Supplementary Table 1 Diagnostic criteria for complications

Complications	Diagnostic criteria
Acute kidney injury	We used the pROCK criterion, which defines acute kidney injury as an
	increase in creatinine levels of $\geq 20~\mu mol/L$ and $\geq 30\%$ within 7 days.
	The pROCK classified AKI stages 2 and 3 as SCr increases of $\geq 40~\mu mol/L$
	and $\geq 60\%$ and $\geq 80~\mu mol/L$ and $\geq 120\%,$ respectively.
Anemia	1-4 months < 90 g/L;
	4-6 months < 100 g/L;
	6-60minths < 110 g/L;
	60-144months < 115 g/L;
	>144 months < 120 g/L.
Pneumonia	Including pneumonia caused by various pathogens.
Central nervous system infection	Including central nervous system infection caused by various pathogens.
Diabetic ketoacidosis	Blood glucose > 11 mmol/L; venous blood pH < 7.3 or serum bicarbonate <
	15 mmol / L; presence of ketone bodies in blood or urine.
Liver dysfunction	Total bilirubin > 68.4mmol/L or alanine aminotransferase elevation more than
	two times the upper value.
Malignancy	Including solid malignancies and non-solid malignancies.

Variable	Number of missing values (n)	Ratio of missing values (%)
Age	0	0
Sex	0	0
ICU type	0	0
Cause for admission n(%)	0	0
Laboratory data		
White blood cell	90	2.1
Platelet	89	2.0
Sodium	24	0.6
Potassium	24	0.6
Glucose	114	2.6
Albumin	6	0.1
APTT	418	9.6
Ionized calcium	24	0.6
РН	24	0.6
Lactate	27	0.6
Comorbidities		
Anemia	0	0
Acute kidney injury	0	0
Liver dysfunction	0	0
Malignancy	0	0
Diabetic ketoacidosis	0	0
Pneumonia	0	0
CNS infection	0	0

Supplementary Table 2 Number and proportion of missing values

Supplementary Table 3 Area under the curve (AUC) values for the prediction of in-

Variables	AUC	Р	95% CI	Cut-off values	Sensitivity	Specificity
СК	0.557	0.002	0.542-0.572	667	25.2	87.5
CK-MB	0.613	< 0.001	0.598-0.627	40	48.8	73.9
AST	0.701	< 0.001	0.687-0.715	63	58.3	75.6
LDH	0.729	< 0.001	0.715-0.742	408	68.7	68.1

hospital mortality by different cardiac enzyme spectrum

AST, aspartate aminotransferase; CI, confidence interval; CK, creatine kinase; CK-MB, creatine kinase MB;

LDH, lactate dehydrogenase.

Supplementary Table 4 Comparison of clinical data between high lactate dehydrogenase

(LDH) group and low LDH group

Variable	All	Low LDH	High LDH	D
	(n=4343)	(n=2837)	(n=1506)	r
Age, months	22 (6-69)	28 (8-79)	14 (4-44)	0.002
Male, n (%)	2540 (58.5)	1638 (57.7)	902 (59.9)	0.056
Laboratory data				
White blood cell, 10 ⁹ /L	9.63 (6.46-14.17)	9.47 (6.52-13.56)	10.19 (6.36-15.12)	0.022
Platelet, 10 ⁹ /L	297 (206-384)	305 (235-386)	269 (133-380)	< 0.001
Sodium, mmol/L	137 (134-139)	137 (135-139)	137 (133-140)	0.081
Potassium, mmol/L	3.8 (3.4-4.1)	3.7 (3.4-4.1)	3.8 (3.4-4.3)	< 0.001
Glucose, mmol/L	6.7 (5.6-8.7)	6.7 (5.7-8.4)	6.7 (5.5-9.3)	0.662
Albumin, g/L	36.8 (32.6-40.8)	37.6 (33.6-41.4)	35.0 (30.8-39.2)	< 0.001
APTT, s	33.9 (28.8-43.2)	33.9 (28.9-43.2)	33.9 (28.7-43.1)	0.079
Ionized calcium, mmol/L	1.21 (1.12-1.28)	1.23 (1.15-1.29)	1.17 (1.06-1.25)	< 0.001
РН	7.375 (7.317-	7.381 (7.331-	7.362 (7.284-	< 0.001
Lactate, mmol/L	1.7 (1.2-2.7)	1.6 (1.2-2.4)	2.0 (1.3-3.6)	< 0.001
Comorbidities, n (%)				
Anemia	2938 (67.6)	1893 (66.7)	1045 (69.4)	0.426
Acute kidney injury	459 (10.6)	231 (8.1)	228 (15.1)	< 0.001
Liver dysfunction	750 (17.3)	173 (6.1)	577 (38.3)	< 0.001
Malignancy	250 (5.8)	128 (4.5)	122 (8.1)	0.074
Diabetic ketoacidosis	171 (3.9)	76 (2.7)	95 (6.3)	< 0.001
Pneumonia	456 (10.5)	256 (9.0)	200 (13.3)	< 0.001
CNS infection	206 (4.7)	148 (5.2)	58 (3.9)	0.041
Clinical outcome				
ICU LOS, days	1.9 (0.9-6.7)	1.4 (0.9-5.2)	3.4 (1.0-9.7)	< 0.001

Hospital LOS, day	10.0 (5.4-17.1)	10.0 (5.9-16.5)	10.8 (4.4-19.1)	< 0.001
30-day mortality, n (%)	297 (6.8)	91 (3.2)	206 (13.7)	< 0.001
Hospital mortality, n (%)	326 (7.5)	102 (3.6)	224 (14.9)	< 0.001

APTT, activated partial thromboplastin time; CNS, central nervous system; ICU, intensive care unit; LOS,

length of stay.

Supplementary Table 5 Univariate and multivariable logistic regression results for in-

	Crude OR	95% CI	Р	Adjusted OR	95% CI	Р
Age	0.997	0.994-0.999	0.013	0.998	0.995-1.001	0.123
Gender (female)	0.80	0.63-1.01	0.057			
WBC (< 4 or > 12, $10^9/L$)	1.91	1.52-2.40	< 0.001	1.32	1.03-1.70	0.028
Platelet (< 100, 10 ⁹ /L)	2.53	1.91-3.34	< 0.001	1.53	1.12-2.09	0.008
Sodium (< 135 or > 145, mmol/L)	1.62	1.28-2.03	< 0.001	1.07	0.83-1.38	0.625
Potassium (< 3.5 or > 5.5, mmol/L)	1.26	0.99-1.60	0.059			
Glucose (< 3.6 or > 6.1, mmol/L)	1.03	0.81-1.31	0.799			
Ionized calcium (< 1.2 or > 1.3, mmol/L)	2.69	2.04-3.55	< 0.001	1.77	1.32-2.38	< 0.001
PH (< 7.30 or > 7.50)	2.60	2.07-3.28	< 0.001	1.50	1.16-1.95	0.002
Lactate (≥ 2.0 , mmol/L)	3.65	2.87-4.64	< 0.001	2.57	1.98-3.34	< 0.001
APTT (< 23 or > 48, s)	1.15	0.90-1.48	0.266			
Albumin (< 32 or > 52, g/L)	2.10	1.65-2.66	< 0.001	1.44	1.10-1.89	0.008
Anemia	1.11	0.84-1.41	0.426			
Acute kidney injury	3.25	2.47-4.26	< 0.001	2.18	1.61-2.95	< 0.001
Liver dysfunction	3.43	2.70-4.35	< 0.001	1.41	1.06-1.87	0.017
Malignancy	1.47	0.96-2.24	0.075			
Diabetic ketoacidosis	2.91	1.94-4.37	< 0.001	1.37	0.87-2.16	0.176
Pneumonia	2.36	1.77-3.15	< 0.001	2.40	1.74-3.31	< 0.001
Central nervous system infections	1.59	1.02-2.49	0.043	2.22	1.36-3.65	0.002
Lactate dehydrogenase (> 408, U/L)	4.69	3.67-5.98	< 0.001	2.45	1.84-3.24	< 0.001

hospital mortality of model 4

APTT, activated partial thromboplastin time; CI, confidence interval; OR, odds ratio; WBC, white blood

cell.

Supplementary Table 6 Stepwise extended of the multivariate logistic regression model

for secondary	outcome
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	High	lactate dehydrogenase (>408 U/L)	
	β	95% confidence interval	Р
ICU LOS			
Model 1	2.81	1.99-3.63	< 0.001
Model 2	2.81	1.99-3.63	< 0.001
Model 3	2.09	1.24-2.94	< 0.001
Model 4	1.64	0.73-2.54	< 0.001
Hospital LOS			
Model 1	0.86	-0.13-1.85	0.089
Model 2	0.70	-0.30-1.70	0.172
Model 3	0.46	-0.57-1.49	0.381
Model 4	-0.25	-1.36-0.87	0.665

ICU, intensive care unit; LOS, length of stay.

Supplementary Table 7 The value of the Wald Chi-squared statistic minus the degrees of

Covariates	Wald Chi-squared statistic	Degrees of freedom
Age	2.4	1
White blood cell	4.8	1
Platelet	7.1	1
Sodium	0.2	1
Ionized calcium	14.5	1
РН	9.4	1
Lactate	50.3	1
Albumin	7.1	1
Acute kidney injury	25.7	1
Liver dysfunction	5.7	1
Diabetic ketoacidosis	1.8	1
Pneumonia	28.6	1
Central nervous system infection	10.0	1
Lactate dehydrogenase	38.7	1

freedom for different covariates

Supplementary Table 8 Comparisons of the covariates after propensity score matching

using sensitivity analysis

Variable	All	Low LDH	High LDH	Р
	(n=1986)	(<i>n</i> =993)	(<i>n</i> =993)	1
Age, months	17 (4-51)	18 (5-51)	17 (4-51)	0.706
Male, n (%)	1191 (60.0)	599 (60.3)	592 (59.6)	0.749
Laboratory data				
White blood cell, 10 ⁹ /L	9.63 (6.26-14.13)	9.63 (6.39-14.12)	9.63 (6.10-14.13)	0.870
Platelet, 10 ⁹ /L	297 (182-386)	297 (198-373)	293 (166-400)	0.708
Sodium, mmol/L	137 (134-139)	137 (134-139)	137 (134-139)	0.280
Potassium, mmol/L	3.8 (3.4-4.2)	3.8 (3.4-4.1)	3.8 (3.4-4.2)	0.669
Glucose, mmol/L	6.7 (5.6-8.8)	6.7 (5.6-8.8)	6.7 (5.6-8.7)	0.888
Albumin, g/L	36.0 (31.8-40.2)	36.0 (31.5-40.4)	36.1 (32.1-40.0)	0.800
APTT, s	33.9 (28.6-41.8)	33.9 (28.9-41.6)	33.9 (28.4-41.8)	0.893
Ionized calcium, mmol/L	1.19 (1.10-1.27)	1.20 (1.10-1.27)	1.19 (1.10-1.27)	0.442
РН	7.375 (7.314-	7.375 (7.318-	7.375 (7.312-	0.866
Lactate, mmol/L	1.7 (1.2-2.7)	1.7 (1.2-2.7)	1.7 (1.2-2.6)	0.864
Comorbidities, n (%)				
Anemia	1394 (70.2)	705 (71.0)	689 (69.4)	0.433
Acute kidney injury	226 (11.4)	108 (10.9)	118 (11.9)	0.480
Liver dysfunction	312 (15.7)	169 (17.0)	143 (14.4)	0.109
Malignancy	160 (8.1)	79 (8.0)	81 (8.2)	0.869
Diabetic ketoacidosis	85 (4.3)	40 (4.0)	45 (4.5)	0.579
Pneumonia	293 (14.8)	149 (15.0)	144 (14.5)	0.752
CNS infection	80 (4.0)	40 (4.0)	40 (4.0)	1.000
Clinical outcome				
ICU LOS, days	2.9 (1.0-8.1)	2.1 (0.9-6.6)	3.6 (1.0-9.5)	< 0.001

Hospital LOS, day	10.8 (5.5-18.0)	10.5 (5.9-17.8)	10.9 (5.0-18.8)	0.775
30-day mortality, n (%)	151 (7.6)	57 (5.7)	94 (9.5)	0.002
Hospital mortality, n (%)	164 (8.3)	61 (6.1)	103 (10.4)	0.001

APTT, activated partial thromboplastin time; CNS, central nervous system; ICU, intensive care unit; LOS,

length of stay.

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Supplementary Table 9 Sensitivity analysis: stepwise extended of the multivariate logistic

	High lactate dehydrogenase (>408 U/L)			
-	Odds ratio	95% confidence interval	Р	
In-hospital mortality				
Model 1	3.25	2.48-4.24	< 0.001	
Model 2	3.14	2.40-4.11	< 0.001	
Model 3	2.12	1.59-2.83	< 0.001	
Model 4	1.90	1.41-2.58	< 0.001	
30-day mortality				
Model 1	3.21	2.43-4.25	< 0.001	
Model 2	3.12	2.36-4.12	< 0.001	
Model 3	2.09	1.55-2.81	< 0.001	
Model 4	1.88	1.37-2.58	< 0.001	

regression model after excluding patients from the surgical intensive care unit

	Lactate dehydrogenase (per standard deviation increase)		
	Odds ratio	95% confidence interval	Р
In-hospital mortality			
Model 1	1.23	1.14-1.33	< 0.001
Model 2	1.23	1.13-1.33	< 0.001
Model 3	1.13	1.05-1.23	0.002
Model 4	1.09	1.00-1.18	0.040
30-day mortality			
Model 1	1.23	1.13-1.33	< 0.001
Model 2	1.22	1.13-1.32	< 0.001
Model 3	1.14	1.05-1.23	0.002
Model 4	1.09	1.01-1.19	0.033

Supplementary Table 10 Sensitivity analysis: stepwise extended of the multivariate

	High lactate dehydrogenase (>408 U/L)		
-	Odds ratio	95% confidence interval	Р
In-hospital mortality			
Model 1	4.69	3.67-5.98	< 0.001
Model 2	4.64	3.63-5.94	< 0.001
Model 3	2.85	2.19-3.72	< 0.001
Model 4	2.42	1.83-3.22	< 0.001
30-day mortality			
Model 1	4.78	3.70-6.17	< 0.001
Model 2	4.75	3.67-6.16	< 0.001
Model 3	2.93	2.22-3.87	< 0.001
Model 4	2.51	1.86-3.37	< 0.001

logistic regression model including comorbidity status as a separate covariate

	Lactate dehydrogenase (per standard deviation increase)		
-	Odds ratio	95% confidence interval	Р
In-hospital mortality			
Model 1	1.32	1.22-1.43	< 0.001
Model 2	1.32	1.22-1.43	< 0.001
Model 3	1.17	1.09-1.25	< 0.001
Model 4	1.11	1.03-1.20	0.005
30-day mortality			
Model 1	1.32	1.22-1.42	< 0.001
Model 2	1.31	1.22-1.42	< 0.001
Model 3	1.17	1.09-1.26	< 0.001
Model 4	1.12	1.04-1.20	0.004

The comorbidity status consists of three categories: no comorbidities, one comorbidity, and multiple comorbidities. Multiple comorbidities are defined as having two or more comorbidities.

Supplementary Table 11 Sensitivity analysis: stepwise extended of the multivariate Cox

regression model

Model 1

Model 2

Model 3

Model 4

	High lactate dehydrogenase (>408 U/L)			
	Hazard ratio	95% confidence interval	Р	
30-day mortality				
Model 1	4.52	3.53-5.79	< 0.001	
Model 2	4.50	3.50-5.77	< 0.001	
Model 3	2.77	2.12-3.61	< 0.001	
Model 4	2.36	1.78-3.12	< 0.001	
	Lactate dehydrogenase (per standard deviation increase)			
	Hazard ratio	95% confidence interval	Р	
30-day mortality				

1.14-1.23

1.15-1.23

1.07-1.18

1.03-1.15

< 0.001

< 0.001

< 0.001

0.002

1.19

1.19

1.13

1.09



Supplementary Figure 1 Flow diagram of patient recruitment. AST, aspartate

aminotransferase; CICU, cardiac intensive care unit; CK, creatine kinase; CK-MB,

creatine kinase MB; ICU, intensive care unit; NICU, neonatal intensive care unit.



Supplementary Figure 2 Association between lactate dehydrogenase (LDH) and 30-day

overall survival in critically ill children.



Supplementary Figure 3 The statistical results of the Wald chi-square values minus degrees of freedom for each variable. AKI, acute kidney injury; CNS, central nervous system; DKA, diabetic ketoacidosis; LDH, lactate dehydrogenase.



Supplementary Figure 4 Propensity scores before sensitivity analysis.



Supplementary Figure 5 Propensity scores after sensitivity analysis.