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Ruling out coronary heart disease in primary care: external validation of a clinical prediction rule

Haasenritter *et al*¹ performed an external validation of the Marburg Heart Score (MHS), a clinical prediction rule to rule out coronary heart disease (CHD) in patients presenting with chest pain in primary care. We read this potentially important article with great interest because ruling out CHD in primary care is of special concern. The authors concluded that, according to its generalisability, ease of application, and accuracy, its use in clinical practice is recommended.

However, we have some doubts about their outcome measure and conclusion. The outcome measure, the reference diagnosis, was established using a delayed-type reference standard and an expert panel. Our main concern was that this expert panel was not blinded to the results of the index test. The authors acknowledged this problem, but stated that blinding of this panel would have led to fewer available data for this study. In addition, another study showed a 'substantial and satisfying' agreement ($\kappa = 0.62$) between a blinded and unblinded panel. We think that having used two independent experts without knowledge of the MHS, blinding without loss of data would have been possible without risk of bias. Furthermore, the reported agreement was derived from another study, and is therefore not generalisable to this study. We would be inclined to rate a κ of 0.62 at best as moderate rather than 'substantial and satisfying'.

The authors report an impressive negative predictive value of 97.9%. Nevertheless, still one in 50 patients with CHD would have been missed using the MHS. Moreover, four of 21 patients with acute coronary syndrome (ACS) were falsely classified as 'CHD-negative'. In our opinion, missing almost one in five patients with ACS does not justify recommending the MHS for use in clinical practice. Besides, the low positive predictive value may lead to more unnecessary investigations and costs.

Lastly, the authors did not demonstrate that there is a strong need for the MHS, nor published data that the MHS performs better than a GP's own judgment based on common practice. Apart from statistical evidence, do GPs feel that the MHS will positively contribute to their diagnostic practice?

Therefore, it is hard for us to see the diagnostic accuracy of the MHS in the right perspective and estimate its clinical relevance. In our opinion, it is premature to recommend the MHS. Nevertheless, we would like to encourage the authors to continue validating the MHS, for example, in a prospective cohort study, and demonstrate its surplus value.

Dewi Djasmo,

Medical Student, Department of General Practice, Erasmus Medical Center Rotterdam, the Netherlands.

Michael Echteld,

PhD, Intellectual Disability Medicine and Department of General Practice, Erasmus Medical Center Rotterdam, the Netherlands.

Leo Spee,

*GP Trainee and PhD Student, Department of General Practice, Erasmus Medical Center Rotterdam, PO Box 2040, 3000 CA Rotterdam, the Netherlands.
E-mail: l.spee@erasmusmc.nl*

REFERENCE

1. Haasenritter J, Bösner S, Vaucher P, Herzig L, *et al*. Ruling out coronary heart disease in primary care: external validation of a clinical prediction rule. *Br J Gen Pract* 2012; DOI:10.3399/bjgp12X649106.

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Authors' response

We would like to thank Djasmo, Echteld, and Spee for their well-founded and insightful comments on our report on the external validation of the MHS.¹

Regarding the reference standard, Djasmo *et al* point out that the results of our study may be biased since the expert panel establishing

the reference diagnosis was not blinded to the results of the MHS, that they assume that blinding without loss of data would have been possible, and that a κ of 0.62 does not indicate a substantial agreement. Regarding the latter, several authors suggested that a κ between 0.6 and 0.8 indicates a substantial agreement.^{2,3} However, we do not have the primary intention to discuss the appropriateness of such threshold recommendations. We think that the main message is that the agreement was not perfect and that this indicated a difference between the blinded and the unblinded reference panel. But it is important to state that the lack of total agreement did not necessarily mean that the blinded reference panel made the more accurate decision. A reference panel blinded to the items of the MHS would have had to make a decision without knowledge of the sex, age, history of CHD, if pain had depended on effort, or if it had been reproducible by palpation. We found it reasonable to assume that, especially in cases in which only data of the telephone follow-up were available, lack of these data may result in a less accurate decision and a misclassification bias. In the end we had to weigh the risk of a bias introduced by a lack of blinding against a risk of misclassification bias. Based on our practical experience with this kind of reference standard we estimated the latter as higher, but we acknowledge this limitation.

Regarding the accuracy of the MHS, Djasmo *et al* state implicitly that missing one in 50 patients with CHD may be too high and they state explicitly that missing four out of 21 with acute coronary syndrome (ACS) is too high. Regarding the first point we suppose that the predictive values present the most informative measures from a clinical point of view since they account for the prevalence of the target disease in the respective setting. Increasing the sensitivity would substantially decrease the positive predictive value, especially in a low prevalence setting. However, we must state that the accuracy of the MHS regarding the diagnostic outcome, ACS is lower than in regards to the outcome myocardial ischaemia. We also agree that this fact deserves more attention. Diagnosis of ACS remains a major challenge in primary care since patients often present in an early stage and specific tests (for example, biomarkers) lack sensitivity.⁴⁻⁶ Different,