Knowledge translation strategies should dispel caregiver misconceptions, and highlight the impact of pain on children and the importance of analgesia at home.

Keywords: pain management, analgesia, knowledge translation

LO057

Association between metoclopramide treatment in the ED for concussion and persistent post-concussion headaches: a propensity score matching analysis

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Introduction: There is a paucity of pediatric literature regarding effective treatment for post-concussion headache. The objective of this study was to assess whether metoclopramide treatment in the Emergency Department (ED) within 48 hours of injury was associated with reduced persistent headache symptoms post-concussion at 1-week and 1-month post-injury. **Methods:** Children aged 8-18 years with acute concussion were enrolled across 9 EDs of the Pediatric Emergency Research Canada network in a prospective cohort study [Predicting and Preventing Post-concussive Problems in Paediatrics (5P)] from August 2013 to June 2015. Treatments administered in ED (including metoclopramide) were collected using standardized forms. Self-report symptom questionnaires were rated at baseline, at 7 and 28 days follow-up using the validated Post-Concussion Symptom Inventory (PCSI). Propensity scores for treatment with metoclopramide were calculated using a multivariate logistic regression model including confounders. Intervention and control groups were matched 1:4 on the logit of the propensity scores using a greedy algorithm and nearest-neighbour approach. The primary outcome was headache persistence at one-month. **Results:** 2095 patients met inclusion criteria and completed baseline assessment. At 1 and 4 weeks respectively, 54% (963/1808) and 26% (456/1780) of participants completing follow-up had persistent headache symptoms. 50 metoclopramide treated participants were propensity score matched to 234 controls (1:4 matching). At 4 weeks, no statistically significant difference in persistent headache symptoms was observed between the treatment and propensity score matched control groups (OR: 0.67; 95% CI: 0.33-1.36, p = 0.26). There was also no statistically significant difference between the groups at 1-week post-concussion (OR 0.58; 95% CI: 0.32-1.05, p = 0.07). **Conclusion:** This secondary analysis was unable to detect a statistically significant association between acute ED treatment with metoclopramide and reduced medium and long-term headache symptoms post-concussion. Nevertheless, the 1-week results hold promise, but require a well-powered RCT to fully address confounding issues to determine the benefit of metoclopramide post-concussion.

Keywords: concussion, headache, propensity analysis

LO058

Reducing unnecessary coagulation studies in suspected cardiac chest pain patients

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Introduction: In light of escalating health care costs, initiatives such as Choosing Wisely have been advocating the need to "reduce unnecessary or wasteful medical tests, treatments and procedures". We have identified coagulation studies as one of those low cost, but frequently ordered items, where we can decrease unnecessary testing and costs by leveraging our Computerized Practitioner Order Entry (CPOE). Considerable evidence exists to suggest a low yield of doing coagulation studies (herein defined as PTT AND INR's) in suspected cardiac chest pain patients (SCCP). **Methods:** Using administrative data merged with CPOE we extracted data 90 days pre- and 90 post-intervention (Pre-intervention: May 20, 2015 to August 19th 2015, Post-intervention: August 20th, 2015 to November 18th 2015). The setting for the study is a large urban center (4 adult ED's with an annual census of over 320,000 visits per year). Our CPOE system is fully integrated into the ED patient care. The intervention involved modifying the nursing CPOE to remove the pre-selected coagulation studies in SCCP and providing education around appropriate usage of coagulation studies. Patients were included in the study if the bedside nurse or physician felt 1. the chest pain may be cardiac in nature and 2. Labs were ordered. The primary outcome was to compare the number of coagulation studies ordered pre and post-intervention. **Results:** Our analysis included 10,776 patients that were included in an SCCP pathway as determined by the CPOE database. Total number of visits in these two phases were similar (73,551 pre and 72, 769 post). In the pre-intervention phase, 5255 coagulation studies were done (4246 ordered by nursing staff and 1009 studies ordered by ED physicians). In the post-intervention phase, 1464 coagulation studies were ordered (1211 by nursing staff and 253 additional tests were ordered by ED physicians). With our intervention, we identified a net reduction of 3791 coagulation studies in our post-intervention phase for a reduction of 72.14% reduction (p = <0.0001) At a cost of 15.00$ (CDN$ at our center), we would realize an estimated cost -savings of 56,865$ for this intervention over a 90 day period. **Conclusion:** We have implemented a simple, sustainable, evidence based intervention that significantly minimizes the use of unnecessary coagulation studies in patients presenting with SCCP.

Keywords: chest pain, coagulation, decision support

LO059

CT head scans yield no relevant findings in patients presenting to the emergency department with bizarre behavior

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Introduction: The standard approach between Emergency Departments (EDs) and Psychiatric Emergency Services is to medically "clear" a stable patient of organic pathology prior to psychiatric consultation. Medical clearance involves neuroimaging, typically in the form of a computed tomography (CT) head scan. This study examines the clinical impact of ordering CT head scans for patients presenting with bizarre behaviour. **Methods:** A 5-year retrospective chart review was conducted at 3 academic, urban ED sites. Inclusion criteria were patients ≥18 years of age triaged as "mental health - bizarre behavior" (defined as deviating from normal cognitive behaviour with no obvious cause) with a CT head scan ordered while under the care of the ED. Exclusion criteria were focal neurologic deficits on exam, alternative medical etiology (i.e. delirium, trauma) and/or pre-existing CNS disease. Demographic, administrative, and neuroimaging data were extracted with 10% of charts independently reviewed by a staff Emergency Physician for inter-rater reliability. **Results:** 270 cases met study criteria. CT results were unavailable in 3, leaving 267 cases studied. The population demographics were: 49% percent female, average age 51 years old, 28% homeless, 59% arrived by police and/or ambulance. CT head results demonstrated 1 (0.4%) case with possible acute findings on CT. 108 (40%) had incidental findings (i.e. cerebral atrophy, small hypodensities), none of which impacted clinical management. Average time to physician assessment was 1 hour 58 minutes (sd 1:17) and time

to CT head completion was 6 hours 50 minutes (sd 7:20) leaving an average of 4 hours 52 minutes awaiting these results. Ultimately 86% of patients were referred to a consultant of which 92% were to Psychiatry. **Conclusion:** This study of CT head scans for bizarre behavior ED presentations showed that the CT results did not change the clinical management of the patient. Furthermore, awaiting these results prolonged ED length of stay and delayed patient disposition. A prospective trial of a clinical decision tool for ordering CT head scans in these patients is warranted.

Keywords: neuroimaging, medical clearance, emergency department

LO060

Diagnostic and prognostic value of hydronephrosis in emergency department patients with acute renal colic

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Introduction: Hydronephrosis is a marker of stone-related ureteral obstruction. Our objective was to assess the diagnostic and prognostic value of hydronephrosis in ED patients with renal colic. **Methods:** We used an administrative database to identify all renal colic patients seen in Calgary's four EDs in 2014. Research assistants reviewed imaging reports to identify proven ureteral stones, and to document hydronephrosis and stone size. Surgical interventions, ED and hospital visits within 60-days were collated from all regional hospitals. The primary outcome was sensitivity and specificity of hydronephrosis (moderate or severe) for detecting stones >5mm. We also assessed the association of hydronephrosis with index admission-intervention, and with outcomes at 7 and 60 days. **Results:** In 2014, 1828 patients had a confirmed ureteral stone plus assessment of hydronephrosis and stone size (1714 CT, 114 US). Hydronephrosis was absent, mild, moderate or severe in 15%, 47%, 34% and 4% of patients respectively. Median stone size was 4.0, 4.0, 5.0 and 7.0mm for patients in these categories. Mild, moderate and severe hydronephrosis were highly associated with admission (OR = 2.0, 4.6, 9.8; p < 0.001) and index visit surgical intervention (OR = 2.1, 3.7, 6.0; p < 0.001). The presence of moderate-severe hydronephrosis was 54.7% sensitive and 65.4% specific for stones > 5mm, with positive and negative predictive values of 51% and 74.2%. Of 1828 patients, 748 had an index visit surgical procedure and 1080 were discharged with medical management. In the latter group, hydronephrosis was absent, mild, moderate or severe in 20%, 50%, 27% and 3%. Corresponding median (IQR) stone size was 3.0, 4.0, 4.0 and 5.0mm. Of 1080 medically managed patients, 19% and 25% had an unscheduled ED revisit by 14 and 60 days, 9% and 10% were hospitalized by 7 and 60 days, and 13% had a rescue procedure within 60 days. In the medically managed group, degree of hydronephrosis had no statistical association with any outcomes at 7 or 60 days. **Conclusion:** Hydronephrosis has poor sensitivity, specificity and predictive value for stones > 5mm. Degree of hydronephrosis is highly associated with MD decisions for admission and intervention, but not associated with patient outcomes in the absence of these decisions. Despite poor diagnostic and prognostic performance, hydronephrosis is likely guiding critical early management decisions.

Keywords: hydronephrosis, renal colic, diagnosis

LO061

Variation in emergency department use of computed tomography for investigation of acute aortic dissection

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Introduction: Acute aortic dissection (AAD) is a life threatening condition making early diagnosis critical. Although 90% present with acute pain, the myriad of associated symptoms can make investigation and diagnosis a challenge. Our objectives were to assess emergency physician use of CT, yield of CT and ordering variation among physicians in patients presenting with pain for diagnosis of AAD. **Methods:** This historical cohort study of consecutive adult patients presenting to two tertiary academic care EDs over one calendar year included patients with a primary complaint of non-traumatic chest, back, abdominal or flank pain. Patients were excluded if clear diagnosis was made by basic investigations or exam. Primary outcome was rate of CT Thorax or Thorax/Abdomen ordered to rule out AAD as per clinical indication on diagnostic requisition. Secondary outcome was variation in CT ordering. Variation was measured with; Cochrane q test for homogeneity, proportion of positive CT's (z-test) and mean CT's (t test) ordered between high (>5CT/yr) and low (<5CT/yr) test users. Sample size of 6 per group was calculated based on an expected delta in mean CT ordered of 5 and a within group SD of 3. **Results:** 31,201 patients presented with chest, abdominal, back, flank pain during the study period. 8,472 were excluded based on a diagnosis made by clinical exam or basic investigations. 22,776 were included (Mean 47years SD 18.5yrs 56.2% Female). Most common diagnoses; Chest pain NYD (23.3%), Abdominal pain NYD(20.8%), Lower back pain NYD(10.5%), Renal Colic (5.3%), ACS (2.9%). CT was ordered to rule out AAD in 175 (0.7%) (Mean 62 years SD 16.5, 50.6% Female). Only 4(2.3%) were found to have an AAD. There was significant variation (range 0.6-12% Q test P < 0.027) between proportion of CT's ordered by physicians. Between high (Mean 7.9 n = 10 AAD = 2) and low test users (Mean 2.3 n = 41 AAD = 2), there was significant difference in mean number of CT's ordered (p < 0.001) but no difference in number of AAD found (p < 0.2). No AAD were missed. **Conclusion:** Current rate of imaging for aortic dissection is appropriately low but inefficient, with 98% of advanced imaging negative. There is significant variation in physician CT ordering (almost 20-fold) without an increase in diagnosis. These findings suggest great potential for more standardized and efficient use of CT for the diagnosis of AAD.

Keywords: aortic dissection, imaging, variation

LO062

Ultrasound-assisted distal radius fracture reduction

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Introduction: Closed reduction of distal radius fractures (CRDRF) is a commonly performed emergency department (ED) procedure. The use of Point-of-care ultrasound (POCUS) to diagnose fractures and guide reduction has previously been described. The primary objective for this study was to determine if the addition of PoCUS to CRDRF changed the perception of successful initial reduction. This was measured by the rate of further reduction attempts based on POCUS following the initial clinical determination of achievement of best possible reduction. **Methods:** We performed a multicenter prospective cohort study, using a convenience sample of adult ED patients presenting with a distal radius fracture to 5 Canadian EDs. All study physicians underwent standardized PoCUS training for fractures. Standard clinically guided best possible fracture reduction was initially performed. PoCUS was then used to assess the reduction adequacy. Repeat reduction was performed if deemed indicated. A post-reduction radiograph was then performed. Clinician impression of reduction adequacy was scored on a 5 point Likert scale following the initial clinically guided reduction, and