

Supplemental Materials for

**Association of Platelet Trajectory Patterns with In-Hospital Mortality in Critically Ill
Adults Undergoing Continuous Renal Replacement Therapy**

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Supplemental Table S1:
ICD codes for Comorbidities

Supplemental Figure S1:
Platelet slope category distribution by cutoff thresholds

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Cohort Characteristics Stratified by Survival Status

Supplemental Table S3:
Full Model Results for the Association of Platelet Slope Patterns with In-Hospital Mortality

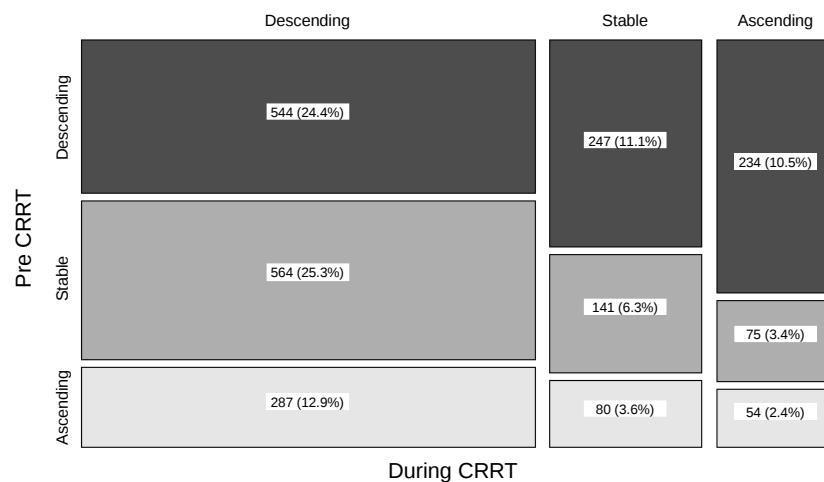
Supplemental Table S4:
Association of Platelet Slope as a Continuous Variable with In-Hospital Mortality

Supplemental Table S1: ICD codes for Comorbidities

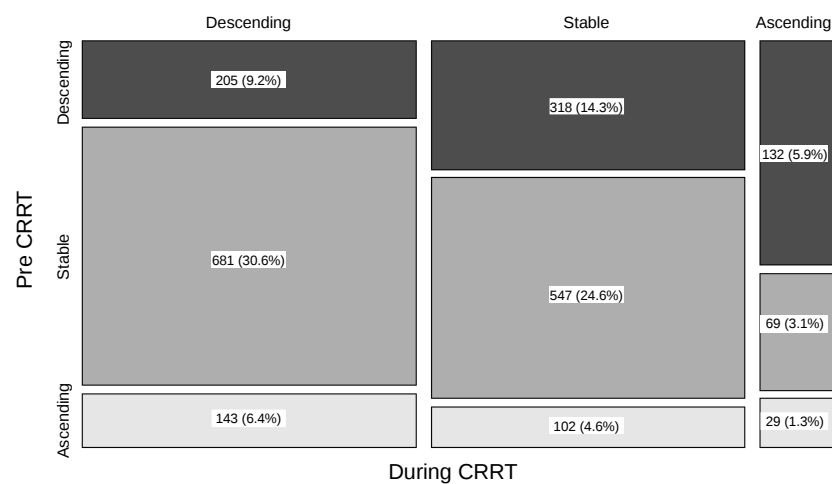
Disease Category	ICD-9	ICD-10
End-Stage Kidney Disease	585.6	N18.6
Kidney Transplant	996.81, V42.0	T86.10, T86.11, T86.12, Z48.22, Z94.0
Diabetes Mellitus	250	E08–E13
Hypertension	401, 405	I10, I15
Cardiovascular Disease	410–412, 428, 434	I20–I22, I24–I25, I50, I63
Coronary Artery Disease	410–412	I20–I22, I24–I25
Chronic Kidney Disease	585.1–585.5	N18.1–N18.5
Liver Disease	571.2, 571.5, 571.6, V42.7	K70.3, K71.7, K74, Z94.4
Primary Thrombocytopenia	287.3	D69.3–D69.4
Hematologic Malignancies	200–208	C81–C86, C88, C90–C96
Thrombotic Microangiopathy	446.6	M31.1
Metastatic Cancer	196–199	C77–C80

Supplemental Figure 1: Platelet slope category distribution by cutoff thresholds

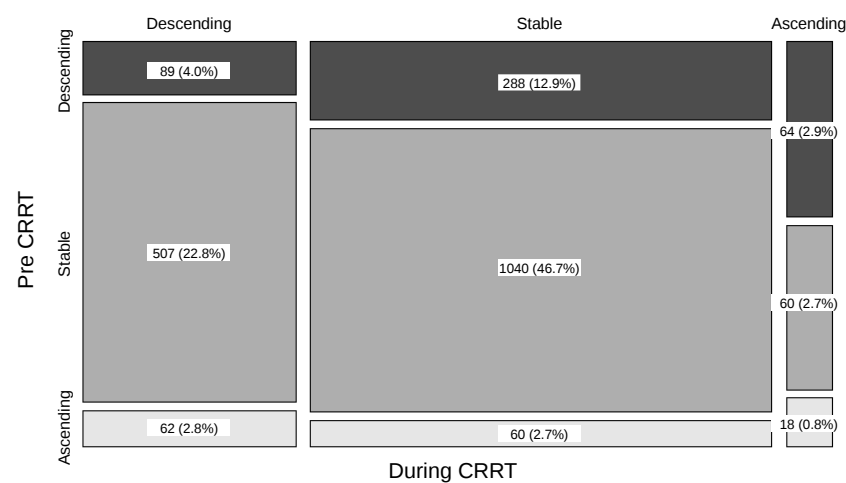
Distribution with a cutoff of $\pm 5 \times 10^3/\mu\text{L}/\text{day}$



Distribution with a cutoff of $\pm 10 \times 10^3/\mu\text{L}/\text{day}$



Distribution with a cutoff of $\pm 15 \times 10^3/\mu\text{L}/\text{day}$



Abbreviation: CRRT, continuous renal replacement therapy
The number of patients in each category is presented as n (%)

Supplemental Table S2: Cohort Characteristics Stratified by Survival Status

	Overall (n = 2226)	Expired (n = 1287)	Survived (n = 939)	<i>p</i>
Baseline Characteristics between ICU admission and CRRT initiation				
Age (years)	59 [48, 69]	61 [50, 70]	57 [44, 66.50]	<0.001
Female sex	869 (39.0)	513 (39.9)	356 (37.9)	0.376
Race				
Black	752 (33.8)	425 (33.0)	327 (34.8)	0.661
White	140 (6.3)	83 (6.4)	57 (6.1)	
Other	1334 (59.9)	779 (60.5)	555 (59.1)	
Body weight at ICU admission (kg)	91.7 [77.0, 111.1]	91.2 [76.7, 108.9]	92.6 [77.1, 113.9]	0.141
Charlson Comorbidity Index	3 [0, 4]	3 [0, 4]	2 [0, 4]	0.042
Diabetes Mellitus	865 (38.9)	487 (37.8)	378 (40.3)	0.267
Hypertension	1175 (52.8)	656 (51.0)	519 (55.3)	0.05
Cardiovascular disease	1413 (63.5)	835 (64.9)	578 (61.6)	0.118
Coronary artery disease	1067 (47.9)	647 (50.3)	420 (44.7)	0.011
Liver disease	454 (20.4)	292 (22.7)	162 (17.3)	0.002
Chronic kidney disease	873 (39.2)	488 (37.9)	385 (41.0)	0.153
Baseline SCr (mg/dL)	1.20 [0.90, 2.00]	1.30 [0.90, 2.30]	1.10 [0.80, 1.70]	<0.001
SOFA score at ICU admission	9 [6, 12]	9 [6, 12]	8 [6, 11]	0.001
SOFA score at CRRT initiation	12 [9, 14]	12 [10, 15]	10 [8, 13]	<0.001
Number of vasopressors at CRRT initiation	1 [0, 2]	2 [1, 3]	1 [0, 2]	<0.001
Use of Inotropes at CRRT initiation	527 (23.7)	313 (24.3)	214 (22.8)	0.431
Sepsis *	2058 (92.5)	1219 (94.7)	839 (89.4)	<0.001
MV *	1705 (76.6)	1022 (79.4)	683 (72.7)	<0.001
ECMO *	149 (6.7)	97 (7.5)	52 (5.5)	0.075
VAD *	84 (3.8)	50 (3.9)	34 (3.6)	0.833
Heparin exposure *	1596 (71.7)	931 (72.3)	665 (70.8)	0.461
Clinical Outcomes				
Hospital length of stay (days)	20 [11, 36]	14 [7, 25]	30 [19, 47]	<0.001
ICU length of stay (days)	13 [7, 24]	12 [6, 21]	16 [9, 30]	<0.001
28-day ICU-free days	0 [0, 12]	0 [0, 0]	14 [5, 20]	<0.001
Total duration of CRRT (days)	7 [3, 13]	6 [3, 12]	8 [5, 14]	<0.001
28-day CRRT-free days	0 [0, 19]	0 [0, 0]	20 [14, 23.5]	<0.001
Platelet Characteristics				
Platelet count at CRRT initiation (10 ³ /μL)	158.9 [101.8, 238.7]	150.2 [95.8, 222.6]	172.4 [110.6, 260.2]	<0.001
Highest platelet count after CRRT initiation (10 ³ /μL)	176.5 [112.5, 267.4]	151.2 [99.4, 229.8]	215.4 [145.3, 318.7]	<0.001
Lowest platelet count after CRRT initiation (10 ³ /μL)	92.3 [45.6, 155.4]	81.1 [39.2, 142.2]	108.3 [59.3, 176.5]	<0.001
Slope of platelet before CRRT initiation (10 ³ /μL/day)	-8.8 [-16.5, -0.1]	-8.9 [-16.6, -0.3]	-8.7 [-16.2, -0.1]	0.336
Slope of platelet after CRRT initiation (10 ³ /μL/day)	-4.1 [-12.1, 2.4]	-5.0 [-13.0, 0.5]	-2.8 [-10.5, 6.4]	<0.001
Platelet count at CRRT initiation (10 ³ /μL)	158.9 [101.8, 238.7]	150.2 [95.8, 222.6]	172.4 [110.6, 260.2]	<0.001

Abbreviation: AKI, acute kidney injury; CRRT, continuous renal replacement therapy; ECMO, extracorporeal membrane oxygenation; ICU, intensive care unit; MV, mechanical ventilation; SCr, serum creatinine; SOFA, Sequential Organ Failure Assessment; VAD, ventricular assist device.

Categorical variables are presented as n (%), and numerical variables are presented as median [IQR].

* Determined as exposure between ICU admission and CRRT initiation

Supplemental Table S3: Full Model Results for the Association of Platelet Slope Patterns with In-Hospital Mortality

	aOR	95%CI	p
Platelet Slope Patterns			
Descending - Descending	1.52	1.04 - 2.23	0.031
Descending - Stable	0.72	0.55 - 0.93	0.014
Descending - Ascending	0.25	0.16 - 0.38	< 0.001
Stable - Descending	1.49	1.07 - 2.08	0.019
Stable - Ascending	0.33	0.20 - 0.55	< 0.001
Ascending - Descending	1.92	1.16 - 3.21	0.012
Ascending - Stable	0.71	0.41 - 1.24	0.229
Ascending - Ascending	0.47	0.19 - 1.07	0.082
Other Independent Variables			
Age	1.02	1.01 - 1.03	< 0.001
Male sex (vs. female)	0.85	0.70 - 1.04	0.116
White race (vs. Black race)	1.10	0.73 - 1.69	0.647
Other race (vs. Black race)	0.95	0.77 - 1.17	0.628
Body weight, per 1-unit increase	1.00	1.00 - 1.00	0.386
CCI, per 1-unit increase	0.99	0.95 - 1.04	0.738
Liver disease	1.10	0.83 - 1.45	0.519
Baseline SCr, per 1-unit increase	1.42	1.30 - 1.57	< 0.001
SOFA score at CRRT initiation, per 1-unit increase	1.17	1.13 - 1.21	< 0.001
Sepsis *	1.65	1.14 - 2.38	0.008
Number of vasopressors at CRRT initiation, per 1-unit increase	1.20	1.10 - 1.31	< 0.001
Use of inotropes *	1.05	0.82 - 1.34	0.701
MV *	0.98	0.76 - 1.26	0.872
ECMO *	1.13	0.75 - 1.73	0.549
VAD *	0.89	0.52 - 1.54	0.680
Heparin exposure *	1.46	1.16 - 1.84	0.001
Platelet count at CRRT initiation, per 1-unit increase	1.00	1.00 - 1.00	0.008

Abbreviation: aOR, adjusted odds ratio; CI, confidence interval; CCI, Charlson Comorbidity Index; CRRT, continuous renal replacement therapy; ECMO, extracorporeal membrane oxygenation; MV, mechanical ventilation; SCr, serum creatinine; SOFA, Sequential Organ Failure Assessment; VAD, ventricular assist device.

* Determined as exposure between ICU admission and CRRT initiation.

Supplemental Table S4: Association of Platelet Slope as a Continuous Variable with In-Hospital

Mortality

	aOR	95%CI	p
Slope before CRRT initiation, per 1-unit increase	1.00	1.00 - 1.01	0.398
Slope after CRRT initiation, per 1-unit increase	0.96	0.95 - 0.96	< 0.001
Age, per 1-unit increase	1.02	1.01 - 1.03	< 0.001
Male sex (vs. female)	0.90	0.73 - 1.10	0.299
White race (vs. Black race)	0.93	0.75 - 1.15	0.488
Other race (vs. Black race)	1.07	0.70 - 1.64	0.762
Body weight at ICU admission, per 1-unit increase	1.00	1.00 - 1.00	0.536
CCI, per 1-unit increase	0.99	0.94 - 1.03	0.550
Liver disease	1.07	0.80 - 1.42	0.656
Baseline SCr, per 1-unit increase	1.42	1.29 - 1.56	< 0.001
SOFA score at CRRT initiation, per 1-unit increase	1.17	1.13 - 1.21	< 0.001
Sepsis *	1.66	1.15 - 2.41	0.007
Number of vasopressors at CRRT initiation, per 1-unit increase	1.16	1.07 - 1.27	0.001
Use of inotropes *	1.09	0.85 - 1.40	0.489
MV *	0.99	0.77 - 1.28	0.944
ECMO *	1.12	0.74 - 1.70	0.609
VAD *	0.85	0.49 - 1.47	0.559
Heparin exposure *	1.54	1.22 - 1.94	< 0.001
Platelet count at CRRT initiation, per 1-unit increase	1.00	1.00 - 1.00	< 0.001

Abbreviation: aOR, adjusted odds ratio; CI, confidence interval; CRRT, continuous renal replacement therapy; CCI, Charlson Comorbidity Index; SCr, serum creatinine; SOFA, Sequential Organ Failure Assessment; MV, mechanical ventilation; ECMO, extracorporeal membrane oxygenation; VAD, ventricular assist device.

* Determined as exposure between ICU admission and CRRT initiation