

Our Editor's Choice paper this month is a retrospective study by Werre and colleagues that compares therapist-directed and physician-directed respiratory care in COPD subjects with acute pneumonia. They found no difference in length of stay between groups, suggesting that the RT-directed protocol did not confer a disadvantage. Moreover, the RT-directed protocol may have presented some benefit in reducing the 30-day post-discharge readmission rate. As Hoerr states, these results provide an additional reason for promoting the use of RT-directed protocols.

The aim of the study by Figueroa-Casas et al was to assess the magnitude and timing of change in breathing variables during the course of a 30-min spontaneous breathing trial (SBT). During the course of a 30-min SBT, breathing variables remained relatively constant and significant changes in these variables after 10 minutes of the SBT were uncommon. Loik points out that available evidence is not sufficient to support a 10-minute SBT, but this possibility merits further investigation.

Messika and colleagues conducted a one-year retrospective study of the use of high flow nasal cannula (HFNC) in subjects with ARDS. They report a high success rate with HFNC, and suggest that this therapy might be considered as first-line therapy in this patient population. Nishimura suggests that, although this study has the limitations of being an observational study, and despite issues such as indications for HFNC, timing for start of HFNC, and criteria for escalating treatment beyond HFNC, it suggests that HFNC is a promising modality for early treatment of adults with severe acute respiratory failure.

Frat et al evaluated the clinical efficacy of consecutive use of HFNC followed by noninvasive ventilation (NIV) in acute hypoxemic respiratory failure (AHRF). They found that HFNC was better tolerated than NIV, and allowed for significant improvement in oxygenation and tachypnea compared to standard oxygen therapy in subjects with AHRF. Thus, HFNC might be used effectively between NIV sessions.

The objective of the study by Davidson et al was to determine whether 30 m of tubing, compared to 6 m of tubing, affects flow and FIO₂ delivery from a cylinder or oxygen concentrator. They found no important changes in flow or FIO₂ with the longer tubing.

Chenelle and colleagues evaluated an automated endotracheal tube cuff controller during simulated mechanical ventilation. They found a significant drop in manually set cuff pressure in a stationary model, and an even larger drop with movement. This was reduced by use of the automated controller. They also observed that cuff pressure varies with inspiratory airway pressure for both techniques, leading to elevated average cuff pressures.

The effect of leaks on volume-targeted pressure support NIV has only been tested with continuous simulated leaks. Luján et al found that the introduction of random leaks influenced the performance of ventilators with single-limb circuits and intentional leak. The decrease in delivered tidal volume with inspiratory leak reached a magnitude that might be clinically important.

A late inspiratory rise in airway pressure caused by inspiratory muscle relaxation or expiratory muscle contraction is frequently seen during pressure support. Chen et al used a bench model to investigate the effects of respiratory mechanics, inspiratory effort, flow cycle criteria, duration of inspiratory muscle relaxation, and 4 types of ventilators on late inspiratory rise in airway pressure. They found that resistance and compliance could affect the late rise in pressure.

The late rise in pressure was unlikely to be abolished by lowering flow cycle criteria when inspiratory effort is strong and relaxation time is rapid.

Gacouin and colleagues evaluated trends in prevalence and prognosis of subjects with acute on chronic respiratory failure treated by NIV and/or invasive ventilation between 1998 and 2012. Over this time, the use of NIV increased significantly in those with COPD. Mortality remained stable while the severity increased. Transition from NIV to invasive ventilation was associated with a poorer prognosis.

DiBlasi et al evaluated nitric oxide (NO) delivery in neonatal noninvasive respiratory support devices. They found that clinicians cannot assume that the set dose of NO results in a similar lung dose with all forms of noninvasive support. This could result in the need to change settings or use a different form of support. The NO₂ level delivered to the patient might also be greater than the value reported on the delivery system.

De Souza et al compared the performance of timed inspiratory effort to 3 other indexes of weaning outcome in subjects with neurological and neuromuscular disorders. The timed inspiratory effort index might have a better performance than other weaning indexes in this population.

The aim of the study by Ünlü et al was to determine the knowledge of subjects with COPD about vaccines, to find the rate of inoculation with influenza and pneumococcal vaccines, and to assess the effectiveness of vaccination status. Their results suggest that physicians could do a better job recommending both influenza and pneumococcal vaccines to all patients with COPD.

Lee and colleagues measured pepsin concentrations and pH in exhaled breath condensate (EBC) to determine the relationship with gastroesophageal reflux (GER) in bronchiectasis or COPD. Pepsin was detectable in EBC samples in bronchiectasis and COPD. Although no association was found between pepsin concentration and diagnosis of GER, a moderate relationship between sputum and EBC pepsin concentrations suggest that EBC pepsin may be a useful noninvasive marker of pulmonary microaspiration.

Chen and colleagues investigated the association between COPD phenotype and exhaled H₂S, lung function, and plasma levels of inflammatory factors. Exhaled H₂S levels were lower in subjects with eosinophilia. Increased exhaled H₂S predicted a non-eosinophilic phenotype.

Mitchell and colleagues identified subjects with radiologic usual interstitial pneumonia (UIP) to determine differences in the extent and severity of radiologic fibrosis and/or emphysema in those with idiopathic pulmonary fibrosis (IPF) versus individuals with non-IPF UIP. When controlled for confounders, smokers with IPF and emphysema had worse radiologic IPF and emphysema than smokers with non-IPF UIP and emphysema. This suggests a synergy among IPF, emphysema, and smoking.

Lu et al conducted a meta-analysis to examine the efficacy and safety of subcutaneous immunotherapy (SCIT) in mite-sensitized individuals with asthma. Their results suggest that SCIT is helpful in alleviating symptoms and reducing medication use in mite-sensitive subjects with asthma, but there was no improvement in lung function. The safety of SCIT is acceptable.

The aim of the study by Feng and colleagues was to explore whether intermittent hypoxia and emphysema existing simultaneously plays overlapped roles on systematic/endothelial inflammation and endothelial damage. In a rat model, they found that this overlap elicits more severe systematic endothelial inflammation and endothelial damage.