in determining its construct validity is to evaluate the use of the UCAT in a multi-centered examination setting.
Keywords: assessment, innovations in EM education, ultrasound

LO86

Improving time to analgesia administration for musculoskeletal injuries in the emergency department.

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Background: Greater than 80% of patient visits to emergency departments (EDs) are for a pain-related concerns. Approximately 38,000 patients per year have such complaints in our academic hospital ED. 3,300 (8.6%) of those visits are for musculoskeletal (MSK) pain (i.e. back or extremity injury/pain), which are typically triaged as low-acuity presentations, leading to longer times to clinician assessment. Delays to adequate analgesia result in unnecessary suffering, worse patient care and satisfaction, and increased patient complaints. **Aim Statement:** We aimed to reduce the time-to-analgesia (TTA; time from patient triage to receipt of analgesia) for patients with MSK pain in our ED by 55% (to under 60 minutes) in 9 months' time (May 2018). **Measures & Design**: Our outcome measures were TTA (in minutes) and ED length of stay (LOS; in minutes). Process measures included nurses' use of medical directive and rate of analgesia administration. Balancing measures included patient adverse events and time spent triaging for nurses. We utilized weekly data capture for the Statistical Process Control (SPC) chart, and we used Mann-Whitney U test for our before-and-after evaluation. Utilizing the Model for Improvement, we performed wide stakeholder engagement and root cause analyses, and we created a Pareto chart. This led to our Plan-Do-Study-Act (PDSA) cycles: 1) nurse-initiated analgesia (NIA) at triage; 2) new triage documentation aid for medication administration; 3) quick reference medical directive badge tag for nurses; 4) weekly targeted feedback of the project's progress at clinical team huddle. **Evaluation/Results:** TTA decrease from 129 minutes ($n = 153$) to 100 minutes (22.5%; $n = 87$, $p < 0.05$). ED LOS decreased from 580 minutes ($n = 361$) to 519 minutes (10.5%; $n = 187$; $p = 0.77$). Special cause variation was identified on the ED LOS SPC chart with eight consecutive points below the midline, after PDSA 1. The number of patients who received any analgesia increased from 42% ($n = 361$) to 47% ($n = 187$; $p = 0.13$). The number of patients who received medications via medical directives increased from 22% ($n = 150$) to 44% ($n = 87$; $p < 0.001$). Balancing measures were unchanged. **Discussion/Impact:** The significant reduction in the TTA and increase in the use of medical directives in the before-and-after analyses were likely due to our front-line focused improvements and deliberate nursing engagement. With continued success and sustainable processes, we are planning to spread our project to other EDs and broaden our initiative to all pain-related concerns.
Keywords: analgesia, pain management, quality improvement and patient safety

LO87

Impact of an evidence-based clinical pathway for suspected renal colic in low-risk patients with previous nephrolithiasis on CT utilization and emergency department throughput

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Background: Choosing Wisely (CW) recommends patients under age 50 with uncomplicated, recurrent renal colic do not require CT scans. Despite this, CT use has risen dramatically in the past two decades, resulting in unnecessary radiation, cost and prolonged length of stay (LOS). Additionally, a common alternative – formal ultrasound (US) – is not always available. Returning for US can add 10 hours to LOS. We introduced a clinical management pathway (CMP) for low-risk patients with renal colic utilizing point-of-care ultrasound (POCUS) and evaluated its impact on emergency department (ED) CT rates and LOS. **Aim Statement:** By April 2019, we aim to reduce CT utilization by 50% and time from physician initial assessment (PIA) to discharge by 1 hour for patients under age 50 presenting to Sunnybrook ED with uncomplicated, recurrent renal colic. **Measures & Design**: The primary intervention was a CMP developed collaboratively with local urologists. The CMP uses POCUS to assess for hydronephrosis (HN) as a marker of nephrolithiasis. Patients with HN receive follow-up in urology clinic without confirmatory imaging. Patients without HN proceed to usual care. An Ishikawa diagram helped identify barriers to success. Subsequent PDSA cycles included the introduction of reference cards, POCUS workshops and online modules. Outcome measures were ED CT utilization and PIA to discharge times. Process measures were referrals to urology clinic and proportion of patients receiving XR, US and no imaging. Balancing measures were urology CT utilization, alternate diagnoses and return ED visits. Data was plotted on a run chart. **Evaluation/Results:** Data collection is ongoing and will conclude by April 2019. Interim data shows patients enrolled in the CMP have a reduction in mean PIA-to-discharge time of 173 minutes. Fidelity – specifically, the willingness of ED physicians to use POCUS compared to the ease of ordering CTs – is the biggest challenge to success. **Discussion/Impact:** This study addresses the feasibility of CW recommendations and utilizes POCUS as a tool for recurrent renal colic. Collaboration with Urology will provide insight into the CMP's sustainability and downstream impact. Reduction of unnecessary CTs will lead to improved patient safety and reduced costs. Decreased PIA-to-discharge times will reduce overcrowding, shorten wait times and improve access to imaging for other patients. Finally, this project may encourage use of POCUS for low-risk patients with renal colic.
Keywords: point-of-care ultrasound, quality improvement and patient safety, renal colic

LO88

Reducing urine culture testing in the emergency department

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Background: The Choosing Wisely campaign aims to reduce unnecessary testing. Over testing for urinary tract infections and concomitant overtreatment of asymptomatic bacteriuria is a target of this campaign, aiming to decrease healthcare costs and the risks of side effects such as Clostridium difficile infection, adverse reactions, and antimicrobial resistance. During the study baseline (2017), 95 urine cultures (UC) were sent for every 1000 ED visits (9.5%). Of these, fewer than 20% were positive. **Aim Statement:** The aim of this improvement initiative was to reduce UC testing in the ED, by 50%, from a baseline average of nearly 100 cultures per 1000 ED patients visits, to 50 cultures per 1000 visits, by May 31st, 2018. **Measures & Design**: This was an interrupted time series study, analyzed using Statistical Process Control (SPC) methodology. Root

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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. **Evalution/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

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