

SUPPLEMENTARY TABLE 1. Clinical Characteristics of Study Subjects (n = 304).

Characteristics	All (n = 304)	Alive (n = 225)	Dead (n = 79)	<i>p</i>
Age (y)	59 (48, 67)	58 (47, 67)	61 (49, 67)	0.294
Sex				
Male	211 (69.41%)	152 (67.56%)	59 (74.68%)	0.237
Height (cm)	170 (163, 173)	169 (162, 173)	170 (165, 173.5)	0.278
Weight (kg)	72 (61, 80)	73 (65, 80)	70 (60, 81.5)	0.405
NYHA				< 0.001
I	43 (14.14%)	43 (19.11%)	0 (0%)	
II	55 (18.09%)	44 (19.56%)	11 (13.92%)	
III	89 (29.28%)	63 (28%)	26 (32.91%)	
IV	117 (38.49%)	75 (33.33%)	42 (53.16%)	
Systolic blood pressure (mmHg)	119 (105, 132)	121 (110, 133)	112 (99, 122.5)	< 0.001
Diastolic blood pressure (mmHg)	76 (66.75, 86)	77 (68, 87)	73 (66, 82.5)	0.171
Time to peak of renal blood flow (s)	27.25 (21, 39)	25 (21, 35)	37 (30, 55)	< 0.001
Glomerular filtration rate (mL/min/1.73 m²)	70 (56.02, 86.08)	73.7 (61.13, 87.31)	63.78 (48.07, 75.48)	< 0.001
Echocardiographic				
Left atrium diameter (mm)	43 (37, 48)	41 (36, 47)	46 (41,52)	< 0.001
LVEDD (mm)	60 (49, 69)	57 (48, 68)	65 (54.5, 75)	< 0.001
Left ventricular ejection fraction (%)	42 (33, 60.25)	45 (34, 62)	35 (31, 44.5)	< 0.001
Right atrium diameter (mm)	36 (33, 44)	36 (33, 42)	40 (34.5, 47)	0.001
Right ventricular diameter (mm)	35 (31, 40)	34 (31, 39)	37 (34, 45)	< 0.001
Moderate to severe aortic regurgitation	44 (14.47%)	29 (12.89%)	15 (18.99%)	0.185
Moderate to severe mitral regurgitation	148 (48.68%)	94 (41.78%)	54 (68.35%)	< 0.001
Moderate to severe tricuspid regurgitation	127 (41.78%)	82 (36.44%)	45 (56.96%)	0.001
Blood data				
Red blood cell distribution width (%)	13.4 (13, 14.2)	13.4 (12.9, 14.1)	13.6 (13.15, 14.7)	0.009
Creatinine (µmol/L)	79.5 (65.6, 100.25)	75.9 (62.95, 90.4)	89.2 (72.55, 124)	< 0.001
Blood urea nitrogen (mmol/L)	6.65 (5.07, 8.35)	6.26 (4.95, 7.7)	7.79 (5.9, 12.41)	< 0.001
Uric acid (µmol/L)	429.9 (331.75, 559.8)	406.95 (322.35, 546.85)	509.7 (414.75, 605.7)	< 0.001
Total bilirubin (µmol/L)	16.3 (11.85, 22.82)	15.6 (11.8, 21.9)	17.5 (12.4, 26.35)	0.124
Potassium (mmol/L)	4.06 (3.82, 4.32)	4.04 (3.8, 4.29)	4.13 (3.84, 4.36)	0.104
Sodium (mmol/L)	140 (138, 142)	140 (139, 142)	137 (136, 140)	< 0.001
Chlorine (mmol/L)	104.9 (102.7, 107.1)	105.2 (103.5, 107.32)	103 (100.05, 106.05)	< 0.001
B-type natriuretic peptide (pg/mL)	257 (98, 664)	175 (58.8, 504)	591 (278.25, 1071.5)	< 0.001
Heart failure etiologies				
Coronary heart disease	149 (49.01%)	116 (51.56%)	33 (41.77%)	0.135
Dilated cardiomyopathy	106 (34.87%)	75 (33.33%)	31 (39.24%)	0.343
Hypertrophic cardiomyopathy	15 (4.93%)	11 (4.89%)	4 (5.06%)	0.953
Valvular heart disease	19 (6.25%)	13 (5.78%)	6 (7.59%)	0.761
Others	15 (4.93%)	10 (4.44%)	5 (6.33%)	0.716
Comorbidity				
Hypertension	141 (46.38%)	106 (47.11%)	35 (44.30%)	0.667
Atrial fibrillation/atrial flutter	80 (26.32%)	55 (24.44%)	25 (31.65%)	0.211
Diabetes	73 (24.01%)	48 (21.33%)	25 (31.65%)	0.065
Medication				
ACE-Is/ARBs/ARNIs	164 (53.95%)	130 (57.78%)	34 (43.04%)	0.024
β-blockers	256 (84.21%)	192 (85.33%)	64 (81.01%)	0.365
Aldosterone antagonists	241 (79.28%)	172 (76.44%)	69 (87.34%)	0.04
Diuretics	248 (81.58%)	174 (77.33%)	74 (93.67%)	0.001
NYHA, New York Heart Association; LVEDD, left ventricular end-diastolic diameter; ACE-Is, angiotensin-converting enzyme inhibitors; ARBs, angiotensin II receptor blockers; ARNIs, angiotensin receptor-neprilysin inhibitors.				

SUPPLEMENTARY TABLE 2. COX Regression Analysis of Factors for Predicting Clinical Outcomes of HF Patients.

	Univariate analysis		Multivariate analysis	
	HR (95% CI)	<i>p</i>	HR (95% CI)	<i>p</i>
All-cause mortality				
Systolic blood pressure (mmHg)	0.977 (0.965, 0.99)	< 0.001	0.982 (0.968, 0.996)	0.01
NYHA III-IV	2.762 (1.46, 5.224)	0.002		
Time to peak of renal blood flow (s)	1.045 (1.029, 1.061)	< 0.001	1.026 (1.008, 1.044)	0.004
Glomerular filtration rate (mL/min/1.73 m²)	0.98 (0.969, 0.991)	< 0.001	0.983 (0.972, 0.995)	0.005
Left atrium diameter (mm)	1.054 (1.027, 1.082)	< 0.001		
Left ventricular end-diastolic diameter (mm)	1.019 (1.002, 1.036)	0.03		
Left ventricular ejection fraction (%)	0.973 (0.956, 0.989)	0.001		
Right atrium diameter (mm)	1.036 (1.011, 1.061)	0.004		
Moderate to severe mitral regurgitation	1.888 (1.172, 3.041)	0.009		
Moderate to severe tricuspid regurgitation	1.605 (1.027, 2.508)	0.038		
Red blood cell distribution width (%)	1.155 (1.018, 1.311)	0.025		
Creatinine (µmol/L)	1.005 (1.003, 1.008)	< 0.001		
Blood urea nitrogen (mmol/L)	1.097 (1.064, 1.131)	< 0.001		
Uric acid (µmol/L)	1.002 (1.001, 1.003)	0.001		
Total bilirubin (µmol/L)	1.028 (1.011, 1.045)	0.001		
Potassium (mmol/L)	1.683 (1.173, 2.414)	0.005		
Sodium (mmol/L)	0.867 (0.832, 0.903)	< 0.001	0.896 (0.854, 0.94)	<0.001
Chlorine (mmol/L)	0.92 (0.885, 0.955)	< 0.001		
B-type natriuretic peptide (pg/mL)	1.001 (1, 1.001)	< 0.001	1 (1, 1.001)	0.017
Cardiovascular mortality				
Systolic blood pressure (mmHg)	0.974 (0.961, 0.987)	< 0.001	0.98 (0.965, 0.995)	0.01
NYHA III-IV	3.088 (1.534, 6.215)	0.002		
Time to peak of renal blood flow (s)	1.052 (1.035, 1.069)	< 0.001	1.033 (1.014, 1.053)	0.001
Glomerular filtration rate (mL/min/1.73 m²)	0.982 (0.97, 0.994)	0.002	0.985 (0.972, 0.997)	0.016
Left atrium diameter (mm)	1.064 (1.036, 1.093)	< 0.001		
Left ventricular end-diastolic diameter (mm)	1.026 (1.009, 1.044)	0.003		
Left ventricular ejection fraction (%)	0.963 (0.945, 0.981)	< 0.001		
Right atrium diameter (mm)	1.047 (1.022, 1.073)	< 0.001		
Moderate to severe mitral regurgitation	2.239 (1.332, 3.765)	0.002		
Moderate to severe tricuspid regurgitation	1.768 (1.1, 2.841)	0.019		
Creatinine (µmol/L)	1.005 (1.003, 1.008)	< 0.001		
Blood urea nitrogen (mmol/L)	1.1 (1.066, 1.135)	< 0.001		
Uric acid (µmol/L)	1.002 (1.001, 1.003)	< 0.001		
Total bilirubin (µmol/L)	1.03 (1.012, 1.048)	0.001		
Potassium (mmol/L)	1.733 (1.206, 2.492)	0.003		
Sodium (mmol/L)	0.868 (0.832, 0.907)	< 0.001	0.9 (0.855, 0.947)	< 0.001
Chlorine (mmol/L)	0.921 (0.885, 0.959)	< 0.001		
B-type natriuretic peptide (pg/mL)	1.001 (1, 1.001)	< 0.001	(1, 1.001)	0.01
NYHA, New York Heart Association; CI, confidence interval.				

SUPPLEMENTARY TABLE 3. Comparison of Different Factors for Predicting Clinical Outcomes of HF Patients.

Model	Corrected C-index (95% CI)	AIC	<i>p</i>
All-cause mortality			
TTPr	0.7 (0.636, 0.763)	754.33	
Sodium	0.676 (0.611, 0.744)	755.28	< 0.001
BNP	0.698 (0.645, 0.751)	769.09	< 0.001
SBP	0.648 (0.587, 0.718)	772.94	< 0.001
GFR	0.608 (0.545, 0.691)	774.15	< 0.001
Cardiovascular mortality			
TTPr	0.734 (0.661, 0.794)	664.51	
Sodium	0.677 (0.608, 0.744)	677.02	< 0.001
BNP	0.725 (0.663, 0.772)	683.38	< 0.001
SBP	0.659 (0.608, 0.749)	688.54	< 0.001
GFR	0.597 (0.518, 0.673)	695.23	< 0.001
TTPr, time to peak of renal blood flow; BNP, B-type natriuretic peptide; SBP, systolic blood pressure; GFR, glomerular filtration rate; CI, confidence interval; AIC, Akaike information criterion; HF, heart failure. <i>p</i> compared to TTPr.			