**SUPPLEMENTAL ONLINE MATERIALS**

**Adaptive Pressure Control vs. Volume Control Continuous Mandatory Ventilation:**

**Factors Associated with Initiation, Maintenance, and Adjustments**

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**RESULTS**

**Admission Source**

The emergency department constituted the predominant source of admission for subjects intubated before their arrival at the ICU (**eTable 1**). Conversely, for subjects intubated subsequent to ICU admission, the primary source was typically the general hospital ward.

**Pressure Control-Continuous Mandatory Ventilation (PC-CMV)**

A multivariable logistic regression of factors associated with Pressure Control- Continuous Mandatory Ventilation (PC-CMV) demonstrated a higher likelihood PC-CMV initiation if intubation occurred during the night shift (OR 1.8, CI 1.2-2.8), and lower likelihood as the majority mode if a patient was intubated outside the ICU (OR: 0.4, CI 0.3-0.6) (**eTable 2**).

**Length of Stay**

Compared to patients receiving Volume Control-Continuous Mandatory Ventilation (VC-CMV) as the majority mode, those receiving Adaptive Pressure Control-Continuous Mandatory Ventilation (APC-CMV) exhibited comparable ICU length of stay (LOS) but tended to have a longer average hospital LOS (14 versus 12 days, unadjusted *p*<0.001) (**eTable 3**).

**Positive End-Expiratory Pressure (PEEP) and Fraction of Inspired Oxygen (FiO2)**

The distribution of Positive End-Expiratory Pressure (PEEP) and Fraction of Inspired Oxygen (FiO2) was similar between APC-CMV and VC-CMV majority mode groups (**eFigure 1**). Notably, a PEEP of 5 cm H2O was the most prevalent setting in both groups, and more patients in the VC-CMV group received a PEEP of ≥8.

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| **eTable 1:** **Admission source to medical ICU** | | | |
| **Admission Source** | **Intubation before ICU**  **n = 435 of 1,213 (36%)** | **Intubation in ICU**  **n = 778 of 1,213 (64%)** | **All Patients**  **N = 1,213** |
| Emergency Department | 281 (65%) | 227 (29%) | 508 (42%) |
| Other Intensive Care Unit | 88 (20%) | 30 (4%) | 118 (10%) |
| Hospital Ward | 25 (6%) | 495 (64%) | 520 (43%) |
| Post-Anesthesia Care Unit | 41 (9%) | 26 (3%) | 67 (6%) |

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| **eTable 2: Multivariable Logistic Regression of Factors Associated with PC-CMV Mode\*** | | |
|  | **PC-CMV Initial Mode**  **OR (95% CI)** | **PC-CMV Majority Mode+**  **OR (95% CI)** |
| **Demographic Variables** |  |  |
| Age (reference group: 18-65) |  |  |
| 65-79 | 0.5 (0.3-0.9) | 1.1 (0.7-1.6) |
| 80+ | 0.4 (0.2-0.9) | 0.5 (0.2-0.9) |
| Female | 0.9 (0.6-1.4) | 1.6 (1.1-2.3) |
| Hispanic | 1.0 (0.6-1.7) | 1.1 (0.6-1.8) |
| Race (reference group: White) |  |  |
| Black | 0.6 (0.3-1.3) | 1.1 (0.6-2.1) |
| Other | 1.9 (1.2-3.0) | 1.3 (0.9-2.1) |
| **ICU Variables** |  |  |
| Admission diagnosis (reference group: Respiratory) | | |
| Sepsis | 0.4 (0.2-0.6) | 1.5 (0.8-2.7) |
| Other‡ | 0.2 (0.1-0.3) | 0.9 (0.5-1.6) |
| Night Shift Intubation§ | 1.8 (1.2-2.8) | 1.1 (0.7-1.6) |
| Intubation Outside ICU║ | 1.4 (0.9-2.3) | 0.4 (0.3-0.6) |
| OR: odds ratio; PC-CMV: pressure control continuous mandatory ventilation; CI: confidence interval.  \* Odds ratio calculated using a multivariable logistic regression model and represents the likelihood of whether a ventilator mode was present in the group of subjects with the listed characteristics compared to the reference group  + Ventilator mode with the highest proportion of the total ventilation time  ‡ Includes gastroenterology/hepatology, renal, endocrine, rheumatology, cardiology, hematology/oncology, neurological disorders, non-sepsis infectious disease, toxicology, and dermatologic diagnoses  § Between 7 pm and 7 am  ║ Determined from records of the first ventilator flowsheet entry time is earlier than the time of ICU admission | | |

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| **eTable 3: Length of Stay and Mortality by Majority Ventilator Mode\*** | | | | |
|  | **Majority Mode\*** | | | |
|  | **APC-CMV**  **(n=758)** | **VC-CMV**  **(n=253)** | **PC-CMV**  **(n=167)** | **Other**  **(n=35)** |
| ICU Length of Stay, median (IQR) days | 7 (3, 12) | 7 (4, 13) | 10 (5, 21) | 2 (1, 4) |
| Hospital Length of Stay, median (IQR) days | 14 (8, 30) | 12 (6, 23) | 17 (8, 33) | 9 (4, 19) |
| Death in ICU, n (%) | 227 (30%) | 80 (32%) | 81 (49%) | 16 (46%) |
| Death in hospital, n (%) | 273 (36%) | 95 (37%) | 88 (52%) | 18 (51%) |
| Abbreviations: PC-CMV: adaptive pressure control continuous mandatory ventilation; VC-CMV: volume control continuous mandatory ventilation; PC-CMV: pressure control continuous mandatory ventilation  \* Ventilator mode with the highest proportion of the total ventilation time | | | | |

**eFigure 1**: Distribution of PEEP and FiO2 in subjects on APC-CMV and VC-CMV majority mode.

A group of graphs showing different types of data

Description automatically generated with medium confidence