

A Statewide Survey of Institutional Trauma Human Resource Allocation and Associated Patient Mortality

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Introduction:

Excellent trauma care relies on an excellent trauma system. It requires a coordinated, multidisciplinary approach to the care of the victim. As it relates to patient mortality, who should comprise that multidisciplinary team and the criteria to activate it has not been well described.

Study Objectives:

In this study, we sought to determine the allocation of trauma staff who respond to an injured trauma patient in trauma centers across the State of Pennsylvania (PA) for differing triage levels. We also sought the initial mortality data for trauma activated patients.

Methods:

After IRB approval, statewide data were gathered from trauma centers through the Pennsylvania State Trauma Systems Foundation (PTSF). PTSF maintains records of resource allocation as part of the application and renewal process for trauma accreditation. Anonymous institutional data collected included all personnel who respond to trauma I codes (highest level of activation), trauma II codes, and trauma consults (non-trauma activated patients). Patient outcome data from each institution were also included. Data included were for the calendar year 2008.



Results:

PTSF provided data on 32 certified trauma centers. Statistically significant differences were noted in the distribution of the staff required to respond to different trauma triage levels, with the trauma I activation more likely to have anesthesia, a trauma surgeon, CRNA, respiratory therapy and blood bank (all $p < 0.001$) than trauma II or consults. Other staff with $p < 0.05$ more likely to respond to trauma I were OR RN, ICU RN, RN director, OR physicians, security and social work. ED physicians were less likely to respond to trauma I ($p = 0.23$). Figure 1 depicts that there is no linear relationship between ISS score and mortality in the ED.

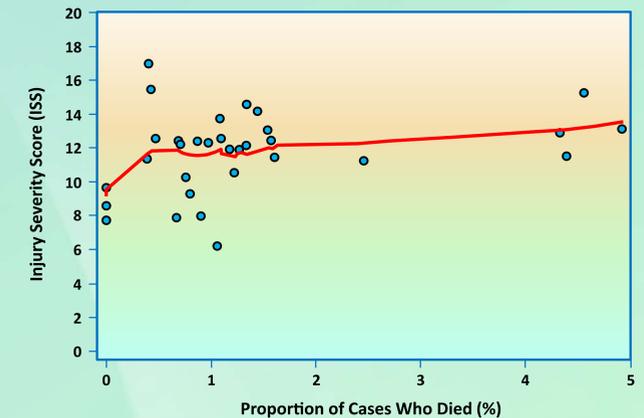


Figure 1. Scatterplot of Injury Severity Score (ISS) and the proportion of patients who died in the Emergency Department of the presenting institution with smoothed Lowess curve.

Conclusion:

Within PA, there is a statistically significant difference in the number of staff resources applied to trauma patients at different levels of trauma response activation. No clear linear relationship between severity of injury and mortality was found. This raises the issue of whether the mortality differences between institutions are based on the proper activation of the trauma response system. If so, more attention needs to be placed on trauma center patient triage criteria.

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