

not cause a significant change. The total number of pages to RR (a measure of workflow disruption) decreased significantly on the WDs (23 vs 19 pages, $p=0.0011$), but not on WE (79 vs 75 pages, $p=0.1663$). However when adjusting for number of scans ordered, there was a decrease in paging rates (0.73 vs 0.54 pages per scan ordered on WD [$p<0.00005$], 3.24 vs 2.63 pages per scan ordered on WE [$p=0.0012$]). **Discussion/Impact:** Our intervention led to improved work satisfaction and perceived efficiency experienced by both EPs and RRs. It did not statistically significantly affect imaging turnaround times or utilization rates. Our project shows that calling for preapproval of imaging studies does not seem to provide any benefit in our setting.

Keywords: computerized provider order entry, quality improvement and patient safety, workflow optimization

P122

The evaluation of various point of care ultrasound features in Stanford type A aortic dissections

T. Chiang, MD, BMLSc, G. Puri, BSc, MD, University of Toronto, Toronto, ON

Introduction: Type A aortic dissection (AD) is one of the most lethal diseases in medicine. Its mortality rate increases 1-2% per hour from the onset of symptoms to treatment. Timely diagnoses of ADs, therefore, are crucial to improve survival and decrease morbidity. There are various proposed clinical guidelines to help emergency physicians decide when a CTA is urgently needed with most widely quoted being the validated Aortic Dissection Detection Risk Score (ADD-RS) recommended by the American Heart Association. The addition of D-Dimer for further risk stratification has also been entertained. A recent article published in the American Journal of Emergency recommends using point of care ultrasound (POCUS) to expedite diagnosis. With the rising use of POCUS in the emergency department, it can be the missing link to timely AD diagnoses. This project aims to elucidate the prevalence of positive POCUS findings (pericardial effusion and dilated aortic root) in type A AD via a retrospective chart review. **Methods:** This study is a retrospective chart review of 200 patients with the diagnosis of AD treated at Southlake Regional Hospital. We included patients diagnosed with type A AD and excluded those diagnosed with type B AD. We collected data on their demographics, ADD-RS scores, investigation results, treatments, and clinical outcomes. The main focus of the chart review was on the presence of pericardial effusion or dilated aortic root on echocardiograms. Binomial statistical analysis was used to analyze the collected data. **Results:** We identified 126 patients with type A AD out of 200 charts reviewed. Thirteen (14% CI 8-23%, $n=93$ $p=0.05$) had wide mediastinum on their chest X-rays; twenty (95% CI 75-100%, $n=21$ $P=0.05$) had elevated D-dimer levels; and ninety-one (72% CI 64-80%, $n=126$ $p=0.05$) had positive ADD-RS. Only 88 out of 126 AD cases had documented echocardiograms. Sixty-eight (77% CI 67-86%, $n=88$ $p=0.05$) had either pericardial effusions or dilated aortic roots on their echocardiograms. Eighty-one (92% CI 84-95%, $n=88$ $p=0.05$) had either positive ADD-RS or positive echocardiogram findings, which is 20 (23% CI 14-33%, $n=88$ $P=0.05$) more cases than ADD-RS would have picked up alone. **Conclusion:** The absence of both pericardial effusion and dilated aortic root on echocardiogram in combination with a negative ADD-RS has a high sensitivity for ruling out type A AD. Our data support further research into the use of POCUS to expedite the diagnosis of type A AD in the emergency department.

Keywords: aortic dissection, diagnosis, point-of-care ultrasound

P123

Emergency department utilization by patients with advanced chronic kidney disease and dialysis: A population based study

R. Chhibba, BSc, MD, S. Leon, MD, MSc, C. Rigatto, MD, MSc, T. Ferguson, MSc, P. Komenda, MD, N. Tangri, MD, PhD, University of Manitoba, Winnipeg, MB

Introduction: Chronic Kidney Disease (CKD) is a potent risk factor for kidney failure, cardiovascular events and all cause hospitalizations. In addition to higher outpatient resource use, patients with CKD may present more frequently to the emergency department (ED) and may be more likely to be admitted for hospitalization. In Manitoba, we previously demonstrated an 8-fold increase in the frequency of ED presentations by patients on dialysis as compared to a non-dialysis population. Comparable data on ED visits remain sparse for patients with CKD G3-G5, not on dialysis. Here, we aim to describe the frequency of ED visits and highlight differences in reasons for visit in patients with CKD stages G3-G5 and those on dialysis when compared to a non-CKD population. **Methods:** We performed a retrospective cohort study using administrative health data from the Winnipeg Regional Health Authority, Canada. We included all adults (≥ 18 years) with CKD stages G3-G5 and patients undergoing dialysis between January 1st, 2010 and December 31, 2014. Secular trends in the rates of ED visits were calculated for those with CKD, those on dialysis and in the non-CKD population. **Results:** Over the study period, patients undergoing dialysis had the highest incidence of ED visits, followed by patients with CKD and those with normal kidney function (150 vs 106 vs 34 per 100 persons per year respectively). These rates were stable over the period studied. Among the non-CKD population, the most common reasons for an ED visit were musculoskeletal complaints (25.6%), followed by gastrointestinal (11.04%) and cardiovascular complaints (10.26%). In the CKD and dialysis cohort, ED visits were more commonly secondary to cardiovascular complaints (21.54% and 18.99% respectively), followed by respiratory and gastrointestinal complaints. Admission to hospital was higher in CKD and dialysis populations than in the non-CKD population (29.56%, 26.07% vs 10.61%, respectively). **Conclusion:** Patients with CKD present frequently to the ED, and are often admitted after presentation. Cardiovascular and respiratory complaints are more common in the CKD population when compared to the general population.

Keywords: chronic kidney disease, dialysis, glomerular filtration rate

P125

Low dose intravenous ketorolac in renal colic, a pilot randomized controlled trial

J. Chao, BSc, MD, MSc, P. Brasher, PhD, K. Cheung, MD, MPH, R. Sharma, MD, BSFN, K. Badke, BScPharm, PharmD, C. Hohl, BSc, MDCM, MHSc, University of British Columbia, Vancouver, BC

Introduction: Non-steroidal anti-inflammatory drugs (NSAIDs) are first-line analgesics for emergency department (ED) patients with renal colic. Lower doses of intravenous (IV) ketorolac may provide similar pain relief to standard dosing in patients with acute pain. Patients with renal colic may be at increased risk of acute kidney injury; exposing them to lower doses of NSAIDs may put them at lower risk while providing equally effective analgesia. We conducted a pilot study to determine the feasibility of a randomized trial

comparing the effectiveness and safety of low with standard ketorolac dosing in ED patients with suspected renal colic. The primary objective was to demonstrate the ability to achieve an enrolment target of 2 patients per week. **Methods:** We enrolled a convenience sample of adults presenting to an academic urban ED with unilateral flank pain suspected to be renal colic. We randomized patients to 10 mg (low dose, intervention) or 30 mg (standard dose, control). Participants, treating physicians and nurses, and researchers were blinded to treatment allocation. Our main feasibility outcome was the recruitment rate. Secondary outcomes were changes in pain scores (0-10) at 30 and 120 minutes post-ketorolac administration, vital signs, adverse events and ED length of stay. **Results:** We approached 82 patients, of whom 47 (57.3%) were eligible. Of these, 36 consented to participating and 30 were randomized. The proportion of screened patients who were enrolled was 36.6% (30/82). We completed enrolment over a 21-week period, with an average recruitment rate of 1.5 patients/week (range 0-4). The average baseline pain score for all participants was 6.9 (SD = 2.1). At 30 minutes post-ketorolac administration, the low dose group had a mean pain reduction of 2.0 points compared to a pain reduction of 1.7 in standard dose group (difference = 0.3, 90% CI: -0.7 to 1.4). **Conclusion:** These preliminary results support the possibility that low dose ketorolac may be efficacious in this patient population. We did not meet our target recruitment of 2 patients per week as this was primarily due to restricted recruitment hours. To successfully conduct a larger trial, we would need to expand both recruitment hours and the number of sites.

Keywords: ketorolac, pain control, renal colic

P126

Utilization and outcomes of children presenting to an emergency department by ambulance

Z. Cantor, BA, M. Aglipay, MSc, A. Plint, MD, MSc, Children's Hospital of Eastern Ontario, Ottawa, ON

Introduction: Children account for a low proportion of paramedic transports. Evidence suggests that many pediatric transports are of low acuity, but there are few studies comparing these patients to those that self-present to the ED. Our primary objective was to determine if illness severity was associated with presentation by ambulance among pediatric patients. **Methods:** We undertook a single centre, retrospective cohort study at a tertiary care pediatric centre. All patients presenting to the ED in 2015 by any route other than air ambulance were eligible. Patients were divided into two groups based on the route of presentation – ambulance or self-presentation. The primary outcome was disposition decision; the secondary outcome was CTAS level. To determine whether patient discharge disposition or CTAS was associated with the method of arrival, we conducted generalized estimating equations (GEE) to account for correlation within patients with multiple ED visits. **Results:** Of the 69,092 visits, 69,034 were eligible and analyzed. Of those, 4478 (6.5%) arrived by ambulance, while 64,556 (93.5%) self-presented. Those arriving by ambulance had a median age of 10 years [IQR: 2-5 years] vs. 4 years [IQR: 1.75-10 years] in the self-presenting group and were 52.6% male (vs. 52.8%). Two percent of the ambulance cohort were admitted to the ICU (vs. 0.2%), and 16.6% were admitted to the ward (vs. 5%). Patients presenting by ambulance had higher CTAS scores – 5.3% CTAS 1 (vs. 0.3%), 16.4% CTAS 2 (vs. 7.0%), 61.2% CTAS 3 (vs. 45.8%), and 17.1% CTAS 4-5 (vs. 46.9%). The odds of arriving by ambulance were 10.2 x higher for patients admitted to the ICU (OR = 10.2, 95%CI: 7.9 to 13.3) vs.

those discharged home. The odds of arriving by ambulance were 64.2 x (OR = 64.2, 95% CI: 48.6 to 84.7) higher for patients CTAS 1 patients vs. CTAS 5 patients. The top 3 complaints among ambulance patients were neurological (22.5%), respiratory (22.7%), and orthopaedic (11.3%). Among self-presenting patients, the top three were general/minor (20.4%), respiratory (16.4%), and gastrointestinal (14.3%). **Conclusion:** Children presenting to the ED via ambulance are at higher risk for admission to the ward and critical care unit. It is important that paramedics have sufficient training to ensure adequate skills to manage critically ill children. Given the low proportion but higher severity of illness of pediatric transports, further research and consideration must be given to how best to enable paramedics in the management of children.

Keywords: emergency medical services, paediatrics, prehospital

P128

Emergency physician efficiency benchmarking and diagnostic imaging use

S. Weerasinghe, PhD, N. Chandratilleke, BSc, S. Campbell, MBChB, Dalhousie, Halifax, NS

Introduction: As part of our audit and feedback process, Emergency Physicians (EP) are provided feedback on flow metrics and resource utilization. We analysed the relationship between two specific metrics (adjusted workload measurement (AWM), with the number of patients seen per hour adjusted according to CTAS, and percentage of revisits within 72 hours and diagnostic imaging use. Unfortunately, we are unable to evaluate quality of care, nor appropriateness of DI indication at this stage. **Methods:** We used data from 86 physicians at an academic ED, from June 1, 2015 to May 31, 2017. The Data Envelope Analysis (DEA) model incorporated performance quality measures as outputs and efficiency measures as inputs. DEA is a method widely used in physician performance analysis. The method provides a score (optimal performance efficiency-OPE) for each EP based on maximization of the performance (AWM) in proportion to the combination of efficient use of resources, diagnostic imaging (DI). The score was used to regress against demographic characteristics and training. **Results:** The median AWM was 6.8 (quartiles Q1-Q3 = 6.4-7.4) with the median diagnostic imaging use of percentages of CT (median = 10.1, 8.6-11.9), US (median = 4.7, 3.6-5.6) and x-ray (80, 74-84). The EPs who had highest AWM combined with least use of DI (OPE = 100%), provided median AWM of 9.1 (range 8.9-9.7) with percentage CT, US and x-ray medians at 5.8% (range 5.8-6.2), 2.7% (range 2.4-3.6) and 59% (range 59-72). These provided benchmarks for optimal performance indicators. We found statistically significant differences of OPE scores based on gender (men 4.1 times higher, $p < 0.001$) and degree (RCPS < CCFPEM, Other < CCFPEM, $p < 0.001$). Overall AWM diminishes at the rate of 14% (95%CI: 9-20%) for a combination of 100 DI tests ordered. In order to reach the optimal level of performance, to reach an OPE of 100%, the median CT use percentage needs to be reduced by 6% (quartile range 3.9- 7.7%), US by 2.2% (quartile range 1.5-3.4%) and x-rays by 37.2% (quartile range: 26.8-44.3%). Return visit rates were not associated with DI use, possibly due to homogeneity in the percentage of return visits. **Conclusion:** We found significant performance variations in terms of average workload measurement in proportion to the weighted average of diagnostic imaging use, with increased use of DI being associated with decreasing AWM. Percentage of return visits does not appear to be useful as a performance indicator.

Keywords: audit and feedback, diagnostic imaging, efficiency