

Research Day 2014

Dr Eddy Lang's presentation on
[Making the Most of Chart Reviews and other Retrospective Studies](#)

Emergency physicians as human billboards for injury prevention messaging: a randomized controlled trial

Top Abstract

Sullivan E, Paterson Q, Woods R, Fuller D

Affiliation: University of Saskatchewan, Saskatoon, SK, Canada

INTRODUCTION: Preventable injuries are a common cause of morbidity and mortality encountered in emergency departments (EDs). Emergency physicians (EPs) focus their efforts on diagnosis and treatment, while counseling on health promotion and injury prevention does not often occur. This randomized controlled trial (RCT) examined the impact of a novel health promotion tactic involving EPs wearing scrub tops with a bicycle helmet-promoting message.

METHODS: This was an RCT done in two tertiary EDs and a pediatric ED in Saskatoon, Canada. Fourteen EPs were observed for two shifts each between June and August of 2013. Each pair of shifts was randomized to either an injury prevention shift, during which the EP would wear the customized scrub top, or a control shift. The primary outcomes were the number of seconds spent on injury prevention counseling and a dichotomous indicator of any counseling. The secondary outcome was a change in self-reported helmet use at one-month follow-up.

RESULTS: There were a total of 244 patient encounters (134 control, 110 intervention). Of the patient encounters 33 (control) and 18 (intervention) received injury prevention counseling. The average time spent on injury prevention discussion was 3.36 seconds. There was no difference in the likelihood of injury prevention discussion between the treatment (OR=0.59, 95% CI: 0.30 to 1.16) and control group. 133 individuals cycled and 20 reported always wearing a helmet prior to this visit. 37% of patients who always wore a helmet reported that the visit had reinforced their decision to wear a helmet and 25% of patients who often, seldom, or never wore helmets reported that the visit had changed their decision to wear a helmet. However, at one month follow-up there was no significant difference in reinforcement or change in helmet-wearing between the control and treatment groups.

CONCLUSIONS: Injury prevention messaging on scrub tops worn by EPs did not increase the amount of physician-patient discussion on injury prevention. Given that our sample size was relatively small, this novel health promotion study should be replicated with more providers involved (allied health, residents, nurses). This would allow for a more complete examination of this simple intervention's potential for health behavior change in patients.

Does Physician Gender Affect Provision of Gynaecological Exam in Non-Pregnant Females with Vaginal Bleeding Presenting to the Emergency Department

* Top Abstract*

Ramunno R, Perrot J, Oyedokun T, McKay S, Smith J

Affiliations: College of Medicine, University of Saskatchewan

INTRODUCTION: Vaginal bleeding is a common complaint in the Emergency Department. Current guidelines and literature recommend a thorough gynaecological examination in all women presenting with abnormal uterine bleeding in order to appropriately and fully examine the lower genital tract and confirm the source of bleeding.

While patient preference in the gender of their physician has been well documented in the literature, little is known regarding practice differences between male and female physicians. This study investigated whether or not a difference exists between the practices of male and female emergency physicians when faced with nonpregnant women complaining of vaginal bleeding. More specifically, is one gender more likely to perform a gynaecological examination over the other?

METHODS: All charts from 2011-2013 listing vaginal bleeding as a complaint or diagnosis at the three Saskatoon Emergency departments, St. Paul's Hospital (SPH), Saskatoon City Hospital (SCH) and Royal University Hospital (RUH) were reviewed. The included charts were reviewed to determine if the attending physician was female or male, and whether or not a gynaecological exam was performed. The data was entered into IBM SPSSv.20 for analysis, including Chi-square and ANOVA ($p \leq .05$).

RESULTS: 203 charts met the inclusion criteria. For the included visits, 38 (18.7%) of the attending physicians were female and 165 (81.3%) of the attending physicians were male. There was a documented a gynaecological exam for 54 of the 203 charts (26.6%). While female physicians performed a gynaecological exam (34.2%) more frequently than male physicians (24.8%), this difference was not statistically significant.

CONCLUSION: There was no statistically significant difference between the practices of male and female physicians when dealing with vaginal bleeding in the Emergency Department. However, regardless of physician gender, gynaecological examinations were performed in less than 27% of cases of vaginal bleeding presenting to the Emergency Department, despite current recommendations.

A Determination of Pre-Triage Wait Times at Two Busy Acute Care EDs and a Comparison to CTAS Recommendations

Top Abstract

Trivedi S, Betz M, Stempien J

Affiliation: College of Medicine, University of Saskatchewan

INTRODUCTION: Measuring the lengths of stay of patients in an emergency department (ED) is usually documented from the time of registration and triage. The time that patients wait in line prior to registration and triage has not been well documented. We sought to characterize pre-triage wait times and compare them to CTAS time-to-physician recommendations.

METHODS: This observational study documented the time that consenting patients entered the ED and the time they were formally registered and triaged. Participants' CTAS score were collected from the electronic record. Patients arriving to the ED by ambulance were excluded.

RESULTS: A total of 536 participants were timed. Of these, eleven (2%) participants left without being triaged. Participants who scored either CTAS 1 or 2 ($n=53$) waited a median time of 3.1 (range: 0.05-44.2) minutes. Patients triaged as CTAS 3 ($n=187$) waited a median of 11.4 (range: 0.05-91.1) minutes, CTAS 4 ($n=139$) a median of 16.6 (range: 0.06-98.6) minutes and CTAS 5 ($n=146$) a median of 17.5 (range: 0.05-90.4) minutes. Across all groups, 11 CTAS 2, 34 CTAS 3 and 10 CTAS 4 patients ($n=55$, 10.5%) had exceeded their CTAS time recommendations before being triaged.

CONCLUSIONS: All urban EDs closely follow patients' wait times, often stratified according to triage category, and are assumed to begin upon patients' arrival in the ED. The study's findings suggest that these times, if included, may take up a portion of or exceed the CTAS time-to-physician recommendations. For some patients this could be clinically significant and as a result EDs should consider documenting time-to-physician times from the moment of patient arrival.

Bedside Ultrasound for Diagnosis of Small Bowel Obstruction in the Emergency Department

Bouchard NR, Selvig AL, Olszynski P, Bryce R

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

INTRODUCTION: Abdominal pain is the presenting problem in 30% of emergency departments (ED) visits, with a final diagnosis of small bowel obstruction (SBO) in approximately 2%. In order to diagnose or rule out SBO many patients will undergo a CT scan, which is known to have excellent sensitivity and specificity, each exceeding 90% with modern technology. Additionally alternate diagnostic modalities including plain radiography and formal ultrasound have been employed to aid in diagnosis. Unfortunately plain radiography has been unreliable in up to 30% of cases and radiology performed ultrasound is not always readily available despite relatively good sensitivity and specificity. The emergence of bedside ultrasound in the ED makes it an attractive option for evaluating possible SBO because it could facilitate a quicker disposition, decrease radiation exposure and allow for better use of other diagnostic resources. To date only a small number of studies have evaluated bedside ultrasound for the diagnosis of SBO and show encouraging results. Our study's goal is to assess the accuracy of bedside ultrasound for diagnosis of SBO in order to add to the body of literature that has evaluated this tool.

METHODS: This study will consist of a prospective convenience sample of participants presenting with symptoms suspicious for SBO to Royal University Hospital and St. Paul's Hospital in Saskatoon, SK. Data will be collected by comparing formal SBO diagnosis with results of a ED bedside ultrasound by a blinded study physician or resident. The study ultrasonographer will be any available physician or resident, separate from the treating physician, who have previous bedside ultrasound experience and has undergone a specific SBO training session. The training session reviews a 5-minute protocol for conducting an ultrasound looking for SBO findings that include dilated bowel loops, abnormal peristalsis, presence of free fluid and a tanga sign. A patient is considered to have a diagnosis of SBO if either a CT diagnosis of SBO, surgical diagnosis of SBO or a final discharge diagnosis of SBO. Statistical analysis will determine the sensitivity, specificity, positive predictive value, and negative predictive value of bedside ultrasound, with the final surgical or CT diagnosis as the gold standard. Receiver-operator curves will also be examined.

RESULTS and CONCLUSIONS: Participant enrollment is actively ongoing and data analysis has not yet begun.

Pediatric Head Injuries: Are we using an evidence based approach for observation times in minor head injuries?

O'Malley A, Seymour J, Smith S, Karreman E.
University of Saskatchewan, Regina, SK.

INTRODUCTION: Pediatric head injury is a frequent cause for Emergency department (ED) presentations worldwide. In Canada, it is responsible for 20,000 ED visits per year. It is one of the leading causes of death and disability in children. In the US, 50% of children presenting to an ED with a head injury will undergo head CT scanning. Not only do these CTs contribute to ionizing radiation, there is a low detection rate of clinically important traumatic brain injury.

Multiple large studies have investigated when CT scans are indicated, and clinical decision making rules (CDMR) such as PECARN and CATCH help stratify risk. However, the evidence is not as well established regarding the appropriate duration of observation for children with head injuries not requiring a CT scan. This study aims to assess whether we are using a documented approach to observation times in pediatric head injuries in Regina.

METHODS: This was a retrospective chart review of pediatric patients 0-2 years old who presented between April 1, 2012 and March 31, 2013 with a head injury. The primary outcome was the length of stay (LOS) in the ER for observation of children who did not undergo CT. Secondary outcomes included rate of CT, use of a CDMR, and documentation of head injury advice.

RESULTS: A total of 104 charts fulfilled our criteria. Demographics were similar (60% males, average age of 14 months). Using the PECARN scoring system, 58 patients (56%) had a minor head injury, 40 patients (38%) had a moderate injury, and 6 patients had a severe injury. In patients with a minor injury, the average LOS was 2:01 hours (n=38). The average LOS was 4:32 hours for moderate injury (n=32). In the 6 with severe injuries, only 1 was not admitted. Of all patients who did not get a CT, the average LOS was 2:13 hours.

None of the patients with a minor injury received a CT scan. In the moderate injury group, 8 patients (20%) had a CT, with 2 of those showing abnormalities. All patients with a severe injury received a CT scan. Only two charts indicated the use of a CDMR, both of which were moderate severity and used PECARN to justify observation rather than CT. 49% of charts had documentation that head injury advice was given verbally or in a written form.

CONCLUSION: Our results show that the average LOS in those patients with moderate severity injuries is about twice as long as those with a minor injury. Our rates of CT of 100% in severe injury and 20% in moderate injury are reasonable, and well within accepted rates in the literature. Documentation of clinical decisions, discharge times, and head injury advice could be improved. Due to lack of documentation, we were unable to fully assess whether physicians are choosing to observe patients with moderate injuries longer rather than obtaining CT scans.

Emergency Medical Services versus Self-Transport: Profile of patients presenting with Acute Coronary Syndrome to Cypress Regional Hospital

Ebrahim B, Wood A, Gatzke J, McKay S.

Affiliations: College of Medicine, University of Saskatchewan

ABSTRACT:

INTRODUCTION: Acute Coronary Syndrome (ACS) benefits from early time to treatment, and thus, in large geographical areas, it is difficult to provide patients with quick access to treatment. Use of EMS provides the opportunity to have earlier contact with medical providers and may have an impact on patient outcomes. The Cypress Regional Hospital (CRH) serves the Cypress Health Region and patients present either by Emergency Medical Services (EMS) or by Self Transport. Our team examined the patient profile of those experiencing ACS, including those that self-present or use EMS, door-to-ECG and door-to-needle times, onset of symptoms to needle time, and if distance from hospital was associated with choice of transport.

METHODS: An ethics proposal was submitted and approved by both the University of Saskatchewan and the Cypress Health Region. A retrospective chart review was done on 152 patient charts, of which 100 were included in the analysis based on inclusion criteria. Patient demographics and times of symptom onset, hospital arrival and treatment were recorded.

RESULTS: 37% of the patients utilized EMS. The mean age was 71 years (SD=13.7), 72% of the patients were male and the mean distance from hospital was 37 km (SD=48.0). Patients with CAD risk factors did not choose EMS more than those without. Of the 45 patients that had door-to-ECG times ≤ 10 min, 20 (44.4%) arrived by EMS. There was no significant difference in the proportion of those receiving ECG ≤ 10 min who arrived by EMS (54.1%) and those presenting by self transport (39.7%). 17 patients had a STEMI, with fourteen receiving fibrinolytic therapy. The mean time from hospital arrival to fibrinolytic therapy was 118 min (SD = 186.1). EMS transport reduced that mean time.

CONCLUSION: Despite having EMS available, over half of the patients chose to present to the hospital by self-transport. Surprisingly, 55.6% of those patients receiving their ECG's in the recommended timeline were self-transporters. However, they put themselves at risk of suffering catastrophic events while en route, and a delay in receiving vital medical treatments, which could greatly affect their prognosis.

Simulation-based learning: Does structured debriefing result in improved closed-loop communication? A pilot study

Dressler N, Woloschuk D, Loos F, Karreman E, Lyster K.

Affiliations: College of Medicine, University of Saskatchewan

INTRODUCTION

Communication errors are the leading cause of patient harm in healthcare. Closed-loop communication (CLC) is one means to improve communication between healthcare members. High-fidelity simulation followed by debrief is a modality used to improve healthcare workers' communication and team skills during crisis situations. We seek to find whether debrief post-simulation can be used specifically to improve CLC.

METHODS

We had Family Medicine residents and senior nursing students participate in two simulated cases with debrief after each session. Participants were divided into groups containing one resident and two nursing students and were assigned to either CLC-focused debrief or debrief focused on the medical management of the case. CLC was scored for each simulation session using a rubric in which points were assigned for each component of the communication loop and a percent score was created based on total possible score. Scores for each group were compared for pre-debrief simulation and post-debrief simulation.

RESULTS

We recruited four Family Medicine residents and 8 nursing students from the University of Saskatchewan who were divided into four groups, two intervention, and two control. The intervention groups showed a decline in CLC score of 3.7% and 13.5%. The control groups showed a decline of 9.7% and 3.8%.

CONCLUSIONS

Groups for both control and intervention showed a decrease in use of CLC during their second simulation irrespective of the simulation they participated in. This is difficult to explain although may reflect a "reverse" Hawthorne effect in which learners abilities' were taxed in these complex simulated scenarios leading to a decrease in general performance abilities. The lack of improvement in CLC is in keeping with findings in previous published research. There were several limitations in this pilot study and further research with a larger sample size is warranted.

Estimating Pediatric Weights in the Emergency Department: When we guess wrong, what are the implications?

Ferguson J, Sadoway R, Finningley A, Woods R

Affiliation: College of Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada

INTRODUCTION

In the Emergency Department (ED) medications used in resuscitation of pediatric patients are often dosed based on estimated weights calculated using age or length. Our team evaluated the accuracy of common weight estimation methods in a pediatric population and solicited expert opinion on when over/under-dosing may cause harm in resuscitation scenarios.

METHODS

A convenience sample of patients presenting to the Pediatric ED at Royal University Hospital was enrolled between June 1 - August 1, 2012. Patient length, weight and demographics were recorded. Seven age-based methods were used to calculate weight and their percentage error was determined. The number of patients with concordant and discordant Broselow color categories was determined. Seven experts in pediatric resuscitation participated in a survey and focus group to determine the percent over/under-dose that may cause harm for twenty commonly used medications based on five resuscitation scenarios.

RESULTS

226 female and 275 male patients aged 2 days to 17 years (median 3.36 years) were enrolled. The seven age-based methods resulted in percentage errors ranging from -8.5% to 14.2%. The Broselow Tape was concordant in 66.5% (2007) and 66.7% (2011) of patients. The most significant outliers from the Broselow Tape had overestimations of 105% and underestimations of 73%. On average, one and two weight category discrepancies in Broselow category resulted in overestimating weight by 68.9% and 112.0% or underestimating weight by 39.3% and 51.3%.

The expert focus group concluded that harm may occur with overdoses greater than 100%. The exceptions to this were Propofol and Ketamine in cases with hypotension where the group felt that even a full dose may cause harm. It was felt that harm may occur when underdosing medications between 5-100%. Antibiotics were the most important medications not to underdose. The focus group recommended titrating medications and generally felt that it was safer for patients to be overdosed than underdosed.

CONCLUSIONS

Most methods of pediatric weight estimation are reasonably accurate. The Broselow Tape will estimate the correct weight category two thirds of the time. When weight estimations are inaccurate, patients are unlikely to experience harm unless there is a significant over/under-dose. We recommend that clinicians be particularly careful not to overdose sedatives or underdose antibiotics.

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

Gaco D, Lendsay A, Woods RA

Affiliations: College of Medicine, University of Saskatchewan

ABSTRACT

INTRODUCTION: Placing a breathing tube into a patient (intubation) has the potential to be life saving in certain clinical situations. Because this procedure is often time-sensitive, many jurisdictions have implemented this procedure into the pre-hospital environment, under the scope of practice of paramedics. Research into the effectiveness of this procedure in the pre-hospital environment has shown mixed results towards benefit and harm. This has highlighted the importance of selecting the right patients who would benefit from this procedure in the pre-hospital environment. Saskatchewan recently introduced Medication Facilitated Intubation (hereafter referred to as MFI). After implementation, there was a large surge in pre-hospital intubations by Advanced Care Paramedics. The goal of this research is to examine whether these intubations were medically necessary by reviewing the current reporting forms that are completed by paramedics after each successful or attempted intubation. The results of this survey will inform education initiatives going forward on MFI indications.

METHODS: A descriptive study/review of the intubations by Advanced Care Paramedics in a two year period, from approximately March 2012, to April 2014, in the Saskatoon and Regina-Qu'Apelle health regions. The hope is for nearly 100 intubations, however whatever number is achieved during this time period will be used. Clinical data and scenarios will be gathered from de-identified reporting forms, which must be filled out by paramedics following each case of MFI. Specific data to be collected include patient age and gender, vital signs, clinical indication for intubation, medications and equipment used, number of attempts, and encountered difficulties or complications. This data will be collected by the medical student Andrea Lendsay, except for the clinical indication for intubation - which will be determined by a third year Emergency Medicine resident.

De-identified MFI documents will be provided to the research team, that have been completed prior to our start date (expected June 1st 2014), by Jacqueline Messer-Lapage, executive director/registrar of the Saskatchewan College of Paramedics. Medical charts will be pulled by the research time to find out supplementary patient information, such as time of extubation, and airway difficulties encountered in hospital.

This data will be compiled, and then summarized in short cases, which will be presented to EMS physician directors and paramedics, and the question will be as to whether the same decision for intubation would have been reached by another clinician involved in pre-hospital care. We will then look at discrepant cases to identify themes for which ongoing education to EMS personnel can be designed and modified.

The Social Media Index: Measuring the Impact of Emergency Medicine and Critical Care Blogs and Podcasts

Thoma B, Sanders JL, Lin M, Paterson QS, **Steeg J**, Chan TM

Affiliations: University of Saskatchewan, Saskatoon, SK

INTRODUCTION: The number of online medical education resources for emergency medicine and critical care learners has increased dramatically. With no way to assess their impact or quality, it is challenging for learners to find good resources and educators to receive scholarly credit for their products. The study developed and evaluated an impact metric for these resources.

METHODS: The Social Media Index (SMi) was derived using data from emergency medicine and critical care (EMCC) blogs and podcasts. Alternative metrics including Google PageRanks, Alexa Ranks, Facebook Likes, Twitter Followers, and Google+ Followers were gathered for each site and assessed for inclusion. Ordinal, Logarithmic and Raw versions of the SMi were normalized and evaluated with descriptive statistics. The temporal characteristics of the SMi were evaluated using website age and repeated measures over a three week period. The derived SMi was then applied to relevant EMCC journals to assess for correlation with known journal impact metrics using Spearman's rho.

RESULTS: The logarithmic version of the SMi containing four metrics (Google PageRank, Alexa Rank, Facebook Likes, and Twitter Followers) was felt to be the most robust based on the statistical analyses. The SMi demonstrated strong temporal correlation over three weeks ($r=0.991, 0.796, 0.806$; $p<0.001$) and moderate correlation with website age ($r=0.372$; $p<0.001$). When applied to EMCC journals, the SMi correlated significantly with all impact metrics except number of articles published. The strongest correlations were seen with the Immediacy Index ($\rho=0.609$; $p<0.001$) and Article Influence Score ($\rho=0.608$; $p<0.001$). When the SMi was applied to both websites and journals, several websites scored as high as EMCC-specific journals.

CONCLUSION: The SMi has the potential to be a reliable and accessible indicator of impact for medical education websites. This could benefit medical education by identifying high impact resources for learners and assessing the scholarly value of educational products for educators.

The METR:IQ Project: Developing Quality Indicators for Emergency Medicine Blogs and Podcasts

Paterson QS, Thoma B, Lin M, Milne K, Sanders JL, Carpenter C, Chan TM

Affiliations: Emergency Medicine, University of Saskatchewan; Division of Medical Simulation, Department of Emergency Medicine, Massachusetts General Hospital; MedEdLIFE Research Collaborative

INTRODUCTION – Blogs and podcasts are frequently used for medical education and knowledge translation in emergency medicine (EM). Concerns about quality prevent their widespread utilization. The Medical Education and Translational Resources: Indicators of Quality (METR:IQ) Project aims to develop quality indicators for these resources.

METHODS– A literature search for quality indicators applicable to secondary sources was conducted using Medline, EMBASE, Web of Science, and ERIC. Articles likely to contain quality indicators were identified by two reviewers and an arbitrator. Three reviewers extracted article data and quality indicators. Quality indicators were excluded if deemed irrelevant by two reviewers. The remaining quality indicators were thematically analyzed using a constant comparative technique to generate codes until saturation was reached. Each categorization was made by two investigators and reviewed by an auditor. Disagreements were resolved by consensus. The complete data set was coded by at least one investigator, with 30% of the items redundantly coded to calculate inter-rater agreement. An internal survey of the authors and four focus groups with prominent emergency medicine bloggers (N=7) and podcasters (N=9) were conducted to identify missing quality indicators.

RESULTS – The literature review returned 4530 articles. 164 articles were included by the reviewers and 154 articles were accessible. 1817 quality indicators were extracted. The qualitative analysis found three major themes and 130 subthemes. The major themes (most frequent subtheme) were credibility (transparency), content (academic rigor), and design (aesthetic). Concordance during the coding was 90.0%. 22 additional subthemes were identified in the internal survey and focus groups. All 155 themes were converted into quality indicators.

CONCLUSION –155 potential quality indicators for EM blogs and podcasts were found that will help educators create and learners assess online resources. Next we plan to build consensus on the most important indicators among EM bloggers and podcasters (Delphi survey) and medical educators (ICRE 2014 consensus conference).

Little time spent giving discharge instructions in Canadian emergency departments

Paterson QS, Sullivan E, Woods RA, Fuller D

University of Saskatchewan, Saskatoon, Saskatchewan, Canada

INTRODUCTION: Discharge instructions (DI) are crucial for improving patient self-management and safety. Patients typically have poor understanding of their DI, which may lead to poor health outcomes, high return rates, and poor compliance. Best practice guidelines for emergency department DI were recently published, yet no recommendations were made regarding how much time should be spent giving DI. To our knowledge, only three studies have measured time spent on DI. The length of DI varied from 76 seconds to 6 minutes. This study contributes to the literature by examining the time spent giving DI in two Canadian emergency departments.

METHODS: This direct observational analytic study took place in two Canadian emergency departments, including one adult and one combined adult/pediatric department. Fourteen volunteer physicians were directly observed by a medical student for two shifts between June and August of 2013. All physicians were blinded to the outcome being measured, the length of time spent giving DI. The student used a stopwatch to record the time the physicians spent giving DI to each patient. Patients (n=244) provided informed verbal consent to the medical student after discharge, provided they met the inclusion criteria (stable vitals, no apparent distress, competent mental status). Descriptive analyses were conducted in Stata (version 12) to examine both the mean time spent giving DI to patients and physician variation in DI time.

RESULTS: The mean time spent giving DI by physicians was M=71 seconds (SD=77 s). The difference in DI time for adult patients (n=184; M=69 s; SD=74 s) and pediatric patients (n=60; M=78 s; SD=83 s) was not statistically significant. The means between the 14 physicians ranged from 28 to 124 seconds.

CONCLUSION: Consistent with past research, our results show that emergency department physicians spend little time giving DI to patients. Our data shows that Canadian emergency physicians may spend less time on DI compared to American and Swiss physicians; however, with the paucity of research in this area it is difficult to reach a conclusion. Though different methods have been studied in hopes of improving patient comprehension of DI, future research should focus on the implications of spending more time giving DI, regardless of the method.

Emergency Medicine Simulation Training: Measuring Self-Efficacy of Residents

Fox D, Smith S, Zimmer J, DeGroot J

Introduction: The first week of resident training for new emergency medicine residents at the University of Saskatchewan, requires participation in a simulation-based program referred to as Critical Care Week (CCW). This program includes simulation training in various resuscitation procedures and situations. It is essential that emergency physicians feel confident in performing these techniques in the acute care setting. Little research has been done reviewing simulation training and the perceived competence acquired through self-efficacy measures for new medical residents in the emergency medicine program.

Methods: This study compared emergency medical residents' self-efficacy scores before and after their training at CCW. Self-efficacy surveys were given to the residents before and after their CCW training to measure pre and post levels of self-efficacy with the required skills. A 5 point Likert Scale was used, asking residents to grade 16 areas of resuscitation techniques and CanMEDs roles. Results were analyzed using equal variance 2 sample t-test to compare pre-training and post-training responses (level of significance = 0.05 for all tests).

Results: Residents indicated increased levels of self-efficacy in the following skills post simulation training: cricothyroidotomy (1.20 ± 0.42 vs. 3.70 ± 0.67 ; $p < 0.0001$), chest-tube insertion (2.80 ± 1.23 vs. 4.30 ± 0.67 ; $p = 0.003$), central-line insertion (2.30 ± 0.95 vs. 3.90 ± 0.74 ; $p = 0.0005$). Self-efficacy levels remained the same for some residents in the following skills: endotracheal tube insertion ($p = 0.1$), airway management ($p = 0.2$), dyspnea NYD ($p = 0.1$), hypotension NYD ($p = 0.18$), seizure ($p = 0.24$), trauma ($p = 0.1$), tachycardia ($p = 0.1605$).

Conclusion: Simulation-based training in critical care situations has the potential to serve as an important educational tool for emergency medicine residents, providing the opportunity to enhance skills and increase individual levels of self-efficacy. Overall, our descriptive analysis indicates increased levels of self-efficacy on the whole from our EM residents who participated in the simulation critical care training.

The edus2 Workout

Olszynski P

Affiliations: University of Saskatchewan

INTRODUCTION:

The edus2 workout offers trainees an interactive way to apply their developing knowledge of several critical care conditions and their associated emergency ultrasound findings. The “workout” can take place both inside and outside the simulation environment, but preferably during small group learning sessions. Through the use of the edus2 simulator and a newly designed scanning shirt (a t-shirt embedded with multiple velcro-held scan tags embedded at key anatomical landmarks), trainees can now attempt combining the appropriate series of scans for a given indication. This next generation edus2 invention may help emergency medicine trainees: 1) incorporate the relevant scans for a given indication 2) review key positive findings on recordings from real patients 3) develop a consistent approach to scanning protocols such as EFAST.

METHODS:

The edus2 "workout" makes use of our previously invented emergency ultrasound simulator, the edus2 (www.edus2.com). The workout t-shirt consists of over 25 secured velcro tabs placed at appropriate anatomic landmarks. Facilitators can have one of the trainees wear the workout shirt and then select the appropriate clips for the other trainees to scan by placing their tags on the relevant velcro landmarks. For example, a facilitator could program the shirt for cardiogenic shock by placing the following tags at their appropriate landmarks: B-Lines at lung fields, severely hypokinetic LV at all cardiac views, full IVC in subxiphoid view, etc... After the trainee completes the appropriate scans and demonstrates an understanding of the findings, the group can then move on to covering other indications.

RESULTS:

All instructions for making the edus2 workout shirt are available free at our website: www.edus2.com.

CONCLUSION:

The concept of layered learning is not new to medical training. Its theoretical origins are found in Vygotsky's Sociocultural Development Theory. Expertise (defined as the ability to complete a task independently) is gained through careful guidance of trainees through their respective Zone Of Proximal Development (ZPD). The ZPD is therefore defined as “the distance between the actual developmental level and the level of potential development. Such guidance allows for tailored trainee development and may avoid factors that are detrimental to learning (excessive cognitive load, performance anxiety and safety concerns). This can be achieved through the deliberate use of the edus2 workout in a progressively challenging fashion.

Characterizing how Long Term Care Patients use Emergency Department Services in Regina, Saskatchewan

Trivedi S, Little B, Karreman E, Lyster K

Affiliations: University of Saskatchewan, Regina Qu'Appelle Health Region

Key words: Patient flow, Long-term care, quality improvement

INTRODUCTION: In light of recent local initiatives aimed at improving emergency department (ED) patient flow, we sought to characterize how residents of long term care homes aged 65 and older utilize the services of the EDs in Regina, Saskatchewan and if the EDs were able to meet CAEP length of stay (LOS) benchmarks

METHODS: A retrospective chart review was performed with a convenience sample of the first 50 patients who presented to the ED of both hospitals in Regina starting January 1, 2012. In order for the patients to be included they were required to be age 65 or older and to reside in one of the nine long term care homes in Regina, SK. We abstracted data from a variety of different clinical, demographic and administrative parameters.

RESULTS: The charts of 100 patients were reviewed (54 females; mean age: 82.6 ± 9.0 years old). Of the 100 visits, 27% were made by repeat users within the study window. The CTAS distribution for the LTC patients was found to be CTAS 1: 5%, CTAS 2: 9%, CTAS 3: 43%, CTAS 4: 33% and CTAS 5: 10%. The mean ED LOS for patients triaged as CTAS 1-3 was 6.7 ± 4.9 hours, while for CTAS 4-5 it was 4.4 ± 2.9 hours ($p = .004$; $r = .29$). The mean ED LOS for admitted patients was 6.9 ± 4.8 hours. We found that 50% of patients were admitted, with 46% being discharged and 4% leaving without being seen. We also noted that 75% of patients were brought to the ED by EMS.

CONCLUSION: Our findings suggest that the highest volume of acuity for the LTC patients falls within the CTAS 3 or 4 categories. Exactly half of our sample was admitted and a substantial amount of them required EMS transport. With respect to LOS, our results show that the two hospitals in Regina, SK are meeting the CAEP benchmarks for the 90th percentile in the CTAS 1-3, CTAS 4-5 patient groups and the median benchmark for the admitted patient group. It is our intent that the findings of this study will help guide future policy development.