Right Patient, Right Place, Right Time: Field Triage and Direct Transfer to Level I Trauma Centers

Autumn Hoffman, Benjamin Gough DO, Matthew Painter MD, John Getchell RN, Mark Cipolle MD PhD
Christiana Care Health System, Newark, DE

INTRODUCTION

- Trauma patients are sent to Level I, II, or III trauma centers based on their field triage assessment (an assignment of patient urgency)
- Delaware has one Level I and seven Level III trauma centers
- Level I provides the highest level of care
- Delaware state field triage guidelines differ from the CDC's recommended guidelines and may be allowing for "undertriage"
- Undertriage delays the patient's needed care and can potentially lead to worse outcomes, including death
- **Hypothesis**: Direct transfer to appropriate level of care leads to better patient outcomes
- **Research Objective:** To determine the effect of undertriage on patients by assessing outcomes related to their initial triage

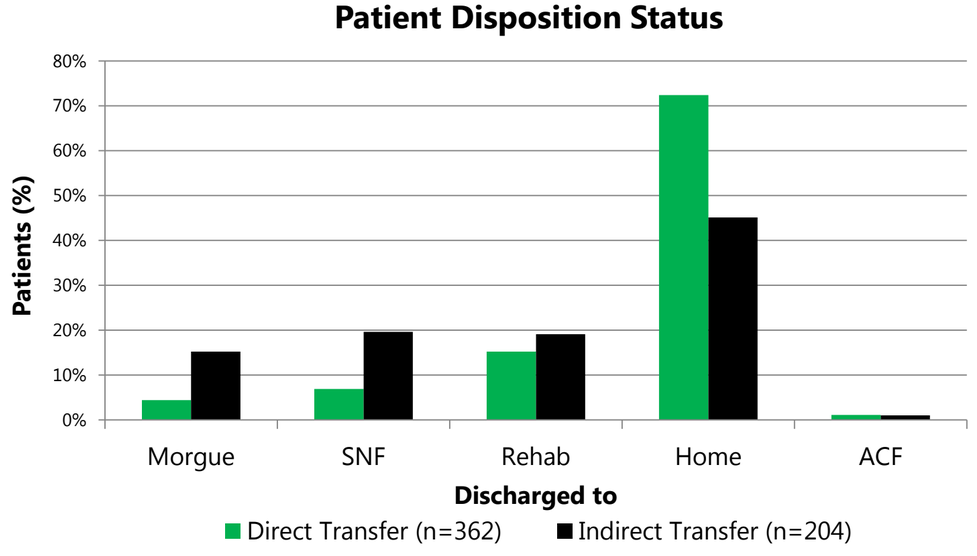
MATERIALS & METHODS

- Retrospective cohort of trauma patients in Kent and Sussex counties from 2013 to 2017 who required transfer to a Level I trauma center
- **Inclusion Criteria:** patients meeting 2011 CDC [recommended] guidelines for field triage of injury
- **Exclusion Criteria:** burn-related injuries, minors, DOA, no trauma activation
- **Outcomes of interest:** hospital mortality, length of stay, other complication, and disposition status
- **Analysis:** Descriptive statistics including cross tabulations and mean comparisons were used to analyze the data

RESULTS

Patient Demographics (n=566)	Direct Transfer (n=362)	Indirect Transfer (n=203)	P-value
Age, mean (SD)	43.6 (18.5)	53.7 (21.5)	<0.001
Male, n (%)	249 (69)	143 (70)	0.75
Penetrating Injuries (%)	19 (7.0)	23 (14.7)	0.50
Injury Severity Score, mean (SD)	13.3 (10.8)	18.7 (11.6)	0.14
Glasgow Coma Score, mean (SD)	13.5 (3.5)	12 (4.6)	<0.001

Patient Outcomes (n=566)	Direct Transfer (n=362)	Indirect Transfer (n=204)	P-value
Mortality, n (%)	16 (4.4)	31 (15.2)	<0.001
Hospital Length of Stay (days), mean (SD)	9.4 (15.3)	13.6 (21.9)	0.01
ICU Length of Stay (days), mean (SD)	7.4 (8.1)	7.7 (9.4)	0.98
Craniotomies, n (%)	11 (3.0)	28 (13.7)	<0.001
Acute Kidney Injury, n (%)	3 (0.8)	3 (1.5)	0.47
Deep Vein Thrombosis, n (%)	7 (1.9)	9 (4.4)	0.09
Catheter Associated Urinary Tract Infection, n (%)	2 (0.6)	1 (0.5)	0.92
Compartment Syndrome, n (%)	3 (0.8)	1 (0.5)	0.64
Cerebrovascular Accident, n (%)	4 (1.1)	6 (2.9)	0.11
Surgical Site Infection, n (%)	0 (0%)	0 (0)	-
Pneumonia, n (%)	9 (2.5)	10 (4.9)	0.13



CONCLUSIONS

- Indirect patients tended to be older with a lower GCS than the direct transfer patients
- Indirect transfer patients had a longer hospital length of stay, significantly more craniotomies, and DVT due to injury
- Indirect transfer patients showed higher rates of mortality than the direct transfer patients
- Direct transfer patients were much more likely to be discharged home

Next Steps:

- Complete an in depth comparative analysis of propensity matched data
- Prepare manuscript

CLINICAL IMPLICATIONS

- Ensuring compliance to federal regulations for field triage will reduce rates of undertriage and improve patient outcomes.

LIMITATIONS

- Single institution study
- Different documentation procedures in 2013-2014
- Imbalances in patient characteristics may affect outcomes

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