

This month's Editor's Choice by Arunurat and colleagues is a non-inferiority study of bronchodilator delivery via high-flow nasal cannula (HFNC) and a vibrating mesh nebulizer (VMN) and a jet nebulizer in stable COPD subjects. The study was a crossover, physiologic study where subjects received bronchodilator delivery with each nebulizer type with a 4-h washout period between treatments. Spirometry, lung volume, and impulse oscillometry were performed at baseline and after each intervention. The primary outcome was change in FEV₁ from baseline. In 17 subjects, both methods significantly improved FEV₁ from baseline. The main finding was that nebulizer time was reduced. Le Pape and colleagues provide an accompanying opinion highlighting the potential improved pulmonary deposition using VMN but also noting that during delivery using HFNC, systemic absorption likely plays a role.

Ramírez et al describe implementation of a 36-h training program focused on the detection of patient-ventilator asynchrony (PVA) by healthcare professionals. They presented physicians 120 cases of PVA using a 6-h training session followed by 1-h training sessions daily for 30 days. Subjects were assessed using a 30-question assessment tool before and after training. They found that identification of PVA was improved post-test and after 1 month.

Chelbi and others report the results of a survey of PVA detection by critical care physicians. They presented 4 clinical cases of PVA including double-triggering, auto-triggering, ineffective efforts, and premature cycling. Only 29% of physicians correctly identified PVAs. Ineffective efforts were most commonly not identified with double triggering being identified in half of cases. They concluded that there were deficiencies in identification of PVAs among critical care physicians.

Liendo and Mireles-Cabodevila provide commentary. They suggest that both technological and educational strategies are required to improve detection and correction of PVA. They stress the importance of hands-on learning and an approach similar to ACLS, and advocate for a certification for mechanical ventilation. In addition, they note that artificial intelligence may provide improved detection, prediction, and notification regarding PVA.

Dominick and others provide a single-center, retrospective review on unplanned extubations (UE) across ICUs in a children's hospital. Over a 5-year timeframe, 408 UEs were identified in 339 subjects. Half of UEs were unwitnessed. Contributing factors included routine care, re-fixation of tubes and patients being held. Desaturation and bradycardia were the most common adverse events; reintubation was most common in the neonatal ICU and least common in the cardiac ICU. They concluded that UEs were common and two-thirds of subjects required reintubation within 72 hours.

Ubolsakka-Jones et al randomized subjects with moderate to severe COPD to no treatment or use of positive expiratory pressure (PEP) during spot marching exercise at a constant speed. Exercise endurance time and end-exercise symptoms were recorded. They reported that use of the conical-PEP mask improved exercise time in subjects with COPD, possibly by delaying dynamic hyperinflation.

Villalba and colleagues described the epidemiology and outcomes of subjects suffering from COVID-19 referred to specialized weaning centers. Over an 18-month period they enrolled 568 subjects with tracheostomy following COVID-19 infection, with 315 subjects requiring long-term ventilation. The mortality rate was low and three-quarters of subjects were weaned and discharged home. Advanced age, prolonged ICU duration of mechanical ventilation, and high co-morbidity burden were impediments to home discharge.

Ari and others surveyed chairs and program directors of US bachelor's and master's degree respiratory care programs using a modified perceived organizational support instrument. The response rate was 69% and faculty reported being satisfied with their job and their employers. Age and gender were inversely related to perceived organizational support.

Stilma and colleagues provide a life-cycle analysis of closed versus open suction systems and the environmental footprint of each. They note that closed suctioning systems produced more CO₂ and particulate matter but point out that closed suctioning used over days eliminated this advantage after a day. Branson and Ring provide commentary, introducing the importance of sustainability in healthcare with an emphasis on respiratory therapy.

Marazzo and co-workers provide a short report on the changes in ventilation distribution with alterations in trunk inclination in subjects with ARDS. Using traditional respiratory mechanics and electrical impedance tomography (EIT), they found that the supine-flat position resulted in worse ventilation homogeneity.

McHenry contributes a narrative review on airway clearance in subjects with ALS highlighting the keys to successful mechanical insufflation-exsufflation use and the importance of secretion clearance for patient quality of life. Rea et al provide a scoping review on health inequities in management of patients with COPD. They provide evidence for health inequities in underserved populations and suggest potential solutions.

In our continuing series *Research and Publication in Respiratory Care*, Goodfellow pens a review discussing the continuum of research from entry-level education to post-graduate respiratory care practice. Miller and others provide an overview of data management in humans subjects research.