

Emergency Medicine (ACEM) drafted a checklist incorporating PoCUS into the ACLS algorithm. This was further developed using the input of 24 international experts associated with five professional organizations led by the International Federation of Emergency Medicine. A modified Delphi tool was developed to reach an international consensus on how to integrate ultrasound into cardiac arrest algorithms for emergency department patients. **Results:** Consensus was reached following 3 rounds. The agreed protocol focuses on the timing of PoCUS as well as the specific clinical questions. **Core** cardiac windows performed during the rhythm check pause in chest compressions are the sub-xiphoid and parasternal cardiac views. Either view should be used to detect pericardial *fluid*, as well as examining ventricular *form* (e.g. right heart strain) and *function*, (e.g. asystole versus organized cardiac activity). **Supplementary** views include lung views (for absent lung sliding in pneumothorax and for pleural fluid), and IVC views for *filling*. **Additional** ultrasound applications are for endotracheal tube confirmation, proximal leg veins for DVT, or for sources of blood loss (AAA, peritoneal/pelvic fluid). **Conclusion:** The authors hope that this process will lead to a consensus-based *SHoC-cardiac arrest* guideline on incorporating PoCUS into the ACLS algorithm.

**Keywords:** point-of-care ultrasound (PoCUS), cardiac arrest, consensus

#### LO046

##### Factors associated with hospital admission following asthma exacerbations: a systematic review

B.H. Rowe, MD, MSc, N. Arrotta, J. Hill, E. Dennett, MLIS, M. Harries; University of Alberta, Edmonton, AB

**Introduction:** Patients with asthma frequently present to the emergency department (ED) with exacerbations; however, a select number of patients require admission to hospital. The objective of this study was to summarize the evidence regarding asthma-related hospital admissions and factors associated with these admissions following ED presentation. **Methods:** Comprehensive literature searches were conducted in seven electronic databases (database inception to 2015); manual and grey literature searches were also performed. Studies reporting disposition for adults after ED presentation were included. Study quality was assessed using the Newcastle-Ottawa Scale (NOS); standardized data-collection forms were used for data extraction. Admission proportions and factors associated with admission at a statistical significance level ( $p < 0.05$ ) were reported. **Results:** Out of an initial 5865 identified articles, 37 articles met full inclusion criteria. Admission proportions were reported in 25/37 studies, ranged from 1% to 37%, and collectively demonstrated a decline of ~9% in admissions between 1993 and 2012. Studies including a >50% Caucasian ethnicity were found to have a median admission proportion of 13% (interquartile range [IQR] = 7, 20) versus studies with >50% non-Caucasian ethnicity at 22% (IQR = 20, 28). Age, female sex, and previous hospitalizations for asthma exacerbation were the most individually identifiable factors associated with admission. Presenting features and medication profile were the most frequent domains associated with admission. **Conclusion:** Admission rates have decreased approximately 9% in a nearly 20-year span and seem to be higher in studies involving mostly non-Caucasian ethnic groups. Demographic factors, markers of severity obtained by history or at ED presentation, and medication profile could be assessed by ED clinicians to effectively discern patients at high risk for admission.

**Keywords:** asthma, admissions, knowledge synthesis

#### LO047

##### Predictors of treatment failure in renal colic patients discharged from the emergency department

G. Innes, MD, J. Andruchow, MD, MSc, A. McRae, MD, T. Junghans, BA, E. Lang, MD; University of Calgary, Calgary, AB

**Introduction:** Most patients with acute renal colic are discharged from the ED after initial diagnosis and symptom control, but 20-30% require repeat ED visits for ongoing pain, and 15-25% require rescue intervention (ureteroscopic intervention or lithotripsy). If patients destined for failure of outpatient management could be identified based on information available during their ED visits, they could be prioritized early for intervention to reduce short term pain and disability. Our objective was to identify predictors of outpatient treatment failure, defined as the need for hospitalization or rescue intervention within 60 days of ED discharge. **Methods:** We collated prospectively gathered administrative data from all Calgary region patients with an ED diagnosis of renal colic over a one-year period. Demographics, arrival mode, triage category, vital signs, pain scores, analgesic use and ED disposition were recorded. Research assistants reviewed imaging reports and documented stone characteristics. These data were linked with regional hospital databases to identify ED revisits, hospital admissions, and surgical procedures. The primary outcome was hospitalization or rescue intervention within 60 days of ED discharge. **Results:** Of 3104 patients with first ED visit for acute renal colic, 1296 had CT or US imaging and were discharged without intervention. Median age was 50 years and 69% were male. 325 patients (25.1%) required an ED re-visit and 11.8% required admission or rescue intervention. Patients with small (<5mm), medium (5-7mm) and large (>7mm) stones failed in 9.0%, 14.4% and 9.9% of cases respectively. The only factor predictive of treatment failure in multivariable models was stone position in the proximal or mid-ureter. Age, sex, vital signs, pain score, WBC, creatinine, history of prior stone or intervention, stone side, stone size, presence of stranding and degree of hydronephrosis were not associated with outpatient failure. **Conclusion:** Outpatient treatment failure could not be predicted based on any of the predictors studied.

**Keywords:** renal colic, treatment failure, pain management

#### LO048

##### Systematic review of the use of low-dose ketamine for analgesia in the emergency department

G. Ghate, MD, E. Clark, MD, C. Vaillancourt, MD, MSc; University of Ottawa, Ottawa, ON

**Introduction:** Ketamine is a popular sedative agent for painful procedures. It is not widely used at sub-dissociative analgesic doses in the emergency department (ED). We sought to determine the performance of low-dose ketamine (LDK) as an analgesic for acute pain management in adult patients in the ED. **Methods:** We systematically reviewed electronic databases (MEDLINE, EMBASE, AMED, CINAHL, PubMed and Cochrane database of systematic reviews), grey literature, conference proceedings and clinical trials registries. Two independent reviewers identified eligible studies using pre-determined criteria. We included peer-reviewed studies that used LDK (<1 mg/kg IV or <2mg/kg IM) in adult patients (>18 yo) requiring acute pain management for any condition in the ED. Our outcome measures included analgesic effect of LDK compared to any opioids, need for rescue analgesia, and neuropsychological adverse events. We assessed interrater agreement using kappa statistics, risk of bias using the Cochrane Collaboration's Tool, and propose a treatment recommendation using GRADE. Heterogeneity among studies precluded meta-analysis.