prevalence and correlates of Sexual Assault Evidence Kit (SAEK) completion and release to police among sexual assault cases presenting at the hospital emergency department. **Methods:** Data for this cross-sectional study come from the Sexual Assault and Partner Abuse Care Program (SAPACP) case registry (Jan1-Dec31, 2015) at The Ottawa Hospital, a unique medical-forensic access point and the only facility offering SAEK collection in Ottawa. Bivariable and multivariable logistic regression models were conducted using odds ratios (OR), adjusted ORs, and 95% confidence intervals (CI). **Results:** In 2015 406 patients were seen by the SAPACP and 202 (77.10%) were eligible for a SAEK. Among eligible cases, 129 (63.86%) completed a SAEK and only 60 (29.70%) released the SAEK to police for investigation. Youth cases below 24 years of age (AOR:2.23, 95% CI: 1.18-4.23) and presenting within 24h (AOR:0.93-3.40) were the strongest independent factors contributing to SAEK completion. Cases who were uncertain of the assailant (AOR:3.62, 95% CI:1.23-10.67) and assaults that occurred outdoors (AOR:3.14, 95% CI:1.08-9.09) were the cases most likely to release the SAEK to police. **Conclusion:** Our study has shown high attrition levels along the continuum of care and justice for sexual assault case. Even with access to specialized forensic evidence collection, many do not complete a SAEK and even fewer release the evidence to police for legal investigation.
Keywords: sexual assault, forensics

LO50

Necrotizing soft tissue infection: diagnostic accuracy of physical examination, imaging and LRINEC score a systematic review and meta-analysis

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Introduction: Necrotizing soft tissue infection (NSTI), a potentially life-threatening diagnosis, is often not immediately recognized by clinicians. Delays in diagnosis are associated with increased morbidity and mortality. We sought to summarize and compare the accuracy of physical exam, imaging, and Laboratory Risk Indicator of Necrotizing Fasciitis (LRINEC) Score used to confirm suspected NSTI in adult patients with skin and soft tissue infections. **Methods:** We searched Medline, Embase and 4 other databases from inception through November 2017. We included only English studies (randomized controlled trials, cohort and case-control studies) that reported the diagnostic accuracy of testing or LRINEC Score. Outcome was NSTI confirmed by surgery or histopathology. Two reviewers independently screened studies and extracted data. We assessed risk of bias using the Quality Assessment of Diagnostic Accuracy Studies 2 criteria. Diagnostic accuracy summary estimates were obtained from the Hierarchical Summary Receiver Operating Characteristic model. **Results:** We included 21 studies (n = 6,044) in the meta-analysis. Of physical exam signs, pooled sensitivity and specificity for fever (49.4% [95% CI: 41.4-57.5], 78.0% [95% CI: 52.2-92.0]), hemorrhagic bullae (30.8% [95% CI: 16.2-50.6], 94.2% [95% CI: 82.9-98.2]) and hypotension (20.8% [95% CI: 7.7-45.2], 97.9% [95% CI: 89.1-99.6]) were generated. Computed tomography (CT) had 88.5% [95% CI: 55.5-97.9] sensitivity and 93.3% [95% CI: 80.8-97.9] specificity, while plain radiography had 48.9% [95% CI: 24.9-73.4] sensitivity and 94.0% [95% CI: 63.8-99.3] specificity. Finally, LRINEC 6 (traditional threshold) had 67.5% [95% CI: 48.3-82.3] sensitivity and 86.7% [95% CI: 77.6-92.5] specificity, while a LRINEC 8 had 94.9% [95% CI: 89.4-97.6] specificity but 40.8% [95% CI: 28.6-54.2] sensitivity. **Conclusion:** The absence of any one physical exam feature (e.g. fever or hypotension) is not sufficient to rule-out NSTI. CT is superior to plain radiography. The LRINEC Score had poor sensitivity, suggesting that a low score is not sufficient to rule-out NSTI. For patients with suspected NSTI, further evaluation is warranted. While no single test is sensitive, patients with high-risk features should receive early surgical consultation for definitive diagnosis and management.
Keywords: necrotizing soft tissue infection, computed tomography, laboratory risk indicator for necrotizing fascitis

LO51

Increased mortality and costs in emergency department sepsis patients with delayed intensive care unit admission

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Introduction: Sepsis remains a major cause of mortality. In the Emergency Department (ED), rapid identification and management of sepsis have been associated with improved outcomes. Following ED assessment, patients with infection may be directly admitted to the Intensive Care Unit (ICU), or alternatively admitted to hospital wards or sent home, with risk of future deterioration necessitating ICU admission. Little is known regarding outcomes and costs of ICU sepsis patients who are initially admitted to a ward or discharged home (delayed ICU admission), as compared to those with direct ICU admission from the ED. **Methods:** We analyzed a prospectively collected registry (2011-2014) of patients admitted to the ICU with a diagnosis of sepsis at two academic hospitals. We included all adult patients with an index ED visit within 72 hours of ICU admission. Patients were categorized into 3 groups: 1) Admitted directly to ICU; 2) Admitted to wards, with ICU admission within 72 hours; and 3) Sent home, with ICU admission within 72 hours. ICU length of stay (LOS) and total costs (both direct and indirect) were recorded. The primary outcome, in-hospital mortality, was analyzed using a multivariable logistic regression model, controlling for confounding variables (including patient sex, comorbidities, and illness severity). **Results:** 657 ICU patients were included. Of these, 338 (51.4%) were admitted directly from ED to ICU, 246 (37.4%) were initially admitted to the wards, and 73 (11.1%) were initially sent home. In-hospital mortality was lowest amongst patients admitted directly to the ICU (29.5%), as compared to patients admitted to ICU from wards (42.7%), or home (61.6%). Delayed ICU admission was associated with increased odds of mortality (adjusted odds ratio 1.85 [1.24-2.76], $P < 0.01$) and increased median ICU LOS (11 days vs. 4 days, $P < 0.001$). Median total costs were lowest among patients directly admitted to the ICU ($19,924, [Interquartile range [IQR], 10,333-32,387]), as compared to those admitted from wards ($72,155 [IQR, $42,771-122,749]) and those initially sent home ($45,121 [IQR, $19,930-86,843]). **Conclusion:** Only half of ED sepsis patients ultimately requiring ICU admission within 72 hours of ED arrival are directly admitted to the ICU. Delayed ICU admission is associated with higher mortality, LOS, and costs.
Keywords: sepsis, shock, critical care

LO52

Predictors of oral antibiotic treatment failure for non-purulent skin and soft tissue infections in the emergency department

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Introduction: Current guideline recommendations for optimal management of non-purulent skin and soft tissue infections (SSTIs) are based on expert consensus. There is currently a lack of evidence to guide emergency physicians on when to select oral versus intravenous antibiotic therapy. The primary objective was to identify risk factors associated with oral antibiotic treatment failure. A secondary objective was to describe the epidemiology of adult emergency department (ED) patients with non-purulent SSTIs. **Methods:** We performed a health records review of adults (age 18 years) with non-purulent SSTIs treated at two tertiary care EDs. Patients were excluded if they had a purulent infection or infected ulcers without surrounding cellulitis. Treatment failure was defined any of the following after a minimum of 48 hours of oral therapy: (i) hospitalization for SSTI; (ii) change in class of oral antibiotic owing to infection progression; or (iii) change to intravenous therapy owing to infection progression. Multivariable logistic regression was used to identify predictors independently associated with the primary outcome of oral antibiotic treatment failure after a minimum of 48 hours of oral therapy. **Results:** We enrolled 500 patients (mean age 64 years, 279 male (55.8%) and 126 (25.2%) with diabetes) and the hospital admission rate was 29.6%. The majority of patients (70.8%) received at least one intravenous antibiotic dose in the ED. Of 288 patients who had received a minimum of 48 hours of oral antibiotics, there were 85 oral antibiotic treatment failures (29.5%). Tachypnea at triage (odds ratio [OR] = 6.31, 95% CI = 1.80 to 22.08), chronic ulcers (OR = 4.90, 95% CI = 1.68 to 14.27), history of MRSA colonization or infection (OR = 4.83, 95% CI = 1.51 to 15.44), and cellulitis in the past 12 months (OR = 2.23, 95% CI = 1.01 to 4.96) were independently associated with oral antibiotic treatment failure. **Conclusion:** This is the first study to evaluate potential predictors of oral antibiotic treatment failure for non-purulent SSTIs in the ED. We observed a high rate of treatment failure and hospitalization. Tachypnea at triage, chronic ulcers, history of MRSA colonization or infection and cellulitis within the past year were independently associated with oral antibiotic treatment failure. Emergency physicians should consider these risk factors when deciding on oral versus intravenous antimicrobial therapy for non-purulent SSTIs being managed as outpatients.

Keywords: cellulitis, antibiotics, treatment failure

LO53

Intravenous cefazolin plus oral probenecid vs. oral cephalexin for the treatment of skin and soft tissue infections: a randomized controlled trial

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Introduction: Skin and soft tissue infections (SSTIs) are a common reason for presentation to an emergency department (ED). Although many patients with mild SSTI are managed with oral antibiotics, those with mild-moderate infections are often treated with parenteral antibiotics, managed in EDs as outpatients using once daily intravenous cefazolin combined with oral probenecid. The purpose of our study was to determine if cephalexin 500 mg orally four times daily was non-inferior to cefazolin 2 g intravenously daily plus probenecid 1 g orally daily in the management of uncomplicated mild-moderate SSTIs patients presenting to the ED.. **Methods:** This was a prospective, multicenter, double dummy-blind, randomized controlled non-inferiority trial conducted at two tertiary care teaching hospitals in Canada. Patients were enrolled if they presented to the ED with an uncomplicated SSTI, in a 1:1 fashion to oral cephalexin or intravenous cefazolin plus oral probenecid for up to 7 days. The primary outcome was failure of therapy at 72 hours. Clinical cure at 7 days, intravenous to oral step-down, admission to hospital and adverse events were also evaluated. **Results:** 206 patients were randomized with 104 patients in the cephalexin group and 102 in the cefazolin and probenecid group. The proportion of patients failing therapy at 72 hours was similar between the treatment groups (4.2% and 6.1%, risk difference 1.9%, 95% CI (-3.3% to 7.1%), p-value for non-inferiority = 0.001). Clinical cure at seven days was not significantly different (100% and 97.7%, risk difference -2.3%, 95% CI (-4.9% to 0.3%), p-value for non-inferiority = 0.008). **Conclusion:** Cephalexin at appropriate doses appears to be a safe and effective alternative to outpatient parenteral cefazolin and probenecid in the treatment of uncomplicated mild to moderate SSTIs who present to the ED.

Keywords: skin and soft tissue infection, antimicrobial therapy, emergency department

LO54

Prospective mulitcenter validation of the Canadian syncope risk score

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Introduction: The Canadian Syncope Risk Score (CSRS) was developed to identify patients at risk for serious adverse events (SAE) within 30 days of an Emergency Department (ED) visit for syncope. We sought to validate the score in a new cohort of ED patients. **Methods:** We conducted a multicenter prospective cohort study at 8 large academic tertiary-care EDs across Canada from March 2014 to Dec 2016. We enrolled adults (age 16 years) who presented within 24 hours of syncope, after excluding those with persistent altered mentation, witnessed seizure, intoxication, and major trauma requiring hospitalization. Treating ED physicians collected the nine CSRS predictors at the index visit. Adjudicated SAE included death, arrhythmias and non-arrhythmic SAE (myocardial infarction, serious structural heart disease, pulmonary embolism, severe hemorrhage and procedural interventions within 30-days). We assessed area under the Receiver Operating Characteristic (ROC) curve, score calibration, and the classification performance for the various risk categories. **Results:** Of the 2547 patients enrolled, 146 (5.7%) were lost to follow-up and 111 (4.3%) had serious condition during the index ED visit and were excluded. Among the 2290 analyzed, 79 patients (3.4%; 0.4% death, 1.4% arrhythmia) suffered 30-day serious outcomes after ED disposition. The accuracy of the CSRS remained high with area under the ROC curve at 0.87 (95% CI 0.82-0.92), similar to the derivation phase (0.87; 95% CI 0.84-0.89). The score showed excellent calibration at the prespecified risk strata. For the very-low risk category (0.3% SAE of which 0.2% were arrhythmia and no deaths) the sensitivity was 97.5% and negative predictive value was 99.7% (95% CI 98.7-99.9). For the very high-risk category (61.5% SAE of which 26.9% were arrhythmia and 11.5% death) the specificity was 99.4% and positive predictive value was 61.5% (95% CI 43.0-77.2). **Conclusion:** In this multicenter validation study, the CSRS accurately risk stratified ED patients with syncope for short-term serious outcomes after ED disposition. The score should aid in minimizing investigation and observation of very-low risk patients, and prioritization of inpatient vs outpatient investigations or following of the rest. The CSRS is ready for implementation studies examining ED management decisions, patient safety and health care resource utilization.

Keywords: syncope, risk stratification, validation

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