

Big HEART Big Problem? Validation of the HEART score in a UK Emergency Department

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Introduction

The HEART score is a cardiovascular disease assessment tool, validated in international ED cohorts, used to predict the risk of major adverse cardiac events (MACE) in patients presenting with chest pain.^{1,2} In 2014, we incorporated the score into our Emergency Department cardiac chest pain pathway to assist in risk-stratifying this patient group.

Component	Criteria	Score
History	Highly suspicious	2
	Moderately suspicious	1
	Slightly suspicious	0
ECG	Significant ST depression	2
	Non-specific repolarisation disturbance	1
	Normal	0
Age	≥ 65	2
	45 – 65 years	1
	≤ 45	0
Risk factors	≥ 3 risk factors or known history of atherosclerotic disease	2
	1 or 2 risk factors	1
	No known risk factors	0
Troponin	≥ 3x normal limit	2
	1 – 3x normal limit	1
	≤ normal limit	0

Figure 1: Components of HEART score

Methodology

Adults triaged as 'chest pain' between 21st September 2014 and 21st October 2014 were identified using the electronic patient record software, QuadraMed (QCPR).

Medical notes from the initial ED attendance were reviewed; where a HEART score was documented in accordance with the guideline this was noted. A retrospective HEART score was also calculated for all patients. The medical discharge letter was reviewed independently to ascertain the discharge diagnosis.

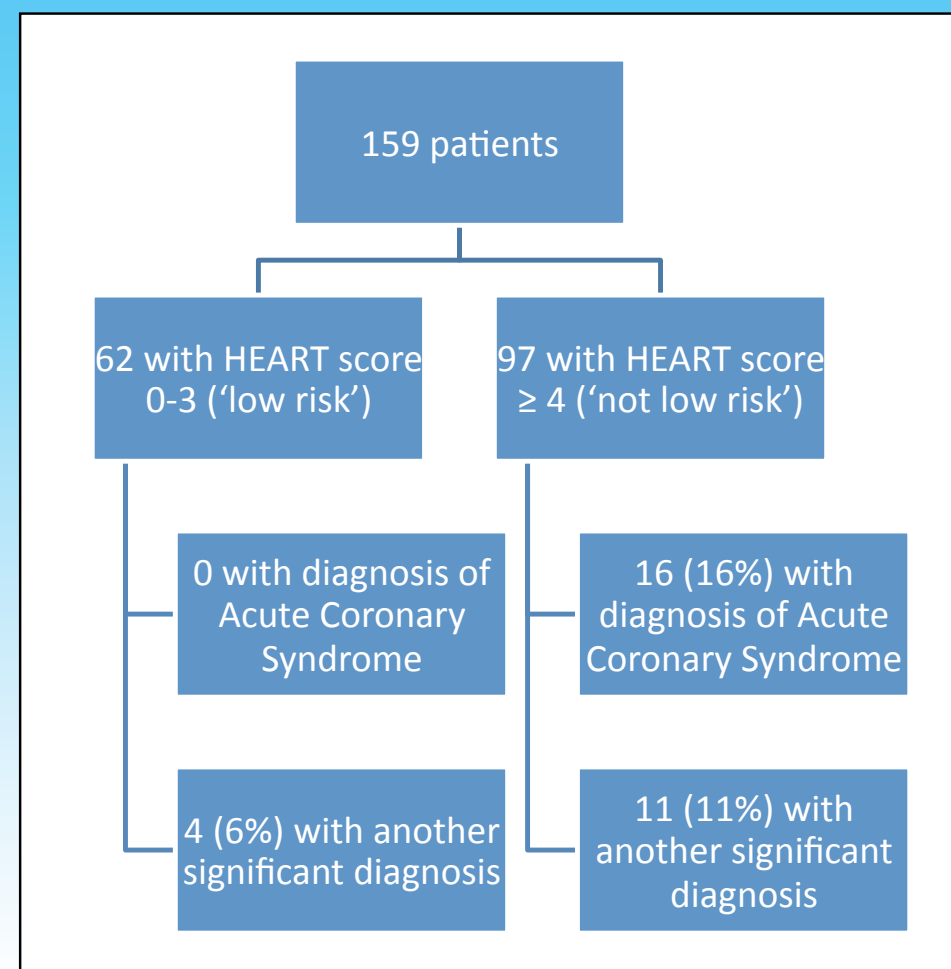


Figure 2: Patient attendances and outcomes

Results

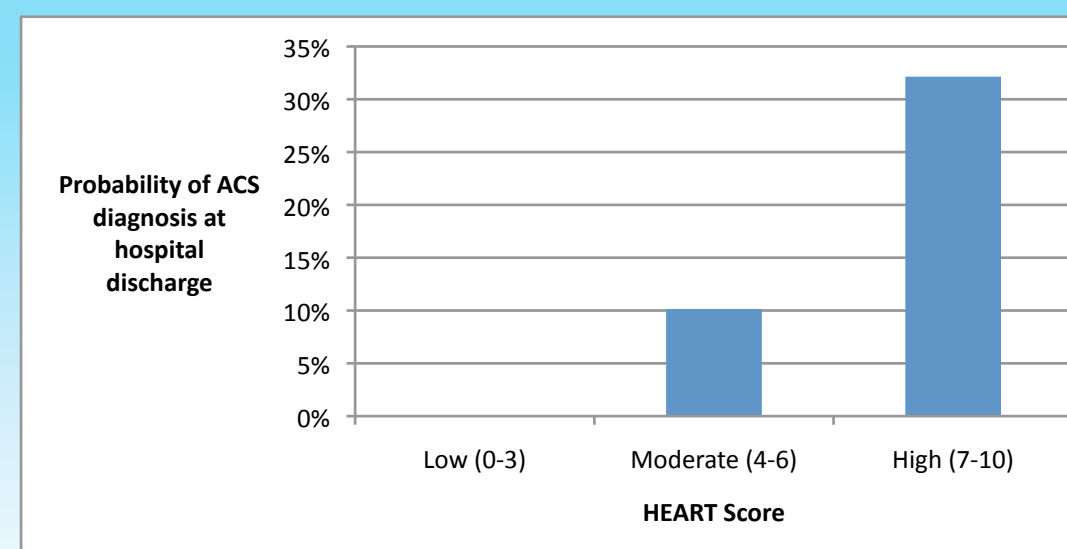


Figure 3: Probability of ACS based on HEART score

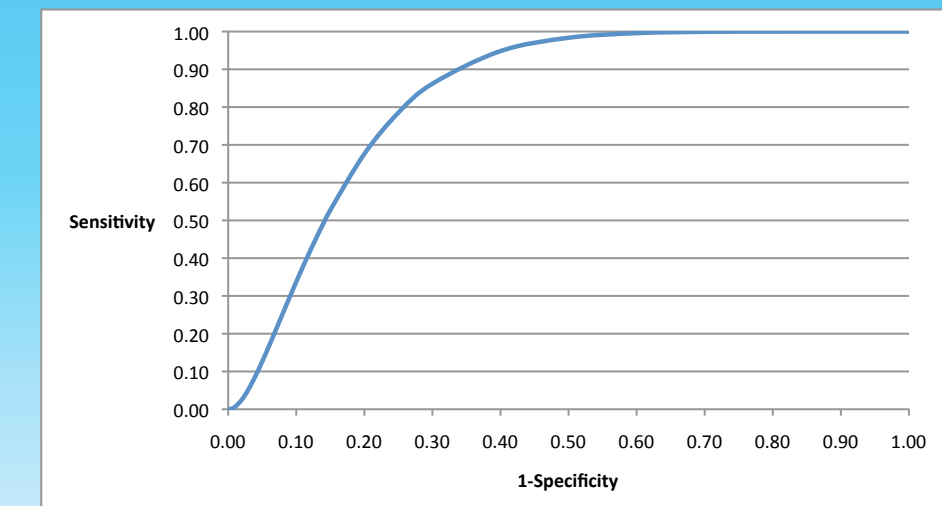


Figure 4: ROC curve for HEART score

Area under ROC curve = 0.831

Agreement between prospective and retrospectively assigned scores was excellent (kappa = 0.89). No patients were classed as low risk (HEART score 0-3) by one rater and moderate or high by another.

Conclusion

The HEART score performs well in a UK ED population and can be used as a risk stratification tool. In isolation it cannot be used to diagnose or exclude ACS.

Our MACE rates are lower than those quoted in previous studies; this is likely to reflect the fact that our methodology only considers diagnosis during the index visit and did not allow for longer term follow up as reported elsewhere.

References

1. Six AJ, Backus BE, Kelder JC. (2008) Chest pain in the emergency room: value of the HEART score. *Neth Heart J.* 16:191-196
2. Six AJ, Cullen L, Backus BE, Greenslade J, Parsonage W, Aldous S, Doevendans PA, Than M. (2013) The HEART score for the assessment of patients with chest pain in the Emergency Department: A multi-national validation study. *Critical Pathw Cardiol.* 12:121-126

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