

Table S1 Univariate Cox regression analysis of association between different risk factors and 30-day death in ARF patients

Variables	Total	Hazard ratios	95% confidence interval	P value
Sex, female	4,353	1.01	0.94–1.10	0.71
Age, >65 years	5,495	1.61	1.49–1.75	<0.001
Comorbidity				
Congestive heart failure	3,648	0.95	0.87–1.02	0.17
Chronic pulmonary disease	3,175	0.93	0.85–1.01	0.08
Diabetes	2,338	0.93	0.85–1.02	0.10
Renal disease	2,437	1.05	0.97–1.15	0.23
Malignant cancer	1,572	1.55	1.41–1.70	<0.001
Severe liver disease	790	1.47	1.31–1.65	<0.001
SOFA, ≥ 2	9,283	1.82	1.39–2.38	<0.001
Albumin, <25 g/L	937	1.48	1.32–1.66	<0.001
Bun, >13.9 mmol/L	7,833	1.58	1.41–1.78	<0.001
Creatinine, >1.5 mg/dL	3,081	1.37	1.27–1.49	<0.001
WBC, $>10 \times 10^9/L$	6,012	1.15	1.06–1.25	<0.001
Platelets, $<100 \times 10^9/L$	1,236	1.59	1.44–1.75	<0.001
Mechanical ventilation	6,055	1.08	0.99–1.17	0.07
Vasopressor use	536	1.72	1.50–1.97	<0.001
BAR				
Low	1,817	1.0		
Middle	1,819	1.39	1.22–1.59	<0.001
High	1,820	1.79	1.57–2.03	<0.001

ARF, acute respiratory failure; SOFA, sequential organ failure assessment; BUN, blood urea nitrogen; WBC, white blood cell; BAR, blood urea nitrogen-to-albumin ratio.

Table S2 The threshold analysis of the BAR' effects on 30-day mortality in ARF patients

Outcome	30-day mortality	
	HR (95% CI)	P value
Model I		
One line effect	1.02 (1.01, 1.02)	<0.001
Model II		
Turning point(K)	11.76	
< K effect 1	1.07 (1.05, 1.09)	<0.001
> K effect 2	1.01 (1.00, 1.01)	0.06
Effect 2-1	0.94 (0.92, 0.96)	<0.001
LRT test		<0.001

BAR, blood urea nitrogen-to-albumin ratio; ARF, acute respiratory failure; LRT, likelihood ratio test.

Table S3 ROC Analysis result by 30-day mortality status

Variables	AUC (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)	Youden index (95% CI)	PPV	NPV	Accuracy	P* (equality compared to BAR)
BAR	0.704 (0.692–0.714)	0.618 (0.549–0.675)	0.692 (0.638–0.760)	0.310 (0.291–0.331)	43.7%	78.6%	78.6%	
BUN	0.647 (0.636–0.657)	0.594 (0.504–0.698)	0.619 (0.522–0.705)	0.241 (0.197–0.245)	42.9%	74.4%	74.4%	<0.001
Albumin	0.641 (0.629–0.653)	0.582 (0.530–0.623)	0.629 (0.587–0.678)	0.223 (0.190–0.232)	41.5%	74.1%	74.1%	<0.001

*, the AUCs of the models were calculated and tested mutually for significance by DeLong equality tests. ROC, receiver operating characteristic; AUC, area under the receiver operating characteristic curve; CI, confidence interval; PPV, positive predictive value; NPV, negative predictive value; BAR, blood urea nitrogen-to-albumin ratio; BUN, blood urea nitrogen.

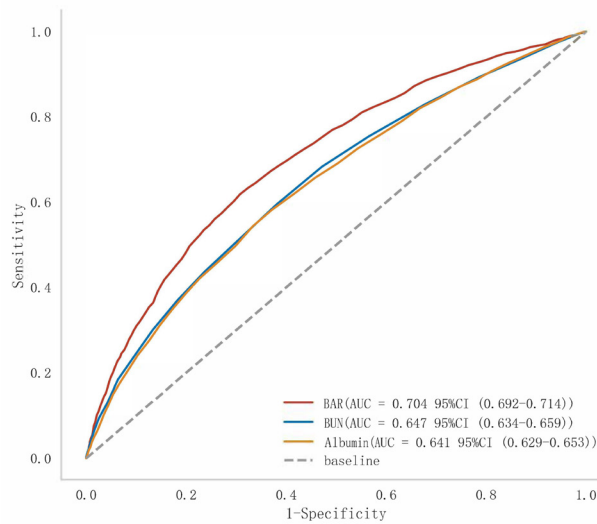


Figure S1 Analysis of receiver operating characteristics curve for predicting 30-day mortality of ARF patients. ARF, acute respiratory failure; BAR, blood urea nitrogen-to-albumin ratio; BUN, blood urea nitrogen; AUC, area under the receiver operating characteristic curve; CI, confidence interval.