approach to performing triage assessments increased consistency in CTAS scores across many, but not all, high-volume CEDIS complaints. This does not reflect triage accuracy, as there are no known benchmarks for triage accuracy. Improvements in consistency were greatest for sentinel presenting complaints with a minimum allowable CTAS score.

Keywords: consistency, electronic Canadian Triage and Acuity Scale, triage

LO22

Risk-stratification of emergency department syncope by artificial intelligence using machine learning: human, statistics or machine

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Introduction: The Canadian Syncope Risk Score (CSRS) is a validated risk tool developed using the best practices of conventional biostatistics, for predicting 30-day serious adverse events (SAE) after an Emergency Department (ED) visit for syncope. We sought to improve on the prediction ability of the CSRS and compared it to physician judgement using artificial intelligence (AI) research with modern machine learning (ML) methods. **Methods:** We used the prospective multicenter cohort data collected for the CSRS derivation and validation at 11 EDs across Canada over an 8-year period. The same 43 candidate variables considered for CSRS development were used to train and validate the four classes of ML models to predict 30-day SAE (death, arrhythmias, MI, structural heart disease, pulmonary embolism, hemorrhage) after ED disposition. Physician judgement was modeled using the two variables, referral for consultation and hospitalization. We compared the area under the curve (AUC) for the three models. **Results:** The proportion of patients who suffered 30-day SAE in the derivation cohort (N = 4030) was 3.6% and in validation phase (N = 2290) was 3.4%. Characteristics of the both cohorts were similar with no shift. The best performing ML model, a gradient boosting tree-based model used all 43 variables as predictors as opposed to the 9 final CSRS predictors. The AUC for the three models on the validation data were: best ML model 0.91 (95% CI 0.87–0.93), CSRS 0.87 (95% CI 0.83–0.90) and physician judgment 0.79 (95% CI 0.74 - 0.84). The most important predictors in the ML model were the same as the CSRS predictors. **Conclusion:** A ML model developed using AI method for risk-stratification of ED syncope performed with slightly better discrimination ability though not significantly different when compared to the CSRS. Both the ML model and the CSRS were better predictors of poor outcomes after syncope than physician judgement. ML models can perform with similar discrimination abilities when compared to traditional statistical models and outperform physician judgement given their ability to use all candidate variables.

Keywords: artificial intelligence, risk-stratification, syncope

LO23

Do point of care ultrasound findings of left ventricular dysfunction predict cardiogenic shock in undifferentiated hypotensive patients?

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Introduction: Patients presenting to the emergency department (ED) with hypotension have a high mortality rate and require careful yet rapid resuscitation. The use of cardiac point of care ultrasound (PoCUS) in the ED has progressed beyond the basic indications of detecting pericardial fluid and activity in cardiac arrest. We examine if finding left ventricular dysfunction (LVD) on emergency physician performed PoCUS reliably predicts the presence of cardiogenic shock in hypotensive ED patients. **Methods:** We prospectively collected PoCUS findings performed in 135 ED patients with undifferentiated hypotension as part of an international study. Patients with clearly identified etiologies for hypotension were excluded, along with other specific presumptive diagnoses. LVD was defined as identification of a generally hypodynamic LV in the setting of shock. PoCUS findings were collected using a standardized protocol and data collection form. All scans were performed by PoCUS-trained emergency physicians. Final shock type was defined as cardiogenic or non-cardiogenic by independent specialist blinded chart review. **Results:** All 135 patients had complete follow up. Median age was 56 years, 53% of patients were male. Disease prevalence for cardiogenic shock was 12% and the mortality rate was 24%. The presence of LVD on PoCUS had a sensitivity of 62.50% (95%CI 35.43% to 84.80%), specificity of 94.12% (88.26% to 97.60%), positive-LR 10.62 (4.71 to 23.95), negative-LR 0.40 (0.21 to 0.75) and accuracy of 90.37% (84.10% to 94.77%) for detecting cardiogenic shock. **Conclusion:** Detecting left ventricular dysfunction on PoCUS in the ED may be useful in confirming the underlying shock type as cardiogenic in otherwise undifferentiated hypotensive patients.

Keywords: echocardiography, hypotension, point of care ultrasound

LO24

Implementing emergency department take-home naloxone programs: a systematic scoping review

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Introduction: Distributing take-home naloxone (THN) kits from Emergency Departments (EDs) is an important strategy for preventing opioid overdose deaths. However, there is a lack of clear operational guidance for implementing ED-based THN programs. This scoping review had two objectives: 1) identify key strategies for THN distribution in EDs, and 2) develop a theory-informed implementation model that can be used to optimize the effectiveness of ED-based THN programs. **Methods:** We systematically searched health science databases through April 18, 2019. The search strategy combined terms representing the ED, naloxone, and take-home kits/bystander administration. Two reviewers independently screened the search results. We included all peer-reviewed articles that described THN distribution within EDs. A standardized form was used for data extraction. Included studies were coded by two reviewers and mapped to domains of the Consolidated Framework for Implementation Research (CFIR). A third reviewer with content expertise adjudicated disagreements in record screening and data coding. **Results:** Database searching retrieved 717 records after duplicates were removed. 87 full-text studies were assessed for eligibility. Two studies were added through other sources, resulting in a total of 21 studies included in the final review. Of note, 14 studies evaluated existing ED-based THN programs. We synthesized themes that emerged within each CFIR domain and identified four key implementation strategies: 1) develop ED policies on opioid harm reduction; 2)

https://doi.org/10.1017/cem.2020.78 Published online by Cambridge University Press