

The final Editor's Commentary of 2018 features a number of papers evaluating the use of cough assist in the care of pulmonary disease. To begin, our Editor's Choice paper is an evaluation of an optoacoustic device to assess endotracheal tube position in children. Volsko and colleagues describe a small cohort of subjects requiring endotracheal intubation and confirmation by chest radiography. They also measured tube position relative to the carina using the optoacoustic device. Accuracy of this system was compared to the determination by the radiologist. They report that the optoacoustic system was comparable in precision to chest radiography. Miller and others contribute an accompanying editorial that places this evidence in light of other methods that don't require technology, for instance anthropometric measures, which appear equally as accurate. Clearly, a larger study is necessary.

De Camillis and coworkers evaluated mechanical insufflation-exsufflation (MI-E) use in invasively ventilated subjects versus standard physiotherapy. They compared secretion removal, measured by weight of secretions removed, and lung mechanics. Complications and hemodynamic tolerance were also recorded. They concluded that the use of MI-E resulted in a larger amount of secretions removed. No complications were reported in either group. Cough is the normal mechanism for secretion removal and while the presence of an artificial airway complicates this mechanism, cough assist is the only secretion clearance technique that is based in physiology. In the accompanying editorial, Terzi et al opine that MI-E should be utilized more frequently, particularly as the myriad consequences associated with endotracheal suctioning are well described. They importantly observe that while suctioning simply removes secretions pooled at the tip of the endotracheal tube, MI-E can mobilize secretions in the periphery towards central airways. The importance of MI-E and its use in both invasive and noninvasive ventilation (NIV) is highlighted in this issue, as well as the need for further investigation.

Jones et al describe their experience with NIV in a neonatal animal model with and without neurally-adjusted ventilatory assist (NAVA). In normal and surfactant deficient models, NIV with NAVA was associated with a reduction in pressure time product compared to traditional synchronized NIV. Blood gases and other variables were unchanged. DiBlasi reviews this study and raises questions regarding the importance of synchronized NIV in neonates. He also suggests that future trials should measure work of breathing using transpulmonary pressure.

Pulmonary rehabilitation is a key component of COPD care. De Souza and colleagues evaluate the utility of an illustrated home manual for subjects in a 12-week rehabilitation program. They report that use of the manual facilitated the maintenance of pulmonary rehabilitation compared to a standard program.

Gülşen and Bülent evaluated the presence of psychological symptoms in smokers compared to non-smokers in a cross-sectional study. They report that while depression and hostility were prominent across all groups, mild smokers had greater somatic findings. At higher nicotine addiction levels, psychiatric symptoms including somatization, anxiety, depression, paranoid symptoms, and hostility all increased.

José et al report that subjects with bronchiectasis had reduced physical activity in daily life compared to controls in a cross- controls. They reported that dyspnea and home oxygen therapy were the major negative impacts on physical activity.

Rose and colleagues describe the use of cough assist for airway clearance in neuromuscular disease and spinal cord injury in both the United Kingdom and Canada. In a survey, they found that routine assessment of cough effectiveness was more frequently reported in the UK than Canada. Cough peak flow was the most frequent method for assessing cough effectiveness. The authors also report issues related to funding for equipment and caregiver education as impediments to providing cough assist therapy.

Kikuchi et al describe methods for cough peak flow measurement in neuromuscular disease during normal cough, with MI-E, and with manually assisted cough + MI-E. The highest cough peak flow was measured with manually assisted cough + MI-E. Additionally, cough peak flow measured by a peak flow meter tended to underestimate true flow.

Kan and coworkers describe teaching cough augmentation techniques to parents and caregivers of children with neuromuscular disease. Their findings suggest that parents/caregivers and healthcare providers are ineffective at increasing cough peak flow using manually assisted cough. This may represent a limitation of manually assisted cough as a therapy.

Duprez and colleagues provide a method for calculating the fractional delivered oxygen (FDO₂) in a lung model using a heat-and-moisture exchanger. Comparing flows of 2-6 L/min and minute volumes of 5-20 L/min they found that inspiratory flow had the greatest effect on FDO₂. Their formula accurately predicted FDO₂.

This month's reviews include a description of patient experiences while awaiting lung transplantation, a meta-analysis of the outcome of subjects with tuberculosis admitted to the ICU, and the impact of high-flow nasal oxygen in immunocompromised, critically ill subjects. Additionally, Uner and others describe supportive care of mechanically ventilated patients, based on the 2017 Egan Lecture at AARC Congress. Their review describes the main components of evidence-based supportive care of mechanically ventilated patients beyond ventilator settings.