

## LO08

**Effect of an intact “chain of survival” sequence on survival to discharge from out-of-hospital cardiac arrest**

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**Introduction:** The “chain of survival” is a 5-link theoretical construct that has been central to cardiac arrest resuscitation for over 40 years. Although the role of each link has been extensively studied, little is known about the impact of performing the chain of survival in sequence. The purpose of this study was to estimate the proportion of out-of-hospital cardiac arrest (OHCA) responses by Emergency Medical Services (EMS) that had an intact chain of survival sequence response, and the effect of this on survival to hospital discharge. **Methods:** We conducted a prospective cohort study of adult (>age 20 years) OHCA patients using data collected between 2005-2007 by the Resuscitation Outcomes Consortium (ROC). ROC is a research network involving 10 research sites and 264 EMS agencies across North America. Using routinely collected data, we coded cases as receiving an intact or non-intact chain of survival sequence based on EMS cardio pulmonary resuscitation (CPR), rhythm analysis or defibrillation, epinephrine administration or endotracheal intubation, and transport to a hospital with an electrophysiology lab or percutaneous coronary intervention capability, contingent on the patient’s condition when EMS arrived. Multiple variable logistic regression was performed, adjusting for known (Utstein) survival predictors, to estimate the independent effect of intact chain of survival sequence on survival to hospital discharge. REB approval was obtained. **Results:** We enrolled 12,821 OHCA cases, of which, 29.4% (n = 3,773) had an intact chain of survival and 7.6% (n = 972) survived to hospital discharge. Cases with an intact chain of survival were younger, and more likely to arrest in public, receive bystander CPR, occur in the USA and specific ROC sites, and had faster EMS response times. The adjusted odds ratio of survival to hospital discharge with an intact chain of survival sequence was 2.4 (95% CI: 2.1-2.8). A sensitivity analysis of 4,056 cases with known timing of endotracheal intubation found a similar adjusted odds ratio of 2.1 (95% CI: 1.6-2.8). **Conclusion:** Our results indicate that OHCA resuscitation with an intact chain of survival occurs in approximately 1/3 of cases, and results in over a two-fold increase in the odds of surviving to hospital discharge. Initiatives to improve EMS teamwork and increase the proportion of OHCA resuscitation with an intact chain of survival appear to be warranted.

**Keywords:** cardiac arrest, resuscitation, system design

## LO09

**Assessing the ability of emergency department patients to self-triage by using an electronic questionnaire: a pilot study**

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**Introduction:** The process of triage is used to prioritize the care of patients arriving in the emergency department (ED). To our knowledge, self-triage has not been previously studied in the general emergency department (ED) setting. In an attempt to test the feasibility of implementing this in the ED, we sought to assess the ability of ED patients to triage themselves using an electronic questionnaire. **Methods:** This was a prospective observational study. An iPad-based questionnaire was designed with a series of ‘yes’ or ‘no’ answers related to common chief complaints. A score corresponding to a Canadian Triage and Acuity Scale (CTAS) category was assigned based on their answers, without

the knowledge of patients or ED staff. These scores were subsequently compared to the official CTAS score assigned by triage nurses. A convenience sample of ambulatory patients arriving at the ED were enrolled over a four week period. Patients arriving by ambulance were excluded. We also sought to assess patients’ ability to predict their ultimate disposition. **Results:** A total of 492 patients were enrolled. The mean age of enrolled patients was 43.9. Of enrolled patients, 56 (11.4%) were under 20 years old, 168 (34.1%) between ages 20-39, 116 (23.6%) between ages 40-59 and 152 (30.9%) older than 60 years. We had 245 (49.8%) patients identify as male. Patient-determined CTAS scores were as follows: 146 CTAS 1 (26.7%), 66 CTAS 2 (13.4%), 176 CTAS 3 (35.8%) and 104 CTAS 4 and 5 (21.1%). Formal triage CTAS scores were: 47 CTAS 2 (9.6%), 155 CTAS 3 (31.5%), and 290 CTAS 4 and 5 (59%). With our survey tool, 22.2% of patients matched their official triage scores. We found that that 69.9% of participants over-estimated their CTAS score while 7.9% underestimated it. Two hundred and three patients (41.3%) felt that they needed to be admitted. In fact, 73 patients (17.3%) were admitted to hospital. **Conclusion:** Using an electronic questionnaire, ambulatory patients frequently overestimated the acuity of their presenting complaint. Patients were also not able to accurately predict their disposition. Further study of different approaches to self-triage is needed before possible implementation in EDs.

**Keywords:** triage, quality improvement, Canadian Triage and Acuity Scale

## LO10

**Quantity of opioid to prescribe for acute pain to limit misuse after emergency department discharge**

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**Introduction:** A 2008 survey found that 1.9% of the entire US population was using prescription pain medication non-medically and that 56% obtained them from a friend or relatives. Diversion of pain medication may occur when a portion of the prescription is unused for pain relief after an ED visit. We hypothesized that at least 10 pills (~40%) of an opioid prescription 2 weeks after an ED visit will not be consumed and become available for potential misuse. **Objective:** Determine the quantity of unused opioids pills for common acute pain diagnoses, 2 weeks after an ED visit for acute pain. **Methods:** Prospective observational cohort study of consecutive ED patients from a tertiary academic urban hospital with 60,000 ED visits annually. Inclusion criteria: aged  $\geq 18$  years, acute pain conditions present  $\leq 2$  weeks, pain intensity at triage of  $\geq 4$  (on a 0-10 numeric rating scale; NRS), and discharged with a new opioid prescription. ED physicians identified (24/7) eligible patients. They recorded the pain complaint/location, the final diagnosis, the quantity and type of prescribed pain medication. Discharged patients completed paper or electronic 14-day diary (REDCap database) to document their pain medication consumption. As a mitigation strategy, they were also contacted by phone at 2 weeks for the same information. A paired t-test was used to test the difference between the amounts of opioids prescribed and consumed. **Results:** 350 patients were recruited. Mean age 50 (SD  $\pm 16$ ) and 54.2% were men. Painful diagnosis: fracture (18.2%), acute back pain (15.3%), renal colic (15.3%), Sprain (excluding back/neck pain) (6.9%), Contusion (6.4%), acute neck pain (5.8%), abdominal pain (4.9%), and other (27.2%). Opioids prescribed: oxycodone (47%), morphine (37%) and hydromorphone (16%). Means quantity of opioid pills prescribed: 24 (IC95%: 23-26). Filled opioid prescription: 92%. Means quantity of opioid pills consumed: 8 (IC95%: 7-9). Means quantity of unused opioids pills: 16. Opioid pills available