

Supplementary Material

Prognostic Value of Lactate-to-Albumin Ratio in Patients with Asthma in the Intensive Care Unit: Development and External Validation of a Predictive Model

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Supplementary Table S1. Baseline characteristics and clinical outcomes of asthma patients in the eICU-CRD validation cohort.

Variables	Total (n = 467)	Low LAR (n = 195)	High LAR (n = 272)	P value
Gender (Male), n (%)	174 (37.3)	63 (32.3)	111 (40.8)	0.061
Age (years),	56.0 ± 18.0	56.2 ± 17.0	55.8 ± 18.0	0.829
SOFA score,	6.5 ± 3.8	6.1 ± 3.5	6.8 ± 3.9	0.042
LAR(IQR)	0.6 (0.4, 1.2)	0.4 (0.3, 0.6)	1.0 (0.7, 1.6)	< 0.001
Lactate(mmol/L)	1.8 (1.1, 3.1)	1.0 (0.8, 1.4)	2.6 (1.9, 4.3)	< 0.001
Albumin (g/dL)	2.9 ± 0.7	3.0 ± 0.6	2.8 ± 0.8	< 0.001
Outcomes				
ICU mortality, n (%)	40 (8.6)	9 (4.6)	31 (11.4)	0.01

Note: Data are presented as mean ± SD, median (interquartile range), or n (%) as appropriate. LAR, lactate-to-albumin ratio; SOFA, Sequential Organ Failure Assessment.

Supplementary Table S2. Association between LAR and mortality across various statistical models in the discovery cohort.

Models	Comparison	Variable	HR(95% CI)	<i>P</i> value
Unmatched model	High vs Low LAR	High LAR	3.58 (2.39–5.37)	<0.001
Multivariable model	High vs Low LAR	High LAR	1.80 (1.16–2.79)	0.009
Propensity Score Matching (PSM)	High vs Low LAR	High LAR	2.10 (1.33–3.31)	0.001
Propensity Score Adjustment (PSA)	High vs Low LAR	High LAR	1.69 (0.93–3.08)	0.087
Weighted (IPTW)	High vs Low LAR	High LAR	2.02 (1.22–3.34)	0.028
Weighted (SMRW)	High vs Low LAR	High LAR	1.80 (1.22–2.67)	0.015
Weighted (PA)	High vs Low LAR	High LAR	1.79 (0.98–3.28)	0.013
Weighted (OW)	High vs Low LAR	High LAR	1.83 (0.94–3.56)	0.008

Notes:

1. Low LAR group was used as the reference category for all comparisons.
2. Multivariable model: Adjusted for age, sex, and all baseline comorbidities with significant differences.
3. Propensity score-based models: Evaluated using 1:1 nearest-neighbor matching, adjustment as a covariate, and various weighting methods.
4. Abbreviations: HR, hazard ratio; CI, confidence interval; LAR, lactate-to-albumin ratio; IPTW, inverse probability of treatment weighting; SMRW, standardized mortality/morbidity ratio weighting; PA, propensity score adjustment; OW, overlap weighting.
5. For the PA and OW models, the slight numerical divergence between the 95% CI (which marginally includes 1.0) and the *P*-value (< 0.05) is attributed to the use of robust sandwich variance estimators. These estimators prioritize the accuracy of the *P*-value in weighted cohorts, which may occasionally result in a wider confidence interval than traditional Wald-based methods

Supplementary Table S3. Logistic regression analysis for predicting mortality in the eICU-CRD validation cohort.

Predictor	β (Estimate)	S.E.	OR (95% CI)	<i>P</i> value
(Intercept)	-5.514	0.852		< 0.001
LAR	0.374	0.148	1.454 (1.087–1.943)	0.012
Age	0.025	0.011	1.025 (1.003–1.048)	0.025
Gender (Male)	-0.237	0.377	0.789 (0.377–1.652)	0.53
SOFA score	0.169	0.047	1.184 (1.080–1.298)	< 0.001

Note:

OR (Odds Ratio): Calculated as e^{β} to represent the relative risk.

95% CI: Calculated as $e^{(\beta \pm 1.96 \times \text{S.E.})}$

***P* value:** Formatted to three decimal places; values approaching 0 are expressed as < 0.001.

Abbreviations: LAR, lactate-to-albumin ratio; SOFA, Sequential Organ Failure Assessment; S.E., standard error.