Clinical Predictors of In-Hospital Mortality Among Patients Hospitalized with Acute Myeloid Leukemia: A National Inpatient Sample Analysis (2018-2023)

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Introduction

- Acute myeloid leukemia (AML) is an aggressive hematologic malignancy associated with substantial inpatient morbidity and mortality.
- Hospitalized AML patients frequently have multiple medical comorbidities and are at increased risk for infectious complications that adversely affect outcomes.
- Contemporary nationwide data identifying independent predictors of inpatient mortality remain limited.
- We evaluated demographic and clinical predictors of in-hospital mortality among AML hospitalizations using a nationally representative U.S. database.

Methods

- Design: Retrospective cohort study using the National Inpatient Sample Analysis (2018-2023)
- Population: Adult hospitalizations (age > 18 years old) with AML (C92.0),
- Primary Outcome: In-Hospital Mortality
- Survey-weighted multivariate logistic regression adjusted for demographics, age, sex, heart failure, chronic kidney disease, diabetes mellitus, hypertension, obesity, COPD, liver disease, stroke/TIA, coronary artery disease.myocardial infarction, peripheral disease, and sepsis.

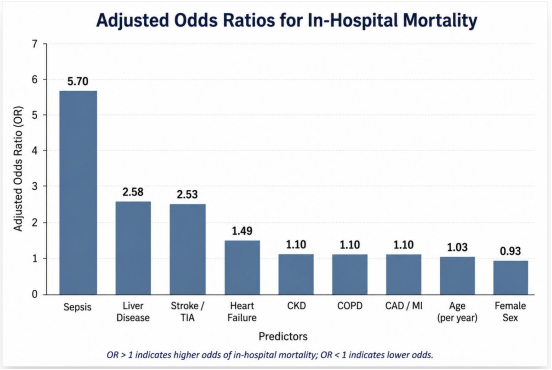
Results

- 77,255 AML hospitalizations representing approximately 386,190 weighted hospitalizations nationwide.
- Overall in-hospital mortality: 8.6%
- Increasing age independently predicted mortality (OR 1.03/year, p<0.001).
- Female sex was associated with slightly lower mortality (OR 0.93, p=0.014).
- Sepsis was the strongest predictor of inpatient mortality (OR 5.70, p<0.001).
- Liver disease, stroke/TIA, heart failure, CKD, COPD, and CAD/MI independently increased mortality.
- Diabetes mellitus and peripheral arterial disease were not significantly associated with mortality.
- Hypertension and obesity demonstrated lower adjusted mortality.

Results Continued

Adjusted Predictors of In-Hospital Mortality

Predictor	Adjusted OR	p-value
Sepsis	5.70	<0.001
Liver disease	2.58	<0.001
Stroke / TIA	2.53	<0.001
Heart failure	1.49	<0.001
Chronic kidney disease	1.10	0.012
COPD	1.10	0.023
CAD / MI	1.10	0.011
Age, per year	1.03	<0.001
Female sex	0.93	0.014



Key Finding:

Sepsis was associated with nearly sixfold higher odds of inpatient mortality (adjusted OR 5.70), making it the strongest independent predictor among hospitalized AML patients.

Discussion

- Sepsis was the strongest independent predictor of inpatient mortality, increasing the odds of death by nearly sixfold.
- Liver disease and cerebrovascular disease were also strongly associated with adverse inpatient outcomes.
- Cardiovascular comorbidities, particularly heart failure, remained important independent predictors of mortality.
- Increasing age was associated with progressively higher mortality risk.
- The inverse association observed with hypertension and obesity may reflect residual confounding or the "obesity paradox" reported in hospitalized populations.
- Strengths include a nationally representative database and survey-weighted multivariable adjustment.
- Limitations include reliance on administrative coding, inability to establish causality, and lack of laboratory, treatment, and disease severity data.

Clinical Implications & Conclusion

- Hospitalized AML patients remain at substantial risk for inpatient mortality (8.6%).
- Early identification and aggressive management of sepsis are essential to improve outcomes.
- Liver dysfunction and cerebrovascular disease identify patients at particularly high risk.
- Cardiovascular comorbidities should be incorporated into inpatient risk stratification.
- These findings support early multidisciplinary management and close monitoring of high-risk AML patients.

References

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