

# Pre-hospital risk stratification in patients with chest pain

## ONLINE SUPPLEMENTARY MATERIAL

Figure S1 The HEART score

### HEART

HEART score for chest pain patients		
History	Highly suspicious	2
	Moderately suspicious	1
	Slightly suspicious	0
ECG	Significant ST-deviation	2
	Non specific repolarisation disturbance / LBTB / PM	1
	Normal	0
Age	≥ 65 years	2
	> 45 and < 65 years	1
	≤ 45 years	0
Risk factors	≥ 3 risk factors or history of atherosclerotic disease*	2
	1 or 2 risk factors	1
	No risk factors known	0
Troponin	≥ 3x normal limit	2
	> 1 and < 3x normal limit	1
	≤ 1x normal limit	0
<b>Total</b>		

\*Risk factors for atherosclerotic disease:

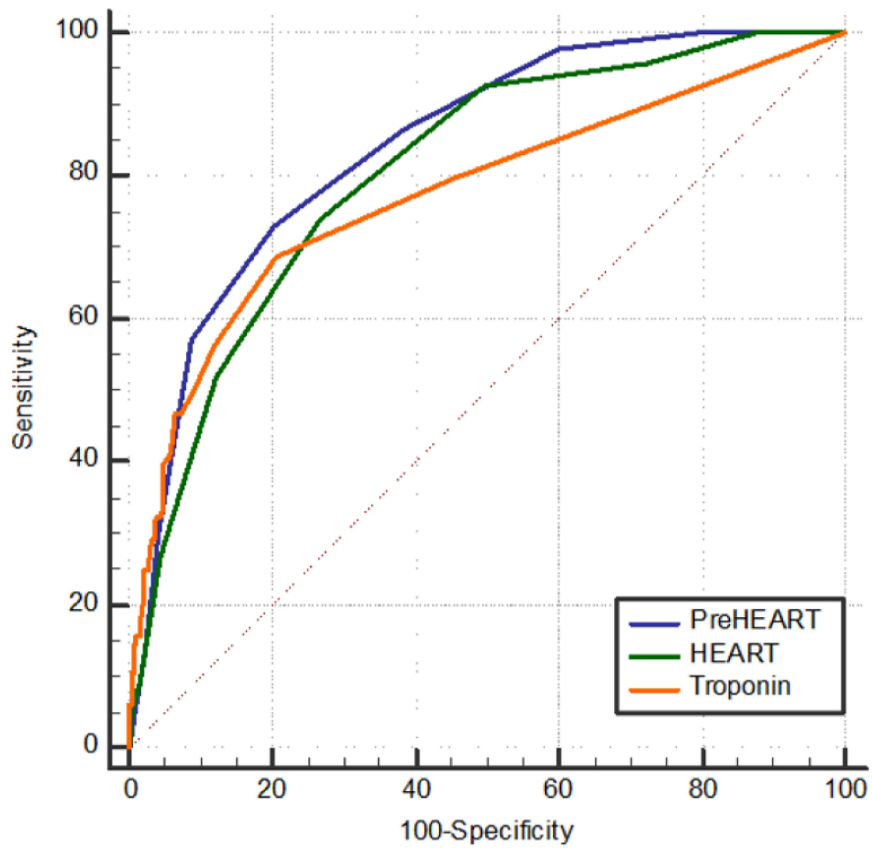
Hypercholesterolemia	Cigarette smoking
Hypertension	Positive family history
Diabetes Mellitus	Obesity

**Table S1.** Baseline characteristics of the 2027 patients with all-cause mortality.

	N = 2027
<b>Variable</b>	
Age years (SD)	65.2 ± 14.3
Male sex (%)	1057 (52.1)
HR bpm (SD)	92 ± 19
Systolic blood pressure mmhg (SD)	154.7± 29.8
Diastolic blood pressure mmhg (SD)	89.3 ± 18.9
Event-time-to-troponin hrs. (SD)	3.8 ± 5.2
HEART score median (IQR)	4 (3)
HISTORY score 0 (%)	928 (45.0)
HISTORY score 1 (%)	667 (32.4)
HISTORY score 2 (%)	465 (22.6)
ECG score 0 (%)	924 (44.9)
ECG score 1 (%)	855 (41.5)
ECG score 2 (%)	281 (13.6)
AGE score 0 (%)	159 (7.7)
AGE score 1 (%)	773 (37.5)
AGE score 2 (%)	1128 (54.8)
RISK score 0 (%)	273 (13.3)
RISK score 1 (%)	674 (32.7)
RISK score 2 (%)	1113 (54.0)

**Abbreviations:** BP, blood pressure; HR, heart rate;

Figure S2:



**Table S2.** PreHEART score development

	<i>OR</i>	<i>95% CIs</i>	<i>p-value</i>	<i>OR</i>	<i>95% CIs</i>	<i>p-value</i>
<b>Variables</b>						
History	2.08	1.46-2.97	0.00	2.02	1.52-2.69	0.00
ECG	1.32	0.91-1.92	0.15	1.57	1.15-2.14	0.00
Age (optimized)	1.98	0.90-4.34	0.09	2.33	1.54-3.54	0.00
Troponin (optimized)	2.68	1.24-5.79	0.01	2.80	1.26-3.53	0.00
Male sex	1.51	1.12-2.05	0.01	1.59	1.26	0.00
Heart rate	0.99	0.97-1.00	0.12	..	..	..
Systolic BP	1.00	0.99-1.02	0.68	..	..	..
Diastolic BP	1.01	0.99-1.03	0.56	..	..	..
Event-to-troponin-time	1.00	1.00-1.00	0.77	..	..	..

**Abbreviations:** *OR*, odds ratio; *CI*s, confidence intervals; *BP*, blood pressure

**Table S3.** Risk stratification and performance of the optimized preHEART score

	<i>No MACE</i>	<i>MACE</i>	<i>Total</i>
<b>Risk category</b>			
Low risk (n)	455 (99.3%)	3 (0.7%)	458 (37.9%)
Intermediate risk (n)	588 (88.2%)	79 (11.8%)	667 (55.2%)
High risk (n)	42 (50.6%)	41 (49.4%)	83 (6.9%)
<b>Performance</b>	<b><i>AUC</i></b>	<b><i>95% CIs</i></b>	<b><i>p-value</i></b>
PreHEART score	0.85	0.82-0.88	<0.01

**Abbreviations:** *AUC*, area under the curve; *MACE*, major adverse cardiac events; *CI*s, confidence intervals

**Table S4.** Performance (in AUCs) of the HEART and preHEART scores considering the secondary endpoints, mortality at 7 and 30 days after first medical contact.

Death at 7 days	Index Cohort	CI 95%	Validation Cohort	CI 95%
HEART	0.81	0.79-0.83	0.81	0.77-0.85
preHEART	0.85	0.85-0.87	0.83	0.79-0.87
Death at 30 days	Index Cohort	CI 95%	Validation Cohort	CI 95%
HEART	0.80	0.78-0.82	0.82	0.78-0.85
preHEART	0.84	0.82-0.86	0.84	0.80-0.87

**Abbreviations:** *CI*, confidence interval.

**Table S5** Distribution of patients across the HEART and preHEART scores in the index and validation cohorts

	Index Cohort N=1208	Validation Cohort N=435
HEART score, median (IQR)	5 (3)	5 (3)
HEART low-risk (%)	320 (26.5)	123 (28.3)
HEART intermediate-risk (%)	699 (57.9)	234 (53.8)
HEART high-risk (%)	189 (15.6)	78 (17.9)
preHEART score, median (IQR)	4 (2)	4 (2)
preHEART low-risk (%)	458 (37.9)	160 (36.8)
preHEART intermediate-risk (%)	668 (55.3)	247 (56.8)
preHEART high-risk (%)	82 (6.8)	28 (6.4)

**Abbreviations:** *IQR*: interquartile range