

Article Appraisal

**Article:**  Single vs Serial Measurements of Cardiac Troponin Level in the Evaluation of Patients in the Emergency Department With Suspected Acute Myocardial Infarction

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**Background and Study Objective(s):** Chest pain is a common ED presentation, and a key goal is ruling out acute coronary syndromes. (ACS) Cardiac biomarkers are critical, but it is uncertain whether single or sequential biomarkers can be used. This study inquired a patient be safely discharged after a single negative troponin.

**Study Design:** This involved 15 community EDs in California and used a single administrative database from 2015 – 2017. Consecutive chest pain patients with at least one troponin were collected; each was also evaluated with the HEART score. Patients with an initial elevated troponin or those with do-not-resuscitate orders were excluded. Patients with a single troponin were compared to those with sequential troponins.Primary outcome was 30-day myocardial infarction or cardiovascular death following ED discharge; secondary outcomes included revascularization or a new diagnosis of unstable angina. Outcomes were adjusted by comorbidities.

**Results:** Overall, the study collected 27 918 patients, of whom 14 459 (52%) had a single troponin. The single-troponin group was younger and had fewer comorbidities. Both groups had 0.4% 30-day MI or mortality, with no difference in adjusted odds ratios. (1.41 [95% CI, 0.96-2.07]) Patients in the single-troponin group had lower adjusted rates of CABG (OR, 0.24 [95% CI, 0.11-0.48]) and invasive angiography (OR, 0.46 [95% CI, 0.38-0.56]). However, there was no statistically significant difference between the groups in the rates of percutaneous coronary intervention (OR, 0.73, [95% CI, 0.44-1.18]) and unstable angina (OR, 1.05 [95% CI, 0.76-1.44])

**Strengths and limitations:** This was a large population with complete follow-up. However, unmeasured confounders, including timing of symptom onset, history, and EKG characteristics, substantially limit the ability to draw conclusions. Even statistical techniques cannot “balance” the two groups. Causality cannot be assumed from this study.

**The Bottom Line:** While this large study is interesting, the substantial differences between the single- and sequential-troponin groups likely limit applicability at this time.