

Supplemental Material

Acute Kidney Injury in a National Cohort of Hospitalized United States Veterans with COVID-19

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Supplemental Methods Cohort

The first hospitalization was used during this time period, where any hospitalization with a discharge and re-admittance within a day were considered the same hospitalization.

Exclusion of those with a history of end-stage kidney disease included prior record of dialysis or kidney transplant (n=347), those with a baseline estimated glomerular filtration rate (eGFR) <15 ml/min/1.73 m² (n=91), or those without any measure of serum creatinine during hospitalization (n=103). We excluded those with and those with no measure of outpatient serum creatinine in the 7 to 365 days prior to hospitalization (n=1,006).

Data Sources

The Corporate Data Warehouse (CDW) provides up to date information from electronic health records generated during routine care, and is updated nightly. Laboratory results, including serum creatinine, were obtained from the CDW Laboratory Results domain. The CDW Outpatient Pharmacy domain contained outpatient prescription information, while CDW Bar Code Medication Administration and Intravenous Medication domains contained inpatient medication data. Data on height, weight, and blood pressure was procured from the CDW Vital Signs domain. Clinical diagnoses, procedures, and hospitalization characteristics were obtained from the CDW Outpatient Encounter and Inpatient Encounter domains. Smoking status was obtained from the CDA Health Factors domain.

The CSDR identifies COVID-19 positive participants based on the VA's National Surveillance Tool, which provides near real time information on COVID-19 cases based on laboratory results and natural language processing applied to clinical notes (which are subsequently vetted by human review). In the identification of COVID-19 positive cases, the VA utilizes identification methods, starting March 14, 2020, including laboratory tests that comply with CDC standards, such the 2019-nCoV RT-PCR Diagnostic Panel and the SARS-CoV-2 Multiplex Assay, or human-confirmed case review. Prior to this time the VA employed interim CDC case definitions, where presumptive positive cases were classified by having a positive laboratory testing for SARS-CoV-2 RNA, identified as positive after undergoing human review, which were then further verified by compliance with workload codes.

Acute Kidney Injury

In order to consider potential AKI that occurred after the KDIGO 7-day timeframe, the KDIGO percent change definition timeframe was extended to anytime during hospitalization, identifying 8% of the AKIs in this cohort. In all participants, serum creatinine values were censored upon receipt of KRT, and the last value prior to hospitalization but before receipt of KRT was used as the discharge value. Continuation of KRT was defined as record of KRT in those who had KRT during their hospitalization in the week after discharge. A histogram of time of AKI during the hospitalization is presented.

Outcomes

Ventilation was identified by HCPCS codes, CPT codes, or ICD-10 procedure codes (supplemental table 1b); ventilation and ICU were assessed as anytime during the hospitalization. Length of stay was defined by time from admittance to death, discharge, or end of study follow-up.

Participant Characteristics

Characteristics reported include demographics of age, race, sex, ADI, body mass index (BMI), and smoking status; hospital characteristics of intensive care unit (ICU) admittance and mechanical ventilator use; comorbidities including prior history of cancer, cardiovascular disease, cerebrovascular disease, chronic liver disease, chronic lung disease, dementia, diabetes mellitus type 2, hypertension, and peripheral artery disease; laboratory tests and vital signs, recorded at the time of hospitalization, including albumin, baseline eGFR, baseline serum creatinine, blood pressure (diastolic and systolic), blood urea nitrogen, hemoglobin, lymphocyte percentage, platelet count, serum bicarbonate, and white blood cell count; and medication history including angiotensin converting enzyme inhibitors (ACE)/angiotensin II receptor blockers (ARB), antibiotics, anticoagulants, antivirals, aspirin, beta-blockers, chemotherapeutic agents with a putative eGFR altering or nephrotoxic effect, diuretics, immunosuppressants, nonsteroidal anti-inflammatory drugs, and proton pump inhibitors.

Race was categorized as White, Black, and other. ADI is a composite measure of a geographic location's socio-economic disadvantage, and ranges from 0 (low disadvantage) to 100 (high disadvantage). The ADI is a composite measure of a geographic location's socio-economic disadvantage, and is constructed from data elements including education, employment, housing quality, and poverty measures. The 2015 ADI was constructed using data from the 2011-2015 American Community Survey, where a set of 17 indicators are weighted using factor score coefficients derived from a study by Singh et al.(1). These are summed to create and ADI score for each census tract block group, and were averaged by county. We report county level ADI based on the participant's location of residence at time of being identified as COVID-19 positive. BMI was computed from the last measurements of the participant's height and weight prior to hospitalization. Descriptions of diuretic use are reported by drug classes of loop, mineralocorticoid receptor antagonists, and thiazides/other, and were combined into one group in regression models. Chronic kidney disease was defined by an eGFR<60 ml/min/1.73 m².

Diagnostic codes used in definition of comorbidities may be found in Supplemental Table 1c(2, 3). Comorbidities were ascertained from the past year before hospitalization. eGFR was calculated using the CKD-EPI equation(4) and was assessed as a participant's last value prior to hospitalization. Medication use was defined by record of a prescription within 30 days before hospitalization.

Statistical Analyses

Characteristics of the cohort overall and by AKI status were reported as mean (standard deviation) or median (interquartile range) and frequency (percent), as appropriate. We plotted smoothed average serum creatine trajectories by stage by applying a locally weighted scatterplot smoother over 14 and 30 days.

In the assessment of predictors of AKI, we first estimated the unadjusted association of demographics, ADI, clinical comorbidities, and medications with risk of AKI, where predictors included pre-hospitalization characteristics well known to be associated with risk of AKI. To address concerns about sparsity of data and overfitting, we employed a variable selection algorithm that selected variables that displayed evidence of an association in the unadjusted models. We then constructed a multivariable model. The model of AKI severity estimates the odds of having a more severe AKI (a higher stage of AKI) compared to a less severe one. To complement our analyses using the variable selection algorithm, we undertook additional analyses using all specified predictors, and alternatively using the Charlson comorbidity score in lieu of individual level clinical comorbidities. We additionally investigated predictors for the composite outcome of AKI stage 3, AKI receiving KRT, and death, and a separate composite outcome of AKI receiving KRT and death. We assessed the risk of mortality by AKI status, and conducted formal interaction analyses by age, race, ADI, obesity, diabetes status, hypertension, and eGFR category using adjusted logistic regression as a means of identifying potentially vulnerable populations, investigating whether the association of AKI with mortality was modified by these characteristics. Covariates included potential confounders of the association between AKI and mortality. Interaction analyses for age and ADI, were assessed as above and below the median. We report results from the interaction model as the effect of AKI without and with the presence of the interaction variable, along with the p-value for the statistical significance of the interaction on the multiplicative scale(5). We present results in a forest plot. Sensitivity analyses of the association of AKI and AKI severity included a Cox-proportional hazard model with time updated AKI status.

In analyses of geographic variance in rates of AKI amongst COVID-19 hospitalized Veterans, we report a pseudo-R² (variance explained by all predictors) and partial R² (variance explained by each predictor independent of other predictors) as the percentage of the variance in AKI rates explained by differences in mean age, percentage Black race, median ADI, and rates of obesity, diabetes, hypertension, and chronic kidney disease (CKD).

In analyses of temporal variance of AKI amongst COVID-19 hospitalized Veterans we constructed a Poisson regression model of rates of AKI by enrollment day employing a 7 day-moving average definition, and assessed the variance associated with key cohort characteristics by mean age, percentage Black race, median ADI, and rates of obesity, diabetes, hypertension, and CKD.

Laboratory results were reported only for those for whom had the measure; there was no missing data for other participant characteristics, and thus no imputation was done. . All analyses were done using SAS Enterprise Guide version 7.1 (SAS Institute, Cary, NC). All figures were created in R using ggplot2(6), or Tableau.

Supplemental Table 1a: Diagnostic and procedure codes for identifying dialysis

Type	Code
ICD-9 diagnosis	585.6, 792.5, V45.1, V45.11, V45.12, V56.0, V56.1, V56.2, V56.31, V56.32, V56.8
ICD-10 diagnosis	N18.6, R88.0, Z49.01, Z49.02, Z49.31, Z49.32, Z91.15, Z99.2
ICD-9 procedure	38.95, 39.95, 39.951, 39.952, 39.953, 54.98, 54.981, 54.982, 54.983, 99.78
ICD-10 procedure	3E1M39Z, 5A1D70Z, 5A1D80Z, 5A1D90Z, 6ABT0BZ
Current Procedural Terminology (CPT)	0505F, 0507F, 36516, 36901, 36902, 36903, 36904, 36905, 36906, 36907, 36908, 36909, 4052F, 4053F, 4054F, 4055F, 90920, 90921, 90924, 90925, 90935, 90937, 90939, 90940, 90941, 90942, 90943, 90944, 90945, 90947, 90951, 90952, 90953, 90954, 90955, 90956, 90957, 90958, 90959, 90960, 90961, 90962, 90963, 90964, 90965, 90966, 90967, 90968, 90969, 90970, 90976, 90977, 90978, 90979, 90982, 90983, 90984, 90985, 90988, 90989, 90990, 90991, 90992, 90993, 90994, 90995, 90996, 90997, 90998, 90999, 99512, 99559, A4690, A4750, A4755, E1590, G0257, G0322, G0323, G0491, G0492, G8075, G8076, G8714, G8715, G8727, G8956, G9240, G9241, G9264, G9265, G9266, G9747, G9749, S9335, S9339

Supplemental Table 1b: Procedure codes for identifying ventilator use

Type	Code
ICD-10 procedure	09HN7BZ, 09HN8BZ, 0DL57DZ, 0DL58DZ, 5A09357, 5A09358, 5A09359, 5A0935B, 5A0935Z, 5A09457, 5A09458, 5A09459, 5A0945B, 5A0945Z, 5A09557, 5A09558, 5A09559, 5A0955B, 5A0955Z, 5A19054, 5A1935Z, 5A1945Z, 5A1955Z
Current Procedural Terminology (CPT)	4168F, 94002, 94003, E0463

Supplemental Table 1c: Diagnostic codes for comorbidities

Comorbidity	ICD-10 codes
Cancer	C00-C43, C45-C97
Cardiovascular disease	I09.81, I11.0, I20.0, I20.1, I20.8, I20.9, I21.11, I21.19, I21.29, I21.3, I21.4, I24.0, I24.1, I24.8, I25.10, I25.810, I25.811, I25.812, I25.9, I50.1, I50.9, I50.20, I50.21, I50.22, I50.23, I50.30, I50.31, I50.32, I50.33, I50.40, I50.41, I50.42, I50.43, I50.9
Cerebrovascular disease	G45, G46, H34.0, I60, I61, I62, I63, I64, I65, I66, I67, I68, I69
Chronic lung disease	J41.0, J41.1, J41.8, J42, J43.9, J44.0, J44.1, J44.9, J45.20-J45.22, J45.901, J45.902, J45.909, 45.990, J45.991, J45.998, J98.2, J98.3
Dementia	F00, F01, F02, F03, F05.1, G30, G31.1
Diabetes mellitus type 2	E10, E11, E12, E13, E14
Hypertension	I10, I11, I12, I13, I15
Chronic liver disease	A52.74, B67.0, B67.5, K70.0, K70.2, K70.30, K70.31, K70.9, K71.0, K71.10, K71.11, K71.7, K71.8, K71.9, K74.0-K74.5, K74.60, K74.69, K75.1, K75.89, K75.9, K76.0-K76.7, K76.81, K76.89, K76.9, K77, O26.611-O26.613, O26.619, O26.62, O26.63
Peripheral Artery Disease	I70.0, I70.1, I70.2, I70.3, I70.4, I70.5, I70.8, I70.9

Supplemental Table 2: Demographic and health characteristics of the overall cohort and by race

Characteristics	Overall N=5,216	White 2615 (50%)	Black 2308 (44%)	Other 293 (6%)
AKI (%)				
No AKI	3561 (68)	1924 (74)	1427 (62)	210 (72)
AKI stage 1	961 (18)	436 (17)	475 (21)	50 (17)
AKI stage 2	223 (4)	94 (4)	117 (5)	12 (4)
AKI stage 3	270 (5)	97 (4)	157 (7)	16 (6)
AKI KRT	201 (4)	64 (2)	132 (6)	5 (2)
Patient demographic characteristics				
Age (median (IQR))	70 (61-76)	72 (63-78)	67 (59-74)	70 (61-75)
Sex = Male (%)	4908 (94)	2481 (95)	2154 (93)	273 (93)
ADI ^a (median (IQR))	52 (40-60)	51 (37-9)	53.7 (42-61)	52 (40-58)
BMI category (%)				
Norm/Underweight	791 (15)	375 (14)	376 (16)	40 (14)
Overweight	1746 (34)	921 (35)	721 (31)	104 (36)
Obese	2679 (51)	1319 (50)	1211 (53)	149 (51)
Smoke (%)				
Never smoker	2893 (56)	1433 (55)	1281 (56)	179 (61)
Former smoker	1490 (29)	764 (29)	652 (28)	74 (25)
Current smoker	833 (16)	418 (16)	375 (16)	40 (14)
Hospital characteristics, no. (%)				
Ventilator (%)	863 (17)	387 (15)	424 (18)	52 (18)
ICU (%)	1693 (33)	843 (32)	754 (33)	96 (33)
Comorbidities				
Cancer	799 (15)	387 (15)	380 (17)	32 (11)
Cardiovascular disease	1588 (30)	903 (35)	601 (26)	84 (29)
Cerebrovascular disease	726 (14)	371 (14)	320 (14)	35 (12)
Chronic liver disease	505 (10)	279 (11)	201 (9)	25 (9)
Chronic lung disease	1302 (25)	734 (28)	497 (22)	71 (24)
Dementia	657 (13)	403 (15)	218 (9)	36 (12)
Diabetes mellitus type 2	2537 (49)	1214 (46)	1161 (50)	162 (55)
Hypertension	3985 (76)	1895 (73)	1867 (81)	223 (76)
Peripheral artery disease	202 (4)	113 (4)	78 (3)	11 (4)
Charlson comorbidity score (mean (sd))	2.4 (2.4)	2.4 (2.4)	2.4 (2.5)	2.2 (2.1)
Laboratory tests and vital signs (median (IQR))^b				
Albumin, g/dL (n=5063)	3.5 (3.1-3.9)	3.5 (3.1-3.9)	3.5 (3.1-3.9)	3.5 (3.1-3.9)
Baseline eGFR, ml/min/1.73 m ²	73.0 (56.9-88.6)	71.1 (54.9-85.9)	74.6 (58.9-92.9)	77.0 (57.1-90.4)
Baseline serum creatinine, mg/dL	1.1 (0.9-1.3)	1.1 (0.9-1.3)	1.2 (1.0-1.4)	1.0 (0.9-1.2)

Blood pressure (diastolic), mmHg (n=5214)	76 (71-81)	74 (69-80)	78 (73-83)	76 (71-81)
Blood pressure (systolic), mmHg (n=5214)	133 (124-142)	131 (123-141)	134 (125-143)	131 (124-138)
Blood urea nitrogen, mg/dL (n=5154)	18 (13-28)	19 (14-28)	18 (13- 29)	17 (13-27)
Hemoglobin, g/dL (n=5070)	13.3 (11.8-14.5)	13.4 (11.9-14.6)	13.2 (11.7-14.3)	13.5 (12.2-14.8)
Lymphocytes, % (n=4805)	16 (10-24)	16 (10-23)	17 (11-25)	15 (10-23)
Platelet count, $\times 10^9/L$ (n=5173)	194 (151-253)	191 (146-247)	199 (156-262)	195 (156-258)
Serum bicarbonate, mEq/L (n=5212)	24.0 (22.0-26.0)	24.0 (22.0-26.0)	24.0 (22.0-26.0)	24.0 (22.0-26.0)
White blood cell count, $\times 10^9/L$ (n=5041)	6.3 (4.8-8.4)	6.3 (4.8- 8.5)	6.2 (4.7-8.1)	6.2 (4.8-8.4)
Medications (N (%))				
ACE-I/ARB	1718 (33)	840 (32)	771 (33)	107 (37)
Antibiotics	86 (2)	48 (2)	34 (2)	4 (1)
Anticoagulant	415 (8)	246 (9)	152 (7)	17 (6)
Antiviral	68 (1)	27 (1)	39 (2)	2 (0.7)
Aspirin	913 (18)	402 (15)	450 (20)	61 (21)
Beta blocker	1546 (30)	800 (31)	657 (29)	89 (30)
Chemotherapy agents	35 (0.7)	16 (0.6)	16 (0.7)	3 (1)
Diuretic: Loop	629 (12)	340 (13)	259 (11)	30 (10)
Diuretic: MRA	214 (4)	90 (3)	118 (5)	6 (2)
Diuretic: Thiazide/other	808 (16)	311 (12)	452 (20)	45 (15)
Immunosuppressants	27 (0.5)	10 (0.4)	15 (0.6)	2 (0.7)
NSAID	656 (13)	287 (11)	325 (14)	44 (15)
Proton pump inhibitors	1213 (23)	682 (26)	473 (21)	58 (20)
<p>^a ADI is a measure of socioeconomic disadvantage, with a range from low to high disadvantage of 0 to 100.</p> <p>^b Laboratory values are reported for those who had a measure. N with the measure is reported. AKI, acute kidney injury; IQR, interquartile range; ADI, Area Deprivation Index; BMI, body mass index; ICU, intensive care unit; eGFR, estimated glomerular filtration rate; ACEI/ARB, angiotensin converting enzyme inhibitors/angiotensin II receptor blockers; MRA, mineralocorticoid receptor antagonists; NSAID, nonsteroidal anti-inflammatory drugs.</p>				

Supplemental Table 3: Characteristics of participants excluded due to a missing measure of baseline serum creatinine

Characteristics	Missing (n=1006)	Overall, non-missing (n=5216)
Age, median (IQR), yr	71 (58-80)	70 (61-76)
Race, no. (%)		
White	552 (55)	2615 (50)
Black	401 (40)	2308 (44)
Other	53 (5)	293 (6)
Sex, no. (%), men	948 (94)	4908 (94)
ADI ^a , median (IQR)	52 (37-61)	52 (40-60)
BMI category, no. (%)		
Underweight/Normal	219 (22)	791 (15)
Overweight	368 (37)	1746 (34)
Obese	419 (42)	2679 (51)
Smoking status, no. (%)		
Never smoked	620 (65)	2893 (56)
Former smoker	179 (19)	1490 (29)
Current smoker	160 (17)	833 (16)
Hospital characteristics, no. (%)		
ICU	288 (29)	1693 (33)
Ventilator	109 (11)	863 (17)
Comorbidities, no. (%)		
Cancer	44 (4)	799 (15)
Cardiovascular disease	110 (11)	1588 (30)
Cerebrovascular disease	101 (10)	726 (14)
Chronic liver disease	13 (1)	505 (10)
Chronic lung disease	110 (11)	1302 (25)
Dementia	159 (16)	657 (13)
Diabetes mellitus type 2	202 (20)	2537 (49)
Hypertension	344 (34)	3985 (76)
Peripheral artery disease	11 (1)	202 (4)
Laboratory tests & vital signs, median (IQR)^b		
Albumin, g/dL	3.5 (3.1-3.9) (n=944)	3.5 (3.1-3.9) (n=5063)
Baseline eGFR, ml/min/1.73 m ²	NA	73 (57-89)
Baseline serum creatinine, mg/dL	NA	1.1 (0.9-1.3)
Blood pressure (diastolic), mmHg	76 (70-83) (n=990)	76 (71-81) (n=5214)
Blood pressure (systolic), mmHg	131 (121-143) (n=990)	133 (124-142) (n=5,214)

Blood urea nitrogen, mg/dL	18 (13-28) (n=964)	18 (13-28) (n=5154)
Hemoglobin, g/dL	13.4 (12.0-14.8) (n=957)	13.3 (11.8-14.5) (n=5070)
Lymphocytes, %	16 (10-24) (n=895)	16 (10-24) (n=4805)
Platelet count, $\times 10^9/L$	198 (157-257) (n=975)	194 (151-253) (n=5173)
Serum bicarbonate, mmol/L	25.0 (22.0-27.0) (n=980)	24.0 (22.0-26.0) (n=5212)
White blood cell count, $\times 10^9/L$	6.2 (4.8-8.7) (n=951)	6.3 (4.8-8.4) (n=5041)

Medications, no. (%)

ACEI/ARB	89 (9)	1718 (33)
Antibiotics	8 (1)	86 (2)
Anticoagulant	16 (2)	415 (8)
Antiviral	3 (0)	68 (1)
Aspirin	50 (5)	913 (18)
Beta-blockers	81 (8)	1546 (30)
Chemotherapy agents	0 (0)	35 (0.7)
Diuretics: Loop	19 (2)	629 (12)
Diuretics: MRA	4 (0.4)	214 (4)
Diuretics: Thiazide/other	62 (6)	808 (16)
Immunosuppressants	2 (0)	27 (0.5)
NSAID	51 (5)	656 (13)
Proton pump inhibitors	54 (5)	1213 (23)

Outcomes, no. (%)

Discharge	765 (76)	4095 (79)
KRT	7 (0.7)	201 (4)
Length of stay, median (IQR), days	8 (4-14)	7 (3-13)
Mortality	181 (18)	832 (16)

^a ADI is a measure of socioeconomic disadvantage, with a range from low to high disadvantage of 0 to 100.

^b Laboratory values are reported for those who had a measure. N with the measure is reported.

IQR, interquartile range; ADI, Area Deprivation Index; BMI, body mass index; ICU, intensive care unit; eGFR, estimated glomerular filtration rate; ACEI/ARB, angiotensin converting enzyme inhibitors/angiotensin II receptor blockers; MRA, mineralocorticoid receptor antagonists; NSAID, nonsteroidal anti-inflammatory drugs; KRT, kidney replacement therapy.

Supplemental Table 4: Demographic and health characteristics associated with risk of AKI in unadjusted analyses

Characteristics	Unadjusted OR (95% CI)		Fully adjusted OR (95% CI)		Charlson model Adjusted OR (95% CI)	
	Any AKI	AKI severity	Any AKI	AKI severity	Any AKI	AKI severity
Age in 10 years	1.24 (1.18-1.30)	1.22 (1.17-1.28)	1.10 (1.03-1.17)	1.09 (1.03-1.16)	1.25 (1.19-1.33)	1.24 (1.18-1.31)
Race (reference = white)						
Black	1.72 (1.52-1.94)	1.77 (1.57-1.99)	1.93 (1.68-2.21)	1.97 (1.73-2.24)	1.90 (1.67-2.16)	1.94 (1.71-2.20)
Other	1.10 (0.84-1.43)	1.10 (0.85-1.44)	1.13 (0.84-1.50)	1.11 (0.84-1.45)	1.15 (0.86-1.51)	1.14 (0.86-1.48)
Sex-men	2.71 (1.99-3.76)	2.68 (1.96-3.68)	2.17 (1.56-3.07)	2.24 (1.62-3.15)	2.18 (1.58-3.07)	2.21 (1.61-3.10)
BMI category (reference = Underweight/Normal)						
Overweight	1.17 (0.97-1.42)	1.19 (0.99-1.43)	1.18 (0.96-1.45)	1.17 (0.96-1.42)	1.25 (1.03-1.52)	1.26 (1.04-1.52)
Obese	1.37 (1.15-1.64)	1.39 (1.17-1.65)	1.37 (1.12-1.68)	1.36 (1.12-1.65)	1.55 (1.28-1.89)	1.55 (1.29-1.87)
Smoking status (reference = Never smoker)						
Former smoker	1.34 (1.17-1.52)	1.32 (1.16-1.50)	1.22 (1.06-1.41)	1.19 (1.04-1.37)	1.20 (1.05-1.38)	1.18 (1.03-1.35)
Current smoker	0.91 (0.76-1.08)	0.90 (0.76-1.07)	1.04 (0.86-1.25)	1.04 (0.87-1.24)	0.97 (0.81-1.16)	0.97 (0.81-1.15)
ADI			1.00 (0.99-1.00)	1.00 (0.99-1.00)	1.00 (1.00-1.00)	1.00 (1.00-1.00)
Comorbidities						
Charlson comorbidity score (every IQR)*	1.25 (1.17-1.35)	1.24 (1.15-1.32)			1.12 (1.04-1.21)	1.11 (1.03-1.20)
Cancer	1.12 (0.95-1.31)	1.12 (0.96-1.31)	0.96 (0.81-1.14)	0.96 (0.81-1.13)		
Cardiovascular disease	1.33 (1.18-1.51)	1.31 (1.16-1.48)	0.86 (0.74-1.00)	0.87 (0.76-1.01)		
Cerebrovascular disease	1.16 (0.98-1.37)	1.13 (0.96-1.33)	1.04 (0.86-1.25)	1.04 (0.87-1.23)		
Dementia	0.90 (0.75-1.08)	0.86 (0.72-1.02)	0.86 (0.70-1.06)	0.83 (0.68-1.01)		
Diabetes mellitus type 2	1.69 (1.51-1.91)	1.67 (1.48-1.87)	1.27 (1.12-1.46)	1.25 (1.10-1.43)		
Hypertension	2.29 (1.96-2.68)	2.24 (1.92-2.61)	1.32 (1.10-1.58)	1.29 (1.08-1.54)		
Chronic lung disease	1.12 (0.98-1.28)	1.09 (0.96-1.25)	1.13 (0.98-1.32)	1.09 (0.95-1.26)		
Liver disease	0.93 (0.76-1.13)	0.94 (0.77-1.14)	1.01 (0.81-1.25)	1.01 (0.82-1.24)		
Peripheral artery disease	1.17 (0.87-1.57)	1.14 (0.86-1.52)	1.00 (0.72-1.37)	0.99 (0.73-1.34)		
eGFR category (reference = eGFR > 90 ml/min/1.73 m ²)						
61-90 ml/min/1.73 m ²	1.43 (1.21-1.69)	1.44 (1.22-1.70)	1.37 (1.15-1.64)	1.41 (1.18-1.69)		
46-60 ml/min/1.73 m ²	2.99 (2.47-3.63)	2.86 (2.37-3.45)	2.62 (2.11-3.25)	2.53 (2.05-3.12)		
30-45 ml/min/1.73 m ²	4.16 (3.32-5.23)	3.86 (3.10-4.79)	3.34 (2.58-4.33)	3.16 (2.47-4.04)		
<30 ml/min/1.73 m ²	8.42 (5.82-12.36)	8.19 (5.93-11.32)	7.34 (4.93-11.05)	7.33 (5.19-10.35)		

Medications						
ACEI/ARB	1.63 (1.44-1.84)	1.59 (1.41-1.79)	1.24 (1.08-1.42)	1.22 (1.07-1.39)	1.37 (1.20-1.56)	1.34 (1.18-1.52)
Aspirin	1.23 (1.06-1.43)	1.19 (1.03-1.38)	0.95 (0.80-1.12)	0.93 (0.79-1.09)	0.95 (0.81-1.12)	0.93 (0.79-1.09)
Antibiotics	1.04 (0.65-1.62)	1.05 (0.68-1.65)	1.08 (0.65-1.74)	1.09 (0.68-1.72)	1.08 (0.66-1.73)	1.10 (0.69-1.73)
Anticoagulant	1.25 (1.02-1.54)	1.21 (0.99-1.48)	0.96 (0.76-1.21)	0.94 (0.75-1.17)	0.92 (0.74-1.16)	0.90 (0.73-1.12)
Antiviral	0.90 (0.52-1.49)	0.94 (0.56-1.59)	0.98 (0.55-1.71)	1.14 (0.65-1.92)	0.92 (0.52-1.57)	1.05 (0.60-1.76)
Beta blocker	1.52 (1.34-1.72)	1.49 (1.32-1.68)	1.05 (0.90-1.22)	1.05 (0.91-1.21)	1.15 (1.00-1.33)	1.15 (1.00-1.32)
Chemotherapy agents	1.44 (0.71-2.81)	1.36 (0.71-2.6)	1.63 (0.75-3.42)	1.32 (0.64-2.60)	1.48 (0.71-3.04)	1.27 (0.63-2.46)
Diuretics	1.85 (1.64-2.10)	1.82 (1.61-2.05)	1.31 (1.14-1.52)	1.30 (1.13-1.49)	1.49 (1.30-1.71)	1.48 (1.29-1.68)
Immunosuppressants	2.71 (1.27-5.91)	2.65 (1.32-5.32)	2.25 (1.00-5.17)	2.13 (1.01-4.40)	2.51 (1.13-5.68)	2.39 (1.14-4.88)
NSAID	0.87 (0.72-1.04)	0.87 (0.73-1.04)	0.99 (0.81-1.20)	0.99 (0.82-1.19)	0.90 (0.74-1.08)	0.90 (0.75-1.08)
PPI	0.98 (0.85-1.13)	0.98 (0.86-1.12)	0.86 (0.74-1.00)	0.89 (0.77-1.03)	0.86 (0.74-1.00)	0.87 (0.76-1.01)
<p>* The odds ratio for Charlson comorbidity score is for change by one interquartile range (a score difference of 3). ACE-I/ARB: angiotensin converting enzyme inhibitors/angiotensin II receptor blockers, NSAID: nonsteroidal anti-inflammatory drugs, PPI: proton pump inhibitors.</p>						

Supplemental Table 5: Demographic and health characteristics associated with the composite outcome of AKI stage 3, AKI requiring KRT, or death, and the composite outcome of AKI requiring KRT or death.

Characteristics	AKI stage 3, AKI requiring KRT, or death, OR (95% CI)	AKI requiring KRT or death, OR (95% CI)
Age in 10 years	1.55 (1.44, 1.67)	1.67 (1.55, 1.81)
Race (reference = white)		
Black	1.39 (1.19, 1.63)	1.28 (1.09, 1.50)
Other	1.06 (0.76, 1.47)	1.08 (0.76, 1.50)
Sex: Male	2.20 (1.40, 3.65)	2.01 (1.25, 3.42)
BMI (reference = underweight/normal weight)		
Obese	1.26 (1.01, 1.59)	1.28 (1.02, 1.63)
Overweight	1.21 (0.97, 1.52)	1.25 (0.99, 1.58)
Smoker (reference = never smoker)		
Current smoker	0.94 (0.75, 1.17)	0.89 (0.70, 1.13)
Former smoker	1.11 (0.94, 1.30)	1.10 (0.93, 1.30)
Cardiovascular disease	1.18 (1.00, 1.39)	1.25 (1.05, 1.48)
Diabetes mellitus type 2	1.24 (1.06, 1.45)	1.30 (1.10, 1.53)
Hypertension	1.03 (0.84, 1.27)	0.95 (0.77, 1.18)
ACEI/ARB	0.92 (0.78, 1.09)	0.93 (0.78, 1.10)
Anticoagulant	0.87 (0.66, 1.13)	0.90 (0.68, 1.18)
Aspirin	0.95 (0.78, 1.15)	0.88 (0.72, 1.08)
Beta blocker	0.87 (0.73, 1.04)	0.92 (0.76, 1.10)
Diuretics	1.05 (0.88, 1.24)	1.03 (0.86, 1.22)
Immunosuppressants	1.72 (0.68, 3.99)	1.72 (0.65, 4.07)
eGFR category (reference = eGFR > 90 ml/min/1.73 m ²)		
61-90 ml/min/1.73 m ²	1.22 (0.98, 1.54)	1.18 (0.93, 1.51)
46-60 ml/min/1.73 m ²	1.76 (1.36, 2.30)	1.61 (1.22, 2.12)
30-45 ml/min/1.73 m ²	1.79 (1.33, 2.43)	1.56 (1.14, 2.14)
< 30 ml/min/1.73 m ²	4.93 (3.30, 7.38)	2.09 (1.36, 3.20)
Models estimates are adjusted for listed characteristics in the table. AKI: acute kidney injury; KRT: kidney replacement therapy; OR: odds ratios; 95% CI: 95% confidence interval; BMI: body mass index; ACEI/ARB: angiotensin converting enzyme inhibitors/ angiotensin II receptor blockers.		

Supplemental Table 6: Outcomes in the overall cohort of hospitalized COVID-19 patients and by AKI stage among those who were discharged or had died

Characteristics	Overall, n=4858	AKI Status			AKI Stage				
		No AKI, n=3310 (68%)	AKI, n=1548 (32%)	p-value	Stage 1, n=893 (58%)	Stage 2, n=211 (14%)	Stage 3, n=256 (17%)	KRT, n=188 (12%)	p-value
Mortality, no. (%)	832 (17)	273 (8)	559 (36)	<0.001	184 (21)	86 (41)	160 (63)	129 (69)	<0.001
Ventilator, no. (%)	818 (17)	261 (8)	557 (36)	<0.001	159 (18)	90 (43)	150 (59)	158 (84)	<0.001
Discharge, no. (%)	4095 (84)	3075 (92)	1020 (66)	<0.001	722 (81)	133 (63)	102 (40)	63 (34)	<0.001
Length of stay, median (IQR), days	6 (3-12)	5 (2-10)	9 (5-17)	<0.001	7 (4-14)	11 (6-24)	10 (6-17)	17 (10-33)	<0.001

AKI, acute kidney injury; KRT, kidney replacement therapy; IQR, interquartile range.

Supplemental Table 7A: Association of AKI status with mortality overall and in consideration of potential effect modification. (A) No interactions, and with interaction of AKI with Black race, diabetes, and hypertension; (B) Interactions with age, ADI, BMI category, and eGFR category

Characteristics	AKI status, no interaction		AKI*Black		AKI*Diabetes		Hypertension	
	OR (95% CI)	Beta (se)	OR (95% CI)	Beta (se)	OR (95% CI)	Beta (se)	OR (95% CI)	Beta (se)
AKI	6.71 (5.62, 8.04)	1.90 (0.09)	5.48 (4.39, 6.84)	1.70 (0.11)	7.16 (5.57, 9.24)	1.97 (0.13)	8.25 (5.56, 12.34)	2.11 (0.20)
Age in 10 years	1.95 (1.78, 2.14)	0.67 (0.05)	1.95 (1.78, 2.14)	0.67 (0.05)	1.95 (1.78, 2.13)	0.67 (0.05)	1.94 (1.78, 2.13)	0.67 (0.05)
Male	1.26 (0.77, 2.20)	0.23 (0.27)	1.25 (0.76, 2.18)	0.22 (0.27)	1.27 (0.77, 2.21)	0.24 (0.27)	1.25 (0.76, 2.19)	0.23 (0.27)
Black	0.87 (0.72, 1.03)	-0.14 (0.09)	0.61 (0.45, 0.82)	-0.50 (0.15)	0.87 (0.72, 1.04)	-0.14 (0.09)	0.87 (0.72, 1.04)	-0.14 (0.09)
BMI category (reference = Underweight/Normal)								
Obese	1.07 (0.83, 1.39)	0.07 (0.13)	1.07 (0.83, 1.38)	0.06 (0.13)	1.07 (0.83, 1.39)	0.07 (0.13)	1.07 (0.83, 1.39)	0.07 (0.13)
Overweight	1.15 (0.89, 1.48)	0.14 (0.13)	1.14 (0.89, 1.47)	0.13 (0.13)	1.15 (0.89, 1.48)	0.14 (0.13)	1.15 (0.89, 1.48)	0.14 (0.13)
Smoking status (reference = Never smoked)								
Current smoker	0.89 (0.68, 1.15)	-0.12 (0.13)	0.90 (0.69, 1.16)	-0.11 (0.13)	0.89 (0.68, 1.15)	-0.12 (0.13)	0.89 (0.68, 1.15)	-0.12 (0.13)
Former smoker	1.03 (0.86, 1.24)	0.03 (0.09)	1.03 (0.86, 1.24)	0.03 (0.09)	1.03 (0.86, 1.24)	0.03 (0.09)	1.03 (0.86, 1.24)	0.03 (0.09)
Hypertension	0.87 (0.69, 1.10)	-0.14 (0.12)	0.88 (0.69, 1.11)	-0.13 (0.12)	0.87 (0.68, 1.10)	-0.14 (0.12)	0.98 (0.72, 1.37)	-0.02 (0.17)
Diabetes	1.24 (1.03, 1.48)	0.21 (0.09)	1.24 (1.03, 1.48)	0.21 (0.09)	1.33 (1.02, 1.73)	0.28 (0.13)	1.24 (1.03, 1.48)	0.21 (0.09)
Cardiovascular disease	1.37 (1.14, 1.65)	0.31 (0.09)	1.36 (1.13, 1.64)	0.31 (0.09)	1.37 (1.14, 1.65)	0.31 (0.09)	1.36 (1.13, 1.64)	0.31 (0.09)
ACEI/ARB	0.77 (0.64, 0.93)	-0.26 (0.10)	0.77 (0.64, 0.93)	-0.26 (0.10)	0.77 (0.63, 0.93)	-0.26 (0.10)	0.77 (0.64, 0.93)	-0.26 (0.10)
Diuretics	0.88 (0.73, 1.07)	-0.12 (0.10)	0.88 (0.73, 1.07)	-0.12 (0.10)	0.88 (0.73, 1.07)	-0.12 (0.10)	0.89 (0.73, 1.07)	-0.12 (0.10)
Anticoagulant	0.95 (0.71, 1.28)	-0.05 (0.15)	0.95 (0.70, 1.27)	-0.05 (0.15)	0.96 (0.71, 1.28)	-0.05 (0.15)	0.96 (0.71, 1.28)	-0.04 (0.15)
Immunosuppressants	1.60 (0.57, 4.09)	0.47 (0.50)	1.62 (0.58, 4.18)	0.48 (0.50)	1.60 (0.57, 4.09)	0.47 (0.50)	1.59 (0.56, 4.07)	0.46 (0.50)
Beta blocker	0.85	-0.16 (0.10)	0.86	-0.15	0.85	-0.16	0.85	-0.16

	(0.70, 1.04)		(0.70, 1.05)	(0.10)	(0.70, 1.04)	(0.10)	(0.70, 1.04)	(0.10)
Aspirin	0.99 (0.79, 1.23)	-0.01 (0.11)	0.99 (0.79, 1.23)	-0.01 (0.11)	0.99 (0.79, 1.23)	-0.01 (0.11)	0.99 (0.79, 1.23)	-0.01 (0.11)
eGFR category (reference = eGFR > 90 ml/min/1.73 m ²)								
61-90 ml/min/1.73 m ²	0.98 (0.75, 1.28)	-0.02 (0.14)	0.96 (0.74, 1.26)	-0.04 (0.14)	0.98 (0.76, 1.28)	-0.02 (0.14)	0.98 (0.76, 1.29)	-0.02 (0.14)
46-60 ml/min/1.73 m ²	0.98 (0.72, 1.33)	-0.02 (0.15)	0.95 (0.70, 1.30)	-0.05 (0.16)	0.98 (0.73, 1.34)	-0.02 (0.16)	0.99 (0.73, 1.35)	-0.01 (0.16)
30-45 ml/min/1.73 m ²	0.78 (0.55, 1.10)	-0.25 (0.18)	0.77 (0.54, 1.09)	-0.26 (0.18)	0.78 (0.55, 1.11)	-0.25 (0.18)	0.78 (0.55, 1.11)	-0.24 (0.18)
<30 ml/min/1.73 m ²	0.74 (0.46, 1.18)	-0.30 (0.24)	0.72 (0.45, 1.16)	-0.32 (0.24)	0.74 (0.46, 1.19)	-0.30 (0.24)	0.75 (0.46, 1.20)	-0.29 (0.24)
Interaction term								
AKI*Black			1.74 (1.21, 2.51)	0.55 (0.19)				
AKI*Diabetes					0.88 (0.63, 1.24)	-0.12 (0.17)		
AKI*Hypertension							0.78 (0.50, 1.20)	-0.25 (0.22)
AKI: acute kidney injury; OR: odds ratios; 95% CI: 95% confidence interval; BMI: body mass index; ACEI/ARB: angiotensin converting enzyme inhibitors/ angiotensin II receptor blockers; eGFR, estimated glomerular filtration rate.								

Supplemental Table 7B: Association of AKI status with mortality overall and in consideration of potential effect modification. (B)
Interactions of AKI with age, ADI, BMI category, and eGFR category

Characteristics	AKI*Age median		AKI*ADI median		AKI*BMI category		AKI*eGFR category	
	OR (95% CI)	Beta (se)	OR (95% CI)	Beta (se)	OR (95% CI)	Beta (se)	OR (95% CI)	Beta (se)
AKI	12.81 (9.08, 18.42)	2.55 (0.18)	6.35 (5.02, 8.08)	1.85 (0.12)	5.18 (3.45, 7.84)	1.65 (0.21)	7.42 (4.74, 11.76)	2.00 (0.23)
Age in 10 years			1.94 (1.78, 2.13)	0.66 (0.05)	1.95 (1.78, 2.14)	0.67 (0.05)	1.94 (1.77, 2.12)	0.66 (0.05)
Male	1.31 (0.80, 2.28)	0.27 (0.27)	1.26 (0.76, 2.19)	0.23 (0.27)	1.26 (0.76, 2.20)	0.23 (0.27)	1.25 (0.76, 2.19)	0.23 (0.27)
Black	0.80 (0.68, 0.96)	-0.22 (0.09)	0.87 (0.73, 1.04)	-0.14 (0.09)	0.87 (0.72, 1.04)	-0.14 (0.09)	0.87 (0.73, 1.04)	-0.14 (0.09)
BMI category (reference = Underweight/Normal)								
Obesity	0.86 (0.67, 1.11)	-0.15 (0.13)	1.07 (0.83, 1.39)	0.07 (0.13)	0.98 (0.69, 1.41)	-0.02 (0.18)	1.07 (0.82, 1.38)	0.06 (0.13)
Overweight	1.07 (0.84, 1.38)	0.07 (0.13)	1.15 (0.89, 1.48)	0.14 (0.13)	0.91 (0.64, 1.30)	-0.09 (0.18)	1.14 (0.89, 1.47)	0.13 (0.13)
Smoking status (reference = Never smoker)								
Current smoker	0.80 (0.62, 1.04)	-0.22 (0.13)	0.89 (0.68, 1.16)	-0.11 (0.13)	0.88 (0.68, 1.14)	-0.12 (0.13)	0.88 (0.68, 1.15)	-0.12 (0.13)
Former smoker	1.05 (0.88, 1.26)	0.05 (0.09)	1.03 (0.86, 1.23)	0.03 (0.09)	1.03 (0.85, 1.23)	0.03 (0.09)	1.03 (0.86, 1.24)	0.03 (0.09)
Hypertension	0.95 (0.75, 1.20)	-0.05 (0.12)	0.88 (0.69, 1.11)	-0.13 (0.12)	0.87 (0.68, 1.10)	-0.14 (0.12)	0.87 (0.69, 1.11)	-0.14 (0.12)
Diabetes	1.16 (0.97, 1.38)	0.15 (0.09)	1.24 (1.03, 1.48)	0.21 (0.09)	1.23 (1.03, 1.47)	0.21 (0.09)	1.24 (1.03, 1.48)	0.21 (0.09)
Cardiovascular disease	1.45 (1.21, 1.74)	0.37 (0.09)	1.36 (1.13, 1.64)	0.31 (0.09)	1.37 (1.14, 1.65)	0.31 (0.09)	1.36 (1.13, 1.64)	0.31 (0.09)
ACEI/ARB	0.74 (0.61, 0.89)	-0.30 (0.10)	0.77 (0.63, 0.93)	-0.26 (0.10)	0.77 (0.64, 0.93)	-0.26 (0.10)	0.77 (0.64, 0.93)	-0.26 (0.10)
Diuretics	0.89 (0.74, 1.08)	-0.11 (0.10)	0.89 (0.73, 1.08)	-0.12 (0.10)	0.88 (0.73, 1.07)	-0.13 (0.10)	0.89 (0.73, 1.08)	-0.12 (0.10)
Anticoagulant	0.96 (0.72, 1.28)	-0.04 (0.15)	0.96 (0.71, 1.28)	-0.04 (0.15)	0.94 (0.70, 1.26)	-0.06 (0.15)	0.95 (0.70, 1.27)	-0.05 (0.15)
Immunosuppressants	1.31 (0.47, 3.31)	0.27 (0.49)	1.60 (0.57, 4.12)	0.47 (0.50)	1.54 (0.55, 3.94)	0.43 (0.50)	1.59 (0.57, 4.08)	0.46 (0.50)

Beta blocker	0.82 (0.68, 1.00)	-0.19 (0.10)	0.85 (0.70, 1.04)	-0.16 (0.10)	0.86 (0.70, 1.04)	-0.16 (0.10)	0.85 (0.70, 1.04)	-0.16 (0.10)
Aspirin	1.00 (0.80, 1.24)	0.00 (0.11)	0.99 (0.79, 1.24)	-0.01 (0.11)	0.99 (0.79, 1.23)	-0.01 (0.11)	1.00 (0.80, 1.24)	0.00 (0.11)
eGFR category (reference = eGFR > 90 ml/min/1.73 m2)								
61-90 ml/min/1.73 m2	1.11 (0.86, 1.45)	0.11 (0.13)	0.98 (0.76, 1.28)	-0.02 (0.14)	0.98 (0.75, 1.28)	-0.02 (0.14)	0.95 (0.65, 1.43)	-0.05 (0.20)
46-60 ml/min/1.73 m2	1.27 (0.94, 1.71)	0.24 (0.15)	0.98 (0.73, 1.33)	-0.02 (0.16)	0.98 (0.73, 1.34)	-0.02 (0.16)	1.29 (0.83, 2.05)	0.26 (0.23)
30-45 ml/min/1.73 m2	1.13 (0.81, 1.59)	0.13 (0.17)	0.78 (0.55, 1.10)	-0.25 (0.18)	0.78 (0.55, 1.10)	-0.25 (0.18)	0.88 (0.50, 1.52)	-0.13 (0.28)
<30 ml/min/1.73 m2	1.14 (0.72, 1.79)	0.13 (0.23)	0.75 (0.46, 1.19)	-0.29 (0.24)	0.74 (0.46, 1.19)	-0.30 (0.24)	1.06 (0.39, 2.54)	0.06 (0.47)
Age above median	5.25 (3.75, 7.50)	1.66 (0.18)						
ADI above median			0.80 (0.62, 1.03)	-0.23 (0.13)				
Interaction term								
AKI*Age above median	0.38 (0.26, 0.57)	-0.96 (0.20)						
AKI*ADI above median			1.13 (0.81, 1.58)	0.12 (0.17)				
AKI*Obesity					1.22 (0.76, 1.97)	0.20 (0.24)		
AKI*Overweight					1.57 (0.96, 2.57)	0.45 (0.25)		
AKI*eGFR 61-90 ml/min/1.73 m2							1.08 (0.64, 1.80)	0.08 (0.26)
AKI*eGFR 46-60 ml/min/1.73 m2							0.64 (0.36, 1.12)	-0.45 (0.29)
AKI*eGFR 30-45 ml/min/1.73 m2							0.83 (0.43, 1.63)	-0.18 (0.34)
AKI*eGFR < 30 ml/min/1.73 m2							0.63 (0.23, 1.88)	-0.47 (0.53)
AKI: acute kidney injury; OR: odds ratios; 95% CI: 95% confidence interval; BMI: body mass index; ACEI/ARB: angiotensin converting enzyme inhibitors/ angiotensin II receptor blockers; eGFR, estimated glomerular filtration rate.								

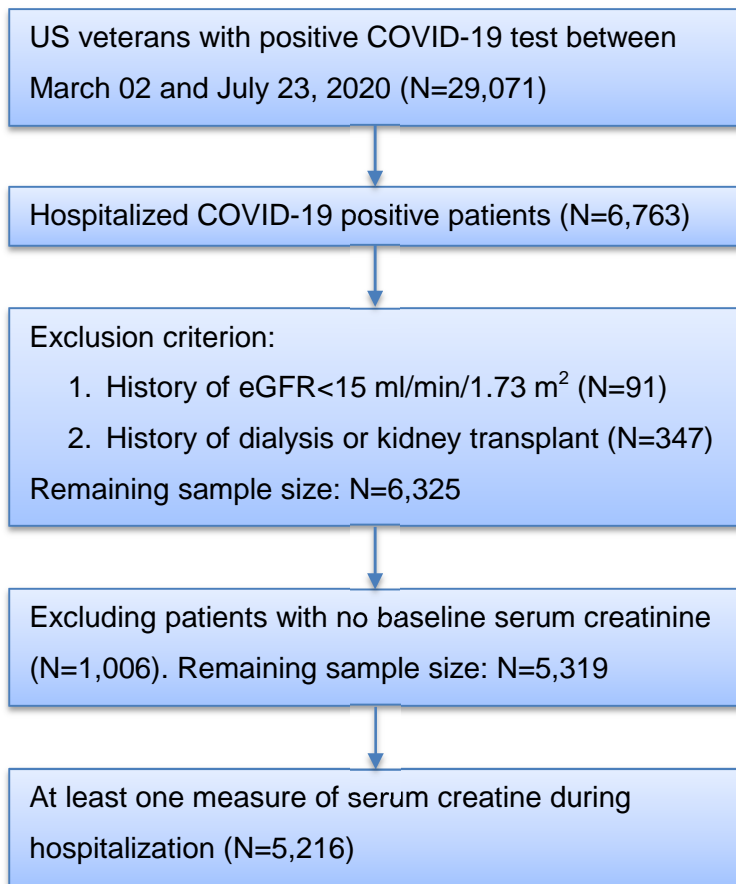
Supplemental Table 8: Association of AKI severity with mortality

Characteristics	OR (95% CI)	Beta (se)
AKI stages		
AKI stage 1	2.90 (2.32, 3.62)	1.06 (0.11)
AKI stage 2	8.50 (6.14, 11.74)	2.14 (0.17)
AKI stage 3	23.07 (17.01, 31.46)	3.14 (0.16)
AKI KRT	40.61 (28.38, 58.70)	3.70 (0.19)
Age in 10 years	2.11 (1.92, 2.32)	0.74 (0.05)
Male	1.19 (0.71, 2.12)	0.18 (0.28)
Black	0.72 (0.60, 0.87)	-0.32 (0.10)
BMI category (reference = Underweight/Normal)		
Obese	1.00 (0.77, 1.31)	0.00 (0.14)
Overweight	1.10 (0.85, 1.43)	0.09 (0.13)
Smoking status (reference = Never smoked)		
Current smoker	0.92 (0.69, 1.21)	-0.08 (0.14)
Former smoker	1.05 (0.87, 1.28)	0.05 (0.10)
Hypertension	0.90 (0.70, 1.16)	-0.10 (0.13)
Diabetes	1.26 (1.04, 1.52)	0.23 (0.10)
Cardiovascular disease	1.41 (1.16, 1.71)	0.34 (0.10)
ACEI/ARB	0.74 (0.61, 0.91)	-0.30 (0.10)
Diuretics	0.83 (0.67, 1.02)	-0.18 (0.11)
Anticoagulant	1.00 (0.73, 1.36)	0.00 (0.16)
Immunosuppressants	1.57 (0.52, 4.21)	0.45 (0.53)
Beta blocker	0.82 (0.67, 1.02)	-0.19 (0.11)
Aspirin	1.05 (0.83, 1.32)	0.05 (0.12)
eGFR < 60 ml/min/1.73 m ²	0.85 (0.69, 1.03)	-0.17 (0.10)
AKI: acute kidney injury; OR: odds ratios; 95% CI: 95% confidence interval; BMI: body mass index; ACEI/ARB: angiotensin converting enzyme inhibitors/ angiotensin II receptor blockers; eGFR, estimated glomerular filtration rate.		

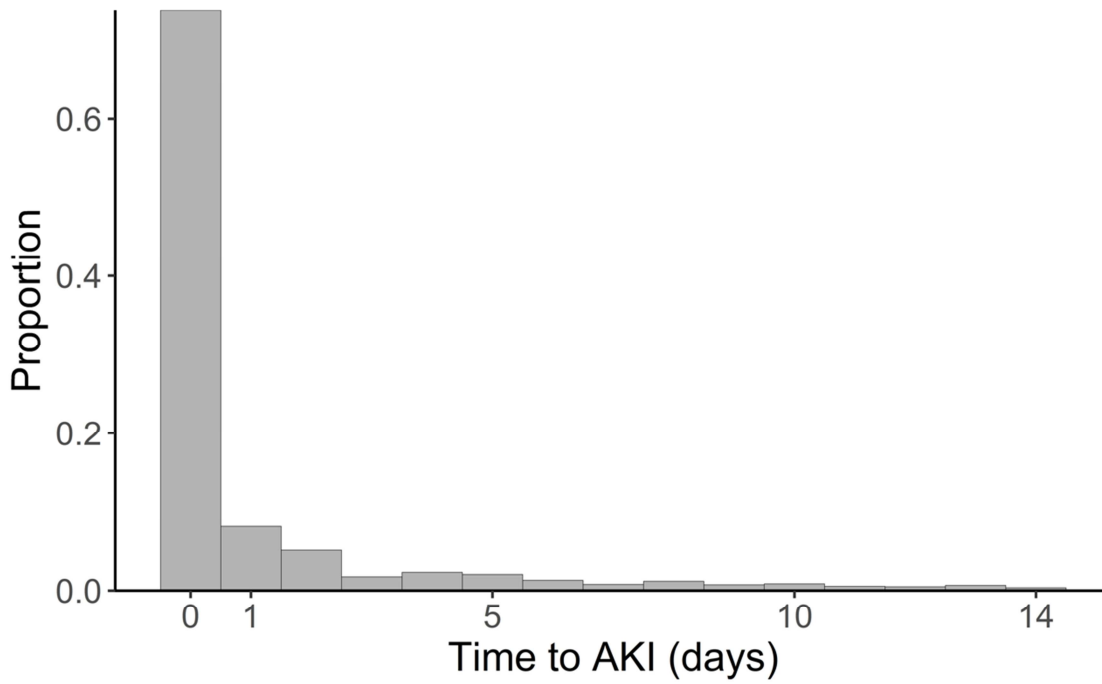
Supplemental Table 9: Rates of AKI in COVID-19 hospitalized participants, and AKI stage within those who had an AKI, by calendar month

Calendar Month	AKI, n (% of hospitalized COVID-19)	AKI Stage 1, n (% of AKI)	AKI Stage 2, n (% of AKI)	AKI Stage 3, n (% of AKI)	AKI KRT, n (% of AKI)
March	297 (40)	126 (42)	42 (14)	62 (21)	67 (23)
April	475 (37)	241 (51)	70 (15)	95 (22)	69 (24)
May	220 (30)	132 (60)	32 (15)	36 (16)	20 (9)
June	256 (27)	167 (65)	36 (14)	32 (13)	21 (8)
July	407 (27)	295 (72)	43 (11)	45 (11)	24 (6)

AKI, acute kidney injury; KRT, kidney replacement therapy.



Supplemental Figure 1. Flowchart diagram of cohort participant inclusion.



Supplemental Figure 2: Histogram of the time to AKI during the first two weeks of follow-up. Time of AKI was defined as the time from admittance to the hospital till time where the KDIGO AKI definition was first met by an inpatient serum creatinine measure. AKI definitions for serum creatinine measures after the first 7 days of follow-up were based on KDIGO percentage change definitions of AKI.

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