SUPPLEMENTARY DATA TABLE OF CONTENTS

Supplementary Table 1: Presenting clinical characteristics and laboratory values in the study patients.

Supplementary Table 2: Clinical Characteristics, laboratory values, and outcomes in the use of ACEIs and ARBs prior to hospitalization.

Supplementary Table 3: Clinical Characteristics, laboratory values, and outcomes in the use of ACEIs during hospitalization.

Supplementary Table 4: Clinical Characteristics, laboratory values, and outcomes in the use of ARBs during hospitalization.

Supplementary Table 5: Multivariable Analysis of predictors associated with key outcomes in the use of ARBs during hospitalization

Supplementary Table 1: Presenting clinical characteristics and laboratory values in the study patients

	N=300
Demographics	
Age, Mean (SE)	59.1 ± 17.5
Gender	
Male	166 (55.3%)
Female	134 (44.7%)
BMI ^a	29.9 ± 6.3
Comorbidities	
Hypertension	133 (44.3%)
Diabetes	74 (24.7%)
Coronary Artery Disease	52 (17.3%)
Vascular Disease	20 (6.7%)
Heart Failure	44 (14.7%)
Chronic Kidney Disease	34 (11.3%)
End Stage Renal Disease	4 (1.3%)
Chronic Obstructive Pulmonary Disease	19 (6.3%)
Other Lung Disease	35 (11.7%)
History of ACEI/ARB Use	
ACE only	36 (12.0%)
ARB only	44 (14.7%)
Total	80 (26.7%)
Blood Pressure on Admission	
SBP, mmHg	127 ± 21.5
DBP, mmHg	73.4 ± 11.5
MAP, mmHg	91.3 ± 13.3
Serum Potassium on Admission, mmol/L	4.1 ± 0.5
Kidney Function on Admission	
AKI	54 (18.0%)
eGFR, ml/min/1.73m ²	86.5 (56.0 – 101.5)
SCr, mg/dL	0.9 (0.7 – 1.2)
Laboratory Values (Inflammation)	
Ferritin, ng/mL ^b	623.5 (280 –1257)
LDH, IU/L ^b	311.5 (239 – 413)
ESR, mm/hr ^b	41.0 (21.0 – 62.0)
D-dimer, ng/mL ^b	301.0 (196 – 499)
CRP, mg/dL ^b	6.5 (3.1 – 13.1)

a. 92% of patients had data available for BMI

Data are presented as a number and percentage, median (25th-75th percentiles), or mean ± standard deviation (SD). BMI, Body mass index; ACEI, angiotensin converting enzyme inhibitor; ARB, angiotensin receptor blocker; AKI, acute kidney injury; RRT, renal replacement therapy; HD, hemodialysis; CKRT, continuous kidney replacement therapy; SBP, systolic blood pressure; DBP, diastolic blood pressure; MAP, mean arterial pressure; SCr, serum creatinine; LDH, lactate dehydrogenase; ESR, erythrocyte sedimentation rate; CRP, C-reactive protein; eGFR, estimated glomerular filtration rate; FC, fold change.

^{b.} 51% of patients had data available for analysis for ferritin, 86% was available for LDH, 46% was available for ESR, 59% was available for D-dimer, and 86% was available for CRP.

Supplementary Table 2: Clinical Characteristics, laboratory values, and outcomes in the use of ACEIs and ARBs prior to hospitalization.

	History of ACE Inhibitor and ARB Use			
	ACEI only (N=36)	ARB only (N=44)	Neither (N=220)	P- Value
Demographics				
Age	68.1 ± 11.6	68.7 ± 12.0	55.7 ± 18.0	<0.001a
Gender				
Male	23 (63.9%)	25 (56.8%)	118 (53.6%)	0.51
Female	13 (36.1%)	19 (43.2%)	102 (46.4%)	
BMI ^b	30.4 ± 5.2	30.5 ± 6.0	29.7 ± 6.5	0.66
Comorbidities				
Hypertension	36 (100.0%)	44 (100.0%)	53 (24.1%)	<0.001
Diabetes	17 (47.2%)	20 (45.5%)	37 (16.8%)	<0.001
Coronary Artery Disease	12 (33.3%)	13 (29.6%)	27 (12.3%)	<0.001
Vascular Disease	3 (8.3%)	3 (6.8%)	14 (6.4%)	0.86
Heart Failure	8 (22.2%)	15 (34.1%)	21 (9.6%)	<0.001
Chronic Kidney Disease	7 (19.4%)	8 (18.2%)	19 (8.6%)	0.05
End Stage Renal Disease	1 (2.8%)	1 (2.3%)	2 (0.9%)	0.29
Chronic Obstructive Pulmonary Disease	4 (11.1%)	5 (11.4%)	10 (4.6%)	0.07
Other Lung Disease	2 (5.6%)	4 (9.1%)	29 (13.2%)	0.41
ACE/ARB Status during Hospitalization				
Held	16 (44.4%)	15 (34.1%)	-	0.34
Continued	20 (55.6%)	29 (65.9%)	-	
Blood Pressure on Admission				
SBP, mmHg	126.6 ± 21.8	130.4 ± 26.0	126.4 ± 20.4	0.52
DBP, mmHg	70.7 ± 12.3	70.8 ± 11.7	74.4 ± 11.2	0.06
MAP, mmHg	89.3 ± 14.5	89.9 ± 13.5	91.9 ± 13.1	0.43
Serum Potassium on Admission, mmol/L	4.2 ± 0.6	4.1 ± 0.6	4.1 ± 0.5	0.22
Kidney Function on Admission				
AKI	10 (27.8%)	20 (45.5%)	24 (10.9%)	<0.001
eGFR, ml/min/1.73m ²	59.0 (41.5 – 94.5)	57.0 (39.5 – 74.0)	92.0 (70.5 - 108)	<0.001a
SCr, mg/dL	1.1 (0.8 – 1.6)	1.2 (1.0 – 1.6)	0.86 (0.7 – 1.1)	<0.001 ^a
Kidney Function During Hospitalization				
AKI	8 (22.2%)	14 (31.8%)	25 (11.4%)	0.002
RRT	0 (0.0%)	5 (11.4%)	3 (1.4%)	0.004
HD	0 (0.0%)	5 (11.4%)	2 (0.9%)	0.002
CKRT	0 (0.0%)	2 (4.6%)	2 (0.9%)	0.17

Laboratory Values (Inflammation)				
Ferritin, ng/ml				
Admission ^c	572 (301 - 1139)	740 (352 - 1490)	607 (270.3 - 1243)	0.35
Peak ^d	768 (513 - 1139)	1362.5 (635 - 1847)	816 (351 - 1668)	0.18
FC in level ^c	1.5 (1.0 – 2.6)	1.3 (1.0 – 2.2)	1.0 (1.0 1.6)	0.08
LDH, IU/L				
Admission ^c	302 (256 - 342)	312 (235 - 401)	317.5 (239 - 424)	0.63
Peak ^d	357 (330 - 543)	433 (303 - 604)	401 (296 - 550)	0.75
FC in level ^c	1.2 (1.0 – 1.6)	1.3 (1.0 – 1.9)	1.1 (1.0 – 1.4)	0.06
ESR, mm/hr				
Admission ^c	39.0 (19.0 – 58.0)	48.0 (28.0 – 69.0)	40.0 (21.0 – 62.0)	0.57
Peak ^d	65.0 (51.0 – 85.0)	91.0 (39.0 – 112.5)	73.0 (44.0 – 95.5)	0.30
FC in level ^c	1.1 (1.0 – 2.9)	1.3 (1.0 – 1.9)	1.2 (1.0 – 2.1)	0.94
D-dimer, ng/mL				
Admission ^c	276 (173 - 556)	313.5 (178 – 436.5)	301 (198 - 503)	0.79
Peak ^d	601 (456 - 2021)	460 (277 - 3516)	680 (301 - 2582)	0.96
FC in level ^c	1.0 (1.0 -3.7)	1.1 (1.0 – 16.0)	1.2 (1.0 – 5.2)	0.69
CRP, mg/dL				
Admission ^c	7.5 (2.9 – 13.3)	7.9 (5.4 – 12.7)	6.2 (2.9 – 13.1)	0.47
Peak ^d	13.6 (7.5 – 25.1)	16.7 (7.9 – 33.4)	10.6 (5.0 – 22.4)	0.05
FC in level ^c	1.9 (1.0 3.3)	1.7 (1.0 – 3.0)	1.2 (1.0 – 2.4)	0.20
Inflammation Scores				
Peak Inflammation Score (0-15)	7.0 (4.0 – 9.5)	8.0 (3.0 – 11.5)	6.0 (2.0 – 10.0)	0.21
FC Inflammation Score (0-15)	4.5 (0.5 – 9.0)	4.0 (0 – 9.0)	3.0 (0 – 6.0)	0.23
Hospital Outcomes				
ICU Admission	7 (19.4%)	15 (34.1%)	59 (26.8%)	0.34
Invasive Mechanical Ventilation	5 (13.9%)	14 (31.8%)	50 (22.7%)	0.17
Patient Outcome				
Discharged	31 (86.1%)	35 (79.6%)	195 (88.6%)	0.22
Death	5 (13.9%)	9 (20.5%)	25 (11.4%)	0.22
Length of Stay, days	6.0 (4.0 – 11.0)	10.8 (4.5 – 17.5)	7.0 (3.0 – 14.0)	0.04 ^e

a. ACEI and ARB only significant when compared to neither, not each other

Data are presented as a number and percentage, median (25th-75th percentiles), or mean ± standard deviation (SD). P-value<0.05 considered statistically significant in analysis.

BMI, Body mass index; ACEI, angiotensin converting enzyme inhibitor; ARB, angiotensin receptor blocker; AKI, acute kidney injury; RRT, renal replacement therapy; HD, hemodialysis; CKRT, continuous kidney replacement therapy; SBP, systolic blood pressure; DBP, diastolic blood pressure; MAP, mean arterial pressure; SCr, serum creatinine; LDH, lactate dehydrogenase; ESR, erythrocyte sedimentation rate; CRP, C-reactive protein; eGFR, estimated glomerular filtration rate; FC, fold change.

b. 92% of patients had data available for BMI

^c 51% of patients had data available for analysis for admission and FC values for ferritin, 86% was available for LDH, 46% was available for ESR, 59% was available for D-dimer, and 86% was available for CRP.

d. 79% of patients had data available for analysis for peak values for ferritin, 94% was available for LDH, 77% was available for ESR, 82% was available for D-dimer, and 94% was available for CRP.

e. ARB only significant when compared to neither, ACEI not significant

Supplementary Table 3: Clinical Characteristics, laboratory values, and outcomes in the use of ACEIs during hospitalization.

	Status of ACEI du	ring Hospitalization	
	Held (N=16)	Continued (N=20)	P-Value
Demographics			
Age	69.4 ± 12.9	67.0 ± 10.6	0.53
Gender			
Male	13 (81.3%)	10 (50.0%)	0.08
Female	3 (18.8%)	10 (50.0%)	
BMI ^a	30.3 ± 4.4	30.5 ± 5.8	0.91
Comorbidities			
Hypertension	16 (100.0%)	20 (100.0%)	N.A
Diabetes	6 (37.5%)	11 (55.0%)	0.30
Coronary Artery Disease	6 (37.5%)	6 (30.0%)	0.64
Vascular Disease	2 (12.5%)	1 (5.0%)	0.57
Heart Failure	3 (18.8%)	5 (25.0%)	0.71
Chronic Kidney Disease	5 (31.3%)	2 (10.0%)	0.20
End Stage Renal Disease	0 (0.0%)	1 (5.0%)	1.00
Chronic Obstructive Pulmonary Disease	2 (12.5%)	2 (10.0%)	1.00
Other Lung Disease	0 (0.0%)	2 (10.0%)	0.49
Blood Pressure on Admission		, ,	
SBP, mmHg	127.9 ± 20.9	125.6 ± 23.0	0.76
DBP, mmHg	72.5 ± 12.5	69.5 ± 18.0	0.88
MAP, mmHg	89.3 ± 12.9	89.3 ± 16.0	0.99
Serum Potassium on Admission, mmol/L	4.3 ± 0.5	4.1 ± 0.7	0.37
Kidney Function on Admission			
AKI	6 (37.5%)	4 (20.0%)	0.29
eGFR, ml/min/1.73m ²	45.5 (36.5 – 72.0)	73.0 (47.0 – 96.0)	0.09
SCr, mg/dL	1.4 (1.0 – 1.9)	0.91 (0.8 – 1.2)	0.01
Kidney Function During Hospitalization			
AKI	5 (31.3%)	3 (15.0%)	0.42
RRT	0 (0.0%)	0 (0.0%)	N.A
HD	0 (0.0%)	0 (0.0%)	N.A
CKRT	0 (0.0%)	0 (0.0%)	N.A
Laboratory Values (Inflammation)			
Ferritin, ng/ml			
Admission ^b	660.0 (326 – 971.6)	521.0 (301 - 1139)	1.00
Peak ^c	723.0 (562 - 1839)	829.5 (315.5 - 1059)	0.61
FC in level ^b	1.9 (1.2 – 4.6)	1.4 (1.0 – 1.9)	0.42
LDH, IU/L	,	· ,	
Admission ^b	340.5 (302 - 497)	266.0 (243 - 311)	0.01
Peak ^c	519.0 (342 - 607)	349.0 (319 - 467)	0.04
FC in level ^b	1.1 (1.0 – 1.7)	1.3 (1.0 – 1.6)	0.75

ESR, mm/hr			
Admission ^b	41.0 (25.0 – 70.0)	30.0 (18.0 – 55.0)	0.41
Peak ^c	41.5 (52.0 – 81.0)	56.5 (50.0 – 88.0)	0.85
FC in level ^b	1.1 (1.0 – 2.5)	1.3 (1.0 – 1.6)	0.97
D-dimer, ng/mL			
Admission ^b	434.5 (230.5 - 982)	269.0 (173 - 508)	0.27
Peak ^c	689.0 (413 - 2021)	578.5 (509.5 - 2278)	0.98
FC in level ^b	1.0 (1.0 – 2.1)	1.1 (1.0 – 11.8)	0.43
CRP, mg/dL			
Admission ^b	9.3 (2.7 – 13.8)	6.6 (3.0 – 11.2)	0.52
Peak ^c	13.7 (9.8 – 27.1)	11.8 (6.6 – 23.4)	0.36
FC in level ^b	1.9 (1.0 – 2.9)	1.9 (1.0 – 3.6)	0.97
Inflammation Scores			
Peak Inflammation Score (0-15)	8.5 (5.5 – 10.5)	6.0 (4.0 – 7.5)	0.16
FC Inflammation Score (0-15)	4.5 (0.5 – 9.5)	4.5 (0.5 – 9.0)	0.83
Hospital Outcomes			
ICU Admission	5 (31.3%)	2 (10.0%)	
Invasive Mechanical Ventilation	3 (18.8%)	2 (10.0%)	0.64
Patient Outcome			
Discharged	12 (75.0%)	19 (95.0%)	0.15
Death	4 (25.0%)	1 (5.0%)	
Length of Stay, days	7.5 (4.5 – 11.5)	5.0 (4.0 – 11.0)	0.61

^{a.} 86% of patients had data available for BMI

Data are presented as a number and percentage, median (25th-75th percentiles), or mean ± standard deviation (SD). P-value<0.05 considered statistically significant in analysis.

BMI, Body mass index; ACEI, angiotensin converting enzyme inhibitor; ARB, angiotensin receptor blocker; AKI, acute kidney injury; RRT, renal replacement therapy; HD, hemodialysis; CKRT, continuous kidney replacement therapy; SBP, systolic blood pressure; DBP, diastolic blood pressure; MAP, mean arterial pressure; SCr, serum creatinine; LDH, lactate dehydrogenase; ESR, erythrocyte sedimentation rate; CRP, C-reactive protein; eGFR, estimated glomerular filtration rate; FC, fold change.

b 51% of patients had data available for analysis for admission and FC values for ferritin, 86% was available for LDH, 46% was available for ESR, 59% was available for D-dimer, and 86% was available for CRP.

^{c.} 79% of patients had data available for analysis for peak values for ferritin, 94% was available for LDH, 77% was available for ESR, 82% was available for D-dimer, and 94% was available for CRP.

Supplementary Table 4: Clinical Characteristics, laboratory values, and outcomes in the use of ARBs during hospitalization.

	Status of ARB dur		
	Held (N=15)	Continued (N=29)	P-Value
Demographics			
Age	70.3 ± 12.1	68.0 ± 12.1	0.54
Gender			
Male	9 (60.0%)	16 (55.2%)	0.76
Female	6 (40.0%)	13 (44.8%)	
BMI ^a	30.5 ± 7.5	30.5 ± 5.3	0.98
Comorbidities			
Hypertension	15 (100.0%)	29 (100.0%)	N.A
Diabetes	9 (60.0%)	11 (37.9%)	0.16
Coronary Artery Disease	5 (33.3%)	8 (27.6%)	0.74
Vascular Disease	2 (13.3%)	1 (3.5%)	0.26
Heart Failure	5 (33.3%)	10 (34.5%)	1.00
Chronic Kidney Disease	2 (13.3%)	6 (20.7%)	0.70
End Stage Renal Disease	0 (0.0%)	1 (3.5%)	1.00
Chronic Obstructive Pulmonary Disease	1 (6.7%)	4 (13.8%)	0.65
Other Lung Disease	1 (6.7%)	3 (10.3%)	1.00
Blood Pressure on Admission			
SBP, mmHg	133.1 ± 31.0	129.0 ± 23.4	0.63
DBP, mmHg	68.7 ± 13.4	71.8 ± 10.8	0.40
MAP, mmHg	88.9 ± 15.3	90.4 ± 12.7	0.72
Serum Potassium on Admission, mmol/L	4.2 ± 0.8	4.1 ± 0.6	0.47
Kidney Function on Admission			
AKI	12 (80.0%)	8 (27.6%)	0.001
eGFR, ml/min/1.73m ²	42.0 (36.0 – 58.0)	62.9 (52.0 – 79.0)	0.01
SCr, mg/dL	1.3 (1.2 – 1.8)	1.1 (0.9 – 1.3)	0.01
Kidney Function During Hospitalization			
AKI	7 (46.7%)	7 (24.1%)	0.18
RRT	2 (13.3%)	3 (10.3%)	1.00
HD	2 (13.3%)	3 (10.3%)	1.00
CKRT	1 (6.7%)	1 (3.5%)	1.00
Laboratory Values (Inflammation)			
Ferritin, ng/ml			
Admission ^b	593.0 (337.3 - 635)	1158.5 (519 - 1645)	0.13
Peak ^c	842.1 (635 - 1830)	1509.0 (656 - 1948)	0.60
FC in level ^b	1.4 (1.0 – 1.9)	1.0 (1.0 – 2.3)	0.62
LDH, IU/L			
Admission ^b	275.5 (219 - 410)	333.0 (235 - 401)	0.77
Peak ^c	454.0 (350 - 711)	431.0 (292 - 562)	0.39

FC in level ^b	1.6 (1.1 – 2.1)	1.2 (1.0 - 1.8)	0.20
ESR, mm/hr			
Admission ^b	64.0 (44.0 – 81.0)	45.0 (19.0 – 53.0)	0.16
Peak ^c	99.0 (82.0 - 134)	47.0 (24.0 - 111)	0.01
FC in level ^b	1.9 (1.5 – 2.1)	1.1 (1.0 – 1.8)	0.05
D-dimer, ng/mL			
Admission ^b	261.5 (161 - 402)	343.0 (185 - 466)	0.44
Peak ^c	1881.0 (391 - 3516)	393.0 (197 - 2377)	0.31
FC in level ^b	10.2 (1.0 – 30.1)	1.0 (1.0 – 4.0)	0.36
CRP, mg/dL			
Admission ^b	10.6 (5.8 – 17.2)	7.3 (3.9 – 11.5)	0.21
Peak ^c	30.0 (11.1 – 36.3)	6.2 (7.1 – 20.6)	0.05
FC in level ^b	2.0 (1.4 – 2.6)	1.3 (1.0 – 3.0)	0.50
Inflammation Scores			
Peak Inflammation Score (0-15)	9.0 (7.0 – 13.0)	5.0 (2.0 – 10.0)	0.06
FC Inflammation Score (0-15)	7.0 (3.0 – 11.0)	3.0 (0.0 - 9.0)	0.14
Hospital Outcomes			
ICU Admission	8 (53.3%)	7 (24.1%)	0.05
Invasive Mechanical Ventilation	7 (46.7%)	7 (24.1%)	0.13
Patient Outcome			
Discharged	10 (66.7%)	25 (86.2%)	0.24
Death	5 (33.3%)	4 (13.8%)	
Length of Stay, days	12.0 (6.0 – 16.0)	10.0 (4.0 – 18.0)	0.52

^{a.} 95% of patients had data available for BMI

Data are presented as a number and percentage, median (25th-75th percentiles), or mean ± standard deviation (SD). P-value<0.05 considered statistically significant in analysis.

BMI, Body mass index; ACEI, angiotensin converting enzyme inhibitor; ARB, angiotensin receptor blocker; AKI, acute kidney injury; RRT, renal replacement therapy; HD, hemodialysis; CKRT, continuous kidney replacement therapy; SBP, systolic blood pressure; DBP, diastolic blood pressure; MAP, mean arterial pressure; SCr, serum creatinine; LDH, lactate dehydrogenase; ESR, erythrocyte sedimentation rate; CRP, C-reactive protein; eGFR, estimated glomerular filtration rate; FC, fold change.

b 51% of patients had data available for analysis for admission and FC values for ferritin, 86% was available for LDH, 46% was available for ESR, 59% was available for D-dimer, and 86% was available for CRP.

^c 79% of patients had data available for analysis for peak values for ferritin, 94% was available for LDH, 77% was available for ESR, 82% was available for D-dimer, and 94% was available for CRP.

Supplementary Table 5: Multivariable Analysis of predictors associated with key outcomes in the use of ARBs during hospitalization

-	Probability of ICU Admission	Probability of Death	Peak CRP, mg/dL		Peak Inflammation Score	
	Odds Ratio (95% C.I)	Odds Ratio (95% C.I)	Estimated Effect (SE)	P-Value	Estimated Effect (SE)	P-Value
Age, (years)	1.07 (0.99 – 1.15)	1.10 (1.00 – 1.21)	0.15 (0.19)	0.44	0.02 (0.07)	0.73
Continuation of ARB during hospitalization	0.06 (0.01 – 0.58)*	0.33 (0.05 – 2.09)	-10.79 (4.81)	0.03	-3.13 (1.77)	0.09
SCr on Admission	1.59 (0.42 – 6.03)	1.20 (0.44 – 3.26)	0.47 (2.70)	0.86	-0.18 (0.99)	0.85
eGFR on Admission	1.07 (1.00 – 1.14)	1.00 (0.94 – 10.64)	0.05 (0.14)	0.72	0.01 (0.05)	0.93
Potassium on Admission	1.48 (0.37 – 5.89)	1.09 (0.27 – 4.44)	-2.20 (3.82)	0.57	0.53 (1.39)	0.71
MAP on Admission	1.09 (1.02 – 1.12)*	1.04 (0.98 – 1.11)	0.22 (0.16)	0.18	0.04 (0.06)	0.50

For categorical values, odds ratios with 95% Confidence intervals (C.I.) are present. For continuous variables, estimated effect with standard errors (SE) are presented with associated p-values. P-values presented with asterisks for statistical significance as follows: p-value <0.0001***, p-value<0.01**, p-value<0.05*. ACEI, angiotensin converting enzyme inhibitor; ARB, angiotensin receptor blocker; MAP, mean arterial pressure; SCr, serum creatinine; CRP, C-reactive protein; eGFR, estimated glomerular filtration rate.