

Hospital AML Volume and Inpatient Mortality Among Acute Myeloid Leukemia Hospitalizations With Sepsis: A National Inpatient Sample Analysis

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INTRODUCTION

Patients hospitalized with acute myeloid leukemia (AML) frequently develop sepsis and critical illness requiring complex multidisciplinary care. However, the relationship between hospital AML volume and inpatient mortality remains poorly characterized nationally.

METHOD

A survey-weighted analysis of the National Inpatient Sample (2016–2023) was conducted among adult AML hospitalizations identified using ICD-10-CM codes for AML not in remission or relapse (C92.0*). Sepsis was defined using ICD-10-CM codes for sepsis, severe sepsis, and septic shock (A41*, R65.20, R65.21). Hospital AML volume was estimated using annual AML hospitalization frequency and categorized into quartiles. Primary outcome was in-hospital mortality. Secondary outcomes included ICU-level intervention burden, multiorgan failure, length of stay (LOS), hospitalization charges, and cost. Multivariable survey-weighted logistic regression adjusted for demographics, hospital characteristics, year, and Elixhauser comorbidity burden.

CONCLUSIONS

Higher AML-volume hospitals are independently associated with lower inpatient mortality among AML hospitalizations, suggesting that specialized leukemia expertise and supportive care infrastructure may improve outcomes in critically ill AML populations.

RESULTS

The weighted cohort comprised 486,490 AML hospitalizations (unweighted n=97,298), of which 19.6% involved sepsis. Higher-volume AML centers demonstrated significantly lower inpatient mortality. Compared with the lowest AML-volume quartile, adjusted mortality was lower at quartile 2 (OR 0.92, 95% CI 0.86–0.97, p=0.005), quartile 3 (OR 0.78, 95% CI 0.73–0.83, p<0.001), and quartile 4 (OR 0.73, 95% CI 0.68–0.79, p<0.001). Teaching hospitals were also independently associated with lower mortality (OR 0.84, 95% CI 0.74–0.94, p=0.003). AML hospitalizations with sepsis demonstrated higher mortality (24.5% vs 4.8%, p<0.001), greater ICU-level intervention burden (18.0% vs 2.3%, p<0.001), and higher multiorgan failure burden (31.7% vs 6.0%, p<0.001). Mean LOS was longer among sepsis-associated hospitalizations (15.9 vs 10.6 days, p<0.001), while hospitalization charges (\$253,347 vs \$137,430, p<0.001) and costs (\$71,443 vs \$41,113, p<0.001) were also increased.

REFERENCES

- 1. Agency for Healthcare Research and Quality. (2016-2023). *National Inpatient Sample (NIS)*. Healthcare Cost and Utilization Project (HCUP), U.S. Department of Health and Human Services.