The Emergency Strategic Clinical Network (ESCN) quality improvement and innovation forum

Patrick McLane, Eddy Lang

Evidence-based research and quality improvement work are pivotal to health systems meeting their goals. Translating findings and disseminating innovative practices to new settings occurs in part through knowledge translation events, such as conferences and workshops.

The Emergency Strategic Clinical Network™ (ESCN) Quality Improvement and Innovation forum fills a gap between local and national events. It is devoted to sharing methods and results of emergency department projects in Alberta among those working in emergency care. 2020 was the second consecutive year the ESCN has held this one day event.

The event provides an opportunity for those working on quality improvement in emergency medicine to network with one another, share innovative projects, share know how and translate promising works to new settings. In addition, the event provides an opportunity to identify projects for potential development through local, provincial, or even national opportunities.

Each year, over 30 teams have presented their projects through a mix of plenary oral and lightning oral formats. All abstracts submitted to the event are accepted, with abstract rankings determining which projects are selected for plenary oral presentations. Among the many topics presented, mental health and addictions, Choosing Wisely™ initiatives, pediatric pain control, clinical skill improvement projects, Indigenous health, staffing, and nurse initiated protocols have featured prominently. Methods have included formal quality improvement projects, systematic reviews, qualitative research, observational studies and health records reviews.

Strong participation shows the value practitioners see in the forum. In 2019, the forum was attended by approximately 90 educators, managers, nurses, physicians and researchers from across Alberta. In 2020, 82 delegates attended in person, while 33 attended virtually. Travel for the 2020 forum was generously supported by the College of Physicians and Surgeons of Alberta.

We are pleased to partner with the Canadian Journal of Emergency Nursing to make abstracts from the event widely available. Individual presenters have had the option of submitting their abstracts for publication in CJEN. In some instances, abstracts have already been published through other conferences and so could not be submitted to CJEN.

The findings presented in the abstracts are solely the work of the submitting authors. The ESCN does not guarantee the accuracy of any reported information. The views expressed in the abstracts are solely the views of the authors and do not represent the ESCN or Alberta Health Services.

Correspondence to: emergencyscn@ahs.ca

A multidisciplinary approach to treating low back pain in the ED: improving patient outcomes

Lesley Beique, Jason Martyn

Background: In collaboration with emergency physicians, the physiotherapy and pharmacy teams at the Rockyview General Hospital (RGH) implemented a novel, multidisciplinary, evidence-based pathway that functions by deploying a "rapid access back-care team" (RABT) to address low back pain (LBP) in urban emergency departments (EDs).

The pathway starts with having a physiotherapist (PT) conducting a neuromusculoskeletal exam, prior to the physician. They provide treatment and guidance including manual therapy, mobilization, education, home-exercises and referral to community resources. The pharmacist then reviews medications, discusses pain management, prescribes analgesia and creates a plan for outpatient analgesia. This occurs while the patient awaits the physician (an average wait time of 2 hours at our site), avoiding increases to length of stay (LOS) and reducing burden on physicians.

Implementation: To operationalize this pathway successfully, a site requires dedicated PT and pharmacy services in the ED, as the unpredictable timing of LBP referrals requires a regular presence of the RABT. The selected PT and pharmacist must be confident, outgoing practitioners with a solid understanding of LBP, red-flags, and appropriate treatment.

Our project team consisted of physiotherapists, pharmacists, nurses, physicians, managers, and QI leaders, formed to facilitate a collaborative approach to implementation. The Prosci® ADKAR model and Plan-Do-Study-Act (PDSA) cycles were used to implement the pathway and troubleshoot operational challenges.

Evaluation Methods: Front-line staff manually collected data on response time, treatments, adverse events, and resources provided. The investigators reviewed patient charts to record opioid prescriptions, DI referrals, and arrival/discharge times of the patients. We compared outcomes of patients seen by the RABT to historical site data of patients with a discharge diagnosis of LBP from the ED.

We actively sought feedback from physicians, nurses, and the leadership group to ensure that unintended consequences or near-misses were identified early on. We reviewed interim data such as LOS and average time-to-assessment, to identify areas for improvement. This data and feedback were addressed via bimonthly PDSA cycles. We also administered patient and staff satisfaction surveys before and after site implementation of the pathway to develop an understanding of patient and staff thoughts, feelings and experiences with the service model.

Results: We studied these outcomes in 44 patients exposed to our RABT. Patients who saw a physiotherapist prior to the physician had shorter median ED LOS (3.2h vs. 4.0h), lower diagnostic imaging rates (36.4% vs. 49.4%) and less opioid prescribing (31.8% vs. 49.2%). No patients returned to the ED within 72 hours post evaluation, compared to the

7.6% historical recidivism. Not all patients were seen by a pharmacist. When performing a subgroup analysis of patients seen by both a pharmacist and physiotherapist prior to physician, opioid prescriptions were found to drop significantly from a baseline of 49.2% to 16.7%.

Advice and Lessons Learned:

1. Service hours are ideally aligned with higher patient demand times, but should ultimately be chosen to minimize service disruptions and maximize overlap between interdisciplinary members of the RABT team.
2. Regular PDSA cycles (every 2-4 weeks) are useful to review interim data and address operational issues that arise during implementation. This ensures the pathway evolves to fit the contextual needs of the site. Reviewing early results motivates the team, and discussing practice issues allows clinicians to identify where improvements can be made.
3. When this pathway was initially implemented, one unintended consequence was the increase in ED LOS for patients referred to the RABT *following* physician assessment. In addition, this subgroup did not show significant reductions in opioid prescriptions or DI referrals. Referrals were subsequently restricted to *before* the physician only and were ideally completed by the triage nurse to maximize time for the RABT.

Optimizing patient outcomes by improving STEMI target times

Danielle Binda, Team Members: SHC ED STEMI Project Team

Background: It is widely recognized that delays in STEMI identification and treatment can negatively affect patient outcomes. Early intervention to achieve reperfusion of the blocked vessel is crucial in minimizing myocardial damage and optimizing patient outcomes. In April 2017, the Southern Alberta STEMI program identified a delay in SHC ED achieving STEMI target times as outlined by the American College of Cardiology and the American Heart Association.

Of all walk-in STEMI patients presenting to SHC ED between October 2016 and October 2017 requiring urgent transfer to FMC cardiac cath lab:

- 24% met the 'Triage to 1st ECG target' of ≤ 10 mins
- 6% met the 'Door in-Door out target' of ≤ 30 mins

A multi-disciplinary project team was formed to examine barriers to both targets and begin implementing strategies aimed at improving these times.

Implementation: The AHS AIW framework as well as the IHI Model for Improvement were useful in guiding our work. A clearly defined problem statement and project goal assisted the project team to focus on engagement of key stakeholders. A multi-disciplinary project team was formed that included ED physician, ED CNE, ED RNs, unit clerks, SHC cardiotech staff and manager, EMS deployment manager who met approx. q2 months. Brainstorming sessions were completed to identify delays affecting each target and intervention strategies were developed to directly impact each identified delay. The project was implemented in 2 phases.

Phase 1 rolled out in July 2018 with interventions aimed at improving the Triage to ECG target (stretcher for ECGs at triage, cardiotech prioritizing r/o STEMI ECGs,"STEMI notification" call out to ED code team, etc) . Regular feedback was provided to ED staff via email and posters to increase buy in for change adoption.

Phase 2 rolled out in October 2018 with interventions aimed at improving the Door in-Door out (DIDO) target (formalized 'Hot Swap' process with EMS crew in EMS park as primary transfer to cath lab, streamlined booking process for Red/STAT transfers to cath lab, RN accompanying pt. in ambulance, transfer checklist, INFO sessions post STEMI transfer).

Sustainability planning includes standardizing ECGs at triage for symptoms of cardiac ischemia, including process education into RN orientation, development of STEMI workbook in tableau for ongoing monitoring and regular STEMI SIMs. Project wrap up completed Sept 2019 with plan for team to meet again in 6 months to address any process gaps.

Evaluation Methods: STEMI is not a high-volume pt. presentation to the ED (43 walk-in STEMI pts in 1 year at SHC ED) so PDSA cycles were a challenge. STEMI patient data was provided to the project team by the STEMI Program data coordinator every 3 months for chart review. Initial review was more thorough to aid in identification of possible opportunities for improvement (med administration, extensive diagnostics prior to cath lab transfer, etc). Triage to 1st ECG and DIDO times were calculated, monitored over time and reviewed with the project

team at each meeting. The "Weekly ECG acquisition" tableau workbook was used to monitor Triage to ECG times for all patients presenting with cardiac chest pain. An unintended consequence of placing an ECG stretcher at triage developed as triage RNs began completing ECGs on more patients than intended (ie; vertigo, bradycardia, a-fib) reducing availability for patients presenting with cardiac ischemia.

Results: Between July 2018-July 2019, 43 walk-in STEMI patients presented to SHC ED and were transferred to the FMC cath lab for revascularization.

Target #1: Triage to 1st ECG ≤ 10 mins

- 50% reduction in median time for Triage to 1st ECG time
- 51% increase in target being met

Target #2: Door in-Door out (DIDO) ≤ 30 mins

- 44% reduction in median time for DIDO time
- 28% increase in target being met

Triage to physician assessment time was also reduced by 40% and EMS Transport booked to ED arrival time also reduced by 33%

Advice and Lessons Learned:

1) Develop a clear problem and goal/aim statement. Use baseline data to validate the problem and ensure the team has a mechanism to regularly provide results to staff.
2) Low # of STEMI presentations made rapid tests of change a challenge. Had to collect data retrospectively every 3 months to review and make changes. We eventually developed a feedback form to aid in more rapid data collection & analysis, but this was not reliably completed by bedside staff
3) Involving key stakeholders is critical. We involved members of the cardiotech team at each meeting to ensure that strategies we were putting into place weren't creating downstream workflow issues for them. This increased buy in for the cardiotechs to complete more timely ECGs and involved them in the solution.

Emergency nurse use of ultrasound guidance for vein cannulation: a three site quality improvement initiative and registry

Domhnall O'Dochartaigh, Warren Ma, Christopher Picard, Richard Drew, Matthew J Douma

Background: AHS suggests a limit of four attempts at traditional peripheral vascular access, however there are limited current options at many sites for these patients. Between 10 and 25 percent of patients present to the emergency department (ED) with difficult to cannulate veins. In these patients ultrasound guided catheter placement decreases the number of IV attempts, decreases time to successful IV placement, improves patient satisfaction, and in adult patients decreases central line use. Emergency nurses have been shown to successfully employ ultrasound-guided peripheral vascular access. Physician and Nursing clinical practice guidelines place a high recommendation for this practice. Despite the evidence and recommendations, in Canadian EDs, with notable exceptions there remains minimal standard procedural uptake or ED research.

Implementation: For difficult peripheral intravenous access a standardized ultrasound guided nurse performed procedure was implemented in 2016 at the University of Alberta (UAH) ED, in 2017 to the Royal Alexandra Hospital (RAH) ED, and in 2018 the Misericordia Community Hospital (MCH) ED. An education module was created that included didactic learning and an exam, approximately one hour of in-person training which included vessel and structure identification and cannulation practice on a gel model until competence was achieved, and finally three successful mentored starts prior to independent practice. Mentorship ensured good technique was followed, provided additional tips to improve practice, and most importantly ensured an IV attempt was on a patient with veins amenable to a novice ultrasound provider attempt (e.g. if a patient was assessed to be a challenging ultrasound start with limited vein options the mentor would place the IV in much the same way as traditional IV placement mentoring). The ultrasound technique taught was a single operator, short access or traverse approach with dynamic tip tracking where the catheter needle tip is continually visualized as the target vessel is cannulated. Catheter placement is confirmed with the catheter tip visualized intraluminal and with an ultrasound visualized saline flush. This study reports on the first 30 nurses trained at the UAH, 12 at the RAH and 6 at the MCH.

Evaluation Methods: A quality improvement (QI) registry documented complications and was used to improve education, training, and procedural success. The two QI study objectives were 1) to determine ultrasound program success for all sites by comparing QI results to historic results from other programs 2) to determine if an abbreviated training regimen (shorter than previously documented for adult patients in Canada) can be used to train nurses in EDs with minimal support or pre-existing experience with UGIVC.

Staff who had achieved independent practice voluntarily completed a tracking form whenever an ultrasound procedure occurred. Completed forms were assessed on a continual basis for any opportunities for improvement. Qualitative feedback was also obtained from informal interviews, a focus group, and a survey of the newly trained nurses. Feedback was thematically analyzed and grouped into themes for reporting. Data and trends from the registry were used to reinforce

education to promote greater procedural success. Also identified were questions to add to the tracking form to improve the usefulness of the registry. Ongoing review will identify if these efforts improve practice. Opportunities for system improvements were managed through consultation with all stake holders including nursing management, CNEs, physicians, and bedside nurses. Program evaluation will shape all aspects of the program development.

Results: At the UAH, RAH, and MCH respectively; the mean number of failed IV attempts [SD] before UGIV was: 4.2 [2.5]; 3.4 [2.1]; 4.77 [2.9]; while first pass success by novice provider (1-10 UGIV starts) was 76%; 66%; and 62%. Success increased rapidly with the number of starts and plateaued after 100. Complications occurred in 4/374 (1%) starts. Qualitative feedback suggests that provider and patient positioning, and equipment preparation improve individual success; engaged staff and a QI registry improve program success; even in cases with more reported pain, patients prefer UGIV to traditional placement.

Advice and Lessons Learned

1) Creating an ultrasound guided peripheral IV program and quality registry that supports emergency nurse use of this procedure is possible. First pass and overall catheter success rates and low reported compilications are reassuring.
2) The quality registry has provided useful data to support practice and suggest modifications to the education and site specific system level supports provided. An example of system feedback is that newly trained staff need to have a clinical assignment that allows the opportnuity to utilize the procedure. Also enough mentors are required to support new staff. A third interesting system issue identifed is the possible effects of the training on traditional difficult IV placement skill and how to best support this.
3) Emergency physicians and nurse champions can play a key supportive role to ensure the success of the program.

Ultrasound guidance for pediatric vein cannulation: an emergency nurse quality improvement initiative and registry

Domhnall O'Dochartaigh, Warren Ma, Christopher Picard, Richard Drew, Matthew J Douma, Tahira Daya, Sarah Curtis

Background: Between 10 and 25 percent of pediatric patients present to the emergency department (ED) with difficult to cannulate veins. Recent RCT evidence suggests that in pediatric patients assessed at being a predicted difficult IV start (by DIVA score of 3 or more), ultrasound guided catheter placement decreased the number of IV attempts, decreased time to successful IV placement, and improved first pass success, patient satisfaction, and catheter dwell time. Our QI project examines the specific learnings around ultrasound guided peripheral IV in pediatric patients and suggests opportunity for non-pediatric specialist hospitals to consider with the overall aim of minimizing IV attempts on all pediatric patients within our EDs.

Building on a RCT led by Dr Curtis in pediatric patients conducted at the Stollery from 2012-2014, a standardized ultrasound guided nurse performed procedure was implemented in 2016 at the University of Alberta and Stollery EDs, and expanded to the Royal Alexandra ED in 2017 and the Misericordia ED in 2019. Using the same education package and QI study methodology as previously reported in adult patients this study focused specifically on pediatric patients.

Methods: A quality improvement (QI) registry was utilized to track complications and success of pediatric patients at all sites. The aim was to assess for program success, and improve education, training, and procedural success as required. Staff who had achieved independent practice voluntarily completed a tracking form whenever an ultrasound procedure occurred. Completed forms were assessed on a continual basis for any opportunities for improvement. Qualitative feedback was also obtained from informal interviews, a focus group, and a survey of the trained nurses. Feedback was thematically analyzed and grouped into themes for reporting.

Results: There were no reported pediatric UGIV placed at the MCH and RAH during the study period. At the Stollery 126 cases were reported. Immediate insertion complications were noted in three cases as 'pain or swelling at site', and 'unable to advance catheter'. In the first and second years of data collection the average number of traditional IV attempts prior to UGIV attempt decreased from 3.9 to 2.8; first ultrasound pass success increased from 65% to 86%; overall ultrasound success improved from 85% to 97.6% respectively. Increasing nurse skill was significant with a linear increase of first pass and overall success seen with increasing number of ultrasound starts: From 6-20 starts (54% first pass 64% overall success) through to >150 starts (97% first pass and 100% overall). QI staff feedback included ensure adequate pediatric specific supplies such as longer length small gauge catheters, and a procedural focus of patient, provider, and assistant set up. Location of IV placement was noted to change in a number of cases from hand and A/C to forearm.

Advice and Lessons Learned:

1) The key for staff to transition to procedural competance was to ensure initial and ongoing oportunities to place many ultrasound guided IVs (i.e. when time allows in all patients with non-optimal IV placement locations or with non-easy predicted tradititional IV starts)
2) Further work is required at non specilaist hospitals with trained staff to increase ultrasound guided use in pedatric patients
3) At all particapting sites work continues on unit level QI to minimize the number of IV attempts on all pedatric patients as well as work towards a cohort of available staff that are comforable and competent with ultrasound that can provide 24/7 unit coverage. (with limited numbers of trained staff there is increase burden on these staff to assist others while also completing their own nursing assignment.

Emergency department treatment plans

Christine East

Background: A small population of "frequent visitors" make up a disproportionate number of ED visits and costs, and these patients may experience significant harms when repeatedly attending the ED. Our multidisciplinary team creates individualized treatment plans for these patients. When they present to a Calgary ED/UCC, a flagged EMR document is easily accessible to treating providers. Our plans provide background and treatment recommendations for these patients, improving care and reducing repetitive, costly and potentially harmful treatments and tests. Ultimately, we improve quality of ED care regardless of site, and shift care out of the ED and into the community whenever feasible.

Implementation: A multidisciplinary team was created to select patient candidates from ED utilization data and ED/EMS staff referrals. Patients are consented to/involved with the treatment plan process whenever possible. An ED physician conducts a chart review and consults with the family physician, specialist(s) and social agencies. If there are unmet needs in the community, this is addressed with the family physician and relevant agencies. A multidisciplinary case conference occurs after which the ED physician authors a plan, which is implemented concurrent with an EMS Specialized Treatment Protocol. The team reviews and monitors all treatment plans.
We have no dedicated funding for any team members and all members participate either as volunteers or as an extension of their existing roles. Ongoing monitoring and updating of plans is increasingly labour intensive as more plans are created. Resources needed to sustain this work are protected time and funding for team members and assigned office administrative support.

Evaluation Methods: We evaluate the effectiveness of individual plans by monitoring patients' ED visit frequency. Additionally, because each plan and the needs of each patient are unique, chart reviews are frequently conducted to assess for other measures of success (i.e. Reduction in narcotics administered in ED) and unintended consequences (i.e. 72-hour readmissions). Each plan is discussed at quarterly meetings and more frequently as needed. Plans are revised as necessary, involving care providers in the community in ongoing discussions.
Regarding unintended consequences, two complaints have been raised by a single patient with a treatment plan. As a result, to ensure the patient's needs are being met, we conducted an ethics review of the plan in question and directly addressed the patient's concerns. It was determined that the concerns arose from misconceptions about the contents of her treatment plan. We have subsequently created a document for patient enrollees to ensure better understanding of the aims of the treatment plan and how to request a review, and have created a process for addressing patient concerns in the future.

Results: Preliminary data shows a significant reduction in average monthly visits across the entire group of Treatment Plan patients. Anecdotally, some patients have expressed improvements in their overall quality of life with greater support in the community and less time spent in emergency. In addition to the benefits to the system and to patients, these plans have been widely lauded by ED staff for significantly easing the care of some of our most challenging patients; this reduction in provider burn out in turn reduces the risks associated with bias when these frequent visitors are treated in the ED.

Advice and Lessons Learned:

1) Several partnerships have been key to our success: Cooperation with the patients' family physicians, consultation with the Calgary Chronic Pain Centre, and coordination with the EMS Specialized Treatment Protocol group. The ability to flag treatment plans in an EMR is a prerequisite for success, as this allows providers at each ED/UCC to easily access a plan and provide appropriate care regardless of where a patient presents. This capability has been built into our new province-wide EMR.
2) Central vetting and monitoring of plans is essential to reduce the risk of creating anchoring bias or unfairly prejudicing care providers. Plans should be written with compassionate, patient-centered language, and

should include a statement similar to the following: “This Treatment Plan presents suggestions intended to expedite care and reduce patient harms. This plan does not preclude clinical judgement at the time of each presentation.” When disagreement or patient concerns arise, a formal ethics consultation, involving the family physician and, if relevant, chronic pain or other specialists, should be undertaken and documented on the chart.

3) Each plan should have a physician author who has conducted a deep chart review and can serve as a contact person should issues arise, but the central Treatment Plan Committee is ultimately responsible for monitoring, revising, and renewing all treatment plans. This reduces the risk of “orphaned” plans that may be out of date and could introduce harm, in case a physician author leaves the zone, retires or is otherwise unavailable.

Helping kids and youth in times of emotional crisis

Daniel Grigat, Monique Fernquist, Andrea Allen, Tanya Drescher, Andrew Fisher, Katelyn Wieringa, Heather Hair, Marni Bercov

Background: In 2017 the Emergency Strategic Clinical Network (ESCN) and Addiction and Mental Health Strategic Clinical Network (AMH SCN) of Alberta Health Services (AHS) launched a survey to understand the experience of young people seeking help in an Emergency Department (ED) for a mental health concern. Over 1500 surveys were completed, and qualitative results were analyzed thematically and interpreted in partnership with focus groups. A major theme of the responses was the feeling of being stigmatized when seeking help for a mental health concern, and that health care professionals' understanding, empathy, and competencies with youth mental health needs to be improved. In response to this finding, a nurse education workshop has been developed and is being piloted and evaluated.

Implementation: The ESCN and the AMH SCN are working together to develop, pilot, and evaluate new training for ED nurses. The education will debunk common misperceptions and associated stigma about the causes of mental illness and addictions by presenting the medical paradigm of a physical illness with a complex etiology including genetic and environmental influences. The objective of these workshops is that nurses receive training to increase knowledge of the science and determinants of addiction and mental health issues to enable them to provide care that is compassionate and trauma informed. Pilot workshops have been delivered to a lived-experience advisory committee, as well as four cohorts of ED nurses. The impact of the workshops is being evaluated to inform further implementation.

Evaluation Methods: Nurses participating in the pilots will complete a 10 question survey to establish a baseline of their knowledge, compassion, and confidence. This survey has been adapted from the Mental Health Commission of Canada Healthcare Providers Questionnaire, and the Attitudes Towards Child Mental Health Questionnaire. Upon completion of the workshop nurses are be asked to complete a second brief survey reflecting on how this training will impact their clinical practice, and the barriers to practice change. Finally, 90-days post-training nurses will be re-administered the 10 question baseline survey. In addition, they will be asked if their goals for clinical practice change have been achieved.

Results: Four cohorts consisting of 39 emergency department nurses have completed the workshop. All 39 nurses completed the baseline survey and the workshop survey.

The baseline survey results were that 90% of respondents agreed that mental illness and addiction deserves as much attention as physical illness, and 92% agreed that healthcare providers need to advocate for people with mental illness and addiction. However, 79% of respondents reported that they were more comfortable treating physical illness than mental illness or addiction. Further, while 95% of respondents disagreed that mental illness was the result of a weak personality, only 74% disagreed that substance abusers have no self-control. Finally, when asked if adverse social circumstances can result in mental illness or addiction 8% of respondents disagreed and 49% were unsure.

Following the workshop 100% of respondents agreed that the workshop was applicable to their clinical practice, and 92% agreed that they understood better how to support these patients. Important themes arising from the qualitative questions were the need to show more empathy and compassion, and the realization that although an ED nurse cannot resolve an underlying mental illness or addiction they do have an important role to play in stabilizing an acute crisis.

Advice and Lessons Learned

1) Youth and their caregivers often do not know where to go in a time of emotional crisis. Their experience in the emergency department can be a source of further distress, and presents an opportunity to provide compassionate and trauma informed care.
2) Approaching the topic of improving care in the ED requires the involvement of multiple stakeholders, including emergency operational and strategic leadership, addiction and mental health specialists, front line clinicians, and the youth and caregivers receiving care.
3) A major barrier to providing higher quality care for youth experiencing an emotional crisis is knowledge of how to assess these patients and communicate them, as well as knowledge of and access to appropriate resources that can be leveraged in patient care.

Mixed methods analysis of an automated email audit and feedback intervention for fostering (emergency) physician reflection

William Kennedy, Daniel Andruchow, Shawn Dowling, Kevin Lonergan, Tom Rich, Catherine Patocka

Background: Physician reflection requires personalized, timely and growth-oriented feedback. Iterative learning from multiple low-pressure events can be personalized to target areas of weakness and show sequential growth. Since emergency physicians typically work individually to deliver episodic care, opportunities for them to obtain iterative feedback on their clinical performance is often limited. Our study sought to evaluate whether physician reflection is facilitated through the 72hr re-admission alert received by emergency physicians in the Calgary zone.

Implementation: The 72-hr readmission alert is already part of feedback received in the Calgary Zone. Our study was specifically looking at understanding the utility of these alerts to emergency physicians through qualitative interviews. Our team of two interviewers (DA and CP) collected and banked the data through anonymized one-on-one interviews. Themes from these interviews will be used to guide future adjustments made to the alert and dictate its future role in emergency physician feedback. Current changes based on preliminary data have included the ability to customize re-admission alert time-frames based on personal preference. We are currently in the process of analyzing the themes that will shape further improvements made to the alert.

Evaluation Methods: This mixed methods realist evaluation consisted of two sequential phases: an initial quantitative phase examining the general features of 72-hr readmission alerts sent over a 1-year period (4024 alerts from May 2017-2018) and a subsequent qualitative phase involving 17 semi-structured interviews to generate "context-mechanism-outcome" (CMO) statements to guide refinement of our program theory.

Results: CMO statements revealed emergency physician stakeholders were concerned that the alert impacted personnel decisions, changed patient return expectations and didn't involve consulting services. Physicians, who didn't believe alerts were involved in personnel decisions, were more likely to pursue balanced reflection/acquisition after each alert when receiving illness related returns. Conversely, physicians, who believed alerts were involved in performance assessment/hiring decisions, were more likely to defensively change their practice. Commonly cited areas of improvement were the ability to personally adjust time criteria for alerts and involving consulting services in feedback.

Advice and Lessons Learned

1) It is essential to partner with local departments who can use formal (newsletters) and informal (word of mouth) avenues to encourage participation in the study. Participant anonymity must be emphasized when recruiting for qualitative interviews in order to receive the full scope of perspectives.

2) Clear and concise scripts highlighting the objective of each question can ensure the quality of responses received and help interviewers probe further into the topic when necessary.
3) When performing quality improvement studies on formal feedback mechanisms, faculty leadership buy-in is essential in order to ensure a safe environment for all participants.

Palliative home care patients' emergency department visits near end of life: decision making and outcomes

Charlotte Pooler, Joy Mekechuk, Domhnall O'Dochartaigh, Christa Desrochers, Jude Spiers.

Background: Despite support and interventions in the community, some palliative patients have one or multiple Emergency (ED) visits near their end of life. People who are able to stay home are more likely to die at home or in hospice compared to those who are admitted to acute care. This study was to describe decisions and outcomes of palliative home care patients who go to emergency within the last 6 weeks of life in one metropolitan zone of Alberta Health Services.

Implementation: In the 2017-2018 fiscal year, there were 1874 palliative home care patients in the Edmonton Zone in urban (377) and rural/suburban (269) areas. Of these, 646 (34.4 %) patients made 1033 known visits to the ED in their last 6 weeks of life. Charts of decreased patients were proportionally and randomly selected by area and CTAS score (CTAS1/2: 40; CTAS 3: 100: CTAS 4/5: 78), and purposefully selected for unusual events: died in the ED (21); left the ED (15); and admitted to critical care (6).

Results: Patients who went to ED were more likely to be male (59%) and older than 65 years (65 %). Most had cancer as a primary diagnosis (82.6%). More 50 % went to ED more than once. For the majority (74.3%), the final ED visit was within 2 weeks of death; almost half were within 7 days (49.2%). Primary presenting concerns were pain (24.9%) and dyspnea (21.5%). There was no known goal of care reported or documented in either the home care or hospital chart for 28.2% of patients. Goals or wishes of care were documented for 85 % as reviewed or discussed in the ED, of whom 9 % had their first order written and 47.8 % had their order changed to align care with their wishes and illness. 44.6 % spent 8 hours or less in ED; 21 patients died in the ED. Most patients (73.8%) identified a preference to die at home or hospice; some were unknown (7.2 %), others had not been discussed (17%); 77.5% died in hospital.

Advice and Lessons Learned:

1) This study highlights the ongoing opportunity to meet palliative care needs, including communication and collaboration between ED and home care.
2) Some patients presented urgently to home care near end of life; others were diagnosed in ED and referred to home care. Emergency clinicians have an important role in the management of symptoms and advance care planning in this population.
3) Additional anticipatory guidance may benefit those who present to the ED near end of life and enable them to attain their preferences to die at home or in hospice.

Implementing a multi-site cardiac arrest quality improvement initiative

Christopher Picard, Domhnall O'Dochartaigh, Richard Drew, Warren Ma, Matthew J Douma, Candice Keddie

Background: Medical cardiac arrest care in Edmonton Zone Emergency Departments does not undergo structured quality monitoring or continuous improvement. Prior to this work, quality indicators had not been selected, nor had tracking or reporting activities been undertaken. This work brings the Edmonton Zone EDs to the forefront of the continuous quality improvement recommendations made by Heart and Stroke Canada and the American Heart Association that are believed to improve both patient outcomes and overall system performance.

For this project quality indicator development and implementation takes three perspectives: patients and families, frontline staff and the health care system. This work is informed by the Institute for Healthcare Improvement, the National Institute of Science and the International Liaison Committee on Resuscitation's work on Systems of Care and Continuous Quality Improvement for Emergency Cardiovascular Care. This work is motivated by the desire to improve patient/family experience and outcome, provider experience while improving system performance.

Implementation: An iterative process identified the lowest resource/highest impact areas for improvement. This process was informed through a Delphi survey conducted by the Alberta Cardiac Arrest Stakeholders group and stakeholder engagement. Four areas for improvement were identified: support of patients and families, support of staff, improvement in care metrics, and system level interventions. Support of patients and families was accomplished through the development of an advisory network, by linking families with existing supports, and through the implementation of a bereavement package. Supporting staff was accomplished through the development of a formal and informal debriefing processes. Improving clinical care was accomplished through the integration of chest compression feedback devices into clinical care. Improvements at the system level will be accomplished through the creation of a cardiac arrest registry.

Evaluation Methods: Mixed methods approaches are used to evaluate this project. Post cardiac arrest quality track forms are being filled out. Chest compression feedback device data was obtained through simulated patient-care scenarios, staff experiences were obtained through a structured survey. Clinically chest compression data was collected from the feedback devices by Clinical educators, through tracking forms, and pre-and-post surveys of frontline staff measuring burnout and occupational stress are underway. Data is being collected in a local registry to generate accurate incidence and survival rates. Eventual post-implementation interviews with providers, survivors and families will be conducted.

Results: A patient/family advisor network has been established. Survivor and families can be connected with the Bystander Support Network and the Heart and Stroke Foundation portal through the bereavement packages being offered at one of the QI sites. Two sites have developed staff debriefing processes: an interdisciplinary Critical Incident Stress Management (CISM) team at one site, and referral to an existing CISM team at two other sites. Chest compression feedback is being used at two sites, staff feedback has been

positive. One site is tracking resuscitation metrics which are being used to guide and evaluate the interventions: continued improvement in chest compression quality has been noted. Data analytics are being used at all sites to identify additional opportunities to improve resuscitation care and efforts are underway to expand data collection to other sites and to unify pre-hospital and in-hospital cardiac arrest data.

Advice and Lessons Learned:

1) Pre-intervention data would have allowed for more meaningful comparisons in patient care. Efforts should be put into identifying what these measures could be.
2) High levels of staff engagement at one site appear to have influenced the uptake of chest compression feedback. Effort should identify key stakeholders and gain buy in to increase uptake
3) There are significant barriers to unifying pre-hospital and in-hospital cardiac arrest data. It is our belief that a continuous record offers some greatest opportunity to collect data on resuscitation care. Efforts should focus on building a linkage between these data sources and creating a shared data set.

‘One health’ promotion in a model city for dog aggression policy: a qualitative inquiry in the city of Calgary

Dawn Rault, Melissa Parkinson, Morgan Mouton, Melanie Rock

Background: Dog-bite injuries remain a perennial problem, especially in pediatric emergency services. Nonetheless, few researchers have examined how local-level policies may contribute to primary prevention. We do so with qualitative research and an emphasis on implementation. This study highlights the potential benefit of coordination in Alberta between municipalities and emergency health services.

Implementation: This study mainly took place in the City of Calgary, which has earned a sterling reputation, in Canada and internationally, for the results of its animal-control policy in reducing dog-aggression incidents. We attribute part of this achievement to the high compliance of licensing in Calgary. The City estimates 80-90% of all dogs in Calgary have been licensed (by comparison, the City of Toronto estimates 35% compliance with mandatory licensing for dogs). The City of Calgary earmarks revenue from licensing for human-animal services, including public education, assessment of dogs’ behavior, and a state-of-the-art shelter oriented towards rehoming. Here, we frame the City of Calgary’s dog-aggression policy as a ‘One Health’ issue. This concept refers to human-animal-environment interdependencies as the basis for health. Whereas most One Health research has focused on preventing zoonotic infections or environmental toxins, our approach emphasizes health promotion, in which ‘caring for one’s self and others’ as the foundation for improving longevity and quality of life. Over the years, we have informed and learned from the City of Calgary’s implementation of its dog-aggression policy framework.

Evaluation Methods: Related research (Caffrey et al., 2019) has analyzed the City of Calgary’s administrative data on dog-bite incidents, statistically and spatially. Previously our team partnered with the Emergency Services Strategic Clinical Network on an analysis of emergency services utilization for dog-bite injuries across Alberta (Jelinski et al., 2016). We have also highlighted risks to occupational health and safety amongst officers who enforce dog-aggression policies, in Alberta and worldwide (Rault et al., 2018). In this presentation, we delve into how these officers act on municipal data when investigating dog-aggression incidents in the City of Calgary. Our main sources of information were semi-structured interviews and participant-observation.

Results: High compliance with dog-licensing bylaws in Calgary assists officers in efficiently locating dogs following a dog-aggression complaint. In turn, citizens lodge complaints because they view the City of Calgary’s human-animal services as effective and humane.

Advice and Lessons Learned:

1) Encourage nurses to document the circumstances of the dog aggression incident in greater detail. This could assist with public health surveillance, investigations, and ultimately injury prevention.

2) Strengthen procedures for nurses to report the injury to public health authorities and their municipal government (animal control officers). Reporting rates are extremely low, so the full impact of dog aggression incidents is poorly understood.

3) Support families to report to their local municipal government (animal control officers) and veterinarian. Officers can help reduce the risk of dog aggression by encouraging responsible pet ownership, and veterinarians can address behavioural issues.

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Procainamide for the acute management of atrial fibrillation and flutter in the emergency department: a systematic review

Fiona Tran, Daniela Junqueira, Jillian Meyer, Kevin Zhou, Maria Tan, Brian Rowe

Background: Chemical or electrical cardioversion are utilized for acute atrial fibrillation or flutter (AFF) management in the emergency department (ED). Procainamide is a common chemical agent used in Canada; however, there is substantial practice variations.

Implementation: Systematic search of five databases and grey literature completed. Randomized controlled trials (RCTs) and prospective controlled cohort studies including adults with acute AFF comparing procainamide with other cardioversion strategies were eligible.

Evaluation Methods: Two independent reviewers performed study selection and data extraction. Relative risks (RR) with 95% confidence intervals (CIs) were calculated using a random-effects model. The protocol was registered with PROSPERO (CRD42019142080).

Results: From 3847 potential citations, 6 studies were included (four RCTs and two cohort studies). Procainamide was less effective in achieving conversion to normal sinus rhythm (NSR) at 1st attempt compared to other chemical (RR 0.76; 95% CI: 0.65 to 0.90) and electrical (RR 0.72; 95% CI: 0.56 to 0.92) options. Procainamide in a drug-shock approach was as effective as electrical cardioversion alone in restoring NSR (RR 1.04; 95% CI 1.00 to 1.08). The occurrence of hypotension was higher in patients receiving procainamide compared to electrical cardioversion (RR 1.87; 95% CI: 1.14 to 3.06). Deaths and strokes were not well-reported.

Advice and Lessons Learned:

1) Procainamide is less effective than other chemical options and electrical cardioversion strategies to restore NSR.
2) The efficacy of procainamide in a drug-shock approach is similar to electrical alone at restoring NSR.
3) The evidence shows that hypotension is a common procainamide adverse effect suggesting that electrical cardioversion as a first approach is preferable.

iOAT in the ED – lessons learned

Stacey Whitman, Cristina Zaganelli, Sharleen Luzny

Background: Deaths related to opioid poisoning have continued to climb over the last few years. The Injectable Opioid Agonist Treatment program (iOAT) provides injectable hydromorphone to those individuals with moderate to severe opioid use disorder and a history of injection drug use who have been unsuccessful with oral OAT and continue to be at high risk for opioid poisoning. Working with the emergency departments (ED) was identified as a critical step in the initial roll out of iOAT.

Implementation: The iOAT program began operating in October 2018. The clinic provides prescribed hydromorphone to clients within the program. Additionally, the team is comprised of physicians, nurse practitioners, nurses, social worker, peer support workers and administrative support to provide comprehensive wrap around care to every client that is registered to the program. It was recognized early on that the clients that were being served by iOAT were also high users of the ED and UCCs. Being part of iOAT became a factor that needed to be considered when these clients presented to the ED due to their prescription of hydromorphone. Working with management, medical leadership, and nurse educators, support and education were provided to ensure that iOAT clients were provided with optimal care when in the ED. Ongoing communication has been the primary strategy that has been used.

Evaluation Methods: The evaluation for this project has been informal and ongoing. The medical team at iOAT has worked with the medical team for the Calgary EDs to develop a detailed treatment plan that is visible on SCM. Telephone and emails have been the primary mode of feedback for both parties, and the plan is adjusted as necessary along the way.

Results: Improving the knowledge and understanding for all staff involved to understand iOAT and the role of the ED has been demonstrated to be effective when clients stay in the ED and don't leave against medical advice, which likely occurred before. Additionally, the trust that is built within the iOAT clinic is maintained when the ED is a partner in care and as appropriate, provides them with the dosing that they would normally receive at iOAT.

Advice and Lessons Learned*:*

1) Involve the emergency department management in planning or initial implementation
2) Communicate, Communicate, Communicate
3) Use continuous feedback to adjust to find the best strategies to provide patient care