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Letter: The AHEAD score in acute myocardial infarction: a call for more rigorous validation

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We read with great interest the article by Saji and colleagues[1], "The AHEAD score as a predictor of all-cause mortality in patients with acute myocardial infarction."[1] The authors are to be commended for exploring the utility of a simple bedside score in a large, contemporary cohort of patients with acute myocardial infarction (MI) from the Japan Acute Myocardial Infarction Registry (JAMIR). They report that the AHEAD score independently predicted 1-year all-cause mortality (adjusted hazard ratio 1.60, 95% confidence interval: 1.39-1.84), even among patients without overt heart failure[1]. However, we wish to highlight several critical methodological limitations that temper the authors' conclusions.

First, a significant methodological concern arises from the non-standardised measurement of creatine kinase (CK). The authors concede that sampling was determined by local hospital practices, potentially leading to an underestimation of peak CK concentrations. As peak CK is a primary surrogate for infarct size, this introduces a critical measurement bias that compromises the integrity of any analysis involving this variable. The lack of standardised enzymatic assessment makes it difficult to reliably interpret the association between the AHEAD score, infarct severity, and subsequent mortality[2].

Second, the study's claim of the AHEAD score's utility is substantially weakened by the absence of a head-to-head comparison with established, validated risk stratification tools such as the Global Registry of Acute Coronary Events (GRACE) or Thrombolysis in Myocardial Infarction (TIMI) risk scores. These scores are the current standard of care for risk assessment in acute coronary syndromes and have demonstrated high predictive accuracy for mortality (C-statistic 0.83-0.85)[3,4]. Without demonstrating non-inferiority or superiority against these benchmarks, the incremental prognostic value of the AHEAD score in the setting of acute MI remains unproven. A simple tool is only useful if its prognostic accuracy is comparable to existing, more complex models.

Third, the data reveal a clear pattern of confounding by indication. As shown in Table 2 and Table 3 of the study by Saji et al[1], patients with higher AHEAD scores – indicating greater baseline risk – were less likely to receive evidence-based therapies, including drug-eluting stents, dual antiplatelet therapy, and angiotensin-converting enzyme inhibitors/angiotensin receptor blockers. Consequently, the higher mortality observed in this group may be driven, at least in part, by disparities in care and undertreatment, rather than reflecting the intrinsic prognostic power of the AHEAD score itself. While the multivariate model adjusts for several covariates, residual confounding from treatment decisions is highly likely and may have inflated the predictive estimate of the score[5].

In conclusion, while the AHEAD score offers simplicity, its validity and clinical utility for risk prediction in acute MI are not sufficiently supported by this study because of major methodological flaws. The findings should be considered hypothesis-generating. Rigorous, prospective validation that includes standardised biomarker assessment and direct comparison with established risk scores is necessary before

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this tool can be recommended for clinical practice in this patient population.

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Conflict of interest statement

The authors have no conflicts of interest to declare.

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