# Arrival Time Outside of Standard Work Hours Increases Risk of Avoidable Transfer in Pediatric Trauma

MaKayla L. O'Guinn, DO Research Resident, Division of Pediatric Surgery

Alice M. Martino, MD; Shadassa Ourshalimian, MPH; Mary C. Holliday-Carroll, BSN, RN, TCRN; Pradip P. Chaudhari, MD; Ryan Spurrier, MD



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### **DISCLOSURE**

· Authors have no disclosures



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## **BACKGROUND**







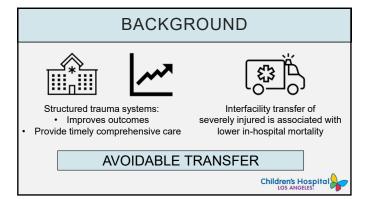
Structured trauma systems:
• Improves outcomes

Provide timely comprehensive care

Interfacility transfer of severely injured is associated with lower in-hospital mortality

What about the unnecessary use of interfacility transfer in trauma patients?





**AVOIDABLE TRANSFER** 

Undergoes an interfacility transfer



Length of stay < 48 hours



Procedures or invasive interventions



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## **OBJECTIVE**

We aimed to characterize factors of pediatric trauma encounters that were associated with avoidable transfer

#### **Hypothesis**

Avoidable transfers would be associated with patient age, injury mechanism and time of arrival.



## **METHODS**

Retrospective, multicenter study using the LA County trauma registry January 1, 2010 to December 31, 2021

#### Avoidable transfer

Interfacility transfer

LOS < 48 hours without

Procedures or invasive interventions

#### Non-avoidable transfer

Interfacility transfer

LOS > 48 hours or

Procedures or invasive interventions



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#### **ANALYSIS**

Bivariate analysis: Mann-Whitney U test or chi-square tests

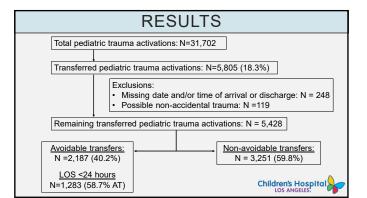
Associated predictors identified using multivariable logistic regression

Sensitivity analysis:

Redefined avoidable transfer as LOS < 24hrs without procedures or invasive interventions



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DIFFERENT	RESOURCE	UTILIZAT	ION
	Non-avoidable Transfer N=3251 (%)	Avoidable Transfer N=2187 (%)	p-value
Transport	2227 (22.2)	4000 (00.0)	<0.0001
Ground EMS	2607 (80.2)	1806 (82.6)	
Air EMS	309 (9.5)	112 (5.1)	
Private	14 (0.4)	18 (0.8)	
Other	321 (9.9)	251 (11.5)	
Receiving Department			0.0002
ED	2127 (65.4)	1538 (70.3)	
Direct admit	1071 (32.9)	619 (28.3)	
Injury Severity Score			
Median [IQR]	9 [4-12]	5 [4-9]	<0.0001
		Children's H	lospital

PREDICTORS O	F AVOIDABLE	TRANSFER
	OR (95% CI)	p-value
Age*	0.95 (0.94 - 0.97)	<0.0001
Mechanism of Injury		
Pedestrian	Ref	
MVC	1.44 (1.05 to 1.98)	0.026
Fall From Elevation*	3.20 (2.35 to 4.39)	<0.0001
Fall at Ground level*	2.48 (1.89 to 3.28)	<0.0001
Assault	1.32 (0.90 to 1.93)	0.1547
Firearm Injuries*	1.74 (1.15 to 2.62)	0.0086
Self-Inflicted	0.62 (0.36 to 1.04)	0.0785
Sports/Recreational *	2.36 (1.78 to 3.16)	<0.0001
		Children's Hospital

PREDICTORS O	F AVOIDABLE	TRANSFER
	OR (95% CI)	p-value
Time of Presentation		
Early Hours * (00:00 to 07:59)	1.48 (1.24 to 1.76)	<0.0001
Normal Hours (08:00 to 16:59)	Ref	
Evening Hours * (17:00 to 23:59)	1.75 (1.47 to 2.07)	<0.0001
		Children's Hospital

### **LIMITATIONS**

- Categorization of injury mechanisms could have resulted in some loss of granularity
- Exclusion of encounters suspected as non-accidental trauma



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### SUMMARY

Inverse relationship between patient age and the odds of an avoidable transfer

Mechanism of injury may be a stronger predictor of avoidable transfer than injury severity

Increased odds of avoidable transfer with an arrival outside of standard work hours



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## **FUTURE INITIATIVES**

How do we reduce avoidable transfer of pediatric trauma? Implementation of collaborations

Improve collaborations and support referring facilities:

Virtual consultations

Align with need of referring facilities



