

# **Epidemiology, Ventilation Management and Outcome of COPD Patients Receiving Invasive Ventilation for COVID– 19—insights from PRoVENT– COVID**

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**Supplement Table S1.** Rescue therapies for refractory hypoxemia, and other therapies during the first four days of mechanical ventilation.

|   | <b>COPD<br/>patients<br/>N = 88</b> | <b>non-COPD<br/>patients<br/>N = 1002</b> | <b>P-value</b> |
|---|-------------------------------------|---|----------------|
| Use of recruitment maneuvers, n (%)                               | 4 (5.8)                             | 59 (7.0)                                  | 1.00           |
| Number of days with prone positioning, days, median [IQR]         | 2 [0–4]                             | 1 [0–3]                                   | 0.01           |
| Number of days with NMBA use, days, median [IQR]                  | 0 [0–2]                             | 0 [0–2]                                   | 0.78           |
| Use of ECMO within first 4 days, n (%)                            | 0 (0.0)                             | 11 (1.1)                                  | 1.00           |
| Number of days with vasopressors or inotropes, days, median [IQR] | 3 [2–4]                             | 3 [2–4]                                   | 0.97           |
| Use of RRT within first 4 days, n (%)                             | 26 (29.5)                           | 260 (25.9)                                | 0.46           |

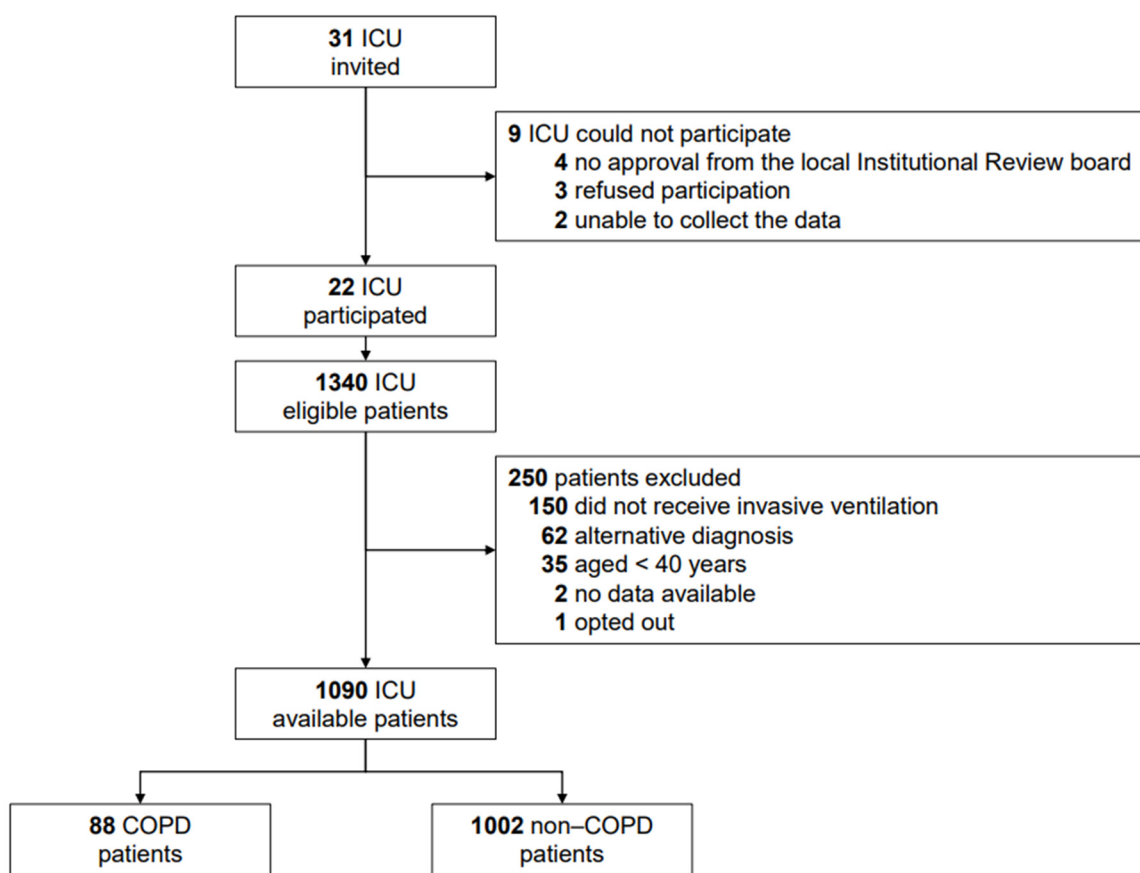
Abbreviations: COPD, chronic obstructive pulmonary disease; NMBA, neuromuscular blocking agent; ECMO, extra–corporeal membrane oxygenation; RRT, renal replacement therapy.

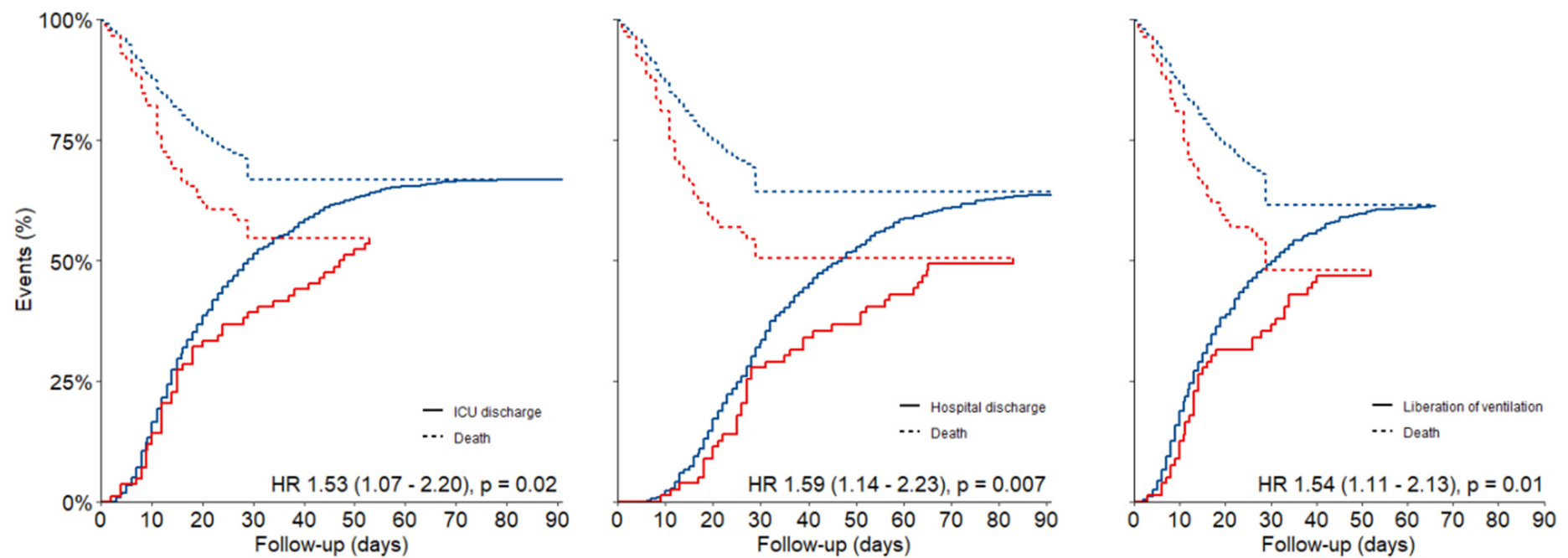
**Supplement Table S2.** Multivariable analysis of factors in 28-day mortality.

|   | <b>crude HR</b><br><b>(95%–CI)</b> | <b>P–value</b> | <b>adjusted HR</b><br><b>(95%–CI)</b> | <b>P–value</b> |
|---|------------------------------------|----------------|---------------------------------------|----------------|
| COPD                                    | 1.60 (1.13–2.28)                   | 0.01           | 1.50 (1.02–2.20)                      | 0.04           |
| <b>Demographic characteristics</b>      |                                    |                |                                       |                |
| Age                                     | 1.07 (1.06–1.09)                   | <0.001         | 1.01 (1.00–1.03)                      | 0.10           |
| Male sex                                | 1.12 (0.87–1.46)                   | 0.38           |                                       |                |
| BMI                                     | 0.99 (0.97–1.01)                   | 0.32           |                                       |                |
| <b>Medical history</b>                  |                                    |                |                                       |                |
| Hypertension                            | 1.48 (1.18–1.86)                   | <0.001         | 1.52 (1.16–2.00)                      | 0.003          |
| Heart failure                           | 1.78 (1.14–2.78)                   | 0.01           | 1.30 (0.76–2.21)                      | 0.34           |
| Diabetes                                | 1.60 (1.25–2.05)                   | <0.001         | 0.88 (0.66–1.15)                      | 0.34           |
| Chronic kidney disease                  | 1.27 (0.77–2.11)                   | 0.35           |                                       |                |
| Active cancer                           | 1.85 (0.89–3.06)                   | 0.39           |                                       |                |
| <b>Home medication</b>                  |                                    |                |                                       |                |
| Angiotensin converting enzyme inhibitor | 1.30 (0.98–1.71)                   | 0.07           | 1.30 (0.93–1.80)                      | 0.12           |
| Angiotensin II receptor blocker         | 1.34 (0.97–1.84)                   | 0.08           | 1.30 (0.89–1.90)                      | 0.17           |
| <b>Physical factors</b>                 |                                    |                |                                       |                |
| Plasma creatinine                       | 1.07 (1.00–1.14)                   | 0.04           | 0.96 (0.83–1.11)                      | 0.58           |
| pH                                      | 0.94 (0.91–0.97)                   | <0.001         | 0.95 (0.85–1.06)                      | 0.36           |
| PaO <sub>2</sub> /FiO <sub>2</sub>      | 1.00 (0.99–1.01)                   | 0.88           |                                       |                |
| Fluid balance                           | 1.00 (1.00–1.00)                   | 0.03           | 1.00 (1.00–1.00)                      | 0.18           |
| Use of vasopressor or inotropic         | 1.13 (0.61–2.10)                   | 0.70           | 1.27 (0.66–2.45)                      | 0.47           |
| Blood pressure                          | 0.99 (0.98–1.00)                   | 0.21           |                                       |                |
| Heart rate                              | 1.00 (1.00–1.01)                   | 0.15           | 1.00 (1.00–1.01)                      | 0.18           |
| <b>Pulmonary factors</b>                |                                    |                |                                       |                |
| Respiratory system compliance           | 1.00 (0.99–1.01)                   | 0.96           |                                       |                |
| Dead space fraction                     | 1.01 (0.89–1.14)                   | 0.89           |                                       |                |

Abbreviations: HR, hazard ratio; COPD, chronic obstructive pulmonary diseases; BMI, body mass index.

**Supplement Figure S1.** CONSORT diagram.





**Supplement Figure S2.** Competing risk analysis for ICU length of stay, hospital length of stay and duration of ventilation with death as the competing risk.