

Despite the growing vulnerability, it has proven to be difficult to identify the most vulnerable persons.

Methods: Data used for the analysis comes from the RAI-HC database in Ontario (n = 275,854). Data links were made between the RAI-HC data and the 2013 hydro outage data (n = 10,748). The results were compared to non-exposed client data (n = 12,072). Methods used included frequency tabulation, bivariate and multivariate logistic regression, as well as Kaplan-Meier survival plotting and Cox proportional hazards ratios.

Results: The study led to the development of the Vulnerable Persons at Risk (VPR) and VPR Plus algorithms. These algorithms were highly predictive of mortality, LTC admission, and hospitalization. To test the ability and identify those most vulnerable, home care clients during disasters, the algorithms were applied to home care clients exposed and not exposed to the 2013 hydro outage. This analysis showed that exposed high-risk clients, identified by the VPR and VPR Plus, were more likely to die and to be admitted to LTC than non-exposed high-risk clients.

Conclusion: The analysis has shown the usefulness of information collected, as routine clinical practice, using inter-RAI assessment instruments during emergencies and disasters. The analysis further showed that the VPR/VPR Plus are valid and reliable algorithms.

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Analyzing the Emergency Triage Logbook Components of Road Traffic Accident Victims at AaBET Hospital in Addis Ababa, Ethiopia

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Study/Objective: To analyze demographic, clinical, and referral characteristics of patients presenting after Road Traffic Accidents (RTA) to Addis Ababa Burn, Emergency and Trauma (AaBET) Hospital (Addis Ababa, Ethiopia) over a seven month period.

Background: Within Africa, Ethiopia has among the highest burden of RTA. The country loses around 3,000 people from RTA annually. Nevertheless, there remains limited data on RTA victims presenting to urban Emergency Departments (EDs) in Ethiopia.

Methods: We conducted a retrospective chart review of all patients presenting after RTA at AaBET Hospital, from August 18, 2015 to March 9, 2016. Selected patient variables from ED triage logbooks were entered into Microsoft Excel and analyzed using SPSS version 21.

Results: During the study period, AaBET Hospital saw 662 RTA victims, comprising 32.1% of all trauma-related patients. Median age was 27 years. Using South African Triage Scale triage color categories, most patients were assigned lower triage acuity, with 289 (43.7%) patients assigned as Green and 273

(41.2%) patients assigned as Yellow. Of Green (lower acuity) victims (n = 289), the majority (54.3%) were referred from health institutions. Among those referred from health institutions (n = 408), 164 (40.2%) were referred without communication to the receiving facility. RTA patients coming from the scene were significantly less likely to arrive by ambulance [Adjusted OR = 0.3 (95%CI: 0.21-0.43)] as compared to those who were referred from health institutions.

Conclusion: In Addis Ababa, many patients being referred to a specialized trauma hospital after RTA have low triage acuity. Nevertheless, these referrals place highest demand on limited ambulance services, and often occur without clear communication between facilities. Strengthening primary health institutions to manage low-acuity RTA victims without referral may decrease strain on pre-hospital transport and trauma center resources, which may instead be directed toward RTA patients from the scene, and those suffering from more critical injuries.

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Controlled Undertriage - Hazard or Benefit at Overcrowded Emergency Departments (EDs)?

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Study/Objective: To verify if modification of the Emergency Severity Index (ESI) allows safe triage, when an increased patient influx, overflows available resources.

Background: Extrapolating (after: Fullam C), the ED of the University Hospital in Cracow, nurse staffing needs is covered at 90% without administration. Staff reports that the influx is a threat to those who are in serious condition, paying particular attention to patients appearing despite, not requiring an emergency service.

Methods: For routine triage the ESI was modified by the council of emergency medicine specialists. Wait time for acuity levels was recommended. Modifications in acuity levels were: pain and inaccurate danger zone vitals – level 3, many resources needed but accurate danger zone vitals – level 4, chronic disease (no exacerbation) or old injury (excluding head and chest) – level 5. Analyzing patients flow between January 12, 2015-March 31, 2016, caring participant observation authors measured: patients' number, assigned acuity level (1-5), deaths, final decision on further hospitalization and real wait time.

Results: A total number of patients was 15,077. Detailed results are shown in table 1.

Conclusion: Level 3 patients are the most vulnerable. Their wait time may exceed recommendations, while it should decrease. Since 1, 2 and 3 acuity level patients represent only 21% from the studied population, it is possible to shorten the 1.5 hour wait time. It shall be implemented, even by delaying level 4 – those who are not at risk of death. It is necessary to increase staffing, also to implement system solutions.

Acuity level	1	2	3	4	5
Triage color	Red	Orange	Yellow	Green	Blue
Recommended wait time	0 min	15 min	1.5 hour	4 hours	12 hours
Was the recommended time exceeded?	No	No	Yes	Yes	Yes
Did death occur?	Yes	Yes	Yes	No	No
Visits by acuity level	0.56%	2.57%	17.84%	73.29%	5.74%
Hospitalization by acuity level	100%	76.49%	43.1%	14.35%	2.08%

Table 1. The ESI modification in practice.

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The Relevant Factors of the Early Prognosis and the Need of Intensive Medical Resources of Patients with Multiple Injuries

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Study/Objective: To estimate the early prognosis and evaluate the need of intensive medical resources of patients with multiple injuries.

Background: A large amount of research and clinical practice indicates that the multiple injuries are urgent and the illness change of a patient's condition is rapid, which leads to the a high mortality rate. We can take some early and effective methods of triage to make patients receive timely, effective treatment, thus to reduce the mortality rate. In that case, we need some early and effective indicators of triage.

Methods: We recruited 115 patients with multiple injuries admitted to emergency department of West China Hospital, Sichuan University between March 2016 and May 2016 and collected 19 clinical indicators from each patient. The indicators included gender, age, temperature, heart rate, respiratory rate, peripheral oxygen saturation, systolic pressure, diastolic pressure, power of hydrogen (PH), hemoglobin, base excess (BE), serum potassium, serum sodium, serum calcium, lactic acid, glucose, partial pressure of oxygen (PO₂), carbon dioxide partial pressure (PCO₂), and peritoneal effusion. We analyzed the correlation of these indicators with deaths within the first 24 hours, emergency surgery, admissions to intensive care unit (ICU), and length of ICU stay through the method of a rank sum test and logistic regression with SPSS 19.0.

Results: The results showed that the possibility of death (A) could be expressed as: $A = -0.276 \cdot BE(\text{mmol}) - 3.005 \cdot T(^{\circ}\text{C}) - 0.073 \cdot PO_2(\text{mmHg}) + 110.843$ and the need of admissions to intensive care unit (B) as: $B = 1.007 \cdot \text{peritoneal effusion} + 0.140 \cdot \text{glucose}(\text{mmol/L}) - 3.224$.

Conclusion: BE, T, PO₂ may be useful in early forecasting the prognosis of patients with multiple injuries; glucose and peritoneal effusion can evaluate if the patient needs the intensive medical resources.

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Validation of CRISTO as a Triage Tool in Emergencies and Disasters

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Study/Objective: Our objective was to validate CRISTO (C: Walking; R: Respiratory failure; I: Unconscious/neurological impairment; S: Bleeding/Shock; T: Complex trauma/Behavioral disorder; O: Others), as a method to be applied in victim classification, as well as in the comparison of efficiency and execution time regarding the Standardized Testing and Reporting (STAR) method.

Background: In April 2016, Ecuador suffered an earthquake which caused 671 deaths and left 8,690 people homeless. This event tested the capacity of response and the implementation of protocols, including triage in the country. START is a validated and widely used method for victim classification; however, the average evaluation time it has, among other things, has made us question its effectiveness in major disasters like this one.

Methods: This is a descriptive and comparative study of two triage methods. A total of 12 simulated patients were evaluated by 10 First Response Teams during a disaster simulation exercise; five for each triage method, selected by drawing lots. Triage was carried out by Technologists in Medical Emergencies, or Medical Doctors with training in both methods and previous experience in each procedure. The simulation patients were 1 black, 4 red, 3 yellow and 4 green. We compared sorting efficiency and evaluation time for each method.

Results: The percentage of positive answers with CRISTO was 85%, and with START was 73.3% ($p = 0.21$); nevertheless, when we evaluated triage time, CRISTO (10.8 sec.) was faster than START (9.5 sec.), $p = 0.025$.

Conclusion: In conclusion, CRISTO is a reliable and fast method of triage, ensuring greater patient care during large events with multiple victims.

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The Use of the Mobile Information and Communication Technologies in Mass-Casualty Incident and Disaster Management - A Medical Triage System

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Study/Objective: Worldwide, Mobile Information and Communication Technologies (ICT) have been used in prehospital emergency care and emergency and disaster medicine. In Poland, the use of ICT in routine emergency practice does not raise any concerns, but special application used in mass-casualty incidents and disasters is still being discussed.

Background: The development of "intelligent" Command Support System (CSS) for Emergency and Disaster Medicine is the aim of this study. The problem of the correct allocation of