

Data Supplement S1 . Supplemental material

TABLE S1 Secondary outcomes of per-protocol analysis

	At 30 minutes		At 60 minutes		At 120 minutes	
	COT (n=17)	NHF (n=18) Difference (95%CI); p-value	COT (n=17)	NHF (n=18) Difference (95%CI); p-value	COT (n=17)	NHF (n=18) Difference (95%CI); p-value
Patient-reported outcomes						
MBS	5.7 ± 2.1	4.9 ± 1.8 0.7 (-0.9, 2.3); p=0.80	3.9 ± 2.5	2.4 ± 1.4 1.5 (-0.1, 3.1); p=0.08	2.9 ± 1.9	0.9 ± 1.4 2.0 (0.4, 3.6); p=0.006
NRS	5.6 ± 2.2	4.8 ± 1.7 0.9 (-0.7, 2.5); p=0.59	3.8 ± 2.5	2.3 ± 1.5 1.6 (0.02, 3.2); p=0.046	2.8 ± 1.9	0.9 ± 1.4 2.0 (0.4, 3.6); p=0.008
Physician-reported outcome and physiologic variables						
Dyspnea score	3.5 ± 2.0	2.9 ± 1.5 0.6 (-1.1, 2.3); p=0.91	2.8 ± 2.0	1.4 ± 1.4 1.4 (0.01, 2.8); p=0.048	2.7 ± 1.8	0.9 ± 1.4 1.9 (0.3, 3.8); p=0.02
Respiratory rate	28.0 ± 5.4	24.9 ± 2.7 2.1 (-1.0, 5.3); p=0.37	26.4 ± 4.2	22.3 ± 2.4 4.1 (0.4, 7.8); p=0.02	25.4 ± 4.2	19.9 ± 2.8 4.6 (1.4, 7.8); p=0.001
Pulse oximetry	96.4 ± 2.5	97.7 ± 2.1 -1.3 (-3.4, -0.8); p=0.45	97.1 ± 2.5	98.0 ± 1.9 -0.9 (-3.0, 1.2); p=0.82	97.2 ± 2.6	98.5 ± 1.3 -1.3 (-3.4, 0.8); p=0.49
Heart rate	107.2 ± 16.0	104.3 ± 19.7 4.1 (-7.3, 15.4); p=0.90	105.2 ± 14.0	101.4 ± 18.7 4.8 (-6.5, 16.2); p=0.81	100.7 ± 11.6	100.1 ± 18.9 1.7 (-9.7, 13.1); p=0.34
Mean arterial pressure	93.7 ± 11.5	98.4 ± 15.8 -4.1 (-13.8, 5.7); p=0.83	90.8 ± 11.4	92.4 ± 13.0 -0.9 (-10.7, 8.8); p=0.99	86.6 ± 9.7	96.7 ± 16.9 -9.3 (-19.1, 0.4); p=0.07

Data are presented as mean ± SD or median (IQR). COT; conventional oxygen therapy, NHF; nasal high flow
Covariance structure of first order autoregressive was the most parsimonious for most outcomes except heterogeneous autoregressive for the dyspnea scale

TABLE S2 Sensitivity analysis of arterial blood gas results

	Before intervention			After intervention (at 120 minutes)			Within-group difference ^c (95%CI); <i>p</i> -value		
	COT (n=10)	NHF (n=17)	Difference ^a (95%CI); <i>p</i> -value	COT (n=10)	NHF (n=17)	Difference ^b (95%CI); <i>p</i> -value	COT (n=10)	NHF (n=17)	
pH	7.41 ± 0.06	7.37 ± 0.04	0.03 (-0.01, 0.07); <i>p</i> =0.11	7.40 ± 0.03	7.37 ± 0.05	0.03 (-0.002, 0.07); <i>p</i> =0.07	0.003 (-0.02, 0.03); <i>p</i> =0.81	0.003 (-0.02, 0.03); <i>p</i> =0.76	
pH_{adj}				7.39 (0.01)	7.38 (0.01)	0.02 (-0.02, 0.05); <i>p</i> =0.28			
PaCO₂	32.9 ± 8.4	38.5 ± 6.9	-5.7 (-11.8, 0.5); <i>p</i> =0.07	32.3 ± 7.0	37.2 ± 8.4	-4.9 (-11.4, 1.7); <i>p</i> =0.14	0.6 (-2.2, 3.3); <i>p</i> =0.65	1.4 (-0.7, 3.4); <i>p</i> =0.18	
PaCO_{2adj}				35.6 (1.3)	35.2 (1.0)	0.4 (-3.1, 3.9); <i>p</i> =0.82			
PaO₂	165.9 ± 68.3	136.0 ± 49.1	29.9 (-16.7, 76.5); <i>p</i> =0.20	141.2 ± 51.1	120.2 ± 37.9	21.0 (-14.4, 56.4); <i>p</i> =0.23	24.7 (-13.5, 62.9); <i>p</i> =0.18	15.8 (-6.4, 38.0); <i>p</i> =0.15	
PaO_{2adj}				132.9 (11.5)	125.1 (8.8)	7.7 (-22.7, 38.1); <i>p</i> =0.61			
P/F ratio	338.3 ± 68.5	278.4 ± 54.7	59.9 (10.6, 109.2); <i>p</i> =0.02	340.7 ± 170.5	316.4 ± 104.1	24.3 (-104.3, 152.9); <i>p</i> =0.69	-2.4 (-110.3, 105.5); <i>p</i> =0.96	-38.0 (-96.8, 20.8); <i>p</i> =0.19	
P/F ratio_{adj}				317.4 (44.0)	330.1 (32.8)	-12.7 (-131.6, 106.2); <i>p</i> =0.83			
HCO₃	23.1 ± 4.0	24.3 ± 6.2	-1.2 (-5.7, 3.3); <i>p</i> =0.60	22.2 ± 4.1	21.8 ± 4.3	0.3 (-3.3, 3.6); <i>p</i> =0.91	0.9 (-0.2, 2.1); <i>p</i> =0.10	2.5 (-0.8, 5.7); <i>p</i> =0.13	
HCO_{3adj}				22.4 (1.2)	21.7 (0.9)	0.8 (-2.4, 4.0); <i>p</i> =0.63			

Data are presented as mean± SD or adjusted mean (SE). COT; conventional oxygen therapy, NHF; nasal high flow, PaCO₂; arterial partial pressure of carbon dioxide, PaO₂; arterial partial pressure of oxygen, P/F; PaO₂/fraction of inspired oxygen, HCO₃; bicarbonate.

^aindependent sample t-test, ^banalysis of covariance adjusted for baseline values of that outcome variable, ^cbefore-after paired-sample t-test