

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; Cochran 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