

Our Editor's Choice paper evaluates the effects of nebulizer position, gas flow and CPAP on aerosol delivery. Ball and colleagues report that a T-piece with cap maximized albuterol delivery. During CPAP, the nebulizer should be placed proximal to the patient. As suggested by Op't Holt, it is time for respiratory therapists and others to use the available evidence when providing aerosol therapy during mechanical ventilation.

Piriyapatsom et al evaluated the ventilator-associated events (VAE) algorithm in a trauma population. They found that infection-related ventilator-associated complications (IVAC) criteria had a low accuracy for identifying ventilator-associated pneumonia (VAP) in high-risk trauma patients. As is clear from this paper and the editorial by Jorens, IVAC and VAP are different entities. Moreover, the VAE algorithm is intended for surveillance and not for clinical identification of VAP.

The study by Liu et al evaluated characteristics, predictors and outcomes of noninvasive ventilation (NIV) intolerance. Younger patients with tachycardia and tachypnea may be more likely to experience NIV intolerance. NIV intolerance worsened subjects' outcomes. As pointed out by Dres and Demoule, NIV intolerance is a challenging issue in the clinical setting.

Iyer and Mhanna evaluated the association between high flow nasal cannula (HFNC) and end expiratory esophageal pressure (EEEP) in premature infants. At HFNC flows ranging from 2 to 8 L/min, the corresponding esophageal pressures ranged from 2 to 15 cm H₂O. The authors concluded that there is an association between flow and esophageal pressure, although there was also variability in the amount of EEEP generated.

The study by Jones et al was to determine whether HFNC, compared to standard oxygen therapy in subjects with acute respiratory distress, would reduce the need for NIV or invasive ventilation. HFNC did not reduce the need for ventilator support, although it was safe and might reduce the need for escalation of oxygen therapy.

In another paper on HFNC, Chikata and colleagues investigated factors affecting condensation within the delivery circuit. At 25° C ambient temperature, there was little condensation, but there was considerable condensation at 20° C. The authors concluded that ambient temperature significantly influenced condensation in the circuit.

Piriyapatsom et al hypothesized that preoperative comorbidities, acquired muscular weakness, and renal dysfunction are predictors of reintubation in the surgical ICU. Elevated blood urea nitrogen, low hemoglobin, and muscle weakness were identified as independent risk factors for reintubation. The presence of these risk factors can potentially aid clinicians in making decisions regarding optimal airway management in patients considered for extubation.

Simon et al assessed the utility of computed tomography (CT) scans in subjects with ARDS. Evaluation of thoracic CT scans yielded information useful for diagnosis, predicting prognosis, and recognizing concomitant disorders. Results obtained from CT scans led to changes in management in 26% of cases.

The objective of the study by Stéphan and colleagues was to compare cultures of bronchoscopic endotracheal aspirates

and bronchoalveolar lavage fluid (BAL) for non-ventilator ICU-acquired pneumonia after cardiothoracic surgery. The modified clinical pulmonary infection score had low diagnostic accuracy. BAL cultures were superior to endotracheal aspirate cultures. When cultures are negative, antibiotic discontinuation is safe.

Bailes et al hypothesized there would be no difference between set and measured CPAP levels between interface types. At lower set CPAP, measured pressure dropped with the nasal prongs and the highest flow. At higher CPAP levels, pressure increased as flow increased. Thus, flow affects measured CPAP. This could be attributed to increased resistance to spontaneous breathing or insufficient flow to meet inspiratory demand.

Khalid et al report their experience caring for subjects with severe Middle East Respiratory Syndrome coronavirus pneumonia and ARDS. They report a high mortality in those with comorbidities. Those who survived the acute infection and its complications remained well after one year.

The aim of the study by Wang and colleagues was to determine an alternative for the fixed cut points of FEV₁/FVC < 70% suitable for FEV₁/FEV₆ in primary care. They found that FEV₁/FEV₆ < 72% can be used in primary care as a valid alternative for FEV₁/FVC < 70%. This suggests FEV₁/FEV₆ might be an option in primary care to detect airway obstruction.

Smallwood and colleagues used an in vitro simulation to test the accuracy of gas exchange measurements by an indirect calorimeter and a volumetric capnograph. They found that these monitors were in agreement with reference oxygen consumption and carbon dioxide values. Measured carbon dioxide production values in both the pediatric and adult range were most accurate with the capnograph. The devices demonstrated acceptable agreement with each other.

In the study by Bozkus et al, the authors compared lipid peroxidation, telomerase, zinc, copper, and malondialdehyde (MDA) levels in asymptomatic smokers and subjects with COPD exacerbation. They found that the group with COPD exacerbation had a significantly lower copper to zinc ratio compared to control group. Subjects with COPD exacerbation, however, had significantly higher levels of telomerase, MDA, copper, and zinc compared to control group.

Zhou and colleagues evaluated subclinical left ventricular (LV) systolic dysfunction in subjects with obstructive sleep apnea with normal LV ejection fraction and without myocardial dysfunction. They found subclinical 3-layer longitudinal and circumferential LV systolic function in subjects with normal left ventricular ejection fraction.

In the study by Kim et al, the authors conducted a study to measure serial changes in pulmonary function over 12 months after lobectomy in subjects with lung cancer. They also evaluated actual recovery of pulmonary function in comparison with predicted preoperative values. They found that pulmonary function compared to predicted preoperative values improved over time for 1 y after lobectomy. However, this improvement was not observed in subjects with COPD or in those who underwent thoracotomy or received postoperative adjuvant chemotherapy.