

***Supplementary Table 1: SEMICYUC reason for admission.***

1. Depressed level of consciousness or other neurological disorders.
2. Acute coronary syndrome
3. Heart rhythm disturbance
4. Cardiorespiratory arrest and postarrest syndrome
5. Heart failure/cardiogenic shock
6. Hypovolemic shock
7. Severe sepsis/septic shock
8. Shock of another etiology
9. Respiratory failure (any etiology)
10. Renal failure and metabolic disorders
11. Intoxications
12. Head injury with or without other associated injuries
13. Other injuries without associated head injury
14. Postoperative monitoring and surveillance (any type)
15. Monitoring and surveillance of non-surgical procedures
16. Other unspecified medical or surgical conditions

**Supplementary Table 2: Characteristics of 340 patients grouped by quartiles according to percentage of time over the target VT (>8 mL/kg predicted body weight)**

Variable	Q1 (n=85)	Q2 (n=85)	Q3 (n=85)	Q4 (n=85)	p-value (All Q)	p-value (Q1 vs Q4)
%VT over target <sup>a</sup>	6.5 (2.4-13.0)	46.6 (35.4-55.1)	84.5 (79.3-89.6)	97.9 (96.3-98.9)	<0.001	<0.001
% excessive VT <sup>b</sup>	4 (0-9)	5 (2-10)	8 (4-14)	17 (12-23)	<0.001	<0.001
<b>Demographics (at admission)</b>						
Age(years), median (p25-75)	53 (38-64)	61 (49-71)	63 (52-72)	67 (56-73)	<0.001	<0.001
Male, sex, n (%)	75 (88.2)	66 (77.6)	55 (64.7)	38 (44.7)	<0.001	<0.001
Weight (kg), median (p25-75)	80 (70-85)	80 (70-88)	75 (70-85)	75 (65-85)	0.41	0.2
Height(cm), median (p25-75)	175 (170-180)	170 (166-175)	167 (165-170)	162 (160-170)	<0.001	<0.001
Reason for admission						
Respiratory failure, n (%)						
Sepsis, n (%)	20 (23.5)	24 (28.2)	24 (28.2)	14 (16.5)	0.198	0.323
Others, n (%)	8 (9.4)	16 (18.8)	14 (16.5)	15 (13.3)	0.198	0.323
	57 (67.1)	45 (52.9)	47 (55.3)	58 (68.2)	0.198	0.323
<b>Severity scores (at 24 hours of admission)</b>						
APACHE <sup>c</sup> II score, (points), median (p25-75)	21 (16-25)	24 (19-32)	25 (20-30)	26 (21-32)	<0.001	<0.001

SOFA <sup>d</sup> score, (points), median (p25-75)	7 (6-9)	8 (6-11)	8 (7-10)	9 (6-11)	0.038	0.014
<b>Respiratory and mechanical ventilation (First 48 h)</b>						
SpO <sub>2</sub> <sup>e</sup> (%)	97 (94-98)	95 (94-97)	95 (94-98)	96 (95-98)	0.25	0.54
SpO <sub>2</sub> /FiO <sub>2</sub> , median (p25-75)	250 (160-313)	222 (153-285)	227 (186-274)	242 (165-320)	0.41	0.89
SpO <sub>2</sub> /FIO <sub>2</sub> <315, n(%)	64 (75.3)	64 (75.3)	72 (84.8)	59 (69.4)	0.131	0.493
FiO <sub>2</sub> <sup>f</sup> (%)	31 (30-45)	35 (30-50)	35 (30-45)	35 (30-40)	0.38	0.71
% controlled MV modes	95 (89-99)	90 (85-96)	91 (84-98)	98 (89-100)	<0.001	0.158
Set MV <sup>g</sup> flow (L/min), median (p25-75)	60 (55-60)	58 (50-60)	59 (50-60)	60 (52-61)	0.61	0.46
Positive end-expiratory pressure, (cmH <sub>2</sub> O), median (p25-75)	5 (5-8)	6 (5-8)	5 (5-8)	5 (5-8)	0.94	0.74
Peak pressure, (cmH <sub>2</sub> O), median (p25-75)	23 (21-26)	23 (21-29)	25 (22-28)	25 (22-28)	0.38	0.13
Plateau pressure, (cmH <sub>2</sub> O), median (p25-75)	18 (16-23)	19 (16-25)	21 (17-25)	21 (17-25)	0.13	0.08
Observed respiratory (rate /min), median (p25-75)	18 (16-23)	18 (16-22)	18 (16-20)	17 (16-20)	0.03	0.05

Set respiratory (rate /min), median (p25-75)	18 (16-20)	17 (16-20)	17 (16-18)	16 (16-18)	0.31	0.08
Set tidal volume (mL), median (p25-75)	510 (480-540)	510 (480-560)	520 (470-550)	520 (480-560)	0.24	0.06
Observed tidal volume (mL), median (p25-75)	500 (470-530)	510 (460-570)	530 (480-560)	530 (490-570)	0.002	<0.001
Set tidal volume, (mL/predicted body weight), median (p25-75)	6.6 (5.9-7.2)	6.5 (5.8-7.4)	6.8 (5.9-7.4)	7.1 (6.4-8.0)	0.006	0.001
Observed tidal volume (mL/predicted body weight), median (p25-75)	6.4 (5.9-7.0)	6.6 (6.0-7.3)	7 (6.1-7.8)	7.2 (6.2-8.0)	<0.001	<0.001
<b>Clinical and laboratory variables (First 48 h)</b>						
Heart rate (beats per minute), median (p25-75)	101 (83-115)	104 (90-119)	100 (90-117)	102 (88-120)	0.72	0.37
Mean arterial pressure (mmHg), median (p25-75)	67 (62-71)	67 (63-73)	68 (62-74)	69 (64-74)	0.08	0.01
Serum lactate (mmol/L), median (p25-75)	1.9 (1.3-2.7)	2.4 (1.5-3.2)	2.2 (1.6-3.0)	2.1 (1.7-3.3)	0.08	0.02

Body temperature(°C), median (p25-75)	37 (36.6-37.4)	37 (36.5-37.5)	37 (36.5-37.7)	37.1 (36.5-37.5)	0.96	0.78
Richmond Agitation-Sedation Scale(points), median (p25-75)	-3 (-3 to -2)	-3 (-3 to -2)	-3 (-3 to -2)	-3 (-4 to -2)	0.59	0.21
<b>Treatments and outcome (First 48 h)</b>						
Vasoactive drugs, n (%)	52 (61.5)	62 (72.9)	61 (71.8)	68 (80.0)	0.056	0.01
Sedative drugs, n (%)	83 (97.6)	77 (90.6)	79 (92.9)	79 (92.9)	0.29	0.28
Neuromuscular blocking agents , n (%)	13 (15.3)	13 (15.3)	12 (14.1)	9 (10.6))	0.78	0.49
Continuous renal replacement , n (%)	5 (5.9)	15 (17.6)	11 (12.9)	11 (12.9)	0.13	0.19
ICU length of stay (days), median (p25-75)	9.4 (7.7-12.9)	13.1 (8.4-20.8)	16 (10.7-24.7)	11.8 (8.8-17.4)	0.004	0.1
MV duration (days), median (p25-75)	5.6 (4.2-7.3)	7.1 (4.8-12.8)	9.2 (5.5-13.7)	7.2 (5.0-10.4)	0.01	0.06
Died in ICU, n (%)	32 (37.6)	39 (45.9)	37 (43.5)	43 (50.6)	0.39	0.12
Died in hospital, n (%)	34 (40.0)	40 (47.1)	37 (43.5)	45 (52.9)	0.37	0.12

(a) %VT over target: time under MV in which the VT > 8 mL/kg predicted body weight, (b) % excessive VT: excessive volume over the VT required for the patient's predicted body weight, VT: tidal volume, (c) APACHE: Acute Physiology And Chronic Health Evaluation, (d) SOFA: Sequential Organ Failure Assessment, (e) SpO<sub>2</sub>: oxygen saturation from pulse oximetry, (f) FiO<sub>2</sub>: fraction of inspired oxygen, (g) MV: mechanical ventilation. Data are shown as medians and interquartile range, or number of patients and percentage as appropriate.

**Supplementary Table 3: Characteristics of patients who received appropriate tidal volume (aTV)  $\geq 80\%$  of the time under mechanical ventilation versus those who did not.**

Variable	aVT No (n=264)	aVT Yes (n=76)	p-value
%tVTot <sup>a</sup>	83.7 (52.5-96)	5.3 (2.0-9.7)	<0.001
% excessive VT <sup>b</sup>	9.5 (4.0-16.2)	4 (0-10)	<0.001
<b>Demographics (at admission)</b>			
Age(years), median (p25-75)	64 (52-73)	52 (37-61.8)	<0.001
Male, sex, n (%)	167 (63.3)	67 (88.2)	<0.001
Weight (kg), median (p25-75)	75 (68.8-85.0)	79 (70-85.1)	0.53
Height(cm), median (p25-75)	170 (162-170)	175 (170-180)	<0.001
Reason for admission			
Respiratory failure, n (%)	37 (24.5)	45 (23.8)	0.119
Sepsis, n (%)	16 (10.6)	35 (18.5)	0.119
Others, n (%)	98 (64.9)	109 (57.7)	0.119
<b>Severity scores (at 24 hours of admission)</b>			
APACHE <sup>c</sup> II score, (points), median (p25-75)	24 (20-31)	20.5 (16-24.2)	<0.001
SOFA <sup>d</sup> score, (points), median (p25-75)	8 (7-10)	7 (6-9)	0.002
<b>Respiratory and mechanical ventilation (First 48 h)</b>			
SpO <sub>2</sub> <sup>e</sup> (%)	95 (94-98)	96.5 (93.8-98)	0.40
SpO <sub>2</sub> /FiO <sub>2</sub> , median (p25-75)	237.5 (165.4-311.2)	250 (153.7-314.2)	0.65
SpO <sub>2</sub> / FIO <sub>2</sub> <315, n(%)	202 (76.5)	57 (75)	0.9
FiO <sub>2</sub> <sup>f</sup> (%)	35 (30-45)	35 (30-45)	0.41
% controlled MV modes	92.5 (85-100)	95.5 (90-99)	0.056
Set MV <sup>g</sup> flow (L/min), median (p25-75)	60 (50-60)	60 (55-60)	0.86
Positive end-expiratory pressure, (cmH <sub>2</sub> O), median (p25-75)	5 (5-8)	5 (5-8)	0.97

Peak pressure, (cmH <sub>2</sub> O), median (p25-75)	24 (21-28)	23 (22-27)	0.36
Plateau pressure, (cmH <sub>2</sub> O), median (p25-75)	20 (17-25)	18 (16-23)	0.11
Observed respiratory (rate /min), median (p25-75)	18 (16-20)	18 (16-20)	0.19
Set respiratory (rate /min), median (p25-75)	16 (16-19)	18 (16-20)	0.043
Set tidal volume (mL), median (p25-75)	520 (480-560)	505 (480-540)	0.22
Observed tidal volume (mL), median (p25-75)	530 (480-570)	500 (470-530)	<0.001
Set tidal volume, (mL/predicted body weight), median (p25-75)	6.9 (5.9-7.5)	6.6 (5.9-7.3)	0.060
Observed tidal volume (mL/predicted body weight), median (p25-75)	6.9 (6.1-7.7)	6.4 (5.8-6.8)	0.001
<b>Clinical and laboratory variables (First 48 h)</b>			
Heart rate (beats per minute), median (p25-75)	102 (88-118)	100 (82-116)	0.21
Mean arterial pressure (mmHg), median (p25-75)	68 (63-73)	67 (61-71)	0.07
Serum lactate (mmol/L), median (p25-75)	2.2 (1.6-3.1)	1.9 (1.3-2.7)	0.009
Body temperature(°C), median (p25-75)	37.1 (36.5-37.6)	37 (36.6-37.4)	0.59
Richmond Agitation-Sedation Scale(points), median (p25-75)	-3 (-3 to -2)	-3 (-3 to -2)	0.47
<b>Treatments and outcome (First 48 h)</b>			
Vasoactive drugs, n (%)	198 (75)	45 (59.2)	0.011
Sedative drugs, n (%)	244 (92.4)	74 (97.4)	0.18
Neuromuscular blocking agents, n (%)	35 (13.3)	12 (15.8)	0.70
Continuous Renal Replacement technique, n (%)	38 (14.4)	4 (5.3)	0.053

ICU length of stay (days), median (p25-75)	13 (9-21)	9 (8-12)	0.001
MV duration, (days), median (p25-75)	7.5 (5-13)	5.5 (4-7)	0.002
Died in ICU, n (%)	121 (45.8)	30 (39.5)	0.39
Died in hospital, n (%)	125 (47.3)	31 (40.8)	0.37

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**Supplementary Table 4: Characteristics of patients according to ICU mortality**

Variable	Died in ICU (n=151)	Survived ICU stay (n=189)	p-value
%VT over target <sup>a</sup>	73.5 (33.4-95.1)	62.9 (20.5-92.5)	0.14
%aTV <sup>b</sup>	30 (19.9)	46 (24.3)	0.39
<b>Demographics (at admission)</b>			
Age(years), median (p25-75)	68 (59-73)	54 (41-67)	<0.001
Male, sex, n (%)	110 (72.8)	124 (65.6)	0.18
Weight (kg), median (p25-75)	78 (70-90)	75 (65-85)	0.14
Height(cm), median (p25-75)	170 (165-175)	170 (165-175)	0.54
Reason for admission			
Respiratory failure, n (%)	62 (23.5)	20 (26.3)	0.457
Sepsis, n (%)	43 (16.3)	8 (10.5)	0.457
Others, n (%)	159 (60.2)	48 (63.2)	0.457
<b>Severity scores (at 24 hours of admission)</b>			
APACHE <sup>c</sup> II score, (points), median (p25-75)	25 (21-32)	22 (17-28)	<0.001
SOFA <sup>d</sup> score, (points), median (p25-75)	9 (6.5-11)	8 (6-10)	0.026
<b>Respiratory and mechanical ventilation (First 48 h)</b>			
SpO <sub>2</sub> <sup>e</sup> (%)	95 (93-97)	96 (94-98)	0.004
SpO <sub>2</sub> /FiO <sub>2</sub> , median (p25-75)	222 (141-313)	245 (186-310)	0.059
SpO <sub>2</sub> / FIO <sub>2</sub> , n(%)	35 (30-50)	35 (30-40)	0.028
FiO <sub>2</sub> <sup>f</sup> , (%)	60 (50-60)	60 (50-60)	0.734
% controlled MV modes	5.5 (5-8)	5 (5-8)	0.832
Set MV <sup>g</sup> flow (L/min), median (p25-75)	24 (22-28)	24 (21-27)	0.169
Positive end-expiratory pressure, (cmH <sub>2</sub> O), median (p25-75)	21 (17-25)	19 (16-25)	0.092
Peak pressure, (cmH <sub>2</sub> O), median (p25-75)	18 (16-20)	17 (16-20)	0.007

Plateau pressure, (cmH <sub>2</sub> O), median (p25-75)	18 (16-20)	16 (16-18)	0.062
Observed respiratory (rate /min), median (p25-75)	520 (480-560)	510 (480-550)	0.456
Set respiratory (rate /min), median (p25-75)	530 (480-570)	510 (480-550)	0.020
Set tidal volume (mL), median (p25-75)	6.7 (5.8-7.4)	6.9 (6.0-7.5)	0.144
Observed tidal volume (mL), median (p25-75)	6.7 (6.1-7.6)	6.8 (6.0-7.6)	0.637
<b>Clinical and laboratory variables (First 48 h)</b>			
Heart rate (beats per minute), median (p25-75)	101 (87-120)	102 (87-117)	0.652
Mean arterial pressure (mmHg), median (p25-75)	68 (63-72)	67 (62-72)	0.43
Serum lactate (mmol/L), median (p25-75)	2.3 (1.8-3.1)	1.9 (1.3-2.7)	0.001
Body temperature(°C), median (p25-75)	37.1 (36.6-37.5)	37 (36.5-37.5)	0.44
Richmond Agitation-Sedation Scale(points), median (p25-75)	-3 (-4 to -2)	-3 (-3 to -2)	0.006
<b>Clinical and laboratory variables (First 48 h)</b>			
Vasoactive drugs, n (%)	119 (78.8)	124 (65.5)	0.011
Sedative drugs, n (%)	135 (89.4)	183 (96.8)	0.011
Neuromuscular blocking agents, n (%)	24 (15.9)	23 (12.2)	0.406
Continuous Renal Replacement technique, n (%)	20 (13.2)	22 (11.6)	0.779

(a) %VT over target: time under MV in which the VT > 8 mL/kg predicted body weight, (b) aVT: Percentage of patients who received appropriate VT (% aVT), VT: tidal volume, (c) APACHE: Acute Physiology And Chronic Health Evaluation, (d) SOFA: Sequential Organ Failure Assessment, (e) SpO<sub>2</sub>: oxygen saturation from pulse oximetry, (f) FiO<sub>2</sub>: fraction of inspired oxygen, (g) MV: mechanical ventilation. Data are shown as medians and interquartile range, or number of patients and percentage as appropriate.