Clinical risk scores versus simple integrated clinical judgment in patients with suspected acute coronary syndromes

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Background: The clinical utility of clinical risk scores in patients presenting with suspected acute coronary syndromes to the emergency department (ED) is uncertain.

Purpose: We aimed to directly compare the performance of three established clinical risk scores to simple integrated clinical judgment (ICJ) of the treating ED physician.

Methods: Thirty day major adverse cardiac events (MACE) including all-cause death, life-threatening arrhythmia, cardiogenic shock, acute myocardial infarction (AMI, including the index event), and unstable angina requiring urgent coronary revascularization were centrally adjudicated by two independent cardiologists in patients presenting to the emergency department (ED) with acute chest discomfort in an international multicenter study (12 centres in 5 European countries). ICJ for the likelihood that an ACS is the cause of acute chest discomfort was quantified by the treating ED physician using a visual analogue scale at 90 minutes after patient’s presentation to the ED. At this time, the ED physician had obtained the patient history, physical examination including vital signs, the 12-lead electrocardiogram at presentation, and the first local (hs)-cTn measurement. We directly compared the prognostic performance of the HEART-score, the GRACE-score, and the T-MACS decision aid to simple integrated clinical judgment (ICJ) of the treating ED physician. We also assessed the safety for rule-out of MACE at 30-days.

Results: Among 4551 eligible patients, 1110/4551 patients (24.4%) had at least one MACE within 30 days. Prognostic accuracy as quantified by the area under the receiver-operating characteristics curve was 0.85 (95% CI, 0.84–0.87) for the HEART-score, 0.85 (95% CI, 0.84–0.87) for the GRACE-score, 0.79 (95% CI, 0.77–0.80) for the TIMI decision aid, and 0.87 (95% CI, 0.85–0.88) for ICJ (Figure). The HEART-score identified 1893/4551 (41.6%) patients as low-risk with an NPV of 96.0% (95% CI, 95.0–96.8), the GRACE score identified 1542/4551 (33.9%) patients as low-risk with an NPV of 97.0% (95% CI, 96.0–97.7), the TIMI score identified 2157/4551 (47.4%) patients as low-risk with an NPV of 93.1% (95% CI, 91.9–94.1), and simple ICJ identified 1743/4551 (38.3%) patients as low-risk with an NPV of 95.6% (95% CI, 94.5–96.5).

Conclusion: The simple ICJ of the treating physician performed well for the prediction of 30-day MACE and might be an alternative to the well-validated HEART-score, GRACE-score, and T-MACS decision aid.

Figure 1. ROC Curves for MACE at 30-days

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