

**Supplementary Table 1.** Characteristics of stem cell transplant patients (n = 29).

| Variable <sup>a</sup>  | All (n = 29)      | APRV (n = 16)     | HFOV (n = 13)     | p value <sup>b</sup> |
|--|-------------------|-------------------|-------------------|----------------------|
| Age (years)  | 4.3 [2.7, 12.7]   | 6.2 [4, 16.5]     | 3.2 [1.5, 6.1]    | 0.044                |
| PRISM III at 24 hr   | 14.5 [9, 19]      | 12 [9, 17]        | 17 [13, 21]       | 0.159                |
| Length of conventional ventilation before switch to NCV (days) | 1 [0, 4]          | 2.5 [0.5, 5]      | 1 [0, 3.3]        | 0.303                |
| Before switch to NCV   |                   |                   |                   |                      |
| mPaw (cmH <sub>2</sub> O)                                      | 22 [19, 24]       | 22 [16, 25]       | 22 [20, 23]       | 0.792                |
| PaO <sub>2</sub> /FiO <sub>2</sub>                             | 83 [62, 98]       | 89 [63, 112]      | 80 [61, 86]       | 0.344                |
| OI <sub>pre</sub>  | 28.1 [21.3, 31.1] | 24.7 [17.2, 31.2] | 28.4 [24.6, 31]   | 0.320                |
| Lung disease   |                   |                   |                   |                      |
| Viral pneumonia  | 18 (62%)          | 10 (63%)          | 8 (62%)           |                      |
| Bacterial pneumonia  | 1 (3%)            | 1 (6%)            | 0                 |                      |
| Fungal pneumonia   | 3 (10%)           | 2 (12%)           | 1 (7.5%)          | 0.389                |
| Alveolar hemorrhage  | 2 (7%)            | 1 (6%)            | 1 (7.5%)          |                      |
| Sepsis   | 3 (10%)           | 0                 | 3 (23%)           |                      |
| Other  | 2 (7%)            | 2 (12%)           | 0                 |                      |
| Vasopressor infusions  |                   |                   |                   |                      |
| < 2  | 11 (38%)          | 7 (44%)           | 4 (31%)           | 0.702                |
| ≥ 2  | 18 (62%)          | 9 (56%)           | 9 (69%)           |                      |
| Stem cell transplant   |                   |                   |                   |                      |
| Allogeneic   | 21 (69%)          | 12 (75%)          | 9 (69%)           | 1                    |
| Autologous   | 8 (31%)           | 4 (25%)           | 4 (31%)           |                      |
| Reason for stem cell transplant                                |                   |                   |                   |                      |
| Congenital/acquired anemia                                     | 8 (27.5%)         | 5 (31%)           | 3 (23%)           |                      |
| Immunodeficiency   | 2 (7%)            | 1 (6%)            | 1 (8%)            | 1                    |
| Leukemia   | 11 (38%)          | 6 (38%)           | 5 (38%)           |                      |
| Solid tumor  | 8 (27.5%)         | 4 (25%)           | 4 (31%)           |                      |
| After 24 hr of NCV   |                   |                   |                   |                      |
| mPaw (cmH <sub>2</sub> O)                                      | 32 [29, 35]       | 29 [26, 38]       | 32 [31, 34]       | 0.383                |
| PaO <sub>2</sub> /FiO <sub>2</sub>                             | 125 [89, 171]     | 143 [97, 184]     | 104 [88, 175]     | 0.720                |
| OI <sub>24</sub>   | 24.4 [16.1, 37.3] | 19.3 [15.4, 39.1] | 28.9 [18.2, 38.3] | 0.608                |
| Mortality (non-survivor)                                       | 22 (76%)          | 12 (75%)          | 10 (77%)          | 1                    |

APRV, airway pressure release ventilation; HFOV, high frequency oscillatory ventilation; NCV, nonconventional ventilation; PRISM III, Pediatric Risk of Mortality version III; mPaw, mean airway pressure; OI, oxygenation index

<sup>a</sup> Continuous data are in the form of median [25<sup>th</sup> and 75<sup>th</sup> percentile], and categorical data are in the form of n (%).

<sup>b</sup> Medians are compared using a Wilcoxon rank sum test for unpaired data. Categorical variables are compared using a Fisher exact test.

**Supplementary Table 2.** Characteristics of patients with malignancies (n = 33).

| Variable <sup>a</sup>  | All (n = 33)      | APRV (n = 16)     | HFOV (n = 17)     | p value <sup>b</sup> |
|--|-------------------|-------------------|-------------------|----------------------|
| Age (years)  | 4.3 [1.6, 10.5]   | 7.1 [4, 17.8]     | 3 [1.4, 6.5]      | 0.042                |
| PRISM III at 24 hr   | 17 [9, 20]        | 14 [9.5, 20]      | 18 [8.5, 22]      | 0.482                |
| Length of conventional ventilation before switch to NCV (days) | 1 [0, 4]          | 1 [0, 4]          | 1 [0, 3]          | 0.738                |
| Before switch to NCV   |                   |                   |                   |                      |
| mPaw (cmH <sub>2</sub> O)                                      | 22 [19, 23]       | 21 [17, 26]       | 22 [20, 23]       | 0.928                |
| PaO <sub>2</sub> /FiO <sub>2</sub>                             | 83 [61, 114]      | 112 [52, 132]     | 81 [62, 97]       | 0.293                |
| OI <sub>pre</sub>  | 25.4 [18.3, 31.4] | 20.5 [17.1, 31.5] | 28.1 [20.8, 32.3] | 0.372                |
| Lung disease   |                   |                   |                   |                      |
| Viral pneumonia  | 16 (48%)          | 8 (50%)           | 8 (47%)           |                      |
| Bacterial pneumonia  | 1 (3%)            | 1 (6%)            | 0                 |                      |
| Fungal pneumonia   | 3 (9%)            | 1 (6%)            | 2 (12%)           | 0.686                |
| Alveolar hemorrhage  | 3 (9%)            | 1 (6%)            | 2 (12%)           |                      |
| Sepsis   | 7 (21%)           | 3 (19%)           | 4 (23%)           |                      |
| Other  | 3 (9%)            | 2 (12%)           | 1 (6%)            |                      |
| Vasopressor infusions  |                   |                   |                   |                      |
| < 2  | 10 (30%)          | 5 (31%)           | 5 (29%)           | 1                    |
| ≥ 2  | 23 (70%)          | 11 (69%)          | 12 (71%)          |                      |
| Stem cell transplant   |                   |                   |                   |                      |
| Allogeneic   | 11 (33%)          | 6 (37.5%)         | 5 (29%)           | 0.841                |
| Autologous   | 8 (25%)           | 4 (25%)           | 4 (24%)           |                      |
| None   | 14 (42%)          | 6 (37.5%)         | 8 (47%)           |                      |
| Malignancy   |                   |                   |                   |                      |
| Leukemia/lymphoma  | 21 (64%)          | 11 (69%)          | 10 (59%)          | 0.156                |
| Neuroblastoma  | 10 (30%)          | 3 (19%)           | 7 (41%)           |                      |
| CNS tumor  | 2 (6%)            | 2 (12%)           | 0                 |                      |
| After 24 hr of NCV   |                   |                   |                   |                      |
| mPaw (cmH <sub>2</sub> O)                                      | 31 [28, 34]       | 29 [28, 35]       | 32 [28, 33.5]     | 0.844                |
| PaO <sub>2</sub> /FiO <sub>2</sub>                             | 148 [98, 226]     | 143 [112, 226]    | 153 [93, 235]     | 0.983                |
| OI <sub>24</sub>   | 20.2 [12.9, 32.1] | 19.3 [12.7, 31.4] | 20.7 [14.1, 34.9] | 0.709                |
| Mortality (non-survivor)                                       | 11 (64%)          | 10 (63%)          | 11 (65%)          | 1                    |

APRV, airway pressure release ventilation; HFOV, high frequency oscillatory ventilation; NCV, nonconventional ventilation; PRISM III, Pediatric Risk of Mortality version III; mPaw, mean airway pressure; OI, oxygenation index; CNS, central nervous system

<sup>a</sup> Continuous data are in the form of median [25<sup>th</sup> and 75<sup>th</sup> percentile], and categorical data are in the form of n (%).

<sup>b</sup> Medians are compared using a Wilcoxon rank sum test for unpaired data. Categorical variables are compared using a Fisher exact test.