TRAUMA TEAM ACTIVATION: SIMPLIFIED CRITERIA SAFELY REDUCES OVER-TRIAGE

Lehmann R, Arthurs Z, Beekley A, Martin M
Department of Surgery, Madigan Army Medical Center, Tacoma, WA

Background: Our current trauma triage system uses mechanism of injury, extrication, age, and scene of injury physiologic parameters within a three-tiered trauma response system. The purpose of this study was to evaluate the accuracy of the current system and identify the most reliable variables for trauma triage.

Methods: A retrospective cohort study set in an urban, level II trauma center. Multivariate logistic regression was used to identify independent predictors of the need for any urgent emergency department (ED) procedure or urgent operative intervention. The current triage system was analyzed and compared to a proposed simplified system.

Results: There were 1495 consecutive trauma admissions identified, the majority (88%) were blunt mechanism. There was a 1% ED mortality rate, and a 3% overall mortality rate. Urgent ED interventions were required in 11% and 4% required an emergent operation. Logistic regression demonstrated that prehospital GCS<14 (OR 9.7 CI 5.5-16.9), hypotension (OR 3.3 CI 1.6-6.8), altered respiratory effort (OR 4.6 CI 1.9-11), and penetrating truncal injury (OR 10.8 CI 4.4-26.5) independently predicted the need for urgent intervention (all $p<0.01$). Heart rate, extrication, and other mechanisms of injury were not predictive. The current system under-triaged only 1% but over-triaged 51% of patients. A simplified triage system using only prehospital hypotension, altered respiration or mental status, and penetrating truncal mechanism maintained a low under-triage (3%) while significantly decreasing over-triage to 29%. The simplified triage criteria also demonstrated equivalent sensitivity and improved specificity for identifying patients with severe injury (Injury Severity Score > 15) compared to the current system.

Conclusions: There is a low under-triage rate but significant over-triage with our current system, mostly due to the inclusion of poorly predictive pre-hospital variables. A simplified system based mainly on patient physiology would significantly decrease over-triage and may result in improved resource utilization.