A Novel Tool to Predict Inpatient Triage and Hospital Quality Measures in the Geriatric Trauma Population at Time of Admission

Sanjit Reddy Konda; Ariana Lott, BA; Hesham Saleh, MD; Thomas R. Lyon; Kenneth A. Egol, MD[1]
[1]*NYU Hospital for Joint Diseases, New York City, New York, USA*

Purpose: We developed a novel geriatric trauma risk tool using patient variables including age, comorbidities, and anatomic injuries, which has been shown to have excellent capacity in predicting inpatient mortality. The purpose of this study is to investigate the efficacy of this trauma triage score in predicting measures of hospital quality, including lengths of stay, need for advanced level of care, inpatient complications, readmissions, and locations of disposition.

Methods: Patients 55 years and older who were evaluated in the emergency department setting by orthopaedic surgery at one academic medical center during the study period of October 1, 2014 to September 30, 2016 were prospectively enrolled. On initial evaluation, each patient's demographics, injury severity, and functional status were utilized to calculate a trauma triage score (STTGMA). Information on length of stay, complications during hospitalization, need for ICU/SDU (intensive care unit/step down unit) level care, and locations of disposition were collected. Patients were followed for 30 days to observe readmissions. Patients were stratified into minimal, low, moderate, and high-risk cohort groups based on inpatient mortality risk of 5%.

Results: A total of 1592 patients were prospectively enrolled in this study. 1278 patients (80.3%) sustained low-energy injuries and 314 patients (34.8%) sustained high-energy injuries. The average age was 73.8 ± 11.8 years. The mean length of hospital stay was 5.2 days with a significant difference between the STTGMA risk groups. In addition, the mean minor complication rate (0.33) and the mean major complication rate (0.16) were both greater in the moderate and high risk cohorts than in the lower risk cohort groups. Patients in the high-risk cohort had a higher risk of inpatient death ($P < 0.001$), requirement of ICU/SDU level care ($P < 0.001$), and unplanned readmissions within 30 days ($P < 0.001$). Lastly, there was a significant difference in the number of patients discharged home between the risk cohorts with 79.8% of the minimal risk cohort discharged home and 12.3% of the high-risk cohort ($P < 0.001$).

Conclusion: Not only is the STTGMA risk score predictive of inpatient mortality for middle age and geriatric patients who sustained trauma, but it also may be a valuable tool to predict inpatient triage and hospital quality measures. Thus, it is a valuable clinical tool for health-care providers in identifying high-risk patients in efforts to continue to provide high-quality resource-conscious care to orthopaedic trauma patients.