Table S1 The linear relationship analysis between continuous variables and logit(p).

Variables	MLE of lambda	Score Statistic(z)	P
Age (years)	1	-0.276	0.782
Creatinine (μmol/L)	1	0.626	0.532
Lactic acid (mmol/L)	1	-1.176	0.240
pH	1	-0.484	0.629
Cholinesterase (U/L)	1	-0.633	0.527
Pro-BNP (pg/ml)	1	0.411	0.681
Blood urea nitrogen (mmol/L)	1	0.342	0.732
Phosphorus (mmol/L)	1	1.148	0.251
Magnesium (mmol/L)	1	0.091	0.928
Total bilirubin (μmol/L)	1	-0.248	0.804

Pro-BNP, pro-brain natriuretic peptide.

Table S2. Variance inflation factor of variables.

Variables	VIF
Gender female	1.063
Age(years)	1.117
Creatinine (μmol/L)	2.288
Lactic acid (mmol/L)	1.590
Cholinesterase (U/L)	1.253
Pro-BNP (pg/ml)	1.233
Blood urea nitrogen(mmol/L)	1.864
Phosphorus (mmol/L)	1.522
Magnesium (mmol/L)	1.121
Total bilirubin (μmol/L)	1.106
pH	1.564
Respiratory failure	1.337

Pro-BNP, pro-brain natriuretic peptide.

Table S3 The AUCs comparison of models based on logistic regression, SOFA, random forest, decision tree, SVM, Xgboost and Ensemble method.

Model	AUC (95% CI)	P[a]
Logistic regression	0.868 (0.826-0.910)	Reference
SOFA	0.799 (0.744-0.854)	<0.001
Random forest	0.865 (0.825-0.906)	0.80
Decision tree	0.835 (0.788-0.881)	0.03
SVM	0.837 (0.786-0.887)	0.02
Xgboost	0.834 (0.788-0.881)	0.03
Ensemble	0.863 (0.821-0.905)	0.50

[a] The significance was obtained by comparison to logistic regression model.

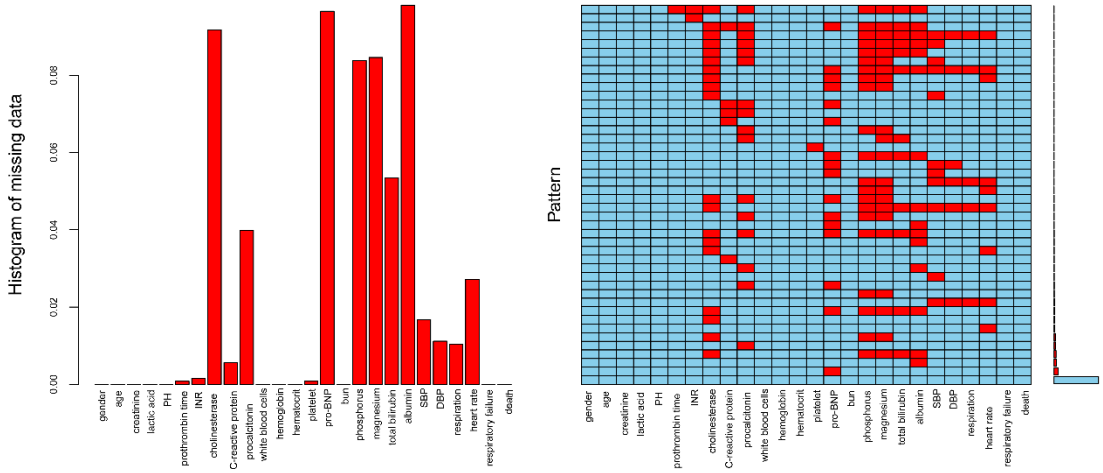

Figure S1. The distribution of missing data in enrolled patients with septic shock.