patients: a systematic review
Long-term outcomes among emergency department syncope
LO58
chest pain

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tivity troponin T result below the LoB (<5 ng/L) for index AMI was 100% (95% CI 96.2%-100%) and for 30-day AMI was 100% (95% CI 96.4-100%). The sensitivity of a troponin below the LoD (<5 ng/L) for index AMI was 97.9% (95% CI 92.7%-99.8%) and for 30-day AMI was 98.0% (95% CI 93.0-99.8%). Sensitivity for 30-day MACE at both cutoffs was lower: 98.4% (95% CI 94.3-99.8%) for <3 ng/L, and 94.4% (95% CI 88.8-97.7%) for <5 ng/L, respectively; however, negative predictive values remained high at both cutoffs: <3 ng/L, 99.0% (95% CI 96.3-99.9%) and <5 ng/L, 98.3% (95% CI 96.6-99.3.%). Conclusion: A high sensitivity troponin T result below the LoB (<3 ng/L) is highly sensitive for excluding AMI and identifies patients at low risk of 30-day MACE. A result below the LoB (<5 ng/L) will identify a larger population of patients as low risk but has a greater risk of missed AMI and MACE. Keywords: high-sensitivity troponin, acute myocardial infarction, chest pain

LO59
External validation of a 2-hour rapid diagnostic algorithm for ruling out acute myocardial infarction in emergency department patients with chest pain using a high-sensitivity troponin-T assay
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Introduction: Ruling out acute myocardial infarction (AMI) using serial troponin testing is central to the care of many emergency department (ED) patients with chest pain. While diagnostic strategies using conventional troponin assays require repeat sampling over many hours to avoid missed diagnoses, serial high-sensitivity troponin (hs-cTn) assays may be able to exclude AMI in most patients within 1 or 2 hours. However, many of the initial studies deriving and validating these rapid diagnostic algorithms had all hs-cTn samples analyzed in a central core lab likely representing optimal assay performance. This objective of this study is to validate a 2-hour rapid diagnostic algorithm to exclude AMI in ED chest pain patients using an hs-cTn assay in real world practice. Methods: This prospective cohort study was conducted at a single urban tertiary center and regional percutaneous coronary intervention site in Calgary, Alberta. Patients were eligible for enrollment if they presented to the ED with chest pain, were 25-years or older and required biomarker testing to rule out AMI at the discretion of the attending emergency physician. Patients were excluded if they had clear acute ischemic ECG changes, new arrhythmia or renal failure requiring hemodialysis. A high-sensitivity troponin result (Roche Elecsys hs-cTnT) was obtained in all patients at ED presentation and 2-hours later. The primary outcome was AMI on the index visit. Secondary outcomes included 30-day AMI and 30-day major adverse cardiac events (MACE - including AMI, revascularization or cardiac death). Electronic medical records were reviewed and telephone follow-up was obtained for all patients at 30-days to ensure relevant events were captured. Two physician adjudication (board-certified emergency physician and cardiologist) was obtained for all outcomes. This study was REB approved. Results: A total of 549 patients were enrolled from August 2014 September 2016 with 2-hour serial hs-cTnT results, of which 349 (63.6%) met the 2-hour rapid diagnostic algorithm low risk criteria (time 0h2h hs-cTnT <14 ng/L and delta 2h <4 ng/L). The sensitivity of the 2-hour low risk criteria for index AMI was 98.4% (95% CI 91.3%-100%) and for 30-day AMI was 98.4% (95% CI 91.6-100%). The sensitivity for 30day MACE was lower 84.4% (95% CI 74.4-91.7%) but maintained a high negative predictive value, 96.6% (95% CI 94.1-98.2%). Conclusion: A 2-hour rapid diagnostic algorithm using an hs-cTnT assay was highly sensitive for AMI on the index visit and successfully pooling the outcomes using random effects model (RevMan v.5.3; Cochrane Collaboration). Results: Initial literature search generated 2094 articles after duplicate removal. 50 articles remained after phase-1 (±0.85) and 16 articles were included in the systematic review after phase-2 (±0.86). The 16 included studies enrolled a total of 44,755 patients. Pooled analysis at 1-year follow-up showed the following outcomes: 7% mortality; 14% recurrence of syncope requiring hospitalization; one study reported that 0.6% of patients had a pacemaker inserted; and two studies reported 0.8 11.5% of patients suffered new arrhythmias. Conclusion: An important proportion of ED patients with syncope suffer outcomes at 1-year. Appropriate follow-up is needed to prevent long-term adverse outcomes. Further prospective research to identify patients at risk for long-term important cardiac outcomes and death is needed. Keywords: syncope, long-term outcomes, mortality

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identified patients at low risk of 30-day AMI. Sensitivity for MACE was lower, reminding us that while biomarker-only rapid diagnostic algorithms excel at ruling out AMI, careful clinical risk stratification is needed to avoid missed MACE events.

**Keywords:** high-sensitivity troponin, myocardial infarction, rapid diagnostic algorithm

**LO60**

Diagnostic utility of creatine kinase in the diagnosis and management of non-ST elevation myocardial infarction

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**Introduction:** Creatine kinase (CK) measurement, despite not being recommended for the diagnosis of a Non-ST Elevation Myocardial Infarction (NSTEMI) is still routinely performed in the emergency department (ED) for the workup of NSTEMI. The diagnostic utility of CK among ED patients with suspected NSTEMI is still not well understood. The objectives of this study were to assess: the additional value of CK in NSTEMI diagnosis and the correlation between the highest CK/TNI values and ejection fraction (EF) on follow-up echocardiography among patients with suspected NSTEMI.

**Methods:** This was a prospective cohort study conducted at the Civic and General Campuses of The Ottawa Hospital from March 2014 to March 2016. We enrolled adults (18 years) for whom troponin (TNI) and CK were ordered for chest pain or non-chest pain symptoms within the past 24 hours concerning for NSTEMI and excluded those with suspected ST-Elevation Myocardial Infarction (STEMI). Primary outcome was a 30-day NSTEMI adjudicated by two blinded physicians. Demographics, medical history, and ED CK/TNI values were collected. We used descriptive statistics and report test characteristics for AMI of a high-sensitivity troponin assay (hsTnT) with very low eGFR. The ideal diagnostic strategy for AMI in patients with CKD likely involves serial high-sensitivity troponin testing with diagnostic thresholds customized to different eGFR categories.

**Keywords:** myocardial infarction, troponin, kidney disease

**LO62**

Variability in triage performance for chest pain patients in two Canadian cities

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**Introduction:** CTAS triage acuity determinations are used to prioritize patients, describe illness acuity, and compare casemix across institutions. The latter functions assume reliable application in diverse settings, but no studies have evaluated this using actual triage data. This administrative database study included all patients with a triage complaint of chest pain (CP) in Vancouver (2012-16) and Calgary (2016). We stratified patients into high vs. non-high severity groups based on discharge diagnoses. High severity diagnoses included all patients with aortic pathology, ACS, shock or arrest states, as well as patients requiring admission because of pulmonary embolism, dysrhythmias, CHF, neurologic or respiratory conditions. We dichotomized patient triage assignments to high (CTAS 1,2) vs. low (3,4,5) acuity. We derived CTAS-adjusted cutoffs to rule-in AMI with sensitivity >90%, which accurately ruled-in up to 18% of patients. Conclusion: Cutoffs achieving acceptable diagnostic performance for AMI using single hsTnT sampling on ED arrival may have limited clinical utility, particularly among patients with very low eGFR. The ideal diagnostic strategy for AMI in patients with CKD likely involves serial high-sensitivity troponin testing with diagnostic thresholds customized to different eGFR categories.

**Keywords:** myocardial infarction, troponin, kidney disease