

### Diagnostic Accuracy of The Kampala Trauma Score using Estimated Abbreviated Injury Scale Scores and Physician Opinion

Andrew Gardner<sup>1</sup>, Paa Kobina Forson<sup>2</sup>, George Oduro<sup>2</sup>, Nkechi O. Dike<sup>3</sup>, Barclay Stewart<sup>4</sup>, Paul Glover<sup>2</sup>, Rockefeller Oteng<sup>5</sup>, Ron Mai<sup>5</sup>

1. Medical School, University of Michigan, Ann Arbor/MI/United States of America
2. Emergency Medicine Department, Komfo Anokye Teaching Hospital, Kumasi/Ghana
3. Emergency Medicine Department, Komfo Anokye Teaching Hospital, Kumasi/MI/Ghana
4. Department Of Surgery, University of Washington, Seattle/WA/United States of America
5. Department Of Emergency Medicine, University of Michigan, Ann Arbor/MI/United States of America

**Study/Objective:** To determine the diagnostic accuracy of the Kampala Trauma Score in predicting Emergency Department outcomes in a limited diagnostics setting.

**Background:** The Kampala Trauma Score (KTS) has been proposed as a triage tool for use in low- and middle-income countries (LMICs). This study aimed to examine the diagnostic accuracy of KTS in predicting emergency department (ED) outcomes, using timely injury estimation with Abbreviated Injury Scale (AIS) score, and physician opinion (PO).

**Methods:** This was a diagnostic accuracy study of KTS among injured patients presenting to Komfo Anokye Teaching Hospital, Ghana. The South African Triage Scale (SATS), KTS and Revised Trauma Score (RTS) variables, PO quantifying serious injuries, and ED disposition were collected. Agreement between estimated AIS score and PO were analyzed with normal, linear weighted, and maximum kappa. Additionally, receiver operating characteristic (ROC) analysis of KTS-AIS and KTS-PO was performed.

**Results:** A total of 1,053 patients were sampled. There was moderate agreement between AIS criteria and PO by normal ( $\kappa = 0.41$ ), weighted ( $\kappa_{\text{lin}} = 0.47$ ), and maximum ( $\kappa_{\text{max}} = 0.53$ ) kappa. ED mortality ROC area for KTS-AIS was 0.93 (95% CI: 0.87-0.98), KTS-PO 0.89 (95%CI 0.78-1.00), SATS 0.88 (95%CI 0.79-0.97), and RTS 0.84 (95%CI 0.72-0.96). Hospital admission ROC area for KTS-AIS was 0.73 (95%CI 0.70-0.76), KTS-PO 0.79 (95%CI 0.76-0.82), SATS 0.71 (95%CI 0.68-0.74), and RTS 0.56 (95%CI 0.54-0.58).

**Conclusion:** KTS predicted mortality and need for admission from the ED very well when early estimation of the number of serious injuries was used, regardless of method (ie, AIS criteria or physician opinion). This study provides evidence for KTS to be used as a practical and valid triage tool to predict prognosis, ED outcomes, and inform referral decision making from first- or second-level hospitals in LMICs.

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### Comparison of Six Disaster Triage Methods using the Wenchuan Earthquake Victim Database

Hai Hu

Emergency Department, West-China Hospital, Sichuan University, Chengdu/China

**Study/Objective:** A variety of disaster triage methods have been used in mass-casualty events. But most of them were only based on expert opinion. The study objective was to determine the accuracy of several disaster triage methods when predicting clinically important outcomes in the trauma victims of the Wenchuan Earthquake.

**Background:** To date, researchers have built a lot of triage methods, such as Simple Triage and Rapid Treatment (START), Triage Sieve, CareFlight, Revised Trauma Score (RTS), Sacco Score, Unadjusted Sacco Score, and so on. However, most triage methods have been based on expert opinion with limited evidence.

**Methods:** Trauma victims from the Wenchuan Earthquake Victim Database were assigned triage levels, using each of six disaster triage methods: Simple Triage and Rapid Treatment (START), SIEVE, CareFlight, Revised Trauma Score (RTS), Sacco Score, and Unadjusted Sacco Score. Methods for approximating triage systems were vetted by subject matter experts. Triage assignments were compared against mortality at discharge with area under the receiver operator curve. Secondary outcomes included death in the emergency department and ICU (intensive care unit) admission.

**Results:** In this study, 26,519 records were included. The Sacco Score predicted mortality most accurately, with area under the receiver operator curve of 0.825 (95% confidence interval 0.780 to 0.893). RTS and CareFlight was as accurate as START.

**Conclusion:** Among six disaster triage methods compared against actual outcomes in trauma registry patients, the Sacco Score predicted mortality at discharge most accurately. This analysis highlighted comparative strengths and weakness of START, SIEVE, CareFlight, RTS, Sacco Score, and Unadjusted Sacco Score, suggesting areas in which each might be improved.

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### Mass-Casualty Events: How do we Ensure an Efficient and Effective Response?

Jakki K. Lea<sup>1</sup>, Vivienne C. Tippet<sup>2</sup>

1. Paramedic Science, Queensland University of Technology, Brisbane/QLD/Australia
2. School Of Clinical Sciences, Queensland University of Technology, Brisbane/QLD/Australia

**Study/Objective:** This case study evaluates the challenges experienced by first responders to a mass casualty incident where triage processes were flawed. The analysis highlights the importance of sound triage practice, and the significance of continuing professional development in a mass casualty event.

**Background:** In May 2005, six Canadians lost their lives and 21 people were injured, following a bus accident outside Edmonton, Alberta. Passengers were oilfield workers travelling to Edmonton from Fort McMurray, Alberta. Four passengers were confirmed dead on scene and subsequently, two others died in hospital. Consequently, analysis of the multi casualty incident revealed that although scene command and control was efficient and effective, accurate triage was inadequate.