

Revised manuscript (EURHEARTJ-D-18-00941)

Supplemental data

Table 1: Data Follow-Up Collection:

Variable	Modality	HFpEF EF \geq 50% (N=3879)		HFmrEF EF 40-49% (N=3115)		HFrEF EF $<$ 40% (N=7970)		P-value
		SR (N=2360)	AF (N=1519)	SR (N=2215)	AF (N=900)	SR (N=5860)	AF (N=2110)	
Lost to Follow-Up	No	2200/2360 (93.2%)	1393/1519 (91.7%)	2061/2215 (93.0%)	806/900 (89.6%)	5410/5860 (92.3%)	1896/2110 (89.9%)	<0.001(S)
	Not Applicable	34/2360 (1.4%)	45/1519 (3.0%)	24/2215 (1.1%)	22/900 (2.4%)	120/5860 (2.0%)	50/2110 (2.4%)	
	Yes	126/2360 (5.3%)	81/1519 (5.3%)	130/2215 (5.9%)	72/900 (8.0%)	330/5860 (5.6%)	164/2110 (7.8%)	
Contact method	Phone	972/2127 (45.7%)	656/1298 (50.5%)	970/1972 (49.2%)	401/749 (53.5%)	2285/5119 (44.6%)	877/1765 (49.7%)	<0.001(S)
	Visit	1155/2127 (54.3%)	642/1298 (49.5%)	1002/1972 (50.8%)	348/749 (46.5%)	2834/5119 (55.4%)	888/1765 (50.3%)	
	ND	233	221	243	151	741	345	
Where is data collected	HF clinic	415/2130 (19.5%)	194/1291 (15.0%)	576/1962 (29.4%)	146/735 (19.9%)	1563/5120 (30.5%)	416/1752 (23.7%)	<0.001(S)
	Hospital	1419/2130 (66.6%)	895/1291 (69.3%)	1130/1962 (57.6%)	491/735 (66.8%)	3043/5120 (59.4%)	1138/1752 (65.0%)	
	Other organisation	200/2130 (9.4%)	90/1291 (7.0%)	175/1962 (8.9%)	61/735 (8.3%)	381/5120 (7.4%)	126/1752 (7.2%)	
	Primary care	96/2130 (4.5%)	112/1291 (8.7%)	81/1962 (4.1%)	37/735 (5.0%)	133/5120 (2.6%)	72/1752 (4.1%)	
	ND	230	228	253	165	740	358	
By whom	Cardiologist	1454/2155 (67.5%)	853/1319 (64.7%)	1494/1988 (75.2%)	526/752 (69.9%)	3991/5196 (76.8%)	1325/1789 (74.1%)	NC
	GP	89/2155 (4.1%)	54/1319 (4.1%)	66/1988 (3.3%)	34/752 (4.5%)	132/5196 (2.5%)	63/1789 (3.5%)	
	Geriatrician	3/2155 (0.1%)	3/1319 (0.2%)	1/1988 (0.1%)	0/752 (0.0%)	3/5196 (0.1%)	2/1789 (0.1%)	
	Internal medicine doctor	261/2155 (12.1%)	147/1319 (11.1%)	118/1988 (5.9%)	66/752 (8.8%)	236/5196 (4.5%)	111/1789 (6.2%)	

Variable	Modality	HFpEF EF>=50% (N=3879)		HFmrEF EF 40-49% (N=3115)		HFrEF EF<40% (N=7970)		P-value
		SR (N=2360)	AF (N=1519)	SR (N=2215)	AF (N=900)	SR (N=5860)	AF (N=2110)	
	Nurse	233/2155 (10.8%)	189/1319 (14.3%)	147/1988 (7.4%)	79/752 (10.5%)	458/5196 (8.8%)	174/1789 (9.7%)	
	Other	111/2155 (5.2%)	71/1319 (5.4%)	156/1988 (7.8%)	45/752 (6.0%)	364/5196 (7.0%)	112/1789 (6.3%)	
	Palliative care nurse	2/2155 (0.1%)	2/1319 (0.2%)	6/1988 (0.3%)	2/752 (0.3%)	10/5196 (0.2%)	1/1789 (0.1%)	
	Physiotherapist	2/2155 (0.1%)	0/1319 (0.0%)	0/1988 (0.0%)	0/752 (0.0%)	2/5196 (0.0%)	1/1789 (0.1%)	
	ND	205	200	227	148	664	321	

Table 1a: Baseline characteristics of overall population with heart failure according to heart rhythm and ejection fraction group.

Variable	Overall (N=14964)	HFpEF (EF≥50%) (N=3879)		HFmrEF (EF 40-49%) (N=3115)		HFrEF (EF<40%) (N=7970)		p value*
		SR (N=2360)	AF (N=1519)	SR (N=2215)	AF (N=900)	SR (N=5860)	AF (N=2110)	
		Age (years)	66.2±13.3	67.6±13.8	74.3±11.5	63.6±13.7	70.4±12.2	
Gender (F)	4933/14964 64 (33.0%)	1129/236 0 (47.8%)	852/1519 (56.1%)	714/2215 (32.2%)	345/900 (38.3%)	1402/586 0 (23.9%)	491/2110 (23.3%)	<0.001
BMI (kg/m ²)	28.3±5.3 N=14,389	29.0±5.9	28.6±5.7	28.6±5.3	28.7±5.6	27.8±4.9	28.6±5.1	<0.001
Physical and vital signs								
Systolic BP (mmHg)	128.7±25.0 N=14724	138.1±27.6	133.6±25.2	130.6±24.8	130.7±24.2	124.5±23.6	123.8±22.2	<0.001

Heart rate	81.7±23.0	77.6±21.3	89.2±27.8	77.6±19.3	91.1±26.9	78.5±19.5	90.3±26.6	<0.001
N=14737								
	7565/146							
NYHA III or IV	97	1103/233	888/1473	866/2185	510/868	2838/577	1360/2065	<0.001
	(51.5%)	5 (47.2%)	(60.3%)	(39.6%)	(58.8%)	1 (49.2%)	(65.9%)	
	6074/144							
Pulmonary rales	41	1033/232	777/1461	804/2157	431/848	2043/565	986/2004	<0.001
	(42.1%)	1 (44.5%)	(53.2%)	(37.3%)	(50.8%)	0 (36.2%)	(49.2%)	
	3054/140							
JVP (>6 cm)	39	403/2255	410/1421	350/2098	228/819	1086/550	577/1938	<0.001
	(21.8%)	(17.9%)	(28.9%)	(16.7%)	(27.8%)	8 (19.7%)	(29.8%)	
	5092/144							
Peripheral oedema	77	728/2323	741/1462	597/2161	386/852	1670/566	970/2011	<0.001
	(35.2%)	(31.3%)	(50.7%)	(27.6%)	(45.3%)	8 (29.5%)	(48.2%)	
Echo-Doppler								
EF (%)	39.4±14.1	58.7±7.0	58.6±6.9	43.2±2.8	43.4±2.8	28.5±6.6	28.5±6.7	<0.001
Mitral regurgitation	4923/125	454/2019	480/1234	598/1890	375/735	2068/492	948/1716	<0.001
	23	(22.5%)	(38.9%)	(31.6%)	(51.0%)	9	(55.2%)	
moderate-severe	(39.3%)					(42.0%)		
Aortic stenosis	837/1249	245/2019	146/1232	97/1892	61/732	167/4908	121/1713	<0.001
moderate-severe	6 (6.7%)	(12.1%)	(11.9%)	(5.1%)	(8.3%)	(3.4%)	(7.1%)	
Medical history								
Previous HF hospitalization	5731/148	794/2344	603/1510	686/2203	358/893	2328/582	962/2092	<0.001
	70	(33.9%)	(39.9%)	(31.1%)	(40.1%)	8 (39.9%)	(46.0%)	
	(38.5%)							
Ischemic heart disease (aetiology)	7270/148	924/2353	362/1508	1258/220	358/893	3394/582	974/2093	<0.001
	82	(39.3%)	(24.0%)	6 (57.0%)	(40.1%)	9 (58.2%)	(46.5%)	
	(48.9%)							
Diabetes	5146/149	816/2359	478/1519	780/2215	295/900	2021/586	756/2110	0.092
	63	(34.6%)	(31.5%)	(35.2%)	(32.8%)	0 (34.5%)	(35.8%)	
	(34.4%)							

	1880/144							
PVD	84 (13.0%)	334/2324 (14.4%)	191/1463 (13.1%)	250/2162 (11.6%)	122/852 (14.3%)	691/5670 (12.2%)	292/2013 (14.5%)	0.006
Hypertension	45 (61.5%)	1663/235 (70.6%)	1099/151 (72.4%)	1278/221 (57.7%)	606/896 (67.6%)	3239/585 (55.3%)	1310/2107 (62.2%)	<0.001
COPD	48 (16.6%)	475/2357 (20.2%)	288/1518 (19.0%)	252/2210 (11.4%)	163/899 (18.1%)	914/5854 (15.6%)	392/2110 (18.6%)	<0.001
Stroke/TIA	58 (10.2%)	249/2359 (10.6%)	224/1519 (14.7%)	174/2214 (7.9%)	114/900 (12.7%)	520/5857 (8.9%)	250/2109 (11.9%)	<0.001
Chronic kidney dysfunction	48 (20.4%)	499/2358 (21.2%)	386/1517 (25.4%)	374/2212 (16.9%)	217/898 (24.2%)	1056/585 (18.0%)	510/2108 (24.2%)	<0.001
Hepatic dysfunction	6 (5.1%)	103/2325 (4.4%)	79/1463 (5.4%)	69/2162 (3.2%)	55/852 (6.5%)	277/5670 (4.9%)	155/2014 (7.7%)	<0.001
Depression	18 (7.5%)	241/2356 (10.2%)	129/1509 (8.5%)	132/2208 (6.0%)	65/896 (7.3%)	408/5843 (7.0%)	140/2106 (6.6%)	<0.001

***P value represent comparison between all 6 sub-groups elaborated in the table.**

Table 1b: Medications, device therapies, and laboratory blood tests of the overall population with heart failure according to heart rhythm and ejection fraction group.

Variable	Overall (N=14964)	HFpEF (EF≥50%) (N=3879)		HFmrEF (EF 40-49%) (N=3115)		HFrEF (EF<40%) (N=7970)		P-value
		SR	AF	SR	AF	SR	AF	
		(N=2360)	(N=1519)	(N=2215)	(N=900)	(N=5860)	(N=2110)	
Medications and device therapies								
ACEI and ARBs	213/14489 (1.5%)	35/2328 (1.5%)	18/1465 (1.2%)	47/2163 (2.2%)	12/852 (1.4%)	76/5669 (1.3%)	25/2012 (1.2%)	<0.001
ACEI or ARBs	10529/1448 9 (72.7%)	1570/2328 (67.4%)	895/1465 (61.1%)	1607/216 3 (74.3%)	601/852 (70.5%)	4397/566 9 (77.6%)	1459/2012 (72.5%)	<0.001
Beta-Blockers	10246/1449 7 (70.7%)	1427/2328 (61.3%)	908/1465 (62.0%)	1523/216 4 (70.4%)	576/853 (67.5%)	4308/567 4 (75.9%)	1504/2013 (74.7%)	<0.001
MRAs	6287/14495 (43.4%)	543/2328 (23.3%)	466/1465 (31.8%)	826/2164 (38.2%)	365/853 (42.8%)	2992/567 2 (52.8%)	1095/2013 (54.4%)	<0.001
Diuretics Oral	10269/1449 5 (70.8%)	1427/2328 (61.3%)	1106/1465 (75.5%)	1294/216 3 (59.8%)	639/853 (74.9%)	4164/567 2 (73.4%)	1639/2014 (81.4%)	<0.001
Digitalis (Digoxin)	2737/14497 (18.9%)	104/2328 (4.5%)	488/1465 (33.3%)	161/2163 (7.4%)	304/853 (35.6%)	830/5674 (14.6%)	850/2014 (42.2%)	<0.001
Statins	7216/14498 (49.8%)	1117/2328 (48.0%)	550/1465 (37.5%)	1127/216 4 (52.1%)	344/853 (40.3%)	3182/567 4 (56.1%)	896/2014 (44.5%)	<0.001
Antiplatelets	6874/14498 (47.4%)	1084/2328 (46.6%)	372/1465 (25.4%)	1122/216 4 (51.8%)	281/853 (32.9%)	3316/587 4 (58.4%)	699/2014 (34.7%)	<0.001
Anticoagulant	5109/14498 (35.2%)	522/2328 (22.4%)	993/1465 (67.8%)	371/2164 (17.1%)	555/853 (65.1%)	1270/567 4 (22.4%)	1398/2014 (69.4%)	<0.001
Amiodarone	1500/14497 (10.3%)	215/2328 (9.2%)	115/1465 (7.8%)	180/2164 (8.3%)	95/853 (11.1%)	614/5673 (10.8%)	281/2014 (14.0%)	<0.001
Ivabradine	621/14498 (4.3%)	74/2328 (3.2%)	2/1465 (0.1%)	108/2164 (5.0%)	3/853 (0.4%)	414/5674 (7.3%)	20/2014 (1.0%)	<0.001
Calcium channel blockers	1949/14497 (13.4%)	522/2328 (22.4%)	359/1465 (24.5%)	289/2164 (13.4%)	146/852 (17.1%)	435/5674 (7.7%)	198/2014 (9.8%)	<0.001
Pacemaker	365/14914 (2.4%)	45/2350 (1.9%)	94/1514 (6.2%)	27/2210 (1.2%)	54/896 (6.0%)	62/5841 (1.1%)	83/2103 (3.9%)	
ICD	1577/14914 (10.6%)	62/2350 (2.6%)	21/1514 (1.4%)	130/2210 (5.9%)	38/896 (4.2%)	1058/584 1 (18.1%)	268/2103 (12.7%)	

CRT-D/P	502/14914 (3.4%)	26/2350 (1.1%)	5/1514 (0.4%)	35/2210 (1.5%)	14/896 (1.6%)	306/5841 (5.2%)	116/2103 (5.5%)	
Laboratory blood tests								
White Blood cells (cell/uL) N=12581	8365±5337	8348±3279	8499±122 89	8419±333 5	8002±2976	8439±443 1	8176± 3145	<0.001
Haemoglobin (g/dL) N=13378	13.0±2.1	12.8±2.2	12.4±2.2	12.9±2.1	12.8±2.1	13.2±2.0	13.3±2.0	<0.001
S-Creatinine (mg/dL) N= 13872	1.1 (0.9-1.4)	1.0 (0.9-1.3)	1.1 (0.9-1.4)	1.1 (0.9-1.4)	1.2 (0.9- 1.4)	1.1 (0.9-1.4)	1.2 (1.0-1.5)	<0.001
Nitrogen urea (mg/dL) N=10117	44.5±32.7	41.4±32.6	49.5±38.8	42.1±30.3	44.2±30.8	44.2±30.7	47.6±35.3	<0.001
eGFR N=13371 (mL/min/1.73m ²)	63.4±29.7	64.±37.5	58.3±28.2	66.5±27.5	59.1±24.1	65.6±28.2	58.8±27.8	<0.001
NT-proBNP (pg/mL) median (IQR) N=4130	1880 (657-4937)	932 (296- 2980)	2500 (1310- 5460)	828 (298- 2864)	2615 (1240- 6100)	1839 (661- 5025)	3320 (1542-7372)	<0.001
Total cholesterol (mg/dL) N=9928	167±57	173±49	155±43	177±50	163±49	168±48	158±97	<0.001
Sodium (mmol/L) N=13051	138.8±4.5	139.3±4.0	138.8±4.8	139.3±4.1	138.4±4.8	138.6±4.4	138.4±5.0	<0.001
Potassium (mmol/L) N=13224	4.42±0.59	4.40±0.59	4.37±0.62	4.43±0.55	4.39±0.61	4.43±0.58	4.44±0.60	0.009

Table 2: Long term outcomes* of the overall population with heart failure, according to heart rhythm and ejection fraction group.

Variable	Modality	HFpEF (EF≥50%) (N=3879)		HFmrEF (EF 40-49%) (N=3115)		HFrEF (EF<40%) (N=7970)		p value
		SR (N=2360)	AF (N=1519)	SR (N=2215)	AF (N=900)	SR (N=5860)	AF (N=2110)	
		All causes of death	Number (%)	252/2234 (11.3%)	296/1438 (20.6%)	250/2085 (12.0%)	153/828 (18.5%)	
	ND	126	81	130	72	330	164	
	Events/100-patient years	9.91	19.52	10.51	16.76	14.21	19.15	
Heart failure hospitalizations	Number (%)	243/2069 (11.7%)	256/1282 (20.0%)	200/1889 (10.6%)	140/719 (19.5%)	874/4922 (17.8%)	377/1674 (22.5%)	<0.001
	ND	291	237	326	181	938	436	
	Events/100-patient years	11.68	23.13	10.00	20.91	19.12	25.53	

AF – atrial fibrillation; SR – sinus rhythm; ND – not defined

*Up to 800 days (~2.2 years)

Table 3: Hazards ratios for adverse outcomes associated with atrial fibrillation, according to ejection fraction groups.

	Comparison (AF vs. SR=reference)	Age and gender adjustment		Multivariate adjustment*	
		HR (95% CI)	<i>p</i> value	HR (95% CI)	<i>p</i> value
Total mortality	HFrEF Rhythm AF vs SR	1.119 (0.991-1.264)	0.069	0.923 (0.782-1.091)	0.347
	HFmrEF Rhythm AF vs SR	1.236 (1.006-1.519)	0.044	1.296 (0.993-1.691)	0.057
	HFpEF Rhythm AF vs SR	1.459 (1.228-1.733)	<0.001	1.198 (0.954-1.504)	0.120
Heart failure hospitalizations	HFrEF Rhythm AF vs SR	1.292 (1.137-1.469)	<0.001	1.036 (0.888-1.208)	0.652
	HFmrEF Rhythm AF vs SR	1.681 (1.338-2.111)	<0.001	1.430 (1.087-1.882)	0.011
	HFpEF Rhythm AF vs SR	1.616 (1.345-1.942)	<0.001	1.487 (1.195-1.851)	<0.001
Total mortality or heart failure hospitalizations	HFrEF Rhythm AF vs SR	1.207 (1.099-1.325)	<0.001	0.957 (0.843-1.087)	0.502
	HFmrEF Rhythm AF vs SR	1.403 (1.190-1.653)	<0.001	1.302 (1.055-1.608)	0.014
	HFpEF Rhythm AF vs SR	1.598 (1.397-1.828)	<0.001	1.365 (1.152-1.619)	<0.001

* Covariates included in the multivariable adjustment are presented in the supplemental appendix.

Table S1: Association between baseline characteristics of the overall population and atrial fibrillation according to ejection fraction group.

Variable	HFpEF		HFmrEF		HFrEF	
	OR* (95% CI)	p-value	OR* (95% CI)	p-value	OR* (95% CI)	p-value
Age (years)	1.042 (1.037;1.048)	<0.001	1.041 (1.035;1.048)	<0.001	1.038 (1.034;1.043)	<0.001
Sex (M)	0.839 (0.733;0.960)	0.011	0.845 (0.716;0.999)	0.048	1.172 (1.038;1.322)	0.010
BMI (kg/m ²)	0.998 (0.986;1.010)	0.719	1.015 (1.000;1.031)	0.056	1.048 (1.037;1.059)	<0.001
Systolic BP (mmHg)	0.991 (0.988;0.994)	<0.001	0.997 (0.994;1.001)	0.119	0.996 (0.994;0.998)	<0.001
Heart rate (in beats/min)	1.021 (1.018;1.024)	<0.001	1.028 (1.024;1.032)	<0.001	1.025 (1.023;1.028)	<0.001
NYHA class III or IV	1.420 (1.237;1.630)	<0.001	1.839 (1.559;2.169)	<0.001	1.881 (1.691;2.092)	<0.001
Pulmonary rales	1.138 (0.991;1.306)	0.067	1.508 (1.279;1.779)	<0.001	1.536 (1.382;1.707)	<0.001
JVP (>6 cm)	1.779 (1.512;2.094)	<0.001	1.844 (1.515;2.244)	<0.001	1.709 (1.515;1.928)	<0.001
Peripheral oedema	1.951 (1.698;2.242)	<0.001	1.948 (1.645;2.307)	<0.001	2.080 (1.869;2.313)	<0.001
Mitral regurgitation (moderate-severe)	2.015 (1.717;2.363)	<0.001	2.116 (1.766;2.535)	<0.001	1.660 (1.483;1.859)	<0.001
Aortic stenosis (moderate- severe)	0.761 (0.607;0.954)	0.018	1.130 (0.800;1.596)	0.487	1.631 (1.274;2.088)	<0.001
Previous HF hospitalization	1.271 (1.107;1.459)	<0.001	1.408 (1.192;1.662)	<0.001	1.307 (1.179;1.449)	<0.001
Ischemic heart disease aetiology	0.421 (0.361;0.489)	<0.001	0.406 (0.343;0.481)	<0.001	0.470 (0.422;0.524)	<0.001

Variable	HFpEF		HFmrEF		HFrEF	
	OR* (95% CI)	p-value	OR* (95% CI)	p-value	OR* (95% CI)	p-value
Diabetes	0.817 (0.709;0.941)	0.005	0.804 (0.679;0.952)	0.011	0.977 (0.879;1.087)	0.673
PVD	0.769 (0.631;0.936)	0.009	1.060 (0.834;1.346)	0.636	1.033 (0.888;1.201)	0.677
Hypertension	0.761 (0.651;0.888)	<0.001	1.168 (0.984;1.388)	0.076	1.069 (0.961;1.190)	0.217
COPD	0.880 (0.744;1.042)	0.138	1.552 (1.244;1.937)	<0.001	1.112 (0.973;1.271)	0.118
Stroke/TIA	1.251 (1.026;1.527)	0.027	1.386 (1.071;1.794)	0.013	1.213 (1.030;1.429)	0.020
Chronic kidney dysfunction	1.017 (0.867;1.192)	0.839	1.196 (0.982;1.456)	0.076	1.153 (1.018;1.306)	0.025
Hepatic dysfunction	1.308 (0.960;1.782)	0.088	2.293 (1.577;3.334)	<0.001	1.691 (1.373;2.082)	<0.001
Depression	0.716 (0.568;0.902)	0.005	1.092 (0.795;1.499)	0.586	0.935 (0.763;1.147)	0.521
ACEI or ARBs	0.707 (0.613;0.816)	<0.001	0.798 (0.663;0.960)	0.017	0.765 (0.678;0.863)	<0.001
Beta-Blockers	1.028 (0.895;1.181)	0.697	0.894 (0.750;1.065)	0.211	0.955 (0.847;1.077)	0.450
MRAs	1.758 (1.508;2.049)	<0.001	1.370 (1.159;1.618)	<0.001	1.185 (1.067;1.317)	0.002
Diuretics Oral	1.667 (1.434;1.937)	<0.001	1.740 (1.451;2.087)	<0.001	1.495 (1.314;1.700)	<0.001
Digitalis (Digoxin)	12.188 (9.626;15.434)	<0.001	7.501 (5.998;9.380)	<0.001	4.953 (4.388;5.591)	<0.001
Statins	0.576 (0.501;0.662)	<0.001	0.540 (0.457;0.639)	<0.001	0.551 (0.495;0.612)	<0.001

Variable	HFpEF		HFmrEF		HFrEF	
	OR* (95% CI)	p-value	OR* (95% CI)	p-value	OR* (95% CI)	p-value
Antiplatelet	0.327 (0.281;0.380)	<0.001	0.385 (0.324;0.458)	<0.001	0.314 (0.281;0.351)	<0.001
Anticoagulant	7.075 (6.086;8.225)	<0.001	8.937 (7.422;10.761)	<0.001	8.095 (7.203;9.096)	<0.001
Amiodarone	0.798 (0.626;1.018)	0.069	1.264 (0.966;1.654)	0.088	1.270 (1.089;1.482)	0.002
Ivabradine	0.048 (0.012;0.198)	<0.001	0.070 (0.022;0.221)	<0.001	0.148 (0.094;0.233)	<0.001
Calcium channel blockers	0.985 (0.840;1.154)	0.851	1.117 (0.893;1.396)	0.334	1.110 (0.927;1.329)	0.257
S-creatinine (in mg/dL)	0.985 (0.897;1.082)	0.756	0.956 (0.856;1.069)	0.431	1.010 (0.994;1.026)	0.204
eGFR (in mL/min/1.73m ²)	0.999 (0.997;1.002)	0.451	0.996 (0.992;1.000)	0.027	0.995 (0.993;0.997)	<0.001
Sodium (in mmol/L)	0.971 (0.956;0.987)	<0.001	0.949 (0.930;0.968)	<0.001	0.981 (0.970;0.993)	0.002
Potassium (in mmol/L)	0.860 (0.765;0.968)	0.013	0.826 (0.711;0.958)	0.012	0.991 (0.904;1.087)	0.849

* Odds ratio, adjusted to age and sex

Table S2a: Baseline characteristics of patients with acute heart failure according to heart rhythm and ejection fraction group.

Variable	HFpEF (EF≥50%)		HFmrEF (EF 40-49%)		HFrEF (EF<40%)		p-value	
	(N=2012)		(N=1352)		(N=3327)			
	Overall (N=6691)	SR (N=1146)	AF (N=866)	SR (N=896)	AF (N=456)	SR (N=2281)		AF (N=1046)
Age (years) N=6691	68.3±13.0	70.0±13.1	75.3±11.6	66.6±12.2	71.8±11.6	64.5±13.1	69.0±11.4	<0.001
Sex (F)	2490/6691 (37.2%)	596/1146 (52.0%)	523/866 (60.4%)	309/896 (34.5%)	197/456 (43.2%)	573/2281 (25.1%)	292/1046 (27.9%)	<0.001
BMI (kg/m ²) N=6435	28.5±5.4	29.1±6.2	28.7±5.9	28.8±5.2	28.4±5.6	27.9±5.0	28.5±5.1	<0.001
Physical and vital signs:								
Systolic BP (mmHg) N=6467	133.2±28.7	144.6±31.2	137.2±27.6	137.0±28.4	134.1±26.8	127.6±28.0	125.7±24.0	<0.001
Heart rate (beats/min) N=6467	92.3±25.7	86.4±24.7	96.5±30.9	88.1±21.0	101.3±29.4	90.1±21.4	100.3±29.0	<0.001
NYHA III or IV	5416/6447 (84.0%)	894/1123 (79.6%)	700/824 (85.0%)	682/869 (78.5%)	362/425 (85.2%)	1874/2204 (85.0%)	904/1002 (90.2%)	<0.001
Pulmonary rales	4833/6435 (75.1%)	837/1127 (74.3%)	640/823 (77.8%)	650/869 (74.8%)	322/422 (76.3%)	1628/2197 (74.1%)	756/997 (75.8%)	0.373
JVP (>6 cm)	2116/6107 (34.6%)	315/1071 (29.4%)	285/793 (35.9%)	224/819 (27.4%)	149/395 (37.7%)	735/2087 (35.2%)	408/942 (43.3%)	<0.001
Peripheral oedema	3446/6455 (53.4%)	485/1128 (43.0%)	531/823 (64.5%)	377/872 (43.2%)	252/425 (59.3%)	1124/2206 (51.0%)	677/1001 (67.6%)	<0.001
Echo-Doppler:								
EF (%)	40.4±14.5	58.8±7.0	58.1±6.7	43.0±2.9	43.3±2.8	28.3±6.6	28.4±6.8	<0.001

Mitral								
regurgitation	2832/5428	302/965	317/658	317/737	219/360	1110/1890	567/818	
(moderate-severe)	(52.2%)	(31.3%)	(48.2%)	(43.0%)	(60.8%)	(58.7%)	(69.3%)	<0.001
Aortic stenosis	545/5415	164/965	101/658	71/738	34/361	96/18.79	79/814	
(moderate-severe)	(10.1%)	(17.0%)	(15.3%)	(9.6%)	(9.4%)	(5.1%)	(9.7%)	<0.001
Medical history								
Previous HF hospitalizations	2104/6663	312/1140	315/861	202/894	147/453	723/2274	405/1041	<0.001
	(31.6%)	(27.4%)	(36.6%)	(22.6%)	(32.5%)	(31.8%)	(38.9%)	
Ischemic heart disease (aetiology)	3794/6660	572/1142	245/861	671/894	216/453	1554/2271	536/1039	<0.001
	(57.0%)	(50.1%)	(28.5%)	(75.1%)	(47.7%)	(68.4%)	(51.6%)	
Diabetes	2563/6691	455/1146	291/866	388/896	164/456	868/2281	397/1046	0.001
	(38.3%)	(39.7%)	(33.6%)	(43.3%)	(36.0%)	(38.1%)	(38.0%)	
PVD (Peripheral vascular disease)	950/6463	206/1130	126/825	110/872	57/425	275/2208	176/1003	<0.001
	(14.7%)	(18.2%)	(15.3%)	(12.6%)	(13.4%)	(12.5%)	(17.5%)	
Hypertension	4359/6684	877/1144	639/866	572/895	300/455	1314/2278	657/1046	<0.001
	(65.2%)	(76.7%)	(73.8%)	(63.9%)	(65.9%)	(57.7%)	(62.8%)	
COPD	1323/6688	310/1145	181/866	128/894	95/456	407/2281	202/1046	<0.001
	(19.8%)	(27.1%)	(20.9%)	(14.3%)	(20.8%)	(17.8%)	(19.3%)	
Stroke/TIA	814/6690	161/1146	145/866	86/896	60/456	231/2280	131/1046	<0.001
	(12.2%)	(14.0%)	(16.7%)	(9.6%)	(13.2%)	(10.1%)	(12.5%)	
Chronic kidney dysfunction	1657/6688	292/1146	249/866	203/894	104/456	526/2280	283/1046	0.004
	(24.8%)	(25.5%)	(28.8%)	(22.7%)	(22.8%)	(23.1%)	(27.1%)	
Hepatic dysfunction	477/6465	71/1129	59/826	39/873	32/425	172/2209	104/1003	<0.001
	(7.4%)	(6.3%)	(7.1%)	(4.5%)	(7.5%)	(7.8%)	(10.4%)	
Depression	512/6681	135/1145	81/864	52/894	36/456	139/2277	69/1045	<0.001
	(7.7%)	(11.8%)	(9.4%)	(5.8%)	(7.9%)	(6.1%)	(6.6%)	
Medications (Prior):								

ACEI and ARBs	67/6462 (1.0%)	20/1130 (1.8%)	6/826 (0.7%)	8/873 (0.9%)	9/425 (2.1%)	16/2208 (0.7%)	8/1000 (0.8%)	0.002
ACEI or ARBs	3945/6462 (61.0%)	674/1130 (59.6%)	475/826 (57.5%)	514/873 (58.9%)	251/425 (59.1%)	1400/2208 (63.4%)	631/1000 (63.1%)	0.002
Beta-Blockers	3556/6462 (55.0%)	573/1130 (50.7%)	456/826 (55.2%)	435/873 (49.8%)	234/425 (55.1%)	1236/2208 (56.0%)	622/1000 (62.2%)	<0.001
MRAs	2160/6460 (33.4%)	186/1130 (16.5%)	231/826 (28.0%)	230/873 (26.3%)	142/425 (33.4%)	898/2206 (40.7%)	473/1000 (47.3%)	<0.001
Diuretics Oral	4026/6461 (62.3%)	607/1130 (53.7%)	573/826 (69.4%)	434/872 (49.8%)	287/425 (67.5%)	1375/2207 (62.3%)	750/1001 (74.9%)	<0.001
Digitalis (Digoxin)	1192/6463 (18.4%)	51/1130 (4.5%)	241/826 (29.2%)	59/873 (6.8%)	135/425 (31.8%)	328/2208 (14.9%)	378/1001 (37.8%)	<0.001
Statins	2688/6463 (41.6%)	470/1130 (41.6%)	273/826 (33.1%)	398/873 (45.6%)	143/425 (33.6%)	1026/2208 (46.5%)	378/1001 (37.8%)	<0.001
Antiplatelets	3110/6463 (48.1%)	523/1130 (46.3%)	253/826 (30.6%)	447/873 (51.2%)	176/425 (41.4%)	1283/2208 (58.1%)	428/1001 (42.8%)	<0.001

Anticoagulant	1989/6463 (30.8%)	210/1130 (18.6%)	476/826 (57.6%)	117/873 (13.4%)	224/425 (52.7%)	390/2208 (17.7%)	572/1001 (57.1%)	<0.001
Amiodarone	594/6462 (9.2%)	78/1130 (6.9%)	67/826 (8.1%)	50/873 (5.7%)	56/425 (13.2%)	200/2207 (9.1%)	143/1001 (14.3%)	<0.001
Ivabradine	84/6463 (1.3%)	23/1130 (2.0%)	1/826 (0.1%)	12/873 (1.4%)	1/425 (0.2%)	39/2208 (1.8%)	8/1001 (0.8%)	<0.001
Nitrates	1521/6463 (23.5%)	198/1130 (17.5%)	128/826 (15.5%)	249/873 (28.5%)	100/425 (23.5%)	592/2208 (26.8%)	254/1001 (25.4%)	<0.001
Calcium channel blockers	992/6463 (15.3%)	253/1130 (22.4%)	196/826 (23.7%)	139/873 (15.9%)	87/425 (20.5%)	196/2208 (8.9%)	121/1001 (12.1%)	<0.001
Laboratory blood tests								
White Blood cells (cell/ μ L) N=6310	9101 \pm 4767	9178 \pm 3762	8695 \pm 4542	9485 \pm 4058	8419 \pm 3373	9380 \pm 6034	8687 \pm 3697	<0.001
Haemoglobin (g/dL) N= 6,341	12.6 \pm 2.3	12.5 \pm 2.4	12.0 \pm 2.3	12.5 \pm 2.3	12.6 \pm 2.1	12.9 \pm 2.2	13.0 \pm 2.1	<0.001
Creatinine (mg/dL) N=6373	1.2 (0.9-1.5)	1.1 (0.9-1.4)	1.1 (0.9-1.5)	1.1 (0.9-1.5)	1.1 (0.9-1.5)	1.2 (0.9-1.5)	1.2 (1.0-1.6)	<0.001
eGFR (mL/min/1.73m ²) N=6256	60.1 \pm 30.9	61.2 \pm 44.5	56.9 \pm 31.0	61.9 \pm 29.1	58.2 \pm 23.1	61.9 \pm 26.5	56.3 \pm 24.5	<0.001
NT-proBNP (pg/mL) median N=1385	3832 (1744-8833)	2474 (934-6399)	3023 (1880-6438)	2773 (1170-7760)	3808 (1910-8852)	4611 (1965-10969)	4892 (2706-9730)	<0.001
Total cholesterol (mg/dL) N=4530	165 \pm 52	171 \pm 53	151 \pm 44	178 \pm 56	158 \pm 51	170 \pm 53	151 \pm 48	<0.001
Sodium (mmol/L) N=6100	138.0 \pm 5.1	138.7 \pm 4.5	138.3 \pm 5.1	138.6 \pm 4.5	137.7 \pm 5.4	137.6 \pm 5.2	137.6 \pm 5.6	<0.001

Potassium								
(mmol/L)	4.37±0.64	4.37±0.63	4.34±0.67	4.42±0.61	4.32±0.64	4.35±0.66	4.42±0.64	0.009
N=6087								

Table S2b: Baseline characteristics of patients with chronic heart failure according to heart rhythm and ejection fraction group.

Variable	Overall (N=8273)	HFpEF (EF≥50%) (N=1867)		HFmrEF (EF 40-49%) (N=1763)		HFrEF (EF<40%) (N=4643)		p-value
		SR	AF	SR	AF	SR	AF	
		(N=1214)	(N=653)	(N=1319)	(N=444)	(N=3579)	(N=1064)	
Age (years) N=8273	64.4±13.3	65.3±14.0	73.0±11.3	61.6±14.3	68.9±12.7	62.0±12.7	67.9±11.0	<0.001
Sex (F) N=8273	2443/8273 (29.5%)	533/1214 (43.9%)	329/653 (50.4%)	405/1319 (30.7%)	148/444 (33.3%)	829/3579 (23.2%)	199/1064 (18.7%)	<0.001
BMI (kg/m ²) N=7954	28.2±5.2	28.9±5.7	28.4±5.4	28.4±5.4	29.1±5.7	27.7±4.9	28.6±5.1	<0.001
Physical and vital signs								
Systolic BP (mmHg) N=8257	125.2±21.1	132.0±22.0	128.9±21.0	126.3±21.0	127.4±21.0	122.6±20.3	122.0±20.3	<0.001
Heart rate (beats/min) N=8270	73.3±16.3	69.3±13.1	79.9±19.6	70.7±14.5	81.3±19.9	71.3±14.1	80.8±19.9	<0.001
NYHA III or IV N=8250	2149/8250 (26.0%)	209/1212 (17.2%)	188/649 (29.0%)	184/1316 (14.0%)	148/443 (33.4%)	964/3567 (27.0%)	456/1063 (42.9%)	<0.001
Pulmonary rales N=8006	1241/8006 (15.5%)	196/1194 (16.4%)	137/638 (21.5%)	154/1288 (12.0%)	109/426 (25.6%)	415/3453 (12.0%)	230/1007 (22.8%)	<0.001
JVP (>6 cm) N=7932	938/7932 (11.8%)	88/1184 (7.4%)	125/628 (19.9%)	126/1279 (9.9%)	79/424 (18.6%)	351/3421 (10.3%)	169/996 (17.0%)	<0.001
Peripheral oedema N=8022	1646/8022 (20.5%)	243/1195 (20.3%)	210/639 (32.9%)	220/1289 (17.1%)	134/427 (31.4%)	546/3462 (15.8%)	293/1010 (29.0%)	<0.001
Echo-Doppler								
EF (%) N=8273	38.6±13.8	58.6±7.1	59.1±7.2	43.4±2.8	43.6±2.8	28.5±6.6	28.6±6.7	<0.001

Mitral								
regurgitation	2091/7095	152/1054	163/576	281/1153	156/375	958/3039	381/898	<0.001
(moderate-severe)	(29.5%)	(14.4%)	(28.3%)	(24.4%)	(41.6%)	(31.5%)	(42.4%)	
Aortic stenosis	292/7081	81/1054	45/574	26/1154	27/371	71/3029	42/899	<0.001
(moderate-severe)	(4.1%)	(7.7%)	(7.8%)	(2.3%)	(7.3%)	(2.3%)	(4.7%)	
Medical history								
HF history with previous hospitalization	3627/8207	482/1204	288/649	484/1309	211/440	1605/3554	557/1051	<0.001
	(44.2%)	(40.0%)	(44.4%)	(37.0%)	(48.0%)	(45.2%)	(53.0%)	
Ischemic heart disease (aetiology)	3476/8222	352/1211	117/647	587/1312	142/440	1840/3558	438/1054	<0.001
	(42.3%)	(29.1%)	(18.1%)	(44.7%)	(32.3%)	(51.7%)	(41.6%)	
Diabetes	2583/8272	361/1213	187/653	392/1319	131/444	1153/3579	359/1064	0.075
	(31.2%)	(29.8%)	(28.6%)	(29.7%)	(29.5%)	(32.2%)	(33.7%)	
PVD (Peripheral vascular disease)	930/8021	128/1194	65/638	140/1290	65/427	416/3462	116/1010	0.113
	(11.6%)	(10.7%)	(10.2%)	(10.9%)	(15.2%)	(12.0%)	(11.5%)	
Hypertension	4836/8261	786/1212	460/653	706/1318	306/441	1925/3576	653/1061	<0.001
	(58.5%)	(64.9%)	(70.4%)	(53.6%)	(69.4%)	(53.8%)	(61.5%)	
COPD	1161/8260	165/1212	107/652	124/1316	68/443	507/3573	190/1064	<0.001
	(14.1%)	(13.6%)	(16.4%)	(9.4%)	(15.3%)	(14.2%)	(17.9%)	
Stroke/TIA	717/8268	88/1213	79/653	88/1318	54/444	289/3577	119/1063	<0.001
	(8.7%)	(7.3%)	(12.1%)	(6.7%)	(12.2%)	(8.1%)	(11.2%)	
Chronic kidney dysfunction	1385/8260	207/1212	137/651	171/1318	113/442	530/3575	227/1062	<0.001
	(16.8%)	(17.1%)	(21.0%)	(13.0%)	(25.6%)	(14.8%)	(21.4%)	
Hepatic dysfunction	261/8021	32/1196	20/637	30/1289	23/427	105/3461	51/1011	<0.001
	(3.3%)	(2.7%)	(3.1%)	(2.3%)	5.4%	(3.0%)	(5.0%)	
Depression	603/8237	106/1211	48/645	80/1314	29/440	269/3566	71/1061	0.165
	(7.3%)	(8.8%)	(7.4%)	(6.1%)	(6.6%)	(7.5%)	(6.7%)	
Medications (Prior)								

ACEI and ARBs	146/8027 (1.8%)	15/1198 (1.3%)	12/639 (1.9%)	39/1290 (3.0%)	3/427 (0.7%)	60/3461 (1.7%)	17/1012 (1.7%)	<0.001
ACEI or ARBs	6584/8027 (82.0%)	896/1198 (74.8%)	420/639 (65.7%)	1093/1290 (84.7%)	350/427 (82.0%)	2997/3461 (86.6%)	828/1012 (81.8%)	<0.001
Beta-Blockers	6690/8035 (83.3%)	854/1198 (71.3%)	452/639 (70.7%)	1088/1291 (84.3%)	342/428 (79.9%)	3072/3466 (88.6%)	882/1013 (87.1%)	<0.001
MRAs	4127/8035 (51.4%)	357/1198 (29.8%)	235/639 (36.8%)	596/1291 (46.2%)	223/428 (52.1%)	2094/3466 (60.4%)	622/1013 (61.4%)	<0.001
Diuretics Oral	6243/8034 (77.7%)	820/1198 (68.4%)	533/639 (83.4%)	860/1291 (66.6%)	352/428 (82.2%)	2789/3465 (80.5%)	889/1013 (87.8%)	<0.001
Digitalis (Digoxin)	1545/8034 (19.2%)	53/1198 (4.4%)	247/639 (38.7%)	102/1290 (7.9%)	169/428 (39.5%)	502/3466 (14.5%)	472/1013 (46.6%)	<0.001
Statins	4528/8035 (56.4%)	647/1198 (54.0%)	277/639 (43.3%)	729/1291 (56.5%)	201/428 (47.0%)	2156/3466 (62.2%)	518/1013 (51.1%)	<0.001
Antiplatelet	3764/8035 (46.8%)	561/1198 (46.8%)	119/639 (18.6%)	675/1291 (52.3%)	105/428 (24.5%)	2033/3466 (58.7%)	271/1013 (26.8%)	<0.001
Anticoagulant	3120/8035 (38.8%)	312/1198 (26.0%)	517/639 (80.9%)	254/1291 (19.7%)	331/428 (77.3%)	880/3466 (25.4%)	826/1013 (81.5%)	<0.001
Amiodarone	906/8035 (11.3%)	137/1198 (11.4%)	48/639 (7.5%)	130/1291 (10.1%)	39/428 (9.1%)	414/3466 (11.9%)	138/1013 (13.6%)	0.001
Ivabradine	537/8035 (6.7%)	51/1198 (4.3%)	1/639 (0.2%)	96/1291 (7.4%)	2/428 (0.5%)	375/3466 (10.8%)	12/1013 (1.2%)	<0.001
Calcium channel blockers	957/8034 (11.9%)	269/1198 (22.5%)	163/639 (25.5%)	150/1291 (11.6%)	59/427 (13.8%)	239/3466 (6.9%)	77/1013 (7.6%)	<0.001
Laboratory blood tests								
White Blood cells(cell/ μ L)	7624 \pm 5762	7386 \pm 2256	8175 \pm 19173	7522 \pm 2209	7485 \pm 2298	7690 \pm 2237	7539 \pm 2112	<0.001
N=6271								
Haemoglobin (g/dL) N=7037	13.3 \pm 1.9	13.2 \pm 1.8	12.8 \pm 2.0	13.1 \pm 2.0	13.1 \pm 2.1	13.5 \pm 1.8	13.6 \pm 1.9	<0.001

Creatinine	1.1	1.0	1.1	1.0	1.2	1.1	1.2	
(mg/dL) N=7501	(0.9-1.3)	(0.8-1.3)	(0.9-1.4)	(0.9-1.3)	(1.0-1.4)	(0.9-1.3)	(1.0-1.5)	<0.001
eGFR N=7115								
(mL/min/1.73m ²)	66.4±28.2	67.0±28.5	60.4±23.4	69.9±25.8	60.1±25.0	68.2±29.0	61.4±30.6	<0.001
NT-proBNP								
(pg/mL) median	1212	507	1841	569	1921	1229	2612	
N=2745	(455-3237)	(203-1466)	(928-4115)	(235-1638)	(911-4155)	(507-3271)	(1308-5530)	<0.001
Total cholesterol								
(mg/dL) N=5398	169±62	175±45	160±42	176±45	168±45	167±44	165±132	<0.001
Sodium (mmol/L)								
N=6951	139.5±3.7	139.9±3.4	139.4±4.2	139.8±3.7	139.3±3.9	139.4±3.5	139.3±4.1	<0.001
Potassium								
(mmol/L)	4.46±0.53	4.44±0.55	4.42±0.55	4.44±0.50	4.46±0.56	4.48±0.52	4.46±0.55	0.299
N=7137								

Table S3a: Association between baseline characteristics of patients with acute heart failure and atrial fibrillation according to ejection fraction group.

Variable	HFpEF		HFmrEF		HFrEF	
	OR* (95% CI)	p-value	OR* (95% CI)	p-value	OR* (95% CI)	p-value
Age (years)	1.035 (1.027;1.043)	<0.001	1.036 (1.026;1.047)	<0.001	1.030 (1.023;1.036)	<0.001
Sex (M)	0.803 (0.668;0.965)	0.019	0.804 (0.634;1.021)	0.073	0.974 (0.822;1.153)	0.759
BMI (kg/m ²)	0.998 (0.983;1.014)	0.810	0.994 (0.971;1.017)	0.577	1.038 (1.022;1.054)	<0.001
Systolic BP (mmHg)	0.991 (0.988;0.994)	<0.001	0.995 (0.991;1.000)	0.041	0.996 (0.993;0.998)	0.002
Diastolic BP (mmHg)	0.995 (0.990;1.001)	0.095	1.003 (0.995;1.010)	0.521	0.997 (0.992;1.002)	0.262
Heart rate (beats/min)	1.015 (1.012;1.019)	<0.001	1.024 (1.019;1.029)	<0.001	1.019 (1.016;1.022)	<0.001
NYHA class III or IV	1.355 (1.061;1.731)	0.015	1.464 (1.064;2.015)	0.019	1.583 (1.243;2.016)	<0.001
Pulmonary rales	1.049 (0.842;1.306)	0.670	1.035 (0.784;1.366)	0.807	1.001 (0.839;1.195)	0.987
JVP (>6 cm)	1.392 (1.139;1.702)	0.001	1.600 (1.234;2.075)	<0.001	1.437 (1.225;1.685)	<0.001
Peripheral oedema	2.250 (1.863;2.718)	<0.001	1.840 (1.448;2.338)	<0.001	1.986 (1.695;2.327)	<0.001
Mitral regurgitation (moderate-severe)	1.982 (1.608;2.442)	<0.001	1.876 (1.442;2.442)	<0.001	1.616 (1.355;1.929)	<0.001
Aortic stenosis (moderate-severe)	0.738 (0.559;0.975)	0.033	0.712 (0.456;1.111)	0.134	1.601 (1.165;2.201)	0.004
previous HF hospitalization	1.399 (1.151;1.700)	<0.001	1.520 (1.175;1.966)	0.001	1.385 (1.186;1.618)	<0.001

Variable	HFpEF		HFmrEF		HFrEF	
	OR* (95% CI)	p-value	OR* (95% CI)	p-value	OR* (95% CI)	p-value
Ischemic heart disease aetiology	0.380 (0.313;0.462)	<0.001	0.299 (0.234;0.382)	<0.001	0.413 (0.352;0.483)	<0.001
Diabetes	0.759 (0.629;0.916)	0.004	0.720 (0.568;0.913)	0.007	0.944 (0.810;1.101)	0.465
PVD	0.757 (0.592;0.970)	0.028	1.022 (0.721;1.450)	0.901	1.329 (1.078;1.639)	0.008
Hypertension	0.653 (0.525;0.812)	<0.001	0.894 (0.698;1.146)	0.376	1.018 (0.870;1.192)	0.822
COPD	0.724 (0.584;0.897)	0.003	1.511 (1.118;2.042)	0.007	1.030 (0.852;1.246)	0.759
Stroke/TIA	1.126 (0.878;1.444)	0.351	1.231 (0.859;1.762)	0.257	1.117 (0.885;1.410)	0.351
Chronic kidney dysfunction	1.011 (0.823;1.242)	0.917	0.810 (0.613;1.071)	0.140	1.031 (0.867;1.227)	0.727
Hepatic dysfunction	1.249 (0.868;1.799)	0.232	2.008 (1.225;3.293)	0.006	1.411 (1.088;1.829)	0.009
ACEI or ARBs	0.834 (0.690;1.007)	0.059	0.991 (0.776;1.265)	0.942	0.955 (0.815;1.119)	0.572
Beta-Blockers	1.100 (0.915;1.323)	0.312	1.173 (0.925;1.487)	0.188	1.270 (1.088;1.483)	0.003
MRAs	2.065 (1.649;2.585)	<0.001	1.490 (1.152;1.928)	0.002	1.410 (1.209;1.644)	<0.001
Diuretics Oral	1.731 (1.426;2.100)	<0.001	1.880 (1.467;2.408)	<0.001	1.741 (1.470;2.061)	<0.001
Digitalis (Digoxin)	9.438 (6.802;13.10)	<0.001	6.908 (4.891;9.759)	<0.001	4.051 (3.379;4.856)	<0.001
Statins	0.622 (0.513;0.755)	<0.001	0.570 (0.445;0.730)	<0.001	0.646 (0.553;0.755)	<0.001

Variable	HFpEF		HFmrEF		HFrEF	
	OR* (95% CI)	p-value	OR* (95% CI)	p-value	OR* (95% CI)	p-value
Antiplatelet	0.448 (0.368;0.544)	<0.001	0.631 (0.496;0.803)	<0.001	0.479 (0.410;0.560)	<0.001
Anticoagulant	5.696 (4.632;7.005)	<0.001	7.093 (5.373;9.364)	<0.001	6.389 (5.390;7.573)	<0.001
Amiodarone	1.145 (0.810;1.617)	0.444	2.387 (1.586;3.593)	<0.001	1.606 (1.273;2.026)	<0.001
Ivabradine	0.056 (0.007;0.419)	0.005	0.177 (0.023;1.383)	0.099	0.492 (0.227;1.065)	0.072
Calcium channel blockers	0.977 (0.786;1.215)	0.837	1.180 (0.870;1.601)	0.286	1.208 (0.946;1.543)	0.130
White Blood cells (cell/ μ L)	1.000 (1.000;1.000)	0.008	1.000 (1.000;1.000)	<0.001	1.000 (1.000;1.000)	<0.001
Haemoglobin (in g/dL)	0.955 (0.917;0.994)	0.026	1.061 (1.003;1.123)	0.040	1.057 (1.018;1.096)	0.003
S-creatinine (mg/dL)	0.988 (0.875;1.116)	0.846	0.763 (0.633;0.919)	0.004	1.015 (0.971;1.062)	0.508
eGFR (mL/min/1.73m ²)	1.000 (0.997;1.002)	0.845	1.001 (0.996;1.006)	0.751	0.996 (0.992;0.999)	0.010
NT-proBNP (pg/mL)	1.000 (1.000;1.000)	0.146	1.000 (1.000;1.000)	0.584	1.000 (1.000;1.000)	0.924
Total cholesterol (mg/dL)	0.993 (0.990;0.995)	<0.001	0.993 (0.991;0.996)	<0.001	0.993 (0.991;0.995)	<0.001
Sodium (mmol/L)	0.981 (0.961;1.000)	0.055	0.961 (0.937;0.986)	0.002	0.994 (0.980;1.009)	0.428
Potassium (mmol/L)	0.887 (0.766;1.027)	0.108	0.756 (0.620;0.921)	0.006	1.134 (1.006;1.277)	0.039

* Odds ratio, adjusted to age and sex

Table S3b: Association between baseline characteristics of patients with chronic heart failure and atrial fibrillation according to ejection fraction group.

Variable	HFpEF		HFmrEF		HFrEF	
	OR* (95% CI)	p-value	OR* (95% CI)	p-value	OR* (95% CI)	p-value
Age (years)	1.049 (1.040;1.058)	<0.001	1.042 (1.033;1.052)	<0.001	1.044 (1.037;1.050)	<0.001
Sex	0.906 (0.742;1.106)	0.331	0.907 (0.716;1.149)	0.418	1.460 (1.223;1.744)	<0.001
BMI (kg/m ²)	0.994 (0.976;1.013)	0.522	1.032 (1.011;1.054)	0.003	1.054 (1.039;1.070)	<0.001
Systolic BP (mmHg)	0.988 (0.983;0.993)	<0.001	0.998 (0.993;1.003)	0.481	0.995 (0.992;0.999)	0.010
Diastolic BP (mmHg)	0.995 (0.987;1.003)	0.255	1.010 (1.001;1.019)	0.037	1.011 (1.005;1.017)	<0.001
Heart rate (beats/min)	1.047 (1.039;1.054)	<0.001	1.047 (1.039;1.055)	<0.001	1.042 (1.038;1.047)	<0.001
NYHA class III or IV	1.598 (1.261;2.025)	<0.001	2.612 (2.016;3.383)	<0.001	1.947 (1.683;2.253)	<0.001
Pulmonary rales	1.093 (0.848;1.407)	0.492	2.281 (1.718;3.027)	<0.001	1.941 (1.615;2.334)	<0.001
JVP (>6cm)	2.844 (2.096;3.861)	<0.001	2.115 (1.542;2.902)	<0.001	1.783 (1.452;2.188)	<0.001
Peripheral oedema	1.604 (1.280;2.009)	<0.001	2.024 (1.562;2.622)	<0.001	1.962 (1.658;2.321)	<0.001
Mitral regurgitation (moderate-severe)	2.083 (1.607;2.701)	<0.001	2.311 (1.786;2.990)	<0.001	1.539 (1.315;1.801)	<0.001
Aortic stenosis (moderate-severe)	0.784 (0.528;1.164)	0.227	2.295 (1.292;4.076)	0.005	1.500 (1.005;2.238)	0.047
previous HF hospitalization	1.225 (1.002;1.497)	0.048	1.457 (1.164;1.823)	0.001	1.384 (1.202;1.594)	<0.001

Variable	HFpEF		HFmrEF		HFrEF	
	OR* (95% CI)	p-value	OR* (95% CI)	p-value	OR* (95% CI)	p-value
Aetiology	0.422 (0.328;0.541)	<0.001	0.432 (0.339;0.551)	<0.001	0.453 (0.389;0.527)	<0.001
Diabetes	0.856 (0.689;1.063)	0.159	0.844 (0.662;1.076)	0.171	0.960 (0.828;1.114)	0.594
PVD	0.735 (0.529;1.021)	0.066	1.090 (0.784;1.517)	0.607	0.764 (0.610;0.956)	0.019
Hypertension	0.852 (0.681;1.066)	0.162	1.476 (1.159;1.879)	0.002	1.100 (0.951;1.272)	0.201
COPD	1.118 (0.849;1.473)	0.427	1.525 (1.097;2.119)	0.012	1.152 (0.955;1.389)	0.140
Stroke/TIA	1.430 (1.025;1.994)	0.035	1.538 (1.062;2.226)	0.023	1.288 (1.023;1.622)	0.031
Chronic kidney dysfunction	0.995 (0.774;1.280)	0.969	1.750 (1.324;2.314)	<0.001	1.215 (1.016;1.454)	0.033
Hepatic dysfunction	1.312 (0.727;2.368)	0.367	2.539 (1.431;4.507)	0.001	1.886 (1.327;2.681)	<0.001
ACEI or ARBs	0.580 (0.463;0.726)	<0.001	0.624 (0.456;0.855)	0.003	0.704 (0.575;0.862)	<0.001
Beta-Blockers	1.031 (0.827;1.286)	0.786	0.719 (0.538;0.960)	0.026	0.872 (0.701;1.083)	0.216
MRAs	1.635 (1.319;2.027)	<0.001	1.417 (1.130;1.778)	0.003	1.165 (1.004;1.350)	0.044
Diuretics Oral	1.802 (1.400;2.319)	<0.001	1.857 (1.400;2.463)	<0.001	1.542 (1.250;1.902)	<0.001
Digitalis (Digoxin)	16.384 (11.630;23.083)	<0.001	8.194 (6.101;11.005)	<0.001	5.945 (5.042;7.009)	<0.001
Statins	0.537 (0.438;0.659)	<0.001	0.528 (0.418;0.667)	<0.001	0.517 (0.446;0.599)	<0.001

Variable	HFpEF		HFmrEF		HFrEF	
	OR* (95% CI)	p-value	OR* (95% CI)	p-value	OR* (95% CI)	p-value
Antiplatelet	0.206 (0.162;0.263)	<0.001	0.227 (0.175;0.294)	<0.001	0.198 (0.168;0.233)	<0.001
Anticoagulant	11.505 (9.028;14.661)	<0.001	13.451 (10.241;17.667)	<0.001	13.174 (11.00;15.776)	<0.001
Amiodarone	0.569 (0.399;0.811)	0.002	0.780 (0.531;1.145)	0.205	1.092 (0.884;1.349)	0.414
Ivabradine	0.045 (0.006;0.331)	0.002	0.057 (0.014;0.233)	<0.001	0.115 (0.064;0.205)	<0.001
Calcium channel blockers	0.995 (0.788;1.255)	0.965	1.016 (0.728;1.417)	0.926	0.945 (0.719;1.242)	0.685
White Blood cells (cell/ μ L)	1.000 (1.000;1.000)	0.461	1.000 (1.000;1.000)	0.576	1.000 (1.000;1.000)	0.171
Haemoglobin (g/dL)	0.951 (0.896;1.010)	0.101	1.007 (0.944;1.075)	0.825	1.097 (1.049;1.147)	<0.001
S-creatinine (mg/dL)	0.955 (0.820;1.113)	0.559	1.186 (1.021;1.379)	0.026	1.008 (0.987;1.029)	0.457
eGFR (mL/min/1.73m ²)	0.998 (0.994;1.002)	0.352	0.991 (0.986;0.996)	0.001	0.996 (0.993;1.000)	0.025
NT-proBNP (pg/mL)	1.000 (1.000;1.000)	0.056	1.000 (1.000;1.000)	0.708	1.000 (1.000;1.000)	<0.001
Total cholesterol (mg/dL)	0.993 (0.990;0.997)	<0.001	0.998 (0.994;1.001)	0.129	1.000 (0.999;1.001)	0.748
Sodium (mmol/L)	0.956 (0.928;0.985)	0.003	0.936 (0.906;0.967)	<0.001	0.978 (0.958;0.998)	0.035
Potassium (mmol/L)	0.827 (0.677;1.010)	0.062	0.950 (0.757;1.193)	0.658	0.872 (0.755;1.006)	0.060

* Odds ratio, adjusted to age and sex

Figure 4a: Adjusted Kaplan-Meier curve for total mortality or HF admission in HFrEF patients with SR vs. AF.

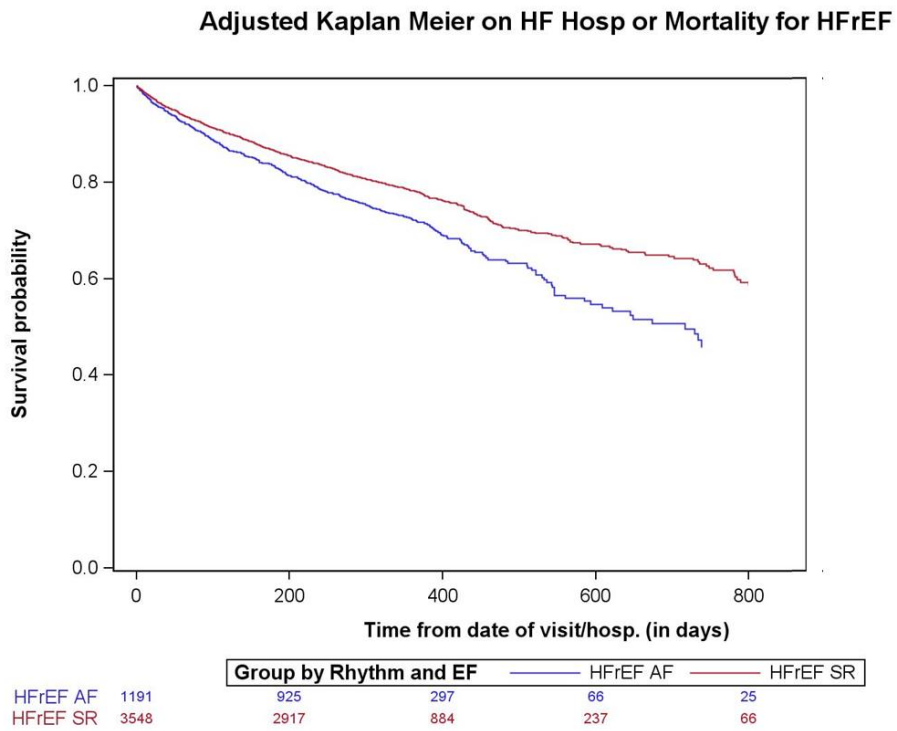


Figure 4b: Adjusted Kaplan-Meier curve for total mortality or HF admission in HFmrEF patients with SR vs. AF.

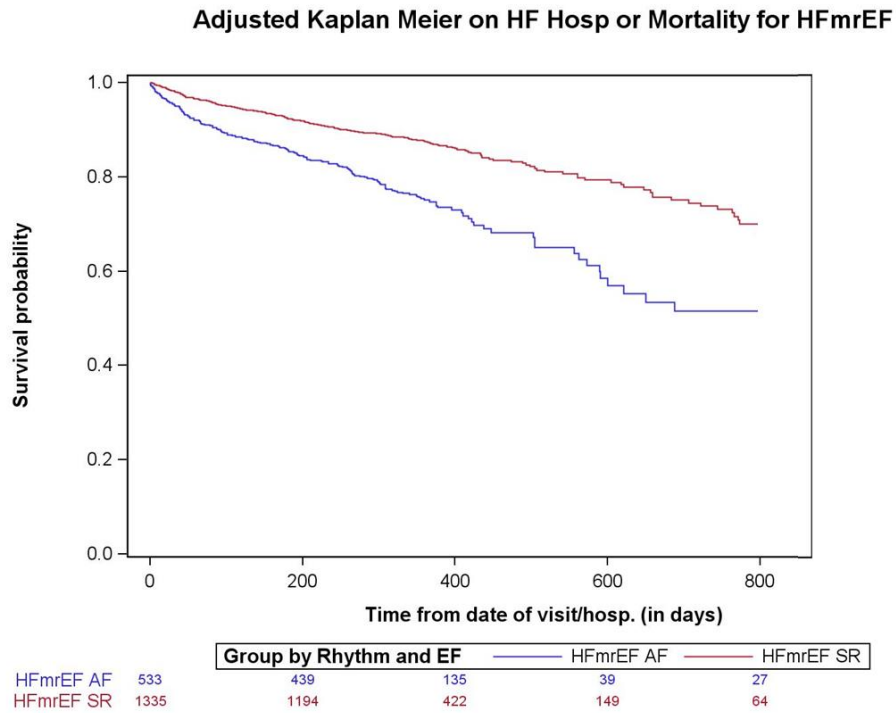


Figure 4c: Adjusted Kaplan-Meier curve for total mortality or HF admission in HFpEF patients with SR vs. AF.

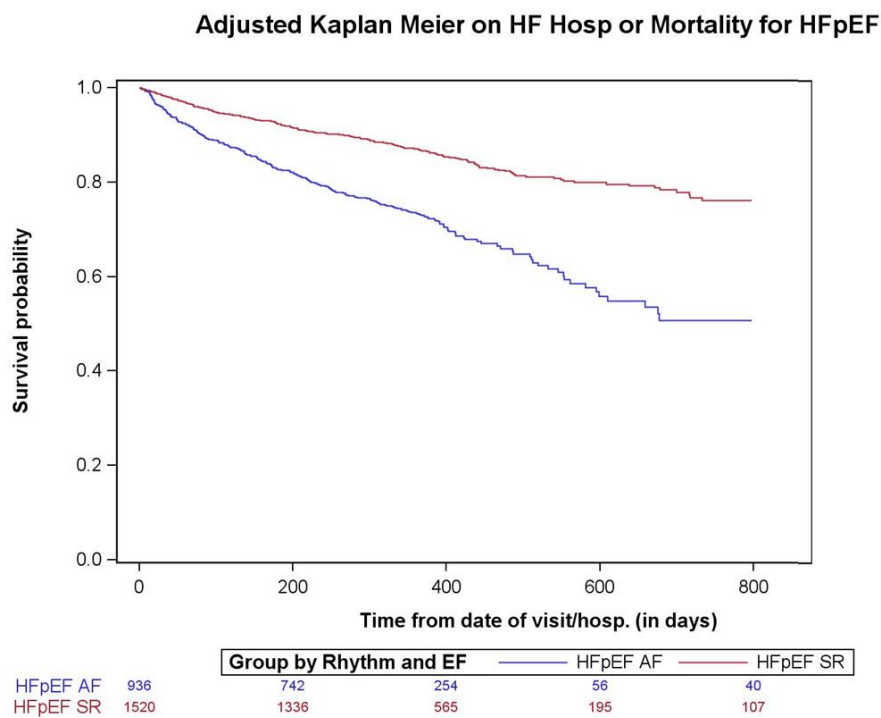


Table A1: Baseline characteristics of patients according to available data on death

Variable	Modality	Overall (N=19136)	Excluded patients (Missing data on HF or Rhythm or Death) (N=5076)	Included patients (Available data on key variables) (N=14060)
	N	19135	5075	14060
Age (years)	Mean (SD)	67.0 (13.3)	69.4 (13.0)	66.2 (13.3)
	Median (Q1;Q3)	68.0 (59.0; 77.0)	71.0 (61.0; 79.0)	67.0 (58.0; 76.0)
	[Min; Max]	[18.0; 102.0]	[19.0; 102.0]	[18.0; 100.0]
Sex	Female	6214/19135 (32.5%)	1581/5075 (31.2%)	4633/14060 (33.0%)
	Male	12921/19135 (67.5%)	3494/5075 (68.8%)	9427/14060 (67.0%)
	ND	1	1	0
BMI (Kg/m2)	N	18408	4919	13489
	Mean (SD)	28.2 (5.3)	27.7 (5.0)	28.4 (5.3)
	Median (Q1;Q3)	27.5 (24.6; 31.1)	26.9 (24.2; 30.4)	27.7 (24.8; 31.2)
	[Min; Max]	[14.0; 81.6]	[14.3; 62.2]	[14.0; 81.6]
HF Group	Group = HFmrEF	3685/18041 (20.4%)	772/3981 (19.4%)	2913/14060 (20.7%)
	Group = HFpEF	4394/18041 (24.4%)	722/3981 (18.1%)	3672/14060 (26.1%)
	Group = HFrEF	9962/18041 (55.2%)	2487/3981 (62.5%)	7475/14060 (53.2%)
	ND	1095	1095	0
Rhythm Group	Rhythm = AF	4902/15903 (30.8%)	691/1843 (37.5%)	4211/14060 (30.0%)
	Rhythm = SR	11001/15903 (69.2%)	1152/1843 (62.5%)	9849/14060 (70.0%)
	ND	3233	3233	0

Table A2: Baseline characteristics of patients according to available data on HF hospitalizations.

Variable	Modality	Overall (N=19136)	Excluded patients (Missing data on HF or Rhythm or HF hospitalizations) (N=6711)	Included patients (Available data on key variables) (N=12425)
Age (years)	N	19135	6710	12425
	Mean (SD)	67.0 (13.3)	69.1 (13.2)	65.9 (13.1)
	Median (Q1;Q3)	68.0 (59.0; 77.0)	71.0 (61.0; 79.0)	67.0 (58.0; 76.0)
	[Min; Max]	[18.0; 102.0]	[19.0; 102.0]	[18.0; 100.0]
Sex	Female	6214/19135 (32.5%)	2151/6710 (32.1%)	4063/12425 (32.7%)
	Male	12921/19135 (67.5%)	4559/6710 (67.9%)	8362/12425 (67.3%)
	ND	1	1	0
BMI (Kg/m2)	N	18408	6077	12331
	Mean (SD)	28.2 (5.3)	27.8 (5.1)	28.4 (5.3)
	Median (Q1;Q3)	27.5 (24.6; 31.1)	27.2 (24.4; 30.6)	27.7 (24.8; 31.2)
	[Min; Max]	[14.0; 81.6]	[14.3; 62.2]	[14.0; 81.6]
HF Group	Group = HFmrEF	3685/18041 (20.4%)	1096/5616 (19.5%)	2589/12425 (20.8%)
	Group = HFpEF	4394/18041 (24.4%)	1060/5616 (18.9%)	3334/12425 (26.8%)
	Group = HFrEF	9962/18041 (55.2%)	3460/5616 (61.6%)	6502/12425 (52.3%)
	ND	1095	1095	0
Rhythm Group	Rhythm = AF	4902/15903 (30.8%)	1269/3478 (36.5%)	3633/12425 (29.2%)
	Rhythm = SR	11001/15903 (69.2%)	2209/3478 (63.5%)	8792/12425 (70.8%)
	ND	3233	3233	0

Table A3: Baseline characteristics of patients according to available data on the combined death/ HF hospitalizations.

Variable	Modality	Overall (N=19136)	Excluded patients (Missing data on HF or Rhythm or Death and HF Hospitalizations) (N=6042)	Included patients (Available data on key variables) (N=13094)
Age (years)	N	19135	6041	13094
	Mean (SD)	67.0 (13.3)	68.8 (13.1)	66.2 (13.3)
	Median (Q1;Q3)	68.0 (59.0; 77.0)	70.0 (61.0; 79.0)	67.0 (58.0; 76.0)
	[Min; Max]	[18.0; 102.0]	[19.0; 102.0]	[18.0; 100.0]
Sex	Female	6214/19135 (32.5%)	1896/6041 (31.4%)	4318/13094 (33.0%)
	Male	12921/19135 (67.5%)	4145/6041 (68.6%)	8776/13094 (67.0%)
	ND	1	1	0
BMI (Kg/m2)	N	18408	5533	12875
	Mean (SD)	28.2 (5.3)	27.8 (5.1)	28.3 (5.3)
	Median (Q1;Q3)	27.5 (24.6; 31.1)	27.3 (24.4; 30.5)	27.7 (24.7; 31.2)
	[Min; Max]	[14.0; 81.6]	[14.3; 62.2]	[14.0; 81.6]
HF Group	Group = HFmrEF	3685/18041 (20.4%)	983/4947 (19.9%)	2702/13094 (20.6%)
	Group = HFpEF	4394/18041 (24.4%)	903/4947 (18.3%)	3491/13094 (26.7%)
	Group = HFrEF	9962/18041 (55.2%)	3061/4947 (61.9%)	6901/13094 (52.7%)
	ND	1095	1095	0
Rhythm Group	Rhythm = AF	4902/15903 (30.8%)	997/2809 (35.5%)	3905/13094 (29.8%)
	Rhythm = SR	11001/15903 (69.2%)	1812/2809 (64.5%)	9189/13094 (70.2%)
	ND	3233	3233	0

Table B: Single model with interaction between HF EF groups, Rhythm (AF vs. SR) and outcomes:

Effect	Total mortality	HF hospitalizations	HF hospitalizations or mortality
HF Group	<0.001 (S)	<0.001 (S)	<0.001 (S)
Rhythm	<0.001 (S)	<0.001 (S)	<0.001 (S)
HF Group*Rhythm	0.002 (S)	<0.001 (S)	<0.001 (S)

Appendix A

Covariates included in multivariate analyses

After adjusting for age and sex, the covariates included in the multivariable regression model were chosen based on their clinical relevance and the significance in univariate analyses with a *p*-value of <0.10 and with at least 80% of data available, entered into the model with an automatic stepwise selection. Following, are the covariates included in each multivariable analysis, according to outcomes and EF subtype.

Total mortality

HF_rEF: Adjusted for NYHA class III/IV – Haemoglobin (in g/dL) – Hepatic dysfunction – Sodium – Systolic BP (in mmHg) – Chronic kidney dysfunction – Beta blockers – White Blood cells (cell/ μ L) – Mitral regurgitation (moderate-severe) – Statins – Primary Aetiology Class – eGFR (in mL/min/1.73m²) – Antiplatelets – Aortic stenosis (moderate-severe) – Diabetes class – Heart rate (in beats/min) – Digitalis.

HF_mrEF: Adjusted for Haemoglobin (in g/dL) – NYHA class III/IV – Diastolic BP (in mmHg) – White Blood cells (cell/ μ L) – Mineralocorticoid receptor antagonists – BMI – Chronic kidney dysfunction – Heart rate (in beats/min).

HFpEF: Adjusted for NYHA class III/IV – Haemoglobin (in g/dL) – Chronic kidney dysfunction – Hypertension Treatment – Aortic stenosis (moderate-severe) – Hepatic dysfunction – Heart rate (in beats/min) – Sodium – Diuretics Oral – ACE and/or ARB – Mitral regurgitation (moderate-severe).

Total mortality or HF hospitalizations

HFReEF: Adjusted for NYHA class III/IV – Chronic kidney dysfunction – Systolic BP (in mmHg) – Haemoglobin (in g/dL) – Mitral regurgitation (moderate-severe) – Hepatic dysfunction – Sodium – Diabetes class – Heart rate (in beats/min) – Beta blockers - Primary Aetiology Class – Diuretics Oral – eGFR (in mL/min/1.73m²) – Statins – Antiplatelets – Digitalis.

HFmrEF: Adjusted for NYHA class III/IV – Haemoglobin (in g/dL) – Diuretics Oral – White Blood cells (cell/ μ L) – Diastolic BP (in mmHg) – Chronic kidney dysfunction – Heart rate (in beats/min) – Aortic stenosis (moderate-severe) – Diabetes class.

HFpEF: NYHA class III/IV – Haemoglobin (in g/dL) – Chronic kidney dysfunction – Aortic stenosis (moderate-severe) – Diuretics Oral – Sodium – ACE and/or ARB – Heart rate (in beats/min) – Hepatic dysfunction.

HF hospitalizations

HFReEF: Adjusted for NYHA class III/IV – Chronic kidney dysfunction – Diuretics Oral – Mitral regurgitation (moderate-severe) – Systolic BP (in mmHg) – Diabetes class – Beta blockers – Haemoglobin (in g/dL).

HFmrEF: Adjusted for NYHA class III/IV – Diuretics Oral – Chronic kidney dysfunction – Diabetes class.

HFpEF: Adjusted for NYHA class III/IV – Chronic kidney dysfunction – Diuretics Oral – Sodium – Aortic stenosis (moderate-severe) – Haemoglobin (in g/dL) – Diabetes class.

Total mortality or HF hospitalizations

HFReEF-CHF: Adjusted for NYHA class III/IV – Haemoglobin (in g/dL) – Chronic kidney dysfunction – Beta blockers – Diuretics Oral – Systolic BP (in mmHg) – Heart rate (in beats/min) – Mitral regurgitation (moderate-severe) – Diabetes class.

HFmrEF-CHF: Adjusted for NYHA class III/IV – Diastolic BP (in mmHg) – Diuretics Oral – Haemoglobin (in g/dL) – Chronic kidney dysfunction – Aortic stenosis (moderate-severe).

HFpEF-CHF: Adjusted for NYHA class III/IV – Haemoglobin (in g/dL) – Sodium.

HF_rEF-AHF: Adjusted for Systolic BP (in mmHg) – Chronic kidney dysfunction – Hepatic dysfunction – Haemoglobin (in g/dL) – NYHA class III/IV – Mitral regurgitation (moderate-severe) – Diabetes class – eGFR (in mL/min/1.73m²) – Sodium.

HF_{mr}EF-AHF: Adjusted for NYHA class III/IV – Haemoglobin (in g/dL) – Diuretics Oral – Aortic stenosis (moderate-severe) – Diastolic BP (in mmHg).

HF_pEF-AHF: Adjusted for NYHA class III/IV – Chronic kidney dysfunction – Diuretics Oral – Haemoglobin (in g/dL) – Aortic stenosis (moderate-severe) – Hypertension Treatment – White Blood cells (cell/ μ L) – Sodium.