Blow-by, a common form of nebulizer therapy, where the device is held away from a child's face, has been dismissed as ineffective because studies have demonstrated incremental aerosol drop-off with increasing distances from the face. The study by Mansour and Smaldone reports adequate therapy during blow-by for some systems. They suggest that blow-by can be an effective means of drug delivery with the appropriate nebulizer system. In his editorial, Restrepo advises that, despite the findings of this study, one should use a mask with a tight seal whenever possible, rather than blow-by.

Valentini and colleagues evaluated how different tracheostomy tube diameters influence diaphragmatic effort and indices of weanability in difficult to wean patients. They found that, in tracheostomized difficult-to-wean subjects, the decrease of the tracheostomy tube size was associated with an increased load that was otherwise normal when using a larger diameter tube. As eloquently addressed by Epstein, this study reminds us that we must consider the physiologic effects of the artificial airway as we attempt to liberate the patient from mechanical ventilation.

Accidental decannulation is a cause of substantial morbidity and mortality in patients in long-term acute care hospitals who require a tracheostomy tube. White et al describe the results of a program to reduce this problem. They found that targeted interventions can significantly reduce both the incidence of accidental decannulation following tracheostomy and associated morbidity. This study provides a good example of applied research in quality improvement, as addressed by Dong and Dunn in their editorial.

Intra-individual variation of the cuff-leak test as a predictor of post-extubation stridor was assessed by Gros et al. They evaluated intra-individual variation of the cuff-leak test (ΔCLT) immediately post-intubation and pre-extubation, as a predictor of post-extubation stridor. The standard pre-extubation cuff leak test was not useful to detect post-extubation stridor, and this was not improved by use of ΔCLT. As nicely discussed by Argalious, perhaps it is better to be prepared for managing post-extubation stridor rather than to predict its occurrence.

The study by Borg et al quantified adherence to acceptability and repeatability criteria for spirometry in complex lung function laboratories. They found that clinical respiratory laboratories met published spirometry acceptability and repeatability criteria only 60% of the time in the first audit period. But this was improved with regular review, feedback, and implementation of a rating scale.

The purpose of the study by Bolzan and colleagues was to compare the cuff pressure levels and air volume required to fill the endotracheal tubes cuffs using 2 different techniques. One technique used the volume-time curve on the ventilator and the other used minimal occlusive volume. The volume-time curve technique demonstrated a significantly lower cuff pressure and a lower volume of air injected into the cuff, compared to the minimal occlusive volume technique. However, the study did not address the fact that both of these methods may potentially result in cuff pressures too low to minimize microaspiration.

Setting PEEP according to end-expiratory transpulmonary pressure may be beneficial in patients with ARDS. Guérin and Richard compared 2 methods for correcting absolute esophageal pressure values. They found that referring absolute esophageal pressure values at the relaxation volume of the respiratory system rather than to an invariant value of 5 cm H_2O better adapts to the patient's unique physiology.

Palazzo and colleagues evaluated the utility of soluble triggering receptor expressed on myeloid cells-1 (sTREM-1) levels in bronchoalveolar lavage fluid and exhaled breath condensate from subjects who underwent bronchoscopy for a clinical suspicion of ventilator-associated pneumonia (VAP). Unfortunately, sTREM-1 levels did not effectively categorize patients as VAP positive or VAP negative when using direct bronchoscopic quantitative culture samples as the comparison standard.

The aim of the study by Vidotto and colleagues was to determine clinical and surgical risk factors that may predict extubation failure in patients submitted to non-emergency intracranial surgery. On multivariate analysis, the most important variables for extubation failure were the level of consciousness at the time of extubation and female sex.

Menzella et al evaluated the adequacy of diagnosis and management of respiratory failure in COPD. Agreement between diagnosis of respiratory failure and arterial blood gas values was found to be insufficient in about half the cases. However, adherence to GOLD treatment guidelines and long term oxygen prescription were good. The re-hospitalization rate at 90 days was about 20%.

In a model of lavage-induced lung injury, Tang et al evaluated the effect of alveolar dead space on the accuracy of end-expiratory lung volume measurement by the modified nitrogen wash-out/wash-in method. They found a systematic underestimation of lung volume measurement at high PEEP levels, likely due to an increased dead space from alveolar over-distention.

Rhee and colleagues evaluated a peer-led asthma self-management program with adolescent peer leaders. The peer-led asthma self-management program was successfully implemented and well received by adolescent learners. Asthma outcomes in peer leaders also appear to have improved as a result of the program

Oxidative stress is known for having a key role in pathogenesis of many diseases. Tavilani et al evaluated oxidative stress in patients with COPD, smokers, and non-smokers. They found decreased total antioxidant capacity in plasma of subjects with COPD and smokers. However, no relationship was found between lung function and antioxidant systems status in the subjects with COPD.

The effect of cardiopulmonary rehabilitation on heart rate recovery in patients with COPD was evaluated by Georgiopoulou et al. They found that, in subjects with stable COPD, exercise-based rehabilitation improves heart rate recovery, which indicates a degree of attenuated autonomic dysfunction. Exercise and muscular oxidative capacity were also improved with rehabilitation.

Hou and colleagues conducted a 5-year study to evaluate the treatment of obstructive sleep apnea-hypopnea syndrome with combined uvulopalatopharyngoplasty and midline glossectomy. At 6 months, surgery was classified as being curative in 79% of subjects, and markedly effective or effective in the remaining subjects. At 5 years, surgery was classified as being curative in 21% of subjects, markedly effective or effective in 74% of subjects, and not effective in the others.