include: trauma team activation, waiting room anxiety, and referral delays from the ED). Working with designers and stakeholders (including patient representatives), learners would map the experience of a particular project. Strengths and opportunities for improvements would be identified at each step of the project. The team would then prototype solutions which will be presented to site chiefs for implementation and evaluation. **Conclusion:** Working with designers offers a practical and powerful approach to undertaking QI projects in the ED. We hope that this process allows residents to undertake projects that they are personally invested in and helps build longitudinal relationships beyond direct clinical work with the local ED they are working in.

**Keywords:** quality improvement, operations, curriculum

**LO43**  
**Does point of care ultrasound improve resuscitation markers in emergency department patients with undifferentiated hypotension?**  
**The first Sonography in Hypotension and Cardiac Arrest in the Emergency Department (SHOC-ED 1) Study; an international randomized controlled trial**

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**Introduction:** Point of Care Ultrasound (PoCUS) protocols are commonly used to guide resuscitation for emergency department (ED) patients with undifferentiated non-traumatic hypotension. While PoCUS has been shown to improve early diagnosis, there is a minimal evidence for any outcome benefit. We completed an international multicenter randomized controlled trial (RCT) to assess the impact of a PoCUS protocol on key resuscitation markers in this group. We report diagnostic impact and mortality elsewhere. **Methods:** The SHoC-ED1 study compared the addition of PoCUS to standard care within the first hour in the treatment of adult patients presenting with undifferentiated hypotension (SBP <100 mmHg or a Shock Index >1.0) with a control group that did not receive PoCUS. Scans were performed by PoCUS-trained physicians. 4 North American, and 3 South African sites participated in the study. Resuscitation outcomes analyzed included volume of fluid administered in the ED, changes in shock index (SI), modified early warning score (MEWS), venous acid-base balance, and lactate, at one and four hours. Comparisons utilized a T-test as well as stratified binomial log-regression to assess for any significant improvement in resuscitation amount the outcomes. Our sample size was powered at 0.80 (α=0.05) for a moderate effect size. **Results:** 258 patients were enrolled with follow-up fully completed. Baseline comparisons confirmed effective randomization. There was no significant difference in mean total volume of fluid received between the control (1658 ml; 95% CI 1365-1950) and PoCUS groups (1609 ml; 1385-1832; p = 0.79). Significant improvements were seen in SI, MEWS, lactate and bicarbonate with resuscitation in both the PoCUS and control groups, however there was no difference between groups. **Conclusion:** SHoC-ED1 is the first RCT to compare PoCUS to standard of care in hypotensive ED patients. No significant difference in fluid used, or markers of resuscitation was found when comparing the use of a PoCUS protocol to that of standard of care in the resuscitation of patients with undifferentiated hypotension.

**Keywords:** point of care ultrasound (PoCUS), hypotension, emergency medicine

**LO44**  
**Initial validation of the core components in the SHoC-Hypotension Protocol. What rates of ultrasound findings are reported in emergency department patients with undifferentiated hypotension?**  
**Results from the first Sonography in Hypotension and Cardiac Arrest in the Emergency Department (SHOC-ED1) Study; an international randomized controlled trial**

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**Introduction:** Point of care ultrasound (PoCUS) is an established tool in the initial management of patients with undifferentiated hypotension in the emergency department (ED). Current established protocols (e.g. RUSH and ACES) were developed by expert user opinion, rather than objective, prospective data. Recently the SHoC Protocol was published, recommending 3 core scans: cardiac, lung, and IVC; plus other scans when indicated clinically. We report the abnormal ultrasound findings from our international multicenter randomized controlled trial, to assess if the recommended 3 core SHoC protocol scans were chosen appropriately for this population. **Methods:** Recruitment occurred at seven centres in North America (4) and South Africa (3). Screening at triage identified patients (SBP < 100 or shock index > 1) who were randomized to PoCUS or control (standard care with no PoCUS) groups. All scans were performed by PoCUS-trained physicians within one hour of arrival in the ED. Demographics, clinical details and study findings were collected prospectively. Initial and secondary diagnoses were recorded collected prospectively. Initial and secondary diagnoses were recorded. Final chart review was blinded to initial impressions and PoCUS findings. **Results:** 258 patients were enrolled with follow-up fully completed. Baseline comparisons confirmed effective randomization. There was no difference between groups for the primary outcome of mortality; PoCUS 32/129 (24.8%; 95% CI 14.3-35.3%) vs. Control 32/129 (24.8%; 95% CI 14.3-35.3%); RR 1.00 (95% CI 0.869 to 1.15; p = 1.00). There were no differences in the secondary outcomes; ICU and total length of stay. Our sample size has a power of 0.80 (φ = 0.05) for a moderate effect size. Other secondary outcomes are reported separately. **Conclusion:** This is the first RCT to compare PoCUS to standard care for undifferentiated hypotensive ED patients. We did not find any mortality or length of stay benefits with the use of a PoCUS protocol, though a larger study is required to confirm these findings. While PoCUS may have diagnostic benefits, these may not translate into a survival benefit effect. **Keywords:** point of care ultrasound (PoCUS), hypotension, emergency medicine

**LO46**

The impact of rapid antigen detection testing on antibiotic prescription for acute pharyngitis: a systematic review and meta analysis

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**Introduction:** Acute pharyngitis is a common reason for primary care or emergency department visits, often resulting in antibiotic prescription. Rapid antigen detection tests (RADT) are routinely used to diagnose Group A Streptococcus (GAS) pharyngitis. However, due to its low sensitivity, patient pressures and conditioning guidelines, the RADT often complicates management decisions. Our aim was to assess the impact of RADT in patients presenting with acute GAS pharyngitis on the antibiotic prescription rate and appropriateness of antibiotic management. **Methods:** We systematically searched Medline, Embase, and Cochrane databases from 1980 to June 2016. Studies were selected according to a predefined PRISMA protocol and data extracted by two independent reviewers. Prospective and retrospective studies that evaluated the impact of RADT on antibiotic prescription for pharyngitis were included. Study quality was assessed using Cochrane Risk of Bias Tool and the Newcastle-Ottawa Scale. Our main outcome was a dichotomous measure of antibiotic prescription, with or without RADT availability. Studies were combined if there was low clinical and statistical heterogeneity (I² < 30%). Bivariate Mantel-Haenszel random effects model was used to perform meta analyses using SPSS 22 and Revman 5. **Results:** We identified 4003 studies: 139 were selected for full text review; 10 met our inclusion criteria (N = 10859 participants,