Geriatric Trauma Patients in the Emergency Department: Length of Stay, Intensity of Care, and Post ED Destination

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INTRODUCTION

Research on emergency department length of stay (EDLOS) suggests that increased LOS may result in worse patient outcomes and increased overall LOS. Additional research suggests that increased age may not only result in lower intensity of care for some patients but might also increase EDLOS. For geriatric trauma patients, intensity of care and EDLOS may be different from non-geriatric patients. Given the nature of geriatric traumatic injury, it is important to understand if improvements can be made in geriatric trauma services.

BACKGROUND

The geriatric population more frequently uses EDs as compared to many other groups. Once in the ED, they have more tests, longer lengths of stay, utilize more resources, and have increased frequencies of admission.

Treatment disparities are hard to ascertain due to the unique combination of trauma, advanced age, physiology, unique neurological issues, and chronic illness complicates treatment for many geriatric trauma patients.

Few studies utilize data from Level 1 trauma centers or academic medical centers. No existing studies discuss the importance of intensity of service in the ED as related to treatment disparities.

OBJECTIVES

This study tested the following hypotheses:

1. Geriatric trauma patients, as compared to non-geriatric trauma ED patients, are more likely to have longer lengths of stay in the emergency department.
2. Geriatric trauma patients, as compared to non-geriatric trauma ED patients, receive less intensive care in the emergency department.
3. Geriatric trauma and non-geriatric trauma patients ED patients differ significantly in post-ED destination upon admission to the hospital.

METHODS

A retrospective descriptive study utilizing five years (2006-2010) of trauma registry data from a Level 1 trauma hospital was conducted, including patient demographics, injury information, EDLOS, post ED destination information, and consultations during ED stay. Patients aged 65 and older were compared to patients less than 65 years of age. Trauma patients were excluded from analysis if they were younger than 18 years of age or if they were directly admitted to the hospital (bypassing the ED). Only blunt force traumas were examined due to the age disparity in penetrating injuries.
Intensity of ED services was calculated such that patients receiving blood products or a CT or being intubated in the ED were scored 1 additively (no incidence = 0, blood products + CT + intubation = 3). Data on intensity of service indicates most patients from both age groups received one of these services.

RESULTS

Descriptive data show:

Descriptive Data					
Variable		18-64		65+	
		n	%	n	%
Sex	Female	660	27.7	857	58.3
	Male	1721	72.2	612	41.7
	Missing	2	.1		
Race	Asian	77	3.2	43	2.9
	Black	464	19.5	123	8.4
	White	1672	70.2	1282	87.3
	Other/Unknown/Missing	2	0.1	1	0.1
Age	Minium	18		65	
	Maximum	64		101	
	Mean	40.27		79.60	
	SD	13.830		8.158	
	N	2383		1469	

- A greater percentage of males in the 18-64 years old group.
- Most patients in both groups were identified as white.

	18-64					65+				
	N	Minimum	Maximum	Mean	Std. Deviation	N	Minimum	Maximum	Mean	Std. Deviation
ISS	2282	1	75	12.02	9.963	1450	1	75	13.20	8.338
GCS	2313	3	15	13.91	3.069	1435	3	15	13.88	2.982
Total LOS	2383	0	200	7.61	11.028	1469	0	112	9.61	10.091
ED LOS in Minutes	2383	0	59	28.70	17.554	1469	0	59	29.47	17.505

- ISS and GCS scores were similar for both groups.
- Hospital length of stay (LOS) was two days longer for the 65+ age group .
- EDLOS was nearly identical.

RESULTS

Intensity of ED Services and Post ED Destination, 2006-2010					
Variable		18-64		65+	
		n	%	n	%
Intensity of ED Services	0	429	18.0	156	10.6
	1	1839	77.2	1222	83.2
	2	114	4.8	90	6.1
	3	1	.0	1	.1
Post ED Destination	OR (Including Pre-Op Area)	380	15.9	87	5.9
	Med/Surg Unit (Including L & D)	469	19.7	155	10.6
	Step Down Unit/Intermediate (Including Interventional Angiography)	1035	43.4	755	51.4
	ICU/Critical Care Unit	471	19.8	458	31.2
	Other (Including Home, Death, Prison, Transfer)	28	1.2	14	1.0

A Mann-Whitney *U* test was performed to test Ho_1. Results indicated no significant difference between the groups in ED LOS (p=.184). Chi-Square analysis was performed for $Ho_{2\ \&\ 3}$. Results for Ho_2 are not included here due to several cells with lower than expected cell count which is most likely the result of patient transfer to the hospital having received ED services somewhere else, creating an artificially low value for intensity of services. Due to few patient deaths and few patient discharges to home or other locations from the ED, data analysis was limited to post ED destinations in the hospital.

Hypothesis Testing, Ho_1	
	ED LOS in Minutes
Mann-Whitney U	1705738.500
Wilcoxon W	4546274.500
Z	-1.330
Asymp. Sig. (2-tailed)	.184

Hypothesis Testing, Ho_3			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	183.457	3	.000
N of Valid Cases	3810		

Results indicated a significant difference in post ED destination with patients aged 19-64 years more likely to go to OR and med/surg and patients over 65 more likely to go to critical care.

CONCLUSION

Trauma registry data from a level I trauma center indicate no significant differences in EDLOS but significant differences in post ED destination for patients in different age groups.

NEXT STEPS

Further data analysis is warranted and should focus on transfer patients, including services received at other hospitals and in transit.