Keywords: ultrasound, simulation, echocardiography

P026

Pilot-testing an adverse drug event documentation form prior to its implementation in an electronic health record

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Introduction: Adverse drug events (ADEs), harmful and unintended consequences of medications, account for 1.7M emergency department (ED) visits in Canada each year. Up to 30% are due to unintentional re-prescribing of culprit drugs, partly due to lack of accessible, succinct, and comprehensible ADE information at the time of prescribing. Through a systematic review and workshops with physicians and pharmacists, we designed new ADE documentation fields. Our objective was to pilot-test the fields to anticipate and address problems prior to their integration into an electronic medical record (EMR). **Methods:** We seek to introduce structured ADE documentation into an EMR and PharmaNet, BC's medication-dispensing database, to generate patient-level alerts when attempts to re-prescribe culprit drugs are made. We conducted this qualitative study in the EDs and on the wards of two BC hospitals. The ADE fields collect information about the culprit drug, its effect on the patient, treatment and outcome. We recruited a convenience sample of pharmacists, and distributed paper forms with the ADE fields to them before data collection shifts. We recorded how pharmacists evaluated patients for ADEs and completed the forms. We collected completed forms, and conducted semi-structured interviews for feedback. We analyzed data for common themes using inductive reasoning and constant comparison methods. **Results:** We observed 6 pharmacists documenting 24 ADEs. The field design was perceived as simple, clear, with sufficient detail to capture ADE information. Users identified fields to be omitted (*e.g.,* excess details of culprit drug), modified (*e.g.,* reporting options), or needing clarification (*e.g.,* treatment details). Users were uncertain about what to report when the differential diagnosis included an ADE, but diagnostic uncertainty remained. Thus, ADE fields should enable communication about suspected events and potential alternative diagnoses. Pharmacists required follow-up in some cases to complete their determination (e.g., *C. difficile toxin assay),* emphasizing the need to be able to modify an ADE report. **Conclusion:** Paper-based pilot testing uncovered barriers to ADE documentation, and allowed us to plan for modifications and required linkages between electronic systems. In order to be functional, electronic ADE documentation must be dynamic, representing a departure from previous reporting platforms.

Keywords: patient safety, adverse drug events, electronic medical records

P027

Emergency medical services (EMS) assist-requiring hypoglycemia in Southwest Ontario

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Introduction: Hypoglycemia is a common treatment consequence in diabetes mellitus (DM) and the second most common cause of Emergency Department (ED) visits for adverse drug events. Prior studies have examined the rates of ED visits and inpatient hospitalizations for hypoglycemia. These represent only a small proportion of severe hypoglycemic events, as many do not present to hospital. To date, there have been no Canadian population-based studies examining the rates of EMS assist-requiring hypoglycemia in DM patients in the pre-hospital setting. The objective of this study was to determine the prevalence and describe the EMS assist-requiring hypoglycemia in DM patients in Southwestern Ontario. **Methods:** A population-based retrospective cohort study was conducted on all EMS calls for diabetic emergency from 2008-2014 in Southwestern Ontario, Canada. Data was extracted from the electronic ambulance call records for 11 EMS services in the region. **Results:** There were 9,265 EMS calls for a diabetic emergency (mean age 59 $\pm$ 20 years, 57% male, 82% DM). For 223 calls (2.4%) patients were younger than 19 years of age. The mean blood glucose level on presentation was 2.49 $\pm$ 1.02 mmol/L and 2,116 (24%) call subjects had initial GCS score less than 9. Treatment (intravenous glucose or IM glucagon) was given in 7,126 (77%) calls. There were 3,884 (51 %) hypoglycemia episodes with documented insulin use and 1,436 (19 %) documented oral hypoglycemia agents use. Between 2008 and 2014, rates of calls increased by 7.4% ($p < 0.0001$). Prevalence of hypoglycemia calls during the study period was estimated at 189 per 10,000 diabetes patients per year. In 2,297 (24.8%) instances, the patient refused transport to the ED. **Conclusion:** The rates of EMS assist-requiring hypoglycemia are almost double the rates of hospitalization/ED visits for acute DM complications in our region. Many life threatening episodes of hypoglycemia may go unreported and subsequently not followed by the patient's primary health care provider. Further assessment and proper education following those episodes may help decrease the rate of severe hypoglycemia.

Keywords: hypoglycemia, emergency medical services (EMS)

P028

Implementation of an emergency department outpatient deep venous thrombosis treatment guideline: a quality improvement initiative

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Introduction: Deep venous thrombosis (DVT) is a common diagnosis in the Emergency Department (ED). Despite evidence that Rivaroxaban is non-inferior to the low molecular weight heparin (LMWH) bridge to Warfarin approach for anticoagulation, there is still variability in physician practice. A collaborative ED-Hematology quality improvement initiative, that included a treatment guideline and increased access to a thrombosis clinic, was introduced to guide anticoagulation. **Methods:** A retrospective chart review of ED patients with DVT one-year pre (April 1, 2013-March 31, 2014) and one-year post (April 1, 2014-March 31, 2015) implementation of an outpatient DVT treatment guideline was conducted. Primary outcomes were percentage of patients discharged from the ED on Rivaroxaban or LMWH/Warfarin. Secondary outcomes included mean ED length of stay (ED LOS), mean number of return ED visits per patient and percentage of thrombosis clinic referrals. Balance measures included percentage of return ED visits with pulmonary embolism (PE) within one month and percentage of return ED visits with bleeding (major bleeding or clinically relevant non-major bleeding) due to anticoagulation use. Clinical and administrative data was extracted with 15% independently reviewed for inter-rater reliability. **Results:** 95 patients met inclusion criteria (52 patients pre and 43 post guideline implementation). The prescribing of Rivaroxaban increased from 9.6% (5/52) to 62.7% (27/43). Mean ED LOS for the Rivaroxaban group was 7.5 hours (95% CI, 5.8-9.2) versus 10.0 hours in the Warfarin group (95% CI, 8.5-11.4) [$p = 0.04$]. The mean return ED visits for the Rivaroxaban group was 0.2 (95% CI, 0-0.3) versus 3.9 in the Warfarin group (95% CI, 3.2-4.6) [$p < 0.001$]. The thrombosis clinic referrals increased from 29.5% (13/44) to 86.0% (37/43). There was one PE

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diagnosed in the Warfarin group within one month of treatment and zero in the Rivaroxaban group. There were 7.9% (5/63) return visits for bleeding in the warfarin group and 3.1% (1/32) in the Rivaroxaban group. **Conclusion:** By implementing an outpatient DVT treatment guideline at our academic center, we increased the prescribing of Rivaroxaban. This significantly decreased both the ED LOS and return ED visits in the Rivaroxaban group. There was also a threefold increase in referrals to a thrombosis clinic. This was all achieved without increasing patient harm.

Keywords: deep vein thrombosis, quality Improvement, anticoagulation

P029

A novel use of a point-of-view camera for teaching lateral canthotomy and cantholysis to emergency physician trainees

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Introduction / Innovation Concept: Orbital compartment syndrome (OCS) is a vision threatening ocular emergency that occurs when there is a sudden rise in orbital pressure resulting in damage to intraocular structures. Lateral canthotomy and cantholysis (LCC) is a simple procedure used to decompress the orbit. Emergency physicians should be comfortable evaluating and diagnosing OCS, and performing a LCC to decrease the risk of vision loss in the event that consultation and intervention by an ophthalmologist is not possible in a timely manner. Developing this skill is challenging as this procedure is seldom performed, therefore resources need to be available. Current training videos are an excellent learning tool but are limited by several factors, such as not capturing from the perspective of the physician performing the procedure. Point-of-view (POV) cameras show the physician's perspective, which is more conducive to training as it mimics the experience for trainees. We report our novel technique of recording a LCC using a head-mounted POV camera as a resource for emergency physician trainees in learning this procedure. **Methods:** We used a head mounted POV GoPro Hero 4 Silver camera (GoPro, San Mateo, CA, U.S.A.) with a modified 5.4mm f/2.5 aftermarket lens with a 60° field of view (Peau Productions Inc, San Diego, CA, U.S.A.). This lens was pre-focused to a working distance of 17 inches, set to 1080P on narrow recording at 48 frames per second, and had spot metering and the low light functions turned on. The camera functions were controlled remotely by an assistant with the use of GoPro App on a tablet computer to ensure proper framing of the camera. **Curriculum, Tool, or Material:** Our novel use of a POV camera for recording LCC is an efficient, cost effective tool useful for medical education at an academic institution as well as a valuable resource for emergency room clinicians. The POV recording system can be a training device in an emergency setting for performing a LCC or other procedures that emergency physicians may seldom encounter. **Conclusion:** Point-of-view cameras have great potential in assisting the education at the post-graduate level within residency training programs. Video recording from the physician's perspective simulates the experience for trainees and could leave them feeling more confident in their ability to perform the procedure.

Keywords: innovations in EM education, simulation, online educational resources

P030

The FAN study: intranasal fentanyl and inhaled nitrous oxide for fracture reduction

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Introduction: Recently, intranasal (IN) fentanyl and inhaled nitrous oxide/oxygen (N_2O) mixture have been increasingly used for procedural sedation and analgesia (PSA) alone or in combination. There is a lack of data on the efficacy of these combined agents. **Methods:** The objective was to evaluate the efficacy of IN fentanyl and N_2O as PSA for the reduction of mildly-to-moderately displaced fractures and dislocations. We performed a prospective, observational cohort study between September 2014 and October 2015. Patients were recruited at CHU Sainte Justine (Montréal) and Royal Children Hospital (Melbourne, Australia). Patients aged 4 to 18 years were eligible if PSA consisted of IN fentanyl and N_2O for the reduction of mildly-to-moderately displaced fractures or dislocations. Patients received at least IN fentanyl 1.5 mcg/kg (100 mcg max) and at least a 50/50% mixture of N_2O with oxygen. Primary outcome was the efficacy of PSA measured by the patient assigned Facial Pain Scale-Revised (FPS-R). The Face, Legs, Activity, Cry, Consolability (FLACC) scale was also recorded. Depth of sedation was evaluated using University of Michigan Sedation Scale (UMSS). Adverse events were recorded following criteria of the Consensus Panel on Sedation Research of PERC/PECARN. Additional data concerning satisfaction or discomfort were evaluated via questionnaires, and follow-up telephone calls were made to elicit information on adverse events after discharge. **Results:** A total of 91 patients aged 9.7 $\pm$ 3.0 years were enrolled. There was no difference between the median FPS-R score during the procedure compared to before: Median 2 and 2 (median difference 0 [95% CI 0, 0]), respectively. The FLACC score was higher during the procedure than before: Median 4 and 0 (median difference 2 [95% CI 1, 3]). UMSS was 1 (95% CI 1, 2) during the procedure. 42 (46%) patients had adverse events, all mild: vertigo (20%), nausea (16%)]or vomiting (12%). A total of 85/88 (97%) parents and 82/85 (96%) ED physicians would want the same sedation in another procedure. **Conclusion:** PSA with IN fentanyl and N_2O seems effective in our study, as evaluated by patient assigned FPS-R. Patients were minimally sedated. Adverse events were frequent but mild. Overall, parents and medical staff would want the same agents used in another procedure. Thus, PSA with IN fentanyl and N_2O appears to be an attractive option for reduction of mildly displaced fractures or dislocations.

Keywords: procedural analgesia and sedation, fracture reduction, intranasal fentanyl

P031

Assessing differences between high- and low-performing resuscitation team leaders using gaze-tracking technology

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Introduction: Crisis decision-making is an important responsibility of the resuscitation team leader but a difficult process to study. The purpose of this study was to evaluate visual and behavioural differences between team leaders with different objective performance scores using gaze-tracking technology. **Methods:** Twenty-eight emergency medicine residents in different stages of training completed four simulated resuscitation scenarios. Participants wore gaze-tracking glasses during each station. An outside expert blinded to participant training level assessed performances using a validated assessment tool for simulation scenarios. Several visual endpoints were measured, including

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