Editor’s Commentary

Animal and laboratory experimental data support the hypothesis that mechanical ventilator settings can generate a flow bias that may result in mucus movement either away from the ventilator or toward the ventilator. In 20 intubated and ventilated adult patients, Ntoumenopoulos et al found that commonly used ventilator settings generate an inspiratory flow bias that may promote secretion retention. As Volpe points out in her editorial, perhaps it is time to include a quick estimate of the impact of ventilator settings on mucus movement as part of the routine care of patients. If the ventilator setting can be adjusted to promote airway clearance, this could potentially benefit patients.

The use of high flow nasal cannula in infants has increased in recent years. Limited data are available to describe the CPAP effects that can be expected when using high flow with a traditional nasal cannula. Volsko et al studied this in a simulated infant model. Interestingly, they found that clinically important pressures were not generated by high flows with a standard nasal cannula. As Hornik and Turner write, firm recommendations for or against the use of high flow nasal cannula as an alternative to nasal CPAP will need to await the results of a randomized controlled trial.

Rice et al evaluated an oximetry-driven O₂-conserving device versus fixed-dose O₂ devices in 28 patients with stable COPD. Compared to continuous-flow O₂, the oximetry-driven O₂-conserving device maintained S_0₂ closer to the target, and it had a higher conservation ratio than the fixed-dose O₂ device. As suggested by Nava, such an approach may be useful to avoid desaturation during the activities of daily living. Moreover, the O₂ conservation might translate to cost savings. Because this was a short-term study, more work is needed to determine the long-term benefits of an oximetry-driven O₂-conserving device such as the one in this study.

As background for the AARC third 2015 and Beyond conference, Barnes et al sought information and opinions on the ability of the current respiratory therapy education infrastructure to make changes that would assure competent respiratory therapists in the envisioned healthcare future. They invited directors of respiratory care educational programs to participate in a survey related to respiratory therapist practice in 2015 and beyond. They found important differences between the baccalaureate-degree and associate-degree programs. There are many opinions regarding what the respiratory therapist of the future should do, and there is lack of peer-reviewed research to guide the profession as we move forward. As stated by Goodfellow, an important question is whether our profession is willing and able to transition from where we are to where we need to be tomorrow.

Use of inhalers requires accurate completion of multiple steps to ensure effective medication delivery. Bashetti et al evaluated user error with Diskus and Turbuhaler by asthma patients and pharmacists from both countries had difficulty with proper use of the Diskus and Turbuhaler. The errors made by patients with asthma were similar to those made by the pharmacists. This provides further evidence supporting the importance of proper patient instruction in the use of inhaler devices.

Shie et al studied patient safety attitudes among respiratory therapists in Taiwan. Taiwanese RTs had low positive attitudes about the surveyed 6 safety domains in their hospitals. High work load, management of RTs under other professions, and lack of the use of protocols may contribute to their low opinions about the patient safety situation and low job satisfaction.

Despite the finding that prolonged slow expiration can be applied in infants to reduce pulmonary obstruction and clear airway secretions, there have been few studies of its effects on the respiratory system. Lanza et al evaluated this technique in 18 infants who had histories of recurrent wheezing. They were able to confirm that prolonged slow expiration deflates the lungs to expiratory reserve volume. Prolonged slow expiration caused no changes in peak expiratory flow, it decreased tidal volume, and it induced more frequent sigh breaths. Whether this method improves outcomes of infants with respiratory disease is yet to be determined.

In patients being considered for lung-resection surgery, quantitative perfusion scintigraphy is used to predict postoperative lung function and to guide the determination of lung-resection candidacy. Vibration-response imaging has been proposed as a noninvasive, radiation-free, and simpler method to predict postoperative lung function. This was evaluated by Comce et al in 25 patients who had preoperative FEV₁ and D_LCO measurements. They found that vibration-response imaging may be a good alternative to quantitative perfusion scintigraphy in evaluating patients who are candidates for lung-resection surgery.

The combination of high PEEP and low tidal volume decreases some of the injury related to mechanical ventilation, including pulmonary over-distention, damage due to cyclic opening and closing of the alveoli, and inflammatory responses that can lead to multiple-organ dysfunction. Aikawa et al evaluated the effects of low and high tidal volume and pentoxifylline on intestinal blood flow and leukocyte-endothelial interactions in mechanically ventilated rats. In this animal model, they found that low tidal volume with high PEEP was lung-protective. Early administration of pentoxifylline reduced the inflammatory response to high tidal volume with high PEEP (and presumed lung over-distention) during mechanical ventilation.

This month’s case reports relate to portable pulse-dose oxygen concentrators and why they should not be used with noninvasive ventilation, the use of intrapleural streptokinase for the treatment of chylothorax, use of hypothermia to allow low-tidal-volume ventilation in a patient with ARDS, and organizing pneumonia and non-necrotizing granulomata on transbronchial biopsy with Mycobacterium kansasi disease. The teaching cases are dyspnea associated with dermatomyositis, and lung abscesses in 2 patients with Lancefield group F streptococci (Streptococcus milleri group).