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ADDITIONAL FILE 1
ONLINE SUPPLEMENTARY DATA

**THE EVOLUTION OF THE VENTILATORY RATIO IS A PROGNOSTIC FACTOR IN
MECHANICALLY VENTILATED COVID-19 ARDS PATIENTS**

Antoni Torres, et al.

12 **FIGURE LEGEND**

13

14 **e-Figure 1.** Missing data map of variables including in the multivariant analyses. Missing
15 observations are displayed in white while observations with valid values are shown in golden.
16 The assessed variables are on the x-axis and the observations are on the y-axis.

17

18 **e-Figure 2.** Smoothed scatter plots between each continuous predictor variables and outcomes
19 in logit scale.

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21 **e-Figure 3.** Heatmap of pairwise correlation between biomarkers, lung mechanics, and gas
22 exchange at ICU admission (A) and at day 3 (B). The color key of the Pearson's coefficient
23 correlations is shown on the right. Statistically significant correlations are indicated with green
24 surrounding squares ($p\text{-value}\leq 0.05$).

Site and Region
Hospital Virgen del Rocío, Andalucía
Hospital Virgen De Valme, Andalucía
Hospital San Juan de Dios, Andalucía
Hospital Virgen Macarena, Andalucía
Hospital Universitario de Jerez de la Frontera, Andalucía
Hospital Universitario Reina Sofía, Andalucía
Hospital Nuestra Señora de Gracia, Aragón
Hospital Universitario de Gran Canaria Doctor Negrín, Canarias
Hospital Universitario Marqués de Valdecilla, Cantabria
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Hospital Clínico Universitario de Valladolid, Castilla y León
Hospital General Río Carrión, Castilla y León
Hospital Germans Trias i Pujol, Catalunya
Hospital Universitario Vall d'Hebron, Catalunya
Hospital Clínic Provincial Barcelona, Catalunya
Hospital Universitari Bellvitge, Catalunya
Hospital Universitario del Mar, Catalunya
Hospital Universitari Mútua Terrassa, Catalunya
Hospital Universitari Arnau de Vilanova, Catalunya
Hospital Universitari Joan XXIII de Tarragona, Catalunya
Hospital Sagrat Cor, Catalunya
Hospital Parc Taulí, Catalunya
Clínica Sagrada Familia, Catalunya
Hospital de Tortosa Verge de la Cinta, Catalunya
Hospital de Mataró, Catalunya
Hospital de Santa Maria, Catalunya
Hospital General Universitario Gregorio Marañón, Comunidad de Madrid
HM Hospitales Madrid, Comunidad de Madrid
Hospital Universitario La Paz, Comunidad de Madrid
Hospital Universitario Ramón y Cajal, Comunidad de Madrid
Hospital Universitario de La Princesa, Comunidad de Madrid
Hospital Infanta Leonor de Madrid, Comunidad de Madrid
Hospital Universitario 12 de Octubre, Madrid
Hospital Universitario Sant Joan d'Alacant, Comunitat Valenciana
Hospital Universitario La Fe de Valencia, Comunitat Valenciana
Hospital Clínic Universitari de València, Comunitat Valenciana
Hospital Universitario de Cruces, Euskadi
Hospital San Pedro de Alcántara, Extremadura
Hospital Álvaro Cunqueiro, Galicia
Hospital Universitario Lucus Augusti, Galicia
Hospital Clínico Universitario de Santiago, Galicia
Hospital Universitari Son Espases, Illes Balears
Hospital Universitari Son Llàtzer, Illes Balears
Hospital Universitario Central de Asturias, Principado de Asturias

28 **e-Table 2.** Box- tidwell test for checking the linearity assumption of the positive variables.
 29 Samples with negative or zero value were replaced by 0.01.
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Variables	p-value
(Intercept)	0.75
PaO2/FiO2	0.71
Log (PaO2/FiO2)	0.99
SOFA_hemo	0.72
Log (SOFA_hemo)	0.63
D-Dimer	0.47
Log (D-Dimer)	0.034
Platelets	0.18
Log (Platelets)	0.17
Creatinine	0.23
Log (Creatinine)	0.54
Age	0.87
Log (Age)	0.99
Lymphocytes	0.45
Log (Lymphocytes)	0.032
Ventilatory Ratio	0.12
Log (Ventilatory Ratio)	0.12
Total Bilirubin	0.77
Log (Total Bilirubin)	0.81
PaO2/FiO2:log (PaO2/FiO2)	0.67
SOFA_hemo:log (SOFA_hemo)	0.75
D-Dimer:log(D-Dimer)	0.52
Platelets:log (Platelets)	0.18
Creatinine:log (Creatinine)	0.23
Age:log (Age)	0.84
Lymphocytes:log (Lymphocytes)	0.63
Ventilatory Ratio:log (Ventilatory Ratio)	0.13
Total Bilirubin:log (Total Bilirubin)	0.86

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32 **e-Table 3:** Number of patients per center included in this subpopulation of 1,118 patients
33 (COVID 19 ARDS patients intubated at day 1 of ICU admission that remained ventilated after 3
34 days).

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Included patients	Sites (N=44)
1 – 25	27 (61%)
25 – 50	6 (14%)
51 – 75	9 (21%)
76 – 100	1 (2%)
> 100	1 (2%)

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37 **e-Table 4.** Demographic and clinical characteristics at ICU admission of patients that received
 38 invasive mechanical ventilation (MV) at any time of ICU stay.

	No.	All patients (n=1645)	Survivors (n=1016)	Non-survivors (n=629)	p-value
Age, years	1645	64.0 [56.0-71.0]	61.0 [53.0-68.0]	68.0 [61.0-73.0]	<0.001
Age, categories	1645				
<50		236 (14.4%)	199 (19.6%)	37 (5.9%)	<0.001
50-69		910 (55.3%)	593 (58.4%)	317 (50.4%)	0.002
>70		434 (26.38%)	191 (18.8%)	243 (38.6%)	<0.001
Sex, female		471 (28.63%)	315/1016 (31.0%)	156/629 (24.8%)	0.007
BMI, kg/m²	1487	28.3 [25.7-31.8]	28.6 [25.7-32.0]	28.0 [25.6-31.3]	0.1
Comorbidities					
Active smoker	1069	84 (7.9%)	44 (6.5%)	40 (10.2%)	0.034
Hypertension	1644	820 (49.9%)	457 (45.0%)	363 (57.8%)	<0.001
Diabetes mellitus	1644	375 (22.8%)	209 (20.6%)	166 (26.4%)	0.006
Dyslipidemia	1644	375 (22.8%)	223 (22.0%)	152 (24.2%)	0.30
Chronic cardiac failure	1643	195 (11.9%)	91 (9.0%)	104 (16.6%)	<0.001
Chronic kidney disease	1644	94 (5.7%)	40 (3.9%)	54 (8.6%)	<0.001
Chronic respiratory disease	1643	170 (10.4%)	78 (7.7%)	92 (14.7%)	<0.001
Days since first symptoms	1611	7.0 [5.0-9.0]	7.0 [5.0-9.0]	7.0 [4.0-9.0]	0.008
Days from hospital admission to ICU admission	1633	2.0 [0.0-4.0]	2.0 [0.0-4.0]	2.0 [0.0-5.0]	0.56
APACHE score	907	12.0 [9.0-15.0]	11.0 [8.0-14.5]	13.0 [11.0-17.0]	<0.001
SOFA score	1102	6.0 [4.0-8.0]	6.0 [3.0-8.0]	7.0 [4.0-8.0]	<0.001
SOFA hemodynamic component	1516	3.0 [0.0-4.0]	1.0 [0.0-4.0]	3.0 [0.0-4.0]	0.013
SOFA renal component	1619	0.0 [0.0-0.0]	0.0 [0.0-0.0]	0.0 [0.0-1.0]	<0.001
Temperature, °C	1462	37.0 [36.1-37.9]	37.0 [36.2-37.9]	36.9 [36.0-37.7]	0.01
Respiratory rate, bpm	1376	25.0 [20.0-30.3]	25.0 [20.0-31.3]	25.0 [20.0-30.0]	0.73
Respiratory support					
High-flow oxygen	1616	616 (38.1%)	414 (41.3%)	202 (32.9%)	0.001
Noninvasive MV	1629	177/1629 (10.9%)	99 (9.8%)	78 (12.5%)	0.10
Invasive MV	1637	1227 (75.0%)	739 (73.2%)	488 (78.1%)	0.026
Arterial blood gases					
PaO ₂ /FIO ₂ ratio, mmHg	1480	112.6 [78.2-168.1]	115.7 [81.4-174.0]	105.2 [72.3-156.4]	0.001
PaO ₂ /FIO ₂ ratio categories	1480				
PaO ₂ /FIO ₂ ratio ≤ 100		610 (41.2%)	355 (38.2%)	255 (46.4%)	0.002
PaO ₂ /FIO ₂ ratio 101-200		624 (42.2%)	408 (43.9%)	216 (39.3%)	0.09
PaO ₂ /FIO ₂ ratio 201-300		172 (11.6%)	113 (12.2%)	59 (10.7%)	0.45
PaO ₂ /FIO ₂ ratio > 301		62 (4.2%)	45 (4.8%)	17 (3.1%)	0.11
pH	1551	7.39 [7.31-7.45]	7.4 [7.33-7.45]	7.36 [7.29-7.43]	<0.001
PaCO ₂ , mmHg	1541	41.4 [35.0-50.0]	40.0 [34.6-48.0]	43.0 [35.5-53.9]	<0.001
Lactate, mg/dL	1081	12.9 [9.9-17.6]	12.6 [9.4-16.2]	14.4 [10.8-19.8]	<0.001
Laboratory findings					
Lymphocyte count, 10 ⁹ /L	1593	0.68 [0.46-0.94]	0.7 [0.5-1.0]	0.61 [0.4-0.9]	<0.001
Platelet count, 10 ⁹ /L	1613	224.0 [169.0-294.0]	234.0 [174.0-299.0]	212.0 [160.0-281.3]	<0.001
D-dimers, mg/L	1253	1.07 [0.57-3.17]	0.96 [0.52-2.19]	1.47 [0.67-5.37]	<0.001
Ferritin, ng/mL	572	1359 [781-2260]	1266 [689-2142]	1465 [846-2376]	0.07

IL6, pg/mL	360	101.6 [46.3-177.2]	93.8 [44.9-173.0]	124.0 [59.4-193.3]	0.15
CRP, mg/dL	1457	16.9 [9.2-26.1]	16.4 [9.1-25.5]	17.7 [9.3-27.2]	0.09
Bilirubin, mg/dL	1454	0.63 [0.42-1.0]	0.64 [0.43-1.0]	0.6 [0.4-1.0]	0.63
Serum creatinine, mg/dL	1619	0.87 [0.68-1.15]	0.82 [0.65-1.04]	0.97 [0.74-1.31]	<0.001

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40 e-Table 4 caption: Continuous variables are expressed as median (IQR) and categorical
41 variables as number (percentages). CRP, C-reactive protein; FiO₂, fraction of inspired oxygen;
42 MV, mechanical ventilation; PaCO₂, arterial partial pressure of carbon dioxide; PaO₂, partial
43 pressure of arterial oxygen; SOFA: sequential organ failure assessment score.

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45 **e-Table 5.** Delta differences between day 3 and ICU admission of laboratory findings and
 46 ventilation management variables of the early ventilated patients that remained ventilated after
 47 2 days according to in-hospital mortality.

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	No.	All patients (n=1118)	Survivors (n=685)	Non-survivors (n=433)	p-value
Arterial blood gases					
PaO ₂ /FIO ₂ ratio, mmHg	1006	+46.7 [-9.2-108.3]	+52.5 [-3.9-114.4]	+38.4 [-15.3-96.7]	0.07
pH	1056	+0.02 [-0.05-0.10]	+0.03 [-0.04-0.10]	+0.02 [-0.06-0.11]	0.15
PaCO ₂ , mmHg	1068	+3.1 [-5.1-12.0]	+2.3 [-5.4-10.0]	+4.3 [-5.0-13.1]	0.007
Lactate, mg/dL	650	+1.8 [-2.2-6.8]	+1.8 [-1.8-7.1]	+7 [-3.0-6.3]	0.93
Laboratory findings					
Lymphocyte count, 10 ⁹ /L	1081	0.00 [-0.20-0.26]	0.00 [-0.20-0.30]	0.00 [-0.20-0.20]	0.041
Neutrophil count, 10 ⁹ /L	472	0.00 [-3.3-2.37]	-0.02 [-3.05-2.27]	+0.02 [-3.58-2.65]	0.95
Platelet count, 10 ⁹ /L	1088	+24.0 [-30.0-75.0]	+35.0 [-20.8-80.0]	+8.5 [-35.0-53.0]	0.013
D-dimers, mg/L	660	+0.45 [-0.18-2.08]	+0.40 [-0.11-1.69]	+0.58 [-0.36-3.67]	0.001
Ferritin, ng/mL	217	-51.0 [-368.0-303.0]	-38.5 [-336.8-273.5]	-79.0 [-370.0-314.5]	0.66
IL6, pg/mL	65	-0.6 [-50.3-75.9]	-2.3 [-51.3-42.7]	+2.0 [-22.8-105.4]	0.93
CRP, mg/dL	859	-4.6 [-14.04-3.4]	-4.8 [-14.8-3.7]	-4.16 [-13.2-2.5]	1.00
Bilirubin, mg/dL	906	+0.04 [-0.16-0.43]	+0.04 [-0.16-0.40]	+0.05 [-0.16-0.56]	0.023
Serum creatinine, mg/dL	1094	+0.02 [-0.13-0.32]	0.0 [-0.14-0.22]	+0.12 [-0.11-0.54]	<0.001
Ventilatory setting and pulmonary mechanics					
Tidal volume/PBW (ml/kg)	445	0.0 [-0.52-0.63]	+0.02 [-0.36-0.67]	0.0 [-0.67-0.54]	0.74
Respiratory rate, rpm	945	0.0 [-2.0-2.0]	0.0 [-2.0-2.0]	0.0 [-1.0-3.0]	0.09
PEEP, cmH ₂ O	1014	0.0 [-2.0-1.0]	0.0 [-2.0-1.0]	0.0 [-2.0-2.0]	0.23
FiO ₂ , %	1036	-20.0 [-35.0--5.0]	-20.0 [-40.0--10.0]	-17.0 [-30.0-0.0]	0.11
Peak inspiratory pressure, cmH ₂ O	453	0.0 [-3.0-3.0]	0.0 [-3.9-3.0]	0.0 [-3.0-4.0]	0.68
End-inspiratory plateau pressure, cmH ₂ O	310	-0.7 [-3.0-2.0]	-1.0 [-3.0-1.0]	0.0 [-3.0-2.1]	0.25
Driving pressure, cmH ₂ O ^a	296	0.0 [-3.0-2.0]	0.0 [-3.0-2.0]	0.0 [-2.0-3.0]	0.39
Compliance, mL/cmH ₂ O ^b	274	+0.69 [-6.28-8.79]	+1.3 [-6.28-9.39]	+0.11 [-6.19-7.17]	0.18
Ventilatory ratio ^c	715	+0.18 [-0.18-0.56]	+0.14 [-0.18-0.47]	+0.32 [-0.17-0.75]	<0.001

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50 e-Table 5 caption: Delta was calculated as variable at day 3 minus variable at ICU admission.

51 Continuous variables are expressed as median (IQR). CRP, C-reactive protein; FiO₂, fraction of
 52 inspired oxygen; PaCO₂, arterial partial pressure of carbon dioxide; PaO₂, partial pressure of
 53 arterial oxygen; PBW, predicted body weight. ^a Defined as plateau pressure—PEEP. ^b Defined
 54 as tidal volume/(Plateau pressure - PEEP). ^c Defined as (minute ventilation × PaCO₂)/(PBW ×
 55 100 × 37.5)

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57 **e-Table 6.** Correlations between ventilatory ratio and main biomarkers, lung mechanics or gas
 58 exchange data at ICU admission and day 3.

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Variable 1	Variable 2	Correlation coefficient	p-value
Ventilatory ratio at ICU admission	PaO ₂ / FiO ₂ at ICU adm.	0.01	0.68
	Platelets at ICU adm.	-0.02	0.61
	D-Dimer at ICU adm.	-0.004	0.90
	PEEP at ICU adm.	-0.03	0.43
	Driving pressure at ICU adm.	0.02	0.68
	Compliance at ICU adm.	-0.02	0.66
Ventilatory ratio at day 3	PaO ₂ / FiO ₂ at day 3	-0.19	<0.001
	Platelets at day 3	-0.06	0.07
	D-Dimer at day 3	0.02	0.6
	PEEP at day 3	0.11	<0.001
	Driving pressure at day 3	0.14	0.004
	Compliance at day 3.	-0.05	0.324

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61 **e-Table 7.** Main interventions and treatments in the subpopulation of 1,118 patients (COVID-19
62 ARDS patients intubated at day 1 of ICU admission that remained ventilated after 3 days)
63 according to in-hospital mortality.

	No.	All patients (n=1118)	Survivors (n=685)	Non-survivors (n=433)	p-value
COVID-19 therapies	1110				
Ribavirin		2 (0.2%)	1 (0.2%)	1 (0.2%)	1
Lopinavir/ritonavir		892 (80.4%)	555 (81.3%)	337 (78.9%)	0.35
Remdesivir		84 (7.6%)	54 (7.9%)	30 (7.0%)	0.67
Interferon alpha		9 (0.8%)	1 (0.2%)	8 (1.9%)	0.003
Interferon beta		488 (44.0%)	289 (42.3%)	199 (46.6%)	0.17
Chloroquine		63 (5.7%)	38 (5.6%)	25 (5.8%)	0.89
Hydroxychloroquine		986 (88.8%)	612 (89.3%)	373 (86.1%)	0.24
Tocilizumab		499 (45.0%)	324 (47.4%)	175 (41.0%)	0.05
Darunavir/cobicistat		23 (2.1%)	13 (1.9%)	10 (2.3%)	0.67
Pharmacological adjunctive therapies					
Continuous furosemide	1002	701 (63.6%)	412 (60.9%)	289 (68.0%)	0.017
Inmunoglobulins	1003	13 (1.2%)	7 (1.0%)	6 (1.4%)	0.58
Subcutaneous heparin	1009	1065 (96.0%)	662 (97.1%)	403 (94.4%)	0.039
≤ 1 mg/kg/day	1009	816 (73.6%)	527 (77.3%)	289 (67.7%)	<0.001
> 1 mg/kg/day	1009	381 (34.4%)	234 (34.3%)	147 (34.4%)	1.00
Convalescent plasma	1105	6 (0.5%)	5 (0.7%)	1 (0.2%)	0.47
Vasopressor treatment	1110	1028 (92.6%)	608 (89.3%)	420 (97.9%)	<0.001
Continuous neuromuscular blockers		950 (85.9%)	561 (82.5%)	389 (91.2%)	<0.001
Corticosteroid	1092	831 (76.1%)	504 (74.6%)	327 (78.6%)	0.14
Other adjunctive treatments					
Tracheostomy	1115	482 (43.2%)	326 (47.7%)	156 (36.1%)	<0.001
Recruitment maneuvers	1057	653 (61.8%)	371 (57.3%)	282 (68.8%)	<0.001
Prone position	1107	874 (79.0%)	509 (74.7%)	365 (85.7%)	<0.001
Prone length, hours	812	48.0 [25.8-82.0]	48.0 [24.0-72.0]	60.0 [36.0-90.0]	<0.001
ECMO support	1105	20 (1.8%)	10 (1.5%)	10 (2.4%)	0.36
ECMO length, days	20	10.5 [4.8-16.5]	17.0 [11.0-24.5]	6.5 [4.0-10.3]	0.024
Renal replacement therapy	1115	157 (14.1%)	62 (9.1%)	95 (22.0%)	<0.001

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66 **e-Table 8.** Major complications in the subpopulation of 1,118 patients (COVID-19 ARDS
67 patients intubated at day 1 of ICU admission that remained ventilated after 3 days) according to
68 in-hospital mortality.

	No.	All patients (n=1118)	Survivors (n=685)	Non- survivors (n=433)	p-value
Bacterial pneumonia ^a	1113	368 (33.1%)	241 (35.2%)	127 (29.6%)	0.06
ARDS ^b	1118				
Mild		76 (6.8%)	65 (9.5%)	11 (2.5%)	<0.001
Moderate		467 (41.8%)	341 (49.8%)	126 (29.1%)	<0.001
Severe		575 (51.4%)	279 (40.7%)	296 (68.4%)	<0.001
Pneumothorax	1118	108 (9.7%)	53 (7.7%)	55 (12.7%)	0.007
Pleural effusion	1117	132 (11.8%)	87 (12.7%)	45 (10.4%)	0.26
Organizing pneumonia	1092	54 (5.0%)	38 (5.7%)	16 (3.8%)	0.20
Tracheobronchitis	1112	16 (1.4%)	15 (2.2%)	1 (0.2%)	0.008
Pulmonary embolism	1083	94 (8.7%)	71 (10.6%)	23 (5.6%)	0.005
Myocardial infarction	1117	132 (11.8%)	87 (12.7%)	45 (10.4%)	0.26
Endocarditis	1118	9 (0.8%)	4 (0.6%)	5 (1.2%)	0.32
Myocarditis/pericarditis	1116	3 (0.3%)	1 (0.2%)	2 (0.5%)	0.56
Cardiomyopathy	1118	24 (2.2%)	12 (1.8%)	12 (2.8%)	0.29
Heart failure	1117	27 (2.4%)	19 (2.8%)	8 (1.9%)	0.43
Cardiac ischemia	1118	43 (3.9%)	23 (3.4%)	20 (4.6%)	0.34
Bacteremia	1115	446 (40.0%)	261 (38.2%)	185 (42.9%)	0.12
Stroke	1116	35 (3.1%)	22 (3.2%)	13 (3.0%)	1.00
Delirium	1113	280 (25.2%)	239 (34.9%)	41 (9.6%)	<0.001
Coagulation disorder ^c	1116	290 (26.0%)	158 (23.1%)	132 (30.6%)	0.006
Disseminated intravascular coagulation ^d	1102	69 (6.3%)	34 (5.0%)	35 (8.2%)	0.041
Anemia ^e	1118	800 (71.6%)	496 (72.4%)	304 (70.2%)	0.45
Rhabdomyolysis	1111	46 (4.1%)	27 (4.0%)	19 (4.4%)	0.76
Acute renal failure ^f	1118	493 (44.1%)	238 (34.7%)	255 (58.9%)	<0.001
Pancreatitis	1118	14 (1.3%)	8 (1.2%)	6 (1.4%)	0.79
Liver dysfunction	1114	369 (33.1%)	218 (31.8%)	151 (35.2%)	0.27
Hemorrhage	1116	103 (9.2%)	49 (7.2%)	54 (12.5%)	0.004

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70 Definitions: ^a Clinically or radiologically diagnosed bacterial pneumonia managed with antimicrobials. Bacteriological
71 confirmation was not required. ^b Acute Respiratory Distress Syndrome (ARDS) was defined according to Berlin criteria.
72 Mild ARDS, PaO₂/FiO₂ >200 mmHg and ≤300 mmHg, with PEEP ≥5 cm H₂O. Moderate ARDS, PaO₂/FiO₂ >100 mmHg
73 and ≤200 mmHg with PEEP ≥5 cm H₂O. Severe ARDS, PaO₂/FiO₂ ≤100 mmHg with PEEP ≥5 cm H₂O. ^c Abnormal
74 coagulation was identified by abnormal prothrombin time or activated partial thromboplastin time. ^d Disseminated
75 intravascular coagulation was defined by thrombocytopenia, prolonged prothrombin time, low fibrinogen, elevated D-
76 dimer and thrombotic microangiopathy. ^e Hemoglobin consistently below 120 g/L for non-pregnant women and 130 g/L
77 for men. ^f Acute renal injury was defined as an increase in serum creatinine by ≥0.3 mg/dL within 48 hours or an
78 increase in serum creatinine to ≥1.5 times baseline.

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81 **e-Table 9.** Main secondary outcomes in the subpopulation of 1,118 patients (COVID-19 ARDS
 82 patients intubated at day 1 of ICU admission that remained ventilated after 3 days) according to
 83 in-hospital mortality.

	No.	All patients (n=1118)	Survivors (n=685)	Non-survivors (n=433)	p-value
Length of ICU stay, days	1116	20.0 [11.0-32.0]	22.0 [13.0-35.0]	16.0 [9.0-26.0]	<0.001
Length of hospital stay, days	1118	30.0 [19.0-48.0]	38.0 [25.0-57.0]	19.0 [11.0-30.0]	<0.001
NIMV length, days	263	2.0 [1.0-5.0]	3.0 [1.0-6.0]	2.0 [1.0-4.0]	0.15
IMV length, days	1089	16.0 [10.0-27.0]	16.0 [10.0-27.0]	16.0 [9.0-25.0]	0.16
ICU mortality	1118	419 (37.5)		419 (97.0%)	
Ventilator free days	567		12.0 [0.0-18.0]		
ICU free days	1116	0.0 [0.0-10.0]	6.0 [0.0-15.0]	0.0 [0.0-0.0]	<0.001
Cause of death	429				
Respiratory failure				178 (41.5%)	
Septic shock				22 (5.1%)	
Multiorgan failure				179 (41.7%)	
Cardiovascular accident				6 (1.4%)	
28-day mortality	1118	357 (31.9%)		357 (82.4%)	<0.001

84
 85 e-Table 9 caption: ICU, intensive care unit; IMV, invasive mechanical ventilation; NIMV, non-
 86 invasive mechanical ventilation.

87

88 **e-Table 10. Multivariable model assessing predictors of in-hospital mortality (N=662**
 89 **patients)**

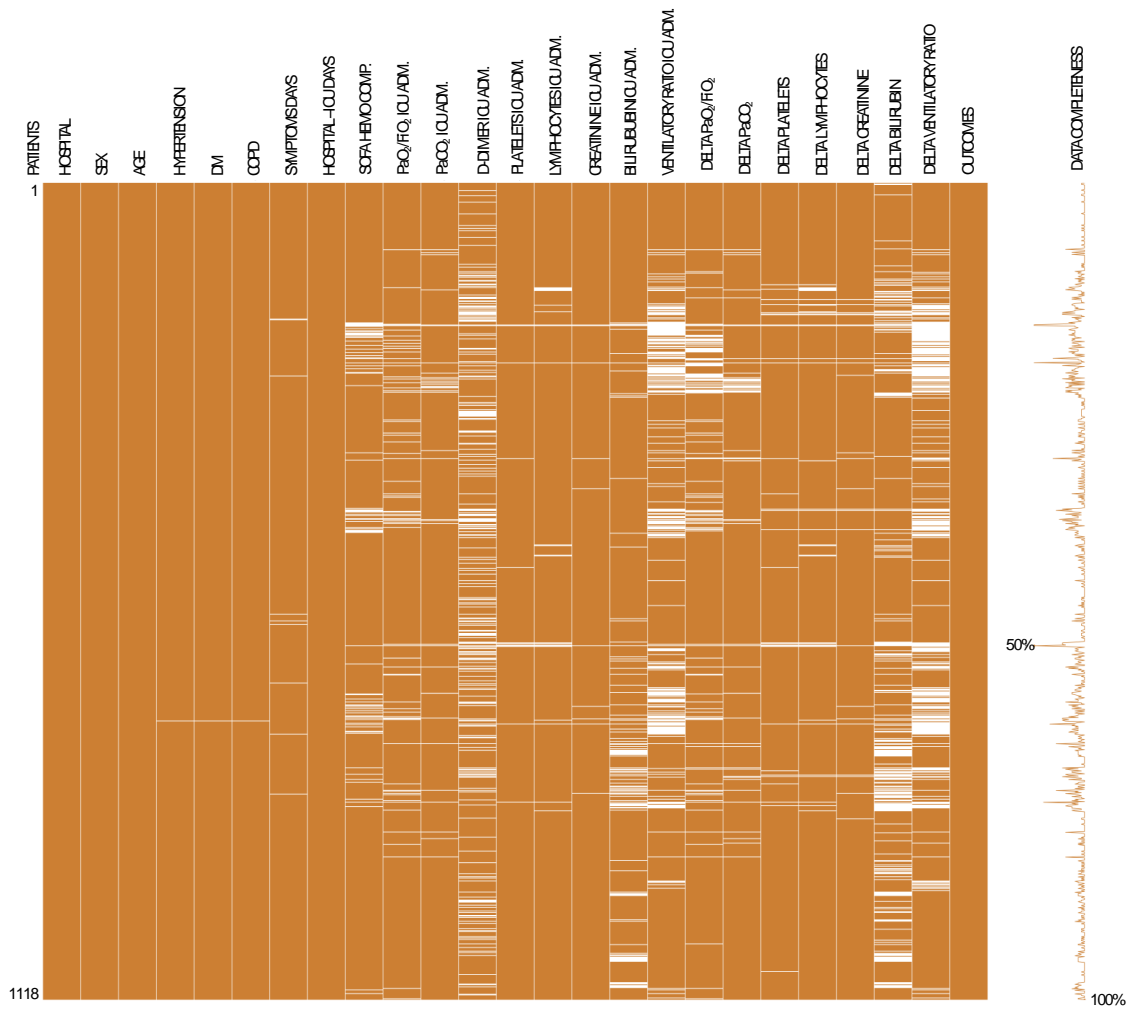
Variable	Odds ratio (95% CI)	p-value
Age, years	1.01 (1.01 to 1.02)	<0.001
Sex, male	1.06 (0.98 to 1.14)	0.16
Hypertension	1.00 (0.93 to 1.08)	0.96
Chronic respiratory disease	1.09 (1.00 to 1.23)	0.049
SOFA hemodynamic component	1.00 (0.98 to 1.02)	0.82
PaO ₂ /F _i O ₂ ratio at ICU admission, mmHg	1.00 (1.00 to 1.00)	0.12
Serum creatinine at ICU admission, mg/dL	1.09 (1.04 to 1.14)	<0.001
Lymphocyte count at ICU admission, x 10 ⁹ /L	1.00 (0.98 to 1.03)	0.85
Platelet count at ICU admission, x 10 ⁹ /L	1.00 (1.00 to 1.00)	0.10
Total bilirubin at ICU admission, mg/dL	0.96 (0.91 to 1.02)	0.22
D-dimers at ICU admission, µg/L	1.00 (1.00 to 1.00)	0.23
Ventilatory ratio at ICU admission	1.08 (1.03 to 1.15)	0.004

90

91 e-Table 10 caption: Mixed-effects model with centers as a random effect and considering a
 92 binomial distribution. AUC statistic (area under the curve) is 0.79 (95% CI 0.76 to 0.83) and
 93 Brier score is 0.18. CI, confidence interval; FiO₂, fraction of inspired oxygen; ICU, intensive care
 94 unit; PaO₂, partial pressure of arterial oxygen; SOFA, sequential organ failure assessment
 95 score.

96

e-Figure 1



98

99

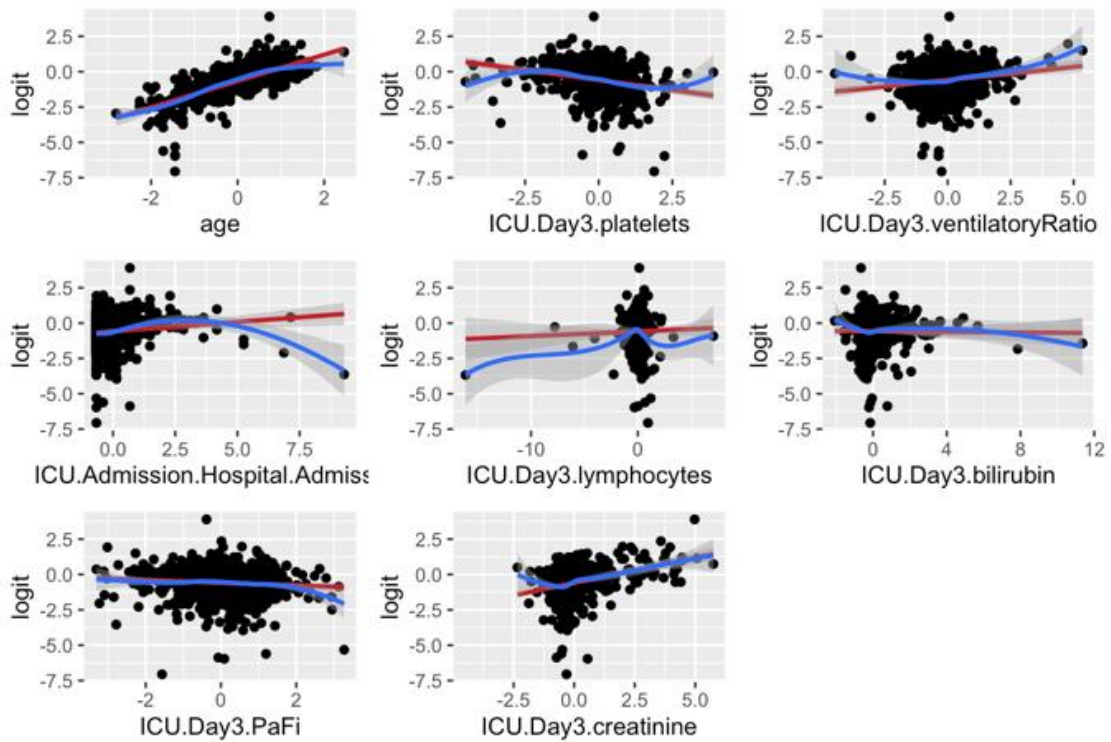
100 e-Figure 1 caption. Missing data map of variables including in the multivariate analyses. Missing

101 observations are displayed in white while observations with valid values are shown in golden.

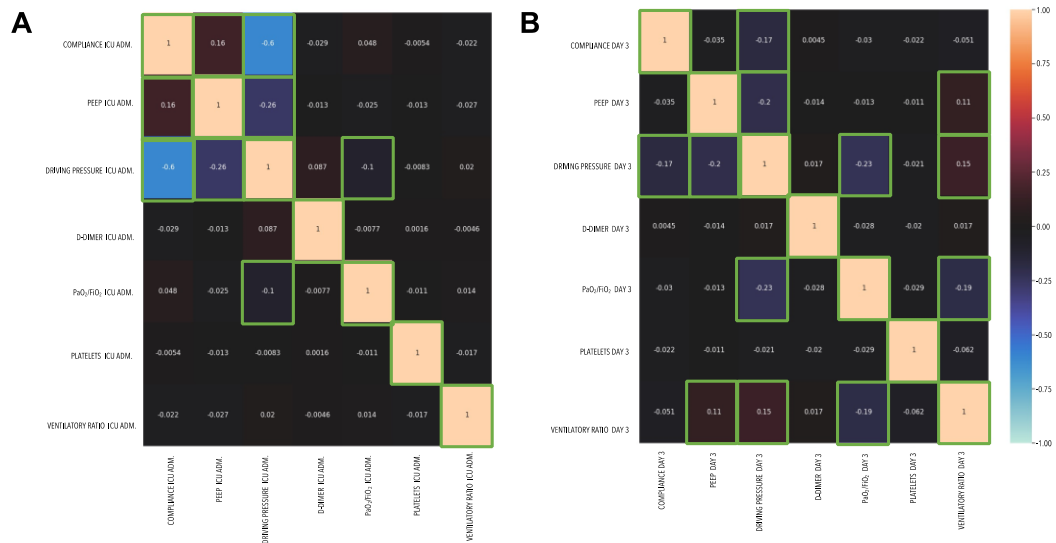
102 The assessed variables are on the x-axis and the observations are on the y-axis.

103

104 **e-Figure 2**



105 e-Figure 2 caption. Smoothed scatter plots between each continuous predictor variables and
106 outcomes in logit scale.
107
108



112 e-Figure 3 caption. Heatmap of pairwise correlation between biomarkers, lung mechanics, and
 113 gas exchange at ICU admission (A) and at day 3 (B). The color key of the Pearson's coefficient
 114 correlations is shown on the right. Statistically significant correlations are indicated with green
 115 surrounding squares ($p\text{-value} \leq 0.05$).