

# **Research Day 2015**

**Regina General Auditorium**

**Wednesday May 27th, 2015**

**Guest Speaker: Dr Carolyn Snider - Injury Prevention Successes and Opportunities for Future Research by Emergency Physicians**

**Intrinsic Motivation in Simulation**  
**\*Top Abstract**

**Intrinsic motivation of preclinical medical students participating in high-fidelity mannequin simulation**

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**Introduction:** While medical schools strive to foster students' lifelong learning, motivational theories have not played an explicit role in curricular design. Self Determination Theory is a prominent motivational theory. It posits that perceived autonomy, competence and relatedness foster intrinsic motivation. This study explores the effects of autonomy on intrinsic motivation in medical students participating in high-fidelity mannequin simulation.

**Methods:** A non-randomised crossover trial compared first-year medical students participating in (1) required simulation (RS) sessions with predetermined learning objectives and (2) extracurricular simulation (ES) sessions with student-directed learning objectives. An adapted Intrinsic Motivation Inventory (IMI) was used to assess intrinsic motivation, perceived autonomy, competence and relatedness. Each participant completed the IMI survey after each type of session. Variables were compared with signed-rank tests.

**Results:** All 22 participants completed the IMI after both types of session. Perceived autonomy was significantly higher during extracurricular simulation ( $p < 0.001$ ), but intrinsic motivation, competence and relatedness were not. Intrinsic motivation correlated with autonomy (RS=0.57 and ES=0.52), competence (RS=0.46 and ES=0.15), and relatedness (RS=0.51 and ES=0.64). The IMI subscales had good internal consistency (Cronbach's  $\alpha = 0.84, 0.90, 0.90$  and  $0.76$  for intrinsic motivation, autonomy, competence and relatedness, respectively).

**Conclusions:** Extracurricular sessions increased students' perceived autonomy, but they were highly intrinsically motivated in both settings. Further study is needed to understand the relationship between perceived autonomy and intrinsic motivation in medical education learning activities. The IMI shows promise as a measurement tool for this work.

**DKA Chart Review**  
**\*Top Abstract**

**A chart review of the management of DKA in adult patients in the Regina Qu'Appelle Health Region Emergency Departments.**

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**INTRODUCTION:** Diabetic Ketoacidosis (DKA) is a diabetic emergency associated with major morbidity and mortality. There are no set diagnostic criteria however the most commonly used criteria include: plasma glucose  $\geq 14$  mmol/L, pH  $\leq 7.3$ , serum bicarbonate  $\leq 15$  mmol/L, anion gap  $>12$  mmol/L, and positive urine and/or serum ketones. It is imperative that DKA is diagnosed and treated immediately to reduce negative consequences. Management involves prompt fluid administration, correction of potassium levels, insulin therapy and treatment of precipitating factors. Our primary objective was to assess whether the current management of adult patients with DKA at the Regina Qu'Appelle Health Region (RQHR) Emergency Departments (EDs) was consistent with the Canadian Diabetes Association (CDA) evidence-based guidelines.

**METHODS:** A retrospective chart review was performed for patients diagnosed with DKA in the RQHR EDs between April 2011 and September 2014 (n= 143). Demographics, laboratory values and medical treatment (fluids, potassium, insulin) were collected.

**RESULTS:** Fluid infusion rates were consistent with CDA guidelines in 98% (n=140/143) of cases and fluid type in 99% (n=133/134) of cases. An insulin bolus was given in 43% (n=60/140) of cases, which does not comply with CDA guidelines. An insulin infusion was administered in 69% of cases, which is recommended in the guidelines; however insulin infusion rates were under dosed in 43% (n=15/35) of cases with documented weight. Patients received no insulin in 16% (n=23/140) and both infusion and bolus in 28% (n=39/140) of cases. Potassium replacement therapy was given in 36% (n=51/140) of cases and should have been given in only 26% (n=37/140) of cases.

**CONCLUSION:** Emergency Physicians in the RQHR EDs are following CDA guidelines for fluid therapy, however the administration of insulin and potassium replacement is not meeting CDA guidelines. A DKA treatment protocol in RQHR EDs may help resolve inconsistencies in current management of DKA and thus improve patient care.

## Improving Emergency Room Efficiency Through a New Patient Intake Model

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**INTRODUCTION:** ER wait times throughout Saskatchewan have doubled since 2010. In 2012, the provincial government announced a goal of reducing emergency room (ER) wait times to zero by March of 2017. The purpose of this study is to assess potential changes in ER efficiency through the implementation of a new ER patient intake model (8-Man PTA (Physician Treatment Area) model). By restructuring how patients are initially evaluated, a reduction in patient wait times is anticipated as well as an improvement in related outcomes.

**METHODS:** Data from every patient who presented to the ER of a large urban hospital in Regina, SK, from June 3 to August 11 for both 2013 (old triage model, n = 10687) and 2014 (8—Man PTA model, n = 11162) was collected using the SCM (Sunrise Clinical Manager) electronic database. Continuous data from both years were compared using Mann-Whitney tests to account for the largely skewed data.

**RESULTS:** The most notable improvement using the new triage model was the average decrease in time from registration to MD assessment. There was a reduction from 109 to 88 minutes on average per patient. Also, the Left-Without-Being-Seen (LWBS) rate decreased by an average of 2.6 patients per day and the percentage of patients seen within the Canadian Triage and Acuity Scale benchmark times increased by 2.2% (all comparisons showed a significant difference,  $p < .001$ ).

**CONCLUSION:** The 8-Man PTA model was found to generally decrease patient wait times and related outcomes. Especially registration-to-MD time decreased substantially. Other outcome variables also showed significant improvements, although in most cases the associated effect sizes were small.

## Fitness with Floyd

### **Fitness with Floyd: A unique resident wellness initiative in a Canadian emergency medicine residency program**

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Affiliation: Department of Surgery, University of Saskatchewan College of Medicine

**INTRODUCTION:** The preventative and treatment benefits of physical activity have been well documented. Residency training programs expose resident physicians to multiple stressors such as long work hours, poor eating habits and a lack of physical activity. A semi-structured initiative in the emergency medicine residency program at the University of Saskatchewan (UofS) coined 'Fitness with Floyd' (FWF) provides staff, residents, medical students and allied health professionals with monthly protected wellness sessions, which have included a variety of physical fitness, team and individual sport activities. All staff and learners are invited and participation is voluntary. The purpose of this study was to examine the influence of a dedicated fitness and activity program on wellness and health promotion as part of a protected academic curriculum in a Canadian emergency medicine residency program.

**METHODS:** This descriptive study used a post-participation online survey to evaluate overall satisfaction with the FWF sessions. It also measured the perceived influence of the program on wellness and health promotion. 85 individuals who participated in FWF sessions between August 2012 and December 2014 were invited to complete a brief online survey.

**RESULTS:** 59 participants (69%) completed the survey. 53 (91%) indicated that FWF sessions had positively influenced their overall wellbeing. 58 (98%) participants felt that FWF should be part of a regularly scheduled wellness curriculum. On the other hand, 21 (36%) reported that FWF had helped them advocate for and counsel their patients about the benefits of physical activity.

**CONCLUSIONS:** This innovation has provided a framework for team-building, social interaction and the promotion of wellness for individuals involved with the Emergency Medicine residency program at the University of Saskatchewan. Study results indicate that FWF should remain part of a protected wellness curriculum. Future developments for this initiative will include an educational component for both individualized exercise programs and health promotion/counseling for patients.

## Residency Program as EMS Advisor

### **An Emergency Medicine Residency Program as EMS Medical Advisor:**

#### **An Evaluation of Curriculum Effectiveness**

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**INTRODUCTION:** Emergency Medicine (EM) residency programs require residents to cover certain Emergency Medical Services (EMS) and pre-hospital care (PHC) curriculum objectives of training. Much variability exists with respect to EMS and PHC curriculum format among Canadian EM residency programs and limited research has been done to assess whether the proposed objectives of training are covered. In 2012, our Canadian Royal College EM residency program assumed the role of EMS medical advisor for our health region under the leadership of our program director. To our knowledge, we are the first Canadian residency program to adopt a medical advisor-based EMS & PHC curriculum. The purpose of this study was two-fold: 1) to present an innovative EMS and PHC curriculum and 2) to assess whether this curriculum format covers the proposed EMS objectives of training.

**METHODS:** This project was a qualitative analysis conducted in two phases. All activities of the EMS Medical Advisor team were tracked from July 2013 to June 2014. These activities were mapped to the EMS objectives and put in a survey format. Phase 1 was a survey of the residents on how each individual objective was covered through the program's newly piloted EMS & PHC curriculum. Phase 2 comprised a focus group in which the residents discussed the strengths, weaknesses and addressed concerns with regards to newly piloted EMS & PHC curriculum

**RESULTS:** The survey generated an 89% response rate and determined that 72% of mandatory and 39% of optional objectives were covered. Additionally, a third-party moderated focus group was conducted with the surveyed residents. This focus group revealed the greatest advantage of the program to be realistic exposure to the medical advisor role allowing residents to make an informed decision regarding future careers in EMS, while the major disadvantage was the time commitment required for activities covering optional objectives.

**CONCLUSIONS:** Although it does not cover all mandatory proposed EMS objectives of training, a medical advisor-based EMS curriculum provides an innovative approach to EMS and PHC education in the residency setting while simultaneously providing residents with realistic insight into what a future career in EMS would entail.

## Pit Crew CPR

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

Netherton S<sup>1</sup>, Leach A<sup>2</sup>, Hillier T<sup>3</sup> & Woods R<sup>1,2</sup>

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**INTRODUCTION:** Since 1980, survival rates after out-of-hospital cardiac arrests (OHCA) have remained unchanged, averaging 7.6%. Despite the use of new and emerging technologies, new medications and the use of automatic external defibrillators, survival remains low. Recently a new focus in cardiopulmonary resuscitation (CPR) has shown dramatic improvements in survival after OHCA. This new model, termed pit-crew CPR, focuses on high quality CPR while minimizing interruptions in chest compressions with each member of the responding team playing a specific role in the resuscitation attempt, akin to the pit-crew of a car race. Certain districts in the USA have adopted the pit-crew CPR model with encouraging results, and Saskatoon has trained its first responders in the same. Our research question is whether pit-crew CPR is associated with an increased rate of survival to hospital discharge after an OHCA in Saskatoon.

**METHODS:** First responders in Saskatoon have been fully trained in, and are utilizing pit-crew CPR when responding to OHCA calls. Our retrospective chart analysis will consist of two cohorts – before (July 1<sup>st</sup> 2011 – June 30<sup>th</sup> 2014) and after (July 1<sup>st</sup> 2015 – June 30<sup>th</sup> 2018) the implementation of the pit-crew CPR model. The primary outcome is survival to hospital discharge. Secondary outcomes include survival to admission, 30 day survival post discharge and any return of spontaneous circulation.

**RESULTS:** Data acquisition and analysis will begin in the summer of 2015. The primary outcome will be directly compared between the two cohorts using a Chi-square analysis. Secondary outcomes and identified sub-group analyses will be examined appropriately in concert with the assistance of the Clinical Research Support Unit at the University of Saskatchewan.

**CONCLUSIONS:** Survival in Saskatoon from OHCA between July 1<sup>st</sup> 2011 and June 30<sup>th</sup> 2014 will be determined in the summer of 2015, and final conclusions of our study will be available in 2018.

## Tap n' Go Physician Authentication System

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

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## Tap n' Go Physician Authentication System

### Effectiveness of the new “Tap-n-Go” Physician Authentication System

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**INTRODUCTION:** Physicians share common computer resources as they move freely around the department however computers are designed for one individual using a single device for an extended period of time. The consequences of this disconnection are that emergency physicians must manually login to applications repeatedly over the course of shift leading to significant wasted time. Moreover as physicians move between workstations they must reopen multiple applications to access patient information. In response the Saskatoon Health Region “Tap-N-Go” (TNG) initiative was launched allowing physicians to forgo passwords and quickly login using proximity cards.

**METHODS:** This study was designed to assess effectiveness of introducing TNG into the emergency department and was divided into a pre-TNG phase and a post-TNG phase. In the pre-TNG phase quantitative data was collected on the number of logins per physician over a period of two months and the average time per login. Simultaneously clinical data on physician performance (e.g. number of patients seen, time spent per patient, etc.) was also collected. In addition a survey was distributed to assess satisfaction with the manual login process and determine to what extent physicians perceived that difficulty with manual authentication impacted clinical outcomes. After the deployment of TNG we repeated our collection of quantitative clinical performance data and our qualitative survey of physician satisfaction.

**RESULTS:** Prior to TNG our results show physicians logging into computers around 20-100 times per shift and thus accruing on average of 41 minutes per shift of lost time and considerable physician dissatisfaction. Post TNG physicians spent considerably less time logging in and though these time savings did not improve any markers of clinical performance there was a substantial improvement in physician satisfaction.

## Time to ECG in Chest Pain

### Effect of the ECG Priority Protocol on Time to ECG in Patients with Chest Pain

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**INTRODUCTION:** The American Heart Association (AHA) guidelines recommend that an electrocardiogram (ECG) be obtained within 10 minutes of arrival to the emergency department in the management of patients presenting with cardiac chest pain. The initial ECG is the most informative tool for early risk stratification of chest pain. Further more, studies have shown that delays in ECG acquisition are associated with poorer clinical outcomes in patients with ST elevation myocardial infarctions. In 2012 a study was done in the Saskatoon Health Region (SHR) demonstrating that these guidelines were not being met. The average time to ECG from triage was 24 minutes. On March 17, 2014 a new protocol was implemented that required every ECG to be assigned a priority. Canadian Triage and Acuity Scale (CTAS) 2 chest pain ECG's were assigned a priority 1 which required an immediate response time from ECG technicians. In addition LEAN interventions reorganized registration to be done before triage.

**METHODS:** Using the information stored on Sunrise Clinical Manager (SCM), the patients' medical record number (MRN), date of presentation, hospital site, time of registration and time of triage was extracted from January 2015 to March 2015. The time of first ECG was taken from TraceMaster. Using this data we evaluated whether this intervention has improved the time to ECG in the emergency departments of Saskatoon.

**RESULTS:** Currently being analyzed

**CONCLUSION:** We suspect that the average time to ECG will have improved compared to the results in 2012 and that the AHA guidelines will be met. This is an important quality assurance study in SHR emergency departments. We expect that this study will make a contribution towards improved patient care and influence best practice with regard to guidelines for diagnosis and management of patients presenting with chest pain.

## Pre-Hospital Intubation Audit

### Audit of Medication Facilitated Intubations in the Saskatoon and Regina Health Regions

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**INTRODUCTIONS:** The introduction of Ketamine in March of 2012 to Advanced Care Paramedic (ACP) providers in Saskatchewan resulted in a large surge of pre-hospital medication facilitated intubations (MFI), as was subjectively reported in Emergency Department physicians. Pre-hospital intubations are a frequently debated and studied topic – pre-hospital success rates of drug facilitated intubations are approximately 86.8%, with the addition of paralytics increasing success to 96.7%. Our research group studied the 2 year time period following the introduction of Ketamine to ACP's, with the emphasis on collecting data about the intubations, and creating cases which will help guide future education about MFI in the province.

**METHODS:** 80 MFI trip sheets and College of Paramedics (COP) reporting sheets were retrospectively examined for the 2 year time period – March 2012 to March 2014. Data was collected on gender and age of the patient in each case, health region, ease of intubation (number of attempts, success rate), pre and post intubation vitals, time on scene, medications and dosages used, and clinical need for intubation. Clinical need for intubation was separated into five separate groups by MD researchers: patency, protection (low Glasgow Coma Scale), protection plus evidence of aspiration, respiratory failure, or multiple. The cases of particular interest are the protection category – since the old adage 'less than 8, intubate' in regards to GCS is now considered untrue by many clinicians, and would be an important education point. Cases were chosen and de-identified, to present to emergency medical services (EMS) medical directors across the country, along with ACP's – as the next phase of the project.

**RESULTS:** Clinical indication was documented in 75 of 80 cases (93.8%) : Patency – 2, Protection – 28, Protection + risk of aspiration – 15, Respiratory failure – 16, Multiple reasons – 14. Overall success rate for MFI was 83.8%. Protection and respiratory failure had the highest rates of MFI failure (17.9% and 18.8% respectively). Average scene time was 54.3 minutes.

**CONCLUSION:** The nebulous area of MFI needs to be carefully examined, since our intubation success rates are lower than the averages studied elsewhere in North America (83.8% vs 86%). Intubation for the sole role of protection is also an important point to educate current and new ACP's on.

## The 14 Day Challenge

### The Better Every Day 14 Day Challenge – Addressing A Region-Wide Overcapacity Using Lean

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Affiliations: College of Medicine, University of Saskatchewan, Saskatoon Health Region

**INTRODUCTION:** In December 2014, Emergency Department (ED) volumes in the Saskatoon Health Region (SHR) rose by an additional 5% resulting in high numbers of admitted patients in the EDs and a region-wide overcapacity. Consequentially, eleven surgeries were cancelled and a patient flow process improvement initiative was launched: The Better Every Day 14 Day Challenge. The goals were to eliminate temporary beds and long waits for patients admitted to the hospital from the ED.

**METHODS:** Six teams were formed; *Health of the Community, Community Strategies, Out-of-region Transfers, Admission & Discharge Criteria, Progression of Care & Treatment* and *Support*. Each team used Lean tools to take short-term actions and develop plans to meet long-term demand for services. Daily reports of trialed initiatives and results were posted on the SHR website.

**RESULTS:** Temporary beds were decreased from 112 to 59. The target to have 85% of patients admitted to hospital from the ED in the right bed within five hours went from a baseline of 40% to 84% at St. Paul's Hospital (SPH) and 74% at Royal University Hospital (RUH).

**CONCLUSIONS:** ED overcrowding (EDOC) is directly related to the inability of admitted patients to access in-patient beds from the ED. A region-wide focused initiative addressing patient flow issues is a novel and successful tool to address EDOC.

## EDUS Documentation

### **Improving EDUS documentation in the Emergency Department.**

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#### **Abstract:**

**Introduction:** ED physicians are increasingly using Emergency Department Ultrasound (EDUS) for assistance in diagnosis and management of their patients. With the continued growth of ultrasound use and the number of indications for EDUS increasing it is important to maintain both high standards of use and clinical communication through quality assurance and documentation. The goal of our project was to increase EDUS documentation in the ED and provide a foundation for future quality assurance projects.

Our research question: Did the implementation of a novel, easy to use, EDUS documentation sheet improve the documentation of ultrasounds performed in the ED? Secondly, does the addition of an EDUS documentation sheet facilitate the review and analysis of EDUS performed in the ED?

From prior chart reviews it is known that EDUS documentation within SHR has, to date, been poor. The reason documentation is important is that without it, providing quality assurance is difficult. Currently, EDUS quality assurance measures include strict credentialing requirements, monthly case reviews and regular CME. This project represents the first step towards providing quality assurance from an image and documentation perspective.

**Methods:** The Emergency physician group in Saskatoon were surveyed to determine how the documentation of EDUS could be facilitated. A novel EDUS documentation sheet was created and implemented in the three Emergency Departments within SHR. Charts were pulled based on specific diagnoses, and a retrospective chart review was performed to determine the use of the EDUS form.

**Results:** A total of 266 charts were reviewed based on specific diagnostic discharge codes. 24% (64/266) of the charts contained documentation of EDUS. 38% (16/42) of emergency physicians participated in the novel EDUS documentation process. The indications for EDUS were as follows: 25 were for symptomatic first trimester pregnancy, 22 for abdominal pain, 6 for flank pain, 1 for Trauma, 1 for leg swelling, and 6 for SOB and chest pain. Where consultative imaging was obtained, 89% (24/27) of scans demonstrated concordant findings, 11% (3/27) required additional same day imaging because the physician declared his/her scan as not definitive. In this review, there were no instances of discordant findings when compared to consultative imaging.

**Conclusions:** The implementation of a novel EDUS documentation process has increased the documentation of EDUS in the Saskatoon ED. The findings of this chart review suggest a very high level of concordance amongst EDUS and consultative imaging studies.

## Health Line Referrals to the ED

### ED referrals from Healthline: A systematic chart review

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Affiliations: College of Medicine, University of Saskatchewan, Department of Family Medicine, University of Saskatchewan

**INTRODUCTION:** Saskatchewan HealthLine receives approximately 2000 calls per month from patients in the Saskatoon Health Region (SHR) seeking medical advice. Of these calls, 26% are referred to the emergency department; with 4% asked to call 911 immediately and the other 22% given a recommendation to go to the closest emergency department (ED) as soon as possible. The purpose of the study was to review those patients who were referred from HealthLine to the ED from January 1<sup>st</sup>, 2014 - March 31<sup>st</sup>, 2014 with respect to those who did or did not go to the ED, and of those who did, were investigation, treatment and admission to hospital required.

**METHODS:** For this retrospective chart review ethics approval was received from the University of Saskatchewan, as well as operational approval from RQHR and SHR. A list of patients referred from HealthLine to an ED in the City of Saskatoon was obtained. This list was cross referenced with patients with SHR registration data to determine which of those patients had been registered in one of the three Saskatoon EDs within 48 hours of the original HealthLine call, resulting in charts for 359 patients for review. The results were entered into Microsoft Excel, and exported to IBM SPSS v. 22 for analysis.

**RESULTS:** During the 90 day time period in question, 707 patients were referred by HealthLine to the ED. Of the 359 patients referred from HealthLine with confirmed ED registration 305 charts were reviewed. Of those that arrived in the ED, the minimum registration time was 11min., and the maximum was 22h:39m(δ3h:1m) with a mean registration time of 2h:04m. There was no significant difference in registration times between CTAS scores. Of those that arrived in the ED, 57% had investigations performed while 66% received some form of treatment in the ED. The overall admission rate for the patient population studied was 11.3%. Of those presenting, 75% of those patients were less than age 43. Presentation of patients according to CTAS scores were as follows: CTAS 2 - 10.4%, CTAS 3-44.6%, CTAS 4-28.7% and CTAS 5-16.3%.

**CONCLUSION:** HealthLine is able to counsel and triage 74% of their callers without having to direct them to an Emergency Department. Of those that are directed to an ED (without EMS transport, patients present fairly quickly. Once in the ED, 57% of patients receive investigations and 66% of patients receive treatment. Admission rates for these patients are slightly lower than that of the general emergency patient population. Future study should be conducted as to the appropriateness of the Emergency Department as the venue for assessment and treatment of patients referred by HealthLine.

## Acute Severe Pain Protocol Chart Review

### Retrospective evaluation of a severe pain protocol in Saskatoon emergency rooms

Rempel B., Oyedokun, T., May, J., Cload, B.

**INTRODUCTION:** There is mounting evidence that providing effective pain control early in the course of the emergency room visit results in improved patient outcomes and satisfaction. The Saskatoon severe pain protocol was developed in response to this evidence in an effort to improve both the efficiency and efficacy of pain medication delivery while maintaining a satisfactory safety profile. This study examined the effectiveness of this protocol with respect to improved pain outcomes and patient safety.

**METHODS:** We retrospectively examined charts of patients who presented with abdominal pain and were triaged as level two or three according to the Canadian triage assessment scale (CTAS). We extracted data related to medication dosage and time between arrival at triage and adequate pain control as indicated by reduction in charted pain severity scores. We then compared patients who were treated according to the pain protocol to those where were treated before its development using both descriptive and quantitative analysis. The primary outcome was to compare the length of time required to adequately control pain using the severe pain protocol versus ad hoc written orders.

**RESULTS:** Final results are pending. Preliminary data suggests that patients treated according to the severe pain protocol are less likely to receive sub therapeutic doses of pain mediation however; quantitative results will likely be limited by documentation quality.

**CONCLUSION:** Preliminary results suggest that the severe pain protocol is a safe and effective way to provide pain management in Saskatoon's emergency rooms. However, improvement in documentation including more frequent and rigorously recorded assessment of pain severity is required for thorough quantitative analysis and evaluation.

## Case Report: Late Post-Partum Seizures

### Diagnostic Considerations in Late Postpartum Seizures: a case report

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Affiliations: College of Medicine, University of Saskatchewan

**INTRODUCTION:** Late postpartum seizures are a well-recognized complication of pregnancy and the puerperium. Early hospital discharge and potential delays in community follow-up make women with postpartum seizures more likely to present to an emergency department (ED) setting. Establishing an etiology during this timeframe presents a significant diagnostic challenge for emergency clinicians. The case of a 29-year-old female experiencing tonic-clonic seizures at 18 days postpartum is described and diagnostic considerations are reviewed.

**METHODS:** Patient consent was obtained prior to conducting case review. Literature searches were completed using the electronic databases of Medline, PubMed, and Google Scholar, using keywords aimed at identifying scholarly articles detailing the diagnostic workup and management of seizures presenting in the postpartum period. Search terms were further narrowed to accommodate the subheadings of intracranial sinus thrombosis and eclampsia.

**RESULTS:** Seizure treatment was initiated in the ED with intravenous benzodiazepines and magnesium sulfate. Initial investigations and head-computed tomography (CT) did not identify a cause of seizures. Important etiologies associated with the late puerperium were considered, including eclampsia, stroke, and cerebral venous thrombosis. Postpartum eclampsia makes for a challenging diagnosis because presenting patients may have no prior evidence of preeclampsia or hypertensive disease. Stroke and cerebral venous thrombosis may also have variable presentations. Significant risk factors, signs, symptoms, and treatments related to these conditions are appended. Following initial management and stabilization, further neuroimaging with CT venography revealed extensive sinus venous thrombosis.

**CONCLUSION:** Maternal seizures in the days-to-weeks following delivery are an important ED presentation. Significant etiologies related to pregnancy and the postpartum period should be considered. Clinical recognition of risk factors and early signs and symptoms of these conditions is crucial so that prompt treatment can be initiated in the ED.

## **RQHR Fire Response**

### **Regina Qu'Appelle Health Region Fire First Response and Intervention**

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Affiliations: Regina Qu'Appelle Health Region

**INTRODUCTION:** Fire fighter first responders are dispatched to certain EMS calls. The intention is that they can deliver numerous time-sensitive interventions such as cardiopulmonary resuscitation, bag-mask ventilation, and defibrillation prior to paramedics arriving on the scene. However, there are inherent public risks from sending a fire code 4 (lights and sirens) response.

**METHODS:** Our data set included all code 4 (lights and sirens response) calls in the RQHR EMS system to which fire was also dispatched. We used retrospective data from January 1, 2013 to December 31, 2013 to evaluate the reason for the call, the time to response, whether fire had any documented intervention, the types of intervention performed by fire, and the transportation urgency on return from scene. The clinical outcome of cardiac arrest patients was determined through a search of Sunrise Clinical Manager (regional electronic health record).

**RESULTS:** Of 6027 code 4 calls, 889 (14.8%) had fire dispatched as well. Of the 889 calls, 11.4% had fire documented as having any involvement and 3.0% of cases had fire documented as having specifically performed the interventions of CPR, AED, and BVM. There is no statistical benefit to fire intervention in the cardiac arrest subgroup, with a mortality rate of 33.3% in the fire intervention group versus 55.4% in the no fire intervention group ( $p= 0.084$ ). The most common reasons of code 4 calls were, in order, ethanol, decreased/ altered LOC/ syncope, cardiac arrest, code 5, motor vehicle collision, overdose, completed suicide, and attempted suicide. The mean time to response was 6.34 minutes, with a standard deviation of 2.39 minutes. 85.4% of calls were responded to within 9 minutes. With regards to return from scene transportation, 13.3% remained at a lights and sirens response, and 49.5% were downgraded to a non-emergent response.

**CONCLUSION:** In this study we found that fire first response was documented as having performed CPR, AED, and BVM interventions in only 3.0% of code 4 (lights and sirens response) calls in which they were dispatched. It is our hope that a system could be devised such that fire can respond to the most appropriate scenarios thereby optimizing their contribution to patient care, while minimizing the risk to the public.

## Pancreatitis Chart Review

### Current Pancreatitis Practice Tendencies in Regina's Emergency Department

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**INTRODUCTION:** Various Canadian and American guidelines, on Acute pancreatitis, advocate for early and aggressive fluid resuscitation of at least 250cc/hr. Our objective is to elucidate whether the treatment trends within the RQHR emergency room departments (ED) meet current management guidelines.

**METHODS:** This retrospective chart review was conducted using patients diagnosed with pancreatitis in the Regina General and Pasqua hospitals' ED. Independent variables include age, gender, date of admission and discharge. The main outcome measures are the type and amount of resuscitative fluids used. Secondary outcomes include surgical interventions, complications, icu admissions, hospital readmissions, and deaths.

**RESULTS:** 60 patients were included in the study with a mean age of 48. 35 of the patients were male (58%). 22 patients had a final diagnosis of Biliary pancreatitis (36.7%), 17 of Alcoholic (28.3%), and 21 as other (35.0%). Only 26 patients (41.5%) received a NS bolus of at least 1000cc in the ED. 34 (56.7%) did not receive a bolus. 4 patients (6.6%) received initial fluids at a rate of at least 250cc/hr. Of those diagnosed with biliary Pancreatitis 14 (63.6%) had a laparoscopic cholecystectomy on the same admission, and 3 (13.6%) at a later date. There were statistically significant differences in amylase levels between the diagnosis groups using the one-way ANOVA. The mean for biliary pancreatitis was significantly higher than alcohol (mean difference = 735.95) and other (mean difference = 717.64) ( $F_{(2,53)}=4.79, p<.05$ ). There were no other significant differences between the groups.

**CONCLUSION:** Our Emergency Departments fall short in meeting the various guidelines' recommendation of aggressive fluid resuscitation in acute pancreatitis. More research needs to be done to assess how we can improve our fluid resuscitative efforts and further assess the long term outcomes of patients in the ED.