Introduction: Intra-articular steroid injection (IASI) is commonly used in the emergency department for management of osteoarthritis (OA) symptoms. Hip IASI carries risks, such as avascular necrosis, and there is currently no reliable way to predict long-term response of a patient's OA to IASI. Ultrasound (US) conveniently assesses for active arthropathy by detecting effusion-synovitis, and x-ray (XR) is useful for visualizing bone-related changes. We investigated the extent that a response to hip IASI could be predicted from baseline OA patient clinical and physical features alongside US and XR imaging features. **Methods:** 97 consenting patients with symptomatic hip OA presenting for hip IASI were evaluated at baseline (XR and US) and again 8-weeks after IASI (US only). Self-reported pain (WOMAC), hip range of motion (ROM) were measured at baseline and follow up. On US images we quantified joint effusion and synovial thickening, i.e., "effusion-synovitis", by the bone-capsule distance (BCD) at the apex of the femoral head from outer femoral cortex to outer synovium. On XR, we measured minimum joint space width (cm) and Kellgren-Lawrence (K-L) Grade for osteophytes and sclerotic changes. **Results:** In our 97 patients (43 female) aged 28-87 years (mean $59 +/-13$ years, K-L grades averaged $2.5 +/-1.5$, and US BCD averaged $5.9 +/-2.0$ mm. We performed multiple linear regression using age, sex, BMI, ROM of hip flexion, US BCD, radiographic joint space width and K-L grade against the dependent variable, change in WOMAC pain subscore (R = 0.587, P = 0.002). We compared the response predicted by this model to the actual change in WOMAC pain. At a threshold value of -20% for minimal clinically important difference, 35/97 patients were responders, and a 2x2 table gave 67% overall model predictive accuracy, 61% sensitivity, and 71% specificity. Likelihood ratio for a positive response (LR +) was 2.13. **Conclusion:** Combining radiographic information on structural damage, US information on active arthropathy, and demographics correctly predicted about two-thirds of the patients that would benefit from IASI after 8 weeks. A patient with hip OA that met our model criteria was more than twice as likely to respond to IASI. With further model refinement, effective, personalized evidence-based management of symptomatic hip OA is possible using XR and hip US, which could both be performed during an ER visit.
Keywords: osteoarthritis, injection, imaging

MP07

Office-based family physicians' use of point of care ultrasound for early pregnancy complaints

C. Varner, MD, S.L. McLeod, MSc, S. Hu, MD, E. Bearss, MD, A. Singwi, MD, S. Lee, MD, MSc, B. Borgundvaag, PhD, MD, Mount Sinai Hospital, Toronto, ON

Introduction: In Canada, family physicians (FPs) provide the majority of early pregnancy care. To receive a same day US, most patients will be sent to the emergency department (ED). FPs are starting to use point of care ultrasound (POCUS) for a variety of indications. The FaMOUS course was modeled after the Canadian Emergency Ultrasound Society (CEUS) ED Echo (EDE) curriculum and adapted with permission for FPs. The objective of this study was to assess the indications for POCUS use in early pregnancy and determine the diagnostic accuracy of POCUS performed by FPs following FaMOUS certification to detect intrauterine pregnancy (IUP) and fetal cardiac activity (FCA). **Methods:** This was a prospective, observational study conducted in 3 FP clinics from November 2015 to June 2016. Pregnant women <20 weeks gestational age who underwent a focused, transabdominal POCUS by a FaMOUS-certified FP using a handheld GE VScan were enrolled. FPs documented the presence or absence of IUP and FCA. The reference standard was radiologist-interpreted US performed after the FP POCUS.

FPs were surveyed to assess provider confidence using POCUS and perceived impact on clinical decision-making. **Results:** Of 253 eligible patients, 56 (22.1%) underwent POCUS. Of these, 50 (89.3%) had a radiologist-interpreted US following the office-based FP visit. POCUS was used for the following indications: 11 (19.6%) had vaginal bleeding, 5 (8.9%) had abdominal pain, 7 (12.5%) had both vaginal bleeding and abdominal pain, and the indication for 33 (58.9%) patients was unclear. All patients had a documented IUP, resulting in a sensitivity of 94.0% (95% CI: 83.5%, 98.5%) and 100% positive predictive value. FCA resulted in sensitivity of 82.9% (95% CI: 69.2, 92.4%) and specificity of 100% (95% CI: 29.2%, 100.0%). When surveyed, 100% of FPs were confident performing POCUS and reported POCUS had an overall positive impact on clinical practice. 75% agreed the use of POCUS decreased the need for urgent radiologist-interpreted US. **Conclusion:** Following a certification process modeled after the CEUS EDE curriculum, FPs used POCUS for both CEUS-defined indications and indications that were unclear. FPs trained in early pregnancy POCUS demonstrated excellent diagnostic accuracy identifying IUP and FCA. Future study should assess the clinical impact of office-based POCUS, including whether its use results in decreased ED visits for this patient population.
Keywords: point of care ultrasound, first trimester, women's health

MP08

What's the plan?: Improving ED patient discharge communication through patient-centred discharge handouts

J.N. Hall, MD, MSc, MPH, J.P. Graham, BSc(Hons), MSc, M. McGowan, MHK, A.H. Cheng, MD, MBA, University of Toronto, Toronto, ON

Introduction: Discharge from the Emergency Department (ED) is a high-risk period for communication failures. Clear verbal and written discharge instructions at patient-level health literacy are fundamental to a safe discharge process. As part of a hospital-wide quality initiative to measure and improve discharge processes, and in response to patient feedback, the St. Michael's Hospital ED and patient advisors co-designed and implemented patient-centred discharge handouts. **Methods:** The design and implementation of discharge handouts was based on a collaborative and iterative approach, including stakeholder engagement and patient co-design. Discharge topics were based on the 10 most common historical ED diagnoses. ED patient advisors and the hospital's plain language review team co-designed and edited materials for readability and comprehension. Process mapping of ED workflow identified opportunities for interventions. Multidisciplinary ED stakeholders co-led implementation, including staff education, training and huddles for feedback. Patient telephone surveys to every 25th patient presenting to the ED meeting the study inclusion criteria (16 years of age or older, directly discharged from the ED, speaks English, has a valid telephone number, and has capacity to consent) were conducted both pre- (June-Sept 2016) and post- (Oct-Dec 2016) implementation. **Results:** Stakeholder engagement and co-design took place over 10 months. Education was provided across one MD staff meeting, four RN inservices, and at monthly learner orientation. 44846 patients presented to the ED and 25600 met the study inclusion criteria. 935 surveys (response rate = 97%; declined n = 30) were completed to date. Pre-implementation (n = 467), 9.2% (n = 43) of patients received printed discharge materials and 71% (n = 330) understood symptoms to look for after leaving the ED. Post-implementation (n = 468), 44% (n = 207) of patients received printed discharge materials with 97% (n = 200) finding the handouts helpful and 82% (n = 385) understanding symptoms to look for after leaving the ED. **Conclusion:** Through the introduction of patient

co-designed and patient-centred discharge handouts, we have found a marked improvement in patient understanding, and consequently safer discharge practices. Future efforts will focus on optimizing discharge communication, both verbal and written, tailored to individual patient preferences.

Keywords: emergency department discharge, communication, discharge handouts

MP09

Canadian Community Utilization of Stroke Prevention Pilot Study-Emergency Department (C-CUSP ED)

R. Parkash, MD, MS, K. Magee, MD, MSc, M. McMullen, MD, M.B. Clory, MD, M. D'Astous, MD, M. Robichaud, MD, G. Andolfatto, MD, B. Read, MD, J. Wang, MSc, L. Thabane, PhD, C.L. Atzema, MD, MSc, P. Dorian, MD, MSc, J. Kaczorowski, PhD, D. Banner, PhD, R. Nieuwlaat, PhD, N. Ivers, MD, PhD, T. Huynh, MD, J. Curran, PhD, I. Graham, MD, PhD, S.J. Connolly, MD, J.S. Healey, MD, MSc, Queen Elizabeth II Health Sciences Center, Halifax, NS

Introduction: Atrial fibrillation (AF) is the most common sustained arrhythmia affecting 1-2% of the population. Oral anticoagulation (OAC) reduces stroke risk by 60-80% in AF patients, but only 50% of indicated patients receive OAC. Many patients present to the ED with AF due to arrhythmia symptoms, however; lack of OAC prescription in the ED has been identified as a significant gap in the care of AF patients. **Methods:** This was a multi-center, pragmatic, three-phase before-after study, in three Canadian sites. Patients who presented to the ED with electrocardiographically (ECG) documented, nonvalvular AF and were discharged home were included. Phase 1 was a retrospective chart review to determine OAC prescription of AF patients in each ED; Phase 2 was a low-intensity knowledge translation intervention where a simple OAC-prescription tool for ED physicians with subsequent short-term OAC prescription was used, as well as an AF patient education package and a letter to family physicians; phase 3 incorporated Phase 2 interventions, but added immediate follow-up in a community AF clinic. The **primary** outcome of the study was the rate of new OAC prescriptions at ED discharge in AF patients who were OAC eligible and were not on OAC at presentation. **Results:** A total of 632 patients were included from June, 2015-November, 2016. ED census ranged from 30000-68000 annual visits. Mean age was 71 ± 15, 67 ± 12, 67 ± 13 years, respectively. 47.5% were women, most responsible ED diagnosis was AF in 75.8%. The mean CHA_2DS_2-VASc score was 2.6 ± 1.8, with no difference amongst groups. There were 266 patients eligible for OAC and were not on this at presentation. In this group, the prescription of new OAC was 15.8% in Phase 1 as compared to 54% and 47%, in Phases 2 and 3, respectively. After adjustment for center, components of the CHA_2DS_2-VASc score, prior risk of bleeding and most responsible ED diagnosis, the odds ratio for new OAC prescription was 8.0 (95%CI (3.5,18.3) $p < 0.001$) for Phase 3 vs 1, and 10.0 (95%CI (4.4,22.9) $p < 0.001$), for Phase 2 vs 1). No difference in OAC prescription was seen between Phases 2 and 3. **Conclusion:** Use of a simple OAC-prescription tool was associated with an increase in new OAC prescription in the ED for eligible patients with AF. Further testing in a rigorous study design to assess the effect of this practice on stroke prevention in the AF patients who present to the ED is indicated.

Keywords: atrial fibrillation, oral anticoagulation

MP10

How dry I am: how much fluid do paramedics give when they administer an IV fluid bolus?

D. Eby, MD, PhD, J. Woods, BHSc, Western University, Owen Sound, ON

Introduction: How is "administer a fluid bolus" interpreted by paramedics? There is no existing literature describing this practice in the prehospital setting. Paramedic medical directives authorize the administration of Normal Saline 20 ml/kg to hypotensive patients (systolic BP <90). Anecdotally, auditors of Ambulance Call Reports (ACRs) and paramedics report this amount of fluid is rarely administered. The aim of this study was to determine the amount and rate of IV fluid administered by Advanced Care (ACP) and Primary Care (PCP) paramedics when they give an IV 'fluid bolus' during an ambulance call. **Methods:** We conducted a retrospective analysis of iMedic platform, electronic, ACRs (January 01, 2015 to June 30, 2015) from 8 municipal paramedic services that serve an urban and rural population of 1.4 million. ACRs containing a procedure code 351 (intravenous fluid bolus) were identified. A stratified, random sample of 20 cases per paramedic category (ACP and PCP) from each service was generated using a random number table. ACRs were manually searched, data abstracted onto spread sheets, and the results analyzed using descriptive statistics (Wizard ver 1.8.16 for Mac). **Results:** The initial sample was 220 cases. 25 were excluded for incomplete documentation, leaving 195 cases (ACP 59, PCP 136) for analysis. The mean IV fluid bolus volume delivered was: ACP 414.8 ml (95%CI: 344.2, 485.4), PCP 242.3 ml (95%CI: 210.9, 274.5). The mean rate of infusion was: ACP 22.7 ml/min (95%CI: 17.6, 27.8) PCP 15.7 ml/min (95%CI 13.2,18.1). Percentage of cases where >250 ml was infused: ACP 74.6%, PCP 44.1%. Percentage of cases where at least 10 ml/kg of fluid was given: ACP 17.0%, PCP 2.9%. Percentage of cases reaching the maximum 20 ml/kg of fluid: ACP 0.5%, PCP 0%. IV cannula size: 18G-ACP 57.4%, PCP 33.3%; 20G ACP 37.0%, PCP 56.8; 22G ACP 0.6%, PCP 9.8%. **Conclusion:** Paramedics rarely gave the amount of IV fluid they were authorized to give to hypotensive patients. On average, Advanced Care Paramedics administered significantly more fluid and gave it significantly faster than Primary Care Paramedics. ACPs were more likely than PCPs to use 18G cannulas and rarely used 22G cannulas whereas PCPs preferred to use 20G IV cannulas. Further training is required to clarify and improve the paramedic practice of IV bolus administration.

Keywords: paramedic, fluid bolus, practice

MP11

A quality improvement initiative to decrease the rate of solitary blood cultures in the emergency department

J. Choi, MD, MPH, S. Ensafi, BSc, L.B. Chartier, MD, CM, O. Van Praet, MSc, MD, CM, University Health Network, Toronto, ON

Introduction: Best practice guidelines recommend that at least two sets of blood cultures be sent when blood cultures are required. However, high rates of solitary blood cultures are still common in the emergency department. The aim of this study was to evaluate the efficacy of different quality improvement initiatives aimed at reducing the rate of solitary blood cultures being sent to the lab on patients ultimately discharged from our emergency department. **Methods:** This was a multi-centre, multi-phase, prospective study evaluating a comprehensive education-based intervention and a second intervention that combined a computerized forcing function along with a brief education-based intervention. The results were analyzed using segmented regression analysis, as well as statistical process control charts. **Results:** The baseline rate of solitary sets of blood cultures was 41.1%. The education intervention reduced this rate to 30.3%. The introduction of a forcing function with a brief educational intervention further reduced the rate to 11.6%. This represents an absolute reduction of 29.5% from baseline (relative reduction of 71.8%). According to segmental regression