

Time Matters: The Impact of Emergency Department Boarding on In-Hospital Mortality Among Oncology Patients

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Background

For cancer patients, emergency departments (ED) serve as critical access points for urgent and acute care. Optimizing transitions between emergency and oncology/hospital teams is increasingly recognized as vital for ensuring continuous, safe care and minimizing patient risks.¹ In the general population, prolonged ED boarding has been linked to worse clinical outcomes, including increased mortality;^{2,3} however, its impact has not been examined in patients with cancer. This study examined the association between boarding time and mortality in a cancer center ED.

Methods

Adult patients presenting to The University of Texas MD Anderson Cancer Center ED between March 3, 2016, and December 31, 2022, who were subsequently admitted to the hospital were included in this retrospective study. Descriptive statistics were used to summarize the main patient and clinical characteristics. Univariate and multivariable logistic regression were performed to evaluate the associations between boarding duration and in-hospital mortality.

Results

Among 43,308 included patients, the median boarding duration was 2.7 hours (interquartile range, 1.5–5.2). In-hospital mortality was 7.0% (n=3,029), with mortality rates of 6.9% at 14 days and 13.7% at 30 days following ED presentation. The median age and Charlson comorbidity index of the final cohort of unique patients were 62 years (IQR [interquartile range] =52–71) and 4 points (IQR=2–6), respectively. Sex was nearly equally distributed, with 52.0% male and 48.0% female. Most of the cohort was White (70.5%), Black or African American (12.8%) or Asian (5.4%). Most patients were not Hispanic or Latino (81.5%). (≤4 hours). Patients boarded for ≥5.2 hours experienced a significantly higher in-hospital mortality than those boarded for <1.5 hours (adjusted OR, 1.24; 95% CI, 1.11–1.38; P<0.001; Table 1) after controlling for

Prolonged ED boarding time longer than 4 hours was independently associated with increased in-hospital mortality among cancer patients

Table 1. Multivariable analysis of the association between clinical and demographic variables and in-hospital mortality

Variable	Dichotomous model		Quartile model	
	AOR* (95% CI)	P value	AOR* (95% CI)	P value
Charlson comorbidity index	1.09 (1.07-1.1)	<0.001	1.09 (1.07-1.1)	<0.001
Cancer type				
Hematologic	Reference		Reference	
Solid	0.79 (0.72-0.87)	<0.001	0.79 (0.72-0.86)	<0.001
Undetermined at time of visit	0.98 (0.84-1.13)	0.759	0.97 (0.84-1.13)	0.734
Boarding time, two groups				
Short (≤ 4 hours)	Reference		-	
Long (> 4 hours)	1.12 (1.03-1.21)	0.005	-	-
Boarding time, quartile				
Q1 (<1.5 hours)	-	-	Reference	
Q2 (≥1.5-<2.7 hours)	-	-	1.14 (1.02-1.28)	0.017
Q3 (≥2.7-<5.2 hours)	-	-	1.16 (1.04-1.29)	0.01
Q4 (≥5.2 hours)	-	-	1.24 (1.11-1.38)	<0.001
Acuity/Emergency Severity Index				
Level 3	Reference		Reference	
Level 2	1.74 (1.61-1.87)	<0.001	1.74 (1.61-1.88)	<0.001
Level 1	3.45 (1.49-7.01)	0.001	3.47 (1.5-7.06)	0.001
Other or unspecified	0.66 (0.33-1.19)	0.206	0.67 (0.33-1.19)	0.210

* AOR: odds ratio adjusted for age, sex, race and active treatment

common demographics, comorbidities, acuity and cancer related factors. Similar association was observed when boarding time was dichotomized at 4 hours, where boarding times >4 hours were associated with increased in-hospital mortality (adjusted OR, 1.12; P=0.005; Table 1) compared to shorter boarding time (≤ 4 hours).

Conclusions

This study found that longer ED boarding times were associated with higher in-hospital mortality among cancer patients, with patients boarded ≥5.2 hours experiencing 24% higher in-hospital mortality compared to those boarded <1.5 hours. These findings highlight the need to streamline admission processes and optimize care transitions to reduce boarding times and improve outcomes for cancer patients.

References

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