Patient-level risk factors associated with pediatric trauma mortality have a stronger influence on outcomes within smaller facilities

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INTRODUCTION

- ***Trauma is a major cause of pediatric mortality in the United States, where the death rate among pediatric patients suffering from unintentional trauma is twice that of mortality rates in other developed countries.***
- Facility-level variations have been identified in pediatric trauma mortality, and must be addressed in order to improve and standardize care.
- Evidence on the independent association between facility bed size and pediatric trauma outcomes is mixed.
- It is possible that the significance of facility volume is dependent on patient or injury characteristics

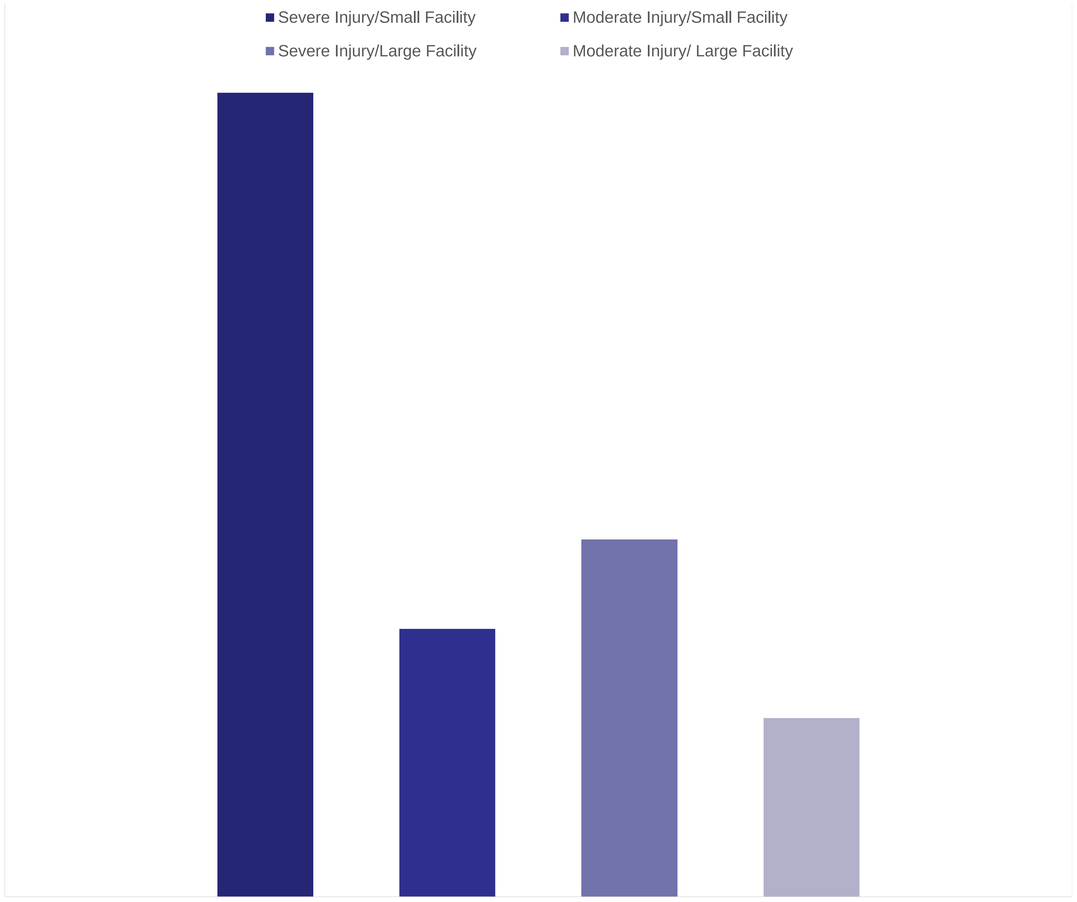
STUDY AIM

- Prior studies have investigated the independent effect of facility bed size. Our study seeks to determine if patient risk factors (i.e: injury severity) have a greater influence on mortality at smaller facilities, compared with larger facilities.

HYPOTHESIS

- We hypothesize that patient risk factors (demographics, injury severity, injury mechanism, transfer status, and insurance coverage) will have a stronger impact on mortality at smaller trauma centers
- We anticipate patient risk factors to matter more for mortality at smaller centers due to a lack of higher quality equipment, decreased number of staff members, and a decreased provider to patient ratio.

HYPOTHESIZED MORTALITY RISK AT LARGE AND SMALL FACILITIES IN PATIENTS WITH MODERATE AND SEVERE INJURY



RESULTS OVERVIEW

TOTAL NUMBER OF PATIENTS	151,675
TOTAL NUMBER TREATED AT A FACILITY WITH >400 BEDS	83,745 (55%)
TOTAL NUMBER TREATED AT A FACILITY WITH >600 BEDS	41,136 (27%)
OVERALL IN-HOSPITAL MORTALITY RATE	1,262 (0.8%)

METHODS

- ***Deidentified data will be obtained from the Trauma Quality Programs (TQP) database, representing data collected by trauma centers participating in the Trauma Quality Improvement Program (TQIP) and Pediatric TQIP.***
- Data will be compared between groups using Chi-square tests for categorical variables, and t-tests for continuous variables.
- **Primary Independent Variable**: Facility Bed Size
  Large: >600 beds
  Small/Medium: ≤600 beds
- We will use logistic regression to evaluate factors associated with mortality.
- **Other facility characteristics to be evaluated:** trauma center level, and pediatric vs. adult trauma center designation, with pediatric centers defined as those participating in the pediatric TQIP.
- **Patient-level characteristics to be evaluated:** demographics, primary injury mechanism, injury severity, transfer status, and insurance coverage.
- **Effect modification** analysis will allow us to see how the effects of bed size vary among patients with different characteristics (i.e: bed size has a more significant influence on patients with severe injury when compared to patients who have less severe injuries.).

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