

# Open Competition Poster Abstracts

## 1) Screening for Sexually Transmitted Infection in the Young Families Program

Nicholas Chadi\*, Zahra Alebraheem, Megan Cooney, Katherine Hick, Mariano Macias, Allison Rodriguez, Cathleen Steinegger\*(Hospital for Sick Children)

**Background/Context:** Young Families Program (YFP) is an inter-professional health care clinic for adolescent mothers and their children at the Hospital for Sick Children offering: comprehensive well baby care, sexual health, psychosocial support and parenting education. Adolescent mothers in YFP may engage in high risk sexual behaviours and are at increased risk for sexually transmitted infections (STIs). Despite the increased risks for STIs, screening opportunities were being missed related to multiple issues including: complexity of patients, lack of time in clinic, lack of screening protocol, multiple healthcare providers.

**Aim/Objectives:** To optimize STI screening in Young Families Program adolescent mothers, using Public Health Agency Canada (PHAC) STI Guidelines.

**Measures:** The specific goal of this project was to increase the offering of STI urine and serum screening from 80-85% to 100% and the completion of urine and serum screening from 85% to 100% and 5% to 65% respectively by May 20, 2016.

**Improvement/Innovation/Change Ideas:** Based on PHAC STI Guidelines recommendations, the project team created an STI screening algorithm as a timeline reference in collaboration with YFP healthcare providers. This algorithm helps capture adolescent mothers during their routine clinic visits within the recommended screening window (annual screening). The changes were implemented on January 18, 2016 after discussion with the YFP team. Audit after implementation was conducted by reviewing the timeline reference sheet included in each eligible patient's chart.

**Impact/Lessons Learned/Results:** Team members felt the process was smooth and helpful. Offered screening rates during the project period were 92% for urine and serum screening. Completed screening rates were stable at approximately 85% for urine screening and increased from 5 to 21% for serum screening. This project has shown that a simple change measure implemented through a collaborative and consensual process can improve screening rates and quality of care in a complex multi-disciplinary clinical setting.

**Discussion/Spread:** Discussions will take place in the upcoming months to determine if the STI screening algorithm will be maintained and/or modified. Potential next steps include expanding the use of the STI screening algorithm to other clinics within the Adolescent Medicine Division.

## 2) ATTEND: A Two-pronged Trial to Eliminate No shows in Diagnostic Imaging

John Mikhael\*, Erdit Celso, Jessica Shanahan, Brian Harvey, Bonnie Sipos, Jennifer Koetsier, Helen Wiley, Tom Roy, Shawn Fitzgerald\*(Brock University)

**Background/Context:** Diagnostic Imaging (DI) at the Niagara Health System (NHS) experiences a considerable percentage of patients who do not attend their scheduled appointments, resulting in a 'no show.' Reducing no show rates presents an opportunity to exceed government benchmarks, and moreover, to improve upon wait lists within specific modalities like Magnetic Resonance Imaging (MRI).

**Aim/Objectives:** This project is aimed at reducing no shows in Diagnostic Imaging at the St. Catharines and Greater Niagara General hospital sites from 6.5 to 4.5 percent by January 2017.

**Measures:** For both changes, the outcome measure is the rate of no shows, which is recorded as a percent of no shows from the total appointments. The process measure for the first intervention is the percent of letters received by patients in the mail. The process measure for the second intervention is a calculation of the percent of pamphlets distributed to patients from the physician's office. The balancing measure for both interventions is in-patient wait times.

**Improvement/Innovation/Change Ideas:** Our two-pronged approach includes interventions at the NHS and at the primary care level. Our first approach is to mail out a letter to patients with their appointment time and other pertinent information, leading to an increase in the number of patients reminded about appointments, and ultimately resulting in lower no show rates. Our second approach consists of a patient information pamphlet, which outlines the benefits of showing up to the scheduled appointment, and aims to educate patients and improve the culture around attendance at DI.

**Impact/Lessons Learned/Results:** Our team conducted an extensive literature review that revealed various reasons why patients did not show up to Diagnostic Imaging appointments. This guided our team in developing interventions to address some of these factors, which resulted in the patient letter and information pamphlet. These interventions are still being trialed, but a run chart was produced with the most current data regarding the improvements.

**Discussion/Spread:** Once our PDSA cycles are completed, a manuscript will be submitted for publication. If these interventions are found to be effective, the reminder letters will continue, and the pamphlet will be scaled up to more physicians, and eventually across the Niagara region.

## 3) Improving 14 day follow up for patients with Heart Failure- a single unit experience

Toni Schofield\*, Meredith Linghorne, NP, Dr J Duero, Dr H Ross, Dr C Alba\*(Toronto General Hospital, University Health Network)

**Background/Context:** An internal audit showed that heart failure patients were being lost to follow up after discharge, being readmitted or not being seen in clinic in a timely manner. Canadian Cardiovascular Society (CCS) guidelines recommend patients admitted with heart failure should be seen in follow up within 14 days. To address this quality gap we focused on reducing time to follow up after hospital discharge. Our initial practice was to send a request to a centralized fax number and then to an email. There was no feedback to the medical team that the email or fax was received or acted upon or when the patient was booked. <50% were seen within 14 days. The purpose of this project is to meet current, recommended national standards according to CCS guidelines.

**Aim/Objectives:** 90% of eligible patients admitted to the inpatient heart failure team with decompensated heart failure will be seen in the outpatient clinic within 14 days of discharge.

**Measures:**

**Outcome measure:** Proportion of patients seen within 14 days. **Balancing measures:** Proportion of patients eligible to attend our clinic, clinic saturation and additional workload are taken into consideration.

#### Improvement/Innovation/Change Ideas:

Process Analysis and changes tested: Root cause analysis of current practice found that a lag in email receipt, accountability for checking email and acting on the email were problems. To address this problem, a dedicated clerk was assigned to book our patients prior to discharge.

Impact/Lessons Learned/Results: Improvement in patient follow up from <50% to an average of 80% (Figure A). With more data, we may be able to calculate a new median. We learned that we are able to make a small sustainable change in the way we transition patients from the inpatient to outpatient setting.

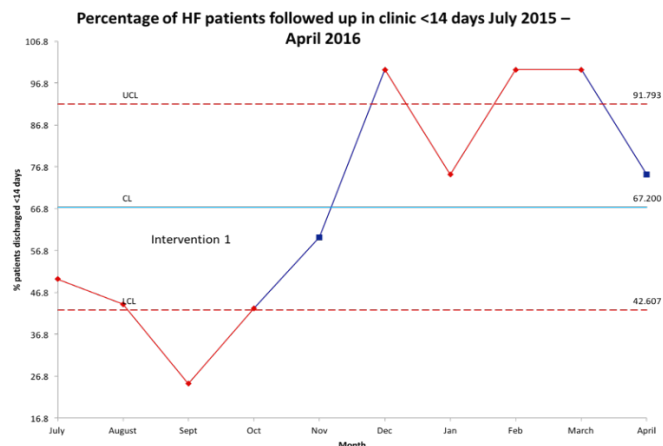


Figure A

#### Discussion/Spread:

Next Steps: Roll out to all of the Peter Munk Cardiac Centre. Unit clerks to be trained in booking appointments. Assess outcomes such as patient satisfaction, length of stay and readmission rates.

#### 4) A Quality Improvement Initiative to Decrease the Rate of Solitary Sets of Blood Cultures in the Emergency Department

Joseph Choi\*, Sahand Ensafi, Lucas Chartier, Oliver Van Praet \*(University Health Network)

Background/Context: Blood cultures (BCs) are commonly performed in the emergency department (ED). Proper collection is paramount for accurate and interpretable results, which includes obtaining at least two sets of BCs. At our tertiary care academic centre EDs, an unacceptably high proportion of patients have single (i.e. solitary) sets of BCs sent to the microbiology lab (40%).

Aim/Objectives: The aim of this project was to reduce the rate of solitary sets of BCs being sent to the lab on patients discharged from the ED.

Measures: The primary outcome was the bi-weekly percentage of patients for whom a solitary set of BCs was sent to the lab.

Improvement/Innovation/Change Ideas: This quality improvement initiative evaluated two sequential interventions, using PDSA cycles. The first intervention included didactic teaching sessions and informal reminders in staff huddles directed to providers in the ED. The second intervention added a forcing function (FF) at the point of computer order entry that automatically produced two sets of sticker labels (corresponding to two sets of BCs), instead of the single set that was the previous default. Providers could still deviate from sending two sets of cultures by discarding unused stickers.

The results were analysed using statistical process control charts and segmented regression analyses.

Impact/Lessons Learned/Results: The baseline rate of solitary sets of BCs was 41.1%. The education intervention reduced this rate to 30.3%. The introduction of a FF further reduced the rate to 11.6%. This represents an absolute reduction of 29.5% from baseline (relative reduction of 71.8%). According to segmental regression analyses, the education intervention alone did not produce a statistically significant change when factoring possible background time-related trends ( $P = 0.071$ ). However, the FF produced a statistically significant improvement ( $P < 0.0005$ ), which was maintained for 6 months.

Discussion/Spread: The combination of an education intervention and a computerized FF was more effective than education alone in reducing solitary BCs to an acceptable rate in our ED. FFs can be a powerful tool in modifying behaviours and processes in the clinical setting. We are continuing to evaluate our processes to improve adherence to best practices at our institution, including investigating differences identified between ED sites.

#### 5) Prevention of Error-Based End-of-life Decision-making in Critical Care

Dr Paula Chidwick\*, Dr Jill Oliver, Dr Andrew Cooper \*(William Osler Health System)

Background: Our research on Form G decisions from Ontario's Consent and Capacity Board identified six common errors in the consent process that have serious ramifications on patient safety and quality of care. Such errors include not identifying the legally correct decision maker, and not acting on the patient's previously expressed capable wishes.

#### Objectives:

To prevent these 6 errors we implemented a checklist (Checklist to Meet Ethical & Legal Obligations ChELO). Preventing these errors improves patient safety and quality of care because it reveals the patient's wishes, values, and beliefs and also ensures they receive wanted and beneficial treatment, and that they do not receive unwanted and potentially harmful treatment. Our aim statements included:

1. By April 2015, ChELO completion in Osler ICU's has increased 5% for 100% of eligible patients
2. By April 2015, a trained nurse will initiate ChELO and document on Meditech for 98% of patients in Renal Program.

#### Measures:

Our family of measures included: (1) documentation of incapacity for decision making; (2) identifying the correct substitute decision maker; (3) recording the advanced care planning documents; (4) inquiry of personal values and beliefs; (5) treatment plans as per the patient's wishes is being followed; and (6) # where family member or substitute decision maker were allowed to direct treatment plans. We measured completion of ChELO comparing T1 (Oct 15) – T2 (May 16).

#### Improvement:

Post intervention measures showed improvement of:

- 22% in the documentation of Incapacity for decision making
- 24 % in identifying the correct substitute decision maker
- 43% in recording the advanced care planning documents
- 38 % in the inquiry of personal values and beliefs
- 100% in treatment plans aligned with patient's wishes
- 100% no substitute decision maker directed treatment plans.

Lessons: We learned that having a dedicated person supporting ChELO completion makes teams aware of patient wishes, values, and beliefs, and integrating these into the care plans increased quality of care and prevented errors in decision-making.

Spread: We have spread this project to the Osler Renal Program, Palliative Care Outpatient Program, Medicine Program and Headwaters Health Care Centre.

## **6) Improving the quality of long-term care transfer reports to the emergency department**

Joseph Carson\*, Stephanie Gottheil, Alan Gob, Sherri Lawson \*(University of Toronto)

Background/Context: In Ontario, about 25% of long-term care (LTC) residents are transferred to hospital emergency departments (ED) every six months. ED staff rely on accurate personal health information to provide safe, high quality care. However, many residents have difficulty describing such information, especially if they have impaired cognition. In the absence of accompanying caregivers or family members, ED staff look for essential details in the LTC transfer reports. Communication gaps between LTC and ED are common, and may lead to unnecessary diagnostic testing and treatments for LTC residents.

Aim/Objectives: The purpose of this quality improvement study was to establish a baseline understanding of the LTC-ED communication gap and test change ideas for sustained improvement. Our aim was for 90% of LTC emergency transfers to include the resident's reason for transfer and baseline cognitive status by June 30, 2016.

Measures: Our outcome measures were the percentage of transfer reports documenting reason for transfer and baseline cognition. Our process measures were the percentage of transfers containing the MDS Kardex and all four standard forms. Our balance measures included the percentage of transfers documenting medications and advance directives, which the ED also rated as high priority information.

Improvement/Innovation/Change Ideas: London Health Sciences Centre, a tertiary care organization in Ontario, Canada, partnered with 10 LTC homes to improve documentation of the two most important items: 'reason for transfer' and 'baseline cognitive status'. After the root cause analysis was performed, a series of PDSA cycles were conducted and results were analyzed using statistical process control charts. The final intervention included individual nurse education, a transfer guide posted at nursing stations, and a standardized minimum set of currently available transfer documents.

Impact/Lessons Learned/Results: After implementation, the documentation rate of 'reason for transfer' improved from 60% to 84%, and 'baseline cognitive status' improved from 4% to 56%.

Discussion/Spread: These results suggest that transfer communication can be improved by co-designing solutions with LTC nurses that build on current reporting practices, which are shared across multiple LTC organizations.

## **7) Advancing the Culture of Medical Quality: Linking Improvement and Safety Rounds to Hospital Credentialing**

A. Yeung\*, A. Ginzburg, R. Cooper, C. Weatherston, S. Bains, D. Morra \*(Trillium Health Partners)

Background/Context: Privileging recommendations to a hospital's Board of Directors are typically made without information on how individual professional staff are advancing the quality of care they provide to patients. Trillium Health Partners (THP), one of Canada's largest academically-affiliated hospitals with over 1300 Professional Staff members, has sought to define medical quality of care and link it to the annual reappointment process. The Medical Quality of Care (MQC) Initiatives for Members of the Professional Staff Policy was created in 2015 to ensure professional staff have clear participation guidelines to advance medical quality of care. The first initiative was to create a common standard for Quality Improvement and Patient Safety Rounds (QIPSR).

Objectives: Prior to this initiative, continuing medical education rounds were inconsistent in terms of expectations. The Medical Advisory Committee (MAC) developed criteria for QIPSR (see attached criteria). As a requirement for reappointment, active and associate professional staff were required to attend 3 QIPSR in Year 1 (2015) and 5 QIPSR per year thereafter.

Measures: Professional staff attendance at QIPSR was centrally recorded in a database managed by the Quality Department.

Innovation Ideas:

- Existing rounds were realigned and new rounds were introduced to meet criteria for QIPSR
- Quarterly hospital wide Quality Grand Rounds helped to provide professional staff with additional opportunities to meet attendance expectations
- Professional Staff competence in patient safety culture and quality improvement can be improved by participation in QIPSR
- Mandatory participation in quality activities will be supported by professional staff
- A corporate-wide initiative with professional staff can be sustained over time

Results: After just one year since inception, professional staff participation in QIPSR has become hardwired into practice and a learning culture around quality and safety has become embedded in the organization. In 2015, there were a total of 695 QIPSR and cumulative attendance of 6679 non-unique active/associate professional staff members. 96% of 734 active/associate professional staff met their QIPSR requirements. For the first six months of 2016, there were a total of 561 QIPSR and cumulative attendance of 4728. 45.6% of active/associate professional staff have already met their requirement of attending five rounds this year.

## **8) Communicating critical results: positive blood culture Gram notification in the General Internal Medicine ward – identification of a quality improvement initiative opportunity**

Lee Goneau\*, Yan Chen, Ramzi Fattouh, Aaron Campigotto, Nancy Matic, Maan Hasso, Ana Cabrera, Manal Tadros, Larissa Matukas \*(University of Toronto)

Background/Context: Delay in the initiation of appropriate antibiotic therapy is a significant risk factor for mortality in cases of bacteremia. Thus, communication of Gram stain results from positive blood cultures is a critical first step in early initiation of targeted therapy.

Aim/Objectives: The microbiology laboratory aims to communicate 100% of Gram stain results from positive blood cultures to physicians within 15 minutes of discovery.

Measures: The notification process was mapped after doing observations for ten positive blood cultures from General Internal Medicine (GIM) patients at

three academic hospitals in Toronto (Table 1). The primary process measure was the time from microbiology laboratory Gram stain result to communication to MRP.

**Improvement/Innovation/Change Ideas:** In 6 out of 10 observations, communication of results to physicians was greater than 15 minutes; in two cases, the physician was not contacted at all. The reporting of critical results for most institutions was found to be inefficient, involving initial communication to the unit clerk, who would relay the result to a nurse, who would then forward to the MRP.

Process change was implemented in the microbiology laboratory of one institution as a pilot study. A Plan, Do, Study, Act (PDSA) cycle was initiated after meeting with the GIM staff, unit manager, and nurse educator. The implemented process instructed laboratory technologists to contact locating who would then page the appropriate GIM resident directly.

**Impact/Lessons Learned/Results:** In 4/7 cases, residents responded promptly (within ten minutes) to laboratory pages relayed through locating. However, the remaining cases required a second page before responding, delaying communication by as much as 90 minutes. A second PDSA cycle has now commenced which aims to utilize the web-based paging system WebEx to permit communication of critical results from technologist directly to the MRP. This should remove delays associated with the 'relay' system currently in place.

**Discussion/Spread:** This study highlights significant delays in the communication of, and therefore response to, critical blood culture results. We suspect that many of these issues will be addressed by implementing WebEx reporting, with the added benefit of introducing accountability to staff of responding to pages promptly

Table 1: Gram stain notification process observations

Observation ID	Gram stain result	Time of notification 1 - clerk/nurse	Time of notification 2 - patient's nurse	Time of notification 3 - physician	TAT (minutes)
Hospital A					
A1	GPC clusters	14:36	15:21	15:36	60
A2	GPC chains	09:18	09:18	09:24	6
A3	GNB	14:03	14:18	14:18	15
A4	GNB	09:31	10:34	ND <sup>1</sup>	>60
A5	GPC chains	09:44	09:45	09:49	5
Hospital B					
B1	GPB	09:54	09:56	10:00	6
B2	GNB	09:53	10:25	10:30	37
B3	GPC chains	10:27	ND <sup>2</sup>		>45
B4	GPC	10:58	11:00	11:05	7
Hospital C					
C1	GNB	10:14	10:14	11:12 <sup>3</sup>	58
C2	GNB	10:38	11:30	ND <sup>1</sup>	>60

GPC gram positive cocci, GNB gram negative bacilli, TAT turn-around-time

<sup>1</sup>Not possible to determine time, nurse did not report to MRP even after intervention

<sup>2</sup>Not determined, nurse was contacted with Gram stain result after 45 min delay at ward clerk

<sup>3</sup>Report to physician was done only after intervention

## 9) Code Resus - Using a Quality Improvement Approach to Improve Health Care Provider Response During Resuscitations

Edward Xie\*, Shandi Hansen, Dawn Lim, Soojin Yi, Barb McGovern, Deb Davies, Kevin Beane, Nicole Harada, Lucas Chartier \*(University Health Network and University of Toronto)

**Background/Context:** Achieving the best possible outcome for patients requiring resuscitation (PRRs) in the emergency department (ED) requires efficient, multi-disciplinary and coordinated responses from healthcare providers (HCPs).

**Aim/Objectives:** The objective of this quality improvement (QI) initiative was to improve HCP response to PRRs at two tertiary care hospital EDs in Toronto.

**Measures:** We conducted a pre-implementation mixed-method survey to evaluate the perception of the adequacy of HCP response and clarity of HCP role when responding to PRRs. Qualitative responses were used to develop the project's change ideas. Six months after implementation, a second survey was conducted to evaluate the sustained effects of the intervention. Results were compared using Chi-square test.

**Improvement/Innovation/Change Ideas:** Through interviews of key stakeholders and with continuous input from HCPs, a multi-disciplinary team modified the ED resuscitation protocol. Innovations included standardized pre-hospital paramedic communication forms, ED-wide announcement of 'Code Resus', dedicated HCPs assigned to respond to PRRs, and specific duties assigned to each responder. Change initiatives were reinforced through education and posters in the ED.

**Impact/Lessons Learned/Results:** Baseline measures indicated that 16 of 52 (30.8%) nurses surveyed believed their role was often or always apparent to themselves and others when they attended to a PRR (on a 5-point rating scale). This proportion increased to 35 of 55 (63.6%) nurses in the post-implementation survey ( $p < 0.001$ ). Regarding adequacy of the number of HCPs responding to PRRs, 17 of 39 (43.6%) physicians and 23 of 53 (43.4%) nurses surveyed thought the appropriate number of HCPs responded to PRRs; the remainder thought that there were too few or too many HCPs. In the post-implementation survey, 34 of 41 (82.9%) physicians ( $p < 0.001$ ) and 36 of 56 (64.3%) nurses ( $p = 0.029$ ) surveyed felt that the appropriate number of HCPs attended to PRRs.

**Discussion/ Spread:** Using a quality improvement approach, we identified and quantified perceived deficiencies in HCP response to PRRs in the ED. Through feedback-based modifications of the ED resuscitation protocol and by engaging HCP stakeholders, change initiatives were implemented to improve HCP response. As a result, this project achieved significant and sustained improvements in HCPs' perceived response to PRRs, and we continue to elicit feedback and improve on our response to PRRs.

## 10) Improving Inpatient Advanced Care Planning (ACP) with a Medical Order for Scope of Treatment: A Quality Improvement Study

Samuel Kohen BSc, MD FRCPC, MSc\*, Rajesh Nair BSc, MD \*(St Joseph's General Hospital, Comox, British Columbia)

**Background/Context:** Research suggests hospital based health care providers (HCP) infrequently engage patients and families in end-of-life (EOL) planning conversations. This care gap can lead to unwanted under or over treatment, conflict, family distress, and clinician burnout. The Vancouver Island Health Authority implemented a standard Medical Order for Scope of Treatment (MOST) placed at the front of admitted patients' charts outlining their code status in order to improve inpatient documentation of patient health care wishes. To date, the MOST has not been proven to be more effective at documenting goals of care than the standard "DNR" order.

**Aim/Objectives:** Our objective is to track and optimize MOST implementation at St Joseph's General Hospital and see if it improves: 1) Inpatient ACP Documentation, 2) Concordance between ACP documentation, patients' wishes and care delivery, 3) Patient and caregiver satisfaction, 4) HCP understanding of key ACP concepts, and 5) Use of acute care resources.

Measures: The primary outcome was ACP documentation (% of admitted patients who had the MOST complete by the third day of hospitalization or before discharge). Secondary outcomes were: 1) Concordance between patient wishes and what is documented in the chart, 2) HCP ACP knowledge (HCP quiz), 3) Intensity of care, 4) Life expectancy, and 5) Patient and caregiver satisfaction (CanHelp Lite).

Improvement/Innovation/Change Ideas: Between May and August 2016, the proportion of patients with a completed MOST increased from 0 to 77%. This was associated with 1) A 47% improvement in ACP documentation, 2) 51% improvement in concordance, 3) 14% improvement in HCP ACP knowledge, and 4) 11% improvement in patient and caregiver satisfaction. We are still awaiting 90-day follow up data to measure intensity of care.

Impact/Lessons Learned/Results: Documenting ACP patient wishes with a standard tool (MOST) is associated with improvements in ACP documentation, concordance and satisfaction with care.

Discussion/Spread: This supports the hypothesis that the MOST improves inpatient documentation of patient wishes when compared to the standard "DNR".

### **11) Improving Critical Care Intubation at a Community Hospital Through Process Standardization: A Prospective Quality Improvement Study**

Samuel Kohen BSc, MD FRCPC, MSc (St Joseph's General Hospital, Comox, British Columbia)

Background/Context: Critical Care Intubation (CCI) is a resource intensive emergency lifesaving procedure performed intermittently, often without notice in physiologically unstable patients, under suboptimal conditions by physicians with limited airway training or experience. These challenges are major contributors to poor documentation, processes inefficiencies, procedural complications and health care practitioner (HCP) stress.

Aim/Objectives: This multidisciplinary quasi-experimental CCI quality improvement project was developed and implemented at St Joseph's General Hospital (SJGH) over one year to: 1) Improve documentation by 25%, 2) Reduce the relative risk of procedural complications by 50%, 3) Improve procedural efficiency by 50% and 4) Reduce HCP stress related to intubation by 50%.

Measures: This prospective study with historical controls outlines includes 20 pre-intervention (2014) and by 26 peri-intervention CCIs (2015). Outcome measures included 1) Procedural documentation (key information recorded in chart), 2) Procedural efficiency (time from decision to intubate to CXR), 3) Procedural complications (new desaturation, hypotension, esophageal intubation, aspiration or cardiac arrest) and 4) HCP stress (self-assessment tool).

Improvement/Innovation/Change Ideas: The CCI worksheet was used in 81% (21/26) of the procedures. Use of the CCI sheet was associated with: 1) 17% improvement in CCI documentation (score 5.2/7 to 6.5/7), 2) 73% relative risk reduction in life threatening procedural complications (6/20 to 3/26) and 3) 52% improvement in procedural efficiency (59 to 27 minutes). We were unable to measure HCP stress.

Impact/Lessons Learned/Results: All improvements reached statistical significance and most attained the stretch goals. We were unable to measure HCP stress because the initial tool was too complicated, staff time pressure and a fear of retribution.

Discussion/Spread: This CCI project drew upon several QI methodologies. Strengths include reliance on current evidence, concordance with previously published complication rates, local administrative support, rigorous data collection and clinical significance. A control group would help to better attribute the observed improvements as due to the intervention rather than baseline improvements over time. This intervention may be easily generalized to other centres.

### **12) Beyond compliance: An ethnography of OR safety cultures**

Sherry Espin\*, Rachel Grant, Roxanne Ziman, Simon Kitto \*(Ryerson University)

Background/Context: The surgical safety checklist (SSC) has been implemented for use in operating rooms (OR) worldwide to optimize patient safety and improve interprofessional communication. While compliance rates have been reported as high, reductions in post-operative mortality and complications have not improved significantly.

Aim/Objectives: The aim of this ethnographic study was to examine the factors which may be impacting the uptake of the SSC.

Measures: Through direct observation and semi-structured interviews with staff, this study looked beyond what "ought" to be happening in the OR to what is actually happening.

Improvement/Innovation/Change Ideas: Qualitative methods uncovered the challenges and complexities of surgical culture in which the SSC is being implemented.

Impact/Lessons Learned/Results: Key findings emerging from this study included the perceived (un)importance of specific checklist components, lack of patient involvement, and workflow barriers that hamper effective communication and use of the SSC.

Discussion/Spread: Study findings have been submitted for publication, and the knowledge and recommendations for improvement have been disseminated locally and nationally.

### **13) Code Hip: Evaluating Time to Surgery Prior to and After the Implementation of a Multidisciplinary Hip Fracture Care Pathway**

Sarah Ward, MD FRCSC\*, Lisa Wild, RN(EC), MN, Michelle Biehl, BHSc(c), Rosane Nisenbaum, PhD, Genny Micallef, RN, MN, Jeremy Hall, MD, FRCSC, M.Ed \*(St. Michael's Hospital)

Background/Context: Hip fracture is a common orthopaedic injury most frequently affecting people aged 65 years or older, resulting in the need for hospitalization and surgery. Hip fractures carry significant risk of mortality, morbidity and loss of functional independence. Early diagnosis and access to surgery within 48 hours have been shown to improve these outcomes.

Aim/Objectives: To improve the percentage of hip fracture patients receiving surgery within 48 hours to over 90% by August 2013 through the development of the Code Hip clinical pathway for hip fracture patients.

Measures: The primary outcomes were average time from ED admission to surgery and percentage of patients achieving surgery within 48 hours.

Improvement/Innovation/Change Ideas: The Code Hip clinical pathway was developed by a multidisciplinary team to improve and streamline care of hip fracture patients. The pathway comprised a bundle of interventions including rapid ED assessment and admission and expedited surgical booking. Retrospective chart reviews were conducted on 202 patients with hip fracture during the study period. The Pre-Code Hip cohort included 97 hip fracture patients admitted between June 2011 and May 2012. The Post-

Code Hip cohort included 105 patients admitted between September 2012 and August 2013. The three-months between cohorts allowed for introduction and incorporation of the Code Hip pathway into clinical practice.

**Impact/Lessons Learned/Results:** Implementation of the Code Hip clinical pathway resulted in a sustained improvement, with the percentage of hip fracture patients achieving surgery within 48 hours increasing from 77% to 92%. Average time from admission to surgery was below 48 hours in the Pre-Code Hip cohort (mean 35.3 hours, SD 23.9) but there was nonetheless a reduction of 19.2% ( $p=0.0159$ ) in time from admission to surgery (mean 28.6 hours, SD 17.9) Post-Code Hip. Time from admission to surgical booking was significantly reduced, but time from surgical booking to surgery remained unchanged.

**Discussion/Spread:** Future efforts will focus on sustaining this improvement, optimizing wait time from surgical booking to surgery, and improving other aspects of hip fracture care, such as nutrition and early post-operative mobilization.

#### **14) Improving the post-operative mobilization protocol following Total Knee Arthroplasty at St. Michael's Hospital**

Dr. Sarah Ward, MD\*, Leah Schwartz, PT, Merle Uglow, RN, Tara Raine, RN, Dr. Nick Lo, MD \*(St. Michael's Hospital and University of Toronto)

**Background/Context:** St. Michael's Hospital is a high-volume arthroplasty centre. Prior to July 2015, various different surgeon-specific post-operative protocols were in use, which were not evidence-based. The lack of a single clear protocol caused confusion for trainees and members of the allied health disciplines and also prevented rapid post-operative mobilization, prolonging length of stay.

**Aim/Objectives:** To develop a standardized post-operative mobilization protocol for total knee arthroplasty patients at St. Michael's Hospital and thereby to decrease knee immobilizer use by 50% by April 1, 2016.

**Measures:** Length of stay (LOS) was evaluated as an outcome measure. Knee immobilizer use was used as a process measure. Balancing measures included the occurrence of falls and knee range of motion (to ensure this was not compromised by the new protocol).

**Improvement/Innovation/Change Ideas:** First we adopted a standardized post-operative protocol for use by all surgeons. Subsequently, we engaged the physiotherapy team to decrease knee immobilizer use. We then engaged the Acute Pain Service (APS) and anaesthesia teams to discontinue femoral nerve catheters earlier to permit return of quadriceps function and promote improved independence with mobilization.

**Impact/Lessons Learned/Results:** Through the development of a unified post-operative protocol, we reduced knee immobilizer use by ~90%. There was no increase in falls and range of motion at hospital discharge increased under the new protocol. We also increased the proportion of patients being discharged home on post-operative day 2.

**Discussion/Spread:** Engaging stake-holders, especially the physiotherapy and APS teams, was crucial to the success of this initiative. The physiotherapy team identified persistent knee buckling that limited mobilization while femoral nerve catheters were in place. Engaging the APS team to remove the catheters earlier and delaying the decision regarding knee immobilizer use helped to address this issue. We also identified other areas for further improvement and we are now embarking on a larger project to create a more comprehensive standardized clinical pathway for total knee arthroplasty patients. This pathway will involve further enhancements to

early post-operative mobilization as well as improvements and standardization of the pain management protocol.

#### **15) Reducing unnecessary inpatient routine blood work**

Margaret Siyu Wu\*, Dr. Christine Soong\*(University of Toronto)

**Background/Context:** Literature estimates that between 10 to 67% of laboratory testing are inappropriate. Inappropriate laboratory testing is associated with adverse health consequences for inpatients, such as iatrogenic anaemia, false positive test results, and pain. Reducing unnecessary repetitive phlebotomy can improve patient experience, patient safety, and better resource utilization.

**Aim/Objectives:** To reduce "routine" blood testing (CBC, electrolytes, and creatinine) testing by 20% among internal medical inpatients at an academic tertiary hospital in a 1-year period.

**Measures:** The primary outcome measure is the total volume of blood drawn for routine blood testing (CBC, electrolytes, and creatinine) per inpatient days on internal medicine units compared to baseline of 6 months before intervention. The process measure includes the proportion of patients with completed consecutive 3-day routine blood testing ordered from admission as part of an order set. The balancing measure is the number of processed STAT routine blood work per inpatient day. Surgical services are used as control group.

**Improvement/Innovation/Change Ideas:** We achieved consensus on appropriate indications for routine blood testing. We modified existing admission ordersets to reduce the default setting of daily blood testing among internal medicine patients and built in decision support.

**Impact/Lessons Learned/Results:** Compared to baseline, there was a 17.2% reduction in the total number of routine blood work per inpatient days in internal medical services the month after intervention. In comparison, the surgical control group had no significant reduction in routine blood work. A chart audit of 60 medical inpatients demonstrated a 7.9% reduction in the number of processed daily 3-day admission routine blood work orderset. There was also a 3.6% decrease in the number of processed STAT routine blood work per inpatient day.

**Discussion/Spread:** We were able to effectively reduce the total amount of blood phlebotomized for medical inpatients by making changes to the default setting of electronic orderset. The development of recommended guidelines combined with the use of computerized order-entry system provided an effective means of reducing blood work testing while incurring minimum cost and adverse consequences.

#### **16) Evaluation of a novel surgical safety checklist process to improve checklist item completion in a tertiary pediatric hospital: A quality improvement project**

Mehr Jain\*, Andrea Sepa, Unni Narayanan, James D. O'Leary \*(Hospital for Sick Children)

**Background:** Surgical safety checklists have become a standard of care for safe operating room practice, but their use in Ontario pediatric hospitals has not been associated with reductions in perioperative complications.<sup>1</sup> Poor checklist completion has been observed in our local practice setting<sup>2</sup> which may contribute to this lack of effect.

**Aim:** To evaluate a novel surgical safety checklist process designed to improve checklist item completion.

Measures: Surgical safety checklist completion was independently observed in the operating room before and during the intervention. The primary outcome measure was overall checklist item completion. Differences in item completion in pre-intervention and intervention groups were compared using Fischer's exact test.

Improvement: With Quality and Risk Management approval, a novel surgical safety checklist process and content –developed by the local Perioperative Services Surgical Safety Checklist Committee– was evaluated in Orthopaedic operating rooms at our institution during July and August 2016. The novel checklist consisted of a wall-mounted physical checklist intended to aid item recall and increase ownership of checklist phases with questions and responses provided by designated team members. Team training was provided, operating room team leaders were identified to promote the intervention, and revisions to the checklist content were implemented in short cycles based on feedback from operating room team members on the feasibility and clinical sensibility of the intervention.

Results: We observed 45 and 59 children who underwent orthopaedic surgery in pre-intervention and intervention groups respectively. 86.8% (1,354/1,560) of all checklist items were observed overall. Checklist item completion was significantly increased in the intervention group (76.7% [615/802]) compared with the pre-intervention group (27.2% [150/522]) (P<0.001).

Discussion: These findings suggest that this novel surgical safety checklist process employing a physical memory aid can significantly improve checklist item completion in our local practice setting. It is planned to use the lessons learned during this project to implement strategies to improve surgical safety checklist completion in other operating rooms at our institution.

References: <sup>1</sup> O'Leary JD. CMAJ 2016;188:E191-8; <sup>2</sup> Mahmood T. Am J Med Qual. 2015;30:191

### **17) The Ontario Emergency Department Return Visit Quality Program: A Provincial Initiative to Promote Continuous Quality Improvement**

Lucas Chartier\*, Olivia Ostrow\*\*, Ivan Yuen\*\*, Sudha Kutty\*\*, Brittany Davis\*\*, Emily Hayes\*\*, Martin Davidek\*\*, Chris Lau\*\*, Angelica Vigo\*\*, Fang Yang\*\*, Lee Fairclough\*\*, Howard Ovens \*(University of Toronto)

\*\*Declaration of conflict of interest: Authors are employed by Health Quality Ontario, which manages the program discussed, or by Cancer Care Ontario, which provides analytical capabilities.

Background/Context: Analysis of charts of patients who have a return visit to an emergency department (ED) requiring hospital admission (termed 'RV') is an efficient way to identify possible adverse events (AEs). Subsequent investigation of AEs can then be used to improve the quality and safety of the care being delivered in the ED.

Aim/Objectives: The ED RV Quality Program is a new provincial program launched on April 1st, 2016. It aims to promote a culture of continuous quality improvement through routine audit and investigation of ED RVs. It is supported by the Ministry of Health and Long-Term Care of Ontario and managed by Health Quality Ontario.

Measures: Participating EDs must review data on their 72-hour RVs, and on all 7-day RVs with a 'sentinel diagnosis' of subarachnoid haemorrhage (SAH), acute myocardial infarction (AMI), or paediatric sepsis (PS).

Improvement/Innovation/Change Ideas: The program is mandatory for all EDs participating in the Pay-for-Results (P4R) program and voluntary for

others. EDs must conduct audits to identify the root causes of the RVs and identify steps to address these causes. Reviews are performed using a standardized audit template, which includes a breakdown of the type and severity of AEs, the underlying causes, and potential actions for quality improvement.

Impact/Lessons Learned/Results: 73 P4R EDs and 14 voluntary non-P4R EDs are participating in the program. Collectively, these EDs receive 87.6% of ED visits in the province. Six months' worth of data has been released to date, which encompasses 21,956 patients with an RV (1.03% of all ED visits). Of those, 150 visits (0.037%) resulted in an RV for a sentinel diagnosis (7 for SAH, 123 for AMI, and 20 for PS). 17.7% of patients returned to a different hospital than the one on their index visit. The most common presenting complaint of the index visit was abdominal pain (17.8%), and the most common discharge diagnosis of the RV admission was acute appendicitis (3.8%).

Discussion/Spread: The ED RV Quality Program is focused on continuously improving the quality of care delivered in Ontario EDs through routine audits of RVs and identification of potential AEs. 87 hospitals that have seen a combined 2,125,823 patient visits over six months are currently participating in the program, with hundreds of patient chart audits already completed to date.

### **18) Development of a Province-Wide Audit Program for Return Visits to the Emergency Department**

Lucas Chartier\*, Olivia Ostrow\*\*, Ivan Yuen\*\*, Sudha Kutty\*\*, Brittany Davis\*\*, Emily Hayes\*\*, Lee Fairclough\*\*, Howard Ovens \*(University of Toronto)

\*\*Declaration of conflict of interest: Authors are employed by Health Quality Ontario, which manages the program discussed, or by Cancer Care Ontario, which provides analytical capabilities.

Background/ Context: Routine auditing of charts of patients with an emergency department (ED) return visit (RV) resulting in hospital admission can uncover quality and safety gaps in care. This feedback can be helpful to clinicians, administrators, and leaders working to improve clinical outcomes, increase patient satisfaction, and promote high-value care.

Aim/Objectives: Health Quality Ontario (HQO) has been tasked by Ontario's Ministry of Health and Long-Term Care (MOHLTC) to manage the newly created ED RV Quality Program (RVQP), which mandates EDs participating in the Pay-for-Results (P4R) program to audit a minimum of 25-50 RVs/year. The goal is to promote a culture of quality improvement (QI) that will lead to improved patient care.

Measures: Participating hospitals receive quarterly confidential reports from Access to Care (ATC) that show their and other hospitals' rates of RVs, as well as identifying information for patients meeting RV inclusion criteria at their ED (within 72hrs of index visit, or within 7 days with specific diagnoses). HQO is tracking program uptake and number of audits completed.

Improvement/Innovation/Change Ideas: HQO has partnered with QI experts and ED physician-leaders to develop guidance materials, including a website, Frequently Asked Questions (FAQs), an audit template with step-by-step instructions on conducting the audits, and an interim Check-In form. These materials have been disseminated through various media (print, electronic, webcast) – see supporting documents for examples. Hospitals are conducting audits to identify underlying quality issues, take steps to address the underlying causes, and submit reports to HQO. A taskforce will then analyze clinical observations, summarize key findings and lessons learned, and share improvements at a provincial level through an annual report.

Impact/Lessons Learned/Results: Since its launch in April 2016, 73 P4R and 14 voluntarily enrolled non-P4R hospitals (which collectively receive approximately 88% of ED visits in the province) are participating in the RVQP. ED leaders have engaged their hospital's leadership to leverage interest and resources to improve patient care in the ED. To date, hospitals have conducted hundreds of audits and have identified quality and safety gaps to address.

Discussion/Spread: The ED RVQP aims to create a culture of continuous QI in the Ontario health care system, which provides care to over 13.8 million people. Other jurisdictions can replicate this model to promote high-quality care.

### **19) Developing a sustainable deprescribing program at the Michael Garron Hospital**

John Abrahamson, MD\*, Mark Daubaras, Ana Florescu, MD, Christopher Smith, MD, Jennifer Jayakar, MD, Ankeeta Tadkase, MD, Andrew Liu, DPharm \*(Michael Garron Hospital)

Background/Context: Numerous studies have shown that, in elderly patients, certain classes of medications may have reduced therapeutic benefit or harmful drug interactions and side effects. Deprescribing is the systematic discontinuing of drugs whose potential for harm outweighs their benefits within the context of an individual's care goals, level of functioning, and life expectancy.

Aims/Objectives: To develop a workflow and business model which demonstrate the feasibility of a sustainable deprescribing program at the Michael Garron Hospital (MGH).

Measures: All admissions to the General Medicine Service at the MGH over a 30 day period were enrolled. A review of home medications was conducted on participants with more than five prescriptions and over 65 years. The total numbers of deprescribing recommendations were recorded and estimated savings were calculated. Hospital physicians were assessed qualitatively for their acceptability of this deprescribing pilot. Readmissions within 30 days were reviewed to determine if this was a consequence of the deprescribing recommendations. Compliance to suggested medication changes will be tracked through the Ontario Drug Database.

Improvement/Innovation/Change Ideas: Improving the health care system by reducing adverse drug reactions and pharmaceuticals spending through the implementation of a deprescribing program at MGH.

Impact/Lessons Learned/Results: From 272 admissions, 72 participants underwent full review of their home prescriptions with 255 deprescribing recommendations made in total. Commonly targeted classes of medications included analgesics (20%), anti-hypertensive (20%), proton pump inhibitors (16%), and sleeping medications (15%). Hospital physicians were accepting and supportive of this pilot project. Less than one in ten readmissions within 30 days was attributed to a deprescribing recommendation. Estimated annual savings to the hospital as a result of this deprescribing pilot was \$20,000.

Discussion/Spread: Approximately 25% of Hospitalists patients at MGH could benefit from a deprescribing review. We have verified that an accepting culture for a deprescribing program exists at MGH. Additionally, readmissions within 30 days were rarely linked to a deprescribing recommendation. The proposed business model for hospitals to develop a sustainable deprescribing program can be funded through pharmaceutical cost savings.

### **20) Low Risk Rule: High QI Reward – Application of the Low Risk Ankle Rule (LRAR) in the SickKids Emergency Department**

Dr. Greg Harvey\*, Dr. Faisal Al-Sani, Dr. Maxim Ben-Yakov, Dr. Jessica Gantz, Dr. Daniel Rosenfield, Dr. Kathy Boutis, Dr. Olivia Ostrow, Dr. Tania Principi \*(Hospital for Sick Children)

Background/Context: At baseline within the Hospital for Sick Children ED, acute ankle injuries have been imaged using x-rays approximately 90% of the time. An evidence-based decision rule, The Low Risk Ankle Rule (LRAR) by Boutis et al. has been developed and validated for minor ankle injuries for the purposes of determining which ankle injuries do not necessitate radiography. The rule is 100% sensitive for capturing clinically important ankle injuries and has been shown to reduce ankle x-ray imaging by 30% when applied.

Aim/Objectives:

Our Aim Statement was as follows: "Achieve a 30% reduction in ankle x-rays for acute ankle injuries ordered by June 30th, 2016".

Measures:

- |           |   |
|-----------|---|
| Outcome   | <ul style="list-style-type: none"><li>• X-rays ordered for ankle injuries</li><li>• ED Length of Stay (PIA to discharge)</li></ul>      |
| Process   | <ul style="list-style-type: none"><li>• Documentation of LRAR in medical record</li><li>• Use of developed ankle x-ray form</li></ul>   |
| Balancing | <ul style="list-style-type: none"><li>• Return to ED visits within 72H for same reason</li><li>• Orthopaedic clinic referrals</li></ul> |

Improvement/Innovation/Change Ideas: Project implementation was approved by the local Quality Management Board. The project was prioritized by the local Choosing Wisely campaign initiative. Relevant patient data was obtained by reviewing the electronic medical record.

Major change ideas implemented included 1) Staff (medical, nursing) education surrounding the LRAR, 2) LRAR reference posters within the ED, and 3) Development of a new mandatory diagnostic requisition for ankle injuries in collaboration with the Division of Radiology that encourages use of the LRAR.

Impact/Lessons Learned/Results: Ankle X-ray ordering rates decreased significantly following implementation of changes (~90% to ~56%, run chart included in additional figure) and ED length of stay decreased in patients with ankle injuries. Increased documentation of LRAR was seen as was use of the developed radiology requisition form. Return visits to the ED and Orthopedic clinic referrals did not increase.

Discussion/Spread: To date, the results have not been replicated outside of the original setting, however our intention is to publish results once sustained gains have been clearly established. We intend to sustain gains by having implemented a hard-stop radiology requisition for all ankle injuries, creating a new electronic documentation template for ankle injuries, continuing regular monitoring of x-ray rates, and handing over of key project roles for long-term maintenance.

### **21) Evaluation of a quality improvement education program in Obstetrics and Gynaecology for final year medical students**

Michelle R. Wise\*, Bridget Kool, Roshini Peiris-John, Lynn Sadler, Susan Wells \*(University of Auckland)

Background/Context: Since 2003, medical students at University of Auckland learn improvement science theory and skills in Year 5, and put this into practice by doing a Quality Improvement (QI) project during their Obstetrics and Gynaecology (O&G) clinical attachment in Year 6. In 2015, a



reinvigorated curriculum resulted in a reduction of the O&G attachment from five weeks to four, necessitating revision of the QI program.

**Aim/Objectives:** To evaluate the Year 6 QI educational program in O&G.

**Measures:** Based on a CIPP (Context/Input/Process/Product) evaluation model, the study was conducted in several stages to get a sense of the context whilst planning the new program (Context evaluation), the feasibility of an alternative approach to meet educational needs (Input evaluation), the implementation of the revised program (Process evaluation) and the program outcomes (Product evaluation). We used multiple data sources (medical students, QI project clinical supervisors, academic administrators, and hospital QI staff) and data collection methods (questionnaires, semi-structured focus group discussions, and individual interviews; consultative workshop; and formal evaluation of student project reports and oral presentations).

**Improvement/Innovation/Change Ideas:** Students were encouraged to work in small groups, limit the audit to only one standard, and have the proposal signed off within the first week, including feedback from the supervisor. Several resources were developed, such as an orientation video, a report template, and a 'tips'n'hints' student webpage.

**Impact/Lessons Learned/Results:** Context evaluation: the program was valuable and contributed to O&G service improvements; however, concerns were: time to complete the project, timely topic selection and access to data, recognition of student achievement, and staff workload. Product evaluation: there was improvement in most of the previously identified challenging areas, and in QI knowledge, skills and attitudes, despite the shortened time frame.

**Discussion/Spread:** Applying the CIPP model to our revised QI program enabled streamlining of procedures to achieve greater efficiency, without compromising the quality of the learning experience or increasing burden on staff. Our program is feasible within a four week clinical rotation, and is sustainable

## **22) Reducing post-caesarean endometritis using the audit cycle**

Michelle R Wise\*, Kaveshan Naidoo \*(University of Auckland)

**Background/Context:** Reducing harm from surgical site infections is a Health Quality & Safety Commission New Zealand target. Post-partum endometritis is an infection of the urogenital tract necessitating early re-admission to hospital. It is more common after caesarean section (CS) and 32% of women at our hospital delivered by CS in 2012. A Cochrane review has shown that pre-operative vaginal cleansing can reduce the risk of endometritis in women undergoing CS; however, this is not performed at our hospital, nor is post-partum endometritis rate measured.

**Aim/Objectives:** To determine the rate of endometritis by pre-set diagnostic criteria in women following CS; to evaluate if the rate could be reduced by implementing a quality improvement initiative.

**Measures:** Audit: baseline (1 December 2012 to 28 February 2013) and post-intervention (1 January to 9 February 2014) case note review of consecutive block sample of women undergoing CS at Auckland Hospital; repeat audit also performed (10 February to 31 December 2014); survey of theatre nurses on knowledge, skill and attitudes.

**Improvement/Innovation/Change Ideas:** Presented to multidisciplinary Theatre Management Committee; developed nursing and medical education and protocols around routine pre-operative vaginal cleansing; added question on vaginal cleansing to Surgical Safety Checklist.

**Impact/Lessons Learned/Results:** Endometritis rate decreased by 44%, from 41/631 (6.5%) at baseline to 9/245 (3.7%) post-intervention, and sustained for the rest of the year (14/383). There was no difference between groups by age, ethnicity, body mass index, CS type or ruptured membranes. Vaginal cleansing was performed in 81% of cases, not performed in 9% of cases, and not documented on the Checklist in 10%. Fifteen nurses completed the survey; most felt that reducing infection was important and supported its continuation, most felt competent at it but that doctors should do it; concerns raised included: invasive nature of cleansing, extra time taken in a 'crash' CS.

**Discussion/Spread:** Despite only 81% of women having the cleansing prior to undergoing CS, there was a significant reduction in endometritis rate consistent with that found in the trial literature. We suggest that embedding a new element into an already well-established pre-operative nursing practice was the key to the success of this quality improvement initiative.

## **23) Contextualizing Learning to Improve Care Using Collaborative Communities of Practices**

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**Background/Context:** The use of interorganizational, collaborative approaches to build capacity in quality improvement (QI) in health care is showing promise as a useful model for scaling up and accelerating the implementation of interventions that bridge the "know-do" gap to improve clinical care and provider outcomes.

**Aim/Objectives:** This learning approach aims to create the conditions for collaborative, reflective, and innovative experiential systems that enable collective discussions regarding daily practice issues and finding solutions for improvement.

**Improvement/Innovation/Change Ideas:** The concepts associated with interorganizational learning and deliberate learning activities within a collaborative 'Communities-of-practice' (CoP) approach formed the foundation of the of an interactive QI knowledge translation initiative entitled PERFORM KT. Nine teams participated including seven teams from two acute care hospitals, one from a long term care center, and one from a mental health sciences center. Six monthly CoP learning sessions were held and teams, with the support of an assigned mentor, implemented a QI project and monitored their results that were presented at an end of project symposium.

**Measures:** 47 individuals participated in either a focus group or a personal interview. Interviews were transcribed and analyzed using an iterative content analysis.

**Impact/Lessons Learned/Results:** Four key themes emerged from the narrative dataset around experiences and perceptions associated with the PERFORM KT initiative: 1) being successful and taking it to other levels by being systematic, structured, and mentored; 2) taking it outside the comfort zone by being exposed to new concepts and learning together; 3) hearing feedback, exchanging stories, and getting new ideas; and 4) having a pragmatic and accommodating approach to apply new learnings in local contexts.

**Discussion/Spread:** Study findings offer insights into collaborative, inter-organizational CoP learning approaches to build QI capabilities amongst clinicians, staff, and managers and the need to contextualize QI learning by

using deliberate learning activities to balance systematic and structured approaches alongside pragmatic and accommodating approaches with expert mentors. A toolkit has been developed to assist other health care organizations in their efforts to build QI capabilities with clinical and staff to improve work processes and patient care.

## 24) Automation of Follow-up Microbiology Culture Results in Patients Discharged from the Emergency Department

Paul Sinclair\*, Dominick Shelton, Darren Hefferon, Zlata Janicjevic \*(Sunnybrook Health Sciences Centre)

**Background:** Timely reporting of microbiology culture results is crucial to ensuring that patients receive optimum quality of care. At Sunnybrook Health Science Centre's emergency department (ED) delays occurred in reporting positive culture results of patients discharged from the ED. Follow up of culture results was driven by a manual paper based process that was inefficient and resulted in a 1-3 day delay in reporting results. We aimed to minimize the delay in follow up of culture results by eliminating the manual process and replacing it with an automated process.

**Aim:** By May 31, 2016, 80% of positive microbiology culture results of patients discharged from Sunnybrook Health Sciences Centre ED will be followed up within 24 hours of results being available from the lab.

**Measures:**

**Outcome Measure –** Percentage of positive culture results followed up within 24 hours

**Process Measure – Time interval:** Availability of culture results from microbiology department to completion of patient follow-up

**Balancing Measure –** Number of positive results not displayed in an ED web based program

**Innovation:** An electronic interface was created to capture results from the microbiology department in real time. Parameters set by our microbiology department were used to accept only positive culture results and block results with no growth. These flagged results were automatically pushed into an ED web based follow up program.

**Results:**

Data collected	n	Median (hours)	Interquartile Range (hours)	Mean (hours)
Pre-intervention (2 months)	136	27.07	27.07	58.79
Post-intervention (2 months)	154	4.30	1.87 – 11.08	13.95

A significant reduction of 23 hours to complete a patient's follow-up of culture results was achieved by eliminating the manual process used in relaying results from the microbiology department to ED.

**Impact:**

1. Earlier initiation or change in antibiotics to patients with culture proven infections
2. Enhanced patient safety due to elimination of human error in relaying results
3. Improved work flow due to elimination of batching results and data entry
4. Reduction in manual processing time of 7 hours per week
5. Entire process is streamlined, since only positive culture results are displayed for follow-up.

## 25) Pediatric ED Return Visits: A Proactive Approach to Quality Improvement

Olivia Ostrow, MD, FAAP\*, Andrea Shim RN, BScN, HBSc,

Syed Azmat, Lucas Chartier, MD, MPH, FRCPC

\*(Hospital for Sick Children)

**Background/Context:** Emergency Department (ED) return visits leading to admission (RVs) are a well-recognized quality metric that can potentially signal quality gaps in patient care. Routine capture, investigation and monitoring of monthly ED RVs provides a better understanding of patient and visit-level factors, which can then inform system-level quality improvement (QI) opportunities.

**Aim/Objectives:** To develop a sustainable database that routinely tracks and analyses pediatric ED RVs to understand reoccurring themes and inform QI initiatives.

**Measures:** Using a computerized record system, all 72-hour RVs leading to admission have been collected since December 2013. Chart reviews are performed for patient and visit variables. Ongoing cumulative analyses are performed using descriptive statistics and t-test analysis.

**Improvement/Innovation/Change Ideas:** RVs are monitored on a monthly and cumulative basis to identify trends and predictors of returns. Treating clinicians receive monthly notification of their RVs and assist the project lead with identifying specific case variables and completion of root cause analyses. Targeted solutions to address system-level themes are sought through educational, quality, safety and administrative avenues, with several completed initiatives to date.

**Impact/Lessons Learned/Results:** Our RV database contains over 2.5 years of data analysing approximately 1,300 cases, equalling 0.75% of total annual ED patient volumes. Children less than 12 months of age have a significantly higher rate of return (24% vs 16%, P < 0.001). RVs have higher CTAS scores on both their index visit and RVs (P = 0.001). 31% of patients had a consult service involved during their index ED visit. The top three consultants included Hematology/Oncology (23%), General Surgery (12%), and Neurology (8%). Upon chart review, the majority of RVs were deemed to be related to natural disease progression (65%). 8% of RVs were called back for positive blood cultures or discrepant results and 6% were categorized as a misdiagnosis.

**Discussion/Spread:** Routine monitoring and investigation of ED RVs provides a proactive approach to seeking improvement opportunities. With a better understanding of specific patient and visit-level factors associated with RVs, future improvement initiatives can be targeted that will ultimately promote higher quality patient care.

## 26) Choosing Wisely at SickKids: A Children's Hospital's Experience Promoting Value at the Bedside

Olivia Ostrow, MD FAAP\*, Carolyn Beck, Kathy Boutis, Sanjay Mahant, Deena Savlov, Jeremy N Friedman \*(Hospital for Sick Children)

**Background/Context:** It is estimated that 20-30% of the annual Canadian healthcare budget may be wasted on unnecessary tests and treatments. Choosing Wisely is an initiative dedicated to addressing this problem. In Canada it has focused primarily on adult healthcare.

**Aim/Objectives:** To describe the development, implementation and initial impact of a departmental Choosing Wisely 'top 5' list on paediatric care at a Canadian children's hospital.

**Measures:** After key stakeholder input and review of current specialty society lists, an inventory of potential paediatric recommendations relevant to hospital care was generated. A survey was developed and broadly

administered to rank items. Two hospitalist leaders independently scored top ranking items based on ease of implementation, measurement, alignment, and value. Five final items were chosen. Baseline measurement was achieved through various hospital databases, chart review or audit where appropriate.

**Improvement/Innovation/Change Ideas:** After appointing a physician lead and developing an implementation strategy for each recommendation, the Choosing Wisely 'top 5' list was launched in January 2016. Recommendations were implemented using various improvement methodologies.

**Impact/Lessons Learned/Results:** Early results 6 months into the initiative show large improvements in reducing unnecessary care. For example: by not automatically giving IVIG as first-line treatment for children with typical newly diagnosed ITP, usage of IVIG has decreased from an initial baseline of 85% to 20%. In the emergency department, nasopharyngeal testing for respiratory viruses has decreased by more than 80% and routine radiography for children with low risk acute ankle injuries has decreased from 86% to 57%.

**Discussion/Spread:** Developing and implementing a Choosing Wisely 'top 5' list at a children's hospital aims to promote a culture of quality, evidence-based and high-value care. We have plans for further improvements in the current project, sustaining the gains already achieved, and to expand the initiative to other areas in our institution. This model, along with lessons learned, is being shared with paediatric healthcare providers across the country through presentation at meetings and rounds, as well as publication in various media and high impact journals.

## **27) Nursing Practice Changes to help Prevent Workplace Violence in SUCD**

Billie Pryer\*, Director of Nursing, Dan Vetesnik, RN in SUCD \*(Royal Ottawa Health Care Group ("the Royal"))

**Background/Context:** The Nursing Advisory Council (NAC) at the Royal changed its meeting structure to become more action oriented rather than information sharing and to align output with our organization's Strategic Plan. Workplace Violence was one of the first topics discussed. Members were trained in techniques to identify key issues and the PDSA method.

**Aim/Objectives:** One key initiative prioritized by the group focused on implementation of Hourly Rounding as a way to address both client needs and client focused independent goals. Hourly rounding is an evidence based approach to nursing rounds performed with the intent to evaluate and meet a patient's comfort and needs.

**Measures:** A baseline of scores on the Aggressive Incidents Scale (AIS) was established on the unit prior to initiation of the rounding. Compliance with the new technique of Hourly Rounding and follow up AIS scores measured success.

**Improvement/Innovation/Change Ideas:** The PDSA approach was driven in the Addictions unit, by a staff nurse member. The practice change centered on the unit staff trying and growing the practice through education, discussion at team meetings, and peer involvement.

**Impact/Lessons Learned/Results:** Initial feedback indicated that this practice led to more inclusive documentation about patient progress, improved goal-focus with the use of whiteboards, and nurses expressed that they knew their patients better. Another advantage was more time for planning and

patients spending less time at the nursing station. Mixed reviews emerged about documentation duplication, and staffing resource challenges.

The approach showed that implementing practice change can be done quickly and locally, with a unit champion coupled with sound evidence based practice. Staged preparation allowed teams to accept new routines, with time and space for analysis of the new practice. The qualitative improvement will also be further measured with AIS scores.

**Discussion/Spread:** This is an example of taking an established practice from a medical setting and adapting it to addiction/mental health setting successfully. Further improvement and spread will include providing resource materials for training casual staff, easing the load of documentation through application of the electronic medical record, and providing more protected time to the staff nurse when making a practice change.

## **28) Developing an Algorithm to Reduce Inappropriate Orthopedic On-Call Pages**

Dr. Ryan Perlus\*, Dr. Ian Whatley, Dr. Sarah Ward \*(University of Toronto)

**Background/Context:** In Orthopedics, residents are assigned to care for the patients under a specific staff. As such, each resident knows the clinical information relative to a small subset of the in-patient population. At level 1-trauma centers, there is an abundance of pages for the on-call Orthopedic resident, most of which would be better managed by the specific resident taking care of that patient. This results in delayed treatment decisions and prevents allied health professionals from performing directed care in a timely manner. Currently, there are no mechanisms to identify which resident to call for a given patient related issue.

**Aim/Objectives:** Our aim was to reduce inappropriate pages to the on-call orthopedic residents at St Michael's Hospital by 80% over a 3-month period.

**Measures:** The primary outcome was amount of inappropriate pages. This was defined as a page that should have been directed to the most responsible resident but instead went immediately to the on-call resident. Paging patterns were measured over 3 call shifts. Once current behaviours were recorded, a system was implemented whereby detailed lists were posted on Orthopedic wards including resident staff coverage and location of residents throughout daytime hours. Once implemented, paging patterns were again measured over 3 call shifts.

**Improvement/Innovation/Change Ideas:** There was a 50% reduction in unnecessary pages after implementation of the new system. Multiple change ideas became evident including paging options for residents in the operating room, after hours paging, pages regarding urgent issues, and paging protocol for discharge limiting issues. We then created a daytime hour algorithm to be used by the multidisciplinary team in an effort to further streamline the system.

**Impact/Lessons Learned/Results:** The implementation of the algorithm resulted in improvement communication and efficiency for the Orthopedic team during daytime hours. Qualitative feedback suggests the algorithm clarifies ambiguities regarding proper resident paging.

**Discussion/Spread:** These results have improved the overall efficiency and performance of the Orthopedic in-hospital service. An additional strategy exists to establish a specific model to not only continue to improve accurate resident paging but communication between medical residents and the rest of the interprofessional team to continue to optimize patient care and efficiency.

### **29) Effectiveness of a Co-Learning Model to Teach Quality Improvement at an Academic Centre With Limited Quality Improvement Expertise**

Alan Gob (London Health Sciences Centre)

**Background/Context:** CanMEDS 2015 emphasizes teaching quality improvement and patient safety (QIPS) concepts to residents; academic institutions have found it challenging to incorporate these concepts into existing programs. Utilizing a co-learning model, Wong and colleagues have developed a successful QIPS curriculum for residents/faculty at the University of Toronto. Major enabling factors included 1) a centralized body of QIPS expertise (C-QulPS) and 2) multiple faculty with advanced degrees in QIPS. Without these two factors, it is not known whether the co-learning model can be successfully implemented to teach QIPS concepts to residents.

**Aim/Objectives:** To evaluate the effectiveness of the co-learning model at London Health Sciences Centre (LHSC), as evidenced by completed QIPS projects and changes to clinical processes.

**Measures:** Over a two-year period, we logged the number of projects presented at our local research day or at national/international conferences. We tracked self-reported comfort with participation in QIPS-related activities.

**Improvement/Innovation/Change Ideas:** The co-learning model at LHSC included one lecturer with advanced QIPS training who designed and delivered QIPS content. The delivery included three large group half days that were didactic/interactive, and a year-long team QIPS project. Four divisions from the Department of Medicine participated. Each division was represented by one faculty lead, and at least one PGY5 trainee. None of the faculty leads had advanced training in QIPS.

**Impact/Lessons Learned/Results:** In year one, one poster was presented at our local resident research day, one at a national subspecialty conference, and one at the Institute of Healthcare Improvement's national forum. In year two, one poster was presented at resident research day, and one clinical process was modified. The majority of participants reported increased comfort with participation in QIPS activities.

**Discussion/Spread:** The results demonstrate that the co-learning model can be successfully implemented despite neither centralized QIPS expertise nor an abundance of faculty highly trained in QIPS. The third iteration of the curriculum includes six divisions. Unexpected benefits included increased interest in QIPS project participation outside of the curriculum by junior residents. This year, QIPS will have its own category at our local research day. These developments synergize with the curriculum to stimulate QIPS interest at our centre.

### **30) Transitioning the Colonoscopy Preparation Process to Home**

Simon Ling\*, Amanda Ricciuto, Eileen Crowley, Marta Carneiro de Moura, Mar Miserachs, Eberhard Lurz, Catharine Walsh \*(University of Toronto)

**Background/Context:** SickKids patients complete the second half of their pre-colonoscopy Picosalax bowel preparation (BP) in hospital under nurse supervision. Transitioning BP entirely to home represents an important quality improvement goal given its potential to liberate bed spaces and enhance patient/family satisfaction.

**Aim/Objectives:** To reduce the number of in-hospital BPs by 50% by October 2016 among English-speaking children  $\geq 10$  years old, without compromising BP quality.

**Measures:** Outcome measures included number of BPs performed at home and user satisfaction on a Likert scale. The percentage of eligible children who completed home BP was monitored as a process measure. Balance measures included home BP quality, rated using the Ottawa BP score (OBS) (lower is better and OBS  $>6$  considered "unacceptable"), and "rescue" enemas.

**Improvement/Innovation/Change Ideas:** An Ishikawa diagram and process map were constructed. The interventions implemented centered on the change idea that children and their families have the capacity to independently prepare for colonoscopy, without the need of in-hospital nursing supervision. Improved educational materials were developed. Changes were tested in Plan-Do-Study-Act (PDSA) cycles.

**Impact/Lessons Learned/Results:** In a pre-intervention audit, among 37 in-hospital BPs over 1 month, the mean OBS was 3.8 and 6/37 (18%) had scores  $>6$ , with 0 rescue enemas. In a first PDSA cycle, among 14 children who completed home BP (48% of those eligible), the mean OBS was 5.8 (SD 3.3) and 5/14 (36%) had scores  $>6$ . Six patients received enemas. Given the decline in BP quality, the home BP process was modified (recommended fluid intake increased, PEG3350 added for 3 days) and the educational materials updated and simplified. In a second PDSA cycle including 11 children (50% of those eligible), mean OBS was 5 (SD 3.5), similar to previous, but only 2/11 (18%) scored  $>6$  and only one enema was required. User satisfaction with home BP was high (4.3/5).

**Discussion/Spread:** Results obtained to date indicate successful reduction of in-hospital BP with acceptable BP quality. Additional data are to be collected until October and the home BP process further modified as needed. If results remain favourable, home BP will be implemented as standard of care.

### **31) Reducing unnecessary nasopharyngeal virus testing at a tertiary care paediatric centre – A Choosing Wisely initiative**

Deena Savlov\*, Olivia Ostrow, Astrid Petrich, Susan E Richardson, Jeremy N Friedman \*(Hospital for Sick Children)

**Background:** Viral respiratory testing in paediatric patients is commonly performed, however results often do not impact care and the procedure is uncomfortable. At SickKids Hospital in Toronto, nearly 6000 nasopharyngeal (NP) swabs for direct fluorescent antibody (DFA) testing (8 viruses) were ordered in 2014; 61% in the Emergency Department (ED) or Paediatric Medicine wards. Approximately 63% ED swabs were on children discharged home. Since results were not immediately available and no formal follow-up was in place, the test frequently did not affect patient management.

**Aim:** To decrease the number of unnecessary NP swabs performed on children in the ED and Paediatric Medicine wards.

**Measures:** The main outcome measure is the total number of swabs performed, relative to total patient volumes, in the ED and Paediatric Medicine. Process measures include the reported indication for testing, ED and hospital length of stays, admission rates, antibiotic and antiviral usage. Balancing measures include total cost of respiratory testing and rates of nosocomial respiratory virus infection.

**Innovation:** A multidivisional expert panel reviewed published guidelines and formulated a pathway listing indications for viral respiratory testing. Two more effective tests were introduced to replace the older DFA test: 1) rapid influenza isothermal amplification that can provide results within 15 minutes and direct timely use of antiviral therapy, and 2) multiplex PCR (15 viruses). As a force function, the electronic order set was modified requiring

users to select an appropriate indication. As a hard-stop, the rapid influenza test could only be ordered for inpatients with Microbiologist approval. A multi-faceted educational campaign was launched throughout the hospital.

Results: Early results indicate that total respiratory virus testing decreased by 38.5% and 32.4% in the ED and Paediatric Medicine respectively, compared with 2014. Testing rates reduced by 14.3% and 28.2% from 2015 rates. Excluding the new rapid influenza test, NP testing dramatically decreased by over 80% in the ED.

Spread: Reducing unnecessary viral testing promotes high-value care, decreases patient discomfort and allows for more effective resource allocation of tests that truly impact care. Planning is underway to disseminate this initiative to other hospital areas including outpatient clinics, subspecialty and surgical wards.

### **32) The Spread of the Better Coordinated Cross-Sectoral Medication Reconciliation (BOOMR) for Residential Care - A Quality Improvement Initiative**

Denis O'Donnell\*, Carla Beaton, Hrishikesh Navare, Vincent Vuong, Jennifer Simpson, Olivia Schmitz, Connie Sheridan, Lori Anderson \*(Medical Pharmacies Group Limited)

Background: Poor communication across care settings frequently contribute to the preponderance of medication errors during transitions to LTC. Building on a novel inter-professional MedRec program initially piloted in a 15-bed LTC unit as an IDEAS Cohort 6 project, the Better Coordinated Cross-Sectoral Medication Reconciliation (BOOMR) quality improvement initiative was expanded to include 4 LTC homes, representing 540 beds.

Aim: To improve the quality of admission MedRec by at least 30% compared to baseline at six months postimplementation.

Measures:

Outcome: modified ISMP MedRec quality audit score

Process: number of discrepancies and clinical concerns

Balance: number of hospital visits due to medication

Change Ideas: Application of Lean principles generated key change ideas which included: initiating the MedRec process 48 hours prior to resident admission, streamlining CCAC documentation to facilitate MedRec, connecting the LTC pharmacist with resident/family to complete a medication history, and utilizing a three-way "Trio call" between the LTC pharmacist, nurse and prescriber to finalize admission orders and discuss admission-related medication issues/concerns.

Results: With integration of care at the center of this practice design, BOOMR has demonstrated value in driving creative solutions in order to provide quality care. A collaborative, inter-professional approach was able to identify and address discrepancies and clinical concerns that were previously undetected. A mean of 2.3 discrepancies and 5.5 clinical concerns were identified per MedRec. No hospital visits were due to medications since the BOOMR intervention. The average modified MedRec quality score upon admission improved from 51% (January 2016) to 89% (May 2016). 92% of surveyed residents/family were satisfied that their medication needs were met. The BOOMR process freed up 3 hours of nursing time and 1 hour of physician time while increasing 1.5 hours of pharmacist time per admission. System workflow efficiencies and polypharmacy reduction resulted in projected cost savings of \$1000 per resident over 3 months.

Spread: Additional homes throughout the province will be included in the further spread of BOOMR. Processes for sustaining success include: clarity of

the goal with recognized advantages to all sectors, team alignment meetings, ongoing data monitoring and sharing success stories, making quality improvement "the work" and not "extra work".

### **33) Health Literacy; Development and implementation of a framework in chronic disease population**

Darlene Bowman\*, Delanya Podgers \*(Kingston General Hospital)

Background: Health literacy refers to a broad set of skills that help patients and their families understand health information, participate in self-management, and navigate the complex health care system. In south eastern Ontario up to 84% of the population has low or very low levels of health literacy. Low health literacy is associated with higher health care costs, greater use of the health care system, higher rates of hospitalization and readmission, and is a significant barrier to safe transitions. It plays a critical role in patient outcomes.

An organizational health literacy scan was conducted at Kingston General Hospital (KGH) to determine current state. This scan identified knowledge and practice opportunities. Results from staff, physician and learner surveys indicated that although 45% of respondents answered that they were familiar with the term health literacy, only 7% could correctly define it. Eighty-two percent of those surveyed had received no formal health literacy education. Further 62% of respondents could not describe the most widely used, strategy aimed at addressing health literacy through patient-centred communication, known as Teach-back.

Objectives: Increase awareness of health literacy and provide the workforce with evidence based health literacy tools and strategies. Specifically increase provider competency in the use of the Teach-back method in the chronic kidney disease (CKD) population.

Process Measures:

- Program specific pre and post provider health literacy surveys and self-competency assessments
- Pre and post patient interviews (patient refers to patient/ family/ key learners)
- Percentage of providers participating in education program
- Post implementation chart reviews to determine Teach-back utilization.

Change Ideas: Develop and implement a framework for health literacy and the Teach-back method in the CKD program to address identified knowledge and practice opportunities.

Lessons Learned/Impact:

Health literacy areas for growth:

- Awareness across all disciplines
- Education and training
- Inclusion in healthcare curriculums

Anticipated impact includes:

- Improved patient-provider communication during discussions regarding therapeutic choices for treatment modalities
- Improved patient ability to fully participate in shared decision making, self-management and navigation of complex pathways and partnerships
- Improved organizational efficiencies

Spread: Future plans include spread to the chronic obstructive pulmonary disease population.

### **34) Safe Patient Handling Training in a Mental Health Facility**

Melanie Taylor\*, Lorraine Doucet, Emily Deacon \*(Royal Ottawa Health Care Group)

**Background/Context:** There is a higher risk of falls and responsive behaviors with our patients due to their multiple medical and psychiatric comorbidities. As a result, employees are at higher risk of injury with the increase in provision of physical care to patients.

**Aim/Objectives:** The goal of developing the Safe Patient Handling (SPH) training at the Royal Ottawa Mental Health Center was to decrease patient and staff injuries related to patient transfers/behaviours.

**Measures:** The number of staff trained in SPH has increased from 40 in 2007-2008 to 56 staff completing the 4 hour initial hands on SPH training and 353 staff completing the online modules in 2013-2014. In 2007 there were 16 staff members injured as a result of patient transfers. In 2015, 5 staff were injured. Furthermore, none of those staff members lost any time due to their injury as all of the injuries were minor.

**Improvement/Innovation/Change Ideas:** Strategies to address responsive behaviors when providing SPH were embedded within the mandatory SPH training.

**Impact/Lessons Learned/Results:** There has been a decrease in the severity of injuries to patients related to falls and to staff involved in SPH activities. Better education results in better patient handling practices which improves patient and staff safety within the organization.

**Discussion/Spread:** An increase in mentoring and development of "champions" on in-patient units is recommended.

### **35) Walk in My Shoes**

Catherine Clarke (University Health Network and OCAD University)

**Background/Context:** Incivility among nurses, and in particular, directed towards novice nurses is a significant problem in hospitals. Uncivil behaviour erodes the quality of patient care and contributes to errors and adverse events. Absent from most organizational interventions are two key prerequisites for change: personal recognition of the need to change and sufficient motivation to alter and sustain new behaviour. This graduate student research project explored the use of arts-based approaches, specifically a shoes and personas exhibition as possible solutions because of their potential to promote self-reflection, perspective taking and meaning making to change the existing mental models that underlie incivility. Shoes were also used as a metaphor in the exhibit to represent the age-old challenge: before you judge a person, walk a mile in his- or her- shoes.

**Aim/Objectives:** This exploratory project was intended as a starting point for future study of the impact of using arts-based techniques in combination with other learning approaches, to promote positive change in workplace relationships and improved teamwork.

**Measures:** Two interactive techniques enabled the researcher to understand the emotional responses to the characters' stories and a brief exit survey was used to assess if the exhibit had promoted self-reflection in participants and consideration of their own behaviour and its potential impact on their peers.

**Improvement/Innovation/Change Ideas:** Fifteen - twenty minutes was needed to read the character stories, notice all the artefacts and participate in the activities. The drop-in nature of the exhibit meant nurses could come by on their break and did not have to be scheduled.

**Impact/Lessons Learned/Results:** Fifty-one participants completed the exit survey. Responses suggest that the methods evoked emotional reactions, increased the participants' capacity to see nurse-to-nurse incivility from other

perspectives and encouraged them to evaluate their personal behaviour and its impact on colleagues and student nurses.

**Discussion/Spread:** The exhibit's simple design, low cost and adaptability make it an attractive option for hospitals with limited budgets and resources. The format can be adapted to include characters from the inter-professional team to promote greater understanding, respect and collaboration among teammates.

### **36) Addressing the quality gap: an order set and checklist to improve red blood cell transfusion ordering practices on the internal medicine ward**

Katie Govereau\*, Alison Battistuzzi \*(University Health Network)

**Background/Context:** Falls in hospital are one of the most prevalent inpatient adverse events, with one third resulting in injury.<sup>1</sup> Falls rates on inpatient psychiatric units are estimated to be three to four times higher than on general hospital units.<sup>2</sup> As admitted patients become increasingly psychiatrically and medically complex, an increase in falls on an inpatient psychiatric unit was noted, with an average of 25 falls in a 6-month period. To address this increase, a falls prevention program was developed and implemented by two unit-based occupational therapists.

**Aim/Objectives:** To develop and implement a falls prevention program to reduce the incidence of falls in a 6 month period on an acute psychiatric unit.

**Measures:** Hospital incident reports were used to establish a baseline rate of falls 6 months prior to program initiation. Incidence reports were reviewed 6 months post initiation to determine outcomes.

**Improvement/Innovation/Change Ideas:** Education on falls and safety was provided during 3 nursing curriculum blocks by the occupational therapists. Falls signs with personalized safety measures were posted for patients. A falls debrief form was created, which was completed immediately post-fall and stored in the patient's paper chart. An "Activity" section was added to the nursing Kardex to outline recommended safety interventions to promote communication during nursing transfer of accountability. A database was also created to collect information for each fall incident and to aid in analysis of unit falls patterns.

**Impact/Lessons Learned/Results:** Falls declined by 52% from 4.16 falls/month to 2.08 fall/month. Project outcomes also included improved inter-professional collaboration and communication, a population-specific understanding of falls risks and interventions, and enhanced patient safety.

**Discussion/Spread:** The commitment to ongoing patient and staff education by team occupational therapists and the acceptance of discipline-specific accountabilities to maintain and sustain the project were central to its success. Continued education sessions for all staff, monthly review of incident reports, and pattern analysis will be completed to optimize sustainability.

**References:**

- <sup>1</sup>Chan, C., Gau, S.S., Chan, H., Tsai, Y., Chiu, C., Wang S., & Huang M. (2013). Risk factors for falling in psychiatric inpatients: A prospective, matched case-control study. *Journal of Psychiatric Research*, 47, 1088-1094.
- <sup>2</sup>Allen, D. E., De Nesnera, A., & Robinson, D. A. (2012). Psychiatric patients are at increased risk of falling and choking. *Journal of American Psychiatric Nurses Association*, 18(2), 91-95.

### 37) Emergency Room Safer Transfers by On-Purpose Pauses (ER-STOP)

Savannah Norman\*, Jennifer Sampson, Frank DeCicco, Ian M. Fraser \*(Michael Garron Hospital and University of Toronto)

Background/Context: Prompted by incident report and CCRT (Critical Care Response Team) audit analysis, reducing risk of deterioration of adult ward patients within 24 hours of ER (Emergency Room) admission was targeted as part of an organizational rescue from danger redesign. A locally validated checklist (Modified Early Warning Score-MEWS + urinary catheter in-situ + nurse concern) with an intentional pause and explicit management options was deployed as a modification of an existing ward transfer of accountability fax report in a 400-bed urban community teaching hospital ER for all admitted adult medical-surgical patients between Jan 1st to June 30, 2016.

Aim/Objectives: Our aim was to improve patient safety by optimizing matching of patient need to provided care following ER admission with:

1. Decreased unexpected on-ward deterioration requiring CCRT activation within 24 hours of admission
2. Unchanged special care unit (CIU, ICU) admissions (vs. 2015)
3. Unchanged timely access to in-patient beds without increasing waiting time in ER to ward admission (vs. 2015)

Measures: Using an unblinded before/after design,

	Control	ER-STOP	p-value
Monthly CCRT responses within 24hrs of admission (n)#	4.5 (range 0-8)	1 (range 1-2)	0.002
Total Med-Surg ER Admits (n)*	4374	4527	
CIU Admission rate (%)*	13.2% (n=577)	12.8% (n=579)	0.59
ICU Admission rate (%)*	5.3% (n=233)	6.1% (n=278)	0.11
Mean time to ward admit (hours)*	5.91±1.85	4.74±1.44	0.16
Medical Short Stay Unit (MSSU) Rate*	31% (n=1370)	32% (n=1455)	0.42

# Control May 2014 to Dec 2015, \*Control Jan to June 2015

Improvement/Innovation/Change Ideas: ER-STOP, a simple 3-component intervention, significantly reduced the risk of deterioration within 24 hours of ward admission to medical-surgical services without increased special care unit use or waiting time to ward admission. Qualitative observations suggest that the MSSU adjacent to the ER developed a close observation function for more severely ill admitted patients.

Discussion/Spread: The beneficial effect of this intervention was greater than the modest predictive value of the early warning score (MEWS) component suggesting that the major effect of ER-STOP was related to increased situational awareness and empowering a culture of patient safety. Local adaptation within existing processes is essential to successful outcomes.

### 38) Interprofessional and interdisciplinary collaborative approach for pre-anesthetic evaluations: successes and challenges

Elaine Ng\*, Natasha Mills, Silvana Oppedisano, Pamela Sehdev, James Robertson \*(Hospital for Sick Children)

Background/Context: Pre-anesthetic evaluations allow for preoperative planning and education of patients and families. In our current process, the referring service identifies inpatients who require an evaluation and informs the on-duty anesthesia resident who completes it. The process for inpatients for placement of gastrostomy tubes (G-tube) is of interest. The timeliness of

the evaluations may not be a key factor contributing to the length of stay (LOS) by preventing timely G-tube bookings, however, the optimal process for pre-anesthesia evaluation is not entirely clear. A novel collaborative approach between advance practice nurses (APNs) and residents in anesthesia is proposed to provide support and structure to this process.

Aim/Objectives:

To understand the pre-anesthesia evaluation process.

To establish a collaborative model between the APNs and residents in anesthesia for pre-anesthesia evaluation.

Measures: All the residents and APNs in anesthesia in October 2015 were approached individually and as a group to discuss the current process for pre-anesthetic evaluations, desired state and challenges. Qualitative themes were identified from this meeting and subsequent focus groups to determine ongoing needs. Data on LOS at different intervals was collected.

Improvement/Innovation/Change Ideas: A logic model was created to identify processes and outcomes which was reviewed by and promoted to the primary stakeholders in anesthesia. In addition, a collaborative approach between APNs in anesthesia and G-tube clinic was established.

Impact/Lessons Learned/Results: The proposed interprofessional model between residents and APN in anesthesia was not utilized: there was lack of understanding of the APN role and lack of resources. On the other hand, there was clear communication regarding patient readiness and preoperative concerns between the APNs in anesthesia and G-tube clinic. Several other processes were established at the same time which all contributed to a decreased LOS by four days.

Discussion/Spread: The streamlined interdisciplinary process with clear communication between APNs in anesthesia and G-tube clinic can be modelled for other services to promote collaboration and potentially decrease LOS. Interprofessional collaboration between residents and APNs in anesthesia could not be established and alternative pathways are being considered for pre-anesthesia evaluation.

### 39) REDUCED: Reducing Unnecessary Coagulation Testing in the Emergency Department

Nicola Goldberg\*, Michael Fralick, Hina Chaudhry, Alun Ackery, Rosane Nisenbaum, Lisa Hicks, Michelle Sholzberg \*(University of Toronto)

Background/Context: The aPTT (activated partial thromboplastin time) and PT/INR (prothrombin time/international normalized ratio) coagulation tests are validated for use in specific circumstances, and rarely are both clinically indicated. Despite this, they are considered "routine" in medical practice. In fact, in 2015 nearly every coagulation test order at St. Michael's Hospital (SMH) included both the aPTT and PT/INR. This suggests gross overuse.

Aim/Objectives: To determine whether a multimodal intervention could diminish excessive coagulation test ordering in the emergency department (ED) our institution, where test volumes were particularly high.

Measures: We compared the rate of coagulation tests ordered before and after the intervention was implemented. As a control measure we assessed creatinine testing rates during the same time periods. As a balance measure and proxy for major bleeding, we evaluated rate of red blood cell (RBC) transfusions. Results were analyzed using Poisson regression and interrupted time series analysis.

Improvement/Innovation/Change Ideas: We met with numerous stakeholders who identified two major barriers to appropriate coagulation testing: ordering processes and clinician understanding.

Prior to our intervention, aPTT and PT/INR were part of nearly all ED blood work panels, meaning these tests were ordered routinely for the majority of ED patients. Once we removed these tests from panels where they were deemed inappropriate, these coagulation tests were only performed if actively hand-written on an order sheet. We educated ED practitioners by presenting at their rounds and by posting targeted educational prompts.

Impact/Lessons Learned/Results: Following the intervention, weekly rates of PT/INR and aPTT testing decreased by over 50% (PT/INR: 17.2 vs 38.4, rate ratio=0.45 (95% CI 0.43-0.47),  $p<0.001$ ; aPTT 16.6 vs 37.8, rate ratio=0.44 (95% CI 0.42-0.46),  $p<0.001$ , respectively). This resulted in \$6,490 CAD in direct cost savings per month (projected annual savings: \$77,880 CAD). The rate of creatinine testing remained unchanged. RBC transfusion rate fell slightly post-intervention - therefore there was no signal of harm.

Discussion/Spread: Our intervention has significantly reduced coagulation testing rates, unnecessary costs and enhanced awareness of appropriate testing at our institution. We attribute our success to stakeholder support and interventional focus on process change. We are now expanding our project to other departments at SMH.

#### **40) Implementation of Routine Two-Person Care in the Neonatal Intensive Care Unit at Sunnybrook Health Sciences Centre**

Virginia McLaughlin\*, Dr. Asaph Rolnitsky, Elizabeth MacMillan-York RN, Lisa Sampson RN, Carli Hubbard RN, Laura Borges RN, Sarah Pelton RN, APN, Jo-Ann Alfred RN, Kate Robson, Karen Bong, Dr. Eugene Ng, Dr. Michael Dunn \*(Sunnybrook Health Sciences Centre)

Background/Context: Sunnybrook Health Sciences Centre's (SHSC) NICU is a 45 bed, single patient room, non-surgical unit within a perinatal center. In 2015 there were 296 VLBW (<1.5kg); also 57 micropremature infants were admitted into our NICU. Age appropriate, developmentally supportive care, including two-person care, is recognized as essential to reduce toxic stress and foster appropriate brain growth in order to reduce morbidity in this population. Two-person care has yet to be successfully implemented in our NICU. Potential barriers include:

- Workload
- Lack of unit wide consensus on developmentally supportive care
- Unit culture
- Unit layout
- Inconsistent documentation

Aim/Objectives: Increase the frequency of two-person care of micropremature infants for stressful procedures from less than 10% to 80% by December 2016.

Measures:

1. Staff questionnaire
2. Frequency of two-person care for stressful procedures
3. Family questionnaire.

Balancing measures

1. Staff Workload
2. Negative staff perception

Outcome Measures

1. IVH rates, growth <10th %ile at discharge
2. NCAST scoring (possible outcome measure).

Improvement/Innovation/Change Ideas:

We ran 3 PDSA cycles on two-person care:

1. One baby for one handling time.
2. An entire pod (approximately 4 eligible infants) for a shift
3. An entire pod (3 eligible infants) for a day

Workload, staff perception and adherence to two-person care were examined in all three and parental perception was assessed in the third cycle. The purpose was to examine two-person care in the context of our unit.

Impact/Lessons Learned/Results: A modest increase of two-person care to 12.3% from 8.7% has been noticed so far within the pod where the PDSA cycles took place. Staff reported workload to be an issue but that it does appear to reduce the infant's stress levels.

Discussion/Spread: Next steps include unit wide education around the benefit of two-person care, as well as how to do it, and to possibly use two-person care in a proposed Small Baby Team (specialized team to care for those infants born <26 weeks). Trying to address workload is another crucial step, as well as encouraging better use of parents as a second set of hands.

#### **41) Improving Bariatric Surgery Appointment Attendance Using a Patient Centred Approach: Sustaining Change**

Dr. Sanjeev Sockalingam, MD, MHPE, FRCPC, FAPM\*, Vincent A. Santiago, BSc, Sandra Robinson, RN, Katie Warwick, RD, Shanthini Ratnakumarasuriyar, BSc \*(University Health Network Centre for Mental Health)

Background/Context: The Toronto Western Hospital Bariatric Surgery Program (TWH-BSP) routinely follows up with post-bariatric surgery patients for up to 5 years with an interdisciplinary team.

Aim/Objectives: We aimed to increase post-op attendance rates by 30% by July 2015.

Measures: The outcome measures included the percentage of patients attending, no showing, and cancelling their appointments in advance each week. The process measures were the number of patients receiving the advanced care calls and visiting the online bariatric aftercare app. The balance measures included patient satisfaction and number of pre-surgical visits per week. We analysed weekly appointment data and used ChartRunner software to detect Special Cause Variation (SCV).

Improvement/Innovation/Change Ideas: 1) Care planning calls/e-mails made by a clinic volunteer one-month in advance of appointments to personalize care; 2) Dissemination of a family physician "hand-off" letter of care; 3) Dissemination of an online mobile site for patients to access information regarding their aftercare; 3) Creation of a cancellation list to facilitate refilling of open slots.

Impact/Lessons Learned/Results: Based on patient and clinician feedback, the call script underwent PDSA cycles in order to encourage patients to attend their appointments, while still allowing patient-centred flexibility. From April 1, 2014-May 29, 2015, attendance and no-show rates remained stable from pre- to post-intervention at 87% and 13%, respectively. Cancellations increased with SCV from 13% to 19%. The increase in cancellations freed up appointments slots for pre-operative and urgent post-operative appointments. This refilling of slots led to average weekly savings of \$513.50 that would have otherwise been wasted. For the first 41 weeks of the project, total savings were \$21,053.50. After two years (102 weeks), the projected savings are \$52,377.

Discussion/Spread: To sustain the project, a patient volunteer was trained and has supplemented calls since January 2015. This patient has provided



invaluable peer-to-peer support and knowledge for other patients. We also developed a 19 page training manual detailing the processes required for care planning calls/e-mails. Two additional research volunteers have since been trained using this manual. Drafting of a publication for an international quality improvement journal is underway.

#### 42) Gemba Time: Shifting Culture to Support Continuous Improvement at JBH

Cheryl Williams\*, Susan Wannamaker, Erin Swindall, Denise Cusson, Nancy Casselman, Steve Metham, Dr. Wes Stephen \*(Joseph Brant Hospital)

Background/Context: In August 2015, Joseph Brant Hospital launched "Gemba Time" and team idea boards to involve staff and physicians in improvements to quality, safety and the Patient experience. As a component of our Lean Management System, Gemba Time is meeting-free time from 9-11 am, weekdays, for leaders to go to the Gemba (where value is created for Patients) and to engage staff and Patients using the principles "Go See, Ask Why, Show Respect".

Aim/Objectives: Support quality, safety, patient experience, and a culture of continuous improvement by increasing engagement of staff and teams in innovations to the way we deliver care.

Measures:

Process Measures:

# staff/team ideas implemented.

# Gemba Time visits by Senior Leaders.

# idea boards launched.

# ideas recognized through "Gemba Time in Action" program.

Impact themes: As of June 2016, over 430 staff/departmental ideas have been implemented across the hospital to improve quality, safety and Patient experience. General impact themes include improved communication, coordination across departments, reduced waiting and transportation waste, 5S of workspaces, and reduction of defects/errors.

Improvement/Innovation/Change Ideas:

1) Gemba Time – meeting-free time, 9-11 weekdays.

2) Scheduled Senior Team/Board of Governors Gemba Time visits.

3) Departmental Idea Board huddles.

4) Gemba Time recognition through "Gemba Time in Action".

Impact/Lessons Learned/Results:

As of June, 2016:

- 430 team ideas implemented.

- 41 different departments visited.

- 42 ideas recognized through "Gemba Time in Action" at Quality Wall.

- Action learning leadership development, culture of continuous improvement.

Specific Gemba Time/Idea Board impacts (Examples):

Quality and Safety: Improved Newborn Screening Card submission timeliness from 41% to 95% on-time.

Patient Experience: ICU added triple lumen PICC line option to order set to improve safety and patient experience.

Leading Performance: Used 5S to reorganize main stores area. Inventory took 25% less time with re-counts reduced by half.

Discussion/ Spread: 'Gemba Time' is a grassroots approach that does not require extensive consultant expertise or 'belt' training, minimizes jargon,

supports culture change, and serves as a platform for future introduction of quality tools and concepts.

#### 43) EyeCare: A Project for Reduction of Severe Retinopathy of Prematurity in Very Low Birth Weight Infants in the NICU at Sunnybrook Health Sciences Centre

Jean Chow\*, Virginia McLaughlin, Asaph Rohnitsky, Elizabeth Asztalos, Marilyn Hyndman \*(Sunnybrook Health Sciences Centre)

Background/Context: 48-bed, Level III, non-surgical, perinatal centre NICU, caring for ~300 very low birth weight (VLBW) infants yearly (~15% outborn) located in Toronto. A significant increase in advanced-stage Retinopathy of Prematurity (ROP) ( $\geq$  Stage 3) was identified with rates up to 13% in VLBW infants.

Aim/Objectives: To reduce Stage  $\geq 3$  ROP in VLBW infants from 13% to 7% by December 2016 in the NICU at Sunnybrook.

Measures:

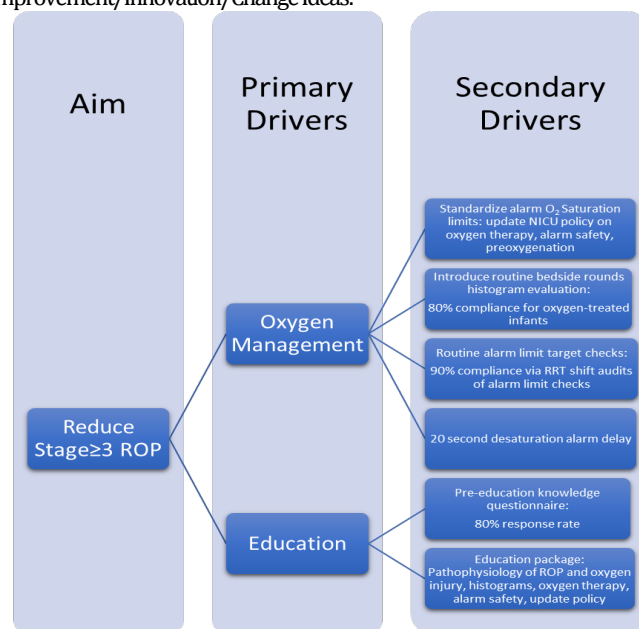
Process measures:

- Reduction of incorrect oxygen saturation alarm settings
- Reduction of incorrect oxygen saturation high alarm limits
- Reduction of exposure to oxygen saturations  $>95\%$
- Reduction of non-actionable desaturation alarms from baseline frequency

Balancing Measures:

- Mortality rate
- Number of re-intubations and ventilation requirements
- Low-grade ROP rates
- RRT and RN workload, and practice satisfaction

Improvement/Innovation/Change Ideas:



Impact/Lessons Learned/Results: The Pre-Intervention knowledge questionnaire had a 77% return rate, with an average of 62% correct responses. This resulted in education targeted at widespread knowledge gaps. The post-intervention questionnaire will be distributed September 2016.

After 3 months of implementing education about retinopathy of prematurity and oxygen awareness program, use of bedside oxygen saturation

histograms, and implementing a 20 second alarm delay for oxygen saturations, we saw a reduction of time spent saturating >95% from 31% to 14%. The 20 second alarm delay was trialed through a PDSA cycle in one NICU patient care pod. The results revealed similar histogram findings and a decrease in the number of desaturations by approximately 25%.

Discussion/Spread: Upcoming activities include a post-intervention questionnaire with intended distribution in September 2016 to assess retention of knowledge and knowledge translation. Updates will be provided to staff in the NICU monthly newsletter to promote continued awareness and positive attitudes regarding the use of oxygen therapy in the NICU. We will be implementing a dashboard to highlight target saturations and performance. The 20 second alarm delay will be implemented as a unit-wide practice change by September 2016. As retinopathy develops late in the infants NICU stay, the key clinical outcomes (ROP incidence) will be reviewed by end of 2016.