

Table S1 Clinical and laboratory variables extracted from database

Variable	Unit	Notes
Age	Year	Patient's age
Gender	Male/female	Patient's gender
Weight	Kg	Patient's weight
Height	Cm	Patient's height
Coronary heart disease	Yes/no	Whether the patient has coronary heart disease?
Heart failure	Yes/no	Whether the patient has heart failure?
HBP	Yes/no	Whether the patient has HBP (hypertension)?
Pneumonia	Yes/no	Whether the patient has pneumonia?
Respiratory failure	Yes/no	Whether the patient has respiratory failure?
Cerebrovascular disease	Yes/no	Whether the patient has cerebrovascular disease?
Renal disease	Yes/no	Whether the patient has renal disease?
Liver disease	Yes/no	Whether the patient has liver disease?
Cancer	Yes/no	Whether the patient has cancer?
DM	Yes/no	Whether the patient has DM (diabetes mellitus)?
WBC (max)	k/ μ L	Maximum value of white blood cell (from ICU admission to extubation)
WBC (min)	k/ μ L	Minimum value of white blood cell (from ICU admission to extubation)
WBC (final)	k/ μ L	Final value of white blood cell (from ICU admission to extubation)
RBC (max)	k/ μ L	Maximum value of red blood cell (from ICU admission to extubation)
RBC (min)	k/ μ L	Minimum value of red blood cell (from ICU admission to extubation)
RBC (final)	k/ μ L	Final value of red blood cell (from ICU admission to extubation)
Lactate (max)	mmol/L	Maximum value of lactate (from ICU admission to extubation)
Lactate (min)	mmol/L	Minimum value of lactate (from ICU admission to extubation)
Lactate (final)	mmol/L	Final value of lactate (from ICU admission to extubation)
Platelet count (max)	k/ μ L	Maximum value of platelet count (from ICU admission to extubation)
Platelet count (min)	k/ μ L	Minimum value of platelet count (from ICU admission to extubation)
Platelet count (final)	k/ μ L	Final value of platelet count (from ICU admission to extubation)
Blood glucose (max)	mg/dL	Maximum value of blood glucose (from ICU admission to extubation)
Blood Glucose (min)	mg/dL	Minimum value of blood glucose (from ICU admission to extubation)
Blood glucose (final)	mg/dL	Final value of blood glucose (from ICU admission to extubation)
PaO ₂ (max)	mmHg	Maximum value of PaO ₂ (from ICU admission to extubation)
PaO ₂ (min)	mmHg	Minimum value of PaO ₂ (from ICU admission to extubation)
PaO ₂ (final)	mmHg	Final value of PaO ₂ (from ICU admission to extubation)
PaCO ₂ (max)	mmHg	Maximum value of PaCO ₂ (from ICU admission to extubation)
PaCO ₂ (min)	mmHg	Minimum value of PaCO ₂ (from ICU admission to extubation)
PaCO ₂ (final)	mmHg	Final value of PaCO ₂ (from ICU admission to extubation)
pH (max)	/	Maximum value of pH (from ICU admission to extubation)

Table S1 (continued)

Table S1 (continued)

Variable	Unit	Notes
pH (min)	/	Minimum value of pH (from ICU admission to extubation)
pH (final)	/	Final value of pH (from ICU admission to extubation)
Heart rate (max)	bpm	Maximum value of heart rate (from ICU admission to extubation)
Heart rate (min)	bpm	Minimum value of heart rate (from ICU admission to extubation)
Heart rate (final)	bpm	Final value of heart rate (from ICU admission to extubation)
MBP (max)	mmHg	Maximum value of mean blood pressure (from ICU admission to extubation)
MBP (min)	mmHg	Minimum value of mean blood pressure (from ICU admission to extubation)
MBP (final)	mmHg	Final value of mean blood pressure (from ICU admission to extubation)
Respiratory rate (max)	min ⁻¹	Maximum value of respiratory rate (from ICU admission to extubation)
Respiratory rate (min)	min ⁻¹	Minimum value of respiratory rate (from ICU admission to extubation)
Respiratory rate (final)	min ⁻¹	Final value of respiratory rate (from ICU admission to extubation)
Temperature (max)	°C	Maximum value of temperature (from ICU admission to extubation)
Temperature (min)	°C	Minimum value of temperature (from ICU admission to extubation)
Temperature (final)	°C	Final value of temperature (from ICU admission to extubation)
SpO ₂ (max)	%	Maximum value of SpO ₂ (from ICU admission to extubation)
SpO ₂ (min)	%	Minimum value of SpO ₂ (from ICU admission to extubation)
SpO ₂ (final)	%	Final value of SpO ₂ (from ICU admission to extubation)
Urine output (24 h)	mL	24 h urine output before extubation
PSV level (max)	cmH ₂ O	Maximum value of PSV level (from ICU admission to extubation)
PSV level (min)	cmH ₂ O	Minimum value of PSV level (from ICU admission to extubation)
PSV level (final)	cmH ₂ O	Final value of PSV level (from ICU admission to extubation)
Mean airway pressure (max)	cmH ₂ O	Maximum value of mean airway pressure (from ICU admission to extubation)
Mean airway pressure (min)	cmH ₂ O	Minimum value of mean airway pressure (from ICU admission to extubation)
Mean airway pressure (final)	cmH ₂ O	Final value of mean airway pressure (from ICU admission to extubation)
PEEP (initial)	cmH ₂ O	Initial value of positive end expiratory pressure (from ICU admission to extubation)
PEEP (final)	cmH ₂ O	Final value of positive end expiratory pressure (from ICU admission to extubation)
FiO ₂ (initial)	%	Initial value of FiO ₂ (from ICU admission to extubation)
FiO ₂ (final)	%	Final value of FiO ₂ (from ICU admission to extubation)
Respiratory rate set (initial)	min ⁻¹	Initial value of respiratory rate set (from ICU admission to extubation)
Respiratory rate set (final)	min ⁻¹	Final value of respiratory rate set (from ICU admission to extubation)
Minute volume (initial)	mL	Initial value of minute volume (from ICU admission to extubation)
Minute volume (final)	mL	Final value of minute volume (from ICU admission to extubation)
Tidal volume set (initial)	mL	Initial value of tidal volume set (from ICU admission to extubation)
Tidal volume set (final)	mL	Final value of tidal volume set (from ICU admission to extubation)
Plateau pressure (initial)	cmH ₂ O	Initial value of plateau pressure (from ICU admission to extubation)

Table S1 (continued)

Table S1 (continued)

Variable	Unit	Notes
Plateau pressure (final)	cmH ₂ O	Final value of plateau pressure (from ICU admission to extubation)
Vasopressor	Yes/no	Whether vasopressor was administered (from ICU admission to extubation)?
Vasopressor (24h)	Yes/no	Whether vasopressor was administered (24 h before extubation)?
SOFA respiration (24 h)	/	24 h SOFA respiration score before extubation
SOFA coagulation (24 h)	/	24 h SOFA coagulation score extubation
SOFA liver (24 h)	/	24 h SOFA liver score extubation
SOFA cardiovascular (24 h)	/	24 h SOFA cardiovascular score before extubation
SOFA CNS (24h)	/	24 h SOFA CNS score before extubation
SOFA Renal (24h)	/	24 h SOFA Renal score before extubation
GCS	/	GCS score before extubation
SIRS	/	SIRS score before extubation

HBP, hypertension; DM, diabetes mellitus; WBC, white blood cell; RBC, red blood cell; ICU, intensive care units; PaO₂, partial pressure of oxygen; PaCO₂, partial pressure of carbon dioxide; MBP: mean blood pressure; PSV, pressure support ventilation; PEEP, positive end-expiratory pressure; FiO₂, fraction of inspired oxygen; SOFA, Sequential Organ Failure Assessment; GCS, Glasgow Coma Scale; SIRS, systemic inflammatory response syndrome.

Table S2 Package and tuning parameters in the study

Model	Package	Tuning	
		Step1	Step 2
RF	<i>randomForest</i>	small range grid search for <i>n</i> tree (350) and <i>m</i> try (7)	large range grid search for <i>n</i> tree (500) and <i>m</i> try (7)
LOG	<i>base</i>	None	
XGB	<i>xgboost</i>	<i>n</i> round (75) and <i>max.depth</i> (1)	
KNN	<i>kknn</i>	<i>k</i> (100)	
SVM	<i>e1071</i>	<i>cost</i> (1) <i>gamma</i> (0.19) and <i>degree</i> (1) with package function	
GBM	<i>lightgbm</i>	<i>num leaves</i> (30) and <i>learn rate</i> (0.03)	min data in <i>leaf</i> (9)

RF, random forest; LOG, logistics regression; XGB, eXtreme Gradient Boosting; KNN, K-nearest neighbors; SVM, support-vector machines; GBM, Light Gradient Boosting Machine.