

SUPPLEMENTAL MATERIAL

Table S1. Definition of baseline characteristics, in-hospital course, procedures and discharge medication - History of comorbidities was collected from the protocol-standardized SWEDEHEART questionnaires and was enriched with data from the National Patient Registry using the International Classification of Diseases, 9th and 10th revision. Information about angiotensin-converting enzyme inhibitors and angiotensin II receptor blockers at discharge was derived from the SWEDEHEART questionnaire and the National Dispensed Drug Registry using Anatomical Therapeutic Chemical classification codes

Variable	ICD-code / ATC-code	Comments
Age	-	Derived from SWEDEHEART
Sex	-	Derived from SWEDEHEART
Smoking	-	Derived from SWEDEHEART
BMI	-	Derived from SWEDEHEART
Admission year	-	Derived from SWEDEHEART
Creatinine	-	Derived from SWEDEHEART
Diabetes mellitus	E10, E11, E12, E13, E14, 250	Derived from the National Patient Registry and SWEDEHEART based on diabetes/diabetes medication at arrival
Hypertension	I10-I15, 401-405	Derived from the National Patient Registry and SWEDEHEART
Myocardial infarction	I21-I23, 410, 412	Derived from the National Patient Registry and SWEDEHEART
Heart failure	I50, 428, K761, I971, I13.0, I13.2, I110, P290, 427.00, 427.10, 428.99	Derived from the National Patient Registry and SWEDEHEART
Peripheral vascular disease	I70-I73, 440-443	Derived from the National Patient Registry
Stroke	I60-I61, I63-I64, 430-431, 433-434	Derived from the National Patient Registry
Any bleeding	I850, K226, K250, K252, K254, K256, K260, K262, K264, K266, K270, K272, K274, K276, K280, K284, K286, K290, K625, K661, K920- K922, I60-I62, N02, R310, R311, R318, R040-R042, R048, R049, R58, T810, I983, D629, DR029	Derived from the National Patient Registry
Chronic obstructive pulmonary disease	J40-J47, 49-496	Derived from the National Patient Registry
Dementia	G30, G31, 290, 294B	Derived from the National Patient Registry
Cancer diagnosis within 3 years	C14-C20	Derived from the National Patient Registry
Previous PCI	FNG00, FNG01, FNG02, FNG03, FNG04, FNG05, FNG06, 3080	Derived from the National Patient Registry and SWEDEHEART
Previous CABG	FNA-FNF, FNH-FNW, 3065, 3066, 3068, 3092, 3105, 3127, 3158	Derived from the National Patient Registry and SWEDEHEART
Type of infarction, NSTEMI/STEMI	-	Derived from SWEDEHEART
PCI	-	Derived from SWEDEHEART
CABG	-	Derived from SWEDEHEART
Killip class	-	Derived from SWEDEHEART
Left ventricular ejection fraction	-	Derived from SWEDEHEART
New-onset atrial fibrillation	-	Derived from SWEDEHEART
Any atrial fibrillation	I480-I484, I489, 427D	Derived from the National Patient Registry and SWEDEHEART
Angiotensin-converting enzyme inhibitors	C09A, C09B	Derived from the National Dispensed Drug Registry and SWEDEHEART
Angiotensin II receptor blockers	C09C, C09D	Derived from the National Dispensed Drug Registry and SWEDEHEART
Aspirin	-	Derived from SWEDEHEART

P2Y ₁₂ inhibitors	-	Derived from SWEDEHEART
Oral Anticoagulants	-	Derived from SWEDEHEART
β-blockers	-	Derived from SWEDEHEART
Calcium channel blockers	-	Derived from SWEDEHEART
Digoxin	-	Derived from SWEDEHEART
Diuretics	-	Derived from SWEDEHEART
Nitrates	-	Derived from SWEDEHEART
Statins	-	Derived from SWEDEHEART

Table S2. Definition of outcomes - The National Patient Registry, The Swedish Cause of Death Registry and the International Classification of Diseases, 10th revision, was used to define the outcomes

Variable	ICD-code	Comments
All-cause mortality	-	Derived from the Swedish Cause of Death Registry
Cardiovascular mortality	I00-I99	Derived from the Swedish Cause of Death Registry
Myocardial infarction	I21-I22	Derived from the National Patient Registry and the Swedish Cause of Death Registry
Stroke	I60, I61, I63, I64	Derived from the National Patient Registry and the Swedish Cause of Death Registry
New-onset atrial fibrillation	I480-I484, I489	Derived from the National Patient Registry and the Swedish Cause of Death Registry

Table S3. Intention-to-treat analysis - Number and incidence rate of events and crude and adjusted hazard ratios for outcomes stratified by angiotensin-converting enzyme inhibitors and/or angiotensin II receptor blockers treatment in patients with and without congestive heart failure and atrial fibrillation in an intention-to-treat analysis

Outcomes, No. of events / Person time per 100 years (Event rate)	All patients (n = 112,648)	Stratification					
		CHF and AF (n = 11,489)	CHF and no AF (n = 31,676)	P-value for interaction	No CHF and AF (n = 10,066)	No CHF and no AF (n = 59,417)	P-value for interaction
All-cause mortality	21,900 / 2,684.5 (8.2)	5,012 / 224.3 (22.3)	7,079 / 740.9 (9.6)	-	3,021 / 222.9 (13.6)	6,788 / 1,496.4 (4.5)	-
No ACEI/ARB	7,746 / 671.7 (11.5)	1,450 / 38.4 (37.8)	1,891 / 96.0 (19.7)	-	1,373 / 72.1 (19.0)	3,032 / 465.2 (6.5)	-
ACEI/ARB	14,154 / 2,012.8 (7.0)	3,562 / 185.9 (19.2)	5,188 / 644.9 (8.0)	-	1,648 / 150.8 (10.9)	3,756 / 1,031.1 (3.6)	-
Unadjusted HR	0.61 (0.60-0.63)	0.53 (0.50-0.56)	0.42 (0.40-0.44)	< 0.001	0.58 (0.54-0.63)	0.56 (0.53-0.59)	0.33
Adjusted HR	0.79 (0.76-0.81)	0.79 (0.74-0.84)	0.73 (0.69-0.77)	0.08	0.85 (0.79-0.92)	0.80 (0.76-0.84)	0.21
Cardiovascular mortality	13,819 / 2,684.5 (5.1)	3,576 / 224.3 (15.9)	4,581 / 740.9 (6.2)	-	1,921 / 222.9 (8.6)	3,741 / 1,496.4 (2.5)	-
No ACEI/ARB	4,749 / 671.7 (7.1)	1,039 / 38.4 (27.1)	1,237 / 96.0 (12.9)	-	855 / 72.1 (11.9)	1,618 / 465.2 (3.5)	-
ACEI/ARB	9,070 / 2,012.8 (4.5)	2,537 / 185.9 (13.6)	3,344 / 644.9 (5.2)	-	1,066 / 150.8 (7.1)	2,123 / 1,031.1 (2.1)	-
Unadjusted HR	0.64 (0.62-0.66)	0.53 (0.49-0.57)	0.41 (0.39-0.44)	< 0.001	0.61 (0.56-0.67)	0.59 (0.56-0.63)	0.63
Adjusted HR	0.83 (0.80-0.86)	0.80 (0.74-0.87)	0.74 (0.69-0.79)	0.13	0.91 (0.83-1.00)	0.88 (0.82-0.94)	0.59
Myocardial infarction	23,347 / 2,358.3 (9.9)	3,466 / 187.4 (18.5)	7,381 / 642.4 (11.5)	-	2,712 / 188.9 (14.4)	9,788 / 1,339.7 (7.3)	-
No ACEI/ARB	6,556 / 591.2 (11.1)	850 / 30.8 (27.6)	1,437 / 81.5 (17.6)	-	1,022 / 61.2 (16.7)	3,247 / 417.7 (7.8)	-
ACEI/ARB	16,791 / 1,767.1 (9.5)	2,616 / 156.6 (16.7)	5,944 / 560.9 (10.6)	-	1,690 / 127.6 (13.2)	6,541 / 922.0 (7.1)	-
Unadjusted HR	0.87 (0.85-0.90)	0.69 (0.64-0.75)	0.65 (0.61-0.69)	0.21	0.83 (0.77-0.90)	0.91 (0.87-0.95)	0.04
Adjusted HR	0.95 (0.92-0.98)	0.85 (0.78-0.93)	0.86 (0.81-0.92)	0.79	0.95 (0.88-1.04)	1.01 (0.97-1.06)	0.21
Stroke	5,782 / 2,623.2 (2.2)	1,126 / 214.2 (5.3)	1,579 / 723.8 (2.2)	-	1,033 / 212.7 (4.9)	2,044 / 1,472.5 (1.4)	-
No ACEI/ARB	1,563 / 656.8 (2.4)	233 / 36.6 (6.4)	284 / 93.3 (3.0)	-	366 / 68.9 (5.3)	680 / 457.9 (1.5)	-
ACEI/ARB	4,219 / 1,966.4 (2.1)	831 / 178.0 (4.7)	1,295 / 630.6 (2.1)	-	667 / 143.8 (4.6)	1,364 / 1,014.6 (1.3)	-
Unadjusted HR	0.91 (0.85-0.96)	0.83 (0.72-0.96)	0.69 (0.61-0.78)	0.07	0.89 (0.78-1.01)	0.90 (0.82-0.99)	0.84
Adjusted HR	1.00 (0.94-1.06)	1.01 (0.86-1.17)	0.91 (0.79-1.04)	0.33	1.05 (0.92-1.20)	1.01 (0.91-1.11)	0.64
New-onset AF	5,978 / 2,151.3 (2.8)		2,553 / 706.3 (3.6)			3,425 / 1,445.0 (2.4)	
No ACEI/ARB	1,487 / 540.6 (2.8)		438 / 90.8 (4.8)			1,049 / 449.8 (2.3)	
ACEI/ARB	4,491 / 1,610.7 (2.8)		2,115 / 615.5 (3.4)			2,376 / 995.2 (2.4)	
Unadjusted HR	1.02 (0.96-1.08)		0.74 (0.66-0.82)			1.02 (0.95-1.10)	
Adjusted HR	1.05 (0.98-1.12)		0.94 (0.84-1.05)			1.10 (1.02-1.19)	

Crude event rates were calculated according to the number of events per 100 person-years. Unadjusted and adjusted HR are given with a 95% confidence interval.

Abbreviations: ACEI, angiotensin-converting enzyme inhibitors; AF, atrial fibrillation; ARB, angiotensin II receptor blockers; CHF, congestive heart failure; HR, hazard ratio.

Table S4. Complete case and propensity score analyses - Complete case and propensity score analyses with hazard ratios for outcomes stratified by angiotensin-converting enzyme inhibitors and/or angiotensin II receptor blockers treatment in patients with and without congestive heart failure and atrial fibrillation

Outcomes, No. of events / Person time per 100 years (Event rate)	All patients (n = 112,648)	Stratification					
		CHF and AF (n = 11,489)	CHF and no AF (n = 31,676)	P-value for interaction	No CHF and AF (n = 10,066)	No CHF and no AF (n = 59,417)	P-value for interaction
All-cause mortality							
Complete case, adjusted HR	0.78 (0.75-0.82)	0.79 (0.72-0.87)	0.72 (0.67-0.78)	0.12	0.85 (0.74-0.98)	0.82 (0.75-0.90)	0.71
Propensity score, adjusted HR	0.72 (0.69-0.75)	0.74 (0.66-0.83)	0.63 (0.57-0.68)	0.02	0.80 (0.72-0.89)	0.78 (0.72-0.84)	0.64
Cardiovascular mortality							
Complete case, adjusted HR	0.81 (0.76-0.86)	0.79 (0.71-0.89)	0.72 (0.65-0.78)	0.14	0.91 (0.75-1.10)	0.91 (0.80-1.04)	0.98
Propensity score, adjusted HR	0.77 (0.73-0.81)	0.76 (0.67-0.87)	0.64 (0.58-0.71)	0.04	0.88 (0.77-1.01)	0.90 (0.81-1.00)	0.80
Myocardial infarction							
Complete case, adjusted HR	0.95 (0.91-0.99)	0.89 (0.79-0.99)	0.85 (0.79-0.91)	0.50	0.94 (0.82-1.08)	1.04 (0.97-1.11)	0.22
Propensity score, adjusted HR	0.94 (0.90-0.98)	0.83 (0.73-0.95)	0.83 (0.75-0.92)	0.92	0.96 (0.86-1.08)	1.02 (0.96-1.09)	0.36
Stroke							
Complete case, adjusted HR	0.98 (0.90-1.07)	0.92 (0.77-1.11)	0.90 (0.77-1.05)	0.83	1.03 (0.83-1.28)	1.03 (0.89-1.19)	1.00
Propensity score, adjusted HR	0.95 (0.87-1.04)	0.96 (0.75-1.23)	0.78 (0.62-0.98)	0.23	0.96 (0.79-1.17)	1.04 (0.90-1.21)	0.53
New-onset AF							
Complete case, adjusted HR	1.04 (0.96-1.12)		0.98 (0.87-1.11)			1.08 (0.98-1.21)	
Propensity score, adjusted HR	1.12 (1.02-1.23)		0.93 (0.78-1.12)			1.15 (1.03-1.28)	

Crude event rates were calculated according to the number of events per 100 person-years. Unadjusted and adjusted HR is given with a 95% confidence interval.

Abbreviations: ACEI, angiotensin-converting enzyme inhibitors; AF, atrial fibrillation; ARB, angiotensin II receptor blockers; CHF, congestive heart failure; HR, hazard ratio.

Table S5. Outcomes stratified by angiotensin-converting enzyme inhibitors and angiotensin II receptor blockers treatment - Number and incidence rate of events and crude and adjusted hazard ratios for outcomes stratified by angiotensin-converting enzyme inhibitors or angiotensin II receptor blockers treatment in patients with and without congestive heart failure and atrial fibrillation

Outcomes, No. of events / Person time per 100 years (Event rate)	All patients (n = 112,648)	Stratification					
		CHF and AF (n = 11,489)	CHF and no AF (n = 31,676)	P-value for interaction	No CHF and AF (n = 10,066)	No CHF and no AF (n = 59,417)	P-value for interaction
All-cause mortality	17,121 / 2,121.4 (8.1)	3,964 / 176.1 (22.5)	5,474 / 590.7 (9.3)	-	2,383 / 173.5 (13.7)	5,300 / 1,181.1 (4.5)	-
No ACEI/ARB	6,115 / 477.9 (12.8)	1,134 / 25.3 (44.9)	1,450 / 57.1 (25.4)	-	1,119 / 53.2 (21.0)	2,412 / 342.3 (7.0)	-
ACEI	8,197 / 1,197.3 (6.8)	2,102 / 108.5 (19.4)	3,073 / 402.4 (7.6)	-	913 / 80.4 (11.4)	2,109 / 606.0 (3.5)	-
ARB	2,458 / 295.4 (8.3)	653 / 32.5 (20.1)	814 / 79.2 (10.3)	-	310 / 31.0 (10.0)	681 / 152.8 (4.5)	-
ACEI, adjusted HR	0.75 (0.73-0.78)	0.77 (0.71-0.83)	0.65 (0.61-0.70)	0.003	0.85 (0.77-0.94)	0.78 (0.73-0.84)	0.16
ARB, adjusted HR	0.72 (0.68-0.76)	0.69 (0.62-0.77)	0.63 (0.57-0.70)	0.23	0.74 (0.65-0.85)	0.75 (0.68-0.82)	0.93
Cardiovascular mortality	11,015 / 2,121.4 (5.2)	2,854 / 176.1 (16.2)	3,660 / 590.7 (6.2)	-	1,546 / 173.5 (8.9)	2,955 / 1,181.1 (2.5)	-
No ACEI/ARB	3,732 / 477.9 (7.8)	809 / 25.3 (32.0)	970 / 57.1 (17.0)	-	696 / 53.2 (13.1)	1,257 / 342.3 (3.7)	-
ACEI	5,476 / 1,197.3 (4.6)	1,522 / 108.5 (14.0)	2,063 / 402.4 (5.1)	-	627 / 80.4 (7.8)	1,264 / 606.0 (2.1)	-
ARB	1,608 / 295.4 (5.4)	470 / 32.5 (14.5)	548 / 79.2 (6.9)	-	199 / 31.0 (6.4)	391 / 152.8 (2.6)	-
ACEI, adjusted HR	0.84 (0.80-0.88)	0.79 (0.72-0.87)	0.69 (0.63-0.75)	0.03	0.96 (0.85-1.08)	0.95 (0.88-1.04)	0.99
ARB, adjusted HR	0.78 (0.73-0.83)	0.72 (0.63-0.82)	0.68 (0.60-0.77)	0.52	0.79 (0.67-0.94)	0.85 (0.75-0.96)	0.54
Myocardial infarction	20,802 / 1,889.7 (11.0)	3,092 / 150.2 (20.6)	6,551 / 518.8 (12.6)	-	2,427 / 149.8 (16.2)	8,732 / 1,070.9 (8.2)	-
No ACEI/ARB	5,609 / 432.4 (13.0)	713 / 21.1 (33.7)	1,179 / 50.1 (23.5)	-	898 / 46.6 (19.3)	2,819 / 314.6 (9.0)	-
ACEI	11,534 / 1,068.7 (10.8)	1,785 / 93.7 (19.1)	4,217 / 356.2 (11.8)	-	1,087 / 69.4 (15.7)	4,445 / 549.5 (8.1)	-
ARB	3,481 / 257.7 (13.5)	590 / 27.5 (21.5)	1,108 / 68.0 (16.3)	-	417 / 26.3 (15.8)	1,366 / 135.8 (10.1)	-
ACEI, adjusted HR	0.95 (0.92-0.99)	0.86 (0.78-0.95)	0.84 (0.78-0.90)	0.61	0.98 (0.89-1.08)	1.02 (0.97-1.07)	0.47
ARB, adjusted HR	0.96 (0.91-1.01)	0.84 (0.74-0.95)	0.91 (0.83-1.00)	0.34	0.94 (0.83-1.07)	1.01 (0.93-1.09)	0.37
Stroke	4,620 / 2,080.6 (2.2)	910 / 169.1 (5.4)	1,244 / 579.3 (2.1)	-	848 / 166.7 (5.1)	1,618 / 1,165.4 (1.4)	-
No ACEI/ARB	1,198 / 468.9 (2.6)	170 / 24.2 (7.0)	208 / 55.7 (3.7)	-	297 / 51.1 (5.8)	523 / 337.9 (1.5)	-
ACEI	2,535 / 1,175.2 (2.2)	556 / 104.4 (5.3)	796 / 395.2 (2.0)	-	379 / 77.4 (4.9)	803 / 598.3 (1.3)	-
ARB	751 / 289.0 (2.6)	161 / 31.2 (5.2)	198 / 77.5 (2.6)	-	149 / 29.9 (5.0)	243 / 150.4 (1.6)	-
ACEI, adjusted HR	0.99 (0.92-1.07)	1.03 (0.85-1.25)	0.84 (0.71-0.99)	0.11	1.03 (0.87-1.21)	1.03 (0.91-1.16)	0.96
ARB, adjusted HR	1.00 (0.90-1.11)	0.97 (0.75-1.24)	0.82 (0.65-1.03)	0.33	1.08 (0.86-1.35)	0.97 (0.81-1.16)	0.45
New-onset AF	4,928 / 1,713.3 (2.9)		2,105 / 566.3 (3.7)			2,823 / 1147.0 (2.5)	
No ACEI/ARB	1,110 / 388.7 (2.9)		303 / 54.8 (5.5)			807 / 333.9 (2.4)	
ACEI	2,763 / 977.5 (2.8)		1,351 / 387.7 (3.5)			1,412 / 589.8 (2.4)	

ARB	887 / 221.6 (4.0)		369 / 75.2 (4.9)		518 / 146.4 (3.5)	
ACEI, adjusted HR	1.05 (0.97-1.13)		0.97 (0.84-1.11)		1.08 (0.99-1.19)	
ARB, adjusted HR	1.20 (1.08-1.33)		1.07 (0.90-1.28)		1.24 (1.09-1.41)	

Crude event rates were calculated according to the number of events per 100 person-years. Unadjusted and adjusted HR are given with a 95% confidence interval.

Abbreviations: ACEI, angiotensin-converting enzyme inhibitors; AF, atrial fibrillation; ARB, angiotensin II receptor blockers; CHF, congestive heart failure; HR, hazard ratio.