

This month's Editor's Choice, by Sahetya et al, is a small, prospective, physiologic study adjusting driving pressure through manipulation of positive end-expiratory pressure (PEEP). When the lowest driving pressure was reached, the stability over time was assessed. Compared to PEEP set using the low PEEP/FIO₂ table from the ARDSnet, a decrease in driving pressure was associated with an increase in PEEP in 6 subjects and decrease in 4. Importantly, after the change in PEEP, driving pressure stabilized in less than 5 minutes. Dries and Marini provide comment, noting that the best PEEP is tidal volume dependent. They argue for an empiric approach to PEEP, as the impact of PEEP on driving pressure is related to lung recruitability.

Mechanical insufflation-exsufflation (MI-E) is standard care in chronic neuromuscular diseases such as amyotrophic lateral sclerosis (ALS). MI-E operation has remained fairly constant since its inception. Recently, MI-E systems have added oscillations in an effort to improve secretion clearance. Sancho and colleagues evaluated MI-E with and without oscillations in a 12-month study of subjects with ALS. They found that the addition of oscillations had no impact on the need for invasive procedures or incidence of respiratory infections. Chatwin and Toussaint comment that the study demonstrates that oscillations should not be routinely adopted. However, they suggest that patients with bulbar involvement could respond differently.

Inay and colleagues measured the distribution of ventilation using electrical impedance tomography (EIT) during mechanical ventilation of pediatric subjects. They found that the distribution of ventilation was more ventral in subjects receiving controlled ventilation. This was associated with poorer oxygenation. Spontaneous ventilation was associated with more even distribution of ventilation and improved oxygenation. EIT provides information on ventilation distribution, but the ability to use that information to impact patient outcomes remains to be seen.

Wataru and others compared high flow nasal cannula (HFNC) to oxygen delivered by a large volume nebulizer following extubation. This single center randomized controlled trial did not demonstrate any differences in re-intubation rate at day 7. HFNC provides advantages related to washout of deadspace versus standard oxygen therapy but that did not result in outcome differences in this trial.

DalCorso et al evaluated a number of field walking tests in subjects with bronchiectasis. They found no difference in the desaturation events or peak heart rate between the 6-minute walk test (6MWT), the incremental shuttle walk test, and endurance shuttle walk test. They concluded that these tests can be used interchangeably for evaluation of exercise-induced desaturations.

Cammarota and colleagues compared setting PEEP using gas exchange endpoints versus esophageal pressure monitoring to obtain a positive transpulmonary pressure during intraoperative ventilation. Targeting transpulmonary pressure was associated with improved oxygenation and better lung compliance. No postoperative outcome variables were measured.

De Souza and others evaluated the intra- and inter-observer reproducibility of the timed inspiratory effort index

(TIE). They previously reported that TIE may be a predictor of successful ventilator discontinuation. They report that there was a low variability between measurements and high reproducibility of the TIE measurement.

Donadio and coworkers evaluated the exercise capacity of subjects with cystic fibrosis during a modified shuttle test (MST). The distance walked was compared with anthropometric data and lung function. They report that the main determinants of exercise capacity assessed by the MST were resting heart rate, age and lung function.

Viral infections predominate the literature at this writing. Holzemer and others describe metapneumovirus (MPV) in hospitalized pediatric subjects. The authors performed a retrospective study in two centers evaluating demographics, comorbidities and treatments. Oxygen therapy met the needs of most subjects. They found that children with MPV were at increased risk of acute kidney injury regardless of the degree of respiratory illness.

Apropos to the current times, Jeong et al evaluated the impact of breathing through an N95 facemask worn by subjects with COPD. They measured respiratory symptoms and physiologic variables during a 10-minute period of rest and during the 6MWT. Of 97 subjects, 7 were unable to wear the mask for the entire study duration. Subjects unable to complete the study had a higher modified British Medical Research Council score and lower forced expiratory volume in 1 second. The authors conclude that more advanced COPD limits tolerability of the N95 mask for even short time periods.

Jin and colleagues evaluated a portable bluetooth spirometer to a traditional pulmonary function analyzer during pulmonary function testing. Testing primarily evaluated flow measurements. The authors found that the concordance between devices was good. They speculate that the device may provide cost savings and convenience.

Su et al provide a systematic review of probiotics for ventilator associated pneumonia (VAP). Their meta-analysis suggests that probiotics may reduce VAP, but this needs to be tested in large multi-center trials.

Epler and others provide a review of radiation post breast cancer radiotherapy and bronchiolitis obliterans organizing pneumonia (BOOP). BOOP is characterized by ground-glass opacities in the radiation-exposed lung and frequently in the non-irradiated lung. They reported that risk factors for BOOP include increasing age, cigarette smoking, and increasing central lung distance.

Our Year in Review series includes neonatal respiratory support by Wheeler and Smallwood and aerosol therapy by Berlinski. Both describe important papers published on the respective topics in the last 12 months.

In a special article by Cobb and Solanki, the role of E-cigarettes and vaping devices on acute lung injury are described. This concise review separates fact from fiction related to the outbreak of e-cigarette associated lung injury (EVALI). The current corona virus has pushed EVALI off the radar, but it remains and important public health issue.

Our second Cochrane Corner is a review of noninvasive ventilation in cystic fibrosis by our Editorial Intern, Denise Willis.