

cations and anions. Strong-Ion Gap (SIG) better accounts for unmeasured anions because it corrects for alterations in variables not included in AG calculation.

**Objective:** To utilize SIG to identify critically ill patients requiring ICU admission or a composite end-point of in-hospital death, transfusion, and/or vasopressor requirements.

**Methods:**

**Inclusion Criteria:** Emergency department patients with impending respiratory or circulatory collapse.

**Exclusion Criteria:** Patients dead-on-arrival or before labs drawn, or inter-institutional transfers. Lactate, AG, and SIG were calculated for 80 patients, and need for ICU admission, in-hospital death, transfusion, or vasopressor use.

**Calculations:**  $SIG_{mEq/L} = SIG_{(apparent)} - SIG_{(effective)}$ ;  $SIG_{mEq/L}(apparent) = [Na^+] + [K^+] + [iCa^{++}] + [iMg^{++}] - [Cl^-] - [LAC^-]$ ;  $SIG_{mEq/L}(effective) = ((1000 \times 2.46 \times 10^{11} \times PCO_2 (mmHg)) / 10^{pH}) + [Alb^-] + [PO_4^-]$ .

**Cutoffs:** SIG <2.0 mEq/L (literature-based), AG <15.0 mEq/L and lactate <2.2 mEq/L (hospital norms).

**Results:** n = 80, 55.8 ±17.8 years 62.5% male. Twenty had elevated SIG and normal AG and LAC. None of these had the composite endpoint, but four (20%) required ICU admission. A total of 42 patients required ICU admission, 22 (52%) had elevated lactate; 22 (52%) had elevated AG; 32 (76%) had elevated SIG. 12 patients met the composite endpoint: nine (75%) had elevated lactate; 10 (83%) elevated AG; 12 (100%) elevated SIG.

**Conclusions:** SIG better identifies critically ill patients requiring ICU admission and in predicting the composite end-point of in-hospital death, transfusions, and/or vasopressor requirements.

**Keywords:** anion gap; critically ill; intensive care unit; mortality; serum lactate; strong ion gap

*Prehosp Disast Med 2009;24(2):s30–s31*

### Glycemia: Triage during Emergencies

*Sophie Abrassart; Pierre Hoffmeyer*

Hôpitaux Universitaires de Genève, Geneva, Switzerland

**Introduction:** Improved survival rates of patients with multiple injuries have increased general interest in the quality of polytrauma management. A special and simple score is needed for the triage of polytraumatized victims. The purpose of this study was to observe the polytrauma population and to correlate lesions with initial blood sugar.

**Methods:** A total of 204 polytraumatized patients were studied prospectively between January 2006 and December 2007. The ethics committee approved this database. Patients were selected according to the admission code “polytrauma” with a National Committee on Aeronautics Score System score ≥4. Blood analyses were performed upon arrival. For each patient, the Injury Severity Scale (ISS) scores were compared to the blood sugar levels.

**Results:** The ISS and Glycaemia curves appear to be linearly related, especially for blood sugar concentration <8. Abdominal injuries always increased the level of blood sugar. Simple limb trauma or spine fracture did not impair glycemia except when associated with open wound fractures, compression syndrome, or paraplegia. The average glycemia of pelvic trauma was 9.0 and average ISS score was 41. Head injuries associated with

abdominal or thoracic trauma always enhanced glycemia when life-threatening lesions are associated. There is not any correlation between ISS score and age or sex.

**Conclusions:** High glucose levels may indicate serious lesions according to ISS scores.

**Keywords:** emergency; glucose; glycemia; Injury Severity Scale; trauma

*Prehosp Disast Med 2009;24(2):s31*

### Outcome Evaluation of Trauma Patients at a Hospital in Iran

*Hamid R. Hatamabady*

Disaster, Tehran, Iran

**Introduction:** Understanding the nature and severity of trauma has a pivotal role in determining priorities for the prevention of trauma, its mortality and morbidity, and the improvement of trauma care and system development. As a developing country, Iran is afflicted by a high number of trauma fatalities. The Trauma and Injury Severity Score (TRISS) is one of the most frequently implemented trauma scoring systems used as the international reference for assessment of injury severity, and has been applicable for Iranian trauma victims.

**Methods:** Two hundred consecutive trauma deaths occurring in an approximately 30-month period in Hazrat-e-Rasool-e-Akram Hospital were reviewed for TRISS using reference and native coefficients retrospectively. Unexpected deaths were identified using TRISS.

**Results:** One hundred eighty-four patients had adequate data for the calculation of TRISS. Of these, the mean age was 41.5 years, the mean Glasgow Coma Scale score was 8, the mean Revised Trauma Score was 4.77, and the mean Injury Severity Score was 26.7. The mean time to death was 123 hours; 34.8% died within 12 hours, 55.4% died within 48 hours, and 77.7% died within seven days. Among the patients, 61.9% had severe head and neck injuries and 16.3% had no vital signs upon admission. Using reference coefficients, the mean TRISS derived probability of survival was 0.62, and using coefficients of a native study, it was 0.42. Using reference coefficients, 120 deaths were unexpected (65.2%), and using the native coefficients, 78 (42.4%) deaths were unexpected according to TRISS.

**Discussion:** The high unexpected trauma death rate and the fact that preventable trauma deaths are almost definitive among such cases, implies the need for further studies and employment of TRISS as a tool for identifying cases suitable for trauma audit sessions, as a filter for peer review, and its application as a component of trauma system development.

**Keywords:** evaluation; Iran; morbidity; outcome; trauma; Trauma and Injury Severity Score

*Prehosp Disast Med 2009;24(2):s31*

### Utility of a Prehospital Electrocardiogram in Patients Presenting with Syncope

*Paul Kivela; Cindy Pierson; Marilyn Manfredi*

Medic Ambulance, Vallejo, California USA

**Introduction:** Up to 3% of emergency department visits and 50% of adults experience syncope during their lifetime. Emergency medicine literature supports the diagnostic use