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ORIGINAL RESEARCH ARTICLE

A Randomized Trial of a 1-Hour Troponin T Protocol in Suspected Acute Coronary Syndromes

The Rapid Assessment of Possible Acute Coronary Syndrome in the Emergency Department With High-Sensitivity Troponin T Study (RAPID-TnT)

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consideration of admission. The standard local pathway recommendation for patients with troponin results ≤29 ng/L was discharge from ED, with subsequent outpatient functional testing based on age >65 years or the presence of ≥3cardiac risk factors. All participants were referred back to their primary care physicians for further evaluation. Clinical information required for the calculation of various risk scores (ie, the Emergency Department Assessment of Chest Pain Score, History ECG Age Risk factors and Troponin Score, Global Registry for Acute Coronary Events score, and Thrombolysis In Myocardial Infarction score for non–ST-segment–elevation acute coronary syndrome) were collected and available to clinicians, but use was not mandated.[19–22] Education on protocol interpretation was provided at the outset and throughout study implementation. Study coordinators were comprehensively trained and were present during the initial assessment of each patient regardless of study arm to assist in data collection and to facilitate knowledge of the protocol recommendations. Clinicians were also informed of the previously published positive and negative predictive values for rule-in MI (72%) and rule-out MI (99%) triage recommendations.[6] Although these protocols provided recommendations, clinicians retained discretion to vary management to provide inpatient or outpatient care that they deemed most appropriate for the patient.

Data Collection and Outcome Measures

ED discharge was defined as those patients not admitted to inpatient wards or extended care facilities within the ED. Participant records were reviewed for hospital actions including subsequent cardiac testing (eg, stress testing [ECG, echocardiography, nuclear, cardiac magnetic resonance imaging], echocardiography, computed tomography coronary

the limit of detection [<5 ng/L]) or masked hs-cTnT reported to ≤29 ng/L evaluated at 0/3-hours (standard arm). The 30-day primary end point was all-cause death and myocardial infarction. Noninferiority was defined as an absolute margin of 0.5% determined by Poisson regression.

Results: In total, 3378 participants with an emergency presentation were randomly assigned between August 2015 and April 2019. Ninety participants were deemed ineligible or withdrew consent. The remaining participants received care guided either by the 0/1-hour hs-cTnT protocol (n=1646) or the 0/3-hour standard masked hs-cTnT protocol (n=1642) and were followed for 30 days. Median age was 59 (49–70) years, and 47% were female. Participants in the 0/1-hour arm were more likely to be discharged from the ED (0/1-hour arm: 45.1% versus standard arm: 32.3%, *P*<0.001) and median ED length of stay was shorter (0/1-hour arm: 4.6 [interquartile range, 3.4–6.4] hours versus standard arm: 5.6 (interquartile range, 4.0–7.1) hours, *P*<0.001). Those randomly assigned to the 0/1-hour protocol were less likely to undergo functional cardiac testing (0/1-hour arm: 7.5% versus standard arm: 11.0%, *P*<0.001). The 0/1-hour hs-cTnT protocol was not inferior to standard care (0/1-hour arm: 18/1646 [1.1%] versus 16/1642 [1.0%]; incidence rate ratio, 1.06 [0.53–2.11], noninferiority *P* value=0.001, superiority *P* value=0.744), although an increase in myocardial injury was observed. Among patients discharged from ED, the 0/1-hour protocol had a negative predictive value of 99.6% (95% CI, 99.0–99.9%) for 30-day death or myocardial infarction.

Conclusions: This in-practice evaluation of a 0/1-hour hs-cTnT protocol embedded in ED care enabled more rapid discharge of patients with suspected acute coronary syndrome