

This month's Editor's Choice is a single-center, retrospective review of electronic health record data comparing adaptive pressure control (APC)-continuous mandatory ventilation to volume control (VC)-continuous mandatory ventilation. Tran et al used multivariable logistic regression to identify variables associated with the initial mode and duration of use of each mode, as well as the number of ventilator setting changes per day. Sedation, as a function of mode, was also compared. They studied over 1,200 subjects of whom 2/3 were initiated on APC. Compared to VC, subjects using APC experienced more ventilator setting changes per day. There were no differences in the amount of sedation between the two groups. Interestingly, the most common ventilator setting change was the inspired oxygen concentration. They concluded that APC offered no advantage related to need for adjustments or sedation. Sheehan and Gibbs offer an accompanying editorial suggesting that APC is often touted as a 'set it and forget it' mode, owing to the variable flow and elimination of high pressure alarms. They suggest this work doesn't support this theorem and that, despite decades of research, the choice of mode remains primarily subjective.

Lhermitte and others conducted a prospective, single-center study with a 3-step lung recruitment protocol. First, potential lung recruitment was assessed by a single breath maneuver in VC. Second, a recruitment maneuver was performed in pressure-control with a driving pressure of 15 cm H₂O and a maximum PEEP of 30 cm H₂O. Third, a recruitment maneuver was followed by a decremental PEEP trial wherein the lowest driving pressure identified best PEEP. Responders were defined by a > 20% improvement in P_{aO₂}/F_{IO₂}. A lung recruitment maneuver followed by PEEP titration resulted in a change in PEEP in 74% of subjects. The single-breath maneuver for evaluating lung recruitability did not correlate with an improvement in P_{aO₂}/F_{IO₂}. Marini provides accompanying commentary. He suggests that the best PEEP may simply be an individual-specific, empirical value which provides viable oxygenation and acceptable P_{aCO₂} while minimizing the need for fluids and vasoactive drugs. He concludes that allowing unstable lung units to rest may be more prudent than pursuing maximum lung recruitment.

da Silva and colleagues conducted a prospective study of subjects with COVID-19 who received invasive ventilation, noninvasive ventilation (NIV), or high-flow nasal cannula (HFNC) during their ICU stay. They measured the WHO Disability Assessment Schedule (WHODAS)-2.0 at 3- and 6-months post-hospital discharge. Data were analyzed collectively and stratified based on use of non-invasive respiratory support and invasive ventilation. They reported that based on the overall WHODAS score, 86% of subjects still had some level of disability at 6 months. They concluded that at 6 months post discharge, disability was not different in those subjects who received invasive ventilation versus those who did not. Social participation was the only domain demonstrating higher disability among those who received invasive ventilation. McDonald and Rollinson provide commentary. They note the small sample size limits generalizability and list potential confounders including long COVID and post intensive care syndrome. They suggest the path forward is a precision approach focused on individualized treatment plans delivered at the optimal timing.

Li et al evaluated continuous albuterol delivery with heliox using different nebulizers in a bench study of a pediatric model. They included a large volume jet nebulizer and vibrating mesh nebulizer coupled with HFNC or a tight-fitting mask. They found that the vibrating mesh nebulizer in line with HFNC during closed-mouth breathing

delivered a higher inhaled dose compared to both the jet nebulizer and vibrating mesh nebulizer with a loose-fitting mask.

Liu and others mined a health insurance database in a nationwide population-based study of patients who had required mechanical ventilation for > 21 d and received hospice palliative care over a 9-year period. This study of 186,533 subjects demonstrated that subjects on prolonged mechanical ventilation in palliative care had significant reductions in hospital costs, ICU admissions, use of cardiopulmonary resuscitation, and medical expenses within 14 d of death. They conclude that palliative care reduces costs in this population.

Muñoz et al conducted a retrospective, nationwide multicenter study using a database with 1.8 million patients from hospitals and primary care centers in Spain. In 24,102 records they determined aerosol therapy delivery with pressurized metered dose inhaler (pMDI) and dry powder inhaler (DPI). In subjects receiving asthma maintenance therapy, 26% used pMDI, 55% used a DPI, and 19% used both, while in subjects with COPD 26% used pMDI, 39% used a DPI, and 35% used both. Older subjects used DPI while younger subjects used pMDI, and use of a valved holding chamber increased with the severity of disease and age. Subjects frequently switched between devices. They concluded that despite access to multiple therapy inhalers, many subjects were treated with multiple devices.

Kenkare and others conducted a survey of cystic fibrosis centers across the U.S. investigating the methods, frequency, and related nebulizer care performed by subjects at home. The response rate was 15% and respondents reported a wide variety of practices, many of which were not aligned with Cystic Fibrosis Foundation guidelines. Daily cleaning was the most common response. They concluded that variations in CF centers' recommendations for nebulizer care with deviations from guidelines demonstrate the need for practical guidelines that address efficacy and the pragmatics of patient adherence.

Kutej et al conducted an observational, single center study of the relationship between extravascular lung water (ELVI) and oxygenation in a cohort of subjects with COVID-19 ARDS. They reported that the alveolar to arterial oxygen difference did not correlate with the degree of lung edema, as evaluated by EVLI in COVID-19 ARDS.

Dahlin and co-workers provide a narrative review of the impact of red tide exposure on respiratory function. They describe how brevetoxins produced by algae blooms negatively impact respiratory function, particularly in the upper airway.

García de Acilu and others provide a narrative review on optimum oxygenation and ventilation following extubation as part of our New Horizons symposium at AARC Congress. They highlight the need for careful patient selection and tailored therapeutic strategies based on specific risk factors and clinical conditions versus a one-size fits all approach. Algahtani et al provide a second review from the New Horizons Symposium detailing the changes in respiratory support during and following cardiac arrest.

Davis contributes a Year in Review on the use of HFNC during the COVID pandemic. Britto and colleagues provide a systematic review on the use of continuous lateral rotation therapy versus conventional position changes in mechanically ventilated critically ill adults. They evaluated mortality, ICU length of stay, and hospital length of stay as primary outcomes and respiratory function, mechanical ventilation duration, pulmonary complications, and adverse events as secondary outcomes. They found no impact on mortality but some improvements in secondary outcomes with continuous lateral rotation therapy.