**Supplemental Table 1. Factors associated with Reintubation**

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| Variable | All subjects n=320 (100%) | Reintubated, n=30 (9.4%) | Not-reintubated, n=290 (90.6%) | P value |
| Age, months | 2.4 (0.3-6.5) | 1.5 (0.2-14.4) | 2.7 (0.3-6.4) | 0.53 |
| Weight, kg | 4.2 (3.3-6.9) | 3.5 (3.1-8.9) | 4.3 (3.3-6.9) | 0.17 |
| Cyanotic Heart Disease | 154 (48.1%) | 19 (63.3%) | 135 (46.6%) | 0.08 |
| Indication for mechanical ventilation  Respiratory failure  Cardiac arrest  Post-operative  Airway protection  Procedure  Other | 54 (16.9%)  9 (2.8%)  245 (76.6%)  4 (1.3%)  43 (13.4%)  22 (6.9%) | 4 (13.3%)  3 (10.0%)  24 (80.0%)  0 (0%)  2 (6.7%)  6 (20.0%) | 50 (17.2%)  6 (2.1%)  221 (76.2%)  4 (1.4%)  41 (14.1%)  16 (5.5%) | 0.59  0.012  0.64  0.52  0.25  0.003 |
| STAT Category  4, 5, and VAD  ≤ 3  Not applicable\* | 144 (45.0%)  91 (28.4%)  85 (26.6%) | 17 (56.7%)  5 (16.7%)  8 (26.7%) | 127 (43.8%)  86 (29.7%)  77 (26.6%) | 0.27 |
| Intubated pre-operative  Yes  No  Non-surgical case | 33 (10.3%)  213 (66.6%)  74 (23.1%) | 8 (26.7%)  16 (53.3%)  6 (20.0%) | 25 (8.6%)  197 (67.9%)  68 (23.5%) | 0.008 |
| Cardiopulmonary Bypass in OR  Yes  No  Non-surgical case | 209 (65.3%)  37 (11.6%)  74 (23.1%) | 22 (73.3%)  2 (6.7%)  6 (20.0%) | 187 (64.5%)  35 (12.1%)  68 (23.5%) | 0.56 |
| Cumulative fluid balance, mL  Positive  Negative | 411 (5-1378)  240 (75.0%)  80 (25.0%) | 335 (-114-1558)  9 (30.0%)  21 (70.0%) | 421 (13-1329)  219 (75.5%)  71 (24.5%) | 0.64  0.51 |
| Respiratory support at extubation  CPAP or NIV  High-flow nasal cannula  COT or nasal cannula | 17 (5.3%)  2 (0.6%)  255 (79.7%) | 4 (13.3%)  0 (0%)  23 (76.7%) | 13 (4.5%)  2 (0.7%)  232 (80.0%) | 0.17 |
| Enteral feeding when extubated | 169 (47.2%) | 16 (53.3%) | 135 (46.6%) | 0.48 |
| Time of extubation  Day shift  Night shift | 267 (83.4%)  53 (16.6%) | 22 (73.3%)  8 (26.7%) | 245 (84.5%)  45 (15.5%) | 0.12 |
| Number of ERT  ≤ 1  ≥ 2 | 166 (52.2%)  152 (47.8%) | 14 (46.7%)  16 (53.3%) | 152 (52.8%)  136 (47.2%) | 0.52 |
| Number of Passed ERT before extubation  ≤ 1  ≥ 2 | 30 (9.4%)  192 (60.0%) | 2 (6.7%)  15 (50.0%) | 28 (9.7%)  177 (61.0%) | 0.20 |
| Failed ERTs  ≤ 1  ≥ 2 | 274 (86.2%)  44 (13.8%) | 23 (76.7%)  7 (23.3%) | 251 (87.2%)  37 (12.9%) | 0.11 |
| Respiratory Parameters at Extubation  Inspiratory pressure, cmH2O  PEEP, cmH2O  mPaw, H2O  FiO2  VD/VT | 12 (10-14)  5 (5-6)  9 (8-10)  0.30 (0.25-0.40)  0.34 (0.27-0.42) | 12 (10-14)  5 (5-6)  9 (8-10)  0.35 (0.30-0.40)  0.37 (0.29-0.46) | 12 (10-14)  5 (5-6)  9 (8-10)  0.30 (0.25-0.40)  0.34 (0.27-0.42) | 0.38  0.80  0.33  0.23  0.24 |
| Delta Pressure  ≥12 cmH2O | 130 (41.3%) | 11 (37.9%) | 119 (41.6%) | 0.70 |
| PEEP  ≥6 cmH2O | 143 (45.3%) | 13 (44.8%) | 130 (45.3%) | 0.96 |
| mPaw  ≥ 9 cmH2O | 168 (53.3%) | 18 (62.1%) | 150 (52.5%) | 0.32 |
| VD/VT  <0.30  0.30-0.40  >0.40 | 34 (34.1%)  88 (37.9%)  65 (28.0%) | 4 (25.0%)  5 (31.2%)  7 (43.8%) | 75 (34.7%)  83 (38.4%)  58 (26.9%) | 0.34 |
| Time to first extubation, days | 3.5 (1.6-6.9) | 4.1 (0.95-8.6) | 3.5 (1.6-6.8) | 0.60 |
| Variable PS Group  Fixed PS Group | 176 (55.0%)  144 (45.0%) | 14 (46.7%)  16 (53.3%) | 162 (55.9%)  128 (44.1%) | 0.34 |

Data are presented as median (interquartile range) or count (percentage).

ERT, extubation readiness testing; PS, pressure support; STAT, **S**ociety of **T**horacic Surgeons – European **A**ssociation for Cardio-**T**horacic Surgery; VAD, ventricular assist device; OR, operating room; NIV, noninvasive ventilation; CPAP, continuous positive airway pressure; COT, conventional oxygen therapy. PEEP, positive end-expiratory pressure; FiO2, fraction of inspired oxygen; VD/VT=dead space/tidal volume

\*Non-surgical or non-index surgical case