Stage Migration and Survival Trends in Hodgkin Lymphoma, Non-Hodgkin Lymphoma, and Multiple Myeloma, 2000–2017: A SEER Analysis of 393,058 Cases

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BACKGROUND

Over the past two decades, the therapeutic landscape of Hodgkin lymphoma (HL), non-Hodgkin lymphoma (NHL), and multiple myeloma (MM) has been transformed by targeted agents, including rituximab, brentuximab-vedotin, and proteasome inhibitors. These advances have led to meaningful improvements in survival. However, whether this era of therapeutic optimism has been paralleled by earlier diagnosis remains unclear.

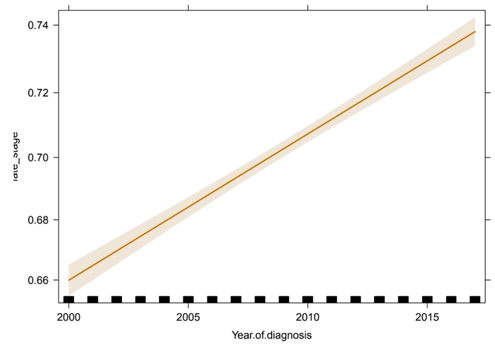
OBJECTIVE

To examine trends in stage at diagnosis and survival outcomes to assess whether gains in therapy have inadvertently shifted focus away from timely diagnosis.

METHODOLOGY

Using SEER-17 data (2000–2017), we identified 393,058 incident cases of HL (n=37,505), NHL (n=261,552), and MM (n=94,001) with known SEER Summary Stage (Localized, Regional, Distant). Rurality (Metro vs Non-Metro) and county-level income were used to explore sociodemographic gradients. Trends in late-stage disease (Regional+Distant) were evaluated using logistic regression and joinpoint analysis. Survival trends were analyzed with Kaplan–Meier curves and multivariable Cox regression.

Year of Diagnosis Effect plot



Stage Trends by Race (2000-2017)



KEYWORDS

Stage at Diagnosis, Survival Trends, Socioeconomic Disparities, SEER Registry

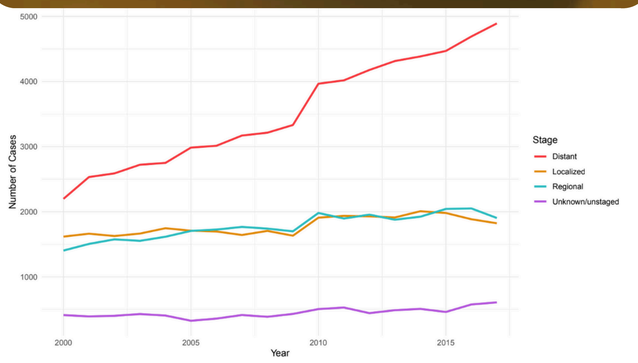
FINANCIAL DISCLOSURE

This author declares no competing financial interests.

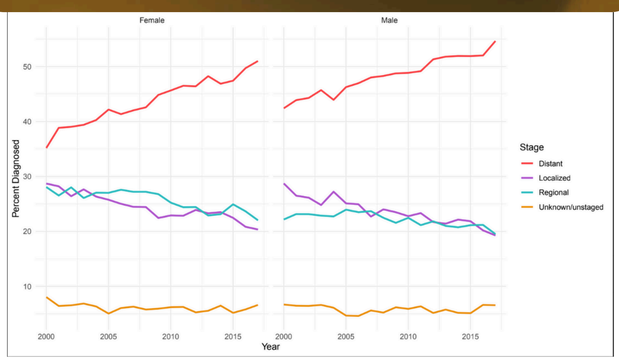
RESULTS

Late-stage presentation increased from 73% in 2000 to 80% in 2017 (adjusted OR per year = 1.016; 95% CI 1.014–1.017; $p < 0.0001$). This rise was most pronounced in rural counties (interaction OR = 1.008; $p = 0.0002$), while income did not significantly modify the trend. Joinpoint analyses identified inflection points in 2001 (HL), 2002 (NHL), and 2014 (MM), reflecting disease-specific shifts. Despite later stage at diagnosis, overall survival improved over time (HR per year = 0.973; $p < 0.0001$), with clear survival benefits for localized (HR = 0.56) and regional (HR = 0.67) versus distant-stage disease. Rural residence (HR = 1.05) and lower income (HR ≥1.15 vs ≥$110k) remained adverse prognostic factors.

Raw Case Counts by Stage (2000-2017)



Stage Trends by Sex (2000-2017)



CONCLUSION

In conclusion, survival has improved in HL, NHL, and MM, but not because of earlier detection. Instead, gains reflect therapeutic progress, while stage at diagnosis has worsened, especially in rural populations. These findings suggest that progress in treatment may have inadvertently deprioritized early diagnosis. Late-stage disease still requires intensive management and remains associated with poorer outcomes. Equitable strategies to enhance timely diagnosis are urgently needed to ensure that therapeutic advances translate into broad, durable survival gains.

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