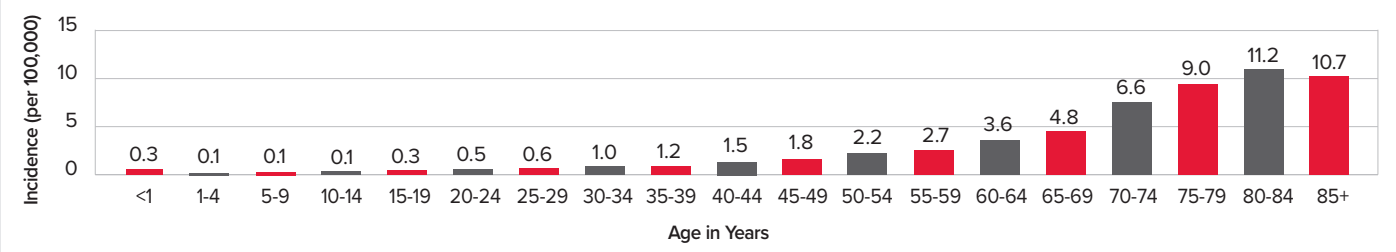

Figure 8. Source: SEER*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute; 2023 Apr 19. [updated: 2023 Nov 16; cited 2024 Feb 21]. Available from: https://seer.cancer.gov/statistics-network/explorer/. Data source(s): SEER Incidence Data, November 2022 Submission (1975-2020), SEER 22 registries.

Signs and Symptoms

Signs and symptoms of acute leukemia may include bruising easily or bleeding (because of platelet deficiency), paleness or fatigue (because of anemia) and/or recurrent minor infections or poor healing of minor cuts (because of a low white blood cell count). These signs and symptoms are not unique to leukemia and may be caused by other, more common, conditions. Nonetheless, they do justify medical evaluation. The diagnosis of leukemia requires specific blood tests, including an examination of cells in the blood and bone marrow. People who have chronic leukemia may not have major signs or symptoms; diagnosis may result from periodic physical examination and testing.

Possible Causes

The cause of most cases of leukemia is not known. Extraordinary doses of radiation and certain cancer therapies are possible causes. Repeated exposure to the chemical benzene may cause acute myeloid leukemia (AML). Automobile exhaust and industrial emissions account for about 20 percent of the total national benzene exposure. About half of the benzene exposure in the US population results from tobacco smoking or from exposure to tobacco smoke. The average smoker is exposed to about 10 times the daily intake of benzene compared to nonsmokers.

Treatment

The goal of leukemia treatment is to bring about a complete remission. Patients with acute myeloid leukemia (AML) and acute lymphoblastic leukemia (ALL) need to start treatment soon after diagnosis. Treatment may include chemotherapy, targeted therapies (including monoclonal antibody therapy), immunotherapy (such as CAR T-cell therapy) and stem cell transplantation. Patients diagnosed with chronic myeloid leukemia (CML) are usually treated with tyrosine kinase inhibitors; these are oral drugs that may need to be taken indefinitely to keep CML under control. Some patients diagnosed with chronic lymphocytic leukemia (CLL) do not need treatment for a long period of time after diagnosis; this period is sometimes called “watch-and-wait.” Patients who need treatment for CLL may receive chemotherapy, targeted therapy (including monoclonal antibody therapy), immunotherapy (such as CAR T-cell therapy), or treatments in combination. All patients should consider new approaches under study (clinical trials).

Survival

Relative survival rates vary according to a person’s age at diagnosis, sex, race and type of leukemia. The 5-year relative survival rate for leukemia has more than doubled, from 34 percent for 1975 to 1977 to 70 percent for 2013 to 2019. See Table 13 on page 12; percentages in Table 13 are rounded to the nearest integer.

From 2013 to 2019, the 5-year relative survival rates overall were:

- ALL – 71.3 percent overall, 92.1 percent for children and adolescents younger than 15 years, and 93.5 percent for children younger than 5 years
- AML – 31.7 percent overall and 68.8 percent for children and adolescents younger than 15 years
- CLL – 88.0 percent overall
- CML – 70.6 percent overall.*

**The survival rate of CML in clinical trials is higher than the survival rate reported here, based on SEER data. It is speculated that close clinical monitoring and better medication adherence in clinical trials are associated with a lower risk of disease progression and higher rates of survival.*

Sex. From 2013 to 2019, 5-year relative survival for leukemia was 67.0 percent for males and 66.3 percent for females.

Race and Ethnicity. Table 13 shows the 5-year survival rates for acute lymphoblastic leukemia (ALL), acute myeloid leukemia (AML), chronic lymphocytic leukemia (CLL), chronic myeloid leukemia (CML) and all subtypes of leukemia combined rounded to the nearest integer, spanning 4 decades.

Trends in 5-Year Relative Survival Rates for Leukemia, by Subtype, Race and Year of Diagnosis

Leukemia	1975-1977	1988-1990	2001-2003	2013-2019
All Races	34%	44%	57%	70%*
Whites	35%	45%	58%	71%*
Blacks	35%	36%	48%	67%*
ALL	**1975-1977**	**1988-1990**	**2001-2003**	**2013-2019**
All Races	40%	56%	65%	75%*
Whites	40%	56%	66%	76%*
Blacks	32%	46%	57%	70%*
AML	**1975-1977**	**1988-1990**	**2001-2003**	**2013-2019**
All Races	6%	13%	23%	33%*
Whites	6%	13%	23%	33%*
Blacks	9%	9%	27%	35%*
CLL	**1975-1977**	**1988-1990**	**2001-2003**	**2013-2019**
All Races	68%	74%	83%	91%*
Whites	68%	75%	84%	91%*
Blacks	68%	55%	69%	88%*
CML	**1975-1977**	**1988-1990**	**2001-2003**	**2013-2019**
All Races	20%	31%	54%	71%*
Whites	19%	31%	53%	71%*
Blacks	28%	32%	60%	76%*

Table 13. Source: Surveillance, Epidemiology, and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat Database: Incidence - SEER Research Plus Data, 8 Registries, Nov 2022 Sub (1975-2020) - Linked To County Attributes - Total U.S., 1969-2021 Counties, National Cancer Institute, DCCPS, Surveillance Research Program, released April 2023, based on the November 2022 submission.
* The difference in rates between 1975-1977 and 2013-2019 is statistically significant (p<.05).

Children and Adolescents. Figure 9 shows childhood ALL 5-year relative survival rates have improved significantly over the past 5 decades. Most children and adolescents younger than 20 years who have ALL are expected to become 5-year survivors of the disease. However, significant treatment-related long-term morbidity and mortality for childhood cancer have been well established by several studies. Long-term treatment-related effects among ALL and other childhood cancer survivors may include cognitive impairment, subsequent cancer, cardiac disease, pulmonary disease or other diseases.

Five-Year Relative Survival Rates for Acute Lymphoblastic Leukemia in Children under 15, Diagnosed 1964-2019

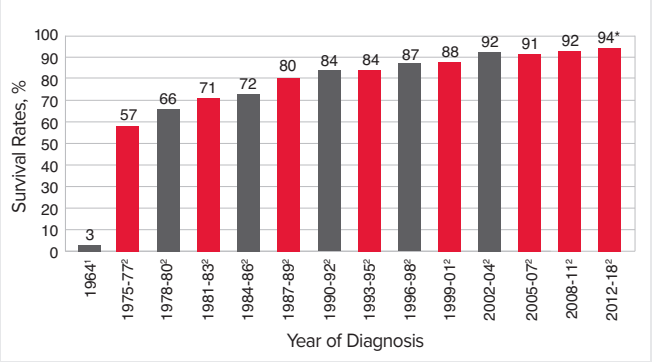

Figure 9. Sources: 1. Zuelzer WW. Implications of long-term survivals in acute stem cell leukemia of childhood treated with composite cyclic therapy. Blood.1964:24:477-494. 2. Surveillance, Epidemiology, and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat Database: Incidence - SEER Research Plus Data, 8 Registries, Nov 2022 Sub (1975-2020) - Linked To County Attributes - Total U.S., 1969-2021 Counties, National Cancer Institute, DCCPS, Surveillance Research Program, released April 2023, based on the November 2022 submission.
* The difference in rates between 1975-1977 and 2013-2019 is statistically significant (p<.05).

Deaths

Approximately 23,670 deaths (13,640 males and 10,030 females) in the US are expected to be attributed to leukemia in 2024. See Table 14 below. Estimated deaths for the four major types of leukemia in 2024 are:

- ALL – 1,330 deaths
- AML – 11,220 deaths
- CLL – 4,440 deaths
- CML – 1,280 deaths
- Other leukemia* – 5,400 deaths.

**There are other rare subtypes of leukemia, beyond the four main subtypes, which comprise "Other Leukemia."*

In general, mortality rates for leukemia decreased from 1975 (8.1 per 100,000) to 2020 (5.8 per 100,000).

Sex. From 2016 to 2020, leukemia was the sixth most common cause of cancer deaths in males and the seventh most common cause of cancer deaths in females in the US. In 2024, the estimated number of deaths expected to be attributed to leukemia in the US is 36.0 percent higher for males than it is for females. Expected deaths from leukemia in 2023, according to sex, are shown in Table 14.

Estimated Deaths from Leukemia, by Sex, 2024

Type	Total	Male	Female
Acute Lymphoblastic Leukemia	1,330	640	690
Chronic Lymphocytic Leukemia	4,440	2,790	1,650
Acute Myeloid Leukemia	11,220	6,290	4,930
Chronic Myeloid Leukemia	1,280	750	530
Other Leukemia	5,400	3,170	2,230
Total	**23,670**	**13,640**	**10,030**

Table 14. Source: *Cancer Facts & Figures* **2024**. American Cancer Society; 2024.

Race and Ethnicity. For leukemia, the highest age-adjusted rates of death from 2016 to 2020 were in non-Hispanic (NH) whites at 6.4 per 100,000 population; followed by NH Blacks at 5.3 per 100,000 population and Hispanics at 4.3 per 100,000 population.

- Leukemia is the fifth most common cause of cancer deaths in NH white males and the sixth most common in NH white females.
- Leukemia is the eighth most common cause of cancer deaths in NH Black males and the ninth most common in NH Black females.
- From 2016 to 2020, NH Blacks between the ages of 15 and 64 years had a higher death rate from leukemia than NH whites.

Children and Adolescents. The leukemia age-adjusted death rate for children and adolescents younger than 20 years in the US has declined by 75.0 percent from 2.0 per 100,000 population in 1975 to 0.5 per 100,000 population in 2020 Despite this decline, leukemia is the second leading cause of cancer death among children and adolescents younger than 20 years, accounting for 24.7 percent of all cancer deaths in this age-group.

Hodgkin and Non-Hodgkin Lymphoma

"Lymphoma" is a general term for many blood cancers that originate in the lymphatic system. Visit www.LLS.org/booklets to download or order copies of free booklets about lymphoma.

Lymphoma results when a lymphocyte (a type of white blood 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). This disease has characteristics that distinguish it from other diseases classified as lymphoma, including the presence of Reed-Sternberg cells (large, abnormal B lymphocytes found in a tissue sample).

Non-Hodgkin Lymphoma (NHL). This disease comprises a diverse group of blood cancers distinguished by the characteristics of the cancer cells associated with each. The designations "indolent" and "aggressive" (slow growing or fast growing, respectively) are often applied to types of NHL. Each type is associated with factors that categorize the prognosis as either more or less favorable.

Prevalence

An estimated total of 912,982 people in the United States (US) are living with or in remission from lymphoma^.

- There are 165,856 people living with or in remission from HL.
- There are 750,602 people living with or in remission from NHL.

^The unique number of people living with or in remission from lymphoma may not equal the sum of those living with or in remission from both HL and NHL due to people diagnosed with both HL and NHL.

New Cases

About 89,190 people in the US are expected to be diagnosed with lymphoma in 2024 (8,570 cases of HL and 80,620 cases of NHL). NHL represents 90.4 percent of all types of lymphoma expected to be diagnosed in 2024. HL represents 9.6 percent of all types of lymphoma expected to be diagnosed in 2024.

The median age at diagnosis for lymphoma is 66 (39 for HL and 67 for NHL).

The incidence of HL is consistently and considerably lower than that of NHL. Table 15 shows estimated new cases of lymphoma in 2024, by sex.

New Cases of Lymphoma, by Sex, 2024

Type	Total	Male	Female
Hodgkin Lymphoma	8,570	4,630	3,940
Non-Hodgkin Lymphoma	80,620	44,590	36,030
Total	**89,190**	**49,220**	**39,970**

Table 15. Source: *Cancer Facts & Figures 2024*. American Cancer Society; 2024.

Incidence

From 2016 to 2020, the age-adjusted incidence rate for lymphoma was 21.2 per 100,000. See Figure 10 (on page 14) for age-specific rates.

- The age-adjusted incidence rate for HL was 2.5 per 100,000.
- The age-adjusted incidence rate for NHL was 18.7 per 100,000.

The age-adjusted incidence rate of HL declined by 23.3 percent from 1975 (3.1 per 100,000) to 2019 (2.4 per 100,000), an annual percentage decrease of 0.5 percent. The age-adjusted incidence rate of NHL rose by 63.4 percent from 1975 (11.0 per 100,000) to 2020 (18.0 per 100,000), an average annual percentage increase of 1.4 percent.

Sex. From 2016-2020, 55.2% of those diagnosed with a lymphoma were male (55.3% males NHL, 55.0% males HL).

Age-adjusted incidence rates for HL and NHL are higher among males than among females.

- HL – 2.8 per 100,000 for males; 2.3 per 100,000 for females
- NHL – 22.5 per 100,000 for males; 15.5 per 100,000 for females

In 2024, it is expected that 17.5 percent more males than females will be diagnosed with HL and about 23.8 percent more males than females will be diagnosed with NHL.

NHL is the seventh most common cancer in both males and females in the US.

Race and Ethnicity. The highest age-adjusted incidence rate of lymphoma is in non-Hispanic (NH) whites (23.0 per 100,000), followed by Hispanics (19.5 per 100,000) and NH Blacks (17.0 per 100,000).

- The highest age-adjusted incidence rate of HL is in NH whites (2.9 per 100,000), followed by NH Blacks (2.6 per 100,000) and Hispanics (2.3 per 100,000).
- The highest age-adjusted incidence rate of NHL is in NH whites (20.1 per 100,000), followed by Hispanics (17.2 per 100,000) and NH Blacks (14.4 per 100,000).

NH Blacks, from their mid-20s to their late-40s, have higher incidence rates of NHL than NH whites. However, beginning at age 50 years, NH whites generally have considerably higher incidence rates of NHL than NH Blacks.

Children and Adolescents. Lymphoma is the third most common cancer in children and adolescents younger than 20 years. HL accounts for 6.4 percent of all cancers in this age group; NHL accounts for 6.6 percent of all cancers in this age group.

- In 2024, an estimated 1,154 new cases of lymphoma are expected to be diagnosed in children and adolescents younger than 15 years in the US. This will account for 12

percent of all cancers expected to be diagnosed in this age-group.

- In children younger than 15 years, the age-adjusted incidence rate for NHL (1.0 per 100,000) is higher than for HL (0.6 per 100,000).
- In adolescents and young adults ages 15–29, the age-adjusted incidence rate for HL (3.7 per 100,000) is higher than it is for NHL (2.6 per 100,000).
- An average of 2,022 children and adolescents younger than 20 years were diagnosed with lymphoma each year (including 1,014 diagnosed with NHL and 1,009 diagnosed with HL) in the US from 2016 to 2020.

The following data are based on age-adjusted incidence rates for children and adolescents younger than 20 years:

- Lymphoma is most commonly diagnosed in non-Hispanic (NH) whites (2.8 per 100,000 population), followed by NH Asians and Pacific Islanders (2.3 per 100,000 population).
- Lymphoma is least commonly diagnosed among NH American Indians and Alaska Natives (1.3 per 100,000 population).

Adults. HL incidence rates are higher in adolescents and young adults ages 15–34 years than in adults ages 35–64 years Incidence is highest at ages 80-84 years (see Figure 11).

In contrast, the incidence rates of NHL increase with age (see Figure 12).

- From ages 20–24 years, the incidence rate of NHL is 2.6 cases per 100,000 population.
- From ages 60–64 years, the incidence rate increases 17 times to 43.0 cases per 100,000 population.
- From ages 80–84 years, the incidence rate increases 45 times to 115.7 cases per 100,000 population.
- In young adults ages 30–34, NHL incidence (4.8 per 100,000) is higher than HL incidence (3.4 per 100,000).

Age-Specific Incidence Rates for Lymphoma, 2016-2020

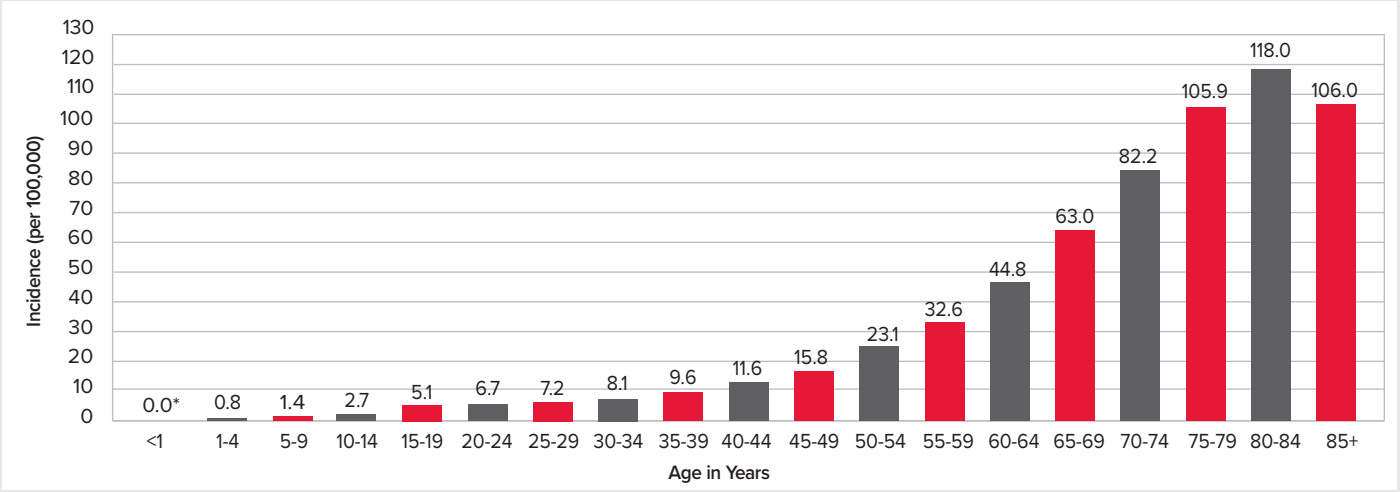

Figure 10. Source: Surveillance, Epidemiology, and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat Database: Incidence - SEER Research Plus Limited-Field Data, 22 Registries, Nov 2022 Sub (2000-2020) - Linked To County Attributes - Total U.S., 1969-2021 Counties, National Cancer Institute, DCCPS, Surveillance Research Program, released April 2023, based on the November 2022 submission.
* Estimates based on less than 16 cases are suppressed and not shown.

Age-Specific Incidence Rates for Hodgkin Lymphoma (HL), 2016-2020

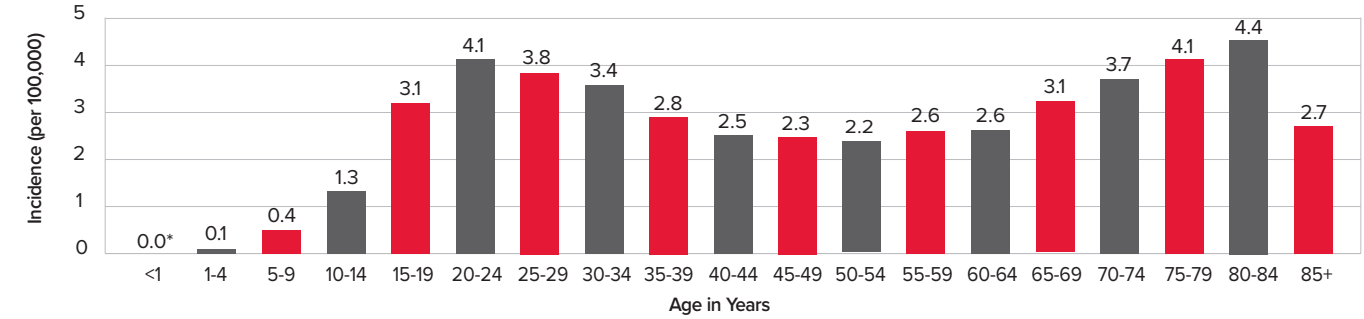

Figure 11. Source: SEER*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute; 2023 Apr 19. [updated: 2023 Nov 16; cited 2024 Feb 21]. Available from: https://seer.cancer.gov/statistics-network/explorer/. Data source(s): SEER Incidence Data, November 2022 Submission (1975-2020), SEER 22 registries.
* Estimates based on less than 16 cases are suppressed and not shown.

Age-Specific Incidence Rates for Non-Hodgkin Lymphoma (NHL), 2016-2020

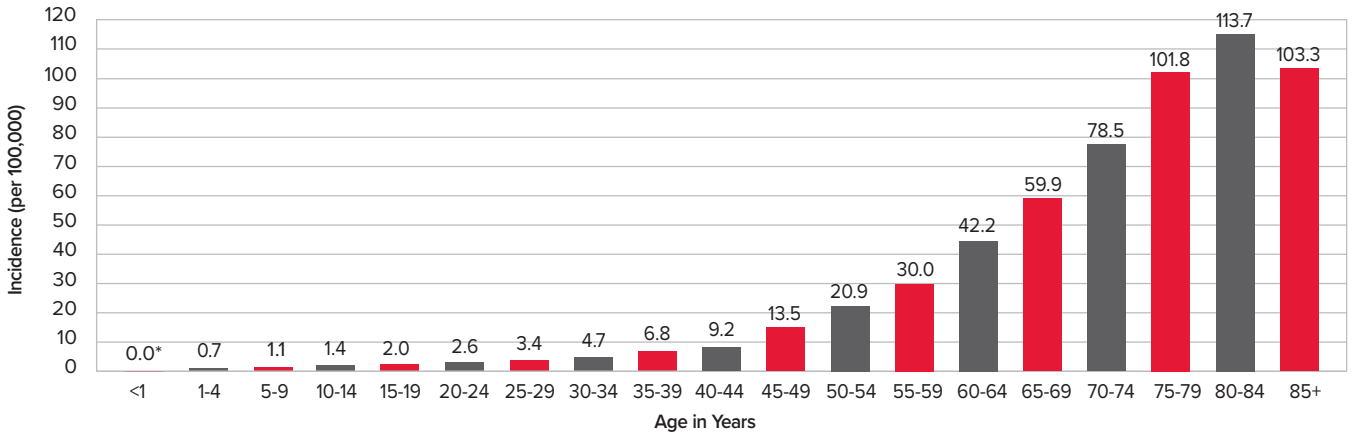

Figure 12. SEER*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute; 2023 Apr 19. [updated: 2023 Nov 16; cited 2024 Feb 21]. Available from: https://seer.cancer.gov/statistics-network/explorer/. Data source(s): SEER Incidence Data, November 2022 Submission (1975-2020), SEER 22 registries.
* Estimates based on less than 16 cases are suppressed and not shown.

Signs and Symptoms

A common early sign of HL or NHL is a painless enlargement of one or more lymph nodes. Enlarged lymph nodes may also be the result of inflammation in the body and are not necessarily a sign of cancer.

Other HL signs and symptoms may include recurrent high fever, persistent cough and shortness of breath, drenching night sweats of the whole body, itching and/or weight loss.

Other signs and symptoms of NHL may include bone pain, cough, chest pain, abdominal pain, rash, fever, night sweats, enlarged spleen, unexplained fatigue and/or weight loss. Some individuals may have no signs or symptoms, and a diagnosis of NHL is made as a result of a periodic physical examination and testing.

Possible Causes

The results of certain studies about causes of HL have not been definitive—many studies of links between HL and environmental exposures have been conducted, with unclear results. Although Epstein-Barr virus (EBV) has been associated with nearly half of HL cases, EBV has not been conclusively established as a cause. People infected with human immunodeficiency virus (HIV) have increased probability of developing HL.

The reasons for the development of NHL are not known. Immune suppression plays a role in some cases. People infected with HIV have a higher risk of developing NHL. Studies suggest that specific ingredients in herbicides and pesticides may be linked to NHL. Exposure to certain viruses, such as EBV and human T-lymphotropic virus (HTLV), are also associated with NHL.

The bacterium *Helicobacter pylori* causes ulcers in the stomach and is associated with the development of mucosa-associated lymphoid tissue (MALT) lymphoma in the stomach wall. About a dozen uncommon, inherited syndromes can predispose individuals to develop NHL. These risk factors explain only a small proportion of cases.

Treatment

The goal of treatment for HL is to cure the disease. Chemotherapy, either alone or combined with an antibody-drug conjugate or modality therapy (chemotherapy and radiation), is a commonly administered treatment approach for HL. Involved site radiation therapy (ISRT) is the most common type of radiotherapy used to treat HL. The radiation targets primarily the lymph node regions involved by disease. Chemotherapy is used to kill neighboring lymphoma cells.

In general, the goal of treatment for NHL is to destroy as many lymphoma cells as possible and to induce a complete remission. Treatment protocols vary according to the subtype of disease. Chemotherapy and radiation therapy are the two principal forms of treatment. Although radiation therapy is often neither the sole nor the principal curative therapy, it is an important additional treatment in some cases. Immunotherapy (such as CAR T-cell therapy) is indicated to treat individuals with specific types of NHL. Stem cell transplantation and a watch-and-wait strategy are also used to treat some NHL subtypes. All patients should consider new approaches under study (clinical trials).

Survival

Hodgkin lymphoma (HL) is now considered to be one of the most curable forms of cancer.

- The 5-year relative survival rate for people with HL has increased more than 21 percent, from 73 percent during the period 1975 to 1977 to 88.9 percent during the period 2013 to 2019.
- The 5-year relative survival rate is 96.0 percent for all people with HL who were younger than 50 years at diagnosis.
- The 5-year relative survival rate for people with NHL has risen from 46 percent from 1975 to 1977 to 74.3 percent from 2013 to 2019.
- The 5-year relative survival rate is 85.6 percent for all people with NHL who were younger than 50 years at diagnosis.

Sex. From 2013 to 2019, 5-year relative survival rates were:

- HL – 87.8 per 100,000 for males and 90.2 per 100,000 for females
- NHL – 72.7 per 100,000 for males and 76.2 per 100,000 for females.

Race and Ethnicity. Table 16 shows the 5-year relative survival rates, rounded to the nearest integer, spanning 4 decades.

Children and Adolescents. Five-year relative survival is 97.9 percent for HL in children and adolescents younger than 20 years. In children and adolescents younger than 20 years, 5-year relative survival for NHL is 90.4 percent. This represents a significant improvement in the rate of survival. As recently as the mid-1970s, most children and adolescents with NHL did not survive 5 years after they were diagnosed (44.6 percent from 1975-1977).

Trends in 5-Year Relative Survival Rates for Lymphoma, by Subtype, Race and Year of Diagnosis

Lymphoma	1975-1977	1988-1990	2001-2003	2013-2019
All Races	53%	56%	71%	79%*
Whites	53%	56%	72%	80%*
Blacks	61%	51%	69%	77%*
Hodgkin Lymphoma	**1975-1977**	**1988-1990**	**2001-2003**	**2013-2019**
All Races	73%	81%	87%	91%*
Whites	72%	81%	88%	92%*
Blacks	79%	73%	85%	90%*
Non-Hodgkin Lymphoma	**1975-1977**	**1988-1990**	**2001-2003**	**2013-2019**
All Races	46%	50%	69%	77%*
Whites	47%	51%	70%	78%*
Blacks	51%	45%	65%	74%*

Table 16. Source: Surveillance, Epidemiology, and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat Database: Incidence - SEER Research Plus Data, 8 Registries, Nov 2022 Sub (1975-2020) - Linked To County Attributes - Total U.S., 1969-2021 Counties, National Cancer Institute, DCCPS, Surveillance Research Program, released April 2023, based on the November 2022 submission.
* The difference between 1975-1977 and 2013-2019 is statistically significant (p<.05).

Deaths

In 2024, an estimated 21,050 individuals in the US population are expected to die from lymphoma (910 HL and 20,140 NHL), as shown in Table 17.

Estimated Deaths from Lymphoma, by Sex, 2024

Type	Total	Male	Female
Hodgkin Lymphoma	910	550	360
Non-Hodgkin Lymphoma	20,140	11,780	8,360
Total	**21,050**	**12,330**	**8,720**

Table 17. Source: *Cancer Facts & Figures 2024.* American Cancer Society; 2024.

Sex. Non-Hodgkin lymphoma (NHL) is the eighth most common cause of cancer death in males and females in the US. Death rates for HL are much lower than those for NHL for both males and females.

- Males – 0.3 per 100,000 for HL; 6.7 per 100,000 for NHL
- Females – 0.2 per 100,000 for HL; 3.9 per 100,000 for NHL

Race and Ethnicity. For NHL, the highest age-adjusted rates of death from 2016 to 2020 were in non-Hispanic (NH) whites at 5.4 per 100,000 population, followed by NH American Indians and Alaska Natives at 4.6 per 100,000 population.

Children and Adolescents. For children and adolescents under 20 years, age-adjusted death rates for HL and NHL per 100,000 population declined from 1975 to 2020.

- For HL, the rate was 0.1 in 1975 vs 0.0* in 2020.
- For NHL, the rate was 0.4 in 1975 vs 0.0 in 2020.

**Statistic is not reported due to fewer than 16 deaths*

Myeloma

Myeloma is a cancer of the plasma cells (a type of white blood cell). Plasma cells are found primarily in the bone marrow. Visit www.LLS.org/booklets to download or order copies of free booklets about myeloma.

About 90 percent of people with myeloma have disease involving multiple sites at the time of diagnosis (multiple myeloma). 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 in 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.

Prevalence

An estimated 168,234 people in the United States (US) are living with or in remission from myeloma.

New Cases

An estimated 35,780 new cases of myeloma (19,520 males and 16,260 females) are expected to be diagnosed in the US in 2024 (see Table 18).

The median age at diagnosis is 69 years; myeloma is seldom diagnosed in people younger than 40 years.

Estimated New Cases of Myeloma, by Sex, 2024

Cancer Type	Total	Male	Female
Myeloma	35,780	19,520	16,260

Table 18. Source: *Cancer Facts & Figures 2024*. American Cancer Society; 2024.

Incidence

For the years 2016 to 2020, the age-adjusted incidence rate for myeloma was 7.1 per 100,000.

Sex. In 2016-2020, 55.6 percent of those diagnosed with Myeloma were male.

The age-adjusted incidence rate for the years 2016 to 2020 was 49.6 percent higher in males (8.7 per 100,000 population) than it was in females (5.8 per 100,000 population).

Race and Ethnicity. From 2016 to 2020, myeloma was the ninth most commonly diagnosed cancer among non-Hispanic (NH) Black males and the seventh most commonly diagnosed in NH Black females. In NH white males, myeloma was the fifteenth most commonly diagnosed cancer and the sixteenth most commonly diagnosed in NH white females.

- The median age at diagnosis is 66 years for NH Blacks and 70 years for NH whites.
- NH Blacks have more than twice the age-adjusted incidence rate (14.4 per 100,000 population) of myeloma than NH whites (6.4 per 100,000 population).
- NH Blacks account for 21.0% of new myeloma cases each year.
- NH Black males have a higher age-adjusted myeloma incidence rate (16.8 per 100,000) than males or females of any other race or ethnicity.
- The highest incidence rate is found in NH Black males who are ages 80–84 (124.7 per 100,000 population).

Age. Figure 13 shows the age-specific incidence rates for myeloma for the years 2016 to 2020.

Age-Specific Incidence Rates for Myeloma, 2016-2020

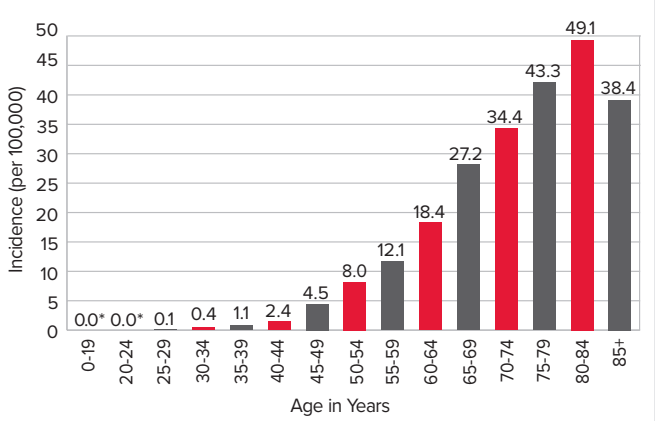

Figure 13. Source: SEER*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute; 2023 Apr 19. [updated: 2023 Nov 16; cited 2024 Feb 21]. Available from: https://seer.cancer.gov/statistics-network/explorer/. Data source(s): SEER Incidence Data, November 2022 Submission (1975-2020), SEER 22 registries.
* Estimates based on less than 16 cases are suppressed and not shown.

Signs and Symptoms

The first symptom of myeloma is often bone pain from the effects myeloma cells are having on the marrow. Fractures may occur because of the weakened bones. Anemia, recurrent infections, or numbness or pain in the hands and/or feet (caused by a condition called "peripheral neuropathy") can also be early signs and symptoms of the disease. People with myeloma may also tire more easily and feel weak, or they may have no signs or symptoms.

Possible Causes

The cause of myeloma is unknown in most cases. Long-term exposure to certain chemicals seems to increase the risk of developing myeloma, but most people who have myeloma do not have any history of such exposure, indicating other factors must play a major role. Most people diagnosed with myeloma are older than 50 years and Blacks are more likely to develop myeloma than whites. Research suggests obese people have a higher incidence of myeloma. Some studies indicate firefighters are at a higher risk for many types of cancer, including myeloma. There are presently clinical trials being conducted to look at possible causes and precursors of myeloma. Contact an LLS Information Specialist at (800) 955-4572 for more information.

Treatment

The goals of treatment for people with myeloma are to reduce symptoms, to slow disease progression and to provide prolonged remission. There have been significant treatment advances in recent years. The approach for treating each person is customized, based on the extent of disease and the rate of disease progression. People who have a slow growing myeloma and no symptoms may not need treatment immediately. Some people need only supportive care to reduce symptoms of anemia, high blood calcium levels, infections and/or bone damage or osteoporosis. Patients who require myeloma-specific therapies may receive combination drug therapy, immunotherapy (such as CAR T-cell therapy), high-dose chemotherapy with stem cell transplantation (autologous, allogeneic or reduced-intensity allogeneic), or radiation therapy for local disease. All patients should consider new approaches under study (clinical trials).

Survival

Overall 5-year relative survival in people with myeloma has improved significantly since the 1970s. Table 19 shows the 5-year relative survival rates, rounded to the nearest integer, spanning 4 decades.

- Five-year relative survival increased from 24 percent from 1975 to 1977 to 59.8 percent from 2013 to 2019.
- The 3-year survival rate as of January 1, 2020, was 71.7 percent for all races and ethnicities.
- The 5-year survival rate is 77.7 percent for people with myeloma who were younger than 50 years at diagnosis.

Trends in 5-Year Relative Survival Rates for Myeloma, by Race and Year of Diagnosis

	1975-1977	1988-1990	2001-2003	2013-2019
All Races	24%	27%	40%	62%*
Whites	24%	26%	41%	61%*
Blacks	26%	35%	41%	65%*

Table 19. Source: Surveillance, Epidemiology, and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat Database: Incidence - SEER Research Plus Data, 8 Registries, Nov 2022 Sub (1975-2020) - Linked To County Attributes - Total U.S., 1969-2021 Counties, National Cancer Institute, DCCPS, Surveillance Research Program, released April 2023, based on the November 2022 submission.
*The difference between 1975-1977 and 2013-2019 is statistically significant (p<.05).

Sex. From 2013 to 2019, 5-year relative survival was 59.7 percent for males and 59.8 percent for females.

Race and Ethnicity. Five-year survival from 2013 to 2019 is highest for non-Hispanic (NH) Black females (62.1 percent) compared to 59.8 percent for NH Black males, 59.9 percent for NH white males and 58.5 percent for NH white females.

Deaths

Approximately 12,540 deaths from myeloma are expected in 2024 (see Table 20).

Estimated Deaths from Myeloma, by Sex, 2024

Cancer Type	Total	Male	Female
Myeloma	12,540	7,020	5,520

Table 20. Source: *Cancer Facts & Figures 2024*. American Cancer Society; 2024.

Sex. Myeloma was the seventh most common cause of cancer death for non-Hispanic (NH) Black females and the fourteenth most common cause of cancer death for NH white females from 2016 to 2020.

Myeloma was the sixth leading cause of cancer death for NH Black males and the fourteenth most common cause of cancer death for NH white males from 2016 to 2020.

Race and Ethnicity. As reported in Cancer Facts & Figures for African Americans 2019-2021, the American Cancer Society estimated that approximately 3 percent of all cancer-related deaths among Blacks are expected to be caused by myeloma.

- The age-adjusted mortality rate for myeloma from 2016 to 2020 for NH Black males was nearly double the rate for NH white males (7.3 per 100,000 population vs 3.7 per 100,000 population).
- For NH Black females, the age-adjusted mortality rate from myeloma was more than twice the rate for NH white females (5.0 per 100,000 population vs 2.2 per 100,000 population).
- The US median age at death from myeloma is 75 years. It is 76 years for NH whites and 72 years for NH Blacks.

Myelodysplastic Syndromes

Myelodysplastic syndromes (MDS) comprise a group of diseases of the blood and bone marrow, with varying degrees of severity and life expectancy. Visit www.LLS.org/booklets to download or order copies of free booklets about MDS.

A myelodysplastic syndrome begins with a change to a normal stem cell in the bone marrow. The marrow becomes filled with an increased number of developing blood cells. However, the blood is usually deficient in cell numbers 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 a person with MDS, blasts often constitute more than 5 percent of the cells in the marrow; in a person with acute myeloid leukemia (AML), blasts constitute more than 20 percent of the cells. 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.

Prevalence

An estimated 60,041 people in the United States (US) are living with or in remission from MDS.

New Cases

For the 5-year period from 2016 to 2020, there were 77,552 new cases of MDS throughout the US, averaging 15,510 cases per year.

The median age at diagnosis for MDS is 77.

Incidence

The overall age-adjusted incidence rate of MDS is 3.9 cases per 100,000 population (see Table 21).

Sex. In 2016-2020, 58.5% of those diagnosed with MDS were male.

In the US, for the 5-year period from 2016 to 2020, 45,351 MDS cases were diagnosed in males (averaging 9,070 per year) and 32,201 MDS cases were diagnosed in females (averaging 6,440 per year). The overall age-adjusted incidence rates of MDS by sex are 5.3 per 100,000 in males and 2.9 per 100,000 in females.

Race and Ethnicity. Non-Hispanic (NH) white males have the highest age-adjusted incidence rates (6.0 per 100,000 population), while the lowest occur among NH Asian and Pacific Islander females (1.9 per 100,000 population).

Age. The age-adjusted incidence rate for MDS is highest for males ages 75 years and older (57.7 per 100,000) and lowest for both males and females younger than 15 years (0.1 per 100,000).

Myelodysplastic Syndromes Age-Adjusted Incidence Rates, per 100,000 Population, 2016-2020

By Race/Ethnicity	Rate
All Races	3.9
Hispanic (any race)*	2.9
Non-Hispanic American Indian / Alaska Native**	2.8
Non-Hispanic Asian / Pacific Islander	2.6
Non-Hispanic Black	3.1
Non-Hispanic White	4.3
By Age	**Rate**
Ages <15	0.1
Ages 15-39	0.2
Ages 40-64	1.6
Ages 65-74	13.9
Ages 75+	40.0

Table 21. Source: SEER*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute; 2023 Apr 19. [updated: 2023 Nov 16; cited 2024 Feb 21]. Available from: https://seer.cancer.gov/statistics-network/explorer/. Data source(s): SEER Incidence Data, November 2022 Submission (1975-2020), SEER 22 registries.
* Incidence data for Hispanics are based on NAACCR Hispanic Identification Algorithm (NHIA).
** Incidence data for American Indian/Alaska Native are based on the PRCDA (Purchased/Referred Care Delivery Areas) counties.

Signs and Symptoms

Most often, people diagnosed with MDS first seek medical attention because they are experiencing fatigue and shortness of breath (from anemia). Some individuals have no signs or symptoms, and a diagnosis of MDS is made because of periodic physical examination and testing.

Possible Causes

Most people with MDS have "primary MDS," for which there is usually no clear-cut triggering event. A possible cause of MDS is repeated exposure to the chemical benzene. Automobile exhaust and industrial emissions account for about 20 percent of the total national exposure to benzene. About half of the benzene exposure in the US population results from smoking tobacco or from exposure to tobacco smoke. The average smoker is exposed to about 10 times the daily intake of benzene compared to nonsmokers. Secondary MDS is caused by previous cancer treatments, such as chemotherapy or radiation.

Treatment

The goal of therapy for a person with lower-risk MDS is to manage the disease by reducing transfusion needs and infection risk. Currently, the only potentially curative therapy is high-dose chemotherapy with allogeneic stem cell transplantation. This may be a practical option for certain younger people with higher-risk MDS (individuals whose life

expectancy without successful treatment warrants the risk associated with transplantation). Other general approaches to treatment (either used alone or in combination) include a watch-and-wait strategy, transfusion, administration of blood cell growth factors, drug therapy with newer agents, and chemotherapy used to treat acute myeloid leukemia (AML). All patients should consider new approaches under study (clinical trials).

Survival

For 2013-2019, the 5-year relative survival rate for MDS was 36.9 percent.

Sex. From 2013 to 2019, 5-year relative survival was 33.9 percent for males and 40.7 percent for females.

Race and Ethnicity. Five-year survival from 2013 to 2019 was highest for non-Hispanic (NH) American Indian and Alaska Native females (54.1 percent), followed by NH Black females (44.4 percent) and Hispanic females (41.2 percent). See Table 22.

Deaths

The SEER report reflects mortality data from the National Cancer for Health Statistics (NCHS) database, in which MDS is not included as a cause of death. Therefore, mortality statistics were

Myelodysplastic Syndromes 5-Year Relative Survival Rates, by Race/Ethnicity and Sex, 2013-2019

	Both Sexes	Male	Female
All Races	36.9	33.9	40.7
Hispanic (any race)*	36.7	32.4	41.2
Non-Hispanic American Indian / Alaska Native**	34.5	24.1	54.1
Non-Hispanic Asian / Pacific Islander	33.9	32.4	35.8
Non-Hispanic Black	40.9	37.0	44.4
Non-Hispanic White	36.4	33.7	40.2

Table 22. Source: SEER*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute; 2023 Apr 19. [updated: 2023 Nov 16; cited 2024 Feb 21]. Available from: https://seer.cancer.gov/statistics-network/explorer/. Data source(s): SEER Incidence Data, November 2022 Submission (1975-2020), SEER 22 registries (excluding Illinois and Massachusetts). Expected Survival Life Tables by Socio-Economic Standards.
* Incidence data for Hispanics are based on NAACCR Hispanic Identification Algorithm (NHIA).
** Incidence data for American Indian/Alaska Native are based on the PRCDA (Purchased/Referred Care Delivery Areas) counties.

Myeloproliferative Neoplasms

Myeloproliferative neoplasms (MPNs) make up a group of blood cancers characterized by the overproduction of one or more types of blood cells—red blood cells, white blood cells and/or platelets. MPNs usually develop slowly over time, and different MPNs affect different blood cells. Visit www.LLS.org/booklets to download or order copies of free booklets about MPNs.

There are several types of MPNs. The following three classic types are traditionally grouped together because of their overlapping features:

- Essential thrombocythemia (ET), which accounted for 49.6 percent of MPNs from 2016 to 2020.
- Polycythemia vera (PV), which accounted for 39.6 percent of MPNs from 2016 to 2020.
- Myelofibrosis (MF), which accounted for 9.9 percent of MPNs from 2016to 2020.

Prevalence

An estimated 120,761 people in the United States (US) are living with or in remission from MPNs.

New Cases

For the 5-year period from 2016 to 2020, there were 69,354 new cases of MPNs throughout the US, averaging 13,871 cases per year. The median age at diagnosis for MPN is 66.

Incidence

The overall age-adjusted incidence rate of MPNs is 3.5 cases per 100,000 population (see Table 23).

Myeloproliferative Neoplasms Age-Adjusted Incidence Rates, per 100,000 Population, 2016-2020

By Race/Ethnicity	Rate
All Races	3.5
Hispanic (any race)*	2.2
Non-Hispanic American Indian / Alaska Native**	3.1
Non-Hispanic Asian / Pacific Islander	2.0
Non-Hispanic Black	3.3
Non-Hispanic White	4.0
By Age	**Rate**
Ages <15	0.1
Ages 15-39	0.9
Ages 40-64	4.1
Ages 65-74	12.1
Ages 75+	18.4

Table 23. Source: SEER*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute; 2023 Apr 19. [updated: 2023 Nov 16; cited 2024 Feb 21]. Available from: https://seer.cancer.gov/statistics-network/explorer/. Data source(s): SEER Incidence Data, November 2022 Submission (1975-2020), SEER 22 registries.
* Incidence data for Hispanics are based on NAACCR Hispanic Identification Algorithm (NHIA).
** Incidence data for American Indian/Alaska Native are based on the PRCDA (Purchased/Referred Care Delivery Areas) counties.

Sex. In 2016-2020, 54.0% of those diagnosed with MPN were female.

In the US, for the 5-year period from 2016 to 2020, 31,878 MPN cases were diagnosed in males (averaging 6,376 per year) and 37,476 MPN cases were diagnosed in females (averaging 7,495 per year). The overall age-adjusted incidence rates of MPNs by sex are 3.6 per 100,000 in males and 3.4 per 100,000 in females.

Race and Ethnicity. Non-Hispanic (NH) white males have the highest age-adjusted incidence rates of MPNs (4.1 per 100,000 population), while the lowest occur among NH Asian and Pacific Islander females (1.9 per 100,000 population).

Age. The age-adjusted incidence rate for MPNs is highest for males ages 75 years and older (18.8 per 100,000 population) and lowest for both males and females younger than 15 years (0.1 per 100,000 population).

Signs and Symptoms

Many people with MPNs experience few or no signs or symptoms for extended periods of time with proper monitoring and treatment. Each type of MPN may show different signs and symptoms.

Essential thrombocythemia (ET) is often detected during a routine blood test before an individual has any signs or symptoms. One of the first indications of ET may be the development of a blood clot (thrombus). In a small subset of patients, ET may cause bleeding in individuals with an extremely high platelet count.

Polycythemia vera (PV) develops slowly, and it may not cause signs or symptoms for many years. The condition is often diagnosed during a routine blood test before severe signs or symptoms occur.

Myelofibrosis (MF) usually develops slowly. Often, MF does not cause early signs or symptoms and it may be found during a routine blood test. However, as disruption of normal blood cell production increases, people may experience signs or symptoms such as fatigue, weakness, shortness of breath and/or pale skin.

Possible Causes

Myeloproliferative neoplasms (MPNs) are considered "clonal disorders." Clonal disorders begin with one or more changes to the DNA of a single stem cell in the bone marrow.

In most cases, the cause of the change to the stem cell is unknown. Mutations may be caused by environmental factors or by an error during cell division. While family clusters of ET, PV and MF have been reported, these are generally not inherited diseases. They arise from gene mutations that occur during a person's lifetime.

Researchers believe that proteins known as "Janus kinases" (JAKs) are involved. JAKs send signals that affect the production of blood cells in the bone marrow. These proteins help control the numbers of red blood cells, white blood cells and platelets. When JAKs send too many signals, they cause the bone marrow to make too many blood cells. This chain of events is referred to as "overactive JAK signaling." JAK signaling may become overactive in many ways. One way is a mutation of the *JAK2* gene.

Approximately 95 percent of PV patients have a mutation of the *JAK2* gene. Mutations in genes of hematopoietic stem cells (blood stem cells) are thought to be responsible for the overactive JAK signaling that causes MF. The mutations may be in the genes that make JAKs, or the mutations may be in genes that affect how JAKs work. Most patients with MF have either a mutation of the *JAK2, MPL* or *CALR* gene.

Most cases of ET are associated with one or more acquired genetic mutations to a hematopoietic stem cell that results in the overproduction of megakaryocytes, the precursor cells of platelets in the bone marrow. Most patients with ET have a mutation of the *JAK2, MPL* or *CALR* gene.

Treatment

Treatment for MPNs can vary based on specific diagnosis. Patients have symptoms and circumstances that require different treatments. There is no single treatment that is effective for all patients. Treatment for patients may include low-dose aspirin, therapeutic phlebotomy, drug therapy, and allogeneic stem cell transplantation. All patients should consider new approaches under study (clinical trials). All patients need to be closely monitored through regular examinations, so their doctor may watch for any signs of disease progression.

Survival

For 2013-2019, the 5-year relative survival rate for MPNs was 88.4 percent.

Sex. From 2013 to 2019, 5-year relative survival rate was 87.1 percent for males and 89.7 percent for females.

Five-year survival from 2013 to 2019 was highest for non-Hispanic (NH) Asian and Pacific Islander females (92.0 percent), followed by NH Black females (90.3 percent) and NH white females (89.2 percent). See Table 24.

Myeloproliferative Neoplasms 5-Year Relative Survival Rates, by Race/Ethnicity and Sex, 2013-2019

	Both Sexes	Male	Female
All Races	88.4	87.1	89.7
Hispanic (any race)*	88.3	87.6	88.9
Non-Hispanic American Indian / Alaska Native**	83.4	81.6	81.8
Non-Hispanic Asian / Pacific Islander	88.5	84.7	92.0
Non-Hispanic Black	87.9	84.7	90.3
Non-Hispanic White	88.2	87.2	89.2

Table 24. Source: SSEER*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute; 2023 Apr 19. [updated: 2023 Nov 16; cited 2024 Feb 21]. Available from: https://seer.cancer.gov/statistics-network/explorer/. Data source(s): SEER Incidence Data, November 2022 Submission (1975-2020), SEER 22 registries (excluding Illinois and Massachusetts). Expected Survival Life Tables by Socio-Economic Standards.
* Incidence data for Hispanics are based on NAACCR Hispanic Identification Algorithm (NHIA).
** Incidence data for American Indian/Alaska Native are based on the PRCDA (Purchased/Referred Care Delivery Areas) counties.

Deaths

The SEER report reflects mortality data from the National Cancer for Health Statistics (NCHS) database, in which MPNs are not included as a cause of death. Therefore, mortality statistics were not reported in 2024 at the time of this publication.

Incidence Rates

Tables 25, 26 and 27 show incidence rates for leukemia, non-Hodgkin lymphoma, Hodgkin lymphoma, myeloma, myelodysplastic syndromes (MDS) and myeloproliferative neoplasms (MPNs) using data figures from 2016 to 2020 (the most recent data available). Rates are per 100,000 population and are age-adjusted to the 2000 US standard population.

Age-Adjusted Incidence Rates, by Sex, All Races, per 100,000 Population, 2016-2020

Type	Total	Male	Female
Leukemia	14.0	17.8	10.9
Non-Hodgkin Lymphoma	18.7	22.5	15.5
Hodgkin Lymphoma	2.5	2.8	2.3
Myeloma	7.1	8.7	5.8
Myelodysplastic Syndromes	3.9	5.3	2.9
Myeloproliferative Neoplasms	3.5	3.6	3.4

Table 25. Source: SEER*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute; 2023 Apr 19. [updated: 2023 Nov 16; cited 2024 Feb 21]. Available from: https://seer.cancer.gov/statistics-network/explorer/. Data source(s): SEER Incidence Data, November 2022 Submission (1975-2020), SEER 22 registries.

Age-Adjusted Incidence Rates, by Sex, for Non-Hispanic Blacks, per 100,000 Population, 2016-2020

Type	Total	Male	Female
Leukemia	11.1	13.7	9.2
Non-Hodgkin Lymphoma	14.3	17.3	12.1
Hodgkin Lymphoma	2.6	2.9	2.4
Myeloma	14.4	16.8	12.8
Myelodysplastic Syndromes	3.1	3.7	2.7
Myeloproliferative Neoplasms	3.3	3.3	3.3

Table 26. Source: SEER*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute; 2023 Apr 19. [updated: 2023 Nov 16; cited 2024 Feb 21]. Available from: https://seer.cancer.gov/statistics-network/explorer/. Data source(s): SEER Incidence Data, November 2022 Submission (1975-2020), SEER 22 registries.

Age-Adjusted Incidence Rates, by Sex, for Non-Hispanic Whites, per 100,000 Population, 2016-2020

Type	Total	Male	Female
Leukemia	15.3	19.6	11.7
Non-Hodgkin Lymphoma	20.1	24.3	16.5
Hodgkin Lymphoma	2.9	3.2	2.6
Myeloma	6.4	8.1	5.0
Myelodysplastic Syndromes	4.3	6.0	3.1
Myeloproliferative Neoplasms	4.0	4.1	3.8

Table 27. Source: SEER*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute; 2023 Apr 19. [updated: 2023 Nov 16; cited 2024 Feb 21]. Available from: https://seer.cancer.gov/statistics-network/explorer/. Data source(s): SEER Incidence Data, November 2022 Submission (1975-2020), SEER 22 registries.

Race and Ethnicity

Tables 28-33, below through page 24, show prevalence, incidence, survival and mortality for blood cancers by race and ethnicity. United States (US) prevalence estimates for January 1, 2020 are based on 2020 cancer prevalence proportions from the SEER 13 cancer registries (excluding the Alaska Native Registry) and US population estimates from the US Bureau of the Census. Incidence and mortality rates are per 100,000 population and are age-adjusted to the 2000 US standard population. To adjust for possible reporting delay, counts of incidence and mortality cases are provided as average annual counts for recent years using national data from US Cancer Statistics and the National Center for Health Statistics. Five-year relative survival is provided based on the SEER 18 cancer registries for 2013-2019.

Approximate US Prevalence of Blood Cancers, by Race/Ethnicity, as of January 1, 2020

Race/Ethnicity	All blood cancers^#	Lymphomas^	NHL^	HL^	Leukemia^	ALL^	CLL^	AML^	CML^	Myeloma^	MDS*	MPN*
All Races	**1,698,339**	**912,982**	750,602	165,856	**456,481**	85,504	204,226	64,652	63,479	**168,234**	**60,041**	**120,761**
Hispanic (any race)**	**159,873**	**85,979**	67,059	19,217	**49,878**	23,647	6,960	9,062	7,084	**14,100**	**3,603**	**7,437**
Non-Hispanic American Indian / Alaska Native	**5,213**	**2,320**	1,978	350	**1,696**	614	284	288	313	**667**	**184**	**373**
Non-Hispanic Asian / Pacific Islander	**53,206**	**29,173**	25,083	4,173	**12,928**	3,935	2,139	3,354	2,586	**4,786**	**2,133**	**4,630**
Non-Hispanic Black	**163,305**	**78,478**	59,760	19,154	**33,481**	5,705	11,668	6,094	7,135	**34,559**	**5,506**	**13,416**
Non-Hispanic White	**1,323,631**	**720,891**	596,581	127,044	**360,494**	47,594	189,543	45,544	45,659	**113,215**	**49,488**	**96,659**

Table 28. Source: U.S. 2020 cancer prevalence estimates are based on 2020 cancer prevalence proportions from the SEER 12 Areas https://seer.cancer.gov/registries/terms.html (excluding the Alaska Native Tumor Registry) and 1/1/2020 U.S. population estimates based on the average of 2019 and 2020 population estimates from the U.S. Bureau of the Census.population estimates from the US Bureau of the Census. The Alaska Native Tumor Registry only includes cases diagnosed among Alaska Natives and is excluded from the analysis to avoid bias in the underlying calculations.
^ 28-year limited-duration prevalence.
# Prevalence counts for all blood cancers combined only includes 19-years of incidence for MDS and MPN due to fewer years of reportability for these cancers.
* 19-year limited-duration prevalence. Shorter duration prevalence required due to fewer years of reportability for these cancers.
** Incidence data for Hispanics are based on NAACCR Hispanic Identification Algorithm (NHIA).

Blood Cancer Incidence Rates, by Race/Ethnicity, 2016-2020, SEER 22 (Rates per 100,000 population)

Race/Ethnicity	All blood cancers	Lymphomas	NHL	Hodgkin Lymphoma	Leukemia	ALL	CLL	AML	CML	Myeloma	MDS	MPN
All Races	**49.7**	**21.2**	18.7	2.5	**14.0**	1.8	4.6	4.1	1.9	**7.1**	**3.9**	**3.5**
Hispanic (any race)*	**42.3**	**19.5**	17.2	2.2	**11.0**	2.6	2.1	3.4	1.6	**6.7**	**2.9**	**2.2**
Non-Hispanic American Indian / Alaska Native**	**42.1**	**16.7**	15.0	1.7	**12.6**	2.4	2.5	3.7	1.8	**7.0**	**2.8**	**3.1**
Non-Hispanic Asian / Pacific Islander	**31.5**	**14.8**	13.4	1.4	**8.2**	1.6	1.1	3.5	1.2	**4.0**	**2.6**	**2.0**
Non-Hispanic Black	**48.9**	**17.0**	14.3	2.6	**11.1**	1.1	3.2	3.7	1.8	**14.4**	**3.1**	**3.3**
Non-Hispanic White	**52.9**	**23.0**	20.1	2.9	**15.3**	1.6	5.7	4.4	2.1	**6.4**	**4.3**	**4.0**

Table 29. Source: Surveillance, Epidemiology, and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat Database: Incidence - SEER Research Plus Limited-Field Data, 22 Registries, Nov 2022 Sub (2000-2020) - Linked To County Attributes - Total U.S., 1969-2021 Counties, National Cancer Institute, DCCPS, Surveillance Research Program, released April 2023, based on the November 2022 submission.
Rates are per 100,000 and age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130) standard.
* Incidence data for Hispanics are based on NAACCR Hispanic Identification Algorithm (NHIA).
** Incidence data for American Indian/Alaska Native are based on the PRCDA (Purchased/Referred Care Delivery Areas) counties.

Average Annual Blood Cancer Incidence Counts, by Race/Ethnicity, 2016-2020, United States*

Race/Ethnicity	All blood cancers	Lymphomas	NHL	Hodgkin Lymphoma	Leukemia	ALL	CLL	AML	CML	Myeloma	MDS	MPN
All Races	**185,933**	**78,624**	70,288	8,335	**51,376**	5,312	17,889	15,553	7,058	**27,286**	**15,147**	**13,617**
Hispanic (any race)*	**18,390**	**8,345**	7,151	1,193	**5,205**	1,547	839	1,530	741	**2,638**	**1,090**	**1,127**
Non-Hispanic American Indian / Alaska Native	**991**	**406**	360	46	**286**	53	63	86	48	**167**	**68**	**64**
Non-Hispanic Asian / Pacific Islander	**6,139**	**2,891**	2,613	278	**1,590**	294	232	668	237	**783**	**468**	**412**
Non-Hispanic Black	**19,276**	**6,773**	5,684	1,090	**4,342**	433	1,214	1,458	724	**5,738**	**1,131**	**1,306**
Non-Hispanic White	**138,749**	**59,279**	53,651	5,628	**39,187**	2,921	15,117	11,728	5,184	**17,723**	**12,246**	**10,397**

Table 30. Source: National Program of Cancer Registries and Surveillance, Epidemiology and End Results Program SEER*Stat Database: NPCR and SEER Incidence - U.S. Cancer Statistics Public Use Research Database, 2022 Submission (2001-2020). United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute. Released June 2023. Accessed at https://www.cdc.gov/united-states-cancer-statistics/public-use/?CDC_AAref_Val=https://www.cdc.gov/cancer/uscs/public-use/
* US Incidence data by race/ethnicity excludes North Dakota and Wisconsin
** Incidence data for Hispanics are based on NAACCR Hispanic Identification Algorithm (NHIA).

Blood Cancer 5-Year Relative Survival Rates, by Race/Ethnicity, 2013-2019

Race/Ethnicity	All blood cancers	Lymphomas	NHL	Hodgkin Lymphoma	Leukemia	ALL	CLL	AML	CML	Myeloma	MDS	MPN
All Races	**69.3**	**76.1**	74.3	88.9	**66.7**	71.3	88.0	31.7	70.6	**59.8**	**36.9**	**88.4**
Hispanic (any race)*	**67.7**	**73.4**	71.1	85.6	**64.7**	70.4	83.4	40.1	77.8	**58.9**	**36.7**	**88.3**
Non-Hispanic American Indian / Alaska Native**	**63.7**	**67.3**	66.0	74.3	**63.1**	64.5	81.2	43.0	72.1	**58.3**	**34.5**	**83.4**
Non-Hispanic Asian / Pacific Islander	**65.1**	**72.0**	70.0	90.1	**57.8**	74.3	83.0	35.4	72.6	**60.1**	**33.9**	**88.5**
Non-Hispanic Black	**66.6**	**73.1**	69.8	87.7	**61.4**	66.5	82.0	33.0	71.2	**61.0**	**40.9**	**87.9**
Non-Hispanic White	**70.1**	**77.4**	75.7	90.2	**68.0**	72.3	88.6	28.4	67.8	**59.3**	**36.4**	**88.2**

Table 31. Source: Surveillance, Epidemiology, and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat Database: Incidence - SEER Research Plus Limited-Field Data, 22 Registries (excl IL and MA), Nov 2022 Sub (2000-2020) - Linked To County Attributes - Total U.S., 1969-2021 Counties, National Cancer Institute, DCCPS, Surveillance Research Program, released April 2023, based on the November 2022 submission.
* Incidence data for Hispanics are based on NAACCR Hispanic Identification Algorithm (NHIA).
**Incidence data for American Indian/Alaska Native are based on the PRCDA (Purchased/Referred Care Delivery Areas) counties.

Blood Cancer Mortality Rates, by Race/Ethnicity, 2016-2020, US (Rates per 100,000 population)

Race/Ethnicity	All blood cancers**	Lymphomas	NHL	Hodgkin Lymphoma	Leukemia	ALL	CLL	AML	CML	Myeloma
All Races	**14.5**	**5.4**	5.1	0.3	**6.0**	0.4	1.1	2.7	0.3	**3.1**
Hispanic (any race)	**11.7**	**4.8**	4.5	0.3	**4.3**	0.7	0.4	1.9	0.2	**2.6**
Non-Hispanic American Indian / Alaska Native*	**12.4**	**4.8**	4.6	0.2	**4.3**	0.6	0.5	1.8	0.3	**3.2**
Non-Hispanic Asian / Pacific Islander	**8.6**	**3.7**	3.6	0.1	**3.4**	0.3	0.2	2.0	0.2	**1.5**
Non-Hispanic Black	**15.3**	**4.1**	3.9	0.2	**5.3**	0.3	0.9	2.3	0.3	**5.9**
Non-Hispanic White	**15.0**	**5.7**	5.4	0.3	**6.4**	0.4	1.2	2.9	0.3	**2.9**

Table 32. Source: Surveillance, Epidemiology, and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat Database: Mortality - All COD, Aggregated Total U.S. (1990-2020) <Katrina/Rita Population Adjustment>, National Cancer Institute, DCCPS, Surveillance Research Program, released June 2022. Underlying mortality data provided by NCHS (www.cdc.gov/nchs).
Rates are per 100,000 and age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130) standard.
* Incidence data for American Indian/Alaska Native are based on the PRCDA (Purchased/Referred Care Delivery Areas) counties.
** The National Center for Health Statistics (NCHS) US data, reported by SEER, does not include MDS nor MPNs as a cause of death. Therefore, mortality statistics for MDS and MPNs were not reported in 2023 at the time of this publication.

Average Annual Blood Cancer Deaths, by Race/Ethnicity, 2016-2020, US

Race/Ethnicity	All blood cancers**	Lymphomas	NHL	Hodgkin Lymphoma	Leukemia	ALL	CLL	AML	CML	Myeloma
All Races	**57,098**	**21,291**	20,291	1,000	**23,447**	1,509	4,310	10,678	1,175	**12,359**
Hispanic (any race)	**4,471**	**1,767**	1,639	128	**1,758**	360	141	759	88	**946**
Non-Hispanic American Indian / Alaska Native*	**185**	**71**	67	3	**66**	10	6	28	5	**48**
Non-Hispanic Asian / Pacific Islander	**1,671**	**714**	692	21	**664**	54	41	392	30	**294**
Non-Hispanic Black	**5,931**	**1,619**	1,525	94	**2,048**	129	340	913	126	**2,264**
Non-Hispanic White	**44,667**	**17,053**	16,303	750	**18,841**	950	3,768	8,556	923	**8,772**

Table 33. Source: Surveillance, Epidemiology, and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat Database: Mortality - All COD, Aggregated Total U.S. (1990-2020) <Katrina/Rita Population Adjustment>, National Cancer Institute, DCCPS, Surveillance Research Program, released June 2022. Underlying mortality data provided by NCHS (www.cdc.gov/nchs).
* Incidence data for American Indian/Alaska Native are based on the PRCDA (Purchased/Referred Care Delivery Areas) counties.
** The National Center for Health Statistics (NCHS) US data, reported by SEER, does not include MDS nor MPNs as a cause of death. Therefore, mortality statistics for MDS and MPNs were not reported in 2023 at the time of this publication.

Estimated New Cases and Estimated Deaths, by State

Estimated New Cases of Blood Cancers, by State, 2024

State	Total**	Leukemia	Non-Hodgkin Lymphoma	Myeloma	Hodgkin
Alabama	2,450	780	1,000	560	110
Alaska	310	100	160	50	*
Arizona	3,810	1,260	1,690	700	160
Arkansas	1,710	580	720	330	80
California	18,190	5,700	8,320	3,300	870
Colorado	2,740	940	1,180	480	140
Connecticut	2,300	750	1,040	400	110
Delaware	640	210	300	130	*
Dist. of Columbia	270	80	110	80	*
Florida	18,660	6,420	7,940	3,630	670
Georgia	5,690	1,920	2,180	1,350	240
Hawaii	690	210	350	130	*
Idaho	1,120	420	460	190	50
Illinois	6,840	2,210	3,030	1,240	360
Indiana	3,800	1,270	1,660	670	200
Iowa	2,060	760	850	350	100
Kansas	1,520	500	670	270	80
Kentucky	2,550	890	1,110	440	110
Louisiana	2,630	890	1,050	570	120
Maine	880	340	410	130	*
Maryland	3,420	1,060	1,420	790	150
Massachusetts	4,010	1,300	1,790	710	210
Michigan	5,720	1,880	2,570	1,010	260
Minnesota	3,690	1,310	1,610	640	130
Mississippi	1,550	470	600	400	80
Missouri	3,550	1,220	1,520	650	160
Montana	650	250	280	120	*
Nebraska	1,070	380	470	170	50
Nevada	1,610	580	720	240	70
New Hampshire	840	290	400	150	*
New Jersey	5,750	1,940	2,490	1,060	260
New Mexico	1,070	370	470	180	50
New York	11,780	3,860	5,010	2,310	600
North Carolina	6,440	2,240	2,560	1,370	270
North Dakota	420	170	180	70	*
Ohio	6,450	2,050	2,880	1,190	330
Oklahoma	2,140	770	890	390	90
Oregon	2,270	760	1,040	370	100
Pennsylvania	8,180	2,710	3,610	1,470	390
Rhode Island	660	230	310	120	*
South Carolina	3,020	950	1,200	730	140
South Dakota	520	200	220	100	*
Tennessee	3,700	1,250	1,530	750	170
Texas	14,280	4,940	5,760	2,920	660
Utah	1,400	490	600	230	80
Vermont	400	140	190	70	*
Virginia	4,400	1,320	1,920	950	210
Washington	4,270	1,480	1,890	700	200
West Virginia	1,150	420	480	200	50
Wisconsin	3,820	1,400	1,630	640	150
Wyoming	290	110	120	60	*
United States	**187,740**	**62,770**	**80,620**	**35,780**	**8,570**

Table 34. Source: American Cancer Society.
* Estimate is fewer than 50 cases.
**Total does not include individually suppressed estimates
Estimates are rounded to the nearest 10. State estimates may not sum to US total due to rounding and exclusion of state estimates with fewer than 50 cases or deaths.
*(**Please note:** The projected numbers of new cancer cases and deaths in 2024 should not be compared with previous years to track cancer trends because they are model-based and vary from year to year for reasons other than changes in cancer occurrence. Age-standardized incidence and death rates should be used to measure cancer trends.)*

Estimated Deaths from Blood Cancers, by State, 2024

State	Total**	Leukemia	Non-Hodgkin Lymphoma	Myeloma	Hodgkin
Alabama	850	360	280	210	*
Alaska	*	*	*	*	*
Arizona	1,260	590	430	240	*
Arkansas	540	230	190	120	*
California	5,900	2,330	2,160	1,300	110
Colorado	820	370	280	170	*
Connecticut	640	290	230	120	*
Delaware	220	90	80	50	*
Dist. of Columbia	50	*	*	50	*
Florida	4,670	2,020	1,560	1,030	60
Georgia	1,620	670	550	400	*
Hawaii	190	90	100	*	*
Idaho	330	150	120	60	*
Illinois	2,090	920	660	460	50
Indiana	1,190	510	460	220	*
Iowa	650	270	230	150	*
Kansas	550	240	200	110	*
Kentucky	880	400	330	150	*
Louisiana	820	330	290	200	*
Maine	320	130	120	70	*
Maryland	980	340	340	300	*
Massachusetts	1,090	480	380	230	*
Michigan	2,040	830	760	450	*
Minnesota	1,060	440	390	230	*
Mississippi	570	260	160	150	*
Missouri	1,140	490	410	240	*
Montana	200	80	70	50	*
Nebraska	340	150	120	70	*
Nevada	520	220	200	100	*
New Hampshire	250	100	90	60	*
New Jersey	1,470	630	520	320	*
New Mexico	340	120	130	90	*
New York	2,570	1,050	1,000	520	*
North Carolina	1,880	780	630	470	*
North Dakota	110	60	50	*	*
Ohio	2,230	960	810	460	*
Oklahoma	830	340	280	210	*
Oregon	840	350	310	180	*
Pennsylvania	2,560	1,070	930	560	*
Rhode Island	150	80	70	*	*
South Carolina	1,080	420	410	250	*
South Dakota	160	80	80	*	*
Tennessee	1,260	520	450	290	*
Texas	4,080	1,630	1,430	950	70
Utah	420	190	140	90	*
Vermont	100	50	50	*	*
Virginia	1,470	610	500	360	*
Washington	1,280	520	490	270	*
West Virginia	390	190	120	80	*
Wisconsin	1,120	480	410	230	*
Wyoming	*	*	*	*	*
United States	**57,260**	**23,670**	**20,140**	**12,540**	**910**

Table 35. Source: American Cancer Society.
* Estimate is fewer than 50 cases.
**Total does not include individually suppressed estimates
Estimates are rounded to the nearest 10. State estimates may not sum to US total due to rounding and exclusion of state estimates with fewer than 50 cases or deaths.
*(**Please note:** The projected numbers of new cancer cases and deaths in 2024 should not be compared with previous years to track cancer trends because they are model-based and vary from year to year for reasons other than changes in cancer occurrence. Age-standardized incidence and death rates should be used to measure cancer trends.)*

Average Annual Incidence and Deaths, by State

Average Annual Blood Cancer Incidence Counts, by State, 2016-2020 (All Races, Males and Females)

State	All Blood Cancers	Leukemia	NHL	Myeloma	HL	MDS	MPN
Alabama	2,506	718	917	449	118	157	151
Alaska	308	88	129	39	16	17	19
Arizona	3,291	912	1,312	492	148	272	158
Arkansas	1,800	514	678	260	80	152	118
California	18,919	5,132	7,752	2,674	877	1,458	1,039
Colorado	2,665	755	1,027	400	136	188	161
Connecticut	2,395	648	940	342	109	192	164
Delaware	548	151	224	88	23	32	30
Dist. of Columbia	275	64	101	66	17	12	16
Florida	19,805	4,918	6,386	2,551	664	2,522	2,777
Georgia	5,909	1,604	1,987	1,005	262	552	503
Hawaii	673	186	278	92	27	54	36
Idaho	1,055	326	388	142	42	76	82
Illinois	7,115	1,993	2,842	1,067	368	457	393
Indiana*	3,640	1,047	1,434	536	183	249	194
Iowa	2,157	644	828	298	87	185	116
Kansas	1,684	489	644	232	72	135	113
Kentucky	2,842	850	1,061	389	115	230	197
Louisiana	2,750	740	996	457	133	204	222
Maine	951	274	390	121	40	70	56
Maryland	3,404	871	1,274	607	159	255	241
Massachusetts	3,999	1,062	1,598	581	204	301	255
Michigan	5,778	1,648	2,330	841	258	395	308
Minnesota	3,758	1,111	1,474	473	158	296	248
Mississippi	1,598	423	571	325	68	132	81
Missouri	3,645	1,049	1,409	522	157	302	208
Montana	707	207	250	103	27	58	63
Nebraska	1,075	322	438	138	50	78	51
Nevada*	1,302	406	519	174	59	90	57
New Hampshire	912	242	375	112	39	69	75
New Jersey	6,277	1,689	2,323	901	292	591	484
New Mexico	1,013	318	376	148	47	63	61
New York	13,520	3,698	5,006	1,985	620	1,064	1,154
North Carolina	6,242	1,747	2,196	1,016	272	495	518
North Dakota	436	131	163	55	20	36	32
Ohio	6,528	1,749	2,775	960	324	444	279
Oklahoma	2,016	594	784	298	89	140	113
Oregon	2,276	671	944	296	100	140	127
Pennsylvania	8,712	2,429	3,340	1,209	401	711	626
Rhode Island	630	184	251	82	35	48	29
South Carolina	2,699	742	994	485	124	194	161
South Dakota	556	171	206	81	22	43	34
Tennessee	3,632	1,044	1,434	551	168	240	199
Texas	13,874	3,988	4,928	2,163	661	1,045	1,098
Utah	1,357	425	507	179	78	96	73
Vermont	384	103	161	54	19	25	22
Virginia	3,951	1,045	1,653	671	197	230	157
Washington	4,270	1,225	1,648	575	178	346	302
West Virginia	1,236	368	490	156	45	98	79
Wisconsin	3,941	1,173	1,504	546	171	327	222
Wyoming	283	85	111	40	16	13	17
United States	**190,311**	**52,680**	**71,956**	**27,887**	**8,527**	**15,510**	**13,871**

Table 36. Source: National Program of Cancer Registries and Surveillance, Epidemiology and End Results Program SEER*Stat Database: NPCR and SEER Incidence - U.S. Cancer Statistics Public Use Research Database, 2022 Submission (2001-2020). United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute. Released June 2023. Accessed at https://www.cdc.gov/united-states-cancer-statistics/public-use/?CDC_AAref_Val=https://www.cdc.gov/cancer/uscs/public-use/
Note: Due to rounding, the total for all blood cancers may not equal the sum of the subtypes.
* Average annual counts for Indiana and Nevada are for 2016-2019 only, 2020 data not available.

Average Annual Blood Cancer Deaths, by State, 2016-2020 (All Races, Males and Females)

State	All Blood Cancers*	Leukemia	NHL	Myeloma	Hodgkin
Alabama	902	374	298	215	16
Alaska	85	35	34	14	^
Arizona	1,197	504	410	261	23
Arkansas	555	232	195	116	11
California	5,911	2,392	2,152	1,243	124
Colorado	797	328	265	190	14
Connecticut	652	274	236	133	9
Delaware	205	83	72	48	3
Dist. of Columbia	89	31	28	28	^
Florida	4,385	1,861	1,542	907	75
Georgia	1,531	621	511	370	29
Hawaii	222	86	90	43	2
Idaho	316	129	113	68	5
Illinois	2,222	922	798	465	36
Indiana	1,258	513	461	265	19
Iowa	649	268	233	139	9
Kansas	560	241	198	113	8
Kentucky	894	377	324	174	19
Louisiana	827	333	284	194	16
Maine	299	118	112	64	6
Maryland	1,040	408	340	276	17
Massachusetts	1,198	494	430	253	20
Michigan	2,046	813	754	449	30
Minnesota	1,074	449	391	217	18
Mississippi	546	231	172	133	10
Missouri	1,181	487	419	252	23
Montana	204	81	71	48	4
Nebraska	351	154	120	71	6
Nevada	468	191	177	90	10
New Hampshire	249	100	93	51	5
New Jersey	1,549	641	548	337	23
New Mexico	330	127	118	77	8
New York	3,325	1,378	1,200	684	63
North Carolina	1,794	726	605	432	31
North Dakota	141	63	45	31	3
Ohio	2,368	970	849	513	36
Oklahoma	774	327	280	154	14
Oregon	806	325	298	170	13
Pennsylvania	2,714	1,118	1,001	554	41
Rhode Island	203	86	75	39	4
South Carolina	949	382	307	245	14
South Dakota	176	68	63	42	2
Tennessee	1,288	522	459	286	21
Texas	3,916	1,586	1,382	871	76
Utah	369	158	128	80	4
Vermont	127	51	49	26	^
Virginia	1,425	575	493	333	24
Washington	1,243	500	460	262	20
West Virginia	425	179	155	82	8
Wisconsin	1,163	490	418	236	19
Wyoming	96	43	34	18	^
United States	**57,098**	**23,447**	**20,291**	**12,359**	**1,000**

Table 37. Source: Surveillance, Epidemiology, and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat Database: Mortality - All COD, Aggregated With State, Total U.S. (1969-2020) <Katrina/Rita Population Adjustment>, National Cancer Institute, DCCPS, Surveillance Research Program, released June 2022. Underlying mortality data provided by NCHS (www.cdc.gov/nchs)..
Underlying mortality data provided by NCHS (www.cdc.gov/nchs).
^ Statistic not displayed due to fewer than 10 total deaths in the 5-year period or because counts for a subgroup are supressed. The suppressed cases, however, are included in the counts and rates for the US combined.
* The National Center for Health Statistics (NCHS) US data, reported by SEER, does not include MDS nor MPNs as a cause of death. Therefore, mortality statistics for MDS and MPNs were not reported in 2023 at the time of this publication.
Note: Due to rounding, the total for all blood cancers may not equal the sum of the subtypes.

Average Annual Incidence, by Race and State

Average Annual Blood Cancer Incidence Counts, By Race/Ethnicity and State, 2016-2020, Males and Females

State	All Races	Hispanic (any race)**	Non-Hispanic American Indian / Alaska Native	Non-Hispanic Asian / Pacific Islander	Non-Hispanic Black	Non-Hispanic White
Alabama	2,506	34	4	17	548	1,812
Alaska	308	7	40	17	9	234
Arizona	3,291	536	81	63	111	2,476
Arkansas	1,800	36	14	16	221	1,480
California	18,919	4,510	101	2,134	1,122	10,712
Colorado	2,665	317	16	43	93	2,167
Connecticut	2,395	207	^	39	186	1,936
Delaware	548	29	^	8	90	415
Dist. of Columbia	275	24	^	5	150	92
Florida	19,805	3,131	33	257	1,918	14,144
Georgia	5,909	283	6	131	1,585	3,879
Hawaii	673	42	^	410	10	198
Idaho	1,055	57	8	9	4	972
Illinois	7,115	650	~	225	862	5,303
Indiana*	3,640	100	^	34	261	3,222
Iowa	2,157	41	4	17	47	2,026
Kansas	1,684	82	-	-	-	1,453
Kentucky	2,842	37	^	18	169	2,601
Louisiana	2,750	72	7	28	719	1,914
Maine	951	5	6	3	6	926
Maryland	3,404	146	5	128	902	2,184
Massachusetts	3,999	261	4	121	214	3,347
Michigan	5,778	126	29	75	643	4,789
Minnesota	3,758	85	32	65	122	3,412
Mississippi	1,598	13	^	8	505	1,069
Missouri	3,645	49	6	34	339	3,184
Montana	707	10	28	^	^	662
Nebraska	1,075	40	6	10	38	963
Nevada*	1,302	184	8	84	97	899
New Hampshire	912	12	^	7	8	872
New Jersey	6,277	732	~	291	641	4,494
New Mexico	1,013	331	57	16	19	559
New York	13,520	1,634	~	618	1,558	9,553
North Carolina	6,242	231	44	74	1,135	4,673
North Dakota	436	#	#	#	#	#
Ohio	6,528	99	6	62	622	5,638
Oklahoma	2,016	83	183	26	122	1,582
Oregon	2,276	115	28	63	36	2,019
Pennsylvania	8,712	296	6	114	670	7,518
Rhode Island	630	52	^	6	24	538
South Carolina	2,699	59	5	21	577	1,994
South Dakota	556	7	25	^	5	516
Tennessee	3,632	74	4	30	434	3,021
Texas	13,874	3,096	52	409	1,551	8,695
Utah	1,357	127	8	28	12	1,171
Vermont	384	^	^	^	^	372
Virginia	3,951	146	8	118	704	2,889
Washington	4,270	218	59	246	143	3,552
West Virginia	1,236	5	^	5	28	1,188
Wisconsin	3,941	#	#	#	#	#
Wyoming	283	13	4	^	^	261

Table 38. Source: National Program of Cancer Registries and Surveillance, Epidemiology and End Results Program SEER*Stat Database: NPCR and SEER Incidence - U.S. Cancer Statistics Public Use Research Database, 2022 Submission (2001-2020). United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute. Released June 2023. Accessed at https://www.cdc.gov/united-states-cancer-statistics/public-use/?CDC_AAref_Val=https://www.cdc.gov/cancer/uscs/public-use/
* Average annual counts for Indiana and Nevada are for 2016-2019 only, 2020 data not available.
** Incidence data for Hispanics are based on NAACCR Hispanic Identification Algorithm (NHIA).
^ Statistic not displayed due to fewer than 16 total cases in the 5-year period.
~ Data for non-Hispanic American Indian and Alaska Native persons cannot be displayed for Illinois, New Jersey, and New York
– Data for non-Hispanic American Indian and Alaska Native, Asian and Pacific Islander, and Black persons cannot be displayed for Kansas.
Hispanic ethnicity data alone or in combination with any race category cannot be displayed for North Dakota and Wisconsin.

Average Annual Deaths, by Race and State

Average Annual Blood Cancer Deaths, by Race/Ethnicity and State, 2016-2020, Males and Females

State	All Races	Hispanic (any race)	Non-Hispanic American Indian / Alaska Native	Non-Hispanic Asian / Pacific Islander	Non-Hispanic Black	Non-Hispanic White
Alabama	902	8	^	4	194	694
Alaska	85	^	8	6	^	68
Arizona	1,197	168	23	21	38	942
Arkansas	555	7	^	2	65	479
California	5,911	1,251	18	657	382	3,589
Colorado	797	83	^	10	26	674
Connecticut	652	36	^	7	47	561
Delaware	205	7	^	4	31	163
Dist. of Columbia	89	5	^	^	55	28
Florida	4,385	647	^	60	485	3,188
Georgia	1,531	49	^	26	409	1,045
Hawaii	222	9	^	150	^	60
Idaho	316	12	^	^	^	299
Illinois	2,222	140	^	53	278	1,750
Indiana	1,258	22	^	7	84	1,144
Iowa	649	8	^	5	10	626
Kansas	560	19	^	5	28	501
Kentucky	894	5	^	3	51	834
Louisiana	827	17	^	7	219	581
Maine	299	^	^	^	^	293
Maryland	1,040	27	^	35	282	695
Massachusetts	1,198	43	^	28	54	1,057
Michigan	2,046	38	5	18	212	1,765
Minnesota	1,074	18	4	17	28	1,005
Mississippi	546	4	^	^	164	376
Missouri	1,181	13	^	8	104	1,054
Montana	204	^	6	^	^	194
Nebraska	351	6	^	2	12	330
Nevada	468	49	3	31	38	347
New Hampshire	249	^	^	^	^	245
New Jersey	1,549	142	^	63	185	1,157
New Mexico	330	111	17	2	6	193
New York	3,325	324	3	134	423	2,407
North Carolina	1,794	37	^	18	342	1,381
North Dakota	141	^	4	^	^	134
Ohio	2,368	23	^	15	234	2,094
Oklahoma	774	22	47	8	43	654
Oregon	806	24	7	17	13	745
Pennsylvania	2,714	61	^	26	224	2,393
Rhode Island	203	8	^	^	8	185
South Carolina	949	11	^	7	213	716
South Dakota	176	^	6	^	^	166
Tennessee	1,288	13	^	6	161	1,107
Texas	3,916	864	^	92	422	2,528
Utah	369	22	^	6	3	336
Vermont	127	^	^	^	^	126
Virginia	1,425	40	^	34	258	1,086
Washington	1,243	46	16	58	35	1,087
West Virginia	425	2	^	^	11	410
Wisconsin	1,163	18	4	9	44	1,087
Wyoming	96	4	^	^	^	90

Table 39. Source: Surveillance, Epidemiology, and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat Database: Mortality - All COD, Aggregated With State, Total U.S. (1990-2020) <Katrina/Rita Population Adjustment>, National Cancer Institute, DCCPS, Surveillance Research Program, released June 2022. Underlying mortality data provided by NCHS (www.cdc.gov/nchs).

* The National Center for Health Statistics (NCHS) US data, reported by SEER, does not include MDS nor MPNs as a cause of death. Therefore, mortality counts for blood cancers only include lymphomas, leukemias and myelomas.

^ Statistic not displayed due to fewer than 10 total cases in the 5-year period.

Average Annual Leukemia Incidence and Deaths, by State

Average Annual Leukemia Incidence Counts, By State, 2016-2020, All Races, Males and Females

State	Leukemia	Acute Lymphoblastic Leukemia	Chronic Lymphocytic Leukemia	Acute Myeloid Leukemia	Chronic Myeloid Leukemia
Alabama	718	67	233	209	107
Alaska	88	11	25	26	14
Arizona	912	129	241	312	127
Arkansas	514	47	198	147	74
California	5,132	773	1,481	1,666	694
Colorado	755	85	250	238	84
Connecticut	648	52	264	185	84
Delaware	151	15	48	53	18
Dist. of Columbia	64	10	21	17	9
Florida	4,918	405	1,792	1,426	727
Georgia	1,604	162	569	470	240
Hawaii	186	24	45	73	27
Idaho	326	30	125	94	44
Illinois	1,993	219	657	648	272
Indiana*	1,047	95	385	331	129
Iowa	644	52	260	196	83
Kansas	489	41	193	144	63
Kentucky	850	68	326	243	120
Louisiana	740	64	278	224	112
Maine	274	21	116	84	26
Maryland	871	93	282	270	125
Massachusetts	1,062	98	376	331	146
Michigan	1,648	145	582	537	226
Minnesota	1,111	98	439	341	143
Mississippi	423	36	133	142	67
Missouri	1,049	91	373	314	132
Montana	207	15	94	45	27
Nebraska	322	33	112	101	41
Nevada*	406	54	117	125	45
New Hampshire	242	18	95	76	30
New Jersey	1,689	162	669	460	219
New Mexico	318	40	111	92	43
New York	3,698	312	1,475	1,053	472
North Carolina	1,747	156	672	514	259
North Dakota	131	12	56	35	18
Ohio	1,749	178	540	589	237
Oklahoma	594	66	204	175	89
Oregon	671	67	253	208	79
Pennsylvania	2,429	208	878	750	311
Rhode Island	184	17	65	59	25
South Carolina	742	67	238	235	110
South Dakota	171	14	69	54	22
Tennessee	1,044	95	328	316	170
Texas	3,988	570	1,274	1,041	571
Utah	425	52	148	125	57
Vermont	103	9	38	31	14
Virginia	1,045	124	265	379	151
Washington	1,225	121	480	352	164
West Virginia	368	24	140	117	51
Wisconsin	1,173	95	472	335	163
Wyoming	85	9	29	29	10
United States	**52,680**	**5,418**	**18,416**	**15,922**	**7,239**

Table 40. Source: National Program of Cancer Registries and Surveillance, Epidemiology and End Results Program SEER*Stat Database: NPCR and SEER Incidence - U.S. Cancer Statistics Public Use Research Database, 2022 Submission (2001-2020). United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute. Released June 2023. Accessed at https://www.cdc.gov/united-states-cancer-statistics/public-use/?CDC_AAref_Val=https://www.cdc.gov/cancer/uscs/public-use/
* Average annual counts for Indiana and Nevada are for 2016-2019 only, 2020 data not available.

Average Annual Leukemia Deaths, By State, 2016-2020, All Races, Males and Females

State	Leukemia	Acute Lymphoblastic Leukemia	Chronic Lymphocytic Leukemia	Acute Myeloid Leukemia	Chronic Myeloid Leukemia
Alabama	374	22	53	145	16
Alaska	35	2	6	19	^
Arizona	504	38	100	221	24
Arkansas	232	15	38	96	11
California	2,392	227	419	1,116	119
Colorado	328	19	67	157	15
Connecticut	274	15	54	130	13
Delaware	83	5	15	43	3
Dist. of Columbia	31	2	7	13	3
Florida	1,861	119	336	846	103
Georgia	621	37	97	260	36
Hawaii	86	7	10	43	5
Idaho	129	9	26	59	7
Illinois	922	54	158	419	51
Indiana	513	32	103	236	26
Iowa	268	14	63	130	12
Kansas	241	14	43	115	13
Kentucky	377	19	75	166	18
Louisiana	333	19	55	129	14
Maine	118	7	25	55	6
Maryland	408	23	79	188	19
Massachusetts	494	22	104	229	21
Michigan	813	46	164	361	42
Minnesota	449	23	106	205	25
Mississippi	231	11	30	79	11
Missouri	487	27	100	224	23
Montana	81	4	21	34	3
Nebraska	154	9	31	77	8
Nevada	191	16	30	88	10
New Hampshire	100	5	21	50	3
New Jersey	641	40	112	276	29
New Mexico	127	9	21	58	8
New York	1,378	81	253	665	61
North Carolina	726	39	136	347	35
North Dakota	63	2	14	28	2
Ohio	970	56	176	442	50
Oklahoma	327	24	57	135	16
Oregon	325	15	68	155	20
Pennsylvania	1,118	55	221	512	52
Rhode Island	86	4	16	36	6
South Carolina	382	23	68	170	23
South Dakota	68	3	17	29	4
Tennessee	522	33	102	233	29
Texas	1,586	144	241	710	84
Utah	158	10	31	65	8
Vermont	51	3	9	26	3
Virginia	575	35	105	268	27
Washington	500	34	96	253	24
West Virginia	179	9	37	80	9
Wisconsin	490	26	91	239	22
Wyoming	43	3	7	20	3
United States	23,447	1,509	4,310	10,678	1,175

Table 41. Source; Surveillance, Epidemiology, and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat Database: Mortality - All COD, Aggregated With State, Total U.S. (1969-2020) <Katrina/Rita Population Adjustment>, National Cancer Institute, DCCPS, Surveillance Research Program, released June 2022. Underlying mortality data provided by NCHS (www.cdc.gov/nchs).
Underlying mortality data provided by NCHS (www.cdc.gov/nchs).
^ Statistic not displayed due to fewer than 10 total deaths in the 5-year period or because counts for a subgroup are supressed. The suppressed cases, however, are included in the counts and rates for the US combined.

Notes and Definitions

The classification of leukemia, myeloma and lymphomas used in this publication is based on The National Cancer Institute's Surveillance, Epidemiology, and End Results' (SEER) site recode definition (https://seer.cancer.gov/siterecode/icdo3_dwhoheme/index.html). This is consistent with the classifications used for most national cancer reporting, including SEER, United States Cancer Statistics (USCS) and the North American Association of Central Cancer Registries (NAACCR). Myelodysplastic syndromes (MDS) are defined using International Classification of Diseases-Oncology, Third Edition (ICD-O-3), histologic type codes 9980-9989. Myeloproliferative neoplasms (MPNs) are defined using ICD-O-3 histologies 9950-9964.

The data within *Facts 2023-2024* reflect the most recent statistics available at the time of the start of this publication from The National Cancer Institute's SEER*Explorer interactive website (https://seer.cancer.gov/explorer/). SEER*Explorer reports cancer incidence, mortality, survival, prevalence and lifetime risk statistics. Incidence, prevalence and survival data were released online by SEER, www.seer.cancer.gov, on April 19, 2023. Recent SEER statistics were published in the spring of 2024. That data is not reflected in this publication.

Incidence and mortality rates measure exactly what occurred and cover the entire period through the most recent year reported, 2020. However, in order to calculate survival rates, the most current year of data is not considered, because not enough time has passed for it to be included.

The SEER Program's SEER*Explorer presents statistics by age, sex, race and ethnicity. Statistics for these categories reflect a blend of biological and cultural factors. Additionally, data reported by race and ethnicity represent both the diversity and the mixed heritage of the United States (US) population.

Data on Hispanic ethnicity are not shown for statistics/years for which they are not available. Incidence data for Hispanics and Non-Hispanics are based on the NAACCR Hispanic Latino Identification Algorithm (NHIA).

Mortality data reflected in the referenced SEER statistics reflect data from the National Cancer for Health Statistics (NCHS) from 1969 to 2020 and were made available in 2023. State-level mortality data is also provided by NCHS and is presented as a yearly average of deaths from 2016-2020. No new mortality data has become publicly available since the publication of Facts 2022-2023, so that data has not been updated.

When reporting statistics using the SEER data, different populations are used depending on the statistic type. The SEER 22 regions, used for recent incidence rates, cover about 47.9 percent of the US population. Survival data is not available for all of the SEER 22 areas, so Illinois and Massachusetts are excluded from recent survival statistics. Data is not available for the SEER 22 regions before 2000, so long-term incidence and survival trends must rely on a smaller subset of the data, most often SEER 8, which covers only about 8.3 percent of the US population. The data can be extrapolated for the entire US by multiplying by the population ratio, but these figures do not take into account differences in geography, race and ethnicity in various regions, or region-specific health risks. These registry groupings were changed from previous publications, reflecting revised SEER registry participation and completeness starting with the November 2022 data submission. See here for more information: https://seer.cancer.gov/registries/terms.html

Data on American Indians and Alaska Natives (AIs/ANs) should be interpreted with care because the data reflect statistics from purchased/referred care delivery areas only. A purchased/referred care delivery area (PRCDA) is a geographic area within which purchased/referred care is made available by the Indian Health Service (IHS) to members of an identified Indian community who reside in the area. A PRCDA was formerly a contract health service delivery area (CHSDA). Many AIs/ANs do not reside in such counties, and other AI/AN individuals are not members of federally recognized tribes and cannot avail themselves of IHS services.

Limited data on myelodysplastic syndromes (MDS) and myeloproliferative neoplasms (MPNs) were included in the SEER statistics as entities on their own beginning in 2007.

The American Cancer Society (ACS) projected the number of estimated cancer cases for 2024 using a model based on incidence data from 50 states and the District of Columbia for the years from 2006 to 2020. That incidence data met the NAACCR's high-quality data standard for incidence. This method considers geographic variations in sociodemographic and lifestyle factors, medical settings and cancer screening behaviors as predictors of incidence, and also accounts for expected delays in case reporting. The ACS projected the estimated number of US cancer deaths by fitting the number of cancer deaths from 2006 to 2020 to a statistical model that forecasts the number of deaths expected to occur in 2024. The estimated number of cancer deaths for each state is calculated similarly, using state-level data. For both US and state estimates, data on the number of deaths are obtained from the National Center for Health Statistics (NCHS) at the Centers for Disease Control and Prevention (CDC).

In instances where 2024 incidence count estimates are not available from the ACS, actual national incidence counts were obtained using the USCS public use database, which contains cancer incidence for the entire US for 2001 to 2020, sourced from the CDC's National Program for Cancer Registries (NPCR) and SEER. National and state-level incidence counts are presented as a yearly average of the 5 most recent years of US incidence available.

Definitions

Age-adjusted rate is an incidence or death rate that has been adjusted to reduce the bias of age in the makeup of the populations that are being compared, thereby providing a more reliable rate for comparison. Incidence or death rates can be adjusted for any demographic factor or any combination of factors, such as age (the most common), sex and race.

Cancer mortality rate is the number of deaths, with cancer as the underlying cause of death, occurring in a specified population during a year. Cancer mortality is usually expressed as the number of deaths due to cancer per 100,000 population. The population used depends on the rate to be calculated. The mortality rate can be computed for a given cancer site or for all cancers combined.

Incidence is the number of newly diagnosed cases either for a specific cancer, or for all cancers combined, during a specific time period. When expressed as a rate, it is the number of new cases per standard unit of population during the time period. Incidence rates can be calculated based on a number of factors, such as age, race or sex.

Prevalence is the estimated number of people alive on a certain date in a population who previously had a diagnosis of the disease. It includes new cases (incidence) and preexisting cases and is a function of both past incidence and survival. Prevalence may be calculated in a number of different ways, especially in looking at populations in which individuals have had more than one type of cancer. In some prevalence statistics, only the first diagnosed cancer counts. Thus, if a person is initially diagnosed with melanoma and later develops leukemia, his or her survival with leukemia may not be counted in leukemia prevalence statistics. Therefore, prevalence numbers reported may vary depending upon the method used to determine them. In this report, complete prevalence is reported as defined by SEER as "an estimate of the number of persons (or the proportion of population) alive on a specified date who had been diagnosed with the given cancer, no matter how long ago that diagnosis was." Most prevalence in this publication is using the "28-year limited duration" prevalence figures, based on the "first invasive tumor for each cancer site diagnosed during the previous 28 years (1992-2019)," as per SEER*Explorer prevalence reporting. Because myelodysplastic syndromes (MDS) and myeloproliferative neoplasms (MPNs) have been collected for a shorter period of time, 19-year limited duration prevalence is used for those cancers. The specified date is January 1, 2020 for the prevalence estimates.

The prevalence counts in *Facts 2023-2024* are adjusted for race, sex and age.

Relative survival rate is an estimate of the percentage of patients who would be expected to survive the effects of the cancer. This rate is calculated by adjusting the observed survival rate so the effects of causes of death other than those related to the cancer in question are removed. The relative survival rate is a comparison of survival to that of a person who is free of the disease. "Observed survival" is the actual percentage of patients still alive at some specified time after diagnosis of cancer. It considers deaths from all causes, cancer or otherwise.

Remission is when signs of a disease disappear. This usually follows treatment. The words "complete" and "partial" are sometimes used to further define the term "remission." Complete remission means all evidence of the disease is gone. Partial remission means the disease is markedly improved by treatment, but residual evidence of the disease is present.

About The Leukemia & Lymphoma Society

The Leukemia & Lymphoma Society (LLS) has helped millions impacted by blood cancer since our founding in 1949, funding research to advance breakthroughs and providing lifesaving support and advocacy for patients.

- **LLS is the largest nonprofit funder of leading-edge research for every type of blood cancer. Our thoughtful investments in blood cancer research have led and will lead to scientific breakthroughs that improve and save the lives of patients.**
- **LLS is the leading source of free blood cancer information, education and support, and helps patients navigate their cancer treatment, access quality care and find clinical trials.**
- **LLS advocates for policy changes to break down the barriers that stand between patients and the care they need.**

Research

Since our founding in 1949, The Leukemia & Lymphoma Society (LLS) has invested more than $1.7 billion in groundbreaking blood cancer research, pioneering many of today's most innovative approaches. We provide funding across the continuum, from basic research through clinical trials—from bench to bedside. **Research Grants** have funded many of today's most promising advances, including targeted therapies and immunotherapies and our funding supports the training of the next generation of first-rate cancer researchers. Four of our ***Therapy Acceleration Program® (TAP)*** supported therapies have been approved by the FDA or included in the National Comprehensive Cancer Network (NCCN) Guidelines.

LLS creates partnerships with universities and biotechnology and pharmaceutical companies to get treatments to patients faster than ever—especially to patients with unmet medical needs.

Our **Research Grant programs** support scientific studies at academic centers throughout the world.

- The *Career Development Program (CDP)* is designed to encourage promising young investigators to embark on academic careers, offering the opportunity to take part in basic, translational, or clinical research to help understand and treat blood cancers and relevant premalignant conditions.
- The *Translational Research Program (TRP)* is designed to reduce the time between laboratory findings and actual treatment, putting research on the bench-to-bedside fast track when it comes to finding better treatment and cures for blood cancers.
- The *Specialized Center of Research Program (SCOR)* supports teams of researchers from one or several institutions representing different disciplines engaged in collaborative efforts to discover new approaches to treat patients with blood cancers.
- The Discovery Grants: the *Blood Cancer Discoveries Grants Program (BCDG)* and the *Discovery Grant Program (DGP)* support cutting edge, innovative research that is oriented toward discovery, concerned with understanding blood cancer properties and vulnerabilities and aimed toward advancing treatments for blood cancers.
- The *Impactful Medicine Providing Access to Clinical Trials (IMPACT)* program supports clinical trial networks that expand access to patients in underserved communities.
- The *Academic Clinical Trials Program (ACT)* program supports academic investigator initiated clinical trials (IIT) in the hematological malignancy space, primarily IIT Phase 1 or 2 trials.
- The *CMML Special Initiative* funds research to better characterize the disease biology of Chronic Myelomonocytic Leukemia (CMML), develop new therapies, and optimize outcomes for patients.
- We also announce disease focused special programs on a regular basis to accelerate research areas with high unmet need, such as mantle cell lymphoma or hairy cell leukemia.

Research Grants currently has ongoing foundation partnerships with:

- The **Follicular Lymphoma Foundation,** to foster scientific innovation, and accelerate clinical trials, that can lead to more effective therapies and, ultimately, a cure for follicular lymphoma
- The **MPN Research Foundation,** to fund innovative grants to better understand and treat the range of myeloproliferative neoplasms (MPNs)
- The **International Waldenström's Macroglobulinemia Foundation,** to fund research to improve quality of life and to better understand and treat Waldenström's Macroglobulinemia (WM) and other B-cell malignancies
- The **Rising Tide Foundation for Clinical Cancer Research,** to fund novel immunotherapy and prevention research linked to clinical trials for all blood cancers
- The **Sarah Cannon Research Institute,** to fund an intensive research program in mantle cell lymphoma
- The **Snowdome Foundation,** and the Leukaemia Foundation to fund translational research on blood cancer in Australia
- The **Mark Foundation** and **The Paul G. Allen Frontiers Group,** to fund early-stage discovery research
- The **Hairy Cell Leukemia Foundation,** to invest in targeted research for hairy cell leukemia

- Major partnerships with the Mayo Clinic, Vanderbilt University Medical Center, Weill Cornell Medicine, Emory University, University of Colorado, and the Fred Hutchinson Cancer Center, to support large, multi-investigator research grants.

Our ***Therapy Acceleration Program® (TAP)*** is LLS' mission-driven, strategic venture philanthropy initiative that seeks to accelerate the development of innovative blood cancer therapeutics and change the standard of care, while also generating a return on investment for the LLS Mission. TAP collaborates with biotech companies to support the development of novel platforms, first-in-class assets addressing unmet medical needs, emerging patient populations and even rare blood cancers

Established in 2007, TAP has invested >$100 million in over 50 biotech projects. Since 2017, four TAP-supported therapies have been approved by the FDA or included in the NCCN Guidelines and have greatly impacted patient care.

- **CPX-351 (Vyxeos®),** first approved treatment (an innovative reformulation of two chemotherapies) for patients with certain types of high-risk acute myeloid leukemia
- **Axicabtagene ciloleucel (Yescarta®),** first CAR T-cell immunotherapy approved for patients with non-Hodgkin lymphoma and transformed follicular lymphoma
- **Tagraxofusp-erzs (Elzonris®),** first approved therapy for children and adults with blastic plasmacytoid dendritic cell neoplasm
- **Duvelisib (Copiktra®),** first dual inhibitor of PI3K-delta and gamma pathways included in NCCN Guidelines for patients with all subtypes of peripheral T-cell lymphoma

Currently, there are over 20 active clinical studies with TAP-supported therapies , including several in ongoing registration-enabling clinical studies in blood cancer.

Visit www.LLS.org/Research or email researchprograms@LLS.org for information about LLS research grant programs. To learn more about TAP visit www.LLS.org/TAP.

Equity in Access Research Program. In addition to specific disease and treatment research, LLS also supports critical health services research through its Equity in Access Research Program. Launched in 2021, Equity in Access aims to fund research that will generate actionable evidence to assist LLS in advocating for policy reform and enhancements to healthcare practice and program delivery to ensure that all patients with and survivors of a blood cancer have access to the care and services they need throughout their lives.

To date, Equity in Access has awarded more than $12 million to researchers addressing critical issues such as the cost of oral anticancer medications, the role of health insurance in financial toxicity, and access to clinical trials. This program also complements and reinforces LLS's efforts to facilitate the growth of academic research and expertise in health services research focused on blood cancer, and it contributes to LLS becoming a leading funder in this area. To learn more about the Equity in Access Research Program visit www.LLS.org/EquityInAccess

Public Policy

The Leukemia & Lymphoma Society (LLS) recognizes finding cures is not enough. We must also work diligently to ensure patients have access to affordable treatments that allow them to live healthy, productive lives. Working closely with dedicated volunteer advocates, the LLS Office of Public Policy (OPP) elevates the voices of patients to state and federal elected officials, the White House, governors and even courts. Together, we advocate for safe and effective treatments. We pursue policies that would make care more accessible to all patients And, most of all, we advocate for the hope for a cure.

The department is composed of leaders in government affairs, public policy, grassroots advocacy, legal advocacy and communications. They are proud to work closely with an incredible network of volunteer patient advocates whose lives have been touched by blood cancer. Together, we work to elevate the voices of cancer patients and their families and make their interests heard by all levels of government.

To learn more about OPP's work and how to get involved, visit www.LLS.org/policy-advocacy or text SPEAK to 73727 to join the LLS Mobile Action Network

Education and Support Services

The Leukemia & Lymphoma Society (LLS) is the leading source of free blood cancer information, education and support. To help ensure access to the latest treatments and survivorship care, and improve quality of life, staff and volunteers provide assistance and resources to patients, caregivers and healthcare professionals nationally and in communities through our chapters across the United States (US) and Canada.

- **Personalized disease and treatment information and support.** Our Information Specialists are highly trained oncology social workers and nurses who provide free one-on-one assistance to patients, families and healthcare professionals. These Specialists offer personalized guidance for coping with a blood cancer diagnosis, current disease and treatment information and referral to financial and support resources within LLS and beyond. Information Specialists can be contacted at (800) 955-4572, Monday through Friday, from 9 am to 9 pm Eastern Time, or by email or live chat at www.LLS.org/InformationSpecialists.
- **One-on-one clinical trial support.** Through our Clinical Trial Support Center (CTSC) patients and caregivers can work one-on-one with an LLS Clinical Trial Nurse Navigator who will conduct a comprehensive clinical trial search and personally assist them throughout the entire clinical trial process. Clinical Trial Nurse Navigators are registered nurses with expertise in blood cancers. To speak with a CTSC nurse navigator at no cost, call our Information Specialists or visit www.LLS.org/CTSC.
- **Nutrition consultations.** LLS offers free one-on-one nutrition consultations to patients and caregivers by phone or email with a registered dietitian who has expertise in oncology nutrition. Visit www.LLS.org/nutrition.

- **Assistance with financial burdens.** LLS offers financial assistance to help individuals with blood cancer.
  - *Patient Aid Program* provides financial assistance to blood cancer patients. Eligible patients will receive a one-time $100 stipend to help offset expenses. There are no income criteria to qualify for this program. Visit www.LLS.org/PatientAid or call (877) 557-2672.
  - *Susan Lang Pay-it-Forward Patient Travel Assistance Program* provides financial assistance to patients diagnosed with a blood cancer who struggle to pay for treatment-related transportation and/or lodging expenses. Eligible patients will receive $500. Patient assistance is based upon available funding. Visit www.LLS.org/travel or call (877) 557-2672.
  - *Susan Lang Pre CAR T-cell Therapy Travel Assistance Program* is available to blood cancer patients who are being evaluated to receive CAR T-cell therapy as either standard treatment or a clinical trial. Eligible patients will receive $2,500 to help pay for approved transportation and/or lodging expenses. Patient assistance is based upon available funding. Visit www.LLS.org/PreCARTtravel or call (877) 557-2672.
  - *Urgent Need Program,* established in partnership with Moppie's Love and Charlie's Fund, helps pediatric, young adult and adult blood cancer patients with acute financial need. The program provides a $500 grant to assist with non-medical expenses, including utilities, rent, mortgage, food, lodging, dental care, childcare, elder care and other essential needs. Patient assistance is based upon available funding. Visit www.LLS.org/UrgentNeed or call (877) 557-2672.
  - *Veteran Dental Financial Assistance* helps Veterans with blood cancer access dental care to begin lifesaving therapy or as a consequence of therapy. All expenses for the required dental care will be covered, as long as funding is available. Visit www.LLS.org/VeteransDental or call (800) 955-4572.

For information about all LLS Financial Assistance Programs, visit www.LLS.org/finances.

- **Information booklets.** Free disease, treatment and support booklets are available in English and Spanish through our Information Specialists and LLS chapters, and can be downloaded and ordered at www.LLS.org/booklets.
- **Education programs.** LLS provides free education programs for patients, caregivers and healthcare professionals. Programs and videos for patients and caregivers feature experts who share the latest disease, treatment and research updates, including information about survivorship. These programs are available via telephone and Web. Visit www.LLS.org/programs and www.LLS.org/EducationVideos.

  LLS also offers free continuing education programs for healthcare professionals including nurses, social workers and physicians. Visit www.LLS.org/ProfessionalEd.

- **Free Mobile Apps**
  - LLS Health Manager™ – Helps you track side effects, medication, food and hydration, questions for your doctor, and more. Available in Spanish and French Canadian. Visit www.LLS.org/HealthManager to download for free.
  - LLS Coloring For Kids™ – Allows children to express their creativity and offers activities to help them learn about blood cancer and its treatment. Visit www.LLS.org/ColoringApp to download for free.
- **Podcasts**
  - Our podcast series for patients and caregivers, *The Bloodline with LLS,* features patients, caregivers, advocates, doctors and other healthcare professionals who discuss diagnosis, treatment options, quality-of-life concerns, treatment side effects, doctor-patient communication and other important survivorship topics. For more information and to subscribe, visit www.LLS.org/TheBloodline.
  - Our podcast series for healthcare professionals (HCPs), *Treating Blood Cancers,* provides up-to-date and accurate information on diagnosis, treatment and survivorship to educate HCPs. For more information and to subscribe, visit www.LLS.org/CE.
- **Connection with other blood cancer survivors.** LLS has created many opportunities for peer-to-peer support.
  - Weekly online chats are moderated by a licensed social worker; the chats give cancer patients and caregivers the opportunity to reach out, share information and provide support to one another in a structured, online setting. For more information, visit www.LLS.org/chat.
  - *The Patti Robinson Kaufmann First Connection® Program* gives patients and caregivers the opportunity to talk about their experiences one-on-one with someone who has "been through it" and obtain valuable information about the community resources available to support them. Visit www.LLS.org/FirstConnection.
  - *LLS Community* is a one-stop virtual meeting place for talking with other patients and caregivers, receiving the latest blood cancer resources and information and getting personalized support from trained LLS staff. To join, visit www.LLS.org/community.
  - Support groups in local communities provide mutual support and offer the opportunity to discuss anxieties and concerns with others who share the same experiences. To find out if there is a support group near you, visit www.LLS.org/ChapterFind to contact your chapter.
- **Blood Cancer Conferences.** LLS Blood Cancer Conferences are free educational events where blood cancer patients, caregivers and their families can learn more about the latest disease-specific breakthroughs, current treatments and survivorship information from local and national experts. Visit www.LLS.org/BCC for a list of these upcoming events.

- **Underserved Outreach.** LLS is dedicated to addressing health disparities in blood cancer among underserved populations, including Black and African American, Hispanic, rural, and age-related groups such as Adolescents and Young Adults (AYA) and the elderly. Through coordinated national and local outreach efforts, along with our robust range of support services and education programs for patients, caregivers, and healthcare professionals, LLS works to reduce barriers to optimal care by expanding access to blood cancer information and resources. This comprehensive approach is part of LLS's broader health equity initiative, aimed at ensuring that all individuals, regardless of their background, have access to the care they need. By tailoring our efforts to be linguistically, culturally, and age-appropriate, we improve access to education on blood cancer, treatment options—including clinical trials—and provide resources that address the specific needs of diverse communities.

Visit www.LLS.org/PatientSupport for access to up-to-date disease, treatment and support information.

Citations and Acknowledgements

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Notes

LEUKEMIA & LYMPHOMA SOCIETY®

The Leukemia & Lymphoma Society 3 International Drive, Suite 200, Rye Brook, NY 10573 914-949-5213

The mission of The Leukemia & Lymphoma Society (LLS) is to cure leukemia, lymphoma, Hodgkin's disease and myeloma, and improve the quality of life of patients and their families. Find out more at www.LLS.org.

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