

Supplementary Table S1- Area under ROC and PRC for NEWS2, additive score combining NEWS2 and maximum score in the preceding 24 hours, NEWS-FiO2 and additive score combining current NEWS-FiO2 and maximum NEWS-FiO2 in the preceding 24 hours

Prediction of outcome of death within 24 hours of an observation		NEWS2	Additive NEWS2 + max NEWS2 in previous 24 hrs	NEWS2 fio2	Additive NEWS2 fio2 + max NEWS2 fio2 in preceding 24 hrs
All Respiratory 2015-2017	Area under ROC	0.888 (0.881-0.895)	0.902 (0.895-0.909)	0.890 (0.882-0.897)	0.901 (0.894-0.908)
	Area under PR curve	0.140	0.144	0.158	0.167
Scale 2 Cohort 2015-2017	Area under ROC	0.857 (0.838-0.877)	0.880 (0.862-0.898)	0.865 (0.847-0.884)	0.883 (0.866-0.900)
	Area under PR curve	0.115	0.118	0.123	0.132
All Respiratory 2017-2019	Area under ROC	0.880 (0.873-0.887)	0.898 (0.892-0.905)	0.887 (0.881-0.894)	0.900 (0.894-0.907)
	Area under PR curve	0.134	0.144	0.145	0.155
Scale 2 cohort 207-2019	Area under ROC	0.878 (0.860-0.897)	0.903 (0.885-0.921)	0.880 (0.861-0.899)	0.899 (0.881-0.918)
	Area under PR curve	0.100	0.121	0.102	0.128

Supplementary Table S2 a)- Cut points for escalation with additive score combining maximum score in previous 24 hours and current NEWS2 matched to the NEWS2 score with equivalent sensitivity

2015-2017 Derivation Cohort						2017-2019 Validation Cohort					
Additive Score			NEWS 2			Additive Score			NEWS 2		
Cut point	Sensitivity	Specificity	Cut point	Sensitivity	Specificity	Cut point	Sensitivity	Specificity	Cut point	Sensitivity	Specificity
0	1.00	0.00	0	1.00	0.00	0	1.00	0.00	0	1.00	0.00
1	1.00	0.02				1	1.00	0.01			
2	1.00	0.06				2	1.00	0.04	1	1.00	0.09
3	1.00	0.12	1	1.00	0.12	3	1.00	0.09			
4	1.00	0.19				4	0.99	0.16			
5	0.99	0.27	2	0.99	0.27	5	0.99	0.23	2	0.99	0.24
6	0.99	0.35				6	0.99	0.31			
7	0.98	0.43	3	0.97	0.43	7	0.98	0.39			
8	0.96	0.51				8	0.97	0.47	3	0.97	0.40
9	0.95	0.58	4	0.93	0.60	9	0.95	0.55			
10	0.93	0.65				10	0.94	0.62	4	0.93	0.56
11	0.90	0.72				11	0.91	0.69			
12	0.87	0.78	5	0.87	0.72	12	0.89	0.75	5	0.88	0.69
13	0.83	0.83	6	0.80	0.82	13	0.85	0.80			
14	0.79	0.87				14	0.80	0.85	6	0.80	0.80
15	0.72	0.90	7	0.68	0.90	15	0.74	0.88	7	0.70	0.88
16	0.64	0.92				16	0.68	0.91			
17	0.57	0.94	8	0.57	0.94	17	0.61	0.94	8	0.59	0.93
18	0.50	0.96	9	0.45	0.97	18	0.53	0.95	9	0.46	0.96
19	0.43	0.97				19	0.44	0.97			
20	0.36	0.98	10	0.32	0.98	20	0.36	0.98	10	0.32	0.98
21	0.28	0.99				21	0.29	0.99			
22	0.22	0.99	11	0.20	0.99	22	0.23	0.99	11	0.23	0.99
23	0.16	1.00				23	0.18	0.99			
24	0.13	1.00	12	0.13	1.00	24	0.14	1.00	12	0.15	1.00
25	0.08	1.00	13	0.07	1.00	25	0.11	1.00			
26	0.06	1.00				26	0.09	1.00	13	0.09	1.00
27	0.04	1.00	14	0.04	1.00	27	0.06	1.00	14	0.04	1.00
28	0.02	1.00	15	0.02	1.00	28	0.04	1.00			
29	0.02	1.00				29	0.02	1.00	15	0.02	1.00
30	0.01	1.00				30	0.01	1.00			
31	0.01	1.00	16	0.00	1.00	31	0.01	1.00	16	0.00	1.00
32	0.00	1.00				32	0.00	1.00	17	0.00	1.00
33	0.00	1.00	17	0.00	1.00	33	0.00	1.00			

Supplementary Table S2 b)- Cut points for Additive NEWS2 score matched to NEWS2 score with closest matched sensitivity for death in 24 hours- Scale 2 cohort with a diagnosis of COPD

2015-2017 Derivation Cohort						2017-2019 Validation Cohort					
Additive Score			NEWS 2			Additive Score			NEWS 2		
Cut point	Sensitivity	Specificity	Cut point	Sensitivity	Specificity	Cut point	Sensitivity	Specificity	Cut point	Sensitivity	Specificity
0	1.00	0.00	0	1.00	0.00	0	1.00	0.00	0	1.00	0.00
1	1.00	0.02				1	1.00	0.01	1	1.00	0.13
2	1.00	0.05				2	1.00	0.04			
3	1.00	0.12	1	1.00	0.14	3	0.98	0.11			
4	0.99	0.20				4	0.98	0.18			
5	0.99	0.28				2	0.97	0.30			
6	0.97	0.37				6	0.98	0.37			
7	0.95	0.46				3	0.95	0.47			
8	0.93	0.55				8	0.95	0.56	3	0.95	0.47
9	0.91	0.63				4	0.87	0.64	9	0.93	0.65
10	0.87	0.71				10	0.89	0.73			
11	0.82	0.77				11	0.85	0.80			
12	0.77	0.83	5	0.77	0.77	12	0.83	0.85	5	0.81	0.79
13	0.70	0.87	6	0.68	0.87	13	0.76	0.89	6	0.71	0.88
14	0.66	0.91				14	0.70	0.92			
15	0.58	0.94				7	0.53	0.93			
16	0.51	0.96				16	0.54	0.96			
17	0.44	0.97				8	0.43	0.96			
18	0.38	0.98				18	0.35	0.98	9	0.28	0.99
19	0.32	0.99				9	0.32	0.98	19	0.25	0.99
20	0.28	0.99	10	0.24	0.99	20	0.17	0.99			
21	0.22	0.99				21	0.13	1.00			
22	0.17	1.00				11	0.15	1.00	22	0.12	1.00
23	0.11	1.00	12	0.10	1.00	23	0.10	1.00			
24	0.07	1.00	13	0.06	1.00	24	0.08	1.00			
25	0.05	1.00				25	0.07	1.00			
26	0.03	1.00				14	0.03	1.00			
27	0.02	1.00				27	0.03	1.00	14	0.03	1.00
28	0.01	1.00				15	0.01	1.00	28	0.02	1.00
29	0.01	1.00				29	0.01	1.00	15	0.01	1.00
30	0.00	1.00				16	0.00	1.00	30	0.00	1.00