

The Financial Cost of Early Inpatient Mortality in High-Risk Middle-Aged and Geriatric Trauma Patients at a Level I Trauma Center

Ariana Lott, BA; Hesham Saleh, MD; Kenneth A. Egol, MD¹; Sanjit Reddy Konda

¹NYU Hospital for Joint Diseases, New York City, New York, USA

Purpose: Aggressive life-extending procedures in the severely injured middle-aged and geriatric trauma patient during the early phase of admission are associated with high costs. The ability to identify these patients has the potential to create avenues for intervention early in the resuscitation process, thereby decreasing hospital costs and improving patient and/or family expectations. We sought to (1) determine the cost of care for patients who die within the first 2 days of admission and (2) demonstrate that a validated trauma triage score could identify these high-risk patients.

Methods: Patients 55 years and older who were evaluated in the emergency department setting by the orthopaedics department or who met American College of Surgeons Tier 1-3 criteria and were admitted to a single Level I trauma center between October 1, 2014 and September 30, 2016 were prospectively enrolled. On initial evaluation, each patient's demographic, injury severity, and functional status were utilized to calculate a STTGMA score (Score for Trauma Triage in the Geriatric and Middle-Aged Orthopaedic Trauma Patient, a validated and published trauma risk score). Length of stay, inpatient mortality, time between admission and time of death, and hospitalization costs were recorded for each patient. Patients who died within 48 hours of presentation and those who did not were compared using significance of $P < 0.05$.

Results: A total of 1470 consecutive patients (mean age of 72.2 ± 11.9 years) were enrolled in this study, 17 (mean age of 78.0 ± 12.5 years) of whom expired within 48 hours of admission. The average time of death in patients who died during index admission was 13.2 ± 15.6 hours. These patients had higher trauma triage scores than the rest of the cohort with a score of $50.9 \pm 37.2\%$ versus $3.3 \pm 9.5\%$ ($P < 0.0001$), indicating that they had a mean risk of inpatient mortality of over 50%. Mean total cost/day was much higher in the cohort of patients who died within 48 hours of admission compared to all other trauma patients ($\$49,367 \pm 79,057$ vs $\$3966 \pm 2,897$; $P = 0.031$). This increase in cost/day seen in the cohort of patients who expired within 48 hours of admission was also seen in several cost buckets of care, including room, radiology, and cardiology.

Conclusion: This study demonstrates the ability of the STTGMA score to triage middle-aged and geriatric trauma patients who are at high risk for early inpatient mortality. To achieve value-based care in this high-risk cohort, targeted cost savings while improving patient outcomes and/or expediting end-of-life goals is necessary and the STTGMA score allows for stratification of these patients in both mortality risk and cost profile.