

Declining Population-Level Infection-Attributed Mortality in Chronic Lymphocytic Leukemia in the United States, 1999–2020: A CDC WONDER Analysis

Canan Dirican ¹, Vedant Shah ¹, Drudhvi Davala¹, Michael Maroules ²

¹ New York Medical College at St Mary’s General Hospital and St Clare’s Health, Denville, NJ, USA

² St Mary’s General Hospital, Passaic, NJ, USA



INTRODUCTION

Patients with chronic lymphocytic leukemia (CLL) are vulnerable to severe infections due to disease-related immune dysfunction, treatment-associated immunosuppression, and advanced age.

Although advances in CLL management have improved outcomes, national trends in infection-attributed mortality involving CLL remain poorly characterized.

Understanding long-term mortality trends may help contextualize infection prevention and supportive care in the modern treatment era.

AIM

To evaluate population-level trends in infection-attributed mortality involving CLL in the United States from 1999-2020, including differences by race and treatment era.

METHOD

Data source: CDC WONDER Multiple Cause of Death database, 1999–2020

Population: Deaths with CLL listed as the underlying cause and infection as a contributing cause

Infections included: Sepsis, bacterial pneumonia, invasive candidiasis, and aspergillosis

Outcome: Age-adjusted mortality rates (AAMRs) per 100,000 persons using the 2000 U.S. standard population

Stratification: Year and race

Treatment eras:

Pre-BTK inhibitor: **1999-2013**

Early BTK inhibitor: **2014-2017**

Contemporary targeted-therapy: **2018-2020**

CONCLUSIONS

Population-level infection-attributed mortality involving CLL declined by approximately 60% from 1999-2020.

Similar reductions occurred among White and Black decedents, with mortality rates converging by 2020.

The decline temporally overlapped with major advances in CLL management, including targeted therapies; however, treatment-level data were unavailable and causality cannot be inferred.

These findings provide national context for continued infection prevention, supportive care, and survivorship strategies in patients with CLL.

RESULTS

Overall burden

24,043 infection-attributed deaths involving CLL were identified. **21,860** occurred among White decedents and **2,183** among Black decedents.

Mortality declined substantially

AAMRs declined from approximately **0.5 per 100,000** in the earlier years to **0.2-0.3 per 100,000** during 2014-2020. This represented an approximately **60% reduction** in population-level infection-attributed mortality.

Similar improvement across racial groups

White decedents: mean AAMR declined from **0.41 to 0.24 per 100,000**
Black decedents: mean AAMR declined from **0.39 to 0.21 per 100,000**

By **2019-2020**, infection-attributed mortality rates had **converged between White and Black decedents**.

