

Evidence-Based Practice (EBP) - E196

Poster

Abstract Title:

A retrospective analysis of high risk trauma patients at a Level I trauma center

Authors:

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Background & Purpose:

Our Level I trauma center is home to the state's only direct field-to-surgery trauma operating room (OR). High-risk patients activated at this emergent level go to a state-of-the-art OR connected to our helipad and emergency department (ED) by high-speed elevator, where specially trained trauma teams are available to conduct a wide variety of procedures. Our objective was to describe and compare characteristics of these high-risk, emergent activation patients with standard trauma activation patients. The findings may identify areas for future education programs.

Study/Project Design:

This retrospective cohort study compared data between emergent and standard trauma activation levels.

Setting:

A community-based, American College of Surgeons (ACS) verified Level I trauma center in the Western United States.

Sample:

The hospital's trauma registry was queried from January 1, 2010 – December 31, 2011; 2344 consecutively activated trauma patients were analyzed.

Procedures:

A retrospective analysis of demographic and clinical characteristics for emergent and standard activation trauma patients was conducted using SPSS. Variables collected and analyzed include gender, age, mechanism, Injury Severity Score (ISS), systolic blood pressure (SBP), heart rate (HR), Glasgow Coma Score (GCS), length of stay (LOS) in the intensive care unit (ICU), and mortality. Continuous variables were analyzed using Student's t-tests and categorical variables were analyzed using Chi-square tests.

Findings/Results:

Of the total activated population (n=2344), 246 (10.4%) patients were emergently activated. The mean ISS was greater for emergent vs standard activations (21 vs 10; $p < .001$). GCS, HR and SBP were significantly worse among emergent activations ($p < .001$ for all). Emergent patients had a greater proportion of penetrating injuries (21.3% vs 5.3% of injuries, $p < .001$). Mechanisms for emergent activations were widely distributed; leading causes were motor vehicle and motorcycle trauma (46.7%), stabbings and gunshot wounds (19.7%), falls (12.7%), and pedestrian accidents (9.0%). Alternatively, motor vehicle and motorcycle trauma (37.5%) and falls (22.1%) made up the majority of incidents for standard activations. A laparotomy and/or thoracotomy was performed in 10.5% of emergent activations, compared to 1.5% for standard activations ($p < .001$). ICU LOS was longer for emergent activations (7.8 vs 2.5 days, $p < .001$). Survival rate was 80% for emergently activated patients, compared to 97% for standard activations. Demographics were similar between activations; mean age was 42 years, and males comprised 72% of all activations.

Discussion/Conclusions/Implications:

We found our emergent, high-risk patients varied significantly at the clinical level, presenting with a wider variety and greater severity of injuries, as well as a significant difference in vital signs, suggesting patients activated emergently appear to be appropriately triaged. We also found the emergent operations of laparotomy and thoracotomy were ten times more common in the trauma OR. This demonstrates the necessity of comprehensive training for our trauma teams to provide optimal treatment. This retrospective study demonstrates how a Level 1 trauma center can learn about its patients, and use the analysis to develop evidence-based education programs to improve high-risk patient care.