

essential to improve outcomes. Both culture proven and clinically suspected SA are thought to have the same prognosis, with similar morbidity and mortality estimates. No clinical exam or serum lab finding has the sensitivity or specificity to diagnose or exclude SA. Instead, diagnosis relies mainly on joint aspiration and synovial fluid analysis. A synovial white blood cell count (sWBC) greater than 50,000 cells/microliter is suggestive of SA and organisms seen on gram stain or growing in culture effectively makes the diagnosis. However, culture and gram stain are positive in only 67% and 50% of cases respectively. The objective of this study was to analyze the accuracy of synovial fluid analysis in our local practice environment. **Methods:** All those encounters with diagnoses related to SA at four adult emergency departments in Calgary between 2013-2014 were reviewed. Hospital records were analyzed for synovial analysis, antibiotic usage and surgical procedures. **Results:** Of 286 encounters, 87 were determined to satisfy the definition for SA in that culture was positive, gram stain was positive or clinical findings lead to treatment with antibiotics and/or surgical intervention. Gram stain was positive in 22% of cases with cultures positive in 51% of patients. sWBC were less than 50000 in 55% of cases and less than 25000 in 24% of cases. Of 88 gram stains performed, 28% were negative but had positive culture. All positive gram stains were associated with positive cultures. **Conclusion:** Culture, gram stain and sWBC of patients diagnosed with SA in Calgary show differences compared with the published literature. In Calgary, the majority of SA diagnoses were made clinically. The sWBC is central to making the diagnosis. Interestingly, 55% of patients diagnosed with SA had a count less than 50,000. It remains unclear what features of history, physical exam, imaging and lab analysis lead to the diagnosis of SA in these cases. Future studies will focus on these outliers to see if a more appropriate diagnostic algorithm would be useful in Calgary. Collaboration between infectious disease specialists, orthopedics, and emergency departments guided by local data is needed to ensure accurate and timely diagnosis.

Keywords: septic arthritis, diagnosis

MP032

Do urine cultures in the emergency department change management of young women with symptoms of uncomplicated urinary tract infection?

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Introduction: Current guidelines do not recommend the routine use of urinary cultures in the management of uncomplicated urinary tract infection (UTI) in premenopausal, non-pregnant women. Complicating factors include atypical presentation, structural abnormalities or recent recurrent infection/antibiotic use. The objective of this study was to determine the number of urine cultures ordered for women who presented to the emergency department (ED) with symptoms of uncomplicated UTI, and whether a culture result impacted subsequent management. **Methods:** This was a retrospective chart review of women aged 18-39 presenting to one of two academic EDs with a discharge diagnosis of uncomplicated UTI from Jan-Dec 2014. Patients were excluded if any of the following were documented: pregnancy, fever, immunocompromised state, diabetes mellitus, absence of lower urinary tract symptoms, ED administration of intravenous antibiotics, a previous UTI treated with antibiotics in the last 90 days, two weeks post-partum or post-instrumentation. **Results:** Of the 512 charts included in the analysis, 494 (96.5%) patients had a urinalysis, of which 463 (93.7%) had positive leukocyte esterase and 90 (18.2%) had positive nitrites. 370 patients (72.3%) had urine cultures performed, of which 236 (63.8%)

were positive. 505 (98.6%) patients received antibiotics (53.9% Macrobid; 22.6% Ciprofloxacin; 15.0% Septra; 6.7% other; 1.8% not documented). 7 (1.9%) cultures grew organisms resistant to the prescribed antibiotic; 2 (0.5%) patients received new prescriptions.

Conclusion: For the majority of young female patients with uncomplicated UTI, urine cultures did not change management. Almost all of these patients had a positive leukocyte esterase and were treated with antibiotics, yet approximately 40% of the patients tested did not return positive urine cultures, suggesting that better algorithms for the diagnosis of UTI in the ED are required. Unnecessary treatment with antibiotics is expensive, contributes to the development of multidrug resistant organisms, and exposes the patient to the unnecessary risks of possible allergic reactions, drug interactions and side effects.

Keywords: urinary tract infection, culture, antibiotic

MP033

The use of femoral nerve blocks in the emergency department for hip fracture patients

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Introduction: Hip fractures affect over 30,000 Canadians each year. Delirium, or acute confusion, occurs in up to 62% of patients following a hip fracture. Delirium substantially increases hospital length of stay and doubles the risk of nursing home admissions and death. Previous studies have shown that regional anesthesia is the optimal pain management strategy for hip fracture patients and has been shown to independently reduce the rate, severity and duration of delirium. However, very few emergency physicians (EPs) have the necessary training and experience to use regional anesthesia for hip fracture in the emergency department (ED). The objective of this study was to determine the number of femoral nerve blocks performed within the ED for the management of hip fracture patients. **Methods:** This was a retrospective chart review of patients aged 65 years and older, presenting to an academic ED (annual census 60,000) with a discharge diagnosis of hip fracture from January 1st 2014 to July 31st 2015. **Results:** Of the 243 hip fractures included in this study, mean (SD) age was 82.9 (8.2) years and 187 (77.0%) were female. The majority (214, 88.1%) of patients arrived to the ED by ambulance and 182 (74.9%) were categorized as CTAS 3. The most common analgesics used in the ED were intravenous (IV) hydromorphone (51.4%), IV morphine (32.1%), or dual therapy with both IV hydromorphone and IV morphine (4.9%). Femoral nerve blocks were initiated for 13 (5.3%) patients and successfully completed in 12 (4.9%) patients in the ED. Median (IQR) ED and hospital length of stay was 5.0 (3.7, 6.6) hours and 6.0 (4.1, 10.2) days, respectively. Forty-three (17.7%) patients experienced in-hospital acute delirium. **Conclusion:** Despite evidence to suggest regional anesthesia may be the optimal pain management strategy for hip fracture patients, the use of femoral nerve blocks in the ED remains low. Future research should attempt to elucidate barriers to use of this procedure by emergency physicians.

Keywords: analgesia, hip fracture, delirium

MP034

What is the diagnostic accuracy of Canadian emergency physicians and cardiologists interpreting potential acute ST-elevation myocardial infarction (STEMI) electrocardiograms?

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Introduction: The accurate interpretation of potential ST-segment elevations on electrocardiograms (ECGs) to diagnose acute myocardial infarction (MI) is a critical competency for emergency physicians (EPs) and cardiologists. There is conflicting evidence on the diagnostic accuracy of EPs and cardiologists interpreting potential STEMI ECGs. **Methods:** We conducted a web-based assessment of the diagnostic accuracy of potential STEMI ECGs of Canadian EPs and cardiologists. They were identified using the membership lists of the Canadian Association of Emergency Physicians and the academic departments of cardiology at Canadian medical schools. When provided with 20 ECGs of confirmed STEMI patients, EPs and cardiologists were asked to provide a binary Yes/No answer to the question, "In a patient with ischemic chest pain, does this ECG represent a STEMI?" EPs and cardiologists were blinded to the correct answers while completing the web-based assessment. Descriptive statistics were used to describe frequencies and counts. Analysis using Rasch Measurement Theory was used to explore the relationship between correct interpretation of ECGs and predictive variables such as age, years in practice or type of practice. **Results:** Two hundred and fifty EPs and 30 cardiologists (n = 280) responded to our survey (total response rate 25%). Average years in practice were 12.5 for EPs (SD 10.6; median 10) and 14.6 for cardiologists (SD 10.6; median 11); 52% of EPs and 93% of cardiologists practiced in an academic setting. Seven of the cardiologists were interventionalists, while 47.6% of EPs and 97% of cardiologists practiced at hospitals with 24-hour catheterization capability. The diagnostic accuracy of EPs for identifying STEMI ECGs was 75% (SD 15%); cardiologists' accuracy was 76% (SD 15.5%). The ability to correctly interpret the ECGs was independent of age, years in practice, or type of practice (community vs academic). **Conclusion:** EPs and cardiologists display similar diagnostic accuracy for interpreting STEMI ECGs, regardless of age, years in practice or type of practice. The findings of our study suggest the need for focused ECG education for both EPs and cardiologists.

Keywords: acute myocardial infarction, electrocardiogram (ECG), diagnostic accuracy

MP035

Point-of-care-ultrasound to diagnose appendicitis in a Canadian emergency department

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Introduction: Appendicitis is a common surgical condition that frequently requires patients to undergo diagnostic imaging. Abdominal computed tomography is the gold standard imaging technique for the diagnosis of appendicitis, but exposes patients to radiation. Ultrasound offers an alternate radiation-free imaging modality for appendicitis. However, the availability of ultrasound during off-hours is limited in many Emergency departments (EDs). Clinician performed point-of-care ultrasound (POCUS) is increasingly used by emergency physicians as a bedside tool to evaluate suspected appendicitis. The purpose of this study is to evaluate the test characteristics of emergency physician performed POCUS to diagnose appendicitis in a Canadian ED. **Methods:** A pragmatic, retrospective chart review was performed on all patients for whom a POCUS was performed to diagnose appendicitis at St. Joseph's Healthcare Hamilton in Ontario from December 1, 2010 to December 4, 2015. All POCUS scans were performed by physicians with Registered Diagnostic Medical Sonographer (RDMS) credentials

or resident physicians undergoing POCUS fellowship training. All scans were over-read by RDMS credentialed faculty and subject to a rigorous quality assurance (QA) process. POCUS findings and patient outcomes were reported. **Results:** A total of 90 patients were included in the study. 24 patients were diagnosed with appendicitis on POCUS. Ultimately, 18 were diagnosed with appendicitis through formal imaging, laparoscopy, and pathology. The sensitivity and specificity for POCUS to diagnose appendicitis was found to be 69.2% (95% CI, 48.1%-84.9%) and 90.6% (95% CI, 80.0%-96.1%) respectively. **Conclusion:** Bedside ultrasound is a reliable imaging modality for ruling in acute appendicitis. In cases where POCUS is negative or indeterminate for appendicitis, further imaging should be obtained as clinical suspicion warrants. The use of POCUS has the potential to reduce patient exposure to ionizing radiation and decrease the costs of obtaining CT scans, while hastening the process of achieving definitive management through earlier surgical consultation.

Keywords: appendicitis, point-of-care-ultrasound (PoCUS), diagnostic imaging

MP036

Trauma Resuscitation Using in-situ Simulation Team Training (TRUST): a novel approach to latent safety threat identification in trauma care

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Introduction: Resuscitation of a trauma patient requires a multi-disciplinary team to perform in a dynamic, high-stakes environment. Error is ubiquitous in trauma care, often related to latent safety threats (LSTs) - previously unrecognized threats that can materialize at any time. In-situ simulation (ISS) allows a team to practice in their authentic environment while providing an opportunistic milieu to explore critical events and uncover LSTs that impact patient safety. **Methods:** At a Canadian Level 1 trauma centre, regular, unannounced trauma ISSs were conducted and video-recorded. A retrospective chart review of adverse events or unexpected deaths informed ISS scenario design. Each session began with a trauma team activation. The on-duty trauma team arrived in the trauma bay and provided care as they would for a real patient. Semi-structured debriefing with participant-driven LST identification and ethnographic observation occurred in real time. A framework analysis using video review was conducted by human factors experts to identify and evaluate LSTs. Feasibility was measured by the impact on ED workflow, interruptions of clinical care and participant feedback. **Results:** Six multidisciplinary, high-fidelity, ISS sessions were conducted and 70 multidisciplinary staff and trainees participated in at least one session. Using a framework analysis, LSTs were identified and categorized into seven themes that relate to clinical tasks, equipment, team communication, and participant workflow. LSTs were quantified and prioritized using a hazard scoring matrix. ISS was effectively implemented during both low and high patient volume situations. No critical interruptions in patient care were identified during ISS sessions and overall participant feedback was positive. **Conclusion:** This novel, multidisciplinary ISS trauma training program integrated risk-informed simulation cases with human factors analysis to identify LSTs. ISS offers an opportunity for an iterative review process of high-risk situations beyond the traditional morbidity and mortality rounds; rather than waiting for an actual case to generate discussion and review, we prophylactically examined critical situations and processes. Findings form a framework for recommendations about improvements in