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# Estimating the United States cure-adjusted prevalence of diffuse large B-cell lymphoma (DLBCL): An epidemiological model

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## Summary

As advances in DLBCL therapies improve overall survival and allow more patients to become treatment-free, prevalence estimates need to be adjusted to provide a more realistic disease burden estimate.

This modelling study showed how varying definitions of cure of disease may affect prevalence estimates of DLBCL. All cure-adjusted prevalence estimates for DLBCL tested in this study, suggested a 2025 US prevalence estimate below 200,000 cases.

Future studies should consider other clinical parameters (e.g. no evidence of disease, treatment-free interval, complete remission) in addition to survival, for a more precise definition of cure; real-world evidence database analyses in other settings (e.g., EU, Japan, etc..) could also be explored.

The validity of cure assumption needs to be confirmed by real world evidence.

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Poster

Narrated poster video

Supplementary material

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## Introduction

In diffuse large B-cell lymphoma (DLBCL), treatment advances now enable cure for an expanding subset of patients. Front-line treatments cure about 60% of patients, with those achieving cancer-free status at two years expecting a normal life expectancy. The increasing presence of curative treatment options in later lines, further increases the overall probability of cure for this disease.

Prevalence reflects both how often a disease occurs and how long patients survive.

**Figure 1: Traditional prevalence estimate approach**


Traditional prevalence estimates including cured patients may overestimate disease burden, potentially leading to misallocation of healthcare resources and treatment planning.

## Aim

Accurate prevalence estimates that account for cure are essential to reflect the true number of patients currently living with active disease. Using Surveillance, Epidemiology, and End Results (SEER) data, it was estimated that fewer than 200,000 persons in the U.S. were living with DLBCL in 2021.[1] This epidemiological modelling study provides a cure-adjusted prevalence estimate of DLBCL in the U.S. for 2025, based on recent SEER data (2018-2022).

## Methods

Using 2000-2022 SEER-21 research data (SEER*Stat Version: 9.0.40.1), DLBCL incidence and survival for patients with first primary DLBCL tumors were analyzed.[2]

- DLBCL cases were identified using the 2021 Lymphoid neoplasm recode classification system code 2(a)2.3, comprising DLBCL not otherwise specified, intravascular large B-cell lymphoma, primary effusion lymphoma and mediastinal large B-cell lymphoma.[3]

The number of incident cases of DLBCL in 2023-2025 was projected using linear extrapolation of historical incident cases, observed between 2000-2022.

Parametric Weibull survival models were fitted by diagnosis year in R, using the flexsurvreg package, with different parameters for each year. Standard extrapolation equations (Briggs et al. 2006[4]) were used to extrapolate survival to 2025, in a Microsoft Excel model.

A base case prevalence estimate of DLBCL patients in 2025 (without cure assumptions) was calculated as the total number of patients who were diagnosed each year since 2020, and remaining alive. With cure assumptions, patients assumed to be cured based on cure parameters were removed from the prevalence pool.

**Figure 2. Cure assumption was defined using the following three parameters**

| | |
|---|---|
| Timepoint (from first DLBCL diagnosis) at which patients can first be considered cured | 1 – 4 years |
| Proportion of patients who were cured at that time | 40 – 70% |
| Timepoint (from first DLBCL diagnosis) at which all survivors are considered cured | 5 or 10 years |

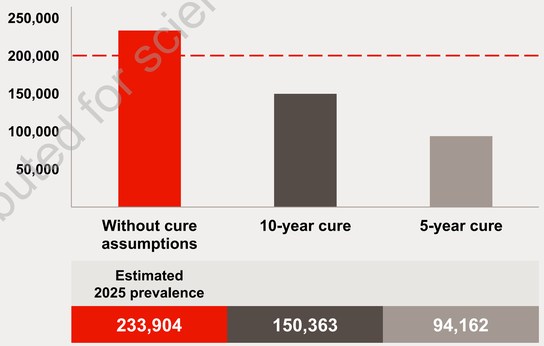
## Results

Without accounting for cure, the 2025 DLBCL prevalence estimate was **233,904.** After incorporating cure assumptions, prevalence estimates decreased substantially.

Under the most **conservative scenario** (no early cure, only DLBCL patients surviving at 10 years after diagnosis were considered cured), 2025 prevalence estimate was **150,363.**

When the survival timepoint **for cure was reduced to 5 years** (no early cure, all survivors considered cured at year 5), prevalence decreased further to **94,162.**

**Figure 3. Scenarios: No early cure, all survivors considered cured at 10 years, all survivors considered cured at 5 years**




The impact of adding **early cure parameters (40-70% cured at years 1-4)** on the survival cure assumptions are shown in Figure 4 and Figure 5.

When **early cure parameters were added to the 10-year survival cure assumption,** prevalence estimates decreased with prevalence estimates ranging from **79,199** (70% cured at year 1) to **123,190** (40% cured at year 4).

When **early cure parameters were added to the 5-year survival cure assumption,** prevalence estimates ranged from **62,338** (70% cured at year 1) to **89,469** (40% cured at year 4).

**Figure 4. All remaining survivors considered cured at year 10**

| Earliest year cure occurs | Cure percentage at this early timepoint | | | | | | |
|---|---|---|---|---|---|---|---|
| | 40% | 45% | 50% | 55% | 60% | 65% | 70% |
| 1 | 109,698 | 104,615 | 99,532 | 94,448 | 89,365 | 84,282 | 79,199 |
| 2 | 114,882 | 110,447 | 106,012 | 101,577 | 97,142 | 92,707 | 88,271 |
| 3 | 118,439 | 114,449 | 110,458 | 106,467 | 102,477 | 98,486 | 94,496 |
| 4 | 123,190 | 119,794 | 116,397 | 113,000 | 109,604 | 106,207 | 102,810 |

**Figure 5. All remaining survivors considered cured at year 5**

| Earliest year cure occurs | Cure percentage at this early timepoint | | | | | | |
|---|---|---|---|---|---|---|---|
| | 40% | 45% | 50% | 55% | 60% | 65% | 70% |
| 1 | 75,977 | 73,704 | 71,431 | 69,158 | 66,885 | 64,612 | 62,338 |
| 2 | 81,161 | 79,536 | 77,911 | 76,286 | 74,661 | 73,036 | 71,411 |
| 3 | 84,718 | 83,538 | 82,357 | 81,177 | 79,996 | 78,816 | 77,635 |
| 4 | 89,469 | 88,883 | 88,296 | 87,710 | 87,123 | 86,537 | 85,950 |

**References**

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**Category: 600s – Hematologic malignancy**

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