

Introduction: The number of CT scans prescribed in the Emergency department (ED) for suspected renal colic has increased over recent years without an associated improvement in patient-centred outcomes. We assessed whether Point-of-Care Ultrasound (PoCUS) decreases the use of formal radiologic imaging. **Methods:** We completed a retrospective cohort study on consecutive patients 18 years of age and older presenting to the ED with suspected uncomplicated renal colic in a tertiary care centre in Québec in 2016. Exclusion criteria included: previous urologic intervention, solitary kidney, dialysis, fever, pyuria, acute kidney injury, pregnancy, suspicion of a serious alternative diagnosis or persistent symptoms despite analgesia. We compared the proportion (95%CI) of formal radiologic imaging performed (Ultrasound or CT) in patients who had PoCUS in the ED vs. those who did not. Two-tailed Fisher exact test ($\alpha = 0.05$) and odds ratios (95%CI) calculated from multivariate logistic regression models adjusted for age, gender, Charlson Index and previous renal colic were used to compare the two groups. The reliability of data collection was evaluated with a kappa score (95%CI). **Results:** 169 patients with uncomplicated renal colic were included. There was no difference between the groups in terms of age, gender, Charlson Index, or previous renal colic. The PoCUS level of training and the doctor's education level was significantly higher in the PoCUS group. There was a non-significant trend towards less formal imaging in patients of the PoCUS group 65/88 (73.9% [63.4-82.7%]) vs. the non-PoCUS group 69/81 (85.2% [75.6-92.1%]), $p = 0.087$. After adjustment for confounders, the patients not evaluated with PoCUS were more likely to have formal imaging with a significant odds ratio of 2.41 [1.05-5.56]. Among patients who underwent a CT, incidentalomas were found in 16.5% and only 2.0% demonstrated significant findings leading to changes in ED management, such as an alternative diagnosis, need for admission, or an urgent urological intervention. Inter-observer agreement was excellent between assessors with a kappa score of 0.88 [0.66-1.00]. **Conclusion:** ED patients with uncomplicated renal colic who are investigated with PoCUS tend to have fewer formal imaging tests. When CT scans were performed, incidentalomas were found in 16.5% and ED management changed only 2.0% of the time. PoCUS appears to be a useful tool for decreasing CT utilisation in this low-risk ED population.

Keywords: computed tomography, point-of-care ultrasound (PoCUS), renal colic

LO70

Functional & cognitive decline in older delirious adults after an emergency department visit

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Introduction: While negative consequences of incident delirium on functional and cognitive decline have been widely studied, very limited data is available regarding functional and cognitive outcomes in Emergency Department (ED) patients. The aim of this study was therefore to evaluate the impact of ED stay-associated delirium on older patient's functional and cognitive status at 60 days post-ED visit. **Methods:** This study is a planned sub-analysis of a large multi-centre prospective cohort study (the INDEED study). This project took place between March and July of the years 2015 and 2016 within 5 participating EDs across the province of Quebec. Independent

non-delirious patients aged ≥ 65 , with an ED stay at least 8hrs were monitored until 24hrs post-ward admission. A 60-day follow-up phone assessment was also conducted. Participants were screened for delirium using the validated Confusion Assessment Method (CAM) and the severity of its symptoms was measured using the Delirium Index. Functional and cognitive status were assessed at baseline as well as at the 60-day follow-up using the validated OARS and TICS-m. **Results:** A total of 608 patients were recruited, 393 of which completed the 60-day follow-up. Sixty-nine patients obtained a positive CAM during ED-stay or within the first 24 hours following ward admission. At 60-days, those patients experienced a loss of 3.1 (S.D. 4.0) points on the OARS scale compared to non-delirious patients who lost 1.6 (S.D. 3.0) ($p = 0.03$). A significant difference in cognitive function was also noted at 60-days, as delirious patients' TICS-m score decreased by 2.1 (S.D. 6.2) compared to non-delirious patients, who showed a minor improvement of 0.5 (S.D. 5.8) ($p = 0.01$). **Conclusion:** People who developed ED stay-associated delirium have lower baseline functional and cognitive status than non-delirious patients and they will experience a more significant decline at 60 days post-ED visit.

Keywords: cognitive decline, delirium, functional decline

LO71

Evaluating the application of the prehospital Canadian C-Spine Rule by paramedics in sport-related injuries

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Introduction: The Canadian C-Spine rule (CCR) was validated for use by paramedics to selectively immobilize stable trauma patients. However, the CCR "Dangerous Mechanism" is highly prevalent in sports. Our objective was to compare the CCR performance in sport-related vs. non-sport-related injuries and describe sport-related mechanisms of injury. **Methods:** We reviewed data from the prospective paramedic CCR validation and implementation studies in 7 Canadian cities, which already included identification of sport-related injuries. A single trained reviewer further categorized mechanisms of injury using a pilot-tested standardized form, with the aid of a sport medicine physician in 15 ambiguous cases. We compared the CCR's recommendation to immobilize sport-injured versus non-sport-injured patients using chi-square and relative risk statistics with 95% confidence intervals. **Results:** There were 201 amateur sport-injuries among the 5,978 patients. Sport-injured patients were younger (mean age 36.2 vs. 42.4) and more predominantly male (60.5% vs 46.8%) than non-sport-injured patients. Paramedics did not miss any c-spine injuries when using the CCR. Although cervical spine injury rates were similar between sport (2/201; 1.0%) and non-sport injured patients (47/5,777; 0.8%), the absolute number of sport-related injuries was very small. Although CCR recommended immobilization equally between the two groups (46.4% vs 42.5% $p = 0.29$; RR 1.17 95%CI 0.87-1.57), the reason for immobilization was more likely to be a dangerous mechanism in sport injuries (68.6% vs 54.5%, $p = 0.012$). Although we observed a wide range of mechanisms, the most common dangerous mechanism responsible for immobilization in sport was axial load. **Conclusion:** The CCR identified all significant c-spine injuries in a cohort of patients assessed and transported by paramedics. Although an equal proportion of sport and non-sports related injuries were immobilized, a dangerous mechanism was most often responsible for immobilization in sport-related

cases. These findings do not address the potential impact of using the CCR to evaluate all sport-related injuries in collegiate or pro athletes evaluated by sport medicine therapists and physicians, as these patients are rarely assessed by paramedics or transported to a hospital. It does support the safety and benefit of using the CCR in sport-injured patients for which paramedics are called.

Keywords: cervical spine, pre-hospital, sports

LO72

Assessing non-technical skills in prehospital ad hoc team resuscitation

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Introduction: Successful resuscitation in the ED cannot occur without a viable patient, and in many cases patient viability is dependent upon optimal prehospital resuscitation performed by ad hoc teams formed in real time. Currently, little is known about the cognitive and interpersonal skills, or non-technical skills, that are essential for effective team collaboration under these conditions. We have completed a scoping review to provide a state of the literature and develop a taxonomy of the non-technical skills pertinent to ad hoc teams in prehospital settings. **Methods:** Our scoping review searched four databases (EMBASE, Medline, Cinahl, and Psycinfo) for articles related to resuscitation in acute care settings. No date criteria were applied, but only full text articles written in English were included. Articles underwent two-reviewer title & abstract screening, full text screening, and analysis. A quality review asked three questions: Are keywords defined? Is the article well-situated within the existing literature? Does the article contribute back to the existing body of knowledge? Although statistical analyses are not appropriate for this scoping review, analysis included a descriptive-analytical framework for organizing data. **Results:** Of 6932 screened articles, 38 were included in analysis, five articles examined prehospital teams, and one addressed the ad hoc nature of these teams. Only one of these articles met our three quality criteria. Nevertheless, our analysis suggests a rudimentary taxonomy whereby the primary objective of a team leader is to overcome this barrier by facilitating the development of optimal team situational awareness, fostered through timely and accurate briefings with closed-loop communication. **Conclusion:** This scoping review has identified that non-technical skills pertaining to resuscitation in acute care settings are becoming a widely examined phenomenon; however, few studies contribute in any meaningful way to our understanding of how non-technical skills training can be tailored to those performing as members of ad hoc prehospital resuscitation teams. As the need for interprofessional training is becoming more pressing, we anticipate this review will provide essential guidance for future inquiry as well as design for both educational models and organizational systems-based interventions.

Keywords: non-technical skills, prehospital, resuscitation

LO73

The state of the evidence for emergency medical services care of adult patients with sepsis: an analysis of appraised research from the Prehospital Evidence-Based Practice (PEP) program

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Introduction: The Prehospital Evidence-Based Practice (PEP) program is an online, freely accessible, continuously updated Emergency

Medical Services (EMS) evidence repository. This summary describes the research evidence for the identification and management of adult patients suffering from sepsis syndrome or septic shock. **Methods:** PubMed was searched in a systematic manner. One author reviewed titles and abstracts for relevance and two authors appraised each study selected for inclusion. Primary outcomes were extracted. Studies were scored by trained appraisers on a three-point Level of Evidence (LOE) scale (based on study design and quality) and a three-point Direction of Evidence (DOE) scale (supportive, neutral, or opposing findings based on the studies' primary outcome for each intervention). LOE and DOE of each intervention were plotted on an evidence matrix (DOE x LOE). **Results:** Eighty-eight studies were included for 15 interventions listed in PEP. The interventions with the most evidence were related to identification tools (ID) (n = 26, 30%) and early goal directed therapy (EGDT) (n = 21, 24%). ID tools included Systematic Inflammatory Response Syndrome (SIRS), quick Sequential Organ Failure Assessment (qSOFA) and other unique measures. The most common primary outcomes were related to diagnosis (n = 30, 34%), mortality (n = 40, 45%) and treatment goals (e.g. time to antibiotic) (n = 14, 16%). The evidence rank for the supported interventions were: supportive-high quality (n = 1, 7%) for crystalloid infusion, supportive-moderate quality (n = 7, 47%) for identification tools, prenotification, point of care lactate, titrated oxygen, temperature monitoring, and supportive-low quality (n = 1, 7%) for vasopressors. The benefit of prehospital antibiotics and EGDT remain inconclusive with a neutral DOE. There is moderate level evidence opposing use of high flow oxygen. **Conclusion:** EMS sepsis interventions are informed primarily by moderate quality supportive evidence. Several standard treatments are well supported by moderate to high quality evidence, as are identification tools. However, some standard in-hospital therapies are not supported by evidence in the prehospital setting, such as antibiotics, and EGDT. Based on primary outcomes, no identification tool appears superior. This evidence analysis can guide selection of appropriate prehospital therapies.

Keywords: emergency medical services, prehospital medicine, sepsis

LO74

Exploring emergency physicians' ability to predict patient admission and decrease consultation to admission time

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Introduction: Delay of hospital admission until completion of assessment by consultants is a major contributor to emergency department (ED) crowding. We measured emergency physicians' (EP) ability to predict patient admission, and estimated potential time saved if EPs could request a bed at the time of consultation. **Methods:** This is a prospective cohort study in a tertiary care center over 4 months using a convenience sample of ED patients requiring consultation. We consecutively recruited patients from purposefully selected shifts to balance day of the week and time of day. We excluded patients younger than 18 years or those likely to be admitted (traumas, strokes, STEMI codes, and CTAS1). We asked EPs to predict patient disposition (admission or alternate disposition) just before consultation. We defined admission as: admission to any service, admission within 48 hours of ED discharge, patients held overnight without bed request, or if bed request was delayed by 12 or more hours, and alternate disposition as any other disposition. We present EP prediction test