order to best represent the individual ACP response to their perceived deficits, a percentage of deficits identified and addressed was chosen. Respondents were not aware that their responses would be compared to the credits obtained for the year, to minimize bias in CME selection. **Results:** Of the 140 ACPs in the region, 42 (30%) completed the survey. From the 37-point list, the median number of perceived deficits identified was 7.00 (IQR 3.00-10.00). The median number of CME events that addressed perceived deficits was 2.00 (IQR 1.00-3.00). The median number of perceived deficits addressed by either paramedic-chosen or mandatory CME were identical at 1.00 (IQR 0.00-2.00). The percentage of perceived deficits identified and addressed via CME was 35.07% (range 0-100%). Paramedic-chosen CME covered 22.48% (range 0-100%) of perceived deficits, while mandatory CME covered 20.14% (range 0-100%) of perceived deficits. **Conclusion:** In the current system, only 35.07% of perceived deficits were addressed through mandatory and paramedic-chosen CME. Further information regarding barriers to paramedics obtaining CME that meets their perceived deficits needs to be elucidated.

Keywords: paramedic, prehospital, education

P029

A descriptive analysis of defibrillation vector change for prehospital refractory ventricular fibrillation

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Introduction: Patients in ventricular fibrillation (VF) who do not respond to standard Advanced Cardiac Life Support treatments are deemed to be in refractory VF (rVF). The ideal prehospital treatment for patients with rVF remains unknown. Double sequential external defibrillation (DSED) has been proposed as a viable option for patients in rVF. Although the mechanism by which DSED terminates rVF remains unknown, one theory is that the change in defibrillation vector that occurs may contribute. The objective of this study was to describe clinical outcomes for patients presenting in rVF during out-of-hospital cardiac arrest (OOHCA) for those who underwent vector change defibrillation, compared to those who received standard treatment. **Methods:** This was a retrospective chart review of adult (18 years) patients presenting in rVF during OOHCA over 15 months beginning in March 2016. Patients who underwent vector change defibrillation had a change in pad position (anterior-anterior to anterior-posterior) after 3 or more consecutive shocks. Termination of rVF was defined as the absence of VF after a vector change or standard shock during the next rhythm analysis. **Results:** There were 372 OOHCA, with 25 (6.7%) patients meeting our definition of rVF. Of these, 16 (64.0%) patients (median age 62 years, 81.3% male) had vector change after a median (IQR) of 3 (3.0-4.0) paramedic defibrillation attempts. Median (IQR) time to vector change defibrillation was 8.8 (7.1-11.1) minutes. Eight (50%) patients had termination of rVF after the first vector change shock, 6 (37.5%) had prehospital return of spontaneous circulation (ROSC) and 5 (31.3%) patients survived to hospital discharge. Of the 9 rVF patients who did not have vector change, median age was 63 years and 88.9% were male. The median (IQR) number of defibrillations within this group was 5 (4.5-7.0). No patients converted after the 4th defibrillation. Prehospital ROSC was achieved in 3 (33.3%) patients and 5 (55.5%) patients were transported while in rVF . Three patients (33.3%) survived to hospital discharge. **Conclusion:** This is preliminary evidence that vector change defibrillation in patients with rVF may result in VF termination. A randomized controlled trial is warranted to test whether or not vector change has a role in the termination of rVF.

Keywords: ventricular fibrillation, prehospital, vector change

P030

Role of scribes in emergency care in the Saskatoon health region

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Introduction: Increasingly, hospitals are adopting electronic charting systems. Recent literature suggests that physicians are spending roughly 2:1 hours on charting as compared to actual patient care raising questions as to whether manual electronic charting is the best use of scarce physician resources. To counter these effects, some hospitals have introduced scribes into their departments. A medical scribe is a person, or paraprofessional, who specializes in charting physician-patient encounters in real time. In this pilot study, we assessed the impact of having a scribe on the mental and physical fatigue, patient and healthcare-team engagement, and overall work satisfaction of emergency physicians at an urban emergency department (St. Paul's Hospital, Saskatoon). **Methods:** Three research participants (emergency physicians) were recruited to the study. Each participant completed a typing test to determine typing skills. The student researcher then provided scribe services for each participant for two shifts. The scribe charted physician-patient interactions in real time and also completed order sets, wrote orders, imaging requisitions, and prescriptions. Physicians completed surveys after each shift with the scribe as well as after 2 shifts without a scribe (for a total of 12 shifts in the study, 6 with the intervention). Physicians were asked to rate their mental and physical fatigue, enjoyment of work, and impact on patient/team engagement on a 10-point Likert scale. Results from the questionnaires were analyzed to determine individual and group mean responses. Given the small sample size, no further statistical calculations were completed. **Results:** Typing test results (in words per minute) were as follows: Scribe 93, Physician A 64, Physician B 40, Physician C 25. In terms of both mental and physical fatigue post shift, all 3 participants recorded being less fatigued after working shifts with a scribe. Mean group scores were as follows: mental fatigue decreased by 33%, physical fatigue decreased by 23%. Physicians work enjoyment improved by 10%. Team and patient interaction did not seem impacted by the intervention. **Conclusion:** It appears that regardless of typing skills, all physician participants noted a measurable benefit from having a scribe on shift. This suggests that off-loading documentation to the scribe has a positive effect on mental and physical endurance. These results warrant further investigations.

Keywords: quality improvement and patient safety, scribes in emergency care

P031

An online video analysis study of out of hospital cardiac arrest: patterns in presentation and opportunities for machine learning

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Introduction: Cameras are a common in public spaces. London England is estimated to have 500,000 and Beijing China over 800,000. Smartphone penetration exceeds 60% of the population in 20 countries worldwide. Hundreds of sudden cardiac arrests are captured on video annually. This study searches publically available cardiac arrest videos with two objectives i) describe sudden cardiac arrest behaviour and ii) explore potential opportunities for machine learning. **Methods:** The search terms: "sudden death," "heart attack," "cardiac arrest" and "public death" were used. English sources included: Youtube.com, Dailymotion, vimeo.com, vidamax.com, LiveLeak.com and documentingreality.com. Whereas, iqiyi.com, youku.com, le.com, fun.tv,

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pptv.com and tudou.com were searched using simplified Chinese. Inclusion criteria required that the subject in the video be completely visible five seconds prior to the event and at least ten seconds after and the quality of the video be adequate to visualize movement. Exclusion criteria included trauma or precipitating event (substance misuse, toxic exposure or asphyxiation). Each video source was searched until 30 consecutive irrelevant videos were obtained. **Results:** Four hundred and eighty eight videos met inclusion criteria. Of those videos, 112 could be confirmed as a "cardiac arrest" by at least two sources (news, or family social media account). In 53 (47%) of these videos the person touches their face or head within five seconds of collapse. Of the 98 videos where the person is upright, in 41 (37%) instances they hip-flexes and with their hands on their upper legs prior to collapse. This pattern of behaviour is combined in 36 (32%) instances. After collapse, 68 (61%) appeared to exhibit extension posturing activity. Agonal breathing was visible in 39 instances (35%). **Conclusion:** Sudden out of hospital cardiac arrest has a recognizable pattern. This represents an opportunity for machine learning, using shape tracking and edge detection, to recognize this event and activate the emergency response system.

Keywords: cardiac arrest, prehospital care, machine learning

P032

Twelve angry medics: a study of bimanual external aortic compression in healthy adult men

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Introduction: Following life-threatening hemorrhage the goal is to temporize blood-loss and expedite definitive-rescue. Junctional (abdominal-pelvic) trauma, between the inguinal ligament and umbilicus; is a leading cause of potentially survivable mortality. Numerous devices such as junctional tourniquets and resuscitative endovascular balloon occlusion of the aorta have been suggested for this injury pattern, but we propose an immediately available and expedient bimanual maneuver that may act as a bridge to device application, proximal external aortic compression (PEAC). Of note, external aortic compression has been used for centuries in life-threatening postpartum hemorrhage. **Methods:** Twelve paramedic volunteers were recruited from a continuing education event. Participant demographics, blood pressure, abdominal circumference, body mass index and procedural discomfort were recorded. In pairs, six participants were taught PEAC and performed the maneuver, then exchanged roles. Training consisted of researcher led demonstration and participant return demonstration with feedback. The duration of training was less than five minutes for all participants. Femoral artery hemostasis was measured by doppler ultrasound. **Results:** Participant mean age was 28.6 (range 22 to 46) and their mean systolic blood pressure was 128.25 mmHg (range 102 to 145). Mean body mass index was 24 (range 22 to 28) and abdominal girth was 80 cm (range 70 to 110). Bilateral common femoral artery blood flow became undetectable in all participants, by doppler ultrasound. Participant discomfort was reported as a mean of 4.4 (range 3 to 6) on a zero to ten scale. No complications were reported with seven and 30 days follow-up. **Conclusion:** This study demonstrates successful PEAC in twelve healthy participants. However, our limitations include a small sample and the relatively modest abdominal circumferences of our participants. If light of these limitations, PEAC may be a potentially life-saving maneuver which is immediately deployable and easy to learn, for patient temporization until device application and/or operative rescue.

Keywords: trauma, hemorrhage, prehospital care

P033

Reducing pantoprazole infusions in ED GI bleed patients by optimizing electronic order sets

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Introduction: Non-variceal upper gastrointestinal bleeding (NVUGIB) is a common presentation to the emergency department (ED) accounting for significant morbidity, mortality and health care resource usage. In Alberta, a provincial care pathway was recently developed to provide an evidence informed approach to managing patients with an UGIBs in the ED. Pantoprazole infusions are a commonly used treatment despite evidence that suggests they are generally not indicated prior to endoscopy in the ED. The goal of this project was to optimize management of patients with a NVUGIB, in particular reduce pre-endoscopy pantoprazole infusions. **Methods:** In July 2016, we implemented a multi-faceted intervention to optimize management of ED patients with NVUGIB including 1) de-emphasizing IV pantoprazole infusions in the ED, 2) clinical decision support (CDS) embedded (for endoscopy, disposition and transfusions) within the order set and 3) educating clinicians about the care pathway. We used a pre/post-order set design, analyzing 391 days pre and 189 days post-order set changes. Data was extracted from our fully integrated electronic health records system. The primary outcome was the % of patients receiving IV pantoprazole infusion ordered by an emergency physician (EP) among all patients with NVUGIB. Secondary outcomes included % transfused with hgb >70g/L and whether using the GIB order set impacted management of NVUGIB patients. **Results:** In the 391 days pre-order set changes, there were 2165 patients included and in the 189 days post-order set changes, there were 901 patients. For baseline characteristics, patients in the post-order set change group were significantly older (64.4 yrs vs. 60.9 yrs, p-value = 0.0016) and had a lower hgb (115 vs. 118, p-value = 0.049) but otherwise for gender, measures of severity of illness (systolic blood pressure, heart rate, CTAS, % admitted) there were no significantly differences. For the primary outcome, in the pre-order set phase, 47.1% received a pantoprazole infusion ordered by an EP, compared to 31.5% in the post-order phase, for an absolute reduction of 15.6% (p-value $\leq$ 0.001). For the secondary outcomes, transfusion rates were similar pre/post (22.08% vs. 22.75%). Significant inter-site variability exists with respect to the reduction in pantoprazole infusion rates across the four sites (-23.3% to +6.12%). **Conclusion:** Our interventions resulted in a significant overall reduction in pantoprazole infusions in ED patients with NVUGIB. Reductions in pantoprazole infusions varied significantly across the different sites, future work in our department will explore and address this variability. Keys to the success of this project included engaging clinicians as well as leveraging the SCM order sets as well as the provincial care pathway. Although there were no changes in transfusion rates, it in unclear if this a function of the CDS not being effective or whether these transfusions were clinically indicated.

Keywords: quality improvement and patient safety, gastrointestinal bleeding, order sets

P034

Audit and feedback for emergency physicians - perceptions and opportunities for optimization

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Introduction: There is a growing interest in providing clinicians with performance reports via audit and feedback (A&F). Despite significant

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