Supplementary material

Prognostic value of health-related quality of life in patients with acute dyspnoea: a cohort study (Swiss Med Wkly. 2025;155:3785; https://doi.org/10.57187/s.3785)

Supplementary methods

Clinical classification of AHF

Patients with an adjudicated final diagnosis of AHF were assigned to the following clinical categories:

- **Hypertensive** HF defined as history of arterial hypertension, echo signs of hypertensive wall thickness or diastolic dysfunction *(2 out of 3 necessary) and* systolic blood pressure at admission *>160mmHg.*
- **Worsening or decompensated chronic HF** defined as HF with a previous episode of decompensation.
- **Isolated right HF** defined as a normal systolic and diastolic left ventricular function, echocardiographic evidence for elevated right ventricular pressure and/or impaired right ventricular function.
- **Acute coronary syndrome (ACS) and HF** defined as heart failure and concurrent evidence of myocardial necrosis in association with a clinical setting consistent with myocardial ischemia. Myocardial necrosis was diagnosed by at least one high sensitivity-cardiac troponin T (hs-cTnT) value above the 99th percentile together with a significant rise and/or fall.
- **Flash pulmonary edema** defined as an oxygen saturation <90% on room air and radiologic evidence for pulmonary edema.

The following predisposing conditions of AHF were analysed:

- For **AHF post myocardial infarction** (MI) a documented MI without intervention was mandatory.
- For **Rhythmogenic HF** a chronic arrhythmia (e.g. atrial fibrillation, ventricular tachycardia or bradycardia) was mandatory on admission.

- **Cardiomyopathy** (hypertrophic dilated or restrictive cardiomyopathy) or **pulmonary hypertension** were only seen as predisposing condition, if they the pertaining patients had a documented previous history of these diseases.

Furthermore, precipitating factors (triggers) of AHF such as anemia, infection, malcompliance with medication or fluid restriction and consecutive volume overload, arrhythmia or myocarditis were analysed.

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Table S1. Overview of the covariates and summary statistics used for multivariable cox regression models. Missing values presented in total cohort (n=2153) and in cohort included in this analysis (n=1144). Continuous variables are presented as medians with interquartile ranges (IQR), categorical variables as number and percent, number of missing as percent and count.

	Total cohort n = 2153	missing	Analysis n = 1144	missing
Age (years)	75 [61, 82]	0% (0)	74 [61, 81]	0% (0)
Sex (% Female(n))	951 (44)	0% (0)	481 (42)	0% (0)
Systolic blood pressure (mmHg)	137 [121, 155]	<1% (4)	138 [122,155])	<1% (1)
History of heart failure	685 (32)	<1% (5)	394 (34)	0% (0)
History of COPD/asthma	720 (33)	0% (0)	387 (34)	0% (0)
eGFR at admission ($mL/min/1,73m^2$)	69 [45, 89]	<1% (5)	67 [45, 88]	<1% (1)
Hemoglobin at admission (g/L)	133 [118, 145]	1% (14)	133 [117, 146]	<1% (7)
NT-proBNP at admission (ng/L)	1283 [224, 5086]	2% (34)	1307 [234, 5020]	1% (9)

COPD: chronic obstructive pulmonary disease, eGFR: estimated glomerular filtration rate as per CKD-EPI, NT-proBNP: N-terminal pro-B-type natriuretic peptide.

Table S2. Characteristics of patients with and without AHF at baseline. Values are median (interquartile range) or no. (%). P-values displayed are calculated for comparison between patients with AHF and other causes for dyspnea. Chi-square test was performed for categorical and Mann-Whitney-U-test for continuous variables.

Baseline characteristics of the patients with and without acute heart failure				
	All patients 1144 (100)	Acute dyspnea other Dx 549 (48.0%)	Acute dyspnea AHF 595 (52.0%)	p-value*
Age (years)	74 (61-81)	66 (54-77)	78 (69-84)	<0.001
Female gender – no. (%)	481 (42)	244 (44)	237 (40)	0.129
Body mass index (kg/m^2)	25.8 (22.5-30.1)	25.1 (21.6-29.5)	26.3 (23.4-30.8)	<0.001
Medical history – no. (%)				
Diabetes	264 (23)	91 (17)	173 (29)	<0.001
Hypertension	783 (68)	300 (55)	483 (81)	<0.001
Coronary artery disease	401 (35)	103 (19)	298 (50)	<0.001
Peripheral artery disease	147 (13)	43 (8)	104 (17)	<0.001
Previous stroke	129 (11)	42 (8)	87 (15)	<0.001
Atrial fibrillation	332 (29)	57 (10)	275 (46)	<0.001
History of heart failure	394 (34)	58 (11)	336 (56)	<0.001
COPD/Asthma	387 (34)	235 (43)	152 (26)	<0.001
Psychiatric disorder[§]	253 (22)	118 (22)	135 (23)	0.626
Signs and symptoms – no. (%)				
Systolic bp (mmHg)	138 (122-155)	139 (125-155)	137 (119.5-155)	0.064
SpO2 (%)	96 (93-98)	96 (93- 98)	96 (93- 98)	0.578
Edema	475 (42)	122 (22)	353 (59)	<0.001

Laboratory findings				
Hemoglobin (g/L)	133 (117-146)	139 (125-149)	127 (113-141)	<0.001
Sodium (mmol/L)	139 (136-141)	138 (135.5-140)	139 (136-141)	<0.001
eGFR (mL/min/m^2)	67 (45-88)	84 (64-101)	52 (34-73)	<0.001
NT-proBNP (ng/L)	1307 (235-5007)	229 (90-671)	4266 (1892-9112)	<0.001
Chronic medication – no. (%)				
ACEIs/ ARBs	581 (51)	201 (37)	380 (64)	<0.001
Beta-blocking agents	510 (45)	154 (28)	356 (60)	<0.001
Diuretics	582 (51)	174 (32)	408 (69)	<0.001
HRQL				
EQ-5D index	0.637 (0.374-0.779)	0.635 (0.355-0.779)	0.639 (0.375-0.779)	0.638
EQ VAS	50 (40- 70)	50 (40- 70)	50 (40- 70)	0.504

*p-values <0.05 were considered statistically significant. All hypothesis testing was two-tailed.

ACEI: angiotensin converting enzyme inhibitor, AHF: acute heart failure, ARB: aldosterone receptor blocker, bp: blood pressure, COPD: chronic obstructive pulmonary disease, Dx: diagnoses, eGFR: estimated glomerular filtration rate by Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) formula, HRQL: health-related quality of life, NT-proBNP: N-terminal pro-B-type natriuretic peptide, SpO2: oxygen saturation, VAS: visual analogue scale.

Table S3. Comparison of baseline characteristics and mortality within follow-up period of patients with and without completed EQ-5D. Values are median (interquartile range) or no. (%). Chi-square test was performed for categorical and Mann-Whitney-U-test for continuous variables.

Baseline characteristics of the patients with and without completed EQ-5D				
	All patients with an adjudicated diagnosis n = 2135	Patients without completed EQ-5D n = 991	Patients with completed EQ-5D n = 1144	p-value*
Age – years	75 [61, 82]	75 [62, 83]	74 [61, 81]	0.114
Female gender – no. (%)	946 (44)	465 (47)	481 (42)	0.027
Body mass index (kg/m^2)	25.8 [22.5, 29.9]	25.9 [22.4, 29.5]	25.8 [22.5, 30.1]	0.575
Medical history – no. (%)				
Diabetes	486 (23)	222 (22)	264 (23)	0.749
Hypertension	1439 (67)	656 (66)	783 (68)	0.337
Coronary artery disease	712 (33)	311 (31)	401 (35)	0.089
Peripheral artery disease	254 (12)	107 (11)	147 (13)	0.163
Previous stroke	239 (11)	110 (11)	129 (11)	0.952
Atrial fibrillation	575 (27)	243 (25)	332 (29)	0.022
History of heart failure	680 (32)	286 (29)	394 (34)	0.008
COPD/Asthma	716 (34)	329 (33)	387 (34)	0.794
Signs and symptoms – no. (%)				

Systolic bp (mmHg)	137 [121, 155]	136 [120, 154]	138 [122, 155]	0.101
SpO2 (%)	96 [93, 98]	96 [93, 98]	96 [93, 98]	0.114
Edema	860 (41)	388 (40)	472 (42)	0.361
Laboratory findings				
Hemoglobin (g/L)	133 [118, 145]	133 [119, 145]	133 [117, 146]	0.884
Sodium (mmol/L)	138 [136, 141]	138 [136, 140]	139 [136, 141]	0.006
eGFR (mL/min/m^2)	69 [45, 89]	71 [45, 90]	67 [45, 88]	0.176
NT-proBNP (ng/L)	1307 [228, 5158]	1306 [221, 5219]	1307 [235, 5007]	0.567
Chronic medication – no. (%)				
ACEIs/ ARBs	1035 (49)	462 (47)	573 (51)	0.119
Beta-blocking agents	902 (43)	401 (41)	501 (45)	0.110
Diuretics	1077 (51)	502 (52)	575 (51)	0.909
All-cause mortality – no. (%)				
Within 30 days	134 (6)	100 (10)	34 (3)	<0.001
Within 90 days	224 (10)	144 (15)	80 (7)	<0.001
Within 180 days	331 (16)	196 (20)	135 (12)	<0.001
Within 720 days	665 (31)	350 (35)	315 (28)	<0.001

*p-values <0.05 were considered statistically significant. All hypothesis testing was two-tailed.

ACEI: angiotensin converting enzyme inhibitor, AHF: acute heart failure, ARB: aldosterone receptor blocker, bp: blood pressure, COPD: chronic obstructive pulmonary disease, Dx: diagnoses, eGFR: estimated glomerular filtration rate by Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) formula, HRQL: health-related quality of life, NT-proBNP: N-terminal pro-B-type natriuretic peptide, SpO2: oxygen saturation, VAS: visual analogue scale.

Table S4. EQ-5D in patients stratified according to depression. EQ-5D index, EQ VAS, proportion of patients with acute heart failure (AHF) and mortality rates in patients presenting with acute dyspnea stratified by severity of depression. Depression scored according to Geriatric Depression Scale (GDS) in 1123 patients. Continuous variables are presented as medians with interquartile ranges (IQR). Comparison happened by Kruskal-Wallis test.

Depression		Adjudicated diagnosis of AHF	Mortality within 720 days	EQ-5D index	EQ VAS
No depression	n = 687	340 (49.5%)	156 (22.7%)	0.69 (0.57 - 0.78)	60 (50 - 75)
Mild Depression	n = 278	161 (57.9%)	96 (34.5%)	0.512 (0.267 - 0.687)	50 (30-60)
Moderate Depression	n = 106	57 (53.8%)	34 (32.1%)	0.375 (0.174 - 0.598)	45 (30 - 53.5)
Severe Depression	n = 52	27 (51.9%)	23 (44.2%)	0.278 (0.126 - 0.592)	37 (25 - 50)

AHF: Acute heart failure, VAS: Visual analogue scale.

Table S5. Post-hoc Dunn-Bonferroni testing between adjacent groups of depression of Table S6.

	p-value*
Post-hoc testing of EQ-5D index in all patients with depression	
No depression vs. mild depression	<0.001
Mild depression vs moderate depression	0.004
Moderate depression vs Severe depression	1.000
Post- hoc testing of EQ VAS in all patients with depression	
No depression vs. mild depression	<0.001
Mild depression vs moderate depression	0.269
Moderate depression vs Severe depression	0.473

*Bonferroni corrected p-value for comparison between the 2 groups describing the length of in-hospital stay.

Table S6. Cox regression models for 90-day all-cause mortality with EQ-5D index and EQ VAS. EQ-5D index and EQ VAS reversed, with higher score indicating lower health-related quality of life (HRQL) and treated as continuous variables. Hazard ratios and 95% confidence interval derived from **A** univariable analyses, **B** multivariable analyses with crude an **C** multivariable analyses with z-transformed EQ-5D index and EQ VAS.

		A Univariable analyses			**B** Multivariable analysis			**C** Multivariable analysis after z-transformation		
Outcome	Variables	HR	95% CI	p-value	aHR	95% CI	p-value*	aHR	95% CI	p-value
90-day mortality	EQ-5D index	9.210	(4.183 - 20.279)	<0.001	7.831	(3.430-17.876)	<0.001	1.892	(1.465 – 2.443)	<0.001
	Age	1.039	(1.019 - 1.059)	<0.001	1.030	(1.007 - 1.054)	0.010	1.030	(1.007 - 1.054)	0.010
	Female sex	0.615	(0.383 – 0.986)	0.044	0.558	(0.343 – 0.907)	0.019	0.558	(0.343 – 0.907)	0.019
	Systolic BP	0.976	(0.966 – 0.985)	<0.001	0.982	(0.972 – 0.993)	0.001	0.982	(0.972 – 0.993)	0.001
	Heart failure	2.368	(1.524 – 3.678)	<0.001	1.185	(0.715 – 1.965)	0.511	1.185	(0.715 – 1.965)	0.511
	GFR	0.985	(0.977 – 0.993)	<0.001	1.007	(0.996 - 1.018)	0.234	1.007	(0.996 - 1.018)	0.234
	Hemoglobin	0.974	(0.965 – 0.983)	<0.001	0.985	(0.975 – 0.996)	0.006	0.985	(0.975 – 0.996)	0.006
	NT-proBNP	1.468	(1.282 – 1.681)	<0.001	1.256	(1.045 - 1.510)	0.015	1.256	(1.045 - 1.510)	0.015
90-day mortality	EQ VAS	1.025	(1.014 – 1.035)	<0.001	1.028	(1.016 - 1.039)	<0.001	1.780	(1.406 - 2.254)	<0.001
	Age	1.039	(1.019 - 1.059)	<0.001	1.030	(1.007 - 1.054)	0.010	1.030	(1.007 - 1.054)	0.010
	Female sex	0.615	(0.383 – 0.986)	0.044	0.627	(0.385 – 1.021)	0.060	0.627	(0.385 – 1.021)	0.060
	Systolic BP	0.976	(0.966 – 0.985)	<0.001	0.982	(0.972 – 0.993)	0.001	0.982	(0.972 – 0.993)	0.001
	Heart failure	2.368	(1.524 – 3.678)	<0.001	1.123	(0.673 – 1.873)	0.657	1.123	(0.673 – 1.873)	0.657
	GFR	0.985	(0.977 – 0.993)	<0.001	1.008	(0.996 - 1.019)	0.183	1.008	(0.996 - 1.019)	0.183
	Hemoglobin	0.974	(0.965 – 0.983)	<0.001	0.982	(0.972 – 0.992)	0.001	0.982	(0.972 – 0.992)	0.001
	NT-proBNP	1.468	(1.282 – 1.681)	<0.001	1.308	(1.088 - 1.573)	0.004	1.308	(1.088 - 1.573)	0.004

Adjusments made for age (years), sex, systolic blood pressure (BP, mmHg) at presentation, history of heart failure, estimated glomerular filtration rate (GFR) as per CKD-EPI (mL/min/1,73m^2), hemoglobin levels (g/L) and natural log of N-terminal pro-B-Type natriuretic peptide (NT-proBNP, ng/L) concentrations at presentation.

aHR: adjusted hazard ratio, CI: confidence interval, HRQL: health-realted quality of life, HR: hazard ratio, VAS: visual analogue scale.

Table S7. Comparison of baseline characteristics and mortality between patients who completed EQ-5D within 5 days versus 5 days after presentation. Values are median (interquartile range) or no. (%). Chi-square test was performed for categorical and Mann-Whitney-U-test for continuous variables.

Variable	Overall n = 1144	Patients with EQ-5D within 5 days n = 829	Patients with EQ-5D >5 days n = 315	p-value
Age – years	74.0 [61.0, 81.0]	71.0 [59.0, 79.0]	79.0 [69.5, 85.0]	<0.001
Female gender – no. (%)	663 (58%)	465 (56%)	198 (63%)	0.045
Body mass index (kg/m^2)	25.8 [22.5, 30.1]	26.1 [23.0, 30.8]	24.7 [21.3, 28.3]	<0.001
Diabetes	264 (23%)	179 (22%)	85 (27%)	0.064
Hypertension	783 (68%)	539 (65%)	244 (77%)	<0.001
Coronary artery disease	401 (35%)	251 (30%)	150 (48%)	<0.001
Peripheral artery disease	147 (13%)	82 (10%)	65 (21%)	<0.001
Previous stroke	129 (11%)	77 (9%)	52 (17%)	0.001
Atrial fibrillation	332 (29%)	207 (25%)	125 (40%)	<0.001
History of heart failure	394 (34%)	236 (28%)	158 (50%)	<0.001
COPD/Asthma	387 (34%)	270 (33%)	117 (37%)	0.164
Systolic bp (mmHg)	138.0 [122.0, 155.0]	140.0 [125.0, 156.0]	131.0 [114.0, 148.0]	<0.001
SpO2 (%)	96.0 [93.0, 98.0]	96.0 [93.0, 98.0]	95.0 [91.0, 98.0]	0.006
Edema	475 (42%)	307 (37%)	168 (53%)	<0.001
Hemoglobin (g/L)	133.0 [117.0, 146.0]	136.0 [123.0, 149.0]	121.0 [108.0, 137.0]	<0.001
Sodium (mmol/L)	139.0 [136.0, 141.0]	139.0 [136.0, 141.0]	138.0 [136.0, 141.0]	0.271
eGFR ($mL/min/m^2$)	66.9 [44.8, 88.3]	72.1 [51.1, 90.5]	50.4 [33.8, 77.7]	<0.001
NT-proBNP (ng/L)	1307.0 [235.0, 5006.5]	853.0 [155.8, 3645.2]	3513.0 [949.5, 9284.0]	<0.001
ACEIs/ ARBs	581 (51%)	410 (50%)	171 (54%)	0.169

Beta-blocking agents	510 (45%)	342 (41%)	168 (53%)	<0.001
Diuretics	582 (51%)	367 (44%)	215 (68%)	<0.001
EQ-5D index	0.6 [0.4, 0.8]	0.7 [0.5, 0.8]	0.5 [0.2, 0.7]	<0.001
AUC EQ-5D index 90-day mortality	0.68	0.67	0.7	0.765
EQ VAS	50.0 [40.0, 70.0]	50.0 [40.0, 70.0]	50.0 [35.0, 60.0]	<0.001
AUC EQ VAS 90-day mortality	0.66	0.64	0.74	0.102

*p-values <0.05 were considered statistically significant. All hypothesis testing was two-tailed.

ACEI: angiotensin converting enzyme inhibitor, AHF: acute heart failure, ARB: aldosterone receptor blocker, bp: blood pressure, COPD: chronic obstructive pulmonary disease, Dx: diagnoses, eGFR: estimated glomerular filtration rate by Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) formula, HRQL: health-related quality of life, NT-proBNP: N-terminal pro-B-type natriuretic peptide, SpO2: oxygen saturation, VAS: visual analogue scale.

Table S8. Results of internal validation comparing multivariable analysis of bootstrapped (**A**) and original data (**B**) for the 720-day mortality outcome.

		A Multivariable analysis bootstrapped data		**B** Multivariable analysis original data	
Outcome	Variables	aHR	95% CI	aHR	95% CI
720-day mortality	**EQ-5D index**	5.031	(3.344 - 7.794)	5.027	(3.308 - 7.640)
	Age	1.041	(1.030 – 1.057)	1.041	(1.029 - 1.054)
	Female sex	0.637	(0.498 – 0.793)	0.637	(0.503 – 0.808)
	Systolic BP	0.990	(0.985 – 0.996)	0.990	(0.986 – 0.995)
	COPD/asthma	1.259	(0.993 – 1.594)	1.258	(0.991 – 1.597)
	Heart failure	1.121	(0.874 – 1.427)	1.121	(0.876 – 1.435)
	GFR	1.001	(0.995 – 1.007)	1.001	(0.995 - 1.006)
	Hemoglobin	0.988	(0.982 – 0.994)	0.988	(0.982 – 0.993)
	NT-proBNP	1.186	(1.080 - 1.308)	1.186	(1.082 - 1.300)

Adjustments made for age (years), sex, systolic blood pressure (BP, mmHg) at presentation, history of obstructive lung disease, history heart failure, estimated glomerular filtration rate (GFR) as per CKD-EPI (mL/min/1,73m^2), hemoglobin levels (g/L) and natural log of N-terminal pro-B-Type natriuretic peptide (NT-proBNP, ng/L) concentrations at presentation. Hazard ratios for continuous variables represent the risk per 1-unit increase, except for NT-proBNP, which was log-transformed and is expressed per unit increase in its natural logarithm. For categorical variables, the reference categories are: Male, absence of COPD/asthma for 'COPD/asthma,' and absence of heart failure for 'Heart failure."

aHR: adjusted hazard ratio, CI: confidence interval.

Table S9. Patients presenting with acute dyspnea stratified by adjudicated final diagnosis, HF phenotypes and triggers of AHF with corresponding EQ-5D indices. Continuous variables are presented as medians with interquartile ranges (IQR) and were compared by Mann-Whitney U test.

Heart Failure phenotypes		**Yes**	**No**	**p-value***
Hypertensive Heart Failure	n-patients	56	1088	
	EQ-5D index	0.664 [0.472,0.779]	0.630 [0.374, 0.779]	0.851
Worsening Heart Failure	n-patients	464	680	
	EQ-5D index	0.662 [0.387, 0.779]	0.635 [0.353, 0.779]	0.175
Isolated Right Heart Failure	n-patients	18	1126	
	EQ-5D index	0.525 [0.181,0.687]	0.651 [0.374, 0.779]	0.068
ACS and Heart Failure	n-patients	38	1106	
	EQ-5D index	0.570 [0.398, 0.713]	0.662 [0.374, 0.779]	0.253
Flash pulmonary edema	n-patients	12	1032	
	EQ-5D index	0.584 [0.374, 0.779]	0.639 [0.283, 0.722]	0.551
Triggers of AHF		**Yes**	**No**	
Anemia	n-patients	47	1097	
	EQ-5D index	0.598 [0.329, 0.753]	0.639 [0.374, 0.779]	0.718
Infection	n-patients	149	995	
	EQ-5D index	0.573 [0.285, 0.753]	0.664 [0.387, 0.779]	0.031
Valvular disease	n-patients	70	1074	
	EQ-5D index	0.676 [0.480, 0.753]	0.635 [0.364, 0.779]	0.691
Arrhythmia	n-patients	191	953	
	EQ-5D index	0.687 [0.480, 0.783]	0.624 [0.335, 0.783]	<0.001
Hypertension	n-patients	72	1072	
	EQ-5D index	0.652 [0.328, 0.779]	0.635 [0.374, 0.779]	0.854

Other causes for acute dyspnea		**Yes**	**No**	**p-value***
COPD/asthma	n-patients	230	914	
	EQ-5D index	0.570 [0.258,0.753]	0.664 [0.402, 0.779]	<0.001
Pneumonia	n-patients	159	985	
	EQ-5D index	0.598 [0.302, 0.753]	0.662 [0.375, 0.779]	0.103
Pulmonary embolism	n-patients	77	1067	
	EQ-5D index	0.690 [0.570,0.783]	0.624 [0.335, 0.779]	0.002
Carcinoma/metastasis	n-patients	72	1072	
	EQ-5D index	0.459 [0.210, 0.664]	0.664 [0.387, 0.779]	<0.001
Hyperventilation	n-patients	34	1110	
	EQ-5D index	0.643 [0.270, 0.713]	0.637 [0.374, 0.779]	0.325

ACS: Acute coronary syndrome. AHF: Acute heart failure. COPD: chronic obstructive pulmonary disease.
*p-value for comparison between the two depicted groups.

Table S10. Comparison of prognostic accuracy of EQ-5D index and NT-proBNP concentrations for predefined subgroups. Patients with missing NT-proBNP level on admission were not included (n=1135). Comparisons were made with the use of DeLong test.

Patients stratified according to diagnosis	Predictor	AUC [95% CI]	p-value*
Other Dx: n=543	EQ-5D index	0.71 [0.66, 0.76]	0.035
AHF: n=592	EQ-5D index	0.63 [0.58, 0.68]	
Other Dx: n=543	NT-proBNP	0.71 [0.66, 0.76]	0.092
AHF: n=592	NT-proBNP	0.65 [0.60, 0.69]	
Patients stratified according to age			
Age<=65 years: n=366	EQ-5D index	0.65 [0.57, 0.73]	0.712
Age >65 years: n=769	EQ-5D index	0.66 [0.62, 0.71]	
Age<=65 years: n=366	NT-proBNP	0.71 [0.63, 0.78]	0.144
Age >65 years: n=769	NT-proBNP	0.64 [0.60, 0.69]	
Patients stratified according to sex			
Women: n=477	EQ-5D index	0.63 [0.57, 0.69]	0.244
Men: n=658	EQ-5D index	0.68 [0.63, 0.72]	
Women: n=477	NT-proBNP	0.70 [0.64, 0.75]	0.942
Men: n=658	NT-proBNP	0.69 [0.65, 0.74]	

AHF: Acute heart failure, AUC: Area under the curve, CI: confidence interval, Dx: other causes for acute dyspnea, NT-proBNP: N-terminal pro-B-type natriuretic peptide.
* p-value for comparison between the two depicted groups

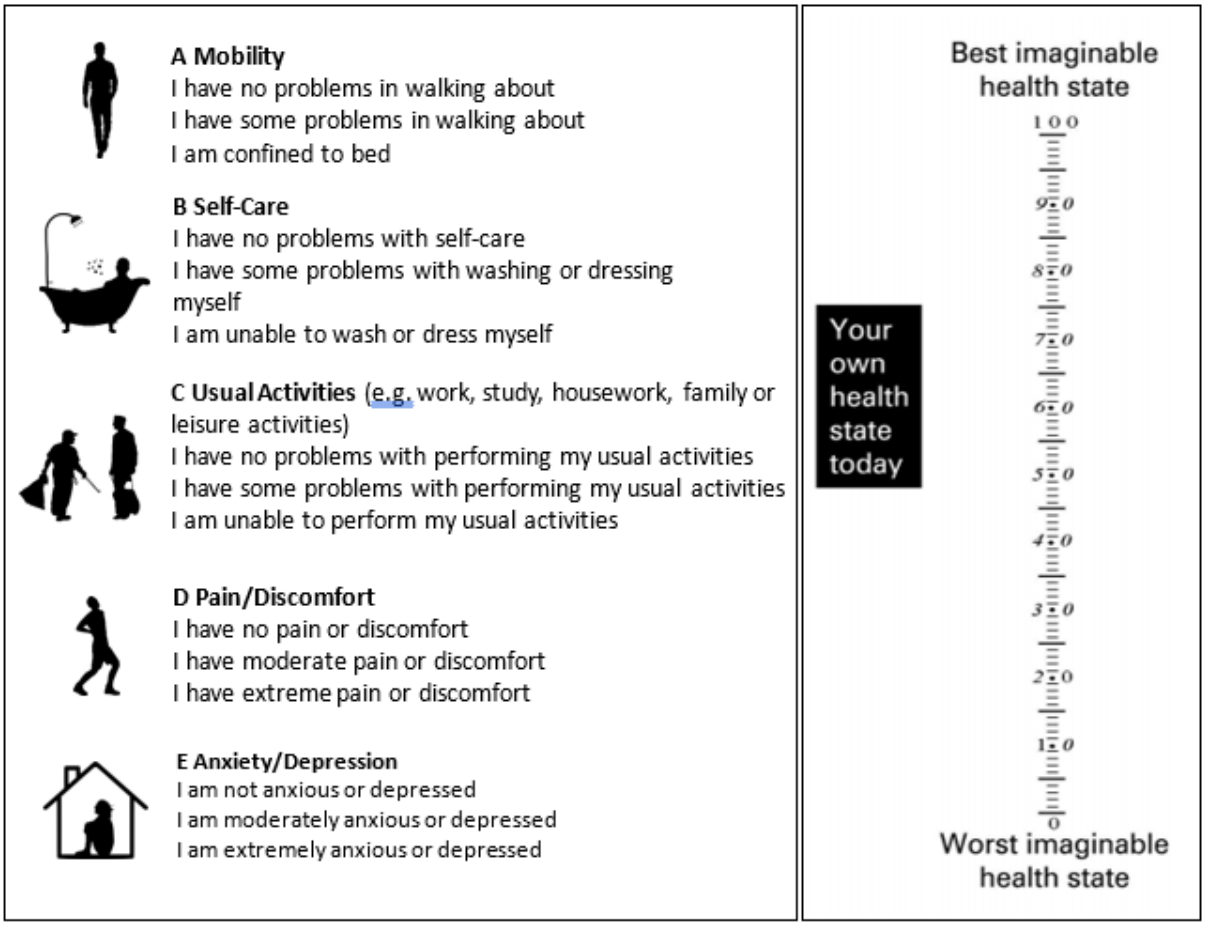
Table S11. Prognostic accuracy of EQ-5D index for AHF in predefined subgroups. Comparisons were made with the use of DeLong test.

HF phenotype worsening CHF	Predictor	AUC [95% CI]	p-value*
no: n=680	EQ-5D index	0.66 [0.61, 0.71]	0.859
yes: n=464	EQ-5D index	0.67 [0.61, 0.72]	
HF phenotype hypertensive HF			
no: n=995	EQ-5D index	0.66 [0.63, 0.70]	0.085
yes: n=149	EQ-5D index	0.57 [0.48, 0.67]	
Other HF phenotypes*			
no: n=1060	EQ-5D index	0.67 [0.63, 0.70]	0.019
yes: n=75	EQ-5D index	0.51 [0.37, 0.65]	
Adjudicated diagnosis of COPD/asthma			
no: n=908	EQ-5D index	0.64 [0.60, 0.68]	0.393
yes: n=227	EQ-5D index	0.68 [0.60, 0.75]	
Adjudicated diagnosis of pneumonia			
no: n=976	EQ-5D index	0.66 [0.62, 0.70]	0.405
yes: n=159	EQ-5D index	0.62 [0.52, 0.71]	
History of atrial fibrillation			
no: n=804	EQ-5D index	0.65 [0.61, 0.70]	0.716
yes: n=331	EQ-5D index	0.67 [0.60, 0.73]	
History of renal insufficiency			

no: n=799	EQ-5D index	0.68 [0.64, 0.73]	0.069
yes: n=336	EQ-5D index	0.61 [0.55, 0.67]	
History of HF			
no: n=744	EQ-5D index	0.67 [0.63, 0.72]	0.248
yes: n=391	EQ-5D index	0.63 [0.57, 0.69]	
History of a psychiatric disorder			
no: n=894	EQ-5D index	0.67 [0.63, 0.71]	0.008
yes: n=250	EQ-5D index	0.56 [0.48, 0.63]	
ACEI/ARB on admission			
no: n=559	EQ-5D index	0.67 [0.62, 0.73]	0.308
yes: n=575	EQ-5D index	0.64 [0.59, 0.69]	
Beta-blocker on admission			
no: n=629	EQ-5D index	0.66 [0.61, 0.71]	0.771
yes: n=506	EQ-5D index	0.65 [0.60, 0.70]	
Diuretics on admission			
no: n=556	EQ-5D index	0.70 [0.65, 0.76]	0.023
yes: n=579	EQ-5D index	0.62 [0.57, 0.67]	

* composition of isolated right HF, acute coronary syndrome (ACS) and HF and flash pulmonary edema.
AHF: Acute heart failure, AUC: Area under the curve, Dx: other causes for acute dyspnea, HF: Heart failure, NT-proBNP: N-terminal pro-B-type natriuretic peptide.

Figure S1. EQ-5D Health Questionnaire and EQ VAS.



Original EQ-5D-3L questions with added pictograms and a downsized EQ VAS. Additional information from:

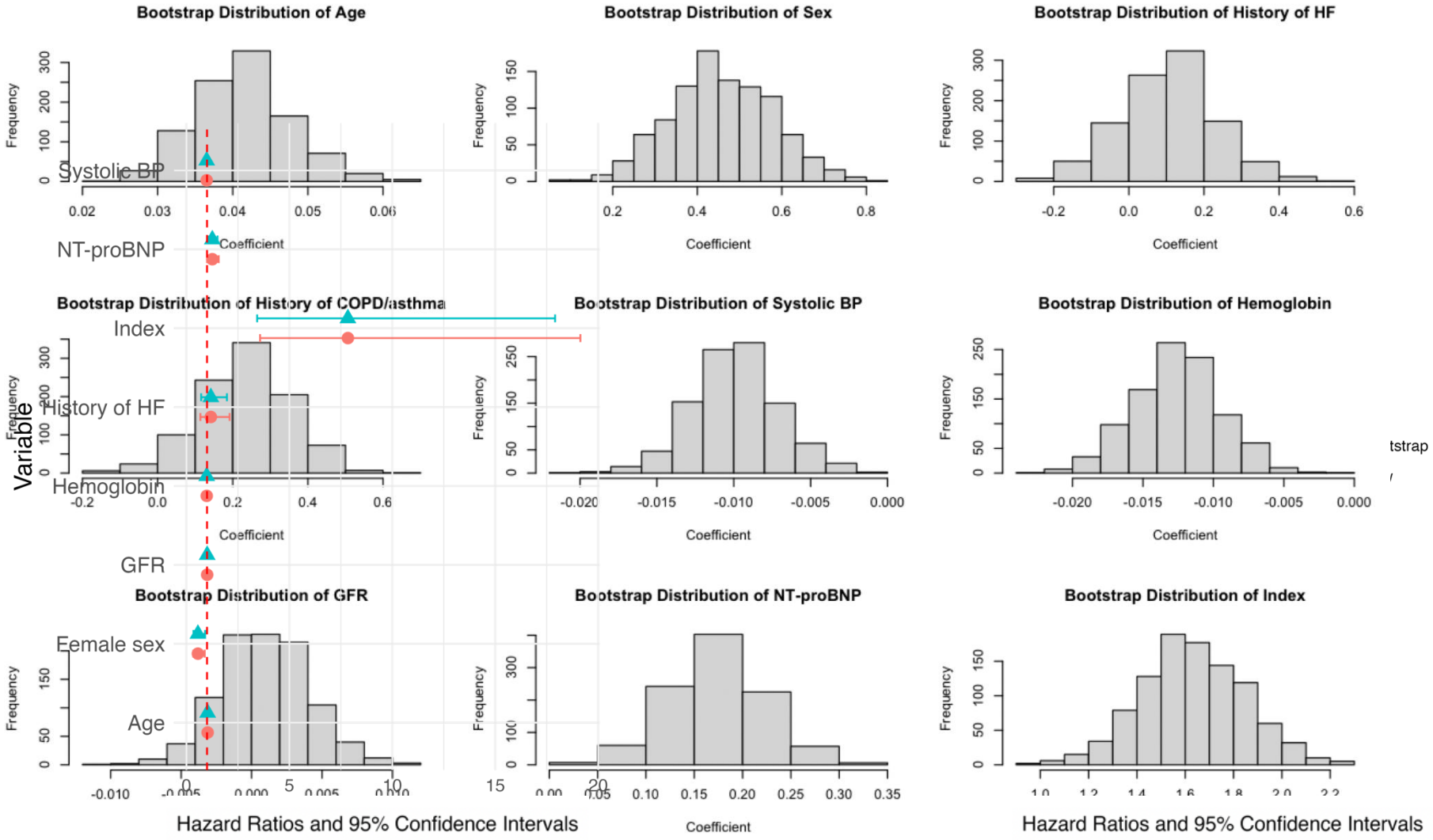
https://euroqol.org/

Figure S2. 15-item Geriatric Depression Scale Questionnaire. Answers in bold indicate depression.

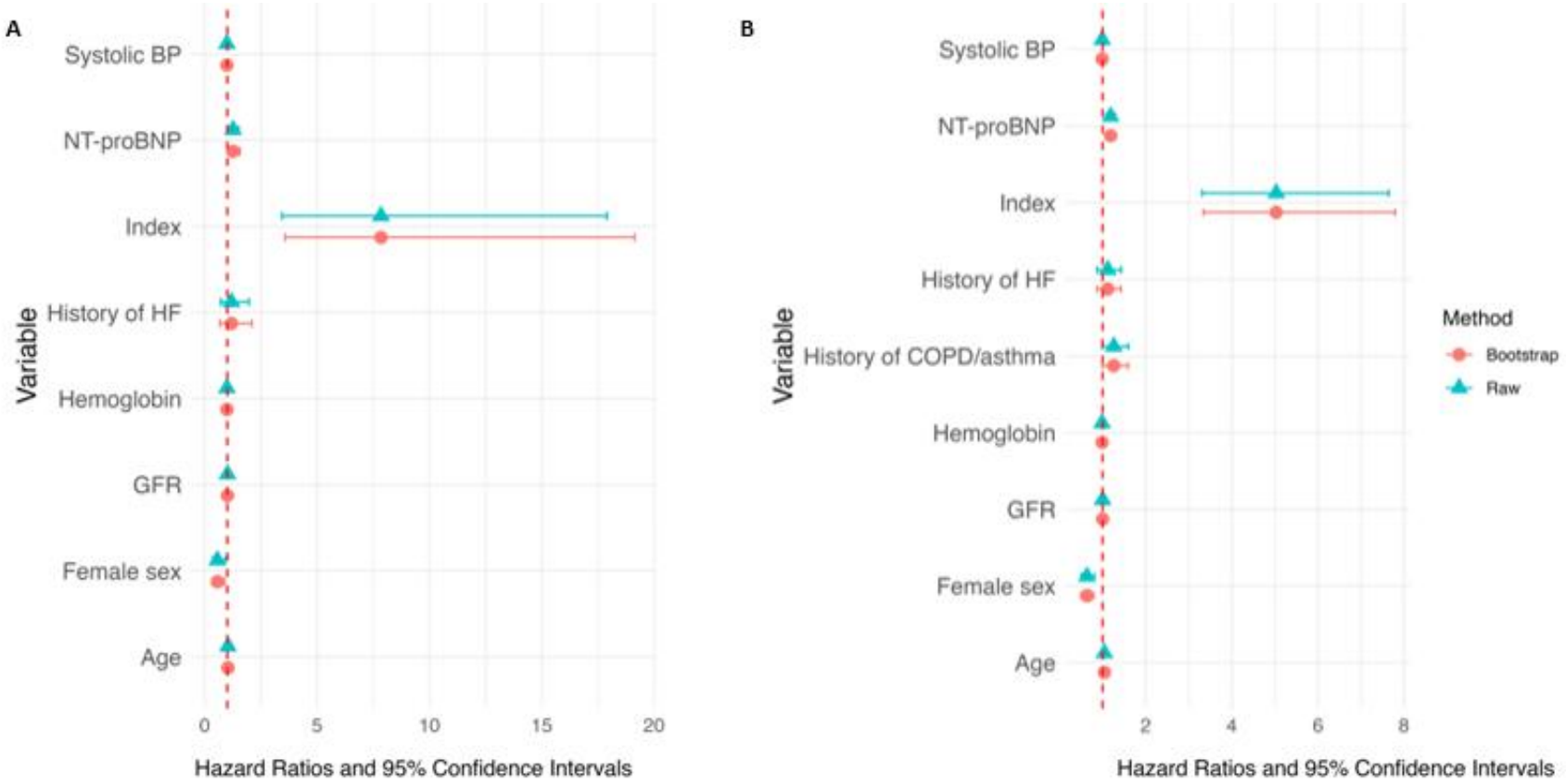
1. Are you basically satisfied with your life?	Yes/**No**
2. Have you dropped many of your activities and interests?	**Yes**/No
3. Do you feel that your life is empty?	**Yes**/No
4. Do you often get bored?	**Yes**/No
5. Are you in good spirits most of the time?	Yes/**No**
6. Are you afraid that something bad is going to happen to you?	**Yes**/No
7. Do you feel happy most of the time?	Yes/**No**
8. Do you often feel helpless?	**Yes**/No
9. Do you prefer to stay at home, rather than going out and doing new things?	**Yes**/No
10. Do you feel you have more problems with memory than most?	**Yes**/No
11. Do you think it is wonderful to be alive now?	Yes/**No**
12. Do you feel pretty worthless the way you are now?	**Yes**/No
13. Do you feel full of energy?	Yes/**No**
14. Do you feel that your situation is hopeless?	**Yes/**No
15. Do you think that most people are better off than you are?	**Yes**/No

Additional scoring information from http://www.stanford.edu/~yesavage/GDS.english.short.score.html: More than five of these answers suggests depression.

Figure S3. Bootstrap distributions of the 720-day mortality Cox model coefficients for prognostic variables. Each panel displays the coefficient distribution for a specific variable obtained through 1,000 bootstrap samples. The histograms represent the variability and stability of the coefficients, highlighting their resampled distribution.
bp: blood pressure, COPD: chronic obstructive pulmonary disease, GFR: glomerular filtration rate by Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) formula, NT-proBNP: N-terminal pro-B-type natriuretic peptide.

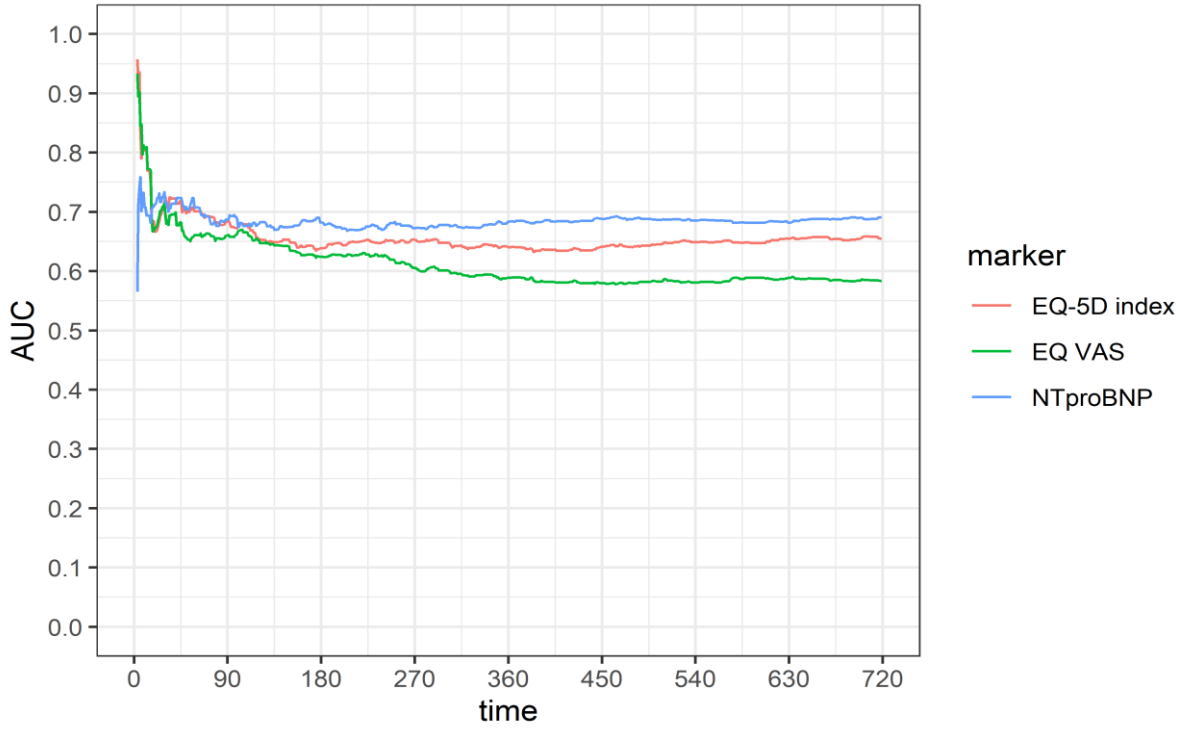


FigureS4. Results of the internal validation with hazard ratios from the 90- (**A**) and the 720-day (**B**) mortality Cox model comparing the original dataset and the bootstrap. The plot presents all used prognostic variables, including Age, Female sex, history of heart failure, history of chronic obstructive pulmonary disease/asthma, systolic blood pressure, hemoglobin level on entry, glomerular filtration rate on entry, N-terminal pro-B-type natriuretic peptide, and the EQ-5D Index. The HR estimates and their confidence intervals highlight the significance and stability of these variables in the model, underscoring their relevance as predictors of the outcome.



Adjustments made for age (years), sex, systolic blood pressure (BP, mmHg) at presentation, history of obstructive lung disease, history heart failure, estimated glomerular filtration rate (GFR) as per CKD-EPI (mL/min/1,73m^2), hemoglobin levels (g/L) and natural log of N-terminal pro-B-Type natriuretic peptide (NT-proBNP, ng/L) concentrations at presentation. Hazard ratios for continuous variables represent the risk per 1-unit increase, except for NT-proBNP, which was log-transformed and is expressed per unit increase in its natural logarithm. For categorical variables, the reference categories are: Male, absence of COPD/asthma for 'COPD/asthma,' and absence of heart failure for 'Heart failure."

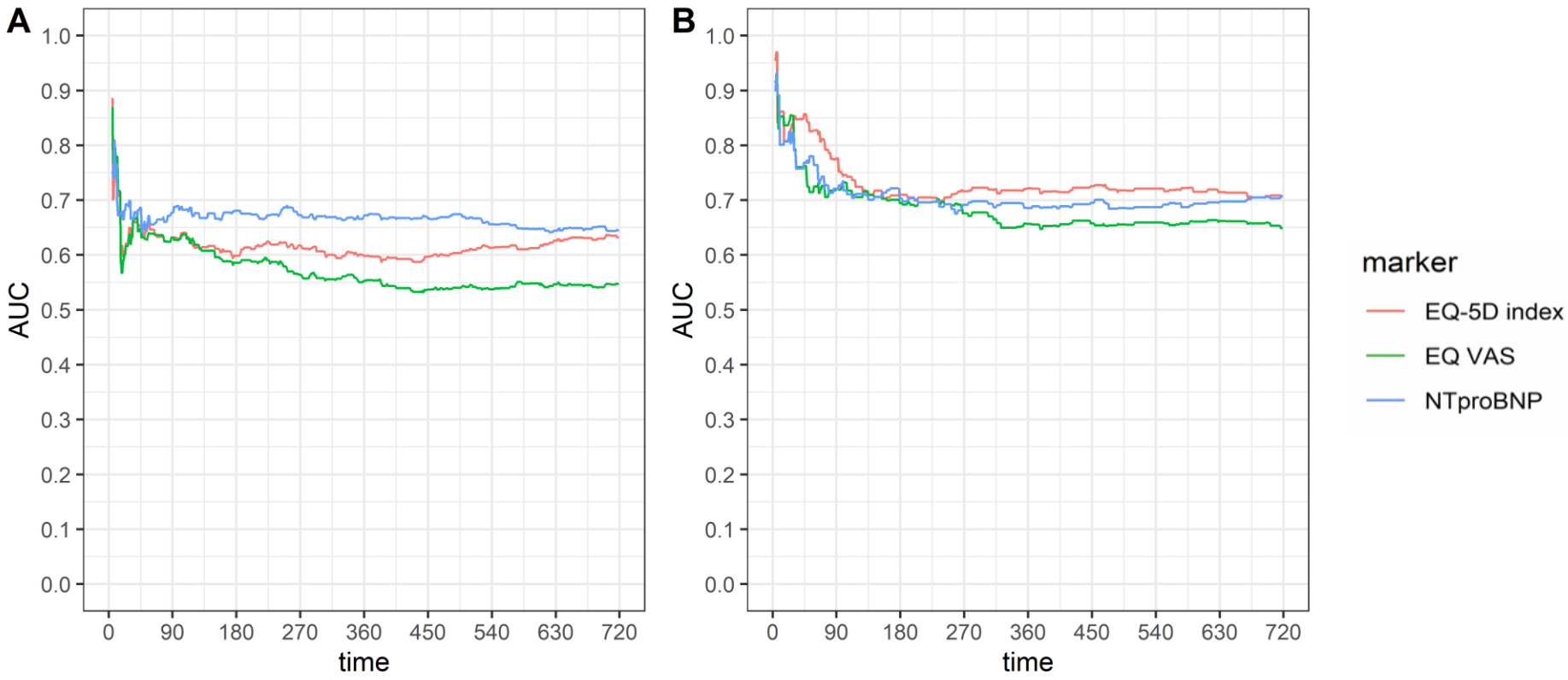
Figure S5. Illustration of prognostic accuracies of EQ-5D index, EQ VAS and NT-proBNP levels at admission. Area under the curve of the three predictors is displayed within 720 days of follow up in patients presenting with acute dyspnea and available NT-proBNP level (n=1135).



Time-dependent Area under the receiver Operating Characteristics curve (AUC) takes censored data into account and was calculated with “timeROC” package R statistical software.

AUC: area under the curve, NT-proBNP: N-terminal pro-B-type natriuretic peptide, VAS: Visual Analogue Scale.

Figure S6. Illustration of prognostic accuracies in depicted subgroups. Area under the curve (AUC) displayed within 720 days of follow up in patients with **A** an adjudicated final diagnosis of acute heart failure (AHF, n=592) and **B** other dyspnea etiologies (n=543) and available NT-proBNP level on admission.



Time-dependent Area under the receiver Operating Characteristics curve (AUC) takes censored data into account and was calculated with "timeROC" package R statistical software.

AHF: acute heart failure, AUC: area under the curve, NT-proBNP: N-terminal pro-B-type natriuretic peptide, VAS: Visual Analogue Scale.