implementation. **Results:** A total of 14 shifts were observed, accounting for 112 hours of observation. EP's time was allocated amongst the following categories: direct patient interaction (40.8%), documentation (27.1%), reviewing patient results (18.4%), communicating with ED staff (7.63%), personal activities (5.7%), writing orders (5.1%), communicating with consultants (3.3%), teaching (1.7%) and medical information searches (1.3%). On average, EPs experienced 15.8 interruptions over the course of an 8 hour shift. **Conclusion:** In a paper charting system, the direct patient interaction accounts for the largest timeshare over the course of a given shift. However, the next two largest categories, documentation and reviewing patient data, both represent areas of potential streamlining via clerical improvements. Additionally, detailed measurements of EPs' activities have proven feasible and provides the potential for future insight into the impact of EHR's on EP workflow.

Keywords: productivity, time-motion, workflow

P106
The BPPV Tool: designing a smartphone app to aid in the diagnosis of benign paroxysmal positional vertigo

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Innovation Concept: Dizziness is an increasingly common presenting complaint in the emergency department (ED), accounting for >2% of visits annually or almost 30% of visits in patients aged over 65. Approximately half of all cases of dizziness in older adults are caused by benign paroxysmal positional vertigo (BPPV). The use of computerized tomography (CT) to rule out serious but rare underlying central nervous system (CNS) causes in patients with dizziness in the ED is increasing despite guidelines supporting the use of clinical exam maneuvers such as the Dix-Hallpike test and therapeutic canalith repositioning maneuvers. Evidence indicates that these clinical tools are underutilized due to clinician discomfort or lack of understanding in performing and interpreting the maneuvers, supporting brief and accessible clinical resources that incorporate video examples to address this. **Methods:** Through an iterative process the authors have developed a smartphone app that is designed to facilitate the clinical diagnosis of BPPV and provide treatment maneuvers where appropriate. The app is being tested by clinicians practicing emergency medicine or primary care in Northern Ontario. **Curriculum, Tool, or Material:** The BPPV Tool is designed as a step-wise guide to diagnose BPPV. Clinicians will be prompted to perform specific exam maneuvers based on clinical findings, and can follow short example videos or written directions. Potentially precipitated nystagmus is described along with example videos. Provocative tests include the Dix-Hallpike and Supine Roll. If appropriate, the clinician will be prompted to perform therapeutic repositioning maneuvers such as the Epley or Gufoni, with associated sample videos, descriptions, and billing information where available. If at any point a clinician's exam findings are not in keeping with a diagnosis of BPPV, they will be alerted to this and stop progressing through the app. **Conclusion:** The BPPV Tool is an accessible and easily disseminated smartphone app designed to improve clinician comfort in reliably diagnosing BPPV. Diagnosing this common condition clinically is supported in the literature and can reduce the number of unnecessary CT scans performed, which would reduce healthcare costs and ED length of stay for these visits, and could reduce the number of patient transfers from peripheral sites for imaging.

Keywords: benign paroxysmal positional vertigo, innovations in EM education, mobile app

P107
Use of activity trackers to count steps of older emergency department patients: a feasibility and validity study

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Introduction: Mobility is an evidence-based non-pharmacologic strategy shown to reduce delirium and functional decline among older patients in the acute care setting. Activity trackers have been used in previous studies to objectively measure mobility in older hospitalized patients. This study aims to compare the feasibility and validate the accuracy of three accelerometer-based activity trackers (Fitbit Zip, Fitbit Charge HR and StepWatch). This is the first step in a program of research to objectively measure as a potential marker of delirium risk. **Methods:** This is a prospective study of patients 65 years of age and older during their ED visit. We excluded those with critical illness, unable to communicate or provide consent; and any ambulatory impediments. Consenting participants wore the trackers for up to 8 hour, and completed a 6-meter walk test while a research assistant manually counted their steps. Our primary feasibility measure was the proportion of eligible patient for which we were able to recover the tracker and recorded their steps. The primary validation endpoint was the concordance between steps recorded by the tracker compared to a gold standard manual step count over a fixed distance. Sample size was based on the desired precision of the final estimate of feasibility. Intraclass correlation coefficient (ICC) was calculated to assess agreements between devices and manual count. We will report proportions with exact binomial 95% confidence intervals (CI) for feasibility and validity endpoints. **Results:** 41 participants were enrolled in this study. Mean age was 74.6 years (+/- 5.76) and 59% were females. The total subjects that wore the Fitbit Zip, Fitbit Charge HR and StepWatch during study participation was, 40/41 (97.5%, CI 0.87–0.99), 33/34 (97%, CI 0.84–0.99) and 31/32 (96.8%, CI 0.83–0.99), respectively. Total subjects with completed data extracted from the Fitbit Zip, Fitbit Charge HR and StepWatch was, 38/41 subjects (92.6%, CI 0.80–0.98), 34 (100%, CI 0.89–1.00), and 32 (100%, CI 0.89–1.00), respectively. All devices were recovered after use (100%, 95% CI 0.91–100). **Conclusion:** Our results suggest: 1) the use of gait-tracking devices in the ED is feasible, 2) consumer and research-grade devices showed good validity against the gold standard, and 3) the use of small, inexpensive, consumer-grade trackers to objectively measure mobility of older adults in the ED.

Keywords: activity trackers, mobility, older adults

P108
Alcohol-related emergency department visits by youth aged 12-24: trends over 4 years in one Canadian centre

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Introduction: Recent evidence shows an increase in alcohol-related emergency department (ED) visits among youth. Highly publicized collegiate rituals such as Homecoming may create a climate for problematic alcohol use. This study describes the frequency of youth alcohol-related ED visits per year and during pre-specified ritualized

drinking dates in one academic centre. **Methods:** This was a chart review of patients aged 12-24 with alcohol-related ED presentations between Sept 2013-Aug 2017. The National Ambulatory Care Reporting System (NACRS) database was searched for visits with ICD-10 codes related to alcohol. The Canadian Hospital Injury Reporting and Prevention Program (CHIRPP) database was also searched using the keyword alcohol. Duplicate visits were removed. Visits were excluded if patients had a history of psychosis, were held in the ED for involuntary psychiatric assessment, were homeless, were inmates from a correctional institute, if alcohol use was not mentioned and for complaints of sexual assault/domestic violence. Data abstraction by two reviewers used a standard form with variables predetermined. Differences were resolved with third party adjudication. Interrater reliability of the reviewers was assessed through duplicate review of 10% of randomly selected charts. A further 10% were assessed by a 3rd reviewer for extraction accuracy. **Results:** A total of 3,256 ED visits were identified with 777 meeting exclusion criteria. The remaining 2,479 visits were reviewed and subclassified into injury (51.8%), acute intoxication (45.1%) and mental health issue (3.2%). Interrater agreement was high for extracted variables with Kappa scores > 0.8. Despite a decrease in the region's youth population during the study period (28,325 to 25,125), overall standardized ED visits by youth increased by 12% (66,538 to 78,129). Adjusted for population, youth alcohol-related visits increased by 86.4% from 1,557 in 2013-14 to 2,902 in 2016-17. Co-ingestion of other substances was reported in 292 (11.8%) of visits, with cannabis the most common (57%). The 17 pre-specified ritualized days saw 578 (23.3%) of ED visits. **Conclusion:** Alcohol-related ED visits in youth are increasing in our region. Ritualized drinking dates appear to be particularly risky for youth with high rates of observed ED utilization. Strategies to manage high volume ritual days are being piloted, including temporary diversion to an in-hospital sobriety centre.

Keywords: alcohol intoxication, substance use/misuse, youth

P109

Does an elevated troponin ultimately matter? An assessment of outcomes in patients presenting to the emergency department with non-cardiac complaints

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Introduction: Acute myocardial infarction (MI) is one of the most time-sensitive diagnoses made in the emergency department (ED). Troponin (TNI) measurement is an invaluable tool; however, its utility depends on the clinical context and is highest where there is a strong pre-test probability. Studies show that most TNI elevations are due to non-cardiovascular causes; however, elevated TNI has been associated with increased morbidity and mortality, often prompting additional investigations. The aim of our study was to compare 1-year cardiac outcomes of patients who presented to the ED with non-cardiac complaints and elevated TNI who had further cardiac testing versus those who did not. **Methods:** We conducted a retrospective chart review of patients ≥18 seen in the ED for non-cardiac complaints with a high TNI from January-June 2016. Patients were stratified into two groups: 1) those who received diagnostic testing for ischemia and/or a cardiac consultation and 2) those without cardiac consultation or testing. Data was also collected on major adverse cardiac events within 1-year of ED presentation. Chi-squared analysis assessed the difference in proportions of outcomes between groups. We present our preliminary data. **Results:** In total, 1500

patients met inclusion criteria and 861 have been analyzed thus far. Of these 861, 209 went on to have either diagnostic testing for ischemia and/or a cardiology consult while 652 had no further investigations. There was no statistically significant difference in the proportion of patients who developed unstable angina (p = 0.9824), ST-elevation myocardial infarction (STEMI) (p = 0.9956), non-STEMI (p = 0.9008), stroke/TIA (p = 0.9657), revascularization (p = 0.8873), cardiac hospitalization (p = 0.9446) or died (p = 0.8972), within 1-year of their ED presentation. **Conclusion:** In patients with isolated elevated TNI and non-cardiac complaints, preliminary data showed no difference in mortality or cardiac event rates between those who had further testing/consultations and those who did not. TNI ordering could be cautiously limited to only presenting complaints/preliminary diagnoses likely to have cardiac etiology or sequelae or those in whom further testing would impact management/outcomes. Quality of care may be improved by reducing length of stay in the ED and potential risks of unnecessary tests. Future studies include determining cost implications and classifying what level of TNI elevation in non-ACS patients may predict a future cardiac outcome.

Keywords: non-cardiac, non-cardiovascular, troponin

P110

Chest tube thoracostomy in the ED: predictors of complications

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Background: Chest tube thoracostomy is frequently performed in the emergency department (ED) for patients with traumatic thoracic injuries. However, this procedure is associated with a high complication rate. **Aim Statement:** The aim of this study was to describe and assess predictors of complications following chest tube thoracostomy. **Measures & Design:** A retrospective chart review was conducted in a level 1 trauma center. Patients aged ≥16 who required a chest tube for a traumatic injury between 2016 and 2019 were identified. Variables including demographic data, Charlson Comorbidity Index, mechanism of injury, Injury Severity Score (ISS), chest tube insertion and technique (i.e. position, dislodgement, obstruction, organ perforation), complications and interventions were collected using a standardized data collection form. A second reviewer assessed all ambiguous files. Descriptive statistics and adjusted odds ratios were calculated. **Evaluation/Results:** 179 patients were included in the study, of which 141 were male (79%). Mean age was 54 [?] 18 and median ISS was 17 (Q1-Q3: 9-27). 207 chest tube thoracostomies were performed for pneumothorax (81%) or a hemothorax (38%) mainly after a blunt injury (92%). 183 standard chest tube (88%) and 24 pigtail catheters (12%) were installed. Overall, emergency medicine physicians/residents performed 70% of these procedures and 54% were performed by residents. Sixty-one patients (34%) suffered a total of 73 complications: 45 were infectious (62%) and 28 were technique-related (38%). Pneumonia was the most frequent complication (19%) followed by reintroduced or replaced chest tube (12%). After adjusting for the ISS, there was no statistically significant association between the type of tube (OR 0.36 95% CI: 0.08-1.68), the medical specialty (OR 1.19 95% CI: 0.55-2.58) or the level of training (OR 1.29 95% CI: 0.63-2.64) of the clinician and the incidence of at least one complication. **Discussion/Impact:** Our results show that one out of three patients experienced at least one complication following a chest tube thoracostomy in the ED, which confirmed existing literature (5%- 38%). After adjustment, the type of tube used, the