African Journal of Emergency Medicine

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A descriptive analysis of endotracheal intubation in a South African Helicopter Emergency Medical Service

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Stassen et al. Afr J Emerg Med 2018; 8(4): 140–144.

Introduction: Helicopter Emergency Medical Services exist to supplement the operations of ground-based emergency care providers, mainly in high acuity cases. One of the important procedures frequently carried out by Helicopter Emergency Medical Services personnel is endotracheal intubation. Several Helicopter Emergency Medical Services providers exist in South Africa, with a mix of advanced life support personnel; however, intubation success rates and adverse events have not been described in any local Helicopter Emergency Medical Services operation.

Methods: This was a retrospective chart review of intubation-related data collected by a Helicopter Emergency Medical Services operation based in Johannesburg over a 16-month period. First-pass and overall success rates were described, in addition to perceived airway difficulty, adverse events, and other data.

Results: Of the 49 cases recorded in the study period, one was excluded leaving 48 cases for analysis. Most cases (n = 34, 71%) involved young male trauma patients who were intubated with rapid sequence intubation. The first-pass success rate was 79% (n = 38) with an overall success rate of 98% (n = 47). At least one factor suggesting airway difficulty was present in 29% (n = 14) of cases, with most perceived airway difficulty related to the high prevalence of trauma cases. At least one adverse event occurred in 27% (n = 13) of cases with hypoxaemia, hypotension, and bradycardia being the most prevalent.

Discussion: In this small sample of South African Helicopter Emergency Medical Services intubation cases, we found overall and first-pass success rates comparable to those reported in similar contexts.

Annals of Emergency Medicine

(The print version of this article has been scheduled for May 2019)
A cost-effectiveness analysis comparing clinical decision rules PECARN, CATCH, and CHALICE with usual care for the management of pediatric head injury

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Study objective: To determine the cost-effectiveness of three clinical decision rules in comparison to Australian and New Zealand usual care: the Children’s Head Injury Algorithm for the Prediction of Important Clinical Events, the Pediatric Emergency Care Applied Research Network, and the Canadian Assessment of Tomography for Childhood Head Injury.

Methods: A decision analytic model was constructed from the Australian health care system perspective to compare costs and outcomes of the three clinical decision rules compared with Australian and New Zealand usual care. The study involved multicenter recruitment from 10 Australian and New Zealand hospitals; recruitment was based on the Australian Pediatric Head Injury Rules Study involving 18,913 children younger than 18 years and with a head injury, and with Glasgow Coma Scale score between 13 and 15 on presentation to emergency departments. We determined the cost-effectiveness of the three clinical decision rules compared with usual care.

Results: Usual care, Children’s Head Injury Algorithm for the Prediction of Important Clinical Events, Pediatric Emergency Care Applied Research Network, and Canadian Assessment of Tomography for Childhood Head Injury strategies cost on average AUD $6390, $6423, $6433, and $6457 per patient, respectively. Usual care was more effective and less costly than all other strategies and is therefore the dominant strategy. Probabilistic sensitivity analyses showed that when simulated 1000 times, usual care dominated all clinical decision rules in 61%, 62%, and 60% of simulations (Children’s Head Injury Algorithm for the Prediction of Important Clinical Events, Pediatric Emergency Care Applied Research Network, and Canadian Assessment of Tomography for Childhood Head Injury, respectively). The difference in cost between all rules was less than $36 (95% confidence interval: −$7 to $77) and the difference in quality-adjusted life-years was less than 0.00097 (95% confidence interval: 0.0015–0.00044). Results remained robust under sensitivity analyses.

Conclusion: This evaluation demonstrated that the three published international pediatric head injury clinical decision rules were not more cost-effective than usual care in Australian and New Zealand tertiary emergency departments. Understanding the usual care context and the likely cost-effectiveness is useful before investing in implementation of clinical decision rules or incorporation into a guideline.

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main diagnosis of acute heart failure. The Multilevel Guided Discharge Plan includes the following components: (1) a checklist of clinical recommendations and resource activations, (2) scheduling of an early follow-up visit, (3) transfer of information to the primary care doctor, and (4) written instructions for the patient. Phase 1 of the study will be a matched-pair cluster-randomized controlled trial. A total of 10 emergency departments will be randomly assigned to the intervention group and 10 to the control group. Each group will enroll 480 patients, and the outcomes will be compared between groups. Phase 2 will be a quasi-experimental study of the intervention in 300 new patients enrolled by the same 20 emergency departments. The outcomes will be compared to those for each Phase-1 group. The main endpoint at 30 days will be a composite of two outcomes: revisits to an emergency department and/or hospitalization for acute heart failure or cardiovascular death.

Conclusion: The study will assess the efficacy and feasibility of comprehensive Multilevel Guided Discharge Plan transfer of care for frail older acute heart failure patients discharged home.

Canadian Journal of Emergency Medicine
http://caep.ca/resources/cjem/

Emergency overcrowding and access block: A smaller problem than we think

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Objective: Emergency department access block, the inability to provide timely care for high acuity patients, is the leading safety concern in First-World emergency departments. The main cause of emergency department access block is hospital access block with prolonged boarding of inpatients in emergency stretchers. Cumulative emergency access gap, the product of the number of arriving high acuity patients and their average delay to reach a care space, is a novel access measure that provides a facility-level estimate of total emergency care delays. Many health leaders believe these delays are too large to be solved without substantial increases in hospital capacity. Our objective was to quantify cumulative emergency access blocks (the problem) as a fraction of inpatient capacity (the potential solution) at a large sample of Canadian hospitals.

Methods: In this cross-sectional study, we collated 2015 administrative data from 25 Canadian hospitals, summarizing patient inflow and delays to emergency department care space. Cumulative access gap for high-acuity patients was calculated by multiplying the number of Canadian Triage Acuity Scale 1–3 patients by their average delay to reach a care space. We compared cumulative emergency department access gap to available inpatient bed hours to estimate fractional access gap.

Results: Study sites included 16 tertiary and 9 community emergency departments in 12 cities, representing 1.79 million patient visits. Median emergency department census (interquartile range) was 66,300 visits per year (58,700–80,600). High-acuity patients accounted for 70.7% of visits (60.9%–79.0%). The mean (standard deviation) cumulative emergency department access gap was 46,000 stretcher hours per site per year (±19,900), which was 1.14% (±0.45%) of inpatient capacity.

Conclusion: Emergency department access gaps are large and jeopardize care for high-acuity patients, but they are small relative to hospital operating capacity. If access block were viewed as a “whole hospital” problem, capacity or efficiency improvements in the range of 1%–3% could profoundly mitigate emergency care delays.

Emergency Medicine Journal

Reliability of triage systems for pediatric emergency care: a systematic review

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Objective: To present a systematic review on the reliability of triage systems for pediatric emergency care.

Methods: A search of MEDLINE, Cochrane Library, Latin American and Caribbean Health Sciences Literature, Scientific Electronic Library Online, Nursing Database Index, and Spanish Health Sciences Bibliographic Index for articles in English, French, Portuguese, or Spanish was conducted to identify reliability studies of five-level triage systems for patients aged 0–18 years published up to April 2018. Two reviewers performed study selection, data extraction, and quality assessment as recommended by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement.

Results: A total of 20 studies on nine triage systems were selected: the National Triage System (n = 1); the Australasian Triage Scale (n = 3); the pediatric Canadian Triage and Acuity Scale (n = 5); the Manchester Triage System (n = 1); the Emergency Severity Index (n = 5); an adaptation of the
South African Triage Scale for the Princess Marina Hospital in Botswana (n = 1); the Soterion Rapid Triage System (n = 1); the Rapid Emergency Triage and Treatment System-pediatric version (n = 2); and the Pediatric Risk Classification Protocol (n = 1). A total of 10 studies were performed with actual patients, while the others used hypothetical scenarios. The studies were rated low (n = 14) or moderate (n = 6) quality. Kappa was the most used statistic, although many studies did not specify the weighting. Pediatric Canadian Triage and Acuity Scale, Manchester Triage System, and Emergency Severity Index V.4 exhibited substantial to almost perfect agreement in moderate quality studies. **Conclusion:** There is some evidence on the reliability of the pediatric Canadian Triage and Acuity Scale, Manchester Triage System, and Emergency Severity Index V.4, but most studies are limited to the countries where they were developed. Efforts are needed to improve the quality of the studies, and cross-cultural adaptation of those tools is recommended in countries with different professional qualification and sociocultural contexts.