

incorrectly assuming a finding was seen by the EP. Our aim was to develop an IT-based system that permitted Radiologists to view EPs documented x-ray interpretations real-time. Based on engagement with both groups, it was essential that the system be user friendly and not add significantly to an already busy workload. **Methods:** An online reporting system was introduced in 2011, but with complaints that interpretations were not readily accessible, nor automatic. A revised system was launched in 2014 with 2 improvements: i) EP entered interpretation onto “sticky note” in PACs directly; and ii) EP interpretation “popped up” when a film was opened by Radiologist. **Results:** Both systems allowed data collection of the percentage of events EPs entered an interpretation. Prior to 2011, 0% of films had EP interpretations available to Radiologist, 33% with initial, and 53% with PACS. The revised system has enabled EPs to enter their x-ray interpretation which has resulted in improvement both *subjectively*, based on regular feedback from both EPs and Radiologists, and *objectively*. **Conclusion:** From this and other quality improvement initiatives, we have learned the importance of engaging frontline practitioners in process changes, specifically the impact on workflow. Also, utilizing existing IT systems and resources can result in positive change with minimal costs.

Keywords: communication, x-ray, quality

P086

Accuracy of the Ottawa Ankle Rules when applied by allied health providers in a pediatric emergency department

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Introduction: The Ottawa Ankle Rules (OAR) are a clinical decision tool used to minimize unnecessary radiographs in ankle and foot injuries. The OAR has been shown to be a reliable rule to exclude fractures in children over 5 years of age. However, there is limited data to support its use by other health care workers in children. Our objective was to determine the sensitivity and specificity of the OAR, to detect clinically significant fractures, when applied by allied health providers (AHPs). **Methods:** Children aged 5 to 17 years presenting with an acute ankle or foot injury were enrolled. Patients assessed by a physician prior to an AHP, presenting for reassessment or > 24 hours after the injury, having open, penetrating or neurovascular injury, or multiple injuries were excluded. Patients with metabolic bone disease, a previous x-ray, or the inability to communicate or ambulate before the injury were also excluded. Baseline data on x-ray use was collected in a convenience sample of 100 patients. AHPs then completed an OAR learning module. Then in phase 2, AHPs applied the OAR to a convenience sample of 186 patients. Both AHPs and physicians performed inter-observer assessments. **Results:** When AHP's applied the ankle portion of the OAR, the sensitivity was 88% (95% CI 46.7-99.3) and the specificity was 32.5% (95% CI 24.5-41.6) for clinically significant fractures. When AHP's applied the foot portion of the OAR, the sensitivity was 87.5% (95% CI 46.7-99.3) and the specificity was 15.6% (95% CI 7.0-30.1) for clinically significant fractures. In total, 2 clinically significant fractures (1 foot fracture and 1 ankle fracture) were missed by AHP's. Inter-observer agreement was $\kappa = 0.24$ for the ankle rule and $\kappa = 0.32$ for the foot rule. The missed ankle fracture had a positive OAR when performed by a physician as an inter-observer assessment. The missed foot fracture was a distal metatarsal fracture that was outside of the “foot zone” as defined by the OAR. **Conclusion:** The sensitivity of the OAR when applied by AHP's was very good. Both clinically significant fractures that were missed by AHP's would likely have been picked up by a physician assessment. More training and practice using the OAR

would likely improve AHP's inter-observer reliability. Our data suggest the OAR may be a useful tool for AHP's to apply as a screening tool prior to physician assessment.

Keywords: Ottawa Ankle Rule, radiography, allied health providers

P087

Overview of reviews: relevant treatment modalities for management of low back pain in the emergency department

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Introduction: Low Back Pain (LBP) remains a condition with relatively high incidence and prevalence. It affects 70-85% of people at some point in their lives and causes significant disability. LBP management may be best suited to a primary care setting, yet it is one of the most common reasons for presentation to Emergency Departments (ED). Nationally representative data from the United States found that LBP related disorders are a frequent cause of ED visits, accounting for 2.7 million visits to US EDs annually. There are numerous treatment modalities for LBP, however the task is identifying those that have relevance in an ED setting. Although there is extensive research available on management of LBP in primary care settings, treatment outcomes differ from that in the ED setting. This makes management of LBP a challenge for ED physicians. Few studies and no systematic reviews focus on treatment of LBP in the ED setting. **Methods:** The objective of our study is to compare effectiveness of treatment modalities relevant for management of LBP in the ED setting. We conducted an Overview of Systematic Reviews following robust methods advocated by Cochrane. We included systematic reviews of randomized controlled trials (RCTs). A medical librarian assisted in completing of an extensive search of the Cochrane Library, PubMed, and EMBASE. We used transparent criteria to select relevant reviews and assess interventions for ED relevance. We collected key data points from the included reviews including pain and functional limitation outcomes. Evidence will be synthesized for important outcome measures following the approach of Jones et al (2012). **Results:** We screened 4740 citations and identified 346 likely relevant systematic reviews. Comparative effectiveness review synthesis will be completed before the conference. We will report effectiveness of each of the included interventions and as well as make head to head comparisons of said relevant interventions. **Conclusion:** Currently most LBP patients presenting to the ED are inundated with a variety of potential treatment modalities, all alleging efficacy in LBP management. Physicians may use the evidence from this synthesis, and related knowledge translation tools, to guide decisions in effectively treating patients presenting to the ED with LBP.

Keywords: low back pain, emergency department, treatment effectiveness

P088

British Columbia emergency practitioner workforce and training survey

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Introduction: Understanding physician human resources in British Columbia's (BC) emergency settings is essential to plan for training, recruitment and professional development programs. In 2014 we conducted an online and phone survey to the site leads for the 95 Emergency Departments (ED) attached to hospitals in BC. **Methods:** A

one-page survey was developed by the authors (JC and JM). Each hospital listed on the BC Ministry of Health's website was contacted to confirm that they had a functioning ED attached to the hospital and to determine who their site lead was. Each ED site lead was then emailed the questionnaire and up to three more follow-up emails and direct phone requests were performed as needed. **Results:** 92 of the 95 EDs completed the survey and we discovered that just over 1000 physicians deliver emergency care in BC with approximately half doing so in combination with family practice. There was an estimated shortfall of 199 physicians providing emergency care in 2014 and an anticipated shortfall of 287 by 2017 and 399 by 2019. Slightly more than half had formal certification, with 28% through the Royal College of Canada and 70% with the College of Family Physicians of Canada. **Conclusion:** More than 1000 physicians care for patients in EDs across BC but there is a significant and growing need for more physicians. There is tremendous variation across health authorities in emergency medicine certification, but approximately half of those who deliver emergency care have formal certification. Despite limitations of a survey method, this provides the most accurate and current estimate of emergency practitioner resources and training in BC and will be important in guiding discussions to address the identified gaps.

Keywords: physician human resources, training, certification

P089

Frequency of substance abuse in Albertan emergency departments: a retrospective NACRS analysis

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Introduction: Substance abuse is strongly correlated with frequent ED use, which is a known risk factor for mortality. This study aimed to examine epidemiologic trends in ED visit frequency, and visit and patient characteristics among all patients presenting to Albertan EDs with visits related to substance abuse over a five-year period. **Methods:** This is a retrospective analysis of National Ambulatory Care Reporting System (NACRS) administrative ED data for Alberta. All ED visits related to substance abuse made by adults from fiscal year 2010/11 to 2014/15 were included. Using a validated definition enhanced by expert consultation, ED visits were classified as visits related to substance abuse if a set of ICD-10 codes determined *a priori* were present within the primary or secondary diagnostic fields. Data are reported as means (with SD), medians (with IQR) and proportions. Visit and admission frequencies were compared using Chi square and Chi square trend tests. All analysis was performed using SAS 9.4. **Results:** Over the study period, 177,287 visits related to substance abuse were made to Alberta EDs. These visits were made by 77,291 unique patients, and annual patient numbers increased consistently from 17,660 in 2010/11 to 24,737 in 2014/15; 62% of patients were male and median age was 38 years (IQR 24, 49). Visits increased from 27,839 in 2010/11 to 42,965 in 2014/15 ($p < 0.001$). 50% arrived by ambulance, and were mostly triaged as CTAS 3 to 5 (32% CTAS 1 or 2, 43% CTAS 3, and 23% CTAS 4 or 5). While most of the patients were discharged, 15.6% of visits resulted in admission; statistical but not clinically meaningful differences were detected in proportions of admitted visits across the study years. Compared to the overall population of patients with substance abuse presentations, frequent presenters (with a visit number greater than the 95th percentile) appeared to be older (median age 40 years [IQR 31, 49]) and had a higher proportion of males (69%). **Conclusion:** ED presentations for substance abuse

increased from 2010 to 2015 in Alberta, and frequent presenters appear to have a different demographic profile. Future study is needed to determine whether patients who present frequently with substance abuse are at increased risk for mortality as this may justify targeted intervention.

Keywords: drug and alcohol use, substance-related disorders, frequent users

P090

Comparing patients who leave the emergency department prematurely, before versus after medical evaluation: a NHAMCS analysis

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Introduction: Many patients leave the Emergency Department (ED) before beginning or completing medical evaluation. Some of these patients may be at higher medical risk depending on their timing of leaving the ED. The objective of this study was to compare patient, hospital, and visit characteristics of patients leaving prior to completing medical care in the ED either before or after evaluation by a medical provider. **Methods:** This is a retrospective cross-sectional analysis of ED visits using the 2009-2011 National Hospital Ambulatory Medical Care Survey. The target population was identified by coded dispositions corresponding to leaving prior to completing medical care, and two groups were defined based on whether or not they had been evaluated by a medical professional. Data are reported as means (with standard errors) and proportions, and bivariate and multivariate logistic regressions were performed. All analysis was performed using SAS 9.4 and SUDAAN 11.0.1 to account for the complex sample design. **Results:** 100,962 ED visits were documented from 2009-2011, representing a weighted count of 402,211,907 total ED visits. 2,646 (3%) resulted in a disposition of left without completing medical care. Of these visits, 1,792 (68%) left prior to being seen by a medical provider versus 854 (32%) who left after medical provider evaluation. Patients who left after being assessed by a medical provider were older, had higher acuity visits, were more likely to have visited an ED without nursing triage, more likely to have arrived by ambulance, and more likely to have private insurance than other payment arrangements (e.g. worker's compensation or charity). **Conclusion:** When comparing all patients who left the ED prior to completion of care, those who left after versus before medical provider evaluation differed in their patient, hospital, and visit characteristics and may represent a high risk patient group.

Keywords: patient safety, left against medical advice, left without being seen

P091

Anaphylaxis: epidemiology and treatment in a Canadian emergency department

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Introduction: As part of the multicenter C-CARE (Cross-Canada Anaphylaxis Registry) project, this study aimed to describe the characteristics of anaphylactic reactions and assess if emergency physicians follow treatment guidelines. **Methods:** A cohort study was conducted in the emergency department of Sacré-Coeur Hospital, a university-affiliated, urban tertiary care hospital. For each anaphylaxis case recruited by the treating physician, a standardised questionnaire was completed. The information for missed cases was collected retrospectively through chart