cause analysis was performed using an Ishikawa diagram. A Pareto chart was completed via multi-voting. A Driver Diagram was developed using the highest ranked items from the Pareto chart to identify locally relevant and feasible interventions. Interventions 1) Medical directives were modified; Routine paired sending of UC with urinalysis by nurses was removed. 2) Physician Education and implementation of a clinical decision aid (CDA); A CDA was created using PDSA methodology, using an iterative approach from development through implementation. Outcome measure: rate of Urine Cultures sent per 1000 ED patient visits Process measure: percent of positive cultures Balancing measures: rate of 14-day ED return visits and hospital admission for patients diagnosed with UTI/Urosepsis/Pyelonephritis. **Evelution/Results:** At the study's conclusion, there was a decrease in UC rate, from 95 per 1000 ED visits, to 59 per 1000 ED visits (RR 38%, AR 3.6%) There was evidence of special cause variation on the SPC chart. Positive cultures increased from 19% to 34%. There was no increase in the rate of ED 14-day return visits or hospital admission for patients with a diagnosis of UTI, urosepsis or pyelonephritis. **Discussion/Impact:** The study interventions of uncoupling routine sending of UA and UC, and physician education and use of a clinical decision aid, effectively decreased the rate of UC testing during the study period. A reduction in inappropriate UC testing is important to limit avoidable patient morbidity and reduce unnecessary health care spending. Further studies are indicated to target interventions on patient subgroups and to reduce unnecessary antibiotic prescriptions.
Keywords: Choosing Wisely, quality improvement and patient safety, urinary tract infections

LO89
A multi-disciplinary quality improvement project to improve adherence to best practice guidelines for emergency department patients with transient ischemic attack

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Background: Canadian Stroke Guidelines recommend that Transient Ischemic Attack (TIA) patients at highest risk of stroke recurrence should undergo immediate vascular imaging. Computed tomography angiography (CTA) of the head and neck is recommended over carotid doppler because it allows for enhanced visualization of the intracranial and posterior circulation vasculature. Imaging while patients are in the emergency department (ED) is optimal for high-risk patients because the risk of stroke recurrence is highest in the first 48 hours. **Aim Statement:** At our hospital, a designated stroke centre, less than 5% of TIA patients meet national recommendations by undergoing CTA in the ED. We sought to increase the rate of CTA in high risk ED TIA patients from less than 5% to at least 80% in 10 months. **Measures & Design**: We used a multi-faceted approach to improve our adherence to guidelines including: 1) education for staff ED physicians; 2) agreements between ED and radiology to facilitate rapid access to CTA; 3) agreements between ED and neurology for consultations regarding patients with abnormal CTA; and 4) the creation of an electronic decision support tool to guide ED physicians as to which patients require CTA. We measured the rate of CTA in high risk patients biweekly using retrospective chart review of patients referred to the TIA clinic from the ED on a biweekly basis. As a balancing measure, we also measured the rate of CTA in

non-high risk patients. **Evaluation/Results:** Data collection is ongoing. An interim run chart at 19 weeks shows a complete shift above the median after implementation, with CTA rates between 70 and 100%. At the time of submission, we had no downward trends below 80%, showing sustained improvement. The CTA rate in non-high risk patients did also increase. **Disucssion/Impact:** After 19 weeks of our intervention, 112 (78.9%) of high risk TIA patients had a CTA, compared to 10 (9.8%) in the 19 weeks prior to our intervention. On average, 10-15% of high risk patients will have an identifiable lesion on CTA, leading to immediate change in management (at minimum, an inpatient consultation with neurology). Our multi-faceted approach could be replicated in any ED with the engagement and availability of the same multi-disciplinary team (ED, radiology, and neurology), access to CTA, and electronic orders.
Keywords: neuroimaging, quality improvement and patient safety, transient ischemic attack

LO90
The clock is ticking: using in situ simulation to improve time to blood delivery in bleeding trauma patients

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Background: Massive transfusion protocols (MTP) are widely used to rapidly deliver blood products to bleeding trauma patients. Every minute delay in blood product administration in bleeding trauma patients is associated with a 5% increased odds of death. In-situ simulation (ISS) is simulation that takes place in the actual clinical work environment. We used ISS as a novel, prospective and iterative quality improvement (QI) approach to identify and improve MTP steps that impact time to blood delivery (TTBD) during actual trauma resuscitations. **Aim Statement:** To reduce the TTBD for bleeding trauma patients by 20% over a 12-month ISS-based QI initiative. **Measures & Design**: We conducted twelve high-fidelity, interprofessional ISS sessions at a Level-1 trauma center in Toronto, Canada. We used clinician video review as well as extensive stakeholder involvement, including with nurses, porters, blood bank and human factors experts, to develop Plan-Do-Study-Act (PDSA) cycles for MTP improvement. Our three major PDSA cycles revolved around: 1) decreasing MTP activation time; 2) reducing the unpredictable and inefficient transport times for the blood itself; and 3) improving the notification of blood product arrival in the trauma bay. Each PDSA cycle was iteratively tested with ISS prior to implementation into clinical care. Outcome measure was the mean TTBD for trauma patients requiring MTP (in minutes, standard deviation [SD]). Process measures included time to MTP activation and porter transport times. Balancing measures included stakeholder satisfaction. **Evaluation/Results:** Our baseline TTBD for MTP patients was 11.58min (n = 41, SD 6.8). There were 54 trauma patients that had MTP during the ISS-based QI initiative, and their mean TTBD was 10.44min (SD 6.1). The TTBD after the QI initiative was 9.12min, sustained over 1 year (n = 50, SD 5.3; 21.2% relative reduction, p < 0.05). A run chart did not show special cause variation chronologically related to our interventions. Patients in each group were similar in demographic data, trauma characteristics and injury severity score. **Discussion/Impact:** We achieved a 21.2% reduction in TTBD for trauma patients requiring MTP with an ISS-based QI initiative. ISS represents a novel approach to the identification and iterative testing of process improvements within trauma care. This methodology can and

should be included in QI projects in order to safely test and improve processes of care before they impact real patients.

Keywords: in situ simulation, mass transfusion protocol, quality improvement and patient safety

LO91

Urinary tract infections in the paediatric emergency department: A quality improvement initiative to promote diagnostic and antimicrobial stewardship

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Background: Urinary tract infection (UTI) is a common diagnosis in children presenting to the Emergency Department (ED) and often leads to empiric antibiotic treatment prior to culture results. A recent study at our centre found that 47% of children diagnosed with a UTI and discharged on antibiotics had a negative urine culture. None of these patients were notified of the negative result or to discontinue antimicrobial treatment. **Aim Statement:** The aim of this study was to improve UTI diagnostic accuracy by 50% while promoting antimicrobial stewardship through timely antibiotic discontinuation and standardized antimicrobial treatment for uncomplicated UTIs over the next 12 months. **Measures & Design**: Three interventions were developed using plan-do-study-act (PDSA) cycles. In collaboration with the hospital's Choosing Wisely campaign and antimicrobial stewardship program, an evidence-based empiric UTI diagnostic algorithm was created to aid with diagnostic decision-making and reduce practice variation. A daily call-back system was also implemented for urine cultures where patients who had a negative urine culture were contacted to stop antibiotics. Lastly, a practice alert was integrated in the EMR as a reminder of appropriate antimicrobial prescription duration. The main outcome measures were the percentage of inappropriately diagnosed UTIs and percentage with timely antimicrobial discontinuation. Process measures included antibiotic days saved, treatment duration, and physician adherence to the algorithm. As a balancing measure, positive urine cultures were reviewed to assess accuracy of the algorithm to detect UTIs and potential harm from delayed UTI diagnoses. **Evaluation/Results:** Early results from the 530 children included in the analysis demonstrated a 14% reduction in inappropriate UTI diagnoses. With the initiation of the call-back system, the antibiotic days saved increased from 0 to 495 days. Call-backs for negative cultures increased from 0% to 68% of the time. Of those positive cultures with a missed UTI diagnosis, only 5 patients in 5 months had a return visit within 72 hours and none required admission. **Discussion/Impact:** Appropriate diagnosis and treatment of UTIs in our ED has improved with the implementation of a diagnostic algorithm. A larger impact is anticipated once the algorithm is embedded in the EMR as a form of decision support, but these changes take time to implement. Although labour intensive, the call-back system has greatly impacted the antimicrobial days saved and reduced risk for harm in this population.

Keywords: antimicrobial stewardship, emergency medicine, quality improvement and patient safety

LO92

Improving patient communication in an emergency department's rapid assessment zone

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Background: Emergency Department (ED) communication between patients and clinicians is fraught with challenges. A local survey of 65 ED patients revealed low patient satisfaction with ED communication and resultant patient anxiety. **Aim Statement:** To increase patient satisfaction with ED communication and to decrease patient anxiety related to lack of ED visit information (primary aims), and to decrease clinician-perceived patient interruptions (secondary aim), each by one point on a 5-point Likert scale over a six-month period. **Measures & Design**: We performed wide stakeholder engagement, surveyed patients and clinicians, and conducted a patient focus group. An inductive analysis followed by a yield-feasibility-effort grid led to three interventions, introduced through sequential and additive Plan-Do-Study-Act (PDSA) cycles. PDSA 1: clinician communication tool (Acknowledge-Empathize-Inform [AEI] tool), based on survey themes and a literature review, and introduced through a multi-modal education approach. PDSA 2: patient information pamphlets developed with stakeholder input. PDSA 3: new waiting room TV screen with various informational ED-specific videos. Measures were conducted through anonymous surveys: Primary aims towards the end of the patient ED stay, and the secondary aim at the end of the clinician shift. We used Statistical Process Control (SPC) charts with usual special cause variation rules. Two-tailed Mann-Whitney tests were used to assess for statistical significance between means (significance: $p < 0.05$). **Evaluation/Results:** Over five months, 232 patient and 104 clinician surveys were collected. Wait times, ED processes, timing of typical steps, and directions were reported as the most important communication gaps, they and were included in the interventions. Patient satisfaction improved from 3.28 (5 being best, all means; n = 65) to 4.15 (n = 59, p < 0.0001). Patient anxiety improved from 2.96 (1 being best; n = 65) to 2.31 (n = 59, p < 0.01). Clinician-perceived interruptions went from 4.33 (1 being best; n = 30) to 4.18 (n = 11, p = 0.98). SPC charts using Likert scales did not show special cause variation. **Discussion/Impact:** A sequential, additive approach undertaken with pragmatic and low-cost interventions based on both clinician and patient input led to increased patient satisfaction with communication and decreased patient anxiety due to lack of ED visit information after PDSA cycles. These approaches could easily be replicated in other EDs to improve the patient experience.

Keywords: communication, emergency department, quality improvement and patient safety

LO93

Implementation of sepsis order sets to decrease the time to antibiotics in the emergency department: a quality improvement initiative

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Background: Sepsis is a life-threatening syndrome, and delays to appropriate antibiotic therapy increases mortality. Order sets have shown decrease in time to antibiotics in pneumonia, and in sepsis, the implementation of order sets resulted in more intravenous fluids, appropriate initial antibiotics and lower mortality. **Aim Statement:** The goal was to create an order set for an approach to septic patients, to improve sepsis management. We sought to improve time from triage to first antibiotics, by 15 minutes, for Emergency Department (ED) patients with sepsis in three months after implementation compared to three months before. **Measures & Design**: We used a literature review, as well as comparison to existing order sets at other EDs to design our initial order set. We underwent multiple revisions based on