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Introduction: Rib fractures represent a frequent condition associated with Minor Thoracic Injury (MTI). Since the last decade, ultrasound have become an important part of emergency physician's (EP) daily practice, and its applications have become numerous. The main objective of this study was to evaluate the feasibility of Emergency Department Targeted Ultrasound (EDTU) for rib fracture diagnosis in patients with MTI. Secondary objectives were to 1) evaluate patients' pain during the EDTU procedure, 2) assess clinicians' degree of certitude over rib fracture diagnosis made by EDTU, 3) identify the limitations of the use of EDTU technique, and 4) compare the diagnosis obtained with EDTU to radiography results. **Methods:** Adult patients who presented with clinical suspicion of rib fractures after MTI were included. All patients underwent EDTU performed by emergency physicians (EP) prior to a rib view X-ray. Visual Analogue Scale (VAS) ranging from 0 to 100 was used to ascertain feasibility, patients' pain and clinicians' degree of certitude. Feasibility was defined as a score of more than 50 on the VAS. We also documented the radiologists' interpretation of rib view X-ray. Radiologists were blinded to the EDTU results. **Results:** Ninety-six patients were included. A majority (65%) of EP concluded that the EDTU technique to diagnose rib fracture was feasible (VAS score > 50). Median score for feasibility was 63. Median score was 31 (Interquartile range (IQR) 5-57) for patients' pain related to the EDTU examination and 72 (IQR 32-92) for the degree of certitude over the diagnosis made by EDTU. The main limiting factor of the EDTU technique was pain during patient examination (15%). **Conclusion:** EDTU examination appears to be a feasible technique for rib fractures diagnosis in the ED.

Keywords: ultrasound, Rib fracture, minor thoracic injury

P074

Impact of wearing a helmet on the risk of hospitalization after a sport injury

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Introduction: Six Canadian provinces recently made bicycle helmet mandatory and subsequent data concerning hospitalization rates after head injuries in cyclists were controversial. Furthermore, there remains an important proportion of participants who don't wear a helmet in sporting activity. We thus wanted to estimate the impact of helmet use in sport injuries on the risk of hospitalization. **Methods:** Study participants were patients of all age presenting at the emergency department of the Hôpital de l'Enfant-Jésus du CHU de Québec for a trauma that occurred in a sport in which it's possible to wear a helmet. Data were collected from information provided by the patient and from the Canadian Hospitals Injury Reporting and Prevention Program' (CHIRPP) database. Descriptive and multivariate analyses have been carried out using these data. We performed binomial logistic regression analyzes to estimate the risk adjusted for potentially confounding variables: age, sex and number of injuries. **Results:** Most patients included in the study (n = 169) were males (69.8%) aged between 10 and 30 years (50.3%). Sports most frequently involved in trauma were cycling (31.4%), downhill skiing (18.3%), snowboarding (14.8%), hockey (11.8%), and skateboarding (5.9%). Overall, 70.4% of patients were wearing a helmet at the time of injury. Helmet use in sports was associated with a reduction of 52% of the risk of hospitalization (RR: 0.48 [CI: 95%: 0.25-0.93]) after a trauma. In addition, patients not wearing a helmet had higher proportions of intracranial hemorrhage (10% vs. 1.7%) and skull fracture (8% vs 2.5%). **Conclusion:** Results suggest that helmet use decreases the risk of hospitalization for trauma sustained in sports in which it's possible to wear a helmet.

Keywords: helmets, sport injury, hospitalization rate

P075

Impact of pit-crew CPR following out-of-hospital cardiac arrest in Saskatoon

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Introduction: Between 1980 and 2008, survival rates following an out-of-hospital cardiac arrest (OHCA) have remained unchanged, averaging 7.6%. Despite the use of new and emerging technologies, new medications, and automated external defibrillators, survival remains low. Recently, a new focus in cardiopulmonary resuscitation (CPR) has shown dramatic improvements in survival post OHCA. This new model, called pit-crew CPR, focuses on minimizing interruptions in chest compressions and has each team member playing a specific role in the resuscitation, akin to the pit-crew of a car race. Certain districts in the United States and Canada have adopted the pit-crew, or a similar, high quality, maximum time-on-chest CPR model, with much success. We aim to determine whether the pit-crew model of CPR improves survival following OHCA in Saskatoon, SK. **Methods:** In Saskatoon, EMS and Fire crews respond to OHCAs and have been exclusively using the pit-crew model of CPR since Jan 1st, 2015. This study is a before and after retrospective chart analysis, comparing two groups - pre and post implementation of the pit-crew CPR model. The primary outcome is survival to hospital discharge post OHCA. Secondary outcomes include survival to admission and any return of spontaneous circulation (as per the Utstein definition). The inclusion criteria are patients >18 years old with a witnessed OHCA of presumed cardiac origin who receive CPR by EMS/Fire within the Saskatoon Ambulance service (MD Ambulance) catchment area. Patients were excluded if the OHCA was unwitnessed, or if there was a presumed non-cardiac cause for the arrest, e.g. trauma. **Results:** In the pre-pit-crew model cohort, between Jan 1st, 2011 and Sept 31st, 2014, 455 OHCAs were analyzed. In this cohort 10.5% survived to discharge, 31.9% survived to admission and ROSC was achieved in 39% of cases. The percentage of patients with initial rhythms of VF/VT, asystole or PEA were 28.5% (26%), 41.5% (1%) and 23.6% (10%) respectively, with survival to discharge shown in parentheses. The post-pit-crew cohort is still in the data collection phase. **Conclusion:** Our pre-pit crew cohort data has been collected and analyzed. With ongoing data acquisition for the post-pit crew cohort, we hope to have the full data set complete by the end of 2018. It will be at that time when we are able to determine whether the pit-crew model of CPR improves survival to discharge following OHCA in Saskatoon.

Keywords: resuscitation, prehospital, cardiopulmonary resuscitation (CPR)

P076

Delirium prevention in the emergency department using regional anesthesia with ultrasound guidance in the elderly population with hip fracture: a pilot study

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Introduction: The incidence of delirium following hip fracture is near 60%. The use of regional anesthesia (RA) with ultrasound (U/S) guidance has suggested a decrease in delirium incidence. In this pilot study, we propose to include the use of femoral block with U/S guidance in the management of the elderly population with hip fracture in the emergency department (ED) to lower the risk of delirium. **Methods:** This paired control case study was conducted from December 2013 to April 2015, and includes patients seen by emergency doctors from the ED of Hospital Enfant Jesus in Quebec City. Patients of the intervention and control groups were paired by age. Inclusion Criteria: Patients with (1) a hip fracture; (2) admitted to the hospital after their ED management; (3) and surgically repaired. Exclusion Criteria: Patients (1) with delirium upon arrival or a known mental/cognitive status (dementia, unconsciousness or severely ill status) (2) less than 60 years old (3) not able to speak English or French. Intervention group: Patients with hip fracture who received femoral blocks by the five emergency doctors who were trained and performed with U/S guidance. Control group: Patients with hip fracture who received standard pain control care by emergency doctors and who did not receive a femoral block. Analysis: Incidence of delirium and blocks performed by EM doctors were tallied. A comparison of absolute pain reduction at 30 minutes was also done. Odd ratios were derived and adjusted for age, sex, total opiates dose, delay before surgery and morbidity scores. **Results:** A total of 29 femoral blocks were performed through the analysis period. Groups were similar for age, sex and APACHE II and CHARLSON scores. A 30 minutes absolute pain reduction of 3/10 was noted. Two thirds of the blocks were performed by two ED doctors. Need for rescue medication was needed for 7% of patients for pain control at 30 minutes. Adjusted odd ratios for age, sex, morbidity scores, total opiate doses and delay before surgery revealed no decrease in delirium. **Conclusion:** Ten out of 26 patients hospitalized for hip fracture who received a femoral block under U/S guidance from the ED doctors were diagnosed with delirium. A Canadian prospective study «EDURAPID» is underway to demonstrate more the impact of R/A under U/S guidance on the incidence de delirium in this population.

Keywords: delirium, regional anesthesia, hip fracture

P077

Subcutaneous fentanyl administration for pain management in prehospital setting

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Background: Intravenous (IV) and Intranasal (IN) route for analgesic administration cannot always be used to provide adequate pain management in pre-hospital setting. **Objective:** In a rural and suburban pre-hospital setting, studying the feasibility, safety and effectiveness of the subcutaneous (SC) route for fentanyl administration by Basic Life Service-Emergency Medical Technician (BLS-EMT) for pain management, with the support of an online medical control (OLMC) center. **Methods:** Retrospective study of patients who received subcutaneous fentanyl and were transported by BLS-EMT to an emergency department (ED). Safety and feasibility were characterized by collecting vital signs, Ramsey sedation scores and adverse events following fentanyl administration, and effectiveness was evaluated by changes in pain scores. Parametric and non-parametric tests were used for statistical analyses comparing age groups (<70 & ≥70 years old) regarding transport time. **Results:** Pain scores ≥7 were found in 288 patients (14-93 years old) who were eligible for analgesia. 249 (86.5%) of the 284 (98.6%) who received subcutaneous fentanyl were included for analysis. At baseline, no difference ($p > 0.05$) in pain scores *p*re-fentanyl between groups even if patients < 70 years old received a significant higher dose of fentanyl than those ≥70 years old (1.4 ± 0.3 $^{v}/_{s}$ 0.8 ± 0.2mcg/kg, $p < 0.05$). Post-administration pain score decreased significantly while proportion of patients achieving a pain relief increased significantly ($p < 0.05$) regarding transport time (15, 30 or 45min) to ED. Adverse events were present in 1.6% of the patients [hypotension (n = 2; 0.8%), nausea (n = 1; 0.4%), and Ramsey score > 3 (n = 1; 0.4%)]. **Conclusion:** Under the supervision of an OLMC center, subcutaneous fentanyl administration by BLS-EMT for pain management seems to be a feasible approach, with a safe and effective route without major adverse event in pre-hospital setting. Pain relief increased with longer transport time. Further studies are needed to determine the benefits of SC route when compared to other administration routes in EMS.

Keywords: prehospital subcutaneous administration, fentanyl, pain management

P078

Handover education in Canadian adult and pediatric emergency medicine residencies: a national survey and needs assessment

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Introduction: Emergency department handover is a high-risk period for patient safety. A recent study showed a decreased rate of preventable adverse events and errors after implementation of a resident hand-off bundle on pediatric inpatient wards. In a 2013 survey by the Canadian Associations of Internes and Residents, only 11% of residents in any discipline stated they received a formal teaching session on handover. Recently, the CanMEDS 2015 Physician Competency Framework has added safe and skillful transfer of patient care as a new proficiency within the collaborator role. We hypothesize that significant variation exists in the current delivery and evaluation of handover education in Canadian EM residencies. **Methods:** We conducted a descriptive, cross-sectional survey of Canadian residents enrolled in the three main training streams of Emergency Medicine (FRCP CCFP-EM, PEM). The primary outcome was to determine which educational modalities are used to teach and assess handover proficiency. Secondarily, we described current sign-over practices and perceived competency at patient handover. **Results:** 130 residents completed the survey (73% FRCP, 19% CCFP-EM, 8% PEM). 6% of residents were aware of handover proficiency objectives within their curriculum, while 15% acknowledged formal evaluation in this area. 98% of respondents were taught handover by observation of staff or residents on shift, while 55% had direct teaching on the job. Less than 10% of respondents received formal sessions in didactic lecture, small group or simulation formats. Evaluation of handover skills occurred primarily by on shift observation (100% of respondents), while 3% of residents had received assessment through simulation. Local centre handover practices were variable; less than half of residents used mnemonic tools, written or electronic adjuncts. **Conclusion:** Canadian EM residents receive variable and sparse formal training and assessment on emergency department handover. The majority of training occurs by on shift observation and few trainees receive instruction on objective tools or explicit patient care standards. There exists potential for further development of standardized