

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 ≥ 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

these resources were designed to target knowledge gaps. Novel methods are required to identify learning needs to allow the targeted development of learner-centered curricula. **Methods:** A multidisciplinary team attempted to determine the feasibility of conducting a Massive Online Needs Assessment (MONA) to assess the perceived and unperceived educational needs in thrombosis and bleeding. An open, online survey was launched via Google Forms and disseminated using the online educational resource CanadiEM.org and social media platforms Twitter and Facebook with the goal of reaching participants of the Free Open Access Medical education (FOAM) community. **Curriculum, Tool, or Material:** The survey was designed to identify knowledge gaps and contained demographic, free text, and multiple choice questions. It took individuals approximately 30 minutes to complete and was incentivized with entry into a draw for one of four \$250 Amazon Gift cards. Feasibility was defined *a priori* as 150 responses from at least 4 specialties in 4 or more countries. This sample was deemed the minimum number required to identify knowledge gaps (defined as <50% correct answers). The survey was open from September 20 to December 10, 2016. We received 198 complete responses from 20 countries. Respondents included staff physicians (n = 109), residents (n = 46), medical students (n = 29), nurses (n = 8), paramedics (n = 4), a pharmacist (n = 1) and a physician assistant (n = 1). The survey entry page hosted on CanadiEM.org received page views from 866 unique IP addresses. As such, a conservative approximation of the completion rate per unique viewer was 22% (198/866). **Conclusion:** It is feasible to use a MONA to collect data on the perceived and unperceived needs of an online community. Such needs assessments could be used to make online resources more learner-centered.

Keywords: free open access medical education, massive online needs assessment, curriculum development

LO31

Identification of high risk factors associated with 30 day serious adverse events among syncope patients transported to the emergency department by emergency medical services

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Introduction: The majority of syncope patients transported to the emergency department (ED) by emergency medical services (EMS) are low-risk with very few suffering serious adverse events (SAE) within 30-days and over 50% are diagnosed with vasovagal syncope. These patients can potentially be diverted by EMS to alternate pathways of care (primary care or syncope clinic) if appropriately identified. We sought to identify high-risk factors associated with SAE within 30-days of ED disposition as a step towards developing an EMS clinical decision tool. **Methods:** We prospectively enrolled adult syncope patients who were transported to 5 academic EDs by EMS. We collected standardized variables at EMS presentation from history, clinical examination and investigations including ECG and ED disposition. We also collected concerning symptoms identified and EMS interventions. Adjudicated SAE included death, myocardial infarction, arrhythmia, structural heart disease, pulmonary embolism, hemorrhage and procedural interventions. Multivariable logistic regression was used for analysis. **Results:** 990 adult syncope patients (mean age 58.9 years, 54.9% females and 16.8% hospitalized) were enrolled with 137 (14.6%) patients suffering SAE within 30-days of ED disposition. Of 42 candidate predictors, we identified 5 predictors that were

significantly associated with SAE on multivariable analysis: ECG abnormalities [OR = 1.77; 95%CI 1.36-2.48] (non-sinus rhythm, high degree atrioventricular block, left bundle branch block, ST-T wave changes or Q waves), cardiac history [OR = 2.87; 95%CI 1.86-4.41] (valvular or coronary heart disease, cardiomyopathy, congestive heart failure, arrhythmias or device insertions), EMS interventions or concerning symptoms [OR = 4.88; 95%CI 3.13- 7.62], age >50 years [OR = 3.18; 95%CI 1.68-6.02], any abnormal vital signs [OR = 1.58; 95%CI 1.03-2.42] (any EMS systolic blood pressure >180 or <100 mmHg, heart rate <50 or >100/minute, respiratory rate >25/minute, oxygen saturation <91%). [C-statistic: 0.81; Hosmer Lemeshow p = 0.30]. **Conclusion:** We identified high-risk factors that are associated with 30-day SAE among syncope patients transported to the ED by EMS. This will aid in the development of a clinical decision tool to identify low-risk patients for diversion to alternate pathways of care.

Keywords: emergency medical services, syncope, risk factors

LO32

Are EMS offload delay patients at increased risk of adverse outcomes?

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Introduction: ED and hospital overcrowding cause offload delays that remove EMS crews from service and compromise care delivery to patients. Prolonged ED boarding times are associated with increased hospital LOS and patient mortality, but the impact of offload delays has not been studied. Our objective was to determine whether offload delays are associated with adverse system and patient outcomes. **Methods:** From July 2013 to June 2016, administrative data was collated from four Calgary adult EDs. All CTAS 2 and 3 EMS arrivals were studied. Those assigned an ED care space within 15 minutes were considered controls while those with delays of ≥60-minutes were considered 'delayed'. Multivariable logistic regression was used to determine propensity scores, which were used to match delayed patients to nearest neighbor controls. Matching variables for propensity modeling included age, sex, CTAS level, ED site, arrival day and time, living situation (homecare/facility vs. independent), complaint category (medical, cardiovascular, mental health/neuro, GI, trauma/MS, other) and previous ED use (visits within 1 year). The primary outcome was 7-day mortality. Secondary outcomes included hospital LOS and 30-day mortality. **Results:** A total of 111,743 patients were studied: 70711 controls and 41032 delayed (median time to stretcher of 8 vs. 109 minutes). There was significant baseline covariate imbalance: Delayed patients were more likely to be female, older, have lower CTAS acuity, arrive on weekdays and evenings, to have general medical complaints, and to arrive at the slowest offload site. In the unmatched analysis, delayed patients had lower 7-day mortality (2.1% vs. 2.6%), similar 30-day mortality (3.5% vs. 3.6%), and longer hospital LOS (10.3 vs. 9.8 days). In the propensity-matched analysis (41016 patients per group), covariate balance was substantially improved and outcomes differed slightly. Seven and 30-day mortality were essentially unchanged, but between group differences for hospital LOS disappeared (10.3 vs. 10.2 days). **Conclusion:** Propensity analysis suggests that EMS patients exposed to offload delays have similar 30-day mortality and slightly lower 7-day mortality than patients who receive timely ED access. While offload delays lead to substandard hallway care, patient dissatisfaction, and remove EMS crews from service, the levels of offload delay studied here were not associated with higher mortality or prolonged hospital LOS.

Keywords: offload delay, overcrowding, adverse outcomes