

quality measures. Although a lack of randomized controlled trials (RCTs) conducted in the prehospital field continues to limit guideline development, suboptimal methodology is also commonplace within the existing literature.

**Keywords:** emergency medical services, prehospital care, guidelines

## LO25

### How safe are our pediatric emergency departments? A multicentre, prospective cohort study

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**Introduction:** Data regarding adverse events (AEs) (unintended harm to the patient from health care provided) among children seen in the emergency department (ED) are scarce despite the high risk setting and population. The objective of our study was to estimate the risk and type of AEs, and their preventability and severity, among children treated in pediatric EDs. **Methods:** Our prospective cohort study enrolled children <18 years of age presenting for care during 21 randomized 8 hr-shifts at 9 pediatric EDs from Nov 2014 to October 2015. Exclusion criteria included unavailability for follow-up or insurmountable language barrier. RAs collected demographic, medical history, ED course, and systems level data. At day 7, 14, and 21 a RA administered a structured telephone interview to all patients to identify flagged outcomes (e.g. repeat ED visits, worsening/new symptoms, etc). A validated trigger tool was used to screen admitted patients' health records. For any patients with a flagged outcome or trigger, 3 ED physicians independently determined if an AE occurred. Primary outcome was the proportion of patients with an AE related to ED care within 3 weeks of their ED visit. **Results:** We enrolled 6377 (72.0%) of 8855 eligible patients; 545 (8.5%) were lost to follow-up. Median age was 4.4 years (range 3 months to 17.9 yrs). Eight hundred and seventy seven (13.8%) were triaged as CTAS 1 or 2, 2638 (41.4%) as CTAS 3, and 2839 (44.7%) as CTAS 4 or 5. Top entrance complaints were fever (11.2%) and cough (8.8%). Flagged outcomes/triggers were identified for 2047 (32.1%) patients. While 252 (4.0%) patients suffered at least one AE within 3 weeks of ED visit, 163 (2.6%) suffered an AE related to ED care. In total, patients suffered 286 AEs, most (67.9%) being preventable. The most common AE types were management issues (32.5%) and procedural complications (21.9%). The need for a medical intervention (33.9%) and another ED visit (33.9%) were the most frequent clinical consequences. In univariate analysis, older age, chronic conditions, hospital admission, initial location in high acuity area of the ED, having >1 ED MD or a consultant involved in care, (all  $p < 0.001$ ) and longer length of stay ( $p < 0.01$ ) were associated with AEs. **Conclusion:** While our multicentre study found a lower risk of AEs among pediatric ED patients than reported among pediatric inpatients and adult ED patients, a high proportion of these AEs were preventable.

**Keywords:** pediatrics, patient safety, adverse events

## LO26

### The efficacy of high dose cephalixin in the outpatient management of moderate cellulitis for pediatric patients

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**Introduction:** Children with moderate cellulitis are often treated with IV antibiotics in the hospital setting, as per recommendations. Previously in our hospital, a protocol using daily IV ceftriaxone with follow-up at the day treatment center (DTC) was used to avoid admission. In 2013, a new protocol was implanted and suggested the use of high dose (HD) oral cephalixin with follow-up at the DTC for those patients. The aim of this study was to evaluate the safety and efficacy of the HD cephalixin protocol to treat moderate cellulitis in children as outpatient. **Methods:** A retrospective chart review was conducted. Children were included if they presented to the ED between January 2014 and 2016 and were diagnosed with a moderate cellulitis sufficiently severe to request a follow up at DTC and who were treated according to the standard of care with the HD oral cephalixin (100 mg/kg/day) protocol. Descriptive statistics for clinical characteristics of patients upon presentation, as well as for treatment characteristics in the ED and DTC were analyzed. Treatment failure was defined as: need for admission at the time of DTC evaluation, change for IV treatment in DTC or return visit to the ED. Outcomes were compared to historic controls treated with IV ceftriaxone at the DTC, where admission was avoided in 80% of cases. **Results:** During the study period, 682 children with cellulitis were diagnosed in our ED. Of these, 117 patients were treated using the oral HD cephalixin outpatient protocol. Success rate was 89.5% (102/114); 3 patients had an alternative diagnosis at DTC. Treatment failure was reported in 12 cases; 10 patients (8.8%) required admission, one (0.9%) received IV antibiotics at DTC, and one (0.9%) had a return visit to the ED without admission or change to the treatment. This compares favorably with the previous study using IV ceftriaxone (success rate of 80%). No severe deep infections were reported or missed; 4 patients required drainage. The mean number of visits per patient required at the DTC was 1.6. **Conclusion:** Treatment of moderate cellulitis requiring a follow-up in a DTC, using an oral outpatient protocol with HD cephalixin is a secure and effective option. By reducing hospitalization rate and avoiding the need for painful IV insertion, HD cephalixin is a favourable option in the management of moderate cellulitis for pediatric patients, when no criteria of toxicity are present.

**Keywords:** cellulitis, ambulatory care, children

## LO27

### System outcomes associated with an emergency department clinical decision unit

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**Introduction:** A clinical decision unit (CDU) is an area within the emergency department (ED) that allows for protocol-driven treatment & observation of patients who may not require hospital admission, but are not ready for discharge after initial assessment & treatment. A CDU was established at BC Children's Hospital in 2014 as a means to optimize hospital resource utilization. Preliminary administrative data review revealed a return to ED (RTED) rate of 15% following a CDU stay, 2-3 times the RTED rate reported in the literature. Whether this is the expected cost of reducing hospital admissions remains unclear. Research exploring the underlying reasons for RTED following a CDU stay is limited. Objectives: Following a CDU stay, to describe 1) disposition outcome distribution; 2) underlying reasons for RTED; and 3) the proportion of potentially preventable RTED. **Methods:** Retrospective cohort study of all ED visits with a CDU stay from Jan 1, 2015 to Dec 31, 2015. Health records data was extracted & entered into standardized online forms by trained research assistants, then blindly reviewed by two investigators to determine a) the most probable cause

of each RTED & b) the number of RTED that were clinically unnecessary. **Results:** Of the 1696 index CDU visits, 1503 (89%) were discharged home. However, 139 (9%) had  $\geq 1$  associated RTED. Among these, 48 (35%) were deemed clinically unnecessary (89% agreement, Kappa = 0.79) & therefore potentially preventable. The most common reason (88%) for unnecessary RTED was mismatch between expected natural progression of disease (not requiring further medical assessment or treatment) & families' understanding of disease symptom range & duration. In 90% of these cases, anticipatory guidance regarding natural progression of disease was not communicated to parents upon discharge. Among the remaining 1364 (91%) that did not return, 750 had an initial visit total ED length of stay of >8 hours, thus were considered averted hospitalizations attributable to the CDU. **Conclusion:** The CDU has had a positive impact on patient & system outcomes through the prevention of several inpatient admissions. However, we observed a relatively large proportion of RTED, 35% of which were clinically unnecessary & 27% of which had inadequate discharge instructions. This highlights opportunities to further optimize the effectiveness of the CDU through quality improvement initiatives focusing on the ED discharge process.

**Keywords:** clinical decision unit, return emergency visits, resource utilization

#### LO28

**The Featured Leadership & Organization Workplace (FLOW) Hacks Series: Using the FOAMed domain for knowledge exchange and transfer of emergency department quality improvement projects**

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**Introduction/Innovation Concept:** Emergency departments (ED) across Canada have experienced increased patient volumes and greater demands on resources. Quality improvement (QI) projects have become common in the ED with the goal of providing better and more efficient care. These projects typically attempt to improve resource utilization or patient experience. Unfortunately, the opportunity to share and exchange information among physicians about QI projects is limited. The Free Open Access Medical Education (FOAMed) domain provides a good opportunity for physicians to share their successes and challenges when implementing QI projects. The Featured Leadership & Organizational Workplace (FLOW) Hacks is an ongoing dissemination project hosted on CanadiEM.org that aims to provide ED physicians with a forum for knowledge exchange and transfer. **Methods:** Emergency physician leaders from across Canada have been recruited to share their QI experiences. The FLOW Hacks are summarized as a standardized set of questions that aim to convey the most important aspects of the QI project. The physician responses are published on a monthly basis as a feature on the site. Our objective is to represent EDs from across Canada and of variable size. **Curriculum, Tool, or Material:** Our standardized questions collect information not only on the innovation and team members but also the methodology used for the QI initiative, the data collected, and the performance measures used to assess the outcome. There is a particular focus placed on the challenges that were encountered in implementing the initiative, how they were overcome, and how they would change their approach if they could redo the project. The goal of this format is to showcase the best QI initiatives in Canada so that others can replicate the work and learn from the challenges and success of the authors. **Conclusion:** The FLOW Hacks series is an innovative project to disseminate QI projects to emergency physicians and managers. In the next phase of this project we will conduct a qualitative analysis of the published FLOW Hacks to

identify the common mistakes and best practices in implementation of QI initiatives.

**Keywords:** innovations in emergency medicine education, quality improvement, free open access medical education

#### LO29

**ILearnEM.com: a curation of quality FOAM resources to learn the fundamentals of emergency medicine**

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**Introduction/Innovation Concept:** Free Open Access Medical Education (FOAM) is an emerging movement enabling crowdsourced sharing of vast amounts of medical knowledge on the web, especially in the dynamic field of emergency medicine (EM). However, the wide range of FOAM producers and the lack of organization in published FOAM content results in a challenge for learners to find quality resources that meet their educational needs. ILearnEM addresses this by curating content from popular FOAM sites to provide both new and seasoned learners with an organized, topic-structured EM curriculum. **Methods:** The resources on ILearnEM.com are drawn from the top 50 scoring websites on the Social Media Index (SMI), an indirect measure of quality and impact for online educational resources. The quality of each individual resource is reviewed by our curators using published Quality Checklists developed specifically for FOAM. Links to the original resources are systematically organized into core EM topics and separated into "Approach to" and "Beyond the Basics" categories. **Curriculum, Tool, or Material:** Since its launch in February 2016, ILearnEM.com has been distributed to the University of Ottawa medical students and residents, the Canadian CCFP-EM program directors, and through social media. Content on the website is updated every two weeks by our curators through an analysis of recent online publications from each of the top 50 SMI sites. The new resources are selected based on the level of quality and the relevance to the fundamentals of EM. Content updates are announced on social media (Twitter) to further engage learners by identifying the availability of new material. **Conclusion:** Based on a 10-month traffic analysis, 4234 unique visitors visited ILearnEM.com with an average of 1.9 visits/person and 10.4 pages/visit. Of those responding to an online survey (n = 138, response rate = 3.3%) visitors were 42.8% (n = 59) residents, 29.0% medical students (n = 40), 19.6% practicing physicians (n = 27), and 8.7% other healthcare professionals (n = 12). As one of few sites with an objective for a learner-oriented approach to curating content, ILearnEM will continue to be updated regularly based on user feedback to benefit the fast growing consumer base of medical student and resident learners.

**Keywords:** innovations in emergency medicine education, online medical education

#### LO30

**Using a Massive Online Needs Assessment (MONA) to develop a Free Open Access Medical education (FOAM) curriculum**

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**Introduction/Innovation Concept:** The boom in online educational resources for medical education over the past decade has changed how physicians learn and keep up to date with new literature. While nearly all emergency medicine residents use online resources, few of