Predictive performance and calibration of the HCM-AF score: A Systematic Review

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INTRODUCTION

The HCM-AF score estimates incident atrial fibrillation (AF) risk at 2 and 5 years using routine clinical and echocardiographic data. [1]

Its performance across populations determines how clinicians should interpret the predicted risk.

OBJECTIVE

Evaluate HCM-AF discrimination, calibration and comparative performance in patients with hypertrophic cardiomyopathy (HCM) without previous AF.

METHODS

We searched PubMed and Embase and reported using PRISMA 2020. Two reviewers independently screened records and assessed eligibility. Discrimination, calibration and within-cohort model comparisons. Structured narrative synthesis without meta-analysis

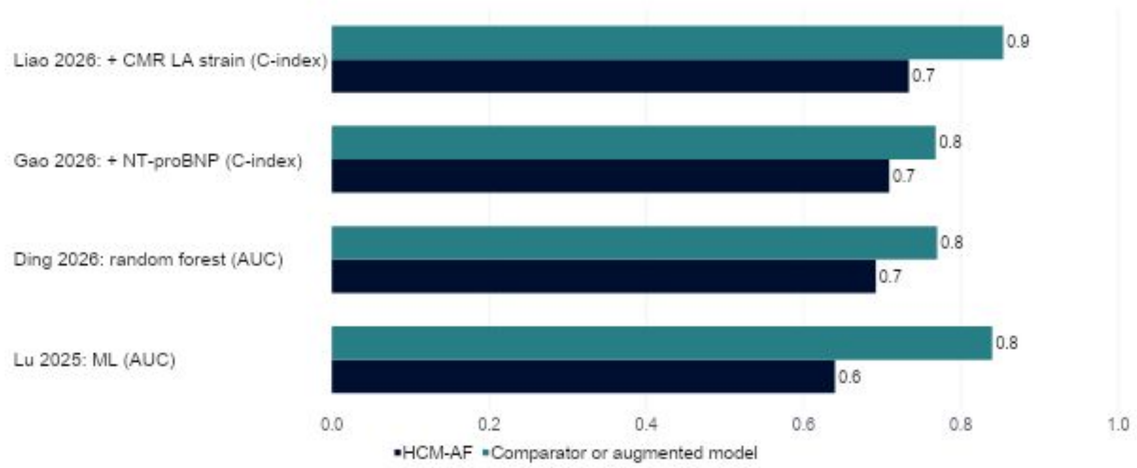
RESULTS

10 reports assessed, published 2021–2026

Report	Measure	HCM-AF result
Carrick 2021 [1]	Concordance	0.68
Stec 2023 [2]	Risk strata	2- and 5-year AF risk
Losi 2024 [3]	AUC	0.647
Pronovost 2025 [4]	C-statistic	0.72 (0.70–0.75)
Lu 2025 [5]	AUC	0.64 (0.54–0.73)
Gao 2026 [6]	C-index	0.709
Ding 2026 [7]	AUC	0.692 (0.598–0.786)
Bukhari 2026 [8]	Concordance	0.78 (0.64–0.93)
Liao 2026 [9]	C-index*	0.734 (0.664–0.809)
Lim 2026 [10]	Incremental value	Not in abstract

Parentheses show 95% confidence intervals where available. Carrick: external cohort. Bukhari: mavacamten cohort. *Liao: competing-risk analysis. Lim reports incremental value, with no standalone HCM-AF estimate in the retrieved abstract.

SELECTED WITHIN-COHORT COMPARISONS



Each pair compares models in the same cohort. Estimators and populations differ between studies. Values are study-specific, with no pooled estimate. [5–7,9]

KEY FINDINGS

0.64–0.78

Range of reported HCM-AF discrimination estimates

CALIBRATION

Some cohorts reported higher observed AF risk than the score predicted. [4,8]

Including qualifying asymptomatic AF approximately doubled observed risk relative to predictions in 1 cohort. [4]

DISCUSSION

Biomarker, imaging and machine-learning models reported higher discrimination in individual cohorts. [5–7,9]

These gains require further validation and do not establish improved clinical outcomes.

LIMITATIONS

AF definitions, monitoring, prediction horizons and estimators varied. Incomplete calibration reporting and potential cohort overlap limit interpretation.

CONCLUSION

HCM-AF may help prioritize rhythm surveillance. Interpret absolute-risk estimates in the context of the population and AF definition. Prospective studies should test whether score-guided monitoring improves AF detection and outcomes.

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