Inter-rater review of 4.5% of abstracted health records revealed a kappa score of 0.8. **Conclusion:** This study highlights that a remarkably low proportion of HFUs received allied health consultations at the study sites, likely corresponding to a lack of available consultants outside of daytime work hours. Our findings suggest the need to address significant gaps in order to balance the clinical needs of patients who frequent the ED with currently available resources.
Keywords: frequent users, administration, emergency department crowding

LO50
Headache presentations to emergency departments in Alberta: understanding investigative approaches

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Introduction: Headaches are a common emergency department (ED) presentation. The objective of this study was to characterize headache presentations in Alberta over a five-year period and explore the proportion of patients with potentially severe pathology. **Methods:** Administrative health data for Alberta (years 2011-2015) were obtained from the National Ambulatory Care Reporting System (NACRS) for all adult (>17 years) headache presentations (ICD-10-CA: G43, G44, R51). Patients with a primary or secondary diagnosis code of headache were eligible for inclusion in the study. Exclusions were made using the following criteria: 1) sites without computed tomography (CT) scanners; 2) presentations with a Canadian Triage and Acuity Scale (CTAS) score of 1; 3) patients with trauma or external mechanism of injury (e.g., ICD-10-CA codes S,T, V,W,X,Y); and 4) presentations receiving an enhanced/contrast CT (head). NACRS data were linked with a provincial diagnostic imaging data. Data are reported as means and standard deviation (SD), medians and inter-quartile range (IQR) or proportions, as appropriate. **Results:** From 2011-2015, 98,333 presentations were made by 66,970 patients (~0.3 pre-sentations per patient per year; equivalent to one presentation every 3.4 years). Headache presentations increased from 15,643 in 2011 to 21,636 in 2015. The median age was 38 years (IQR: 29, 51 years); more patients were female (69.3%), had a CTAS score of 3 (55%) and arrived at the ED without ambulance (90.3%). The majority of patients had a primary ED diagnosis of headache (88%) and the most common co-diagnosis was benign hypertension (2.8%). Additional diagnoses indicating severe or pathological headaches, included: stroke (0.63%), subarachnoid hemor-rhage (0.43%), infection (i.e., meningitis) (0.11%), and other brain hemorrhages (0.08%). Overall, the ED management of approximately 25% of presentations involved a head CT. Most patients were discharged from the ED (89.4%) after a median length of stay of 3.5 hours (IQR: 2.1, 5.2 hours). **Conclusion:** Headache-related ED presentations are increasing in Alberta, yet few severe/pathological diagnoses are being identified. Efforts to ensure appropriateness of head CT ordering could reduce exposure to ionizing radiation, improve patient flow and reduce health care costs; this imaging represents a target for future interventions.
Keywords: emergency department, headache, epidemiology

LO51
Incidence of clinically relevant medication errors after implementation of an electronic medication reconciliation process

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Introduction: Medication discrepancies are unintended differences between a patient's outpatient and inpatient medication regimens, and occur in up to 60% of hospital admissions. Canadian emergency departments (EDs) have implemented medication reconciliation forms that are pre-populated with outpatient medication dispensing data in order to reduce medication discrepancies and resultant adverse drug events. However, these forms may introduce errors of commission by prompting prescribers to reorder discontinued or potentially harmful medications. Our objective was to evaluate the incidence of medication discrepancies and errors of commission after the implementation of pre-populated medication reconciliation forms. **Methods:** This chart review included admitted patients who were enrolled in a parent study in which a research pharmacist prospectively collected best-possible medication histories (BPMHs) in the ED using all available informa-tion sources. Following discharge, research assistants uninvolved with the parent study compared medication orders documented within 48 h of admission with the BPMH to identify medication discrepancies and errors of commission. Errors of commission were defined as inap-propriate continuations of medications and reordering discontinued medications. An independent panel adjudicated the clinical significance of the errors. We used regression methods to identify factors associated with errors. The sample size was limited by enrolment into the parent study. **Results:** Of 151 patients, 71 (47%; 95%CI 39.2-54.9) were exposed to 112 medication errors. Of these errors, 75.9% (85/112; 95% CI 67.1-82.9) were discrepancies, of which 18.8% (16/85; 95%CI 12.0-28.4) were clinically significant. Errors of commission made up 24.1% (27/112; 95%CI 17.3-32.8) of all errors, of which 37.0% (10/27; 95%CI 18.8-55.2) were clinically significant. Taking 8 or more medications was associated with a 5-fold greater odds of experiencing a medication error after controlling for confounders (OR 5.00; 95%CI 2.45-10.17; $p < 0.001$). **Conclusion:** Clinically significant medication discrepancies and errors of commission remain common despite the implementation of electronically pre-populated medication reconciliation forms. Prospective studies are needed to evaluate whether using pre-populated medication reconciliation forms increases the risk of introducing errors of commission.
Keywords: medication reconciliation, patient safety, adverse drug events

LO52
Combination of easily measurable real time variables to predict ED crowding

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Introduction: Almost every domain of quality is reduced in crowded emergency departments (ED), with significant challenges around the definition, measurement and interventions for ED crowding. We wished to determine if a combination of 3 easily measurable variables could perform as well as standard tools (NEDOCS score and a NEDOCS-derived LOCAL tool) in predicting ED crowding at a tertiary hospital with 57,000 visits per year. **Methods:** Over a 2-week period, we recorded ED crowding predictor variables and calculated NEDOCS and LOCAL scores. These were compared every 2 hours to a reference standard Physician Visual Analog Scale (range 0 to 10) impression of crowding to determine if any combination of variables outperformed NEDOCS and LOCAL (crowded = 5 or greater). Five numeric variables performed well under univariate analysis: i) Total ED Patients; ii) Patients in ED beds + Waiting Room; iii) Boarded Patients; iv) Waiting Room Patients; v) Patients in beds To Be Seen. These underwent multivariate, log regression with stratification and

bootstrapping to account for incomplete data and seasonal and daily effect. **Results:** 143 out of a possible 168 observations were completed. Two different combinations of 3 variables outperformed NEDOCS and LOCAL. The most powerful combination was: Boarded Patients; plus Waiting Room Patients; plus Patients in beds To Be Seen, with Sensitivity 81% and Specificity 76% (r = 0.844, β = 0.712, p < 0.0001, strong positive correlation). This compared favourably with NEDOCS and LOCAL, each with Sensitivity 71% and Specificity 64%[PA1] (r = 0.545 and r = 0.640 respectively). We will also present a sensitivity and specificity analysis of all combinations of predictor variables, using various reference standard cut-offs for crowding. **Conclusion:** A combination of 3 easily measurable ED variables (Boarded Patients; plus Waiting Room Patients; plus Patients in beds To Be Seen) performed better than the validated NEDOCS tool and a NEDOCS-derived LOCAL score at predicting ED crowding. Work is on going to design a simple tool that can predict crowding in real time and facilitate early interventions. Correlation with ED system and clinical outcomes should be studied in different ED environments.
Keywords: emergency department, crowding, overcapacity

LO53

Resuscitation status documentation availability among emergency patients with advanced disease

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Introduction: Patients with advanced malignant and non-malignant disease (advanced disease—AD) who do not want or benefit from aggressive resuscitation may unfortunately receive such treatments if unable to communicate in an emergency. Timely access to patients' resuscitation wishes is imperative for treating physicians and for medical information systems. Our aim was to determine what proportion of emergency department (ED) patients with AD have accurate, readily accessible resuscitation status documentation. **Methods:** This cross-sectional, prospective study was conducted at a tertiary care ED during purposefully sampled random accrual times in summer 2016. We enrolled all patients with: 1) palliative care consultation, 2) metastatic malignancy, 3) COPD or CHF on home oxygen, 4) hemodialysis, or 5) advanced neurodegenerative disease/dementia. The primary outcome was the retrieval of any existing resuscitation status documents. Documentation was obtained from a standardized review of forms accompanying the patient ("arrival documents") and electronic medical record ("EMR"). We measured the time to retrieve this documentation, and interviewed consenting patients to corroborate documentation with their current wishes. **Results:** Of 85 enrolled patients, only 33 (39%) had any documentation of resuscitation status: 28 (33%) had goals of care retrieved from the hospital EMR, and 11 (15%) from arrival documents (some had both). Patients from long-term care facilities were more likely to have documentation available (odds ratio 13 [95% CI 2.5-65] vs community-living). Of 32 patients who were able to be interviewed, 20 (63%) expressed "do not resuscitate" wishes. Ten of these 20 lacked any documents to support their expressed resuscitation wishes. Previously expressed resuscitation wishes took more than 5 minutes to be retrieved in 3 cases when not filed "one click deep" in our EMR. **Conclusion:** The majority of patients with AD, including half of those who would not wish resuscitation from cardiorespiratory arrest, did not have goals of care documents readily available upon arrival to the ED. Patients living in the community with AD appear to be at high risk for unwanted resuscitative treatments should they present to hospital *in extremis*. Having documentation of their goals of care that is easily retrievable from the EMR shows promise, though issues of retrieval, accuracy, and validity remain important considerations.
Keywords: documentation, resuscitation wishes, code status

LO54

A descriptive analysis of ED length of stay of admitted patients 'boarded' in the emergency department

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Introduction: Previous studies have shown a link between Emergency Department (ED) overcrowding and worse clinical outcomes, increased risk of in-hospital mortality, higher costs, and longer times to treatment. Prolonged ED Length of Stay (LoS) of admitted patients awaiting a bed on in-patient units has been identified as a major driver of ED overcrowding. The purpose of this study is to provide a descriptive analysis of ED LoS among admitted patients, and determine the impact of prolonged ED LoS on total hospital in-patient length of stay (IP LoS). **Methods:** We conducted a single-site retrospective study for the period between January 1-December 31, 2015 at a very high volume community hospital. All patients aged ≥18 years admitted from the ED to acute in-patient Medicine units were identified. We carried out overall descriptive analysis (including analysis of day-of-the-week variability) on ED LoS. The mean total IP LoS for those patients with ED LoS < 12 hours, 12-24 hours, and ≥24 hours were calculated and analyzed using ANOVA and Tukey HSD tests. **Results:** A total of 6,961 individuals were admitted to the medical units over the 12-month period. The median and mean ED LoS for admitted patients were 22.9 hrs (IQR: 13.9 hrs- 33.1 hrs) and 25.6 hrs respectively. Using ANOVA, there was a statistically significant difference in means of ED LoS as a function of the day of the week (p < 0.0001), with Mondays having the highest mean ED LoS (27.6 hrs), and Fridays having the lowest (23.1 hrs). The mean IP LoS for those with ED LoS < 12 hours, 12-24 hours, and ≥24 hours, were 6.8 days, 6.9 days, and 8.5 days respectively, with a statistically significant difference between group means (p < 0.0001). Multiple pairwise comparisons of group means showed a statistically significant (p < 0.05) difference between mean IP LOS of those with an EDLOS ≥ 24 hours and those with an EDLOS < 24 hours. **Conclusion:** Preliminary results indicate that ED LoS ≥ 24 hours among admitted patients was associated with an increase in total IP LoS.*In the next 1-2 months, we intend to explore the role of other independent variables (age, sex, comorbidity, isolation status, and telemetry) on total ED LoS, and its association with IP LoS.
Keywords: overcrowding, quality improvement, adverse events

LO55

A pilot evaluation of medical scribes in a Canadian emergency department

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Introduction: Improving emergency department productivity has been a priority across Canada. In the United States, medical scribes have been utilized to increase the number of patients seen per hour (PPH) per physician; however, it is not well known if these outcomes can be translated to Canada. The purpose of this pilot evaluation was to (a) establish proof-of-concept of medical scribes in Canada and (b) gain experience in scribe implementation so as to inform future directions for the use of scribes in Canada. It was hypothesized that use of medical scribes would result in a greater PPH per physician. **Methods:** We conducted a