

Table S1. Criteria for medical alert team activation

Screening criteria from electronic medical record	
Systemic mean blood pressure < 60 mm Hg or systolic blood pressure < 90 mm Hg	
Respiratory distress (rate > 25 or < 8 breaths/min)	
Unexplained pulse rate > 130 beats/min or pulse rate < 50 beats/min	
Unexplained metabolic acidosis (pH < 7.3) or lactate > 2 mmol/L	
PaCO ₂ > 50 mmHg or PaO ₂ < 55mmHg	
Glucose < 2.8 mmol/L	
Sudden mental change or unexplained agitation	
Applying O ₂ nasal prong > 3 L, or venturi mask > 30%	
Unexplained seizures	
Chest pain	
Upper airway obstruction sign: stridor	
Calling criteria	
Airway	Threatened or stridor
Breathing	Respiratory rate < 6 breaths/min or Respiratory rate > 30 breaths/m SpO ₂ < 90% on venturi mask 40% or O ₂ 12 L/min
Circulation	Pulse rate < 40 beats/min Pulse rate > 140 beats/min Systolic blood pressure < 90 mm Hg
Neurology	Sudden mental change or Seizure
Others	Bedside nurse's concern about overall deterioration

Table S2. Modified early weaning score (MEWS)

	3	2	1	0	1	2	3
Systolic Blood pressure (mmHg)	≤ 70	71-80	81-100	101-199		≥200	
Pulse rate (bpm)		≤40	41-50	51-100	101-110	111-129	≥130
Respiratory rate (bpm)		< 9		9-14	15-20	21-29	≥30
Temperature (°C)		<35		35-38.4		≥38.5	
Mental status				Alert	Reacts to voice	Reacts to pain	Unresponsiveness

Table S3. Baseline patients and event characteristics

	Daytime		On-call		Total
	Call	Screening	Call	Screening	
	N=1897	N=1836	N=2874	N=3419	N=10026
Activation coding					
Sepsis	103(5.4)	143(7.8) [†]	157(5.5)	331(9.7) [‡]	734(7.3)
Septic shock	179(9.4)	235(12.8) [‡]	293(10.2)	417(12.2) [*]	1124(11.2)
Respiratory distress	980(51.7)	930(50.7)	1444(50.2)	1739(50.9)	5093(50.8)
Cardiac arrest	33(1.7) [‡]	5(0.3)	45(1.6) [‡]	2(0.06)	85(0.8)
Cardiogenic shock	31(1.6) [‡]	10(0.5)	32(1.1)	33(1.0)	106(1.1)
Anaphylactic shock	20(1.1) [†]	5(0.3)	15(0.5)	7(0.2)	47(0.5)
Hypovolemic shock	143(7.5) [‡]	64(3.5)	277(9.6) [‡]	169(4.9)	653(6.5)
Obstructive shock (PTE)	5 (0.3)	2(0.1)	7(0.2)	7(0.2)	21(0.2)
Arrhythmia	24(1.3)	22(1.2)	65(2.3)	56(1.6)	167(1.7)
Altered mentality	207(10.9) [‡]	44(2.4)	236(8.2) [‡]	84(2.5)	571(5.7)
Metabolic acidosis	50(2.6)	248(13.5) [‡]	68(2.4)	290(8.5) [‡]	656(6.5)
(old) Sepsis	24(1.3)	30(1.6)	43(1.5)	76(2.2)	173(1.7)
Hypertension	42(2.2)	62(3.4) [*]	79(2.7)	136(4.0) [†]	319(3.2)
Others	56(3.0)	36(2.0)	113(3.9) [‡]	72(2.1)	277(2.8)

Categorical variables are presented as No. (%). ^{*}p - value < 0.05, [†]p - value < 0.01, [‡]p - value < 0.001. Chi-square test was done for the comparison between daytime calling and daytime screening. Same analytic technique was used for the comparison between on-call calling and on-call screening. PTE = pulmonary thromboembolism.

Table S3. Baseline patients and event characteristics. Continued

Intervention	Day time		On-call		Total	Categorical value e < 0.05, †p - value
	Call	Screening	Call	Screening		
	N=1897	N=1836	N=2874	N=3419	N=10026	
ACLS	44(2.3) [‡]	10(0.5)	77(2.7) [‡]	6(0.2)	137(1.4)	
ECMO	2(0.1)	1(0.0)	1(0.0)	0(0.0)	4 (0.04)	
Intubation	424(22.4) [‡]	115(6.3)	575(20.0) [‡]	183(5.4)	1297(12.9)	
Difficult airway	22(1.2) [†]	6(0.3)	29(1.0) [†]	12(0.4)	69(0.7)	
Ventilator	205(10.8) [‡]	51(3.4)	217(7.6) [‡]	78(2.3)	562(5.6)	
BiPAP	65(3.4) [†]	64(1.9)	91(3.2) [‡]	44(1.3)	234(2.3)	
HFNC	96(5.1)	107(5.8)	149(5.2)	251(7.3) [‡]	603(6.0)	
O2	503(27.8) [‡]	291(16.1)	721(25.9) [‡]	574(17.2)	2089(21.5)	
BFS	8(0.4) [*]	1(0.06)	22(0.8) [‡]	2(0.06)	33(0.3)	
Fiberoptic BFS	6(0.3)	4(0.2)	16(0.6) [‡]	2(0.06)	28(0.3)	
T-can	14(0.8) [*]	5(0.3)	19(0.7) [*]	9(0.3)	47(0.5)	
Suction	401(22.2) [‡]	146(8.1)	568(20.4) [‡]	271(8.1)	1386(14.2)	
Sepsis shock	235(13.0)	308(17.1) [‡]	363(13.1)	604(18.1) [‡]	1510(15.5)	

e < 0.01, [‡]p - value < 0.001. Chi-square test was done for the comparison between daytime calling and daytime screening. Same analytic technique was used for the comparison between on-call calling and on-call screening. ACLS = advanced cardiovascular life support; BiPAP = bilevel positive airway pressure; BFS = bronchoscopy; ECMO = extracorporeal membrane oxygenation; HFNC = high flow nasal cannula; T-can = tracheal cannula.

Table S4. The multivariate analysis for the risk factors associated with ICU admission and 28-day mortality after RRT activation

Variables	OR	95% CI	p-value	Variables	OR	95% CI	p-value
ICU admission							
Illness type				Activation coding			
Medical	1			Sepsis	1	1	
Surgical	1.78	1.54-2.05	<0.001	Septic shock	2.82	2.18-3.66	<0.001
				Respiratory distress	1.4	1.11-1.77	0.005
MEWS	1.09	1.06-1.12	<0.001	Cardiogenic shock	3.78	2.33-6.11	<0.001
				Hypovolemic shock	1.53	1.14-2.06	0.004
Time				Obstructive shock (PTE)	3.74	1.35-10.34	0.011
Daytime	1			Altered mentality	1.51	1.11-2.05	0.008
On-call	0.76	0.68-0.84	<0.001	Metabolic acidosis	1.36	1.02-1.92	0.039
				Hypertension	0.41	0.24-0.68	<0.001
Trigger type							
Calling	1						
Screening	0.51	0.46-0.57	<0.001				
28-day mortality							
Illness type				Activation coding			
Medical	1			Sepsis	1		
Surgical	0.32	0.74-0.38	<0.001	Septic shock	1.57	1.24-1.99	<0.001
				Respiratory distress	2.27	1.85-2.80	<0.001
MEWS	1.15	1.12-1.17	<0.001	Cardiac arrest	2.89	1.25-6.68	0.013
				Cardiogenic shock	1.77	1.08-2.91	<0.001
Time				Anaphylactic shock	0.2	0.05-0.83	0.027
Daytime	1			Hypovolemic shock	1.81	1.38-2.39	<0.001
On-call	0.85	0.78-0.94	0.001	Altered mentality	2.24	1.70-2.94	<0.001
				Metabolic acidosis	3.00	2.32-3.90	<0.001
Trigger type				Hypertension	0.60	0.38-0.82	0.021
Calling	1			Intervention			
Screening	1.19	1.08-1.31	0.001	ACLS	7.03	3.94-12.55	<0.001
Underlying disease				Ventilator	1.44	1.18-1.75	<0.001
Solid malignancy	2.67	2.40-2.97	0.001	HFNC	1.66	1.37-1.99	<0.001
Hematologic malignancy	2.11	1.84-2.42	0.001	O2	1.21	1.08-1.36	0.001
Chronic liver disease	1.79	1.58-2.04	0.001				
Chronic kidney disease	1.26	1.03-1.54	0.023				

Data are presented as odds ratio (OR) with 95% confidence interval (CI). See Table 1 and Table S3 legend for expansion of abbreviations. For ICU admission, illness type, MEWS, Time, Trigger type, and activation code were selected for variables for multivariate logistic regression model. For 28-day mortality, illness type, MEWS, Time, Trigger type, underlying disease, activation code, and intervention were variables selected for multivariate logistic regression model.