

Table S1. Patient characteristics and univariable analysis for in-hospital mortality, all patients

patient characteristics	survived (n=198)	deceased (n=92)	p-value
age [years]	51.75 ± 20.02	64.22 ± 20.59	< 0.001
Charlson Comorbidity Index	1.0 [4.0]	4.0 [4.0]	< 0.001
Glasgow Coma Score	7.5 [9.75]	6.0 [10.0]	0.488
pupillary reactivity to light			0.035
both reactive	145 (73.2)	51 (55.4)	
one reactive	27 (13.6)	15 (16.3)	
none reactive	23 (11.6)	19 (20.7)	
unknown	3 (1.5)	7 (7.6)	
Abbreviated Injury Scale for head	4.0 [1.0]	5.0 [1.0]	< 0.001
Rotterdam-CT-Score	3.0 [1.0]	4.0 [2.0]	< 0.001
Simplified Acute Physiology Score II	44.0 [19.5]	53.5 [18.0]	< 0.001
on day 1			
mean PaO ₂ [mmHg]	98.05 ± 21.12	100.92 ± 27.46	0.338
PaO ₂ integral above 80 mmHg [mmHg/d]	20.88 ± 19.18	23.87 ± 25.69	0.278
PaO ₂ integral above 100 mmHg [mmHg/d]	11.05 ± 15.05	13.80 ± 22.36	0.228
PaO ₂ integral above 120 mmHg [mmHg/d]	6.56 ± 11.87	8.91 ± 19.66	0.302
PaO ₂ integral above 150 mmHg [mmHg/d]	3.82 ± 9.11	5.60 ± 16.80	0.353
admission to day 3			
mean PaO ₂ [mmHg]	90.96 ± 13.27	89.78 ± 15.17	0.508
PaO ₂ integral above 80 mmHg [mmHg/d]	14.02 ± 11.10	13.84 ± 12.37	0.904
PaO ₂ integral above 100 mmHg [mmHg/d]	5.62 ± 6.89	6.43 ± 9.16	0.410
PaO ₂ integral above 120 mmHg [mmHg/d]	2.96 ± 4.85	4.20 ± 7.88	0.176
PaO ₂ integral above 150 mmHg [mmHg/d]	1.66 ± 3.66	2.80 ± 6.63	0.134
admission to day 7			
mean PaO ₂ [mmHg]	87.70 ± 10.37	94.55 ± 40.15	0.131
PaO ₂ integral above 80 mmHg [mmHg/d]	10.95 ± 8.09	18.83 ± 38.46	0.070
PaO ₂ integral above 100 mmHg [mmHg/d]	3.76 ± 4.17	12.06 ± 35.80	0.039
PaO ₂ integral above 120 mmHg [mmHg/d]	1.88 ± 2.64	10.00 ± 33.31	0.030
PaO ₂ integral above 150 mmHg [mmHg/d]	1.06 ± 1.92	8.27 ± 29.80	0.032
admission to day 14			
mean PaO ₂ [mmHg]	86.20 ± 8.54	96.45 ± 46.72	0.105
PaO ₂ integral above 80 mmHg [mmHg/d]	9.43 ± 6.44	20.70 ± 45.13	0.065
PaO ₂ integral above 100 mmHg [mmHg/d]	2.82 ± 2.89	14.15 ± 42.00	0.047
PaO ₂ integral above 120 mmHg [mmHg/d]	1.32 ± 1.76	11.78 ± 39.01	0.048
PaO ₂ integral above 150 mmHg [mmHg/d]	0.76 ± 1.36	9.75 ± 34.61	0.055

Data are given as numbers and percentage in parentheses, mean ± standard deviation or median and interquartile range in brackets, as applicable. PaO₂ = arterial partial pressure of oxygen.

Table S2. Patient characteristics and univariable analysis for GOS after 3-6 months, all patients

patient characteristics	favorable (n=72)	unfavorable (n=160)	p-value
patients lost for follow-up: 58			
age [years]	45.08 ± 16.61	61.57 ± 20.84	< 0.001
Charlson Comorbidity Index	1.0 [1.0]	3.0 [5.0]	< 0.001
Glasgow Coma Score	8.5 [9.0]	7.0 [10.0]	0.206
pupillary reactivity to light			0.125
both reactive	56 (77.8)	99 (61.9)	
one reactive	7 (9.7)	27 (16.9)	
none reactive	8 (11.1)	25 (15.6)	
unknown	1 (1.4)	9 (5.6)	
Abbreviated Injury Scale for head	4.0 [1.0]	5.0 [1.0]	0.021
Rotterdam-CT-Score	3.0 [1.0]	4.0 [2.0]	< 0.001
Simplified Acute Physiology Score II	41.0 [22.0]	51.0 [18.25]	< 0.001
on day 1			
mean PaO ₂ [mmHg]	97.41 ± 17.57	99.89 ± 24.81	0.392
PaO ₂ integral above 80 mmHg [mmHg/d]	19.87 ± 15.91	22.73 ± 23.12	0.283
PaO ₂ integral above 100 mmHg [mmHg/d]	9.51 ± 11.73	12.87 ± 19.71	0.123
PaO ₂ integral above 120 mmHg [mmHg/d]	5.12 ± 8.91	8.08 ± 17.08	0.090
PaO ₂ integral above 150 mmHg [mmHg/d]	2.78 ± 6.87	4.97 ± 14.32	0.122
admission to day 3			
mean PaO ₂ [mmHg]	91.36 ± 12.43	90.44 ± 14.04	0.633
PaO ₂ integral above 80 mmHg [mmHg/d]	14.01 ± 10.41	13.97 ± 11.59	0.983
PaO ₂ integral above 100 mmHg [mmHg/d]	4.95 ± 6.14	6.27 ± 8.20	0.225
PaO ₂ integral above 120 mmHg [mmHg/d]	2.39 ± 4.13	3.81 ± 6.76	0.053
PaO ₂ integral above 150 mmHg [mmHg/d]	1.29 ± 3.17	2.38 ± 5.57	0.063
admission to day 7			
mean PaO ₂ [mmHg]	89.01 ± 11.02	91.49 ± 30.39	0.378
PaO ₂ integral above 80 mmHg [mmHg/d]	12.06 ± 8.92	15.15 ± 29.02	0.236
PaO ₂ integral above 100 mmHg [mmHg/d]	4.01 ± 4.98	8.27 ± 26.82	0.062
PaO ₂ integral above 120 mmHg [mmHg/d]	1.92 ± 3.12	6.31 ± 24.94	0.036
PaO ₂ integral above 150 mmHg [mmHg/d]	1.10 ± 2.25	4.97 ± 22.29	0.037
admission to day 14			
mean PaO ₂ [mmHg]	86.97 ± 9.22	91.29 ± 32.44	0.172
PaO ₂ integral above 80 mmHg [mmHg/d]	10.07 ± 7.20	14.75 ± 31.31	0.116
PaO ₂ integral above 100 mmHg [mmHg/d]	2.97 ± 3.45	8.03 ± 29.06	0.059
PaO ₂ integral above 120 mmHg [mmHg/d]	1.29 ± 1.79	6.12 ± 26.97	0.050
PaO ₂ integral above 150 mmHg [mmHg/d]	0.74 ± 1.29	4.86 ± 23.90	0.059

Data are given as numbers and percentage in parentheses, mean ± standard deviation or median and interquartile range in brackets, as applicable. PaO₂ = arterial partial pressure of oxygen.

Table S3. Patient characteristics and univariable analysis for GOS at discharge, all patients

patient characteristics	favorable (n=13)	unfavorable (n=277)	p-value
age [years]	45.23 ± 22.74	56.19 ± 20.82	0.066
Charlson Comorbidity Index	0.0 [2.5]	2.0 [4.0]	0.060
Glasgow Coma Score	13.5 [8.25]	7.0 [9.0]	0.011
pupillary reactivity to light			0.748
both reactive	10 (76.9)	186 (67.1)	
one reactive	2 (15.4)	40 (14.4)	
none reactive	1 (7.7)	41 (14.8)	
unknown	0 (0.0)	10 (3.6)	
Abbreviated Injury Scale for head	4.0 [1.0]	5.0 [1.0]	0.012
Rotterdam-CT-Score	3.0 [0.5]	3.0 [1.0]	0.281
Simplified Acute Physiology Score II	35.0 [19.0]	48.0 [19.0]	0.003
on day 1			
mean PaO ₂ [mmHg]	92.89 ± 14.60	99.24 ± 23.60	0.160
PaO ₂ integral above 80 mmHg [mmHg/d]	16.31 ± 14.44	22.09 ± 21.70	0.191
PaO ₂ integral above 100 mmHg [mmHg/d]	7.63 ± 11.98	12.12 ± 17.90	0.372
PaO ₂ integral above 120 mmHg [mmHg/d]	4.63 ± 10.66	7.43 ± 14.94	0.506
PaO ₂ integral above 150 mmHg [mmHg/d]	3.15 ± 8.92	4.44 ± 12.20	0.707
admission to day 3			
mean PaO ₂ [mmHg]	87.44 ± 10.95	90.74 ± 14.00	0.404
PaO ₂ integral above 80 mmHg [mmHg/d]	12.05 ± 8.94	14.05 ± 11.58	0.540
PaO ₂ integral above 100 mmHg [mmHg/d]	4.76 ± 6.55	5.93 ± 7.72	0.591
PaO ₂ integral above 120 mmHg [mmHg/d]	2.81 ± 5.05	3.37 ± 6.03	0.745
PaO ₂ integral above 150 mmHg [mmHg/d]	1.77 ± 3.67	2.03 ± 4.86	0.849
admission to day 7			
mean PaO ₂ [mmHg]	84.40 ± 9.53	89.90 ± 24.10	0.406
PaO ₂ integral above 80 mmHg [mmHg/d]	9.17 ± 6.32	13.49 ± 22.69	0.495
PaO ₂ integral above 100 mmHg [mmHg/d]	2.86 ± 3.02	6.38 ± 20.53	0.537
PaO ₂ integral above 120 mmHg [mmHg/d]	1.64 ± 2.18	4.41 ± 19.00	0.600
PaO ₂ integral above 150 mmHg [mmHg/d]	1.00 ± 1.56	3.30 ± 16.95	0.625
admission to day 14			
mean PaO ₂ [mmHg]	83.96 ± 11.18	88.84 ± 24.66	0.555
PaO ₂ integral above 80 mmHg [mmHg/d]	8.42 ± 8.85	12.27 ± 23.54	0.624
PaO ₂ integral above 100 mmHg [mmHg/d]	2.87 ± 3.97	5.64 ± 21.53	0.700
PaO ₂ integral above 120 mmHg [mmHg/d]	1.02 ± 1.18	3.93 ± 19.92	0.662
PaO ₂ integral above 150 mmHg [mmHg/d]	0.63 ± 0.89	3.00 ± 17.63	0.688

Data are given as numbers and percentage in parentheses, mean ± standard deviation or median and interquartile range in brackets, as applicable. PaO₂ = arterial partial pressure of oxygen.

Table S4. Patient characteristics and univariable analysis for in-hospital mortality, sensitivity analysis without palliative care patients (n=228)

patient characteristics	survived (n=198)	deceased (n=30)	p-value
age [years]	51.75 ± 20.02	51.53 ± 19.55	< 0.001
Charlson Comorbidity Index	1.0 [4.0]	1.0 [3.0]	< 0.001
Glasgow Coma Score	7.5 [9.75]	5.0 [7.75]	0.488
pupillary reactivity to light			0.035
both reactive	145 (73.2)	14 (46.7)	
one reactive	27 (13.6)	3 (10.0)	
none reactive	23 (11.6)	12 (40.0)	
unknown	3 (1.5)	1 (3.3)	
Abbreviated Injury Scale for head	4.0 [1.0]	5.0 [1.0]	< 0.001
Rotterdam-CT-Score	3.0 [1.0]	5.0 [1.5]	< 0.001
Simplified Acute Physiology Score II	44.0 [19.5]	55.0 [18.0]	0.040
on day 1			
mean PaO ₂ [mmHg]	98.05 ± 21.12	106.29 ± 22.26	0.050
PaO ₂ integral above 80 mmHg [mmHg/d]	20.87 ± 19.18	28.83 ± 20.52	0.038
PaO ₂ integral above 100 mmHg [mmHg/d]	11.05 ± 15.05	17.79 ± 17.44	0.027
PaO ₂ integral above 120 mmHg [mmHg/d]	6.56 ± 11.87	11.90 ± 14.72	0.067
PaO ₂ integral above 150 mmHg [mmHg/d]	3.82 ± 9.11	7.24 ± 12.26	0.152
admission to day 3			
mean PaO ₂ [mmHg]	90.96 ± 13.27	96.27 ± 13.74	0.043
PaO ₂ integral above 80 mmHg [mmHg/d]	14.02 ± 11.07	19.02 ± 11.81	0.023
PaO ₂ integral above 100 mmHg [mmHg/d]	5.62 ± 6.89	10.00 ± 9.33	0.019
PaO ₂ integral above 120 mmHg [mmHg/d]	2.96 ± 4.85	7.06 ± 8.11	0.011
PaO ₂ integral above 150 mmHg [mmHg/d]	1.66 ± 3.66	4.86 ± 6.88	0.018
admission to day 7			
mean PaO ₂ [mmHg]	87.70 ± 10.37	115.04 ± 60.15	0.019
PaO ₂ integral above 80 mmHg [mmHg/d]	10.95 ± 8.09	37.90 ± 58.73	0.018
PaO ₂ integral above 100 mmHg [mmHg/d]	3.76 ± 4.17	28.58 ± 55.71	0.021
PaO ₂ integral above 120 mmHg [mmHg/d]	1.88 ± 2.64	24.92 ± 52.11	0.022
PaO ₂ integral above 150 mmHg [mmHg/d]	1.06 ± 1.92	21.10 ± 46.87	0.026
admission to day 14			
mean PaO ₂ [mmHg]	86.20 ± 8.54	122.63 ± 74.07	0.046
PaO ₂ integral above 80 mmHg [mmHg/d]	9.43 ± 6.44	46.14 ± 72.12	0.040
PaO ₂ integral above 100 mmHg [mmHg/d]	2.82 ± 2.89	37.73 ± 67.74	0.037
PaO ₂ integral above 120 mmHg [mmHg/d]	1.31 ± 1.76	33.46 ± 63.11	0.039
PaO ₂ integral above 150 mmHg [mmHg/d]	0.76 ± 1.36	28.17 ± 56.42	0.048

Data are given as numbers and percentage in parentheses, mean ± standard deviation or median and interquartile range in brackets, as applicable. PaO₂ = arterial partial pressure of oxygen.

Table S5. Patient characteristics and univariable analysis for GOS after 3-6 months, sensitivity analysis without palliative care patients (n=228)

patient characteristics	favorable (n=72)	unfavorable (n=98)	p-value
patients lost for follow-up: 58			
age [years]	45.08 ± 16.61	55.85 ± 20.49	< 0.001
Charlson Comorbidity Index	1.0 [1.0]	2.0 [4.0]	< 0.001
Glasgow Coma Score	8.5 [9.0]	7.0 [8.0]	0.155
pupillary reactivity to light			0.160
both reactive	56 (77.8)	62 (63.3)	
one reactive	7 (9.7)	15 (15.3)	
none reactive	8 (11.1)	18 (18.4)	
unknown	1 (1.4)	3 (3.1)	
Abbreviated Injury Scale for head	4.0 [1.0]	5.0 [1.0]	0.087
Rotterdam-CT-Score	3.0 [1.0]	4.0 [2.0]	< 0.001
Simplified Acute Physiology Score II	41.0 [22.0]	50.0 [17.50]	< 0.001
on day 1			
mean PaO ₂ [mmHg]	97.41 ± 17.57	100.92 (21.59)	0.247
PaO ₂ integral above 80 mmHg [mmHg/d]	19.87 ± 15.91	23.57 (19.94)	0.184
PaO ₂ integral above 100 mmHg [mmHg/d]	9.51 ± 11.73	13.40 (16.44)	0.076
PaO ₂ integral above 120 mmHg [mmHg/d]	5.12 ± 8.91	8.50 (13.71)	0.055
PaO ₂ integral above 150 mmHg [mmHg/d]	2.78 ± 6.87	5.10 (11.00)	0.094
admission to day 3			
mean PaO ₂ [mmHg]	91.36 ± 12.43	92.81 ± 13.01	0.466
PaO ₂ integral above 80 mmHg [mmHg/d]	14.01 ± 10.41	15.64 ± 11.12	0.336
PaO ₂ integral above 100 mmHg [mmHg/d]	4.95 ± 6.14	7.27 ± 7.82	0.032
PaO ₂ integral above 120 mmHg [mmHg/d]	2.39 ± 4.13	4.45 ± 6.29	0.011
PaO ₂ integral above 150 mmHg [mmHg/d]	1.29 ± 3.17	2.75 ± 5.07	0.022
admission to day 7			
mean PaO ₂ [mmHg]	89.01 ± 11.02	96.14 ± 36.00	0.068
PaO ₂ integral above 80 mmHg [mmHg/d]	12.06 ± 8.92	19.03 ± 34.97	0.061
PaO ₂ integral above 100 mmHg [mmHg/d]	4.01 ± 4.98	11.32 ± 33.69	0.032
PaO ₂ integral above 120 mmHg [mmHg/d]	1.92 ± 3.12	8.92 ± 30.49	0.026
PaO ₂ integral above 150 mmHg [mmHg/d]	1.10 ± 2.25	7.15 ± 27.30	0.031
admission to day 14			
mean PaO ₂ [mmHg]	86.97 ± 9.22	94.83 ± 37.95	0.069
PaO ₂ integral above 80 mmHg [mmHg/d]	10.07 ± 7.20	17.77 ± 37.02	0.064
PaO ₂ integral above 100 mmHg [mmHg/d]	2.97 ± 3.45	10.57 ± 34.66	0.048
PaO ₂ integral above 120 mmHg [mmHg/d]	1.29 ± 1.79	8.44 ± 32.20	0.044
PaO ₂ integral above 150 mmHg [mmHg/d]	0.74 ± 1.29	6.80 ± 28.56	0.054

Data are given as numbers and percentage in parentheses, mean ± standard deviation or median and interquartile range in brackets, as applicable. PaO₂ = arterial partial pressure of oxygen.

Table S6. Patient characteristics and univariable analysis for in-hospital mortality, sensitivity analysis without patients with severe chest injury (n=275)

patient characteristics	survived (n=187)	deceased (n=88)	p-value
age [years]	52.50 ± 20.03	65.49 ± 19.86	< 0.001
Charlson Comorbidity Index	1.0 [4.0]	4.0 [4.0]	< 0.001
Glasgow Coma Score	8.0 [9.0]	7.0 [10.0]	0.537
pupillary reactivity to light			0.149
both reactive	135 (72.2)	50 (56.8)	
one reactive	26 (13.9)	15 (17.0)	
none reactive	23 (12.3)	16 (18.2)	
unknown	3 (1.6)	7 (8.0)	
Abbreviated Injury Scale for head	4.0 [1.0]	5.0 [1.0]	< 0.001
Rotterdam-CT-Score	3.0 [1.0]	4.0 [2.0]	< 0.001
Simplified Acute Physiology Score II	44.0 [19.0]	53.0 [17.0]	< 0.001
on day 1			
mean PaO ₂ [mmHg]	98.30 ± 21.42	101.00 ± 28.00	0.389
PaO ₂ integral above 80 mmHg [mmHg/d]	21.13 ± 19.49	24.01 ± 26.20	0.319
PaO ₂ integral above 100 mmHg [mmHg/d]	11.31 ± 15.35	14.00 ± 22.78	0.260
PaO ₂ integral above 120 mmHg [mmHg/d]	6.76 ± 12.13	9.02 ± 20.03	0.341
PaO ₂ integral above 150 mmHg [mmHg/d]	3.97 ± 9.34	5.66 ± 17.14	0.398
admission to day 3			
mean PaO ₂ [mmHg]	90.91 ± 13.49	89.85 ± 15.50	0.571
PaO ₂ integral above 80 mmHg [mmHg/d]	14.02 ± 11.23	13.96 ± 12.65	0.966
PaO ₂ integral above 100 mmHg [mmHg/d]	5.68 ± 6.98	6.53 ± 9.35	0.406
PaO ₂ integral above 120 mmHg [mmHg/d]	3.01 ± 4.92	4.26 ± 8.04	0.188
PaO ₂ integral above 150 mmHg [mmHg/d]	1.71 ± 3.73	2.85 ± 6.77	0.149
admission to day 7			
mean PaO ₂ [mmHg]	87.59 ± 10.56	93.10 ± 37.69	0.207
PaO ₂ integral above 80 mmHg [mmHg/d]	10.91 ± 8.25	17.41 ± 36.00	0.119
PaO ₂ integral above 100 mmHg [mmHg/d]	3.78 ± 4.25	10.71 ± 33.47	0.072
PaO ₂ integral above 120 mmHg [mmHg/d]	1.91 ± 2.69	8.74 ± 31.21	0.057
PaO ₂ integral above 150 mmHg [mmHg/d]	1.09 ± 1.97	7.17 ± 28.01	0.059
admission to day 14			
mean PaO ₂ [mmHg]	86.08 ± 8.70	97.35 ± 47.85	0.091
PaO ₂ integral above 80 mmHg [mmHg/d]	9.39 ± 6.55	21.54 ± 46.24	0.060
PaO ₂ integral above 100 mmHg [mmHg/d]	2.83 ± 2.94	14.83 ± 43.07	0.046
PaO ₂ integral above 120 mmHg [mmHg/d]	1.34 ± 1.80	12.36 ± 40.02	0.048
PaO ₂ integral above 150 mmHg [mmHg/d]	0.78 ± 1.39	10.25 ± 35.51	0.055

Data are given as numbers and percentage in parentheses, mean ± standard deviation or median and interquartile range in brackets, as applicable. PaO₂ = arterial partial pressure of oxygen.

Table S7. Patient characteristics and univariable analysis for GOS after 3-6 months, sensitivity analysis without patients with severe chest injury (n=275)

patient characteristics	favorable (n=67)	unfavorable (n=152)	p-value
patients lost for follow-up: 56			
age [years]	45.96 ± 16.73	62.45 ± 20.50	< 0.001
Charlson Comorbidity Index	1.0 [1.0]	3.5 [4.0]	< 0.001
Glasgow Coma Score	9.0 [9.0]	7.0 [10.0]	0.220
pupillary reactivity to light			0.255
both reactive	51 (76.1)	95 (62.5)	
one reactive	7 (10.4)	26 (17.1)	
none reactive	8 (11.9)	22 (14.5)	
unknown	1 (1.5)	9 (5.9)	
Abbreviated Injury Scale for head	4.0 [1.0]	5.0 [1.0]	0.012
Rotterdam-CT-Score	3.0 [1.0]	4.0 [2.0]	< 0.001
Simplified Acute Physiology Score II	41.0 [22.0]	50.0 [19.0]	< 0.001
on day 1			
mean PaO ₂ [mmHg]	97.89 ± 17.99	100.01 ± 25.30	0.489
PaO ₂ integral above 80 mmHg [mmHg/d]	20.39 ± 16.28	22.86 ± 23.60	0.444
PaO ₂ integral above 100 mmHg [mmHg/d]	10.02 ± 11.98	12.95 ± 20.14	0.190
PaO ₂ integral above 120 mmHg [mmHg/d]	5.48 ± 9.15	8.21 ± 17.45	0.137
PaO ₂ integral above 150 mmHg [mmHg/d]	2.99 ± 7.08	5.08 ± 14.66	0.162
admission to day 3			
mean PaO ₂ [mmHg]	91.61 ± 12.72	90.34 ± 14.33	0.538
PaO ₂ integral above 80 mmHg [mmHg/d]	14.30 ± 10.62	13.92 ± 11.81	0.824
PaO ₂ integral above 100 mmHg [mmHg/d]	5.19 ± 6.28	6.26 ± 8.34	0.352
PaO ₂ integral above 120 mmHg [mmHg/d]	2.55 ± 4.24	3.82 ± 6.88	0.100
PaO ₂ integral above 150 mmHg [mmHg/d]	1.38 ± 3.27	2.41 ± 5.68	0.098
admission to day 7			
mean PaO ₂ [mmHg]	89.13 ± 11.23	90.60 ± 28.64	0.689
PaO ₂ integral above 80 mmHg [mmHg/d]	12.22 ± 9.11	14.31 ± 27.24	0.547
PaO ₂ integral above 100 mmHg [mmHg/d]	4.16 ± 5.12	7.52 ± 25.09	0.128
PaO ₂ integral above 120 mmHg [mmHg/d]	2.01 ± 3.21	5.64 ± 23.37	0.072
PaO ₂ integral above 150 mmHg [mmHg/d]	1.16 ± 2.32	4.40 ± 20.95	0.072
admission to day 14			
mean PaO ₂ [mmHg]	86.95 ± 9.51	91.57 ± 33.34	0.168
PaO ₂ integral above 80 mmHg [mmHg/d]	10.14 ± 7.42	15.06 ± 32.20	0.120
PaO ₂ integral above 100 mmHg [mmHg/d]	3.09 ± 3.55	8.33 ± 29.90	0.065
PaO ₂ integral above 120 mmHg [mmHg/d]	1.36 ± 1.84	6.40 ± 27.75	0.054
PaO ₂ integral above 150 mmHg [mmHg/d]	0.79 ± 1.33	5.12 ± 24.59	0.061

Data are given as numbers and percentage in parentheses, mean ± standard deviation or median and interquartile range in brackets, as applicable. PaO₂ = arterial partial pressure of oxygen.

Table S8. Multivariable analysis: in-hospital mortality, all patients

oxygenation parameter	odds ratio	lower CI	upper CI	p-value
on day 1				
mean PaO ₂ [mmHg]	1.011	0.995	1.027	0.190
PaO ₂ integral above 80 mmHg [mmHg/d]	1.011	0.994	1.029	0.207
PaO ₂ integral above 100 mmHg [mmHg/d]	1.011	0.990	1.033	0.291
PaO ₂ integral above 120 mmHg [mmHg/d]	1.010	0.985	1.036	0.427
PaO ₂ integral above 150 mmHg [mmHg/d]	1.007	0.975	1.040	0.688
admission to day 3				
mean PaO ₂ [mmHg]	1.006	0.980	1.033	0.643
PaO ₂ integral above 80 mmHg [mmHg/d]	1.013	0.982	1.046	0.417
PaO ₂ integral above 100 mmHg [mmHg/d]	1.025	0.979	1.072	0.288
PaO ₂ integral above 120 mmHg [mmHg/d]	1.037	0.980	1.096	0.211
PaO ₂ integral above 150 mmHg [mmHg/d]	1.043	0.973	1.118	0.238
admission to day 7				
mean PaO ₂ [mmHg]	1.014	0.995	1.032	0.144
PaO ₂ integral above 80 mmHg [mmHg/d]	1.022	0.992	1.052	0.148
PaO ₂ integral above 100 mmHg [mmHg/d]	1.044	0.977	1.116	0.207
PaO ₂ integral above 120 mmHg [mmHg/d]	1.074	0.963	1.198	0.198
PaO ₂ integral above 150 mmHg [mmHg/d]	1.092	0.952	1.266	0.244
admission to day 14				
mean PaO ₂ [mmHg]	1.018	0.999	1.038	0.068
PaO ₂ integral above 80 mmHg [mmHg/d]	1.026	0.998	1.055	0.070
PaO ₂ integral above 100 mmHg [mmHg/d]	1.045	0.982	1.113	0.164
PaO ₂ integral above 120 mmHg [mmHg/d]	1.060	0.961	1.169	0.244
PaO ₂ integral above 150 mmHg [mmHg/d]	1.068	0.932	1.224	0.342

Separate binary logistic regression model for each oxygenation parameter, adjusted for: age, Charlson Comorbidity Index, initial Glasgow Coma Score, pupillary reactivity to light, Rotterdam-CT-Score, Abbreviated Injury Scale for head and Simplified Acute Physiology Score II without points for age and Glasgow Coma Score. CI = 95% confidence intervals; PaO₂ = arterial partial pressure of oxygen.

Table S9. Multivariable analysis: favorable GOS after 3-6 months, all patients

oxygenation parameter	odds ratio	lower CI	upper CI	p-value
on day 1				
mean PaO ₂ [mmHg]	0.959	0.930	0.990	0.009
PaO ₂ integral above 80 mmHg [mmHg/d]	0.955	0.923	0.988	0.008
PaO ₂ integral above 100 mmHg [mmHg/d]	0.939	0.897	0.982	0.006
PaO ₂ integral above 120 mmHg [mmHg/d]	0.923	0.871	0.978	0.007
PaO ₂ integral above 150 mmHg [mmHg/d]	0.922	0.858	0.992	0.029
admission to day 3				
mean PaO ₂ [mmHg]	0.969	0.931	1.009	0.129
PaO ₂ integral above 80 mmHg [mmHg/d]	0.958	0.911	1.007	0.091
PaO ₂ integral above 100 mmHg [mmHg/d]	0.897	0.819	0.983	0.020
PaO ₂ integral above 120 mmHg [mmHg/d]	0.842	0.738	0.961	0.011
PaO ₂ integral above 150 mmHg [mmHg/d]	0.832	0.705	0.981	0.029
admission to day 7				
mean PaO ₂ [mmHg]	0.989	0.961	1.019	0.471
PaO ₂ integral above 80 mmHg [mmHg/d]	0.984	0.944	1.025	0.431
PaO ₂ integral above 100 mmHg [mmHg/d]	0.952	0.863	1.051	0.333
PaO ₂ integral above 120 mmHg [mmHg/d]	0.891	0.749	1.060	0.194
PaO ₂ integral above 150 mmHg [mmHg/d]	0.885	0.699	1.121	0.312
admission to day 14				
mean PaO ₂ [mmHg]	0.988	0.964	1.012	0.331
PaO ₂ integral above 80 mmHg [mmHg/d]	0.984	0.952	1.016	0.321
PaO ₂ integral above 100 mmHg [mmHg/d]	0.973	0.913	1.038	0.408
PaO ₂ integral above 120 mmHg [mmHg/d]	0.949	0.777	1.159	0.606
PaO ₂ integral above 150 mmHg [mmHg/d]	0.950	0.788	1.144	0.586

Separate binary logistic regression model for each oxygenation parameter, adjusted for: age, Charlson Comorbidity Index, initial Glasgow Coma Score, pupillary reactivity to light, Rotterdam-CT-Score, Abbreviated Injury Scale for head and Simplified Acute Physiology Score II without points for age and Glasgow Coma Score. CI = 95% confidence intervals; PaO₂= arterial partial pressure of oxygen.

Table S10. Multivariable analysis: favorable GOS after 3-6 months, sensitivity analysis without palliative care patients

oxygenation parameter	odds ratio	lower CI	upper CI	p-value
on day 1				
mean PaO ₂ [mmHg]	0.966	0.938	0.996	0.025
PaO ₂ integral above 80 mmHg [mmHg/d]	0.963	0.932	0.995	0.023
PaO ₂ integral above 100 mmHg [mmHg/d]	0.948	0.908	0.991	0.018
PaO ₂ integral above 120 mmHg [mmHg/d]	0.934	0.883	0.989	0.020
PaO ₂ integral above 150 mmHg [mmHg/d]	0.925	0.860	0.995	0.037
admission to day 3				
mean PaO ₂ [mmHg]	0.973	0.934	1.014	0.189
PaO ₂ integral above 80 mmHg [mmHg/d]	0.961	0.914	1.011	0.125
PaO ₂ integral above 100 mmHg [mmHg/d]	0.903	0.824	0.989	0.027
PaO ₂ integral above 120 mmHg [mmHg/d]	0.855	0.749	0.975	0.019
PaO ₂ integral above 150 mmHg [mmHg/d]	0.834	0.706	0.985	0.033
admission to day 7				
mean PaO ₂ [mmHg]	0.988	0.957	1.019	0.438
PaO ₂ integral above 80 mmHg [mmHg/d]	0.983	0.943	1.025	0.422
PaO ₂ integral above 100 mmHg [mmHg/d]	0.949	0.857	1.052	0.317
PaO ₂ integral above 120 mmHg [mmHg/d]	0.886	0.741	1.059	0.184
PaO ₂ integral above 150 mmHg [mmHg/d]	0.871	0.683	1.111	0.267
admission to day 14				
mean PaO ₂ [mmHg]	0.987	0.963	1.012	0.303
PaO ₂ integral above 80 mmHg [mmHg/d]	0.984	0.953	1.015	0.295
PaO ₂ integral above 100 mmHg [mmHg/d]	0.973	0.917	1.032	0.360
PaO ₂ integral above 120 mmHg [mmHg/d]	0.941	0.749	1.181	0.598
PaO ₂ integral above 150 mmHg [mmHg/d]	0.936	0.718	1.220	0.625

Separate binary logistic regression model for each oxygenation parameter, adjusted for: age, Charlson Comorbidity Index, initial Glasgow Coma Score, pupillary reactivity to light, Rotterdam-CT-Score, Abbreviated Injury Scale for head Scale and Simplified Acute Physiology Score II without points for age and initial Glasgow Coma Score. CI = 95% confidence intervals; PaO₂ = arterial partial pressure of oxygen.

Table S11. Multivariable analysis: favorable GOS after 3-6 months, sensitivity analysis without patients with severe chest injury

oxygenation parameter	odds ratio	lower CI	upper CI	p-value
on day 1				
mean PaO ₂ [mmHg]	0.963	0.934	0.993	0.017
PaO ₂ integral above 80 mmHg [mmHg/d]	0.959	0.927	0.992	0.016
PaO ₂ integral above 100 mmHg [mmHg/d]	0.944	0.902	0.988	0.013
PaO ₂ integral above 120 mmHg [mmHg/d]	0.928	0.875	0.984	0.013
PaO ₂ integral above 150 mmHg [mmHg/d]	0.929	0.863	1.000	0.050
admission to day 3				
mean PaO ₂ [mmHg]	0.972	0.93	1.012	0.163
PaO ₂ integral above 80 mmHg [mmHg/d]	0.961	0.914	1.010	0.118
PaO ₂ integral above 100 mmHg [mmHg/d]	0.905	0.826	0.991	0.032
PaO ₂ integral above 120 mmHg [mmHg/d]	0.851	0.745	0.973	0.018
PaO ₂ integral above 150 mmHg [mmHg/d]	0.845	0.716	0.996	0.045
admission to day 7				
mean PaO ₂ [mmHg]	0.991	0.963	1.019	0.521
PaO ₂ integral above 80 mmHg [mmHg/d]	0.985	0.947	1.026	0.471
PaO ₂ integral above 100 mmHg [mmHg/d]	0.956	0.868	1.054	0.369
PaO ₂ integral above 120 mmHg [mmHg/d]	0.898	0.754	1.070	0.230
PaO ₂ integral above 150 mmHg [mmHg/d]	0.895	0.707	1.133	0.356
admission to day 14				
mean PaO ₂ [mmHg]	0.988	0.964	1.012	0.314
PaO ₂ integral above 80 mmHg [mmHg/d]	0.983	0.953	1.015	0.306
PaO ₂ integral above 100 mmHg [mmHg/d]	0.974	0.918	1.033	0.385
PaO ₂ integral above 120 mmHg [mmHg/d]	0.954	0.823	1.106	0.534
PaO ₂ integral above 150 mmHg [mmHg/d]	0.944	0.796	1.121	0.513

Separate binary logistic regression model for each oxygenation parameter, adjusted for: age, Charlson Comorbidity Index, initial Glasgow Coma Score, pupillary reactivity to light, Rotterdam-CT-Score, Abbreviated Injury Scale for head and Simplified Acute Physiology Score II without points for age and initial Glasgow Coma Score. CI = 95% confidence intervals; PaO₂ = arterial partial pressure of oxygen.

Table S12. Discontinuation of mechanical ventilation during the first 14 days after admission

parameter [mmHg] n=237	Q1 (64-79) n=60	Q2 (79-85) n=59	Q3 (85-92) n=59	Q4 (92-322) n=59	p-value
extubation	14 (23)	17 (29)	20 (34)	10 (17)	0.178
death	18 (30)	17 (29)	4 (7)	17 (29)	0.006
extubation or death	32 (53)	34 (58)	24 (41)	27 (46)	0.253

Q1 to Q4 refer the quartiles obtained by categorization according to time-weighted mean arterial oxygen partial pressure after 14 days, numbers in parentheses depict the particular range in PaO₂ in mmHg. Separate Chi-square tests were done for each parameter. Data are given as numbers and percent in parentheses. Table only includes deaths up to day 14.

Table S13. Time-weighted mean oxygen partial pressures before and after extubation

Parameter	before extubation	after extubation	p-value
mean PaO ₂ [mmHg]	88.8 ± 9.24	83.3 ± 11.92	< 0.001

Patients extubated alive before day 14 (n=62). Paired t-test reveals a statistically significant difference with both values being within a normoxic range. PaO₂ = arterial partial pressure of oxygen

Table S14. Cause of in-hospital mortality, grouped by arterial oxygen partial pressure during the first 24 hours

parameter [mmHg] n=279	Q1 (53-83) n=70	Q2 (83-95) n=70	Q3 (95-108) n=70	Q4 (108-268) n=69
organ failure despite intensive care therapy	0	0	1	2
brain death	4	5	10	8
withdrawal of care due to poor prognosis and presumed will of patient	16	17	14	10
total	20	23	25	20

Q1 to Q4 refer to the quartiles obtained by categorization according to time-weighted mean arterial oxygen partial pressure during the first day; Chi-square reveals no significant difference, p=0.405; data are given as numbers. Table includes all deaths during initial hospital therapy.

Table S15. Cause of in-hospital mortality, grouped by arterial oxygen partial pressure during the first 72 hours

parameter [mmHg] n=283	Q1 (61-81) n=71	Q2 (81-89) n=71	Q3 (89-99) n=71	Q4 (99-149) n=70
organ failure despite intensive care therapy	0	0	3	0
brain death	3	4	11	9
withdrawal of care due to poor prognosis and presumed will of patient	20	19	8	11
total	23	23	22	20

Q1 to Q4 refer to the quartiles obtained by categorization according to time-weighted mean arterial oxygen partial pressure during the first three days; Chi-square reveals statistically significant difference, p=0.006; data are given as numbers. Table includes all deaths during initial hospital therapy.

Fig. S1 Proportion of mechanically ventilated patients over time

Discontinuity within the first 14 days of ventilation due to extubation or death of the patient.

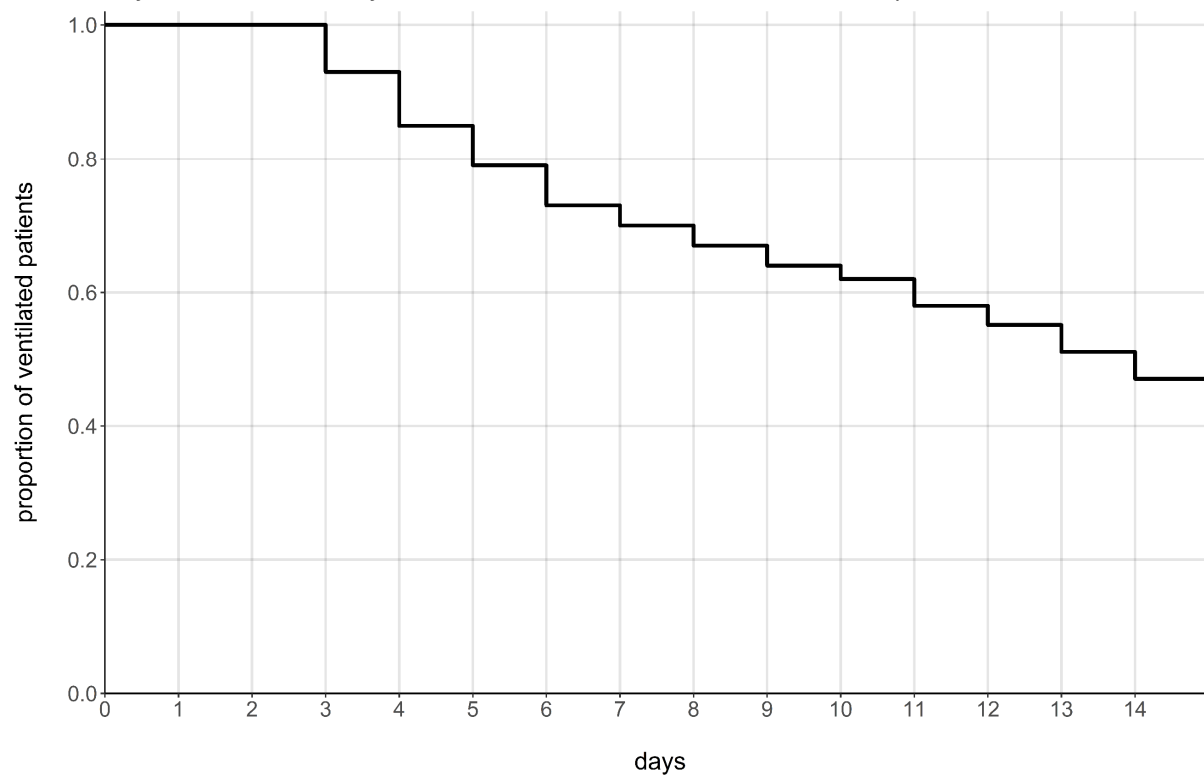


Fig. S2 Logistic regression model for in-hospital mortality, unadjusted

Logistic regression model for in-hospital mortality modelling time-weighted mean PaO₂ in mmHg as a restricted cubic spline with 3 knots. Black solid lines depict Odds Ratios in reference to the PaO₂ labelled with a vertical dashed line. Gray areas represent 95% confidence intervals.

A = on day one, reference: PaO₂ = 100 mmHg

B = admission to day 3, reference: PaO₂ = 95 mmHg

C = admission to day 7, reference: PaO₂ = 90 mmHg

D = admission to day 14, reference: PaO₂ = 88 mmHg

PaO₂ = arterial partial pressure of oxygen.

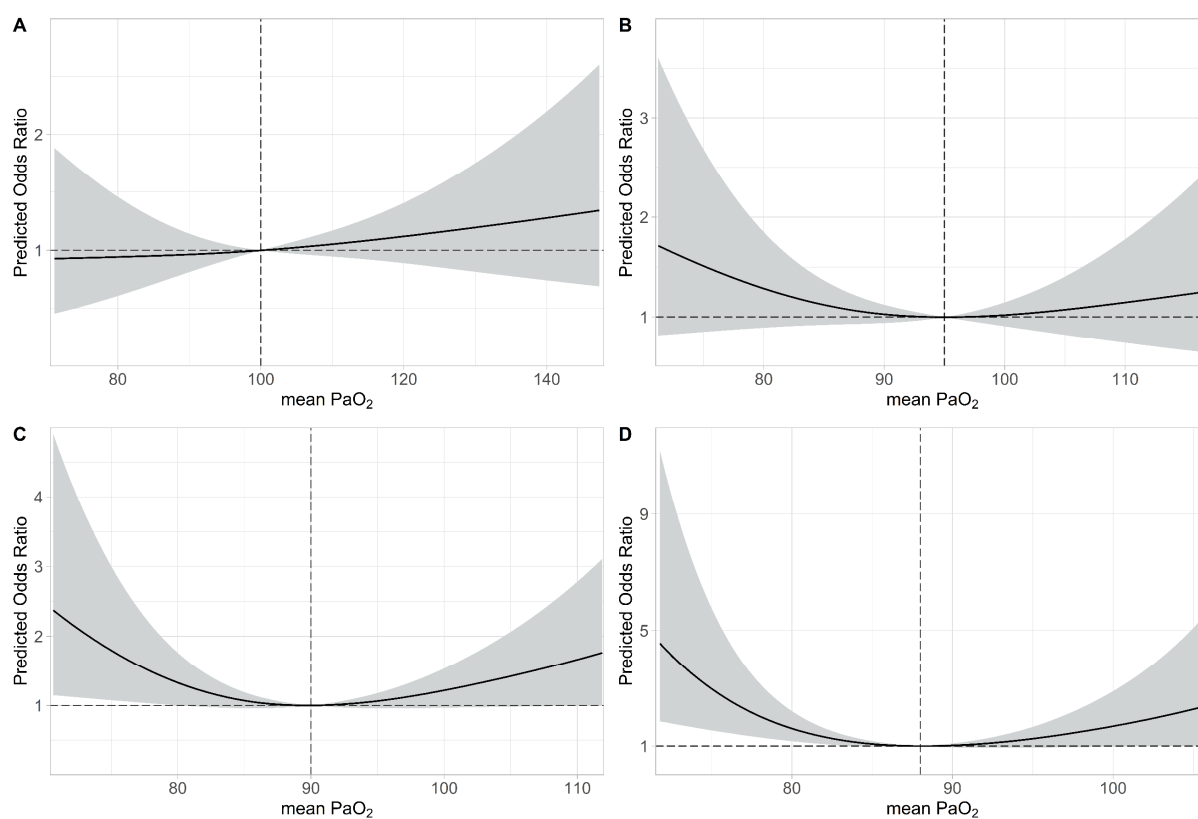


Fig. S3 Logistic regression model for unfavorable GOS after 3-6 months, unadjusted

Logistic regression model for an unfavorable GOS after 3-6 months, modelling time-weighted mean PaO₂ in mmHg as a restricted cubic spline with 3 knots. Black solid lines depict Odds Ratios in reference to the PaO₂ labelled with a vertical dashed line. Gray areas represent 95% confidence intervals.

A = on day one, reference: PaO₂ = 98 mmHg

B = admission to day 3, reference: PaO₂ = 95 mmHg

C = admission to day 7, reference: PaO₂ = 92 mmHg

D = admission to day 14, reference: PaO₂ = 89 mmHg

PaO₂ = arterial partial pressure of oxygen.

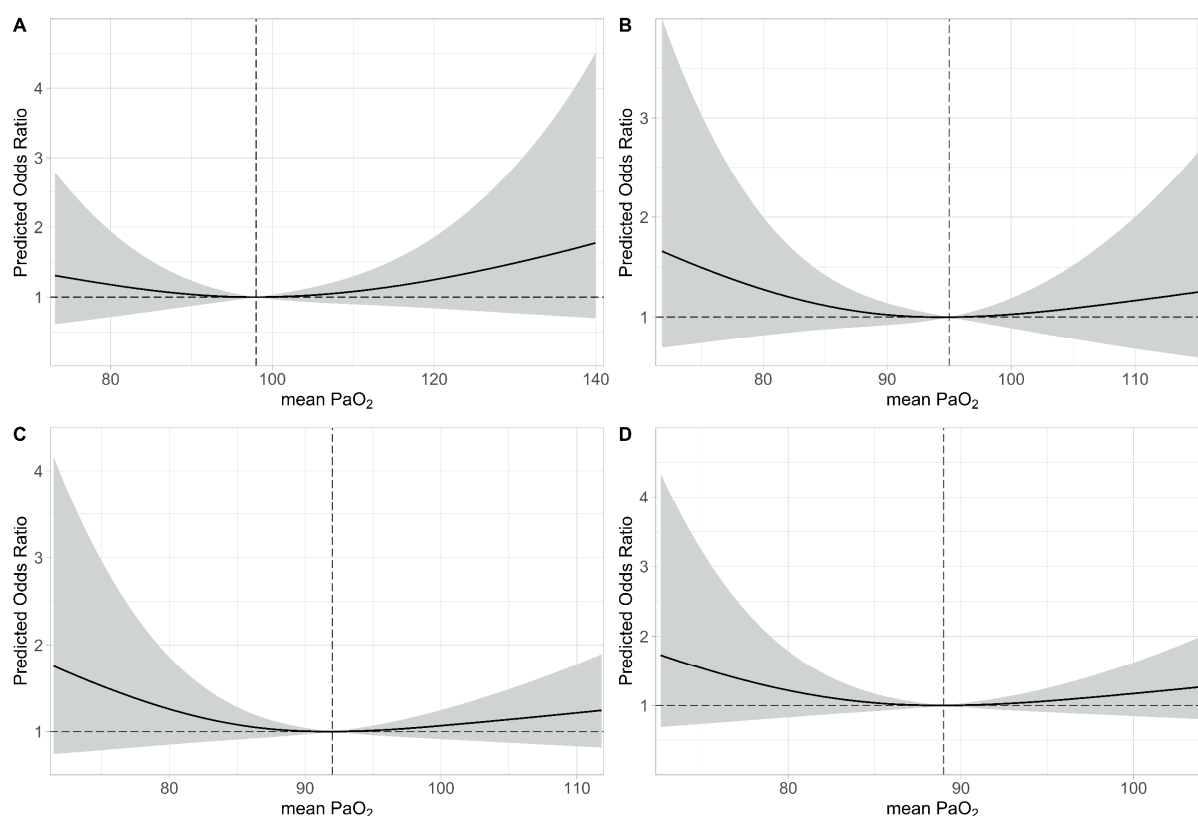


Fig. S4 Logistic regression model for in-hospital mortality, multivariable adjusted

Logistic regression model for in-hospital mortality modelling time-weighted mean PaO_2 in mmHg as a restricted cubic spline with 3 knots. Black solid lines depict Odds Ratios in reference to the PaO_2 labelled with a vertical dashed line. Gray areas represent 95% confidence intervals. Models were adjusted for: age, Charlson Comorbidity Index, initial Glasgow Coma Score, pupillary reactivity to light, Rotterdam-CT-Score, Abbreviated Injury Scale for head and Simplified Acute Physiology Score II without points for age and initial Glasgow Coma Score.

A = on day one, reference: $\text{PaO}_2 = 114$ mmHg

B = admission to day 3, reference: $\text{PaO}_2 = 88$ mmHg

C = admission to day 7, reference: $\text{PaO}_2 = 88$ mmHg

D = admission to day 14, reference: $\text{PaO}_2 = 88$ mmHg

PaO_2 = arterial partial pressure of oxygen.

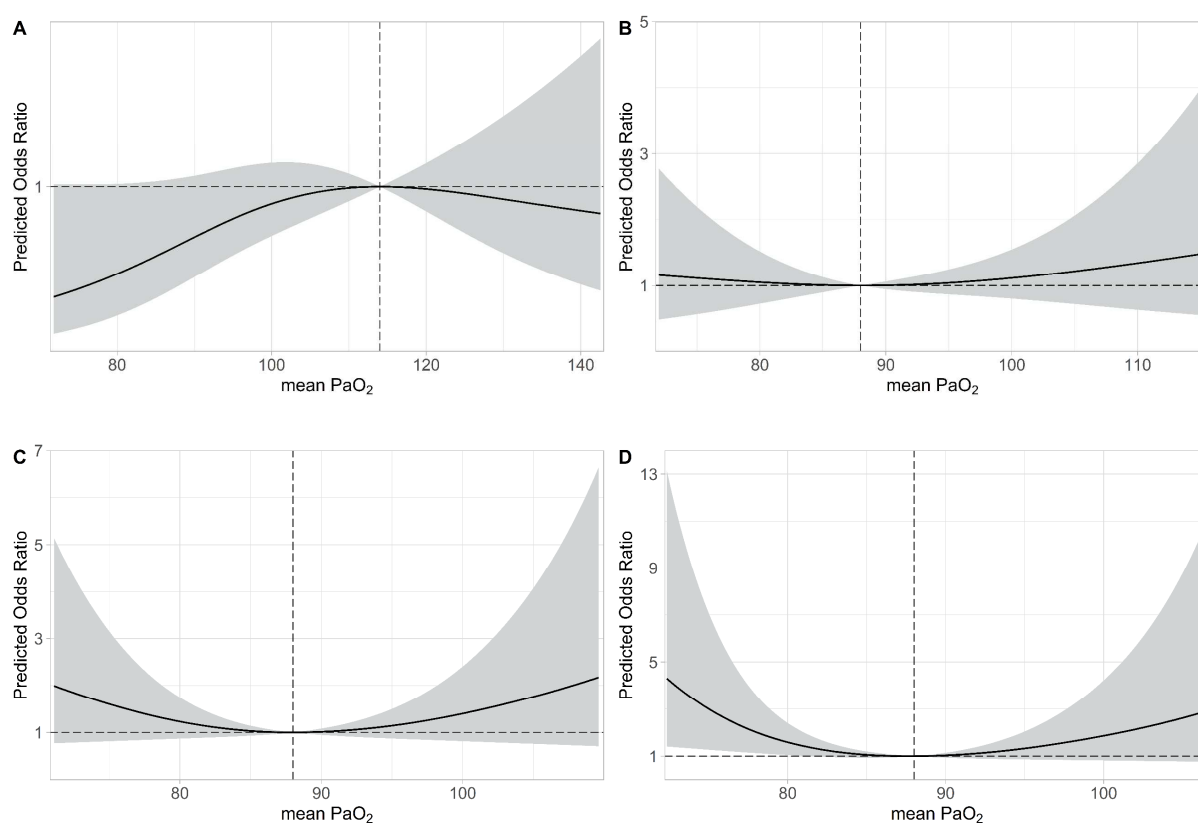


Fig. S5 Logistic regression model for unfavorable GOS after 3-6 months, multivariable adjusted

Logistic regression model for an unfavorable GOS after 3-6 months, modelling time-weighted mean PaO_2 in mmHg as a restricted cubic spline with 3 knots. Black solid lines depict Odds Ratios in reference to the PaO_2 labelled with a vertical dashed line. Gray areas represent 95% confidence intervals. Models were adjusted for: age, Charlson Comorbidity Index, initial Glasgow Coma Score, pupillary reactivity to light, Rotterdam-CT-Score, Abbreviated Injury Scale for head and Simplified Acute Physiology Score II without points for age and initial Glasgow Coma Score.

A = on day one, reference: $\text{PaO}_2 = 100$ mmHg

B = admission to day 3, reference: $\text{PaO}_2 = 85$ mmHg

C = admission to day 7, reference: $\text{PaO}_2 = 88$ mmHg

D = admission to day 14, reference: $\text{PaO}_2 = 88$ mmHg

PaO_2 = arterial partial pressure of oxygen.

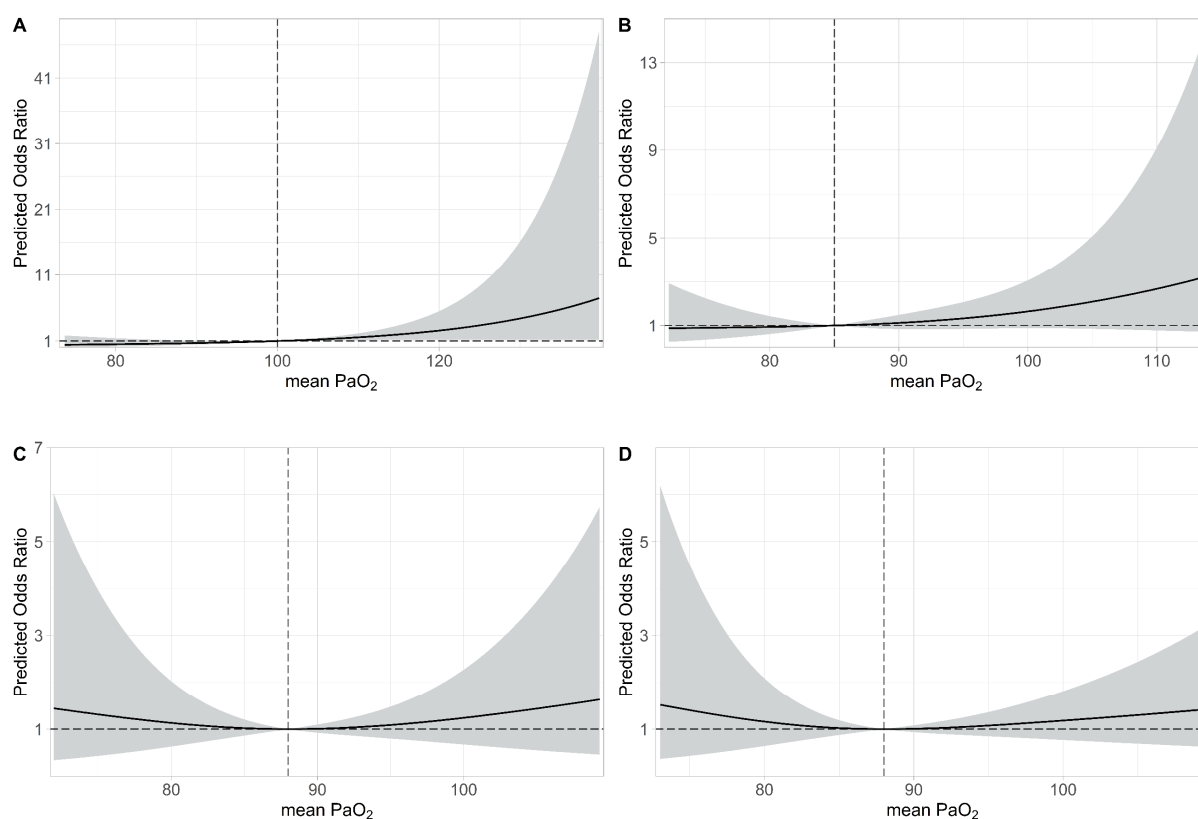


Fig. S6 Distribution of time-weighted mean PaO₂ for days 1, 3, 7 and 14

Change of distribution of time-weighted mean PaO₂ over time.

Light gray = distribution of time-weighted mean PaO₂ at day 1.

Middle gray = distribution of time-weighted mean PaO₂ up to day 3.

Dark gray = distribution of time-weighted mean PaO₂ up to day 7.

Black = distribution of time-weighted mean PaO₂ until day 14.

PaO₂ = arterial partial pressure of oxygen.

