

Weaver et al evaluated the false positive rate of carbon monoxide saturation ( $S_{pCO}$ ) by pulse oximetry. They found that, while the pulse oximeter functioned within the manufacturer's specifications, clinicians using it should expect some  $S_{pCO}$  readings to be significantly higher or lower than blood carboxyhemoglobin (COHb) measurements, and should not use  $S_{pCO}$  to direct triage or for patient management. An elevated  $S_{pCO}$  could broaden the diagnosis of CO poisoning in patients with nonspecific symptoms. However, a negative  $S_{pCO}$  level in patients suspected of having CO poisoning should never rule out CO poisoning, and should always be confirmed by COHb. Wilcox and Richards suggest that clinicians must continue to have a high index of suspicion for CO poisoning and be aware of the limitations of CO oximetry. All patients considered at risk should have a confirmatory COHb measurement.

Galindo-Filho et al conducted a randomized controlled trial of noninvasive ventilation (NIV) coupled with inhaled  $\beta$ -agonist during an asthma exacerbation. They found that, although coupling inhaled  $\beta$ -agonist and NIV during asthma exacerbation did not improve radio-aerosol pulmonary deposition, there was clinical improvement of pulmonary function. As pointed out by Op't Holt, accumulating evidence supports the use of NIV for acute asthma and the administration of inhaled  $\beta$ -agonist coupled with NIV.

The association between comorbid illness, colonization status, and acute hospitalization in patients receiving prolonged mechanical ventilation is evaluated by Verceles et al. They found that a higher comorbidity burden and colonization status were associated with increased risk of transfer to acute care from a long-term acute care hospital, and they suggest that further investigation is needed to clarify the relationship between comorbidity burden and colonization with change in clinical status. Vitacca and Nava conclude that, despite clinical and scientific evidence of the effectiveness of chronic ventilator facilities, their place in the organizational network remains uncertain, and their impact on the economics of healthcare delivery is not fully understood.

The initial tracheostomy tube change is often recommended between day 7 and 14 after insertion. Fisher and colleagues hypothesized that changing tracheostomy tubes before day 7 is associated with earlier use of a speaking valve as well as earlier oral intake, compared to changing the tube after 7 days. They found that tracheostomy tube change before day 7 was associated with earlier ability to tolerate a speaking valve and oral intake, and was not associated with an increased rate of complications.

Blakeman and Branson evaluated 4 portable ventilators in terms of triggering, delivered tidal volume ( $V_T$ ) accuracy, battery duration,  $F_{IO_2}$  accuracy, and gas consumption. All the ventilators that they tested performed well on  $V_T$  delivery across a range of settings, using both the internal drive mechanism and compressed oxygen. However, 2 of the ventilators were unable to deliver accurate  $F_{IO_2}$  across the range of  $V_T$ . None of the devices was clearly superior to the others.

González Pena et al evaluated the effects of a nasogastric tube on middle ear effusion in mechanically ventilated patients. Middle ear effusions and tympanometric alterations are frequent in intubated patients—32% in this study. To prevent these complications, the authors recommend that, whenever feasible, mechanically ventilated patients should receive nasogastric tubes with a diameter less than 18 French.

We publish 3 papers this month related to cystic fibrosis. Adherence to airway clearance therapies by adult patients with cystic fibrosis (CF) was studied by Flores and colleagues. They found a high rate of adherence to airway clearance therapy, with a lower level of education as the

most important factor in poor adherence. Cox et al aimed to establish the feasibility of monitoring an assessment of exercise capacity using telehealth technology in adults with CF. They found that exercise capacity assessment using the 3-min step test is feasible and accurate via remote videoconferencing. Sovtic and colleagues evaluated the exercise capacity of children with CF to determine whether ventilatory limitation associated with static hyperinflation was related to decreased exercise capacity. Static hyperinflation and ventilatory limitation are associated with a decrease in exercise performance and arterial oxygenation during maximum cardiopulmonary exercise testing.

In an in vitro study, Santos et al compared the mechanical performance of the Flutter, Shaker, and Acapella devices. The Flutter and Shaker devices had a similar performance to that of Acapella in many aspects, except for peak expiratory pressure.

Mistraletti and colleagues compared the performances of high flow and low flow air-entrainment masks for CPAP systems to the Boussignac valve. The high-flow air-entrainment mask showed the best performance. During high flow demand, the Boussignac valve delivered lower than expected  $F_{IO_2}$  and showed higher dynamic hyper-pressurization than the air-entrainment masks.

The aim of the study by Cincin and colleagues was to determine whether amino-terminal brain natriuretic peptide (NT-proBNP) levels in pleural fluid have diagnostic value for discriminating heart-failure-related pleural effusions from non-heart-failure effusions. Their findings suggest that pleural fluid NT-proBNP measurement in the routine diagnostic panel may be useful in differentiation of heart-failure-related pleural effusions and exudative pleural fluids.

The aim of the study by Chien et al was to assess how thoraco-abdominal asynchrony in subjects with COPD correlates with exercise performance during the 6-minute walk test (6MWT). They found that thoraco-abdominal asynchrony worsens early during the 6MWT in subjects with moderate and severe COPD, and rib cage excursion at 3 min predicts poor walking capability.

The objective of the study by Paneroni et al was to test the level of patients' knowledge of their disease and therapy at baseline and after a COPD educational program; the feasibility of structured educational sessions; and the influence of clinical status, demographics, previous knowledge level, previous lessons attendance and program adherence to the variation of knowledge after program. The formal COPD education program was feasible and effective in improving subject knowledge and self-management; however, those attending the programs for the first time learned more than those who had attended previous such sessions.

The relationship between depression in patients with COPD and the percent of predicted  $FEV_1$ , BODE Index, and health-related quality of life was evaluated by Iguchi and colleagues. They report a high prevalence of depression among patients with stable COPD treated in long-term in-patient rehabilitation facilities. Depression among these patients was associated with greater impairment in respiratory function and with poorer modified Modified Medical Research Council dyspnea scale and St George's Respiratory Questionnaire scores. The prevalence of depression increased with BODE stage.

Identification of diagnostic criteria and risk factor analysis for severe tracheomalacia in the ICU is explored by Kandaswamy et al. Severe tracheomalacia was associated with a prolonged ICU stay. A distal tracheal antero-posterior diameter  $< 7$  mm on a non-intubated CT chest was suggestive of severe tracheomalacia that required a confirmatory bronchoscopy. Gastroesophageal reflux disease and obesity were potential risk factors.