**Additional file 2** Comparison of patient characteristics with prophylactic NPPV and conventional oxygen (O2) therapy

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|  | Prophylactic NPPV | Conventional O2 therapy | P-values |
|  | (n = 35) | (n = 213) |  |
| Age (years) | 67 ± 14 | 65 ± 17 | 0.4 |
| Women, n (%) | 7 (20) | 70 (33) | 0.2 |
| APACHE II score just before extubation | 14 (11–16) | 13 (10–16) | 0.3 |
| SOFAT score just before extubation | 6 (5–7) | 5 (3–6) | 0.009 |
| RSBI (breaths/min/L) | 54 ± 20 | 43 ± 20 | 0.003 |
| Duration of mechanical ventilation (days) | 8 (4.5–12.5) | 6.5 (5–11) | 0.3 |
| Reason for mechanical ventilation, n (%) |  |  | < 0.001 |
| ARDS | 13 (37) | 146 (69) | 0.001 |
| Congestive heart failure | 19 (54) | 38 (18) | < 0.001 |
| Post-cardiac arrest syndrome | 2 (6) | 28 (13) | 0.3 |
| COPD exacerbation | 1 (3) | 1 (1) | 0.3 |
| Comorbid diseases, n (%) |  |  | 0.3 |
| COPD | 5 (14) | 12 (6) |  |
| Coronary artery disease | 8 (23) | 27 (13) |  |
| Chronic heart failure | 6 (17) | 19 (9) |  |
| Chronic renal failure | 3 (9) | 11 (5) |  |
| Diabetes mellitus | 10 (29) | 34 (16) |  |
| Hypertension | 10 (29) | 75 (35) |  |
| Vital signs just before extubation |  |  |  |
| Heart rate (beats/min) | 81 ± 16 | 89 ± 18 | 0.02 |
| MAP (mmHg) | 86 ± 15 | 91 ± 15 | 0.06 |
| RR (breaths/min) | 22 ± 7 | 19 ± 6 | 0.02 |
| ABG values just before extubation |  |  |  |
| pH | 7.46 ± 0.04 | 7.45 ± 0.04 | 0.2 |
| PaCO2 (mmHg) | 40 ± 7 | 38 ± 5 | 0.02 |
| PaO2 /FiO2 | 242 ± 62 | 310 ± 83 | < 0.001 |

Data are presented as mean ± standard deviation, median and interquartile range, or number (percentage). *APACHE Ⅱ* Acute Physiology and Chronic Health Evaluation Ⅱ, *SOFAT score* sequential organ failure assessment score under tracheal intubation, *RSBI* rapid shallow breathing index, *ARDS* acute respiratory distress syndrome, *COPD* chronic obstructive pulmonary disease, *MAP* mean arterial pressure, *RR* respiratory rate, *ABG* arterial blood gas, *PaCO2* partial pressure of carbon dioxide, *PaO2* partial pressure of arterial oxygen, *FiO2* fraction of inspired oxygen