

SUPPLEMENTARY DATA

Table 1 of the supplementary data. The importance of variables included in the machine learning models. Data were ranked by importance and only the top 40 are shown.

Random forest	XGBoost	Partial least square	Plmnet-elastic.net
Mechanical ventilation	Mechanical ventilation	Mechanical ventilation	Mechanical ventilation
Albumin	Albumin	Albumin	Albumin
INR	INR	Hemoglobin	Age
BUN	Age	Hematocrit	BUN
WBC max	BUN	WBC max	CNS dysfunction
CRP	WBC max	BUN	Heart rate
Age	Platelet	Shock	Dementia
Platelet	CRP	CRP	Nasal oxygen
Hemoglobin	Heart rate	CNS dysfunction	WBC min
Hematocrit	Creatinine	Heart rate	Hb
Heart rate	Nasal oxygen	WBC min	CRP
Creatinine	WBC min	Cardiac arrest	Hemorrhage
WBC min	Troponin I	Mechanical circulatory support	SPO ₂
ALT	Total bilirubin	Admission for heart failure	Scheduled procedure
Troponin I	Diastolic BP	Age	Admission for heart failure
Chloride	Systolic BP	INR	WBC max
Sodium	Hematocrit	Dementia	Platelet
Total bilirubin	SpO ₂	SpO ₂	Sex
AST	Body mass index	Hemorrhage	Hematocrit

Body mass index	ALT	Platelet	Total bilirubin
SPO ₂	Hemoglobin	Total bilirubin	Shock
Systolic BP	CNS dysfunction	Creatinine	INR
Mean arterial pressure	Chloride	Sodium	Urgent admission
Diastolic BP	Sodium	Scheduled procedure	Cardiac arrest
Respiratory rate	Mean arterial pressure	AST	Respiratory rate
Potassium	Body temperature	Potassium	AST
Body temperature	AST	Heart failure	Previous CABG
CNS dysfunction	Potassium	Mean arterial pressure	Mechanical circulatory support
Nasal oxygen	Respiratory rate	Respiratory rate	Unscheduled procedure
Hemorrhage	Scheduled procedure	ALT	Troponin I
Dementia	Sex	Systolic BP	ALT
Shock	Dementia	Diastolic BP	Hypertension
Cardiac arrest	Diabetes	Urgent admission	Heart failure
Sex	Previous coronary artery disease	Sex	Body mass index
Admission for heart failure	Shock	Previous CABG	Previous coronary disease
Scheduled procedure	Hemorrhage	Unscheduled procedure	Renal impairment
Diabetes	Admission for heart failure	Nasal oxygen	Chronic neurologic disorder
Admission for other causes	Cardiac arrest	Renal impairment	Solid cancer
Hypertension	Hypertension	Arrhythmia	Diabetes
Previous coronary disease	Arrhythmia	Diabetes	Liver disease

Ko RE, et al. Machine learning methods for developing a predictive model of the incidence of delirium in cardiac intensive care units

ALT, alanine transaminase; AST, aspartate transaminase; BUN, blood urea nitrogen; BP, blood pressure; CABG, coronary artery bypass graft; CNS, central nervous system; CRP, C-reactive protein; INR, international normalized ratio; SpO₂, saturation for peripheral oxygen; WBC, white blood cell.

Table 2 of the supplementary data. Score for prediction of delirium

Risk of delirium = $1/(1+\exp(-(-2.9236)))$										
1.8313 * oxgen therapy use +										
(-0.716)*albumin +										
+ 0 for INR < 1, 0.1891* for INR 1~1.3, 0.7797 * INR > 1.3										
+ 0.5597 * natural log-transformed BUN										
+ 0.4428 * natural log-transformed WBC										
+ 0.1673 * natural log-transformed C reactive protein										
+ 0 for age < 50, 0.1059 for 50~59, 0.4567 for 60~69, 0.7274 for 70~79, 1.418 for 80 ≤										
+ 0 for HR 40~100, 0.5967 for HR < 40, 0.2969 for HR > 100										
Pati ent No.	Mech anical ventil ation	Albu min (g/ dl)	IN R	BUN (mg/ dl)	WBC (x10 ³ /μl)	CRP (mg/ dl)	Age, y	Heart rate, per min	Logistic regression scoring model	Predicte d probabil ity
	0	3.7	1. 10	20.1	7.54	0.90	66	88	0.5530304 48	0.08544 4622
	0	3.8	1. 11	41.4	11.3 6	0.05	71	120	1.1513818 77	0.14526 6701

BUN, blood urea nitrogen; CRP, C-reactive protein; INR, international normalized ratio; WBC, white blood cells.

Figure 1 of the supplementary data. Estimated spline transformation. A, albumin. B, international normalized ratio (INR). C, blood urea nitrogen (BUN). D, white blood cells count (WBC). E, C-reactive protein. F, age. H, heart rate.

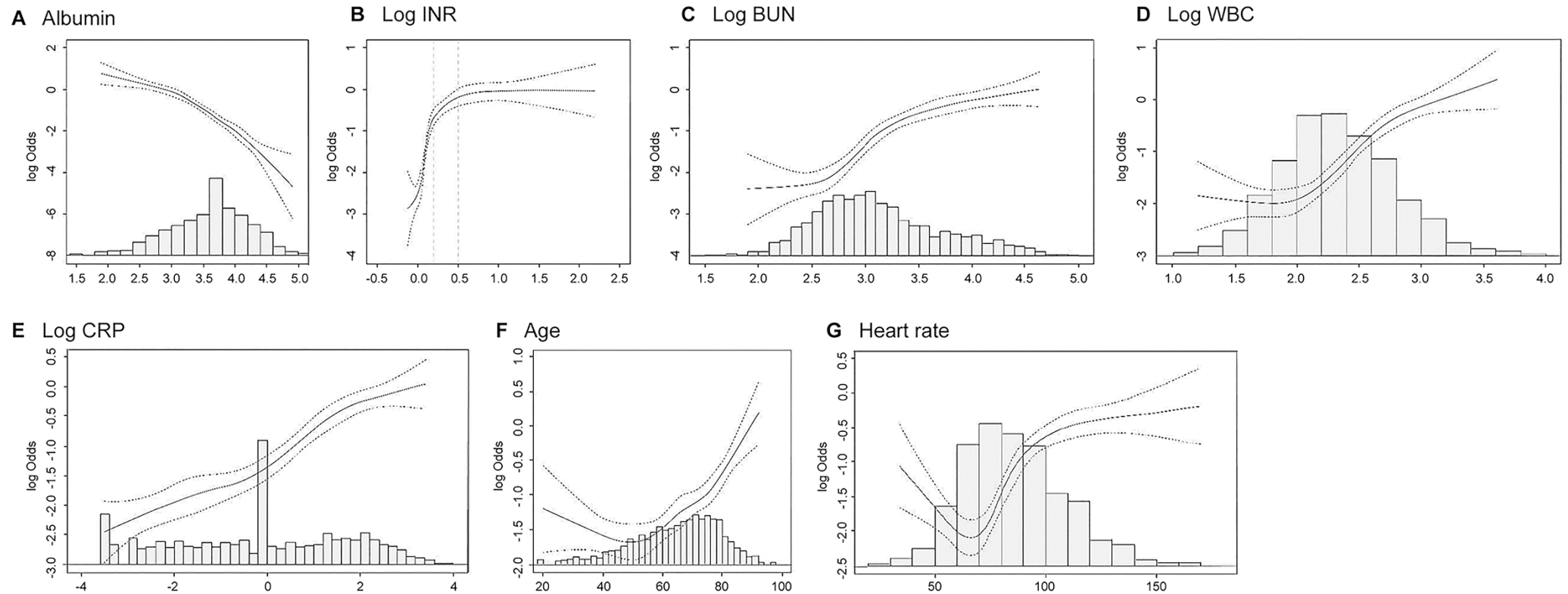


Figure 2 of the supplementary data. Comparison of the goodness-of-fit between the continuous model and the final scoring model ($P = .585$).

