experience. There were 112 victim observations. Four were excluded due to not being triaged. The initial and final triage was correct for 80% of the observations; 13% over- and 7% under-triaged. The mean triage interval was 30 seconds (+21; range: 4–94).

Conclusions: Assessments using SALT Triage were accurate and made quickly during a simulated incident. The accuracy rate was higher than those published for other triage systems and of similar speed.

(K113) Determination of Field Providers' Opinions of SALT Triage

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Objective: The objective of this study was to determine providers' opinions of SALT Triage after receiving training and using it during a simulated mass-casualty incident.

Methods: A survey was conducted of trainees in a disaster course. Trainees were given a-30 minute lecture on SALT (sort, assess, life-saving interventions, treatment and/or transport) Triage and then used it during a drill. After the drill, trainees were asked to complete the survey. Results were analyzed using descriptive statistics.

Results: Thirty trainees (11 medical doctors (MDs), six registered nurses (RNs), eight emergency medical technicians (EMTs), one RN/EMTs, four other) participated in the course. Of these participants, 67% had prior drill experience (mean: 10 drills) and 37% had prior mass-casualty incident experience (mean: four experiences). Prior to the drill: 7% reported that they felt very confident using SALT Triage, 33% were confident, 30% were somewhat confident, and 30% were not confident. After the drill: none reported not feeling confident using SALT Triage, 27% were at the same level of confidence, 73% felt more confident, and none felt less confident. Before the drill: 52% of respondents felt SALT Triage was easier to use than their current disaster triage protocol, 44% felt it was similar, and 4% felt it was more difficult. After the drill: 67% did not change how easy they felt SALT Triage was to use, 26% thought it was easier to use, and 3% thought it was similar.

Conclusions: Providers felt confident using SALT triage after a 30-minute training session and found it was similar or easier to use than their current triage protocol. Using SALT Triage during a drill improved confidence.

(K114) Use of the Visensia (Biosign) System Improves Emergency Department Trauma Triage: A Cluster Analysis with Outcomes

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Introduction: Triage criteria rely on physiologic, anatomic, and mechanistic indicators of injury to minimize over-triage and under-triage, which remain persistently high (35%–65%). The Visensia Index Score (VIS) is a proprietary algorithm in a bedside monitor (OBS Medical, IN) that integrates five vital signs: (1) heart rate; (2) respiratory rate; (3) blood pressure; (4) pulse oximetry; and (5) temperature. It calculates a score ranging from 1 (no abnormality) to 5 (severe abnormalities). The aim of this study was to explore the utility of VIS in identifying trauma patients likely to have a poor prognosis on arrival to the emergency departments.

Methods: After Institutional Review Board approval, the trauma registry was used to review 117 patients admitted to a Level-1 Trauma Center over a six month period. The first set of vital signs was obtained upon arrival to the emergency department. An initial VIS and a mean VIS (based on multiple VS) was calculated. The analysis included a multivariate mathematical technique and k-means cluster analysis. Clusters of populations with different Visensia scores were compared and differences in their outcomes were analyzed.

Results: Two major clusters were identified: VIS Scores >3 increased the risk of mortality as compared to those with scores <3; odds ratio 3.3 [1.04–10.3; p <0.001). There was no association with length of intensive care unit stay, hospital days; or Injury Severity Scale (ISS) scores.

Conclusions: Cluster analysis, a novel multidimensional approach, shows association of a higher VIS (>3) as a useful point-of-care parameter to identify trauma patients likely to have a poorer prognosis, much more than retrospectively computed ISS and Trauma and Injury Severity Scores (TRISS).

(K115) Application of Patient Age-Dependent Sacco Triage Method to Victims with Blunt Injuries

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Objective: The Sacco Triage Method (STM) is a mathematical model of resource-constrained triage. The objective of this presentation is to apply STM-Age, an age-augmented version of STM, to blunt trauma victims and compare it to Simple Triage and Rapid Treatment (START) and START-like protocols.

Methods: The objective of STM is to maximize the number of expected survivors given constraints on the timing

and availability of resources. The STM incorporates estimates of time-dependent victim survival probabilities based on an initial assessment and expected deteriorations.

For the STM-Age application, an "RPM-Age" score (based on respiratory rate, pulse rate, best motor response, and coded age) was used to estimate survival probability. Logistic function-generated survival probability estimates for RPM-Age values were determined from 76,444 patients with blunt injuries from the Pennsylvania Trauma Outcome Study. The Delphi Method provided expert consensus on victim deterioration rates, and the model was solved using linear programming.

The STM-Age was compared to START and START-like methods with respect to process and to outcome, as measured by expected number of survivors, in simulated resource-constrained casualty incidents.

Results: The RPM-Age was a more accurate predictor of survivability for blunt trauma than RPM, as measured by calibration and discrimination statistics. In simulations, STM-Age exhibited substantially more expected survivors than START and START-like protocols.

Conclusions: Resource-constrained triage is modeled precisely as an evidence-based, outcome-driven method (STM-Age) that maximizes expected survivors in consideration of resources. The STM-Age offers life-saving and operational advantages over current methods.

Keywords: blunt injury; disaster; emergency health; evidence base; resource constrained; Sacco Triage Method; START triage; triage

(K116) An Objective Comparison of the START Triage Protocols and the Sacco Triage Method
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Objective: The objective of this study was to compare the operational viability and performance of the Sacco Triage Method (STM) to that of the Simple Triage and Rapid Treatment (START) protocol.

Methods: Following a 20-minute review of the mandated START protocol and a 20-minute training session of STM, parallel disaster exercises were conducted. Emergency responders used START in the morning and STM in the afternoon on a simulated building collapse involving 99 victims. Data were collected on the accuracy of patient assessment (START) and scoring (STM), the timeliness in clearing the scene, and the prioritization of patients leaving the scene.

Results: The STM scoring was more accurate than START assessments at 91.7% and 71.0%, respectively. The time to clear the scene was 16% less using STM than START (53 minutes and 63 minutes, respectively). The 13 most seriously injured patients left the scene in the first seven ambulances using STM; while only two of the 13 most seriously injured patients left the scene in the first 13 ambulances under START, and the three most serious patients were transported by bus. Surveyed providers preferred START to STM and believed it to be more accurate, faster, and better able to identify the most serious patients.

Conclusions: Emergency responders did not implement START successfully. Despite refresher training and 12

years of using START as their statewide protocol, tagging was inaccurate and patient prioritization was poor. In comparison, STM was implemented after 20 minutes of introductory training, was shown to be operationally viable, and outperformed START in all objectives.

Keywords: emergency health; evidence based; prioritization; Sacco Triage Method; START triage; triage

(K117) The Okaloosa Experience—Using Evidence-Based Triage to Save Lives
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Introduction: Okaloosa County, Florida is affected by disasters on an all too frequent basis. In an effort to become better prepared and decrease the possibility of preventable deaths, the Public Safety Department and the Emergency Medical Services (EMS) Division implemented evidence based methodologies as part of a comprehensive solution.

Methods: All EMS and Fire Department responders were trained in the Sacco Triage Method (STM) through a process of tabletop exercises and daily operational practice. Once the implementation began, all trauma patients were scored and prioritized. Patient transportation mode, urgency, and destination were aided by an objective process based on local and regional resources.

Results: During the ensuing 24 months, the STM was used on every trauma victim. Data were collected and resource allocation and management were evaluated relative to patient survival outcomes.

Conclusions: The effectiveness of the daily application exceeded expectations and was used as part of the validation process of resource management and disaster preparedness. During the duration of the evaluation period, no mass-casualty incident occurred, resulting in the need to research the application further.

Keywords: disaster; evidence-based; mass-casualty incident; resource allocation; triage

(K118) Development of a Simulation Model for Evaluation and Comparison of Different Triage Methods
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Introduction: Currently, there is no international consensus with regard to the selection of method for triage during a mass-casualty incident. Many different models are used, with few attempts to objectively evaluate and compare their accuracy and efficiency. Such studies are difficult to perform during the response to a major incident, and require simulation models meeting special requirements including: (1) to give complete and accurate information needed for the triage process; and (2) to show the result of the triage with regard to outcome.

Methods: A model was created based on patient-cards giving: (1) "physiological data" sufficient as a base for different methods of physiological triage; and (2) "anatomical data"