in each study cohort. **Results**: The derivation and validation cohorts had 7-day MI rates of 5.7, 8.6 and 9.1%. In the derivation cohort, a score ≤0 ruled out MI in 35% of patients, with a sensitivity for 7-day MI of 99.5% (95% CI 98-100), NPV of 99.9% (95% CI 98.4-99.9), LR- of 0.02 (95% CI 0.01-0.05) and AUC of 0.88. In the first validation cohort, a score ≤0 ruled out MI in 45% of patients, with a sensitivity for 7-day MI of 97% (95% CI 90-100%), NPV of 99% (95% CI 98-100%), LR- 0.06 (0.02-0.18) and AUC of 0.89. In the second validation cohort, a score ≤0 ruled out MI in 20% of patients, with a sensitivity for 7-day MI of 96% (95% CI 93-99%), NPV of 98% (95% CI 96-100%), LR- of 0.16 (95% CI 0.07-0.39) and AUC of 0.78. **Conclusion**: We developed and validated a simple scoring system to adjust hs-cTnT concentrations for a patient's kidney function that enables MI to be ruled out in a large proportion of chest pain patients using a single measurement on ED presentation.
Keywords: kidney disease, myocardial infarction, troponin

LO02
Development of the HEARTRISK6 Scale for emergency department patients with acute heart failure

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Introduction: We previously derived (N = 559) and validated (N = 1,100) the 10-item Ottawa Heart Failure Risk Scale (OHFRS), to assist with disposition decisions for patients with acute heart failure (AHF) in the emergency department (ED). In the current study we sought to use a larger dataset to develop a more concise and more accurate risk scale. **Methods**: We analyzed data from the prior two studies and from a new cohort. For all 3 groups we conducted prospective cohort studies that enrolled patients who required treatment for AHF at 8 tertiary care hospital EDs. Patients were followed for 30 days. The primary outcome was short-term serious outcome (SSO), defined as death within 30 days, intubation or non-invasive ventilation (NIV) after admission, myocardial infarction, or relapse resulting in hospital admission within 14 days. The fully pre-specified logistic regression model with 13 predictors (where age, pCO2, and SaO2 were modeled using spline functions) was fitted to 10 multiple imputation datasets. Harrell's fast stepdown procedure reduced the number of variables. We calculated the potential impact on sensitivity (95% CI) for SSO and hospital admissions, and estimated a sample size of 2,000 patients. **Results**: The 1,986 patients had mean age 77.3 years, male 54.1%, EMS arrival 41.2%, IV NTG 3.3%, ED NIV 5.4%, admission on initial visit 49.5%. Overall there were 236 (11.9%) SSOs including 61 deaths (3.1%), meaning that current admission practice sensitivity for SSO was only 59.7%. The final HEARTRISK6 scale is comprised of 6 variables (points) (C-statistic 0.68): Valvular heart disease (2) Antiarrhythmic medication (2) ED non-invasive ventilation (3) Creatinine 80–150 (1); ≥150 (3) Troponin ≥3x URL (2) Walk test failed (1). The probability of SSO ranged from 4.8% for a total score of 0 to 62.4% for a score of 10, showing good calibration. Choosing a HEARTRISK6 total point admission threshold of ≥3 would yield sensitivity of 70.8% (95%CI 64.5-76.5) for SSO with a slight decrease in admissions to 47.9%. Choosing a threshold of ≥2 would yield a sensitivity of 84.3% (95%CI 79.0-88.7) but require 66.6% admissions. **Conclusion**: Using a large prospectively collected dataset, we created a more concise and more sensitive risk scale to assist with admission decisions for patients with AHF in the ED. Implementation of the HEARTRISK6 scale should lead to safer and more efficient disposition decisions, with more high-risk patients being admitted and more low-risk patients being discharged.
Keywords: heart failure, risk scale, safety

LO03
Validation of The Ottawa Troponin Pathway

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Introduction: Our team developed "The Ottawa Troponin Pathway" (OTP) for Non-ST Elevation Myocardial Infarction (NSTEMI) diagnosis using serial conventional troponin (cTnI) 3 hours apart to aid in safe and early disposition of ED patients. The primary objective of this study is to validate the diagnostic accuracy of the OTP in the cohort of patients with cTnI values above the 99th percentile (>45ng/L). **Methods**: This study is a health records review conducted at the Civic and General Campuses of The Ottawa Hospital from August 2017 to December 2017. Adults (≥18 years) who presented to the ED with symptoms of ACS, and who had serial cTnI (at least two values 3 hours ±15 minutes apart) performed for diagnosis of NSTEMI and at least one cTnI value >45ng/L were included. Patients with cardiac arrest, STEMI, unstable angina or those with TnI values ≤45ng/L were excluded. The outcomes were death due to unknown cause or NSTEMI adjudicated by two blinded investigators within 30 days. Data collected include baseline characteristics, ED management, length of stay, cTnI values and times of measurement, disposition, and outcome. We used descriptive statistics and test diagnostic characteristics to analyze our data. **Results**: We screened 53,077 patients, of whom 635 patients were included in the study (mean age 71.6 years; 57.6% males; 59.7% hospitalized; median ED length of stay 4.7 hours.). 107 patients (16.9%; 95%CI 14.1%-20.0%) were diagnosed with NSTEMI within 30 days. Among patients with TNI values above the 99th percentile, the OTP did not miss any patients diagnosed with NSTEMI. The sensitivity and the specificity of the OTP were 100% (95%CI 96.6%-100%) and 32.2% (95%CI 28.2%-36.4%) respectively. **Conclusion**: Our results show that the OTP is diagnostically accurate in ruling out NSTEMI among patients with cTNI values above the 99th percentile with symptoms concerning for ACS. Using the OTP will allow for early referral to consulting services for management, safe and early discharge home, and improve ED crowding.
Keywords: chest pain, non-ST elevated myocardial infarction (NSTEMI), troponin

LO04
Canadian best practice diagnostic algorithm for acute aortic syndrome

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Introduction: Acute aortic syndrome (AAS) is a time sensitive aortic catastrophe that is often misdiagnosed. There are currently no