

The association of emergency department (ED) length of stay with adverse events in African-American patients transitioning from the ED to the inpatient setting



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INTRODUCTION

- Adverse events (AEs) occurring during transitions of care are considered a major public health concern.
- AEs during transitions from the ED to the hospital are understudied, particularly in African American (AA) patients who are more likely to experience preventable AEs.
- Data regarding the association of length of stay (LOS) with AEs in AA patients is limited.

AIM

Investigate the association of LOS with AEs in AA patients transitioning from the ED to the inpatient setting.

METHODS

Study Setting

- Detroit Receiving Hospital and Sinai-Grace Hospital

Study Sample and Data Collection

- Prospective cohort study with AA patients (n=67) admitted to the ED between Aug. 2020 – Jan. 2022.
- A trained nurse conducted bedside interviews and reviewed patient EHR.
- Two ED physicians independently identified AEs.

Measures

- LOS was categorized as ≤ 5 days, 6-10 days, and ≥ 11 days.

Statistical Analysis:

- Descriptive statistics were calculated
- Group differences were examined:
 - Chi-square test/Fisher's exact test
 - Independent-Sample t-test/Mann-Whitney test
- Multiple logistic regression
- SPSS software for Windows version 28.0.

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RESULTS

Characteristics of AA patients

- Age (M±SD): 52.6±13.8
- Sex: 46.3% female
- Education level: 53.8% ≤High school
- Household income: 68.7% <\$25,000

Factors Associated with AE Incidence in Bivariate Analysis

- Education level
- LOS

Table 1. AEs categorized as preventable, ameliorable, or neither

	Total	Preventable AEs	Ameliorable AEs	Non-preventable and non-ameliorable AEs
Number of patients	67			
Patients with an AE	13			
Incidence rate	19.4%			
Number of AEs*	13			
Overall	13	10 (76.9%)	3 (23.1%)	0 (0.0%)
Medication errors	6	3 (50.0%)	3 (50.0%)	0 (0.0%)
Management errors	5	5 (100.0%)	0 (0.0%)	0 (0.0%)
Diagnostic errors	2	2 (100.0%)	0 (0.0%)	0 (0.0%)
Serious AEs (yes%)	6	5 (83.3%)	1 (16.7%)	0 (0.0%)

Note: *The number of AEs exceeds the number of unique patients with adverse events because patients can have more than one adverse event.

Table 2. Multiple logistic regression model for the risk of experiencing an AE

	B	aOR	95% CI		p
			Lower	Upper	
Age	-0.02	0.98	0.92	1.04	.575
Female sex	0.39	1.47	0.28	7.72	.649
Education level	0.89	2.43	0.83	7.07	.104
Length of stay in ED (days)					
≤ 5 days (reference)	-	-	-	-	-
6-10 days	-0.19	0.83	0.08	8.67	.877
≥ 11 days	3.07	21.63	2.18	214.82	.009
Number of discharge diagnoses	-0.08	0.92	0.66	1.29	.639

Note: aOR=Adjusted odds ratio. CI=Confidence interval.

CONCLUSION

Main findings

- The incidence of AE.
- Those with LOS ≥ 11 days were 21.63 times more likely to experience AEs (p=0.009), after controlling for age, sex, education level, and the number of discharge diagnoses.

Conclusion

- Prolonged LOS in the ED is significantly associated with AEs in AA patients in the inpatient setting.
 - Increased opportunity for error
 - Staff shortages and lack of bed availability
 - Crowding environment in the ED
 - Time pressures

Clinical implications

- AEs during transitions of care can result in serious morbidity, increase health care utilization, decreases in function, poor patient experience of care, and family caregiver burden.
- Understanding the roles of potentially contributing factors such as LOS in the ED will significantly help efforts to improve the delivery of healthcare by enabling hospitals and their EDs to develop interventions to improve the transition of patients from the ED to the inpatient setting.
- We anticipate that our study will contribute to substantial improvements in patient safety during this vulnerable transition.

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