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Background

Identifying heart failure (HF) with preserved ejection fraction (HFpEF) can be challenging, and several probability-based scores have been proposed to assist diagnosis. Among them, the H₂FPEF and HFA-PEFF scores require echocardiographic assessment, whereas the **HFpEF-ABA score** is solely based on **age**, **body mass index (BMI)**, and a **history of atrial fibrillation (AF)** (another version includes NT-proBNP).

Log Odds = -7.788751 + 0.062564 × Age (years) + 0.135149 × BMI (kg/m²) + 2.040806 × AF (Yes-1, No-0)

HFpEF-ABA score (probability of HFpEF) (%) = $\frac{\text{Odds}}{1 + \text{Odds}}$

Recently, it has also been suggested that the HFpEF-ABA score has prognostic utility in HFpEF. Therefore, we investigated the HFpEF-ABA score among participants in the FINEARTS-HF trial, including the range of scores, its association with outcomes, and the effect of treatment with finerenone according to HFpEF-ABA score.

Methods

FINEARTS-HF investigated the efficacy and safety of finerenone compared with placebo in patients with HF and left ventricular ejection fraction (LVEF) ≥40%. Baseline HFpEF-ABA score was calculated for each patient, and scores were categorized into three groups: **<75%**, **75–90%**, and **>90%**. The prognostic value of the score and the effect of finerenone were examined by score category and also using the score as a continuous variable.

Primary outcome

- Composite of total HF events and cardiovascular death

Secondary outcome

- Total HF events, cardiovascular death, first HF event or cardiovascular death, first HF hospitalization or cardiovascular death, and all-cause death.

Results

Table 1. Baseline characteristics according to baseline HFpEF-ABA

	Score <75% N = 1,944	Score 75-90% N = 1,241	Score >90% N = 2,803	P for trend
Age (years)	67.1 ± 10.3	71.5 ± 8.6	75.6 ± 7.9	<0.001
Male, n (%)	1,191 (61.3)	671 (54.1)	1,399 (49.9)	<0.001
BMI (kg/m ²)	27.3 ± 4.5	29.8 ± 6.5	31.8 ± 6.2	<0.001
NYHA class III/IV	441 (22.7)	384 (30.9)	1,026 (36.6)	<0.001
KCCQ-TSS	72.4 ± 22.8	67.1 ± 23.9	63.3 ± 24.0	<0.001
LVEF (%)	51.5 ± 8.1	52.9 ± 7.9	53.2 ± 7.5	<0.001
LVEF ≥50%	1,051 (54.1)	807 (65.1)	1,952 (69.8)	<0.001
NT-proBNP (pg/ml)	559 (285-1,239)	921 (399-1,859)	1,412 (827-2,380)	<0.001
eGFR (ml/min/1.73m ²)	68.7 ± 20.7	62.7 ± 19.0	57.3 ± 18.0	<0.001
Hypertension, n (%)	1,674 (86.1)	1,074 (86.5)	2,566 (91.5)	<0.001
AF or atrial flutter, n (%)	56 (2.9)	584 (47.1)	2,670 (95.3)	<0.001
ACE inhibitor, n (%)	740 (38.1)	449 (36.2)	958 (34.2)	0.006
ARB, n (%)	892 (45.9)	524 (42.2)	1,195 (42.6)	0.034
ARNI, n (%)	255 (13.1)	95 (7.7)	163 (5.8)	<0.001
Beta-blocker, n (%)	1,625 (83.6)	1,057 (85.2)	2,405 (85.8)	0.039
SGLT2 inhibitor, n (%)	274 (14.1)	165 (13.3)	374 (13.3)	0.48
Loop diuretic, n (%)	1,588 (81.7)	1,096 (88.3)	2,542 (90.7)	<0.001

Abbreviations: ACE inhibitor, Angiotensin-converting enzyme inhibitor; AF, atrial fibrillation; ARB, angiotensin receptor blocker; ARNI, angiotensin receptor neprilysin inhibitor; BMI, body mass index; eGFR, estimated glomerular filtration rate; HFpEF, heart failure with preserved ejection fraction; KCCQ-TSS, Kansas City Cardiomyopathy Questionnaire-Total symptom score; LVEF, left ventricular ejection fraction; NT-proBNP, N-terminal pro-B-type natriuretic peptide; New York Heart Association; and SGLT2, sodium-glucose cotransporter 2.

Table 2. Risk of Clinical Outcomes According to Baseline HFpEF-ABA Score

HFpEF-ABA score	<75% N = 1,944	75-90% N = 1,241	>90% N = 2,803
Total HF events and cardiovascular death			
Event rate (95% CI)	11.1 (9.8-12.6)	13.6 (11.8-15.6)	21.1 (19.3-23.0)
RR (95% CI)*	Reference	1.21 (1.00-1.47)	1.90 (1.63-2.22)
RR (95% CI)**	Reference	1.02 (0.84-1.24)	1.23 (1.03-1.47)
Total HF events			
Event rate (95% CI)	8.2 (7.0-9.5)	10.5 (9.0-12.4)	17.1 (15.5-18.8)
RR (95% CI)*	Reference	1.26 (1.01-1.57)	2.04 (1.70-2.45)
RR (95% CI)**	Reference	1.06 (0.85-1.33)	1.32 (1.07-1.63)
Cardiovascular death			
Event rate (95% CI)	2.9 (2.5-3.4)	3.0 (2.5-3.7)	4.1 (3.6-4.6)
RR (95% CI)*	Reference	1.08 (0.83-1.41)	1.51 (1.22-1.87)
RR (95% CI)**	Reference	0.91 (0.69-1.19)	0.97 (0.77-1.23)
First HF event or cardiovascular death			
Event rate (95% CI)	7.4 (6.6-8.2)	8.7 (7.7-9.9)	12.9 (12.0-13.8)
RR (95% CI)*	Reference	1.17 (0.99-1.39)	1.75 (1.53-2.01)
RR (95% CI)**	Reference	0.97 (0.82-1.15)	1.16 (1.00-1.34)
First HF hospitalization or cardiovascular death			
Event rate (95% CI)	7.0 (6.3-7.8)	8.3 (7.3-9.4)	11.7 (10.9-12.6)
RR (95% CI)*	Reference	1.18 (0.99-1.40)	1.70 (1.48-1.96)
RR (95% CI)**	Reference	0.97 (0.81-1.15)	1.11 (0.96-1.29)
All-cause death			
Event rate (95% CI)	5.8 (5.1-6.5)	6.3 (5.5-7.2)	8.1 (7.4-8.8)
RR (95% CI)*	Reference	1.09 (0.91-1.32)	1.42 (1.22-1.65)
RR (95% CI)**	Reference	0.91 (0.75-1.11)	0.88 (0.75-1.04)

*Stratified by/adjusted for geographic region, baseline LVEF (<60%, ≥60%), and treatment assignment.
**Further adjusted for sex, heart rate, systolic blood pressure, prior hospitalization for HF, NYHA functional class III/IV, left ventricular ejection fraction, estimated glomerular filtration rate, NT-proBNP (log-transformed), myocardial infarction, and diabetes mellitus.
Abbreviations: CI, confidence interval; HF, heart failure; HR, hazard ratio; and RR, rate ratio

Figure 1. Cumulative incidence of clinical outcomes in FINEARTS-HF according to HFpEF-ABA score (analyzed as a categorical variable)

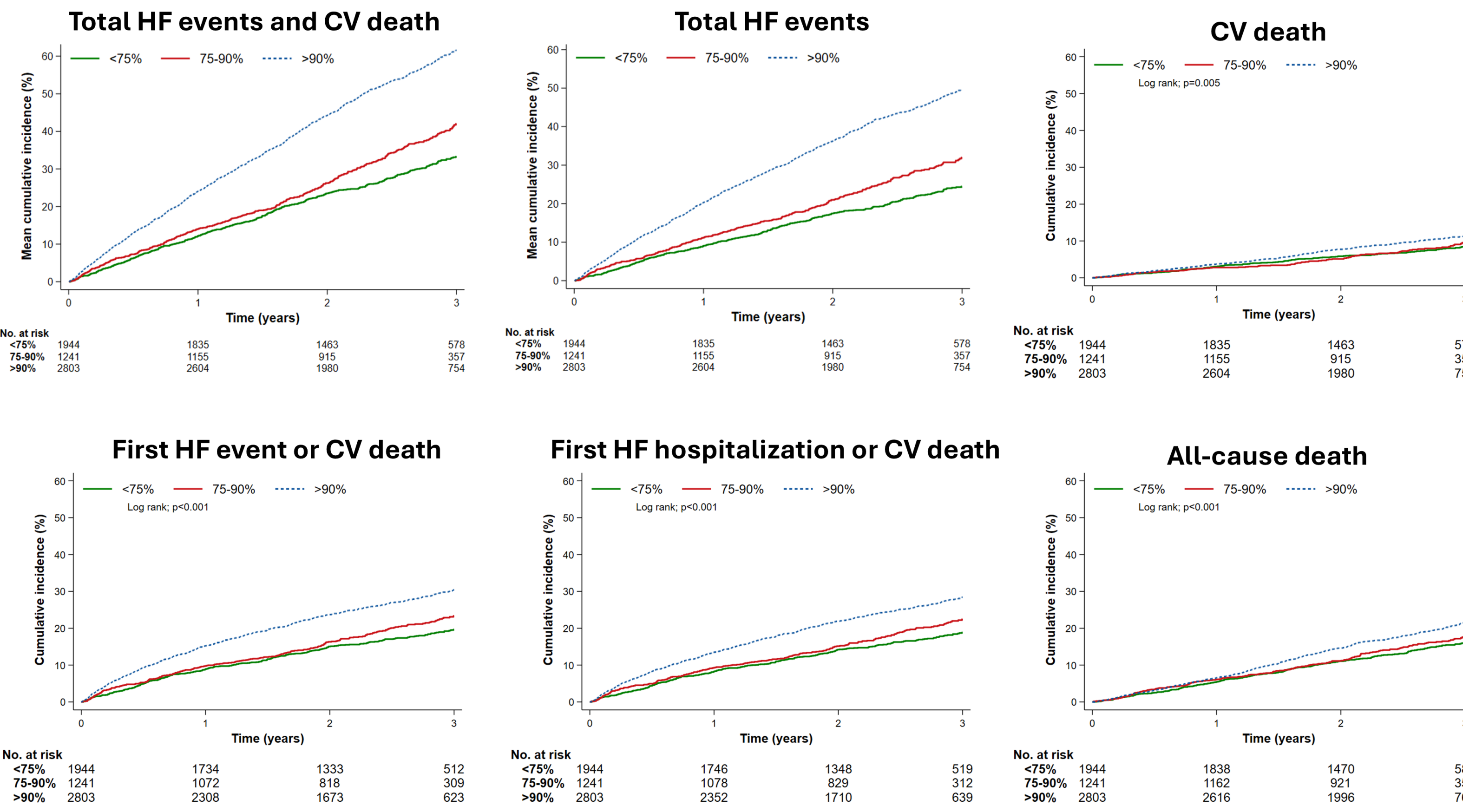


Figure 2. Incidence rates of clinical outcomes in FINEARTS-HF according to HFpEF-ABA score (analyzed as a continuous variable)

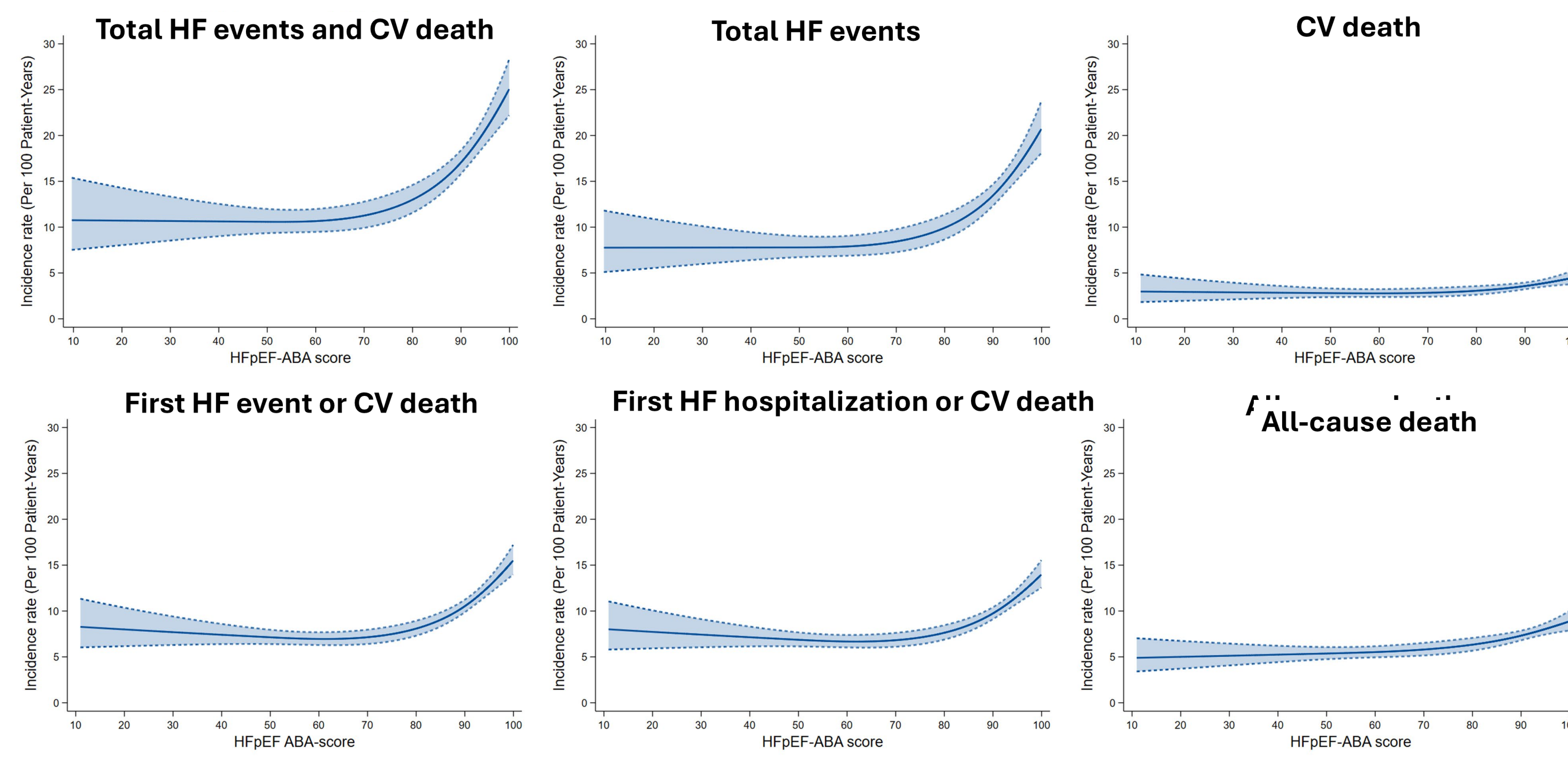
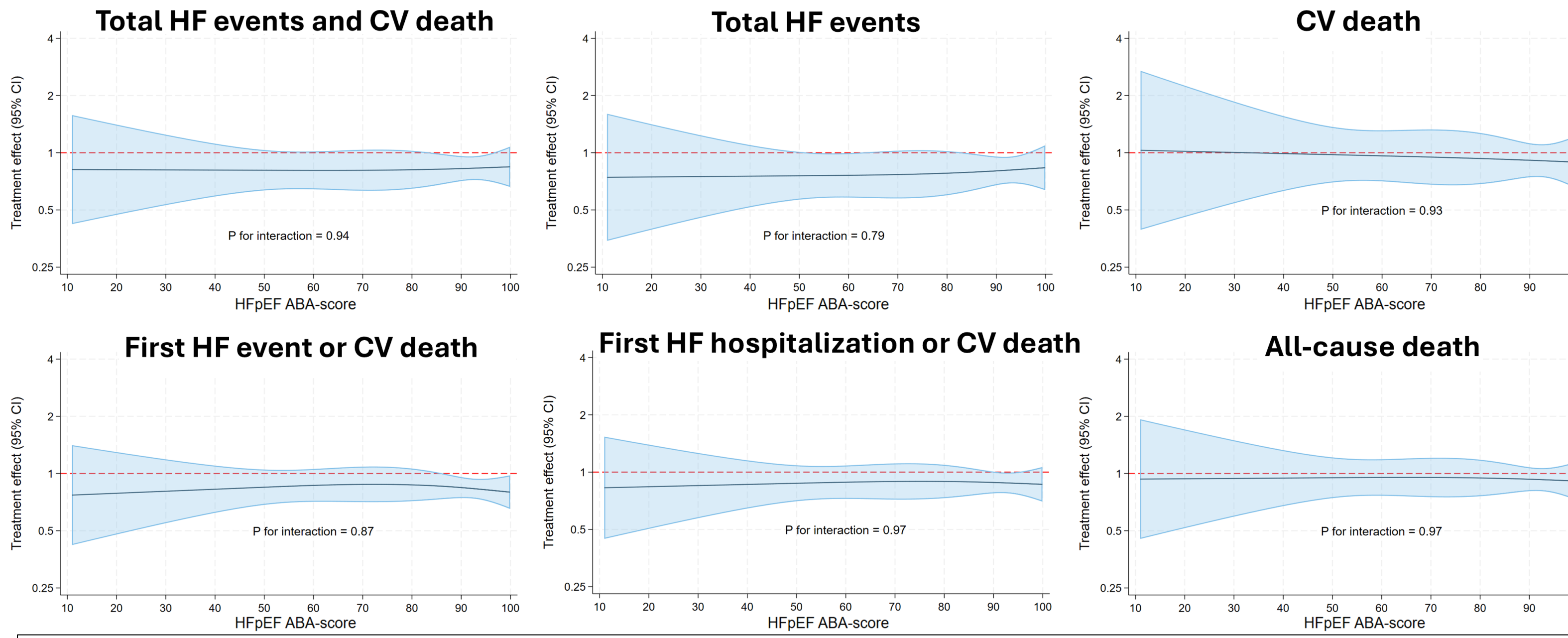


Figure 3. Effect of finerenone on outcomes in FINEARTS-HF according to baseline HFpEF-ABA score (analyzed as a continuous variable)



The models were stratified by geographic region and baseline left ventricular ejection fraction (<60%, ≥60%). Horizontal solid blue line = continuous RR (or HR); shaded blue area = 95% CI; horizontal dashed red line = RR (or HR) of 1.00. An RR (or HR) <1.00 = superiority of finerenone over placebo.
Abbreviations: CI, confidence interval; CV, cardiovascular; HF, heart failure; HR, hazard ratio; RR, rate ratio.

Conclusion

Despite a convincing clinical diagnosis of HFmrEF/HFpEF, approximately 1 in 3 participants in FINEARTS-HF had a HFpEF-ABA score indicating a probability of HFmrEF/HFpEF <75% (and 1 in 5, a score indicating a probability ≤60%), suggesting low sensitivity in this population. Patients with higher HFpEF-ABA scores had worse clinical outcomes, but notably so only if the probability score was >90%. However, finerenone significantly reduced events across the range of HFpEF-ABA scores in FINEARTS-HF. These data suggest that the HFpEF-ABA score may lead to misclassification of patients who benefit from disease-modifying therapy.

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