

There have been few reports of factors affecting aerosol delivery during noninvasive ventilation (NIV). Our Editor's Choice paper this month deals with aerosol delivery during spontaneous breathing, CPAP, and bilevel. The objective of this study by Maccari and colleagues was to determine the effect of spontaneous breathing and NIV mode on 99m-Tc-technetium lung deposition in subjects with normal lungs. They found that there is an equivalent deposition of inhaled aerosol in individuals with healthy lungs during spontaneous breathing, CPAP, and bilevel.

Rittayamai et al conducted a randomized crossover study comparing high-flow nasal cannula (HFNC) versus conventional oxygen therapy after endotracheal extubation. They compared the short term benefit of high-flow nasal oxygen cannula with non-rebreathing mask in terms of change of dyspnea, physiologic variables, and patient comfort in subjects after endotracheal extubation. Because the HFNC was able to improve dyspnea and physiologic parameters, this device may have a potential role after endotracheal extubation. In his editorial, Scala suggests that important questions remain concerning the possible role of HFNC in the post-extubation period, which should stimulate future research.

Sindi et al investigated the relationship between intra-abdominal pressure ( $P_{abd}$ ) and esophageal pressure ( $P_{es}$ ) in mechanically ventilated patients. They report a limited correlation between baseline  $P_{es}$  and  $P_{abd}$  in patients undergoing elective laparoscopic surgery, suggesting limited value of  $P_{abd}$  measurements in the management of mechanically ventilated patients. Whether these results can be applied to critically ill patients remains to be determined. Corbellini appropriately points out that measures of  $P_{abd}$  may provide useful complementary information in the management of mechanically ventilated patients.

Airway suctioning is a common practice in mechanically ventilated patients. Corley and colleagues evaluated lung volume changes during cleaning of closed endotracheal suction catheters. Lung volume during suctioning was estimated using electrical impedance tomography. When there is no valve between the airway and suction catheter, cleaning of the closed suction catheter resulted in significant derangements in lung volume.

Ventilator-associated pneumonia (VAP) is a recognized complication of mechanical ventilation. Nicolosi and colleagues evaluated the effect of oral hygiene and 0.12% chlorhexidine oral rinse on risk of VAP after cardiovascular surgery. They found that oral hygiene and mouth rinses with chlorhexidine under supervision of a dentist proved effective in reducing the incidence of VAP.

The nasopharyngeal tube (NT) is a potential interface for NIV. The aim of the paper by Velasco Arnaiz was to describe their experience in the use of the NT for NIV in infants. They report 73% effectiveness for the use of the NT, with few complications, particularly in the subgroup of patients extubated to NIV.

The purpose of the study by Koldobskiy et al was to determine the association of naturally occurring ambient light levels in a long term acute care hospital with circadian rhythm in patients recovering from critical illness and requiring prolonged mechanical ventilation (PMV). They found that patients recovering from critical illness and actively weaning from PMV maintain their circadian rhythm in phase with normal diurnal variations of light.

The two-minute walk test (2MWT) has been used in several health conditions, but the interpretation of its results is

limited due to lack of reference values. The aim of the study by Dal Corso and colleagues was to establish a reference equation to predict the distance walked in the 2MWT for healthy adults and the elderly, and to test its reproducibility. They were able to establish a prediction equation to interpret performance on the 2MWT performed by adults and the elderly with different health conditions.

Gait speed is simple physical function measure associated with key outcomes in the elderly. Karpman and colleagues explored the methodology and feasibility of measuring gait speed in the outpatient clinic. They found that gait speed was a reliable measure in COPD, regardless of instructed pace, distance or timing mechanism.

The reproducibility of cadence free six-minute step test in the COPD population has not been evaluated. Costa et al found the six-minute step test reproducible in patients with COPD when performed by the same evaluator.

Zacharias et al examined whether patients with chronic neck pain have spirometric abnormalities and whether neck pain problems and psychological states are associated with these abnormalities. They found that patients with chronic neck pain do not have optimal pulmonary function.

Using high resolution computerized tomography, Asker and colleagues evaluated bronchial thickness in subjects with mild intermittent asthma in comparison to healthy control subjects. They found an increase in bronchial wall thickness in peripheral airways in subjects with mild intermittent asthma regardless of duration. This might indicate the need for therapy effective on peripheral airways, such as anti-inflammatories or bronchodilators, in the early period of the disease.

Cheng et al conducted a meta-analysis including 4 randomized controlled trials to evaluate the effect of corticosteroids on the treatment of severe community-acquired pneumonia (CAP) of adults. The results suggest that, although corticosteroid therapy may reduce mortality and improve the prognosis of adult patients with severe CAP, the results should be interpreted with caution due to the instability of pooled estimates.

Ugajin et al studied the predictive values of semi-quantitative procalcitonin test (PCT) and common biomarkers for the clinical outcomes of CAP. The semi-quantitative serum PCT level on admission was less predictive of mortality from CAP as compared to the blood urea nitrogen to serum albumin ratio. Subjects with serum PCT levels  $\geq 10.0$  ng/mL were more likely to require intensive care than those with lower levels.

Patients with nursing home-acquired pneumonia (NHAP) represent a distinct group of lower respiratory tract infections with different risk factors, clinical presentation and mortality rates. Porfyridis and colleagues evaluated the diagnostic value of clinical pulmonary infection score (CPIS), C-reactive protein (CRP) and PCT and compared the accuracy of pneumonia severity scores (CURB-65, PSI, NHAP index, SMART-COP, SOAR) in predicting inpatient mortality of NHAP. They found that CPIS, PCT and CRP are reliable for the diagnosis of NHAP and that PCT and CURB-65 were accurate in predicting inpatient mortality in NHAP.

Distal airway secretions can be sampled by bronchoscopic bronchoalveolar lavage (B-BAL), blind protected BAL (BP-BAL) and tracheal aspirates. Afolabi-Brown et al found that BP-BAL allows for more accurate sampling of lower airway secretions in tracheostomized children and is more accurate in the diagnosis of bronchitis in this group.