

## SUPPLEMENTAL DATA

Device	Fixed performance FiO <sub>2</sub>	Flow l/min	Predicted FiO <sub>2</sub>
Nasal cannula		1	24
Nasal cannula		2	28
Nasal cannula		3	32
Nasal cannula		4	36
Simple mask		1	24
Simple mask		2	28
Simple mask		3	32
Simple mask		4	36
Simple mask		5	40
Simple mask		6	44
Simple mask		7	48
Simple mask		8	52
Simple mask		9	56
Simple mask		>=10	60
Venturi	24	2	
Venturi	28	4	
Venturi	35	8	
Venturi	40	10	
Venturi	60	12	
NIV OR CPAP		1	24
NIV OR CPAP		2	26
NIV OR CPAP		3	28
NIV OR CPAP		4	30
NIV OR CPAP		5	32
NIV OR CPAP		6	34
NIV OR CPAP		7	36
NIV OR CPAP		8	38
NIV OR CPAP		9	40
NIV OR CPAP		>=10	44
Humidified	28		
Humidified	35		
Humidified	40		
Humidified	60		
Tracheostomy mask	Treat as per simple face mask		
HFNC	Continuous % O <sub>2</sub> values from 21 - 100	Continuous flow rate values from 0 - 60	
100% Reservoir Mask 15l/min		15	80

Table S1. Assigned FiO<sub>2</sub> value for fixed and variable performance oxygen delivery devices

Cut point (GTE)	Sensitivity	Specificity	PPV	NPV	NNE	Likelihood ratio +ve	Likelihood ratio -ve
0	100.00	0.00	2.65		37.74	1.00	
1	98.98	20.32	3.27	99.86	30.57	1.24	0.05
2	97.40	40.25	4.25	99.82	23.54	1.63	0.06
3	92.99	59.20	5.84	99.68	17.12	2.28	0.12
4	83.96	74.53	8.24	99.42	12.14	3.30	0.22
5	<b>72.31</b>	<b>85.83</b>	<b>12.20</b>	<b>99.13</b>	<b>8.20</b>	<b>5.10</b>	<b>0.32</b>
6	54.52	91.88	15.46	98.67	6.47	6.72	0.49
7	<b>37.53</b>	<b>95.75</b>	<b>19.39</b>	<b>98.25</b>	<b>5.16</b>	<b>8.84</b>	<b>0.65</b>
8	24.41	97.81	23.29	97.94	4.29	11.16	0.77
9	12.22	99.03	25.59	97.64	3.91	12.64	0.89
10	6.11	99.58	28.15	97.50	3.55	14.39	0.94
11	3.22	99.81	32.10	97.43	3.12	17.37	0.97
12	1.58	99.92	34.98	97.39	2.86	19.77	0.99
13	0.74	99.97	38.22	97.37	2.62	22.73	0.99
14	0.34	99.98	35.28	97.36	2.83	20.03	1.0
15	0.20	100	69.99	97.36	1.43	85.64	1.0
18	0.03	100	100.0	97.35	1.00		1.0

**Table S2. Sensitivity, specificity, PPV, NPV and NNE for NEWS2 for whole cohort for the primary outcome NB. Prevalence = 2.65%. Youden calculation: maximum value 58.49 at NEWS  $\geq$ 4. PPV, positive predictive value; NPV, negative predictive value; NNE, number needed to evaluate; LR, likelihood ratio; GTE, greater than or equal to (n=133349)**

Cut point (GTE)	Sensitivity	Specificity	PPV	NPV	NNE	Likelihood ratio +ve	Likelihood ratio -ve
0	100	0.30	2.65	100	37.74	1.00	
1	98.98	20.71	3.28	99.87	30.52	1.24	0.05
2	95.33	46.87	4.64	99.73	21.53	1.79	0.10
3	88.80	67.67	6.94	99.55	14.41	2.74	0.17
4	80.49	81.91	10.77	99.36	9.28	4.45	0.24
5	<b>68.38</b>	<b>89.39</b>	<b>14.89</b>	<b>99.05</b>	<b>6.72</b>	<b>6.45</b>	<b>0.35</b>
6	55.60	93.88	19.78	98.73	5.05	9.09	0.47

<b>7</b>	<b>40.70</b>	<b>96.55</b>	<b>24.25</b>	<b>98.36</b>	<b>4.12</b>	<b>11.79</b>	<b>0.61</b>
8	26.64	98.13	27.87	98.01	3.59	14.23	0.75
9	15.50	99.05	30.73	97.73	3.25	16.34	0.85
10	7.86	99.54	31.84	97.54	3.14	17.21	0.93
11	3.99	99.80	35.08	97.45	2.85	19.90	0.96
12	2.01	99.91	37.88	97.40	2.64	22.47	0.98
13	1.05	99.95	35.49	97.38	2.82	20.27	0.99
14	0.59	99.98	45.56	97.36	2.19	30.84	0.99
15	0.17	99.99	33.25	97.35	3.01	18.35	1.00
16	0.08	100	74.93	97.35	1.33	119.10	1.00
17	0.03	100	100.00	97.35	1.00		1.00

**Table S3. Sensitivity, specificity, PPV, NPV and NNE for NEWS-FiO<sub>2</sub> for whole cohort for the primary outcome. NB. Prevalence = 2.65%. Youden calculation: maximum value 62.34 at NEWS >=4. PPV, positive predictive value; NPV, negative predictive value; NNE, number needed to evaluate; LR, likelihood ratio; GTE, greater than or equal to (n=133349)**

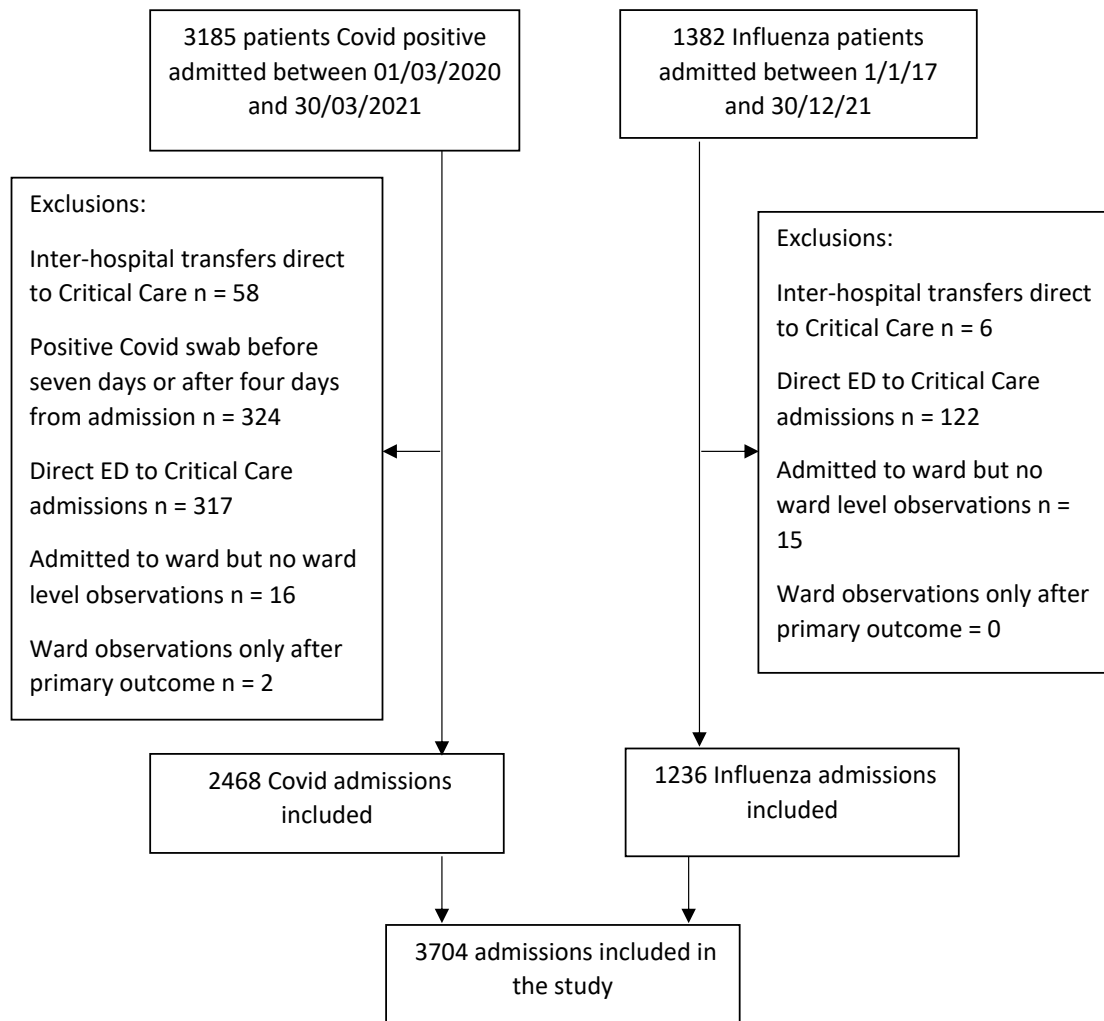


Figure S1. Flow diagram of patient study population