Table S1. All Missing values of data from MIMIC-IV

variables	Missing number n (%)
age	
gender	
weight	38 (0.47)
ethnicity	
myocardial_infarct	
congestive_heart_failure	
peripheral_vascular_disease	
cerebrovascular_disease	
dementia	
chronic_pulmonary_disease	
rheumatic_disease	
peptic_ulcer_disease	
mild_liver_disease	
diabetes_without_cc	
diabetes_with_cc	
paraplegia	
renal_disease	
malignant_cancer	
severe_liver_disease	
metastatic_solid_tumor	
aids	
sofa score	
apsiii	
sapsii	
pt	760 (9.52)
aptt	805 (10.08)
white_blood_cell_counts	3 (0.03)
platelet_counts0[a]	
platelet_counts3[b]	
LOS_hospital	
hospital_expire_flag[c]	
LOS_ICU	

LOS=length of stay

[a]platelete_counts0 are regarded as platelet counts on day 1 of ICU admission

[b]platelete_counts3 are regarded as platelet counts on day 4 of ICU admission

[c]hospital_expire_flag is regarded as in-hospital death

Liu X, *et al. BMJ Open* 2023; 13:e069027. doi: 10.1136/bmjopen-2022-069027

Table S2: Baseline of patient characteristics stratified by proportion of platelet counts on day four of ICU admission

Characteristic	Overall	declining proportion of platelet counts		*p* value
		platelet>10%	platelet≤10%	
Number	7981	3802	4179	
Gender, M (%)	4594 (57.6)	2180 (57.3)	2414 (57.8)	0.717
Median age (IQR), yr	65.8 [53.6 77.3]	66.2 [54.6 77.4]	65.3 [52.6 77.3]	0.012
Median weight (IQR), kg	80.0 [67.0 96.5]	79.8 [66.8 96.5]	80.0 [67.0 96.4]	0.586
Ethnicity, n (%)				0.671
American Indian	20 (0.3)	8 (0.2)	12 (0.3)	
Asian	205 (2.6)	100 (2.6)	105 (2.5)	
Black	707 (8.9)	325 (8.5)	382 (9.1)	
White	5025 (63.0)	2382 (62.7)	2643 (63.2)	
Hispanic	258 (3.2)	132 (3.5)	126 (3.0)	
Others	1766 (22.1)	855 (22.5)	911 (21.8)	
Select comorbidities[a], n (%)				
Cardiovascular disease	2826 (35.4)	1473 (38.7)	1353 (32.4)	<0.001
Chronic pulmonary disease	1945 (24.4)	941 (24.8)	1004 (24.0)	0.467
Liver disease	1466 (18.4)	816 (21.5)	650 (15.6)	<0.001
Renal disease	1582 (19.8)	796 (20.9)	786 (18.8)	0.019
diabetes	2256 (28.3)	1109 (29.2)	1147 (27.4)	0.093
Vascular disease	2359 (29.6)	1082 (28.5)	1277 (30.6)	0.043
Cancer[b]	1189 (14.9)	620 (16.3)	569 (13.6)	0.001
Aids	56 (0.7)	19 (0.5)	37 (0.9)	0.054
Others[c]	1507 (18.9)	705 (18.5)	802 (19.2)	0.477
Status at admission (median [IQR])				
Sofa score	7.0 [5.0 11.0]	8.0 [5.0 12.0]	6.0 [4.0 9.0]	<0.001
Apsiii	61.0 [44.0 81.0]	66.0 [49.0 88.8]	56.0 [42.0 74.0]	<0.001
Sapsii	40.0 [32.0 51.0]	44.0 [35.0 54.0]	38.0 [30.0 47.0]	<0.001
Laboratory test (median [IQR])				
White blood cell counts, k/ul	12.0 [8.6 16.3]	13.0 [9.3 17.8]	11.3 [8.3 15.1]	<0.001
Pt (s)	14.3 [12.7 17.3]	14.6 [12.8 18.2]	14.1 [12.6 16.5]	<0.001
Aptt (s)	31.7 [27.5 40.7]	33.0 [28.1 44.6]	30.8 [27.2 37.7]	<0.001
ICU outcome				
30-day mortality, n (%)	1483 (18.6)	892 (23.5)	591 (14.1)	<0.001
Median hospital LOS (IQR), d	13.9 [9.0 22.0]	14.1 [9.0 22.3]	13.7 [9.0 21.8]	0.122
Median ICU LOS (IQR), d	7.1 [4.8 12.1]	7.5 [4.9 12.9]	6.8 [4.7 11.3]	<0.001

IQR, interquartile range; Sofa, sequential organ failure assessment; Apsiii, acute physiology score; Sapsii, simplified acute physiology score; Pt, prothrombin time; Aptt, activated partial thromboplastin time; LOS, length of stay.

[a]Comorbidities are defined by the Charlson comorbidity index.

[b]Cancer includes malignant cancer and metastatic solid tumor.

[c]Others includes dementia, rheumatic disease, peptic ulcer disease and paraplegia.

Table S3: Univariate and multivariate analysis for assessing the mortality within 30 days

	Univariate analysis			Multivariate analysis		
Variables	OR	CI 95%	*p*	OR	CI 95%	*p*
Age	1.02	1.02-1.03	<0.001	1.03	1.03-1.04	<0.001
Cardiovascular disease	1.41	1.26-1.58	<0.001	1.07	0.94-1.23	0.307
Liver disease	1.94	1.70-2.21	<0.001	1.61	1.37-1.89	<0.001
Renal disease	1.48	1.30-1.69	<0.001	0.97	0.83-1.12	0.646
Vascular disease	1.31	1.16-1.48	<0.001	1.56	1.36-1.78	<0.001
Cancer	1.75	1.52-2.02	<0.001	1.91	1.62-2.25	<0.001
Sapsii	1.04	1.03-1.04	<0.001	0.99	0.98-0.99	<0.001
Sofa score	1.15	1.13-1.16	<0.001	1.01	0.99-1.03	0.469
Apsiii	1.03	1.03-1.03	<0.001	1.03	1.03-1.03	<0.001
WBC (k/ul)	1.01	1.01-1.02	<0.001	1.01	1.00-1.01	0.080
Pt (s)	1.03	1.02-1.04	<0.001	1.01	1.01-1.02	<0.001
Aptt (s)	1.01	1.01-1.01	<0.001	1.00	1.00-1.01	0.051
[a]platelet≤10%	0.54	0.48-0.60	<0.001	0.73	0.64-0.82	<0.001

CI, confidence interval; OR, odds ratio; Sapsii, simplified acute physiology score; Sofa, sequential organ failure assessment; Apsiii, acute physiology score; WBC, white blood cell counts; Pt, prothrombin time; Aptt, activated partial thromboplastin time.

[a]platelet≤10% is regarded as declining proportion of platelet counts on day 4 of ICU admission.

Table S4. Univariate and multivariate analyses were performed to assess mortality within 30 days, excluding patients who had no decline or even an increase in platelet counts on day four at the time of study inclusion

Variables	Univariate analysis			Multivariate analysis		
	OR	CI 95%	*p*	OR	CI 95%	*p*
Age	1.02	1.01-1.02	<0.001	1.03	1.02-1.03	<0.001
Cardiovascular disease	1.32	1.15-1.52	<0.001	1.09	0.93-1.28	0.294
Liver disease	1.94	1.66-2.26	<0.001	1.57	1.30-1.89	<0.001
Renal disease	1.33	1.13-1.56	0.001	0.92	0.76-1.10	0.347
Vascular disease	1.22	1.06-1.41	0.007	1.56	1.32-1.83	<0.001
Cancer	1.69	1.42-2.00	<0.001	1.83	1.50-2.22	<0.001
Sapsii	1.04	1.03-1.04	<0.001	0.99	0.98-1.00	0.003
Sofa	1.14	1.12-1.16	<0.001	1.00	0.97-1.03	0.885
Apsiii	1.03	1.02-1.03	<0.001	1.03	1.03-1.03	<0.001
WBC (k/ul)	1.01	1.01-1.02	<0.001	1.01	1.00-1.01	0.166
Pt (s)	1.03	1.03-1.04	<0.001	1.02	1.01-1.03	<0.001
Aptt (s)	1.01	1.01-1.01	<0.001	1.00	1.00-1.01	0.139
[a]platelet≤10%	0.55	0.46-0.65	<0.001	0.69	0.57-0.84	0.001

CI, confidence interval; OR, odds ratio; Sapsii, simplified acute physiology score; Sofa, sequential organ failure assessment; Apsiii, acute physiology score; WBC, white blood cell counts; Pt, prothrombin time; Aptt, activated partial thromboplastin time.

[a]platelet≤10% is regarded as declining proportion of platelet counts on day 4 of ICU admission.

Figure S1. Kaplan-Meier survival curves

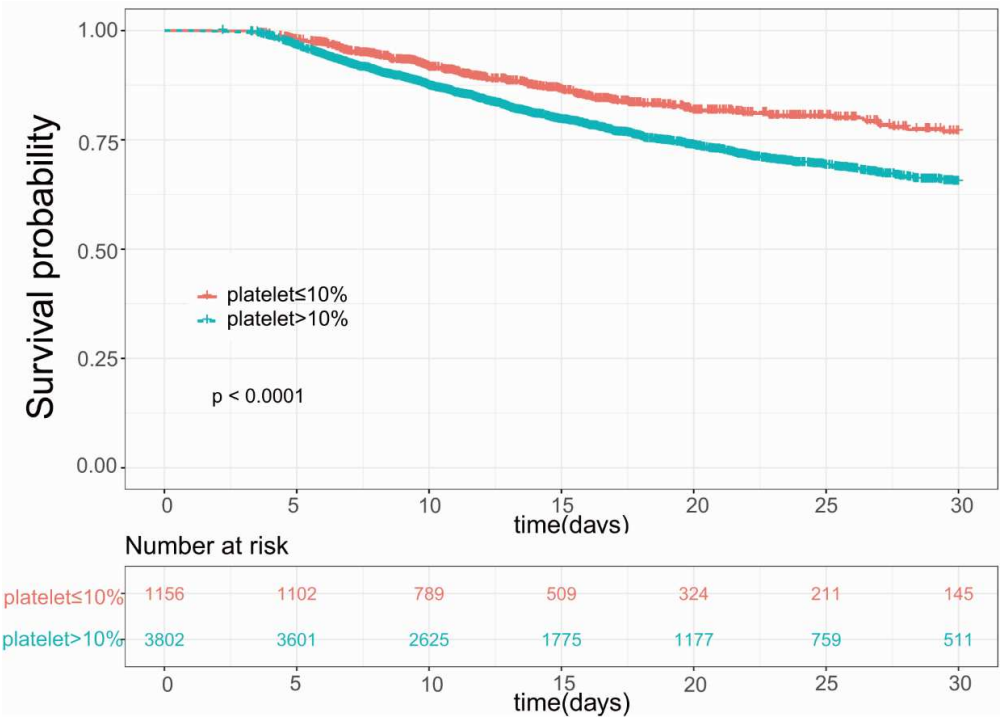

Figure S1. Kaplan-Meier survival curves were used to analyse the association between the percentage change in platelet count on day four compared to day one and the mortality within 30 days, excluding patients with no decline or even an increase in platelet counts on day four at the time of inclusion into the study

Table S5. Univariate and multivariate analyses were performed to assess mortality within 30 days, excluding patients with platelet counts < 100 K/ul on day one at the time of inclusion

Variables	Univariate analysis			Multivariate analysis		
	OR	CI 95%	*p*	OR	CI 95%	*p*
Age	1.03	1.02-1.03	<0.001	1.03	1.03-1.04	<0.001
Cardiovascular disease	1.49	1.31-1.69	<0.001	1.10	0.95-1.28	0.210
Liver disease	1.63	1.37-1.92	<0.001	1.40	1.15-1.70	0.001
Renal disease	1.50	1.30-1.74	<0.001	0.94	0.80-1.11	0.484
Vascular disease	1.40	1.22-1.59	<0.001	1.59	1.37-1.83	<0.001
Cancer	1.70	1.44-2.00	<0.001	1.90	1.57-2.29	<0.001
Sapsii	1.04	1.03-1.04	<0.001	0.99	0.98-1.00	0.001
Sofa	1.14	1.12-1.16	<0.001	0.99	0.97-1.02	0.576
Apsiii	1.03	1.03-1.03	<0.001	1.03	1.03-1.04	<0.001
WBC (k/ul)	1.02	1.01-1.03	<0.001	1.01	1.00-1.01	0.143
Pt (s)	1.02	1.02-1.03	<0.001	1.01	1.00-1.02	0.016
Aptt (s)	1.01	1.01-1.01	<0.001	1.00	1.00-1.01	0.125
[a]platelet≤10%	0.54	0.47-0.61	<0.001	0.72	0.63-0.83	<0.001

CI, confidence interval; OR, odds ratio; Sapsii, simplified acute physiology score; Sofa, sequential organ failure assessment; Apsiii, acute physiology score; WBC, white blood cell counts; Pt, prothrombin time; Aptt, activated partial thromboplastin time.
[a]platelet≤10% is regarded as declining proportion of platelet counts on day 4 of ICU admission.

Figure S2. Kaplan-Meier survival curves

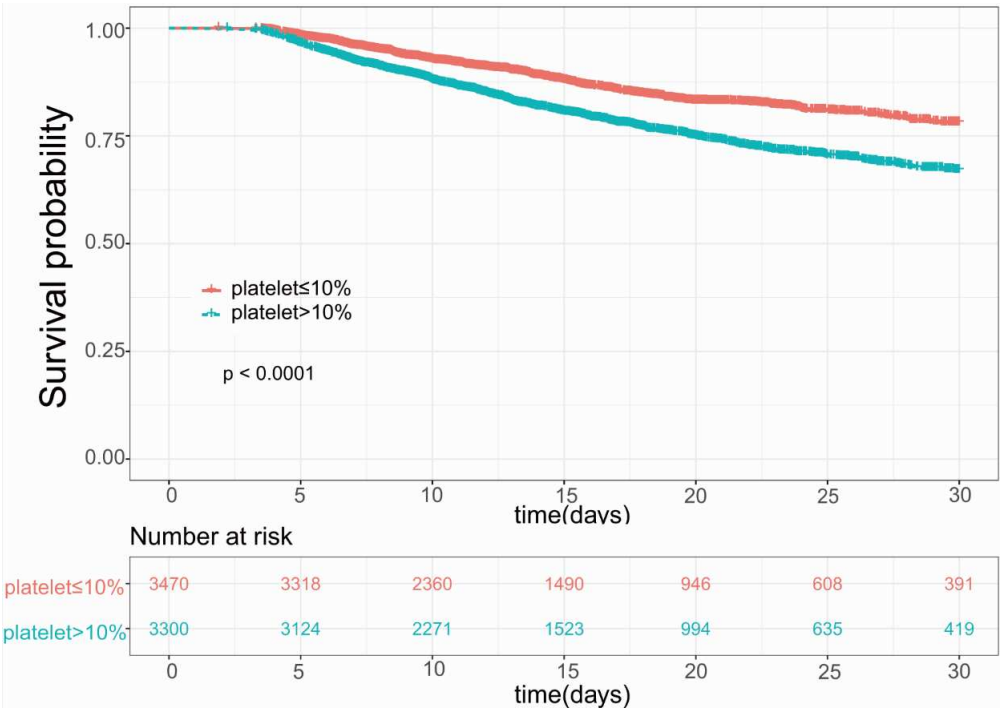

Figure S2. Kaplan-Meier survival curves were used to analyse the association between the percentage change in platelet count on day four compared to day one and the mortality within 30 days, excluding patients with platelet counts < 100 K/ul on day one at the time of inclusion into the study.