

un débit d'oxygène de 15 L/min, et connectée via différentes interfaces à un poumon test pourvu de capteurs:

- Capteur de pression des voies aériennes (PAW en cm H₂O).
- Capteur de débit au niveau des voies aériennes.
- Capteur de pression "intra thoracique" (PIT max et min; et Pression Expiratoire Intra Thoracique).

Les mesures sont effectuées sans b-card, puis avec b-card connectée à un masque facial, un masque laryngé, une sonde trachéale.

Results: La pression "statique", celle de la valve virtuelle, mesurée au niveau de la b-card reste stable à 6 cm d'H₂O, sous un débit de 15 L/min. Elle permet une résistance à hauteur de cette valeur aux flux de gaz entrant ou sortant du thorax expérimental en fonction des compressions/décompressions. Les pressions intra thoraciques positives mesurées lors des compressions restent équivalentes autour de 25 à 30 cm H₂O, et ce quelle que soit l'interface utilisée. Les pressions intra thoraciques négatives mesurées lors des décompressions restent équivalentes autour de 10 à 15 cm d'H₂O, et ce quelle que soit l'interface utilisée. **Conclusion:** Les pressions intra thoraciques obtenues en associant une oxygénation passive par la b-card à des compressions/décompressions continues permettent d'assurer une ventilation efficace et synchrone. Les pressions mesurées au niveau du dispositif sont constamment inférieures à la pression d'ouverture moyenne oesophagienne, ce qui éviterait toute insufflation gastrique.

Keywords: arrêt cardiaque, oxygénation passive, compressions thoraciques continues

P035

Optimization of indirect pressure to temporize life-threatening haemorrhage: a simulation study

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Introduction: Minimizing haemorrhage using direct pressure is intuitive and widely taught. In contrast, this study examines the use of indirect-pressure, such as external aortic compression which has been identified as an immediately applicable maneuver to address the leading cause of battlefield mortality: junctional hemorrhage. However, it is currently unclear how to optimize this technique. **Methods:** This prospective, block-randomized, cross-over simulation study of compression optimization was performed on a model of central vessel compression that recorded weight (lbs) and pressure (mmHg). Forty participants simulated external aortic compression on the ground as well as a stretcher with and without a backboard. Participants were blinded to compression weight and pressure, as well as the purpose of the study, to minimize preparation bias. Manoeuvres were performed in alternating order to control for skill acquisition and fatigue. Scripted instructions were followed to compress with 1 then 2 hands, and to apply "sustainable effort" and then "maximal effort". **Results:** The greater the compressor's bodyweight the greater their mean compression (Pearson's correlation 0.9342). Using one-hand, a mean of 28% participant bodyweight (95%CI, 26% - 30%) could be transmitted at sustainable effort, waist-height, and on a stretcher. A second compressing hand increased rescuer bodyweight transmission by 10-22% regardless of other factors (i.e. presence/absence of a backboard; rescuer position) ($p < 0.001$). Adding a backboard increased transmission of rescuer bodyweight 7%-15% ($p < 0.001$). Lowering the patient from waist-height backboard to the floor increased transmission of rescuer bodyweight 4%-9% ($p < 0.001$). Kneeling on the model was the most efficient method and transmitted 11% more weight compared to two-handed maximal compression ($p < 0.001$). **Conclusion:** Efficacy is maximized with

larger-mass, two hands, and compression on hard surfaces/backboards. Knee compression is most effective and least fatiguing, thus assisting rescuers of lower weight and lesser strength, where no hard surfaces exist (i.e. no available backboard or trauma on soft ground), or when lengthy compression is required (i.e. remote locations). This study demonstrates the feasibility of indirect pressure as a potential temporizing measure for life-threatening haemorrhage not amenable to direct compression.

Keywords: junctional trauma, hemorrhage, prehospital care

P036

A clinical decision support intervention to increase usage of probenecid in the ED

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Introduction: In certain circumstances, skin and soft tissue infections are managed with intravenous (IV) antibiotics. In our center, patients initiated on outpatient IV antibiotics are followed up by a home parental therapy program the following day. A significant number of these patients require a repeat visit to the ED because of clinic hours. Probenecid is a drug that can prolong the half-life of certain antibiotics (such as cefazolin) and can therefore avoid a repeat ED visit, reducing health care costs and improve ED capacity. Our goal was to increase probenecid usage in the ED in order to optimize management of skin and soft tissue infections (SSTI) in the ED. The primary outcome was to compare the usage of probenecid in the pre and post-intervention phase. Secondary outcomes were to compare revisit rates between patients receiving cefazolin alone vs cefazolin + probenecid. **Methods:** Using administrative data merged with Computerized Physician Order Entry (CPOE), we extracted data 90 days pre- and 90 post-intervention (February 11, 2015 to August 11, 2015). The setting for the study is an urban center (4 adult ED's with an annual census of over 320,000 visits per year). Our CPOE system is fully integrated into the ED patient care. The multi-faceted intervention involved modifying all relevant SSTI order sets in the CPOE system to link any cefazolin order with an order for probenecid. Physicians and nurses were provided with a 1 page summary of probenecid (indications, contra-indications, pharmacology), as well as decision support with the CPOE. Any patients who were receiving outpatient cefazolin therapy were included in the study. **Results:** Our analysis included 2512 patients (1148 and 1364 patients in the pre/post phases) who received cefazolin in the ED and were discharged during the 180 day period. Baseline variables (gender, age, % admitted) and ED visits were similar in both phases. In the pre-intervention phase 30.2% of patients received probenecid and in the post-intervention phase 43.0%, for a net increase of 12.8% ($p = < 0.0001$). Patients who received probenecid had a 2.2% (11.4% vs 13.6%, $p = 0.014$) lower re-visit rate in the following 72H. **Conclusion:** We have implemented a CPOE based clinical decision support intervention that demonstrated significant increase in probenecid usage by emergency physician and resulted in a decrease in ED revisits. This intervention would result in health care cost-savings.

Keywords: probenecid, decision support, infection

P037

The impact of fever on corrected QT interval in a general emergency department population

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Introduction: Fever is one of the most common reasons for presentation to the emergency department (ED). Interestingly, a number of small

studies suggest that fever may function as a modulator of the QT interval in healthy individuals and an arrhythmogenic trigger in patients with occult congenital QT abnormalities. The objective of this study was to explore whether presence of fever adversely affects the QT interval, and whether medications known to prolong this interval affect any association found. **Methods:** We performed a retrospective, single center study identifying patients (age > 18 years) presenting to the ED with fever (temperature > 38.0 °C) between January 1st, 2012 and December 31st, 2013 via electronic chart review. The subset for analysis were those who had an ECG both at time of fever and while afebrile (within 30 days of initial ECG). Temperature measurement was within 30 minutes of ECG. Actively paced patients were excluded. Univariate and multiple regression analysis were used to determine risk factors for QT derangement in patients with fever. **Results:** 2018 febrile visits occurred during the reviewed period, 181 of these patients went on to be included in the study. 54.1% of study subjects were female, and the average age was 68.9 years old. The etiology of fever was predominately infectious (69.6%), with community acquired pneumonia being the most frequent cause (24.3%). We found the median corrected QT interval to be significantly shorter in febrile as compared to afebrile patients [QTc = 388.7ms, (371.5-407.5) vs 406.7, (386.7-434.4); p < 0.001]. This difference was observed in both sexes. Males were found to be more likely to experience medication induced QTc prolongation [OR 5.35, 95% CI = 1.46 - 19.68; P < 0.05]. Two instances of Torsades de pointes were identified in our study, both occurring in males on QT prolonging medications. **Conclusion:** In an ED patient population, fever generally shortens the QT interval independent of sex. Prolongation of the QT interval during fever should thus increase clinical suspicion of congenital or acquired QT disorders. Additionally, males appear to be more susceptible to medication-induced derangements in the QT interval and may require more vigilant monitoring when treated with multiple QT prolonging medications.

Keywords: arrhythmia, fever, QT interval

P038

How frequently is hypoglycemia found in ambulance calls for "seizure"?

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Introduction: Paramedics often attend seizure patients in the pre-hospital setting. Received wisdom is that hypoglycemia is frequently present during a seizure or is a 'cause' of seizures. Recent literature disputes this. The purpose of this study was to determine the frequency of hypoglycemia in patients identified as having "seizure" listed as the primary or final problem code in Ambulance Call Reports from a large regional paramedic base hospital program. **Methods:** Retrospective analysis of a database of ambulance call reports (ACRs) from January 01-December 31, 2014. All 2854 ACRs with paramedic determined primary or final problem codes of "seizure" were identified from a database of all calls performed by 8 municipal paramedic services covering a total urban and rural population of 1.4 million. Municipal paramedic services used iMedic electronic ACRs. A 10% sample generated by a random number table was analyzed. ACRs were manually searched and data extracted onto spreadsheets. Results were described using frequencies and summary statistics. **Results:** A total of 285 call were analyzed. 207 (72.6%) calls were adults and 78 (27.4%) were paediatric (age < 18). Seizures were witnessed by paramedics in 23/285 (8.1%) calls; adults 17/207 (8.2%), paediatric 6/78 (7.7%). A blood sugar was determined in

237/285 (83.2%) of all calls; adults 182/207 (87.9%), paediatric 55/78 (70.5%). In calls where paramedics witnessed a seizure a blood sugar was determined 17/21 (80.9%) of the time; adults 13/17 (76.5%), paediatric 6/6 (100%) Hypoglycemia (BS < 4.0 mm/L) was found in only 1 case - 1/237 (0.4%); adults 0/ 207 (0%), paediatric 1/78 (1.3%). The child was age 1, had a GCS 13, and the blood sugar was 3.9 mm/L. **Conclusion:** Hypoglycemia was rarely found in patients who had a seizure and were attended to by paramedics in the pre-hospital setting. The routine determination of blood sugars in all patients who have had a seizure prior to paramedic arrival should be reconsidered.

Keywords: hypoglycemia, seizure, paramedic

P039

What are the frequencies of interventions performed by paramedics during seizure calls?

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Introduction: Paramedics frequently attend out-of-hospital seizure patients. They administer oxygen, check blood glucose levels and if within scope of practice, start IVs and administer benzodiazepines. Little is known about how frequently these procedures are performed. The objective of this study was to determine the frequency of procedures performed by paramedics (Advanced Care (ACP), Primary Care IV (PCP-IV) and Primary Care non-IV (PCP)) attending seizure patients in a regional paramedic base hospital program. **Methods:** Retrospective analysis of a secondary database of ambulance call reports (ACRs) (January 01-December 31, 2014). All 2854 ACRs with paramedic determined primary / final problem codes of "seizure" were identified from total calls performed by 8 municipal paramedic services (MPSs), covering an urban and rural population of 1.4 million. MPSs used iMedic electronic ACRs. A 10% sample, generated using a random number table, was analyzed. ACRs were manually searched and data extracted onto spreadsheets. Findings were summarized using descriptive statistics. **Results:** 285 calls were analyzed; (adult 72.7%, paediatric (age < 18) 27.3%). Paramedics witnessed seizures in 8.1% of all calls they attended; (paediatric 7.8%). The blood sugar was checked in 87.9% of adult calls; (ACP 88.7%, PCP-IV 89%, PCP 77.8%) and in 70.5% of paediatric calls; (ACP 72.0%, PCP-IV 63.3%, PCP 70.5%). Oxygen was administered in 80.7% of adult calls; (ACP 85.9%, PCP-IV 78.0%, PCP 80.7%) and 83.3% of paediatric calls; (ACP 92.0%, PCP-IV 80.1%, PCP 82.4%). IVs were started by paramedics (if in scope of practice) in 28.0% of adult calls; (ACP 47.9%, PCP-IV 16.1%) and 6.6% of paediatric calls; (ACP 8.0%, PCP-IV 5.6%) Midazolam was administered in 10.4% of ACP attended calls and in 91.0% of the calls where they witnessed seizures. Transport occurred in 93.2% of adult calls and 100% of paediatric calls. **Conclusion:** ACPs were more likely to perform procedures on seizure patients than PCPs or PC-IVs. Children were much less likely to have procedures performed on them - blood sugar checks, and IV starts - but more likely receive oxygen and be transported. These findings have training implications.

Keywords: paramedic, seizure, procedure

P040

Development of a categorization tool for delayed hemothoraces in patients with closed minor thoracic trauma

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Introduction: Thoracic trauma is, depending on severity, a frequent cause of mortality, morbidity, hospitalization and incapacity. Minor