Our Editor's Choice paper evaluates the impact of a respiratory therapy assess-and-treat protocol on adult cardiothoracic ICU readmissions. Dailey et al report that their protocol resulted in a significant reduction in all-cause ICU readmissions, although the reduction in respiratory-related ICU readmissions did not reach statistical significance. As Jones states in his editorial, this study validates the front line innovation necessary for the effectiveness of respiratory care, where respiratory therapists can utilize their professional influence to tackle the tough questions that impact their practice setting.

Using lung clearance index (LCI), a measure of ventilation inhomogeneity, Poncin and colleagues evaluated the short-term effect of autogenic drainage on ventilation inhomogeneity in adult subjects with stable non-cystic fibrosis bronchiectasis. They found that autogenic drainage improved ventilation inhomogeneity. As pointed out by Rubin, perhaps the most important finding was that the 5 responders to autogenic drainage who had improved LCI expectorated significantly more sputum than the 19 who had no improvement in LCI.

Chakata et al performed a bench study to investigate the influence of gas flow, ambient temperature, and respiratory parameters on humidification and F_{IO_2} in a neonate/infant simulation of high flow nasal cannula (HFNC). Absolute humidity was affected by ambient temperature and flow. As gas flow increased, the actual F_{IO_2} more closely corresponded to set F_{IO_2}. When flow was 3 L/min, measured F_{IO_2} decreased proportionally more at each F_{IO_2} setting increment. El-Farghali suggests that these findings warrant further clinical trials of HFNC using the high flows that were previously suggested without concern for humidification effectiveness. These results also suggest measuring the delivered oxygen concentration if possible.

The purpose of the study by Ari et al was to determine the impact on aerosol deposition of heat and moisture exchangers designed to allow aerosol delivery, with and without active exhaled humidity, in a ventilator-dependent adult model. Drug delivery without exhaled humidity exceeded aerosol deposition obtained with exhaled humidity. With exhaled humidity, there was no difference between devices and with no device inline.

The aims of the study by Hasegawa and colleagues were to identify factors associated with spiritual well-being and to compare the levels of spiritual well-being between subjects with advanced COPD and those with inoperable lung cancer. Subjects with COPD had a better psychological state and subjects with lung cancer had a better support state. Overall, the results of this study suggest that patients with advanced COPD experience spiritual well-being similar to that of subjects with inoperable lung cancer.

The objective of the study by Vasconcelos et al was to evaluate the influence of simulated respiratory mechanics and patient effort on patient-ventilator asynchrony during pressure support ventilation (PSV) and proportional assist ventilation (PAV). Asynchrony was influenced by effort, respiratory mechanics, ventilator type, and ventilation mode. In PSV, delayed cycling was associated with shorter effort for obstructive respiratory mechanics, whereas premature cycling was more common with longer effort and a restrictive profile. PAV prevented premature cycling but not delayed cycling, especially in obstructive respiratory mechanics profiles.

The purpose of the study by Millán and colleagues was to determine the safety and feasibility of noninvasive support in children with acute respiratory failure during inter-hospital ground transport. Various forms of noninvasive support seemed to be a safe and feasible technique during pediatric ground transport. Careful subject selection, adequate material, and a well-trained transport team were crucial to minimize risks.

Bai et al compared the predictive accuracy for re-intubation diagnosed by cough peak flow (CPF) measured by a spirometer and a ventilator. CPF was lower in re-intubated subjects than those without re-intubation. CPF measured by a ventilator was convenient, affordable and safe. It had similar predictive accuracy for re-intubation as a spirometer.

The aim of the study by Capozzolo and colleagues was to identify whether there are clinical and functional features of subjects with frequent exacerbations in a population of individuals with severe COPD. In the multivariate model, the frequent exacerbations phenotype was associated with a reduced inspiratory capacity, an increased ratio of residual volume to total lung capacity, BODE index, and mMRC. The authors concluded that static hyperinflation and respiratory disability were independently associated with frequent exacerbations in severe COPD subjects.

Furlanetto et al investigated the impact of sedentary behavior on the mortality of subjects with COPD. Sedentary behavior was an independent predictor of mortality in subjects with COPD, even after adjusting for moderate-vigorous physical activity and a number of other variables. Mortality was higher in subjects with COPD who spent more than 8.5 h/d in activities requiring <1.5 metabolic equivalents. These findings may promote future studies aiming at decreasing sedentary time as a strategy to reduce mortality in patients with COPD.

Oude Lansink-Hartgring et al summarize a single center experience with extracorporeal life support (ECLS) as a bridge to lung transplantation, with an emphasis on health-related quality of life. Although ECLS can be used as a bridge to lung transplantation, a significant number of subjects were not bridged successfully due to a variety of reasons. Outcomes of successful transplantation after ECLS might be comparable to the general population undergoing lung transplantation in terms of quality of life, lung function, performance tests, and mortality. However, ICU and hospital length of stay might be longer.

Murthy and colleagues evaluated a method of measuring fractional exhaled nitric oxide (F_{ENO}) in ventilator-dependent children with tracheostomy. They also explored the relationship between the peak F_{ENO} concentration (F_{ENO} peak) and degree of respiratory support using respiratory severity score. They found that F_{ENO} peak and plateau concentration could be measured online easily with a high degree of reliability and repeatability in infants and young children with tracheostomy. F_{ENO} peak from the lower airway was low and influenced by minute ventilation in children receiving mechanical ventilation.

The primary goals of the study by Tai et al were to evaluate early changes in pulmonary function and retrobulbar hemodynamics, and to examine the correlation between these parameters in subjects with type-2 diabetes during the preclinical stages of diabetic retinopathy. They found that pulmonary function and retrobulbar hemodynamics changed during the preclinical stages of diabetic retinopathy. By detecting the retrobulbar resistivity index and the levels of glycosylated hemoglobin A1c, it might be possible to predict changes in pulmonary function during the preclinical stages of diabetic retinopathy and the degree of retinopathy.

Teixeira et al compared the crude and propensity score matched mortality rates between adult subjects with and without cancer admitted to a mixed medical-surgical ICU. In this single center study, the authors were unable to show an association between malignancy and all-cause 30-d mortality rate. The propensity score matched analysis showed no evidence of excessive mortality due to cancer diagnosis.