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Introduction: Point of care ultrasound (PoCUS) has become 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. A threshold incidence for positive findings of 10% was established as significant for the purposes of assessing the appropriateness of the core recommendations. **Results:** 138 patients had a PoCUS screen completed. All patients had cardiac, lung, IVC, aorta, abdominal, and pelvic scans. Reported abnormal findings included hyperdynamic LV function (59; 43%); small collapsing IVC (46; 33%); pericardial effusion (24; 17%); pleural fluid (19; 14%); hypodynamic LV function (15; 11%); large poorly collapsing IVC (13; 9%); peritoneal fluid (13; 9%); and aortic aneurysm (5; 4%). **Conclusion:** The 3 core SHoC Protocol recommendations included appropriate scans to detect all pathologies recorded at a rate of greater than 10 percent. The 3 most frequent findings were cardiac and IVC abnormalities, followed by lung. It is noted that peritoneal fluid was seen at a rate of 9%. Aortic aneurysms were rare. This data from the first RCT to compare PoCUS to standard care for undifferentiated hypotensive ED patients, supports the use of the prioritized SHoC protocol, though a larger study is required to confirm these findings.

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

LO45

Does the use of point of care ultrasonography improve survival in emergency department patients with undifferentiated hypotension? 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). While PoCUS protocols have been shown to improve early diagnostic accuracy, there is little published evidence for any mortality benefit. We report the findings from our international multicenter randomized controlled trial, assessing the impact of a PoCUS protocol on survival and key clinical outcomes. **Methods:** Recruitment occurred at 7 centres in North America (4) and South Africa (3). Scans were performed by PoCUS-trained physicians. Screening at triage identified patients (SBP < 100 or shock index > 1), randomized to PoCUS or control (standard care and no PoCUS) groups. Demographics, clinical details and study findings were collected prospectively. Initial and secondary diagnoses were recorded at 0 and 60 minutes, with ultrasound performed in the PoCUS group prior to secondary assessment. The primary outcome measure was 30-day/discharge mortality. Secondary outcome measures included diagnostic accuracy, changes in vital signs, acid-base status, and length of stay. Categorical data was analyzed using Fishers test, and continuous data by Student T test and multi-level log-regression testing. (GraphPad/SPSS) 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 (α: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 conflicting 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 ($I^2 < 30\%$). 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,

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median age 31 years, 56.7% female). Mean antibiotic prescription rate in the RADT and control arm was 38.2% (SD 15.6) and 55.9% (SD 16.3), respectively. The use of RADT was associated with lower antibiotic prescription rate in both adults (OR = 0.60 [95% CI 0.45-0.80], I^2 = 8%, N = 1407) and pediatrics (OR = 0.49 [95% CI 0.44-0.55], I^2 = 5%, N = 976). There was no overall difference ($p < 0.3$) in antibiotic prescription rate among disease severity (Centor scores 1-4). The use of RADT did not significantly impact the appropriateness of antibiotic management (OR = 1.15 95% CI 0.94-1.5). **Conclusion:** The use of RADT is associated with a reduction in antibiotic prescription for patients with GAS pharyngitis without an increase in appropriate antibiotic use. Despite low prevalence of the disease in the population, antibiotic prescription rates are still high. These findings suggest great potential for antibiotic stewardship and reevaluation of current guidelines for managing GAS pharyngitis.

Keywords: rapid antigen detection test, pharyngitis, antibiotics

LO47

Use of C-reactive protein can safely decrease the number of emergency department patients with sepsis who require blood cultures

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Introduction: Sepsis protocols call for the acquisition of blood cultures in septic emergency department (ED) patients.However, the criteria for blood cultures are vague, they are costly, only positive 8-12% of the time, with up to half of these being false positives. The objective of this study was to establish if positive blood cultures could be excluded in low-risk sepsis patients with levels of CRP below 20 ml/L. **Methods:** This was a multicenter prospective cohort study of 765 ED patients at St Paul's and Mount St Joseph's hospitals in Vancouver with sepsis (2 or more SIRS criteria and infection) and none of: immuncompromised, injection drug use, indwelling vascular device or septic shock (SBP < 90 mmhg). Consecutive patients with sepsis had CRP and blood cultures obtained at the same time.OUTCOMES. True positive blood cultures, false positive blood cultures, positive blood cultures that changed patient management. True and false positive blood cultures were based on Infectious Disease Society of America Guidelines, and change in management was defined as change in type or length of antibiotic therapy and was blindly adjudicated by a medical microbiologist. **Results:** 765 ED patients with sepsis met inclusion criteria. Mean age was 48.3 years and 57% were male. Blood cultures were positive in 99/765 (12.9%) subjects, of which 19 were false positive (19.2%). CRP was >20 mg/L in 595/765 (77.8%) of patients. Of 170 subjects with a CRP < 20 mg/L, 3 had a positive blood culture (1.8%; 95% CI 0.1%- 5%). Management was not changed in any patient with a positive blood culture and CRP level < 20 mg/L. Of 19 subjects with a false positive blood culture, CRP was <20 mg/L for 6 (31.6%). **Conclusion:** In this cohort of low-risk sepsis patients, based on a CRP of <20 mg/L, acquisition of blood cultures could be safely avoided in 22.2% of patients, at significant savings to the health care system.

Keywords: sepsis, blood culture, C-reactive protein

LO48

Evaluation of the effect of nightshifts on patient outcomes: a multicenter study

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Introduction: Nightshifts may represent a more challenging work environment due to staff fatigue. Our objective was to determine if an association exists between health outcomes for patients seen in Calgary Zone Emergency Department (ED) during nightshifts as compared to other time periods. **Methods:** Administrative data from a city-wide electronic health record was collected from four urban EDs on all discharged patients during a 2-year period: January 2015-December 2016. A total of 454,125 patient visits were included and patients with a scheduled return to the ED were excluded. Three primary outcomes were selected to assess the effects of night shifts on the quality of care received by patients in the ED at night; (i) unscheduled returns to the ED within 7 days resulting in admission, (ii) mortality within 48 hrs and, (iii) mortality within 7 days of being seen by a physician. Non-night shifts were defined as patients seen on day and evening or 700-2300. The data was analyzed using descriptive statistics and precision reported via 95% confidence intervals. **Results:** For the outcome of returns resulting in admission, a 2.6% rate was noted for patients seen at night compared to 2.3% during non-night; OR 1.15 (95% CI 1.09-1.21). Furthermore, patients seen at night had a 0.033% rate of death, while non-night patients had a 0.022% chance of death within 48 hrs of discharge; OR 1.53 (95% CI 0.98-2.38). For mortality within 7 days, the rate of death observed was 0.10% and 0.078% respectively; OR 1.24 (95% CI 0.97-1.60). **Conclusion:** Our study identified presenting to the ED at night as a potential risk factor for adverse patient outcomes using 3 primary quality of care indicators. An adjusted analysis is needed to account for potential confounding variables and effect modifiers and is underway.

Keywords: nightshifts, staff fatigue, quality of care

LO49

Characterizing highly frequent users of a large Canadian urban emergency department

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Introduction: Highly frequent users (HFU) of the emergency department (ED) remain a poorly defined and complex population. This study describes patient and visit characteristics for HFU of the ED, and analyzes subgroups of patients with mental illness, substance abuse, and/or ≥30 yearly ED visits. **Methods:** We performed a health records review of 250 randomly selected adults with >99th percentile of ED visit frequency (≥ 7 visits) at a tertiary care academic hospital with two EDs in 2014. Two reviewers collected demographic variables (age, sex, and comorbidities) and visit data (ED diagnosis, ED length of stay (LOS), ED presentation time (daytime 0800-1559 h, evening 1600-2359 h, overnight 2400-0759 h), consultation services, and final disposition). Data were analyzed using descriptive and univariate analyses, student t and Mann Whitney U tests. **Results:** Of 897 eligible patients who experienced 9,376 ED visits we included 250 patients (2,670 visits) in our main analyses, and an additional 11 patients (494 visits) outside of the random selection with ≥30 ED visits. Mean age was 53.4 ± 1.3 (SEM), and 55.6% were female. Most patients had a fixed address (88.9%), and a family physician (87.2%). Top comorbidities included gastrointestinal (61.6%), cardiovascular (52%), and chronic pain issues (47.2%). Top ED diagnoses included musculoskeletal pain (9.6%), abdominal pain (8.4%) and alcohol-related presentations (8.5%). Hospital admission was required for 15.6% of visits. From all possible visits (3164 visits), consultations for social workers, geriatric emergency medicine nurses, or Community Care Access Centres were made for 5.9% of visits, with 47.3% of these patients presenting during daytime hours. Among visits requiring these consultations, median ED LOS was greatest in the evening (12.7 hours, range 1.4-45.2 hours), compared to daytime (5.4, 1.2-33.6; p = 0.0002) or overnight (7.9, 1.0-38.3, p = 0.02).

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