# Risk of mental health outcomes and peak risk periods post-hematologic cancer diagnosis in the United States

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## Key Takeaway

The importance of early and long-term mental health prevention and support post cancer diagnosis is one key aspect underscored by these findings

## Conclusions

There were consistently increased incidence rates of depressive and anxiety disorders at 3-years post-hematologic cancer diagnosis

Effect sizes were most pronounced at 30-days for the occurrence of any depressive and any anxiety disorder

Additional research should focus on improving mental health assessment and management in care of cancer patients

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https://www.congresshub.com/ASH2025/Oncology/ProductAgnostic/Beaulieu

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## Introduction

- According to the American Cancer Society and estimates using data derived from the National Cancer Institute's Surveillance Epidemiology and End Results (SEER) database, the lifetime risk of a person developing cancer (any cancer) is approximately 39-40% in the United States
- The lifetime risk of a person developing leukemia is about 1-2%, and for non-Hodgkin lymphoma (NHL), it is roughly 2%
- A considerable proportion of individuals diagnosed with cancer will develop a subsequent mental health condition
- Building from the work of Forbes et al. (2024), we sought to quantify the real-world and contemporary incidence of mental health conditions post-cancer diagnosis
- We also sought to identify populations and time periods where risk is more pronounced

## Methods

- Data were derived from Optum's de-identified Clinformatics® Data Mart Database (January 2016 through December 2024)
- Individuals with a leukemia or non-Hodgkin lymphoma (NHL) diagnosis were matched to individuals without a cancer diagnosis (1:1 nearest neighbor without replacement)
- With a standardized mean difference threshold of 0.25, this approach yielded adequate balance for most covariates
- Primary outcomes of interest included any depressive disorder and any anxiety disorder*
- A washout period of 365-days was used to help ensure that any observed outcomes were new-onset depressive and anxiety disorders
- Incidence rates (IRs) of depressive and anxiety disorders were calculated
- Adjusted hazard ratios (aHRs) with 95% confidence intervals (CIs) were derived from multivariate cox models
- We sought to examine risk conferred by cancer diagnosis at 30-days, 180-days, 1-year, and 3-years post-cancer diagnosis

## Results

- For the outcome of depressive disorders, each matched cohort was comprised of 80,224 individuals (**Table 1**)
- For the outcome of anxiety disorders 79,480 individuals remained in each cohort post-match

### Table 1. Baseline characteristics post matching

| | Depressive disorders N=80,224 | Anxiety disorders N=79,480 |
|---|---|---|
| **Age** | | |
| median (IQR) | 72 (65, 79) | 72.00 (65, 79) |
| 18-39 | 3,704 (4.6) | 3,618 (4.6) |
| 40-49 | 3,658 (4.6) | 3,587 (4.5) |
| 50-59 | 7,226 (9.0) | 7,140 (9.0) |
| 60-69 | 17,080 (21.3) | 16,970 (21.4) |
| 70-79 | 28,849 (36.0) | 28,519 (35.9) |
| 80-89 | 19,707 (24.6) | 19,646 (24.7) |
| **Sex at birth** | | |
| Female | 34,006 (42.4) | 33,581 (42.3) |
| Male | 46,218 (57.6) | 45,899 (57.7) |
| **Race/Ethnicity** | | |
| Asian | 2,276 (2.8) | 2,269 (2.9) |
| Black or African American | 7,815 (9.7) | 7,783 (9.8) |
| No matching concept | 26,384 (32.9) | 26,069 (32.8) |
| White | 43,749 (54.5) | 43,359 (54.6) |
| Hispanic or Latino | 6,582 (8.2) | 6,506 (8.2) |
| No matching concept | 25,619 (31.9) | 25,317 (31.9) |
| Not Hispanic or Latino | 48,023 (59.9) | 47,657 (60.0) |
| **Region** | | |
| Midwest | 18,159 (22.6) | 18,104 (22.8) |
| Northeast | 11,831 (14.7) | 11,566 (14.6) |
| South | 32,473 (40.5) | 32,088 (40.4) |
| Unknown | 241 (0.3) | 236 (0.3) |
| West | 17,520 (21.8) | 17,486 (22.0) |
| Diabetes | 24,149 (30.1) | 24,199 (30.4) |
| Dementia | 2,724 (3.4) | 2,797 (3.5) |
| Heart disease | 36,469 (45.5) | 36,174 (45.5) |
| Tobacco use disorder | 287 (0.4) | 301 (0.4) |
| Alcohol use disorder | 743 (0.9) | 759 (1.0) |
| Substance use disorder* | 20,733 (25.8) | 20,542 (25.8) |

*Excluding tobacco and alcohol

- At each time point (30-days, 180-days, 1-year, 3-years) incidence of depressive disorders was consistently elevated, and consistently higher among those with hematologic cancer as compared to those without cancer (**Figure 1**)

### Figure 1. Incidence of depressive disorders per 100 persons

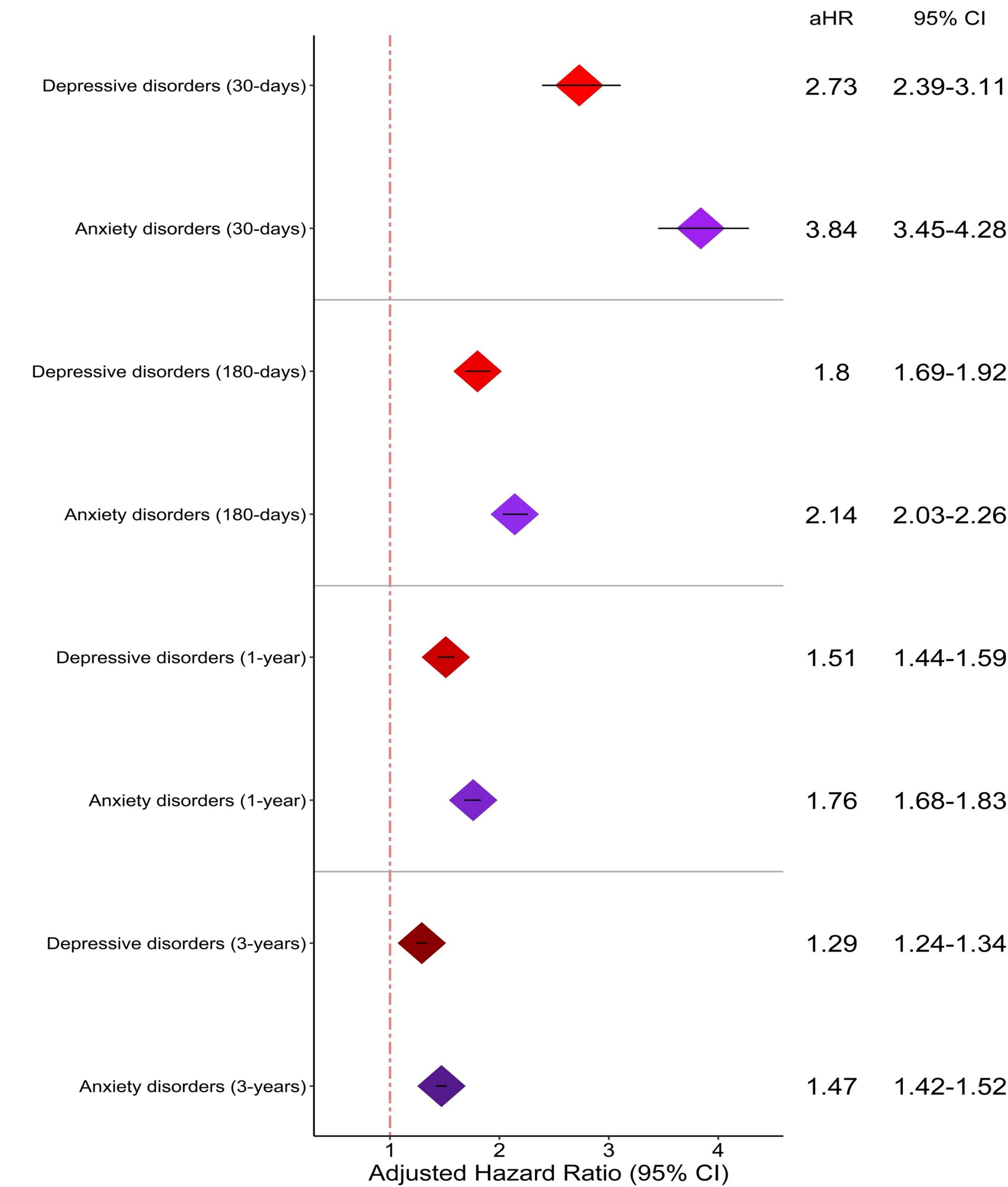| | Hematologic cancer diagnosis | No cancer diagnosis |
|---|---|---|
| **30-days** | 2.18 | 0.54 |
| **180-days** | 12.64 | 5.21 |
| **1-year** | 21.16 | 12.25 |
| **3-years** | 42.11 | 33.15 |

- A similar trend was observed for incidence of anxiety disorders (**Figure 2**)

### Figure 2. Incidence of anxiety disorders per 100 persons

| | Hematologic cancer diagnosis | No cancer diagnosis |
|---|---|---|
| **30-days** | 3.67 | 0.76 |
| **180-days** | 17.24 | 6.48 |
| **1-year** | 27.01 | 14.46 |
| **3-years** | 48.03 | 37.02 |

### Figure 3. A forest plot of adjusted hazard ratios for depressive and anxiety disorders post hematologic cancer diagnosis



| | aHR | 95% CI |
|---|---|---|
| Depressive disorders (30-days) | 2.73 | 2.39-3.11 |
| Anxiety disorders (30-days) | 3.84 | 3.45-4.28 |
| Depressive disorders (180-days) | 1.8 | 1.69-1.92 |
| Anxiety disorders (180-days) | 2.14 | 2.03-2.26 |
| Depressive disorders (1-year) | 1.51 | 1.44-1.59 |
| Anxiety disorders (1-year) | 1.76 | 1.68-1.83 |
| Depressive disorders (3-years) | 1.29 | 1.24-1.34 |
| Anxiety disorders (3-years) | 1.47 | 1.42-1.52 |

Adjusted Hazard Ratio (95% CI)

- For depressive disorders, there was a stepwise decrease in effect size, with effect size appearing most pronounced at 30-days post cancer diagnosis in the hematologic cancer cohort (**Figure 3**).
- The effect size was greater for anxiety disorders than was observed for depressive disorders at each time point.
- These findings should be viewed in the context of several limitations including but not limited to the potential for misclassification, unmeasured confounding and bias, coding and programming inaccuracies, and so forth.

**References**
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**Hematologic Malignancies**