

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

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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 interquartile range (IQR) or proportions, as appropriate. **Results:** From 2011-2015, 98,333 presentations were made by 66,970 patients (~0.3 presentations 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 hemorrhage (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

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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 information sources. Following discharge, research assistants uninformed 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 inappropriate 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

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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