

**Supplement Table 1: Patients Characteristics comparing Low to High Body Mass Index**

patients at time of Venovenous ECMO initiation. (BMI Threshold of 35 kg/m<sup>2</sup>)

	Study Population (N=354)	Low BMI ( $\leq 35$ kg/m <sup>2</sup> ) (N=264)	High BMI ( $> 35$ kg/m <sup>2</sup> ) (N=90)
Age, years	52 (43-60)	54 (46-61)	48 (38-58)
Sex			
Male	250 (71%)	201 (76%)	49 (54%)
Female	104 (29%)	63 (24%)	41 (46%)
Race/Ethnicity			
White	154 (44%)	127 (48%)	27 (30%)
Hispanic	74 (21%)	54 (21%)	20 (22%)
Asian	44 (12%)	38 (14%)	6 (7%)
Black	35 (10%)	13 (5%)	22 (24%)
Others	47 (13%)	32 (12%)	15 (17%)
BMI (kg/m <sup>2</sup> )	30 (26-35)	28 (25-31)	39 (37-43)
Acute Physiology Score II	18 (11-24)	19 (11-24)	16 (10-23)
Sequential Organ-Function Assessment (SOFA)	7 (5-10)	7 (5-10)	7 (5-9)
Pregnancy	6(2%)	3 (1%)	3 (3%)
Co-morbidities			
Immunocompromised or transplant patient	12 (3%)	10 (4%)	2 (2%)
Hypertension	153 (43%)	115 (44%)	38 (42%)
Diabetes	88 (25%)	61 (23%)	27 (30%)
Active Smoker	64 (18%)	51 (19%)	13 (14%)
Chronic pulmonary disease	22 (6%)	15 (6%)	7 (8%)
Chronic cardiac disease	21 (6%)	16 (6%)	5 (6%)
Chronic kidney disease	13 (4%)	12 (5%)	1 (1%)
Alcohol abuse	10 (3%)	5 (2%)	5 (6%)
Malignancy	8 (2%)	5 (2%)	3 (3%)
Time from first symptoms to hospital admission, d	10 (6-16)	10 (6-16)	9 (4-13)
Time from intubation to ECMO, d	4(2-7)	4 (2-8)	4 (2-6)
Duration of mechanical ventilation, d	24 (14-38)	27 (16-42)	18 (10-32)
Hospital length of stay, d	32 (17-50)	32 (20-56)	29 (16-37 )
Intensive Care Unit length of stay, d	28 (16-44)	31 (18-48)	24 (14-34)
Summary Statistics are median (inter-quartile range) or n (%). ECMO = Extracorporeal Membrane Oxygenation, BMI = Body Mass Index, d = days			

**Supplemental Table 2:** Patients pre-ECMO respiratory support characteristics and post-ECMO outcomes, grouped by Body Mass Index

	Study Population (N=354)	Low BMI ( $\leq 35$ kg/m <sup>2</sup> ) (N=264)	High BMI ( $> 35$ kg/m <sup>2</sup> ) (N=90)
Ventilatory parameters			
FiO <sub>2</sub>	100 %	100%	100%
PEEP, cm H <sub>2</sub> O	12 (10-15)	12 (10-14)	12 (10-16)
Static compliance, mL/cm H <sub>2</sub> O	25 (19-33)	26 (20-34)	22 (16-28)
PaO <sub>2</sub> /FiO <sub>2</sub>	86 (63-127)	90 (65-134)	77 (61-105)
PaCO <sub>2</sub>	50 (40-60)	49 (39-61)	51 (45-60)
Pre-ECMO Prone positioning	211 (60%)	162 (61%)	49 (54%)
Duration of mechanical ventilation, d	24 (14-38)	26 (16-42)	17 (10-32)
Duration on ECMO, d	16 (8-28)	18 (8-29)	14 (8-25)
Hospital length of stay, d	32 (18-52)	32 (20-56)	29 (16-37)
Intensive Care Unit length of stay, d	28 (18-46)	30 (18-48)	24 (14-34)
Data are median (inter-quartile range) or n (%). ECMO = Extracorporeal Membrane Oxygenation, PEEP = Positive End-Expiratory Pressure, BMI = Body Mass Index, d = days			

Supplemental Table 3: Outcomes on VV ECMO, (threshold 35 kg/m<sup>2</sup>)

Outcome	Study Population (N=354)	Low BMI ( $\leq 35$ kg/m <sup>2</sup> ) (N=264)	High BMI ( $> 35$ kg/m <sup>2</sup> ) (N=90)
Discharged home or to other facilities	136 (39%)	97 (37%)	39 (43%)
Remain in the hospital	75 (21%)	63 (24%)	12 (14%)
In-hospital death	143 (40%)	104 (39%)	39 (43%)
Data are N (%), BMI = Body Mass Index, d = days			

Supplemental Table 4: Estimated Risk of Death and Discharge, (threshold BMI >35 kg/m<sup>2</sup>)

Variable	Death		Discharge	
	HR	95% CI	HR	95% CI
Age (+10 years)	1.38	1.17 to 1.63	0.73	0.63 to 0.85
Time on ECMO (+1 month)	1.06	1.01 to 1.10	0.83	0.77 to 0.89
Male Sex	1.12	0.79 to 1.58	0.89	0.62 to 1.28
BMI (+5 kg/m <sup>2</sup> )	1.09	0.97 to 1.22	1.00	0.90 to 1.10
APACHE II Score < 18	1.13	0.71 to 1.80	1.30	0.81 to 2.10

ECMO = Extracorporeal Membrane Oxygenation, BMI = Body Mass Index, Acute Physiologic Assessment and Chronic Health Evaluation II Score = APACHE II Score, HR = Hazard Ratio, CI = Confidence Interval. *\*The median APACHE II score was 18.*

**Supplement Table 5: Number of patients per country**

Country	All patients	Low BMI ( $\leq 35 \text{ kg/m}^2$ )	High BMI ( $> 35 \text{ kg/m}^2$ )
United States	134	82	52
Italy	64	54	10
Belgium	17	13	4
Colombia	21	17	4
Germany	18	15	3
Portugal	15	13	2
Japan	14	13	1
Spain	11	10	1
Chile	5	3	2
Kuwait	7	5	2
South Korea	7	6	1
Austria	7	6	1
Canada	7	6	1
Indonesia	6	5	1
Estonia	4	3	1
Mexico	4	2	2
Qatar	2	1	1
South Africa	1	0	1
Brazil	3	3	0
Ireland	3	3	0
Argentina	1	1	0
Poland	1	1	0
Singapore	1	1	0
Taiwan	1	1	0
<b>Total</b>	<b>354</b>	<b>264</b>	<b>90</b>

Data are absolute numbers