Clinical risk scores and integrated clinical judgment in patients with suspected acute coronary syndrome

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Background: Clinical risk scores are recommended for formal risk stratification in patients presenting with suspected acute coronary syndrome (ACS). It is unknown, whether these scores still provide additional value in the era of high-sensitivity cardiac troponin (hs-cTn) compared to simple integrated clinical judgment.

Purpose: To evaluate the diagnostic and prognostic performance of integrated clinical judgment compared to clinical risk scores.

Methods: We prospectively enrolled patients presenting to the emergency department with symptoms suggestive of ACS such as acute chest discomfort. The primary prognostic endpoint was the composite of 30-day major adverse cardiac events (MACE) including all-cause death, life-threatening arrhythmia, cardiogenic shock, acute myocardial infarction (AMI, including the index event), and urgent coronary revascularization and was adjudicated by two independent cardiologists. The performance of five well-established formal risk scores (T-MACS, HEART, GRACE, TIMI, and EDACS) for the prediction of 30-day MACE was directly compared with simple integrated clinical judgment for the ACS likelihood by the treating ED physician. Integrated clinical judgment was quantified using a visual analogue scale at 90 minutes after patient's presentation to the ED. The primary diagnostic endpoint was index AMI.

Results: Among 2031 patients, 417/2031 patients (20.5%) had at least one MACE within 30 days. Prognostic accuracy for 30-day MACE quantified by the area under the receiver-operating characteristics curve (AUC) was 0.87 (95% CI 0.85–0.89) for T-MACS, 0.87 (95% CI 0.85–0.89) for HEART, 0.84 (95% CI 0.82–0.86) for GRACE, 0.81 (95% CI 0.79–0.83) for TIMI, 0.75 (95% CI 0.73–0.78) for EDACS, versus 0.89 (95% CI 0.87–0.91) for simple integrated clinical judgment ($p<0.01$ versus GRACE, TIMI, and EDACS; Figure 1). Similarly, diagnostic accuracy was 0.92 (95% CI 0.90–0.94) for T-MACS, 0.89 (95% CI 0.87–0.90) for HEART, 0.88 (95% CI 0.86–0.89) for GRACE, 0.80 (95% CI 0.78–0.82) for TIMI, 0.74 (95% CI 0.72–0.77) for EDACS, versus 0.89 (95% CI 0.88–0.91) for simple integrated clinical judgment ($p<0.01$ versus GRACE, TIMI, and EDACS).

Conclusion: None of the formal clinical risk scores outperformed simple integrated clinical judgment for ACS in the prediction of 30-day MACE or the diagnosis of AMI. Therefore, in the era of hs-cTn testing as part of integrated clinical judgment, clinical risk scores seem to no longer provide incremental value.

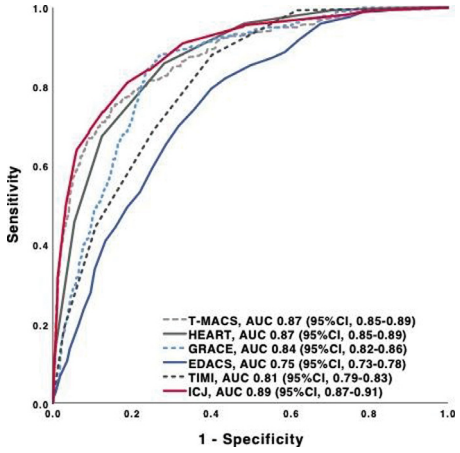

Figure 1. Diagnostic accuracy for MACE at 30-days