Editor’s Commentary

In our Editor’s Choice paper, Teixeira et al assessed the use of proportional assist ventilation as a spontaneous breathing trial (SBT), comparing it with a T-tube and with pressure support ventilation. They found no significant differences in the rate of extubation failure, duration of mechanical ventilation, and length of ICU and hospital stay. Kacmarek and colleagues suggest that, although the approach to an SBT may not have an impact on time to extubation, the mode selected once the patient begins to trigger the ventilator may have an effect on time to extubation.

Visscher and colleagues investigated factors contributing to pressure ulcer development in subjects using noninvasive ventilation. Color imaging, 3-dimensional surface imaging, and skin hydration measurements were used to identify early skin compromise and evaluate 3 interventions to reduce trauma: a silicone foam dressing, a water/polyethylene oxide hydrogel dressing and a flexible cloth mask. Improvement of mask fit was an important priority for improving respiratory outcomes, and strategies to maintain normal skin hydration are also important for tissue integrity. Argent reminds us that the challenge is to provide a mass-produced commercially available interface that is comfortable, adaptable to a wide range of facial shapes, lined with material that prevents overhydration of the skin, and can be fitted in such a way that it does not leak, increase dead space or compromise patient-ventilator synchrony.

Bhalla et al investigated the correlation between volumetric capnography and time-based capnography dead space measurements. In mechanically ventilated children without significant hypoxemia or with cardiac output related dead space changes, $V_D/V_T$ was highly correlated with end tidal alveolar dead space fraction. In children with significant hypoxemia, $V_D/V_T$ was poorly correlated with end tidal alveolar dead space fraction. As Oliveri points out, time-based capnography may be a feasible and less expensive option to assess alveolar dead space during mechanical ventilation.

The study by Metcalf and colleagues examined the use of respiratory care protocols and associated levels of respiratory therapist (RT) job satisfaction, turnover intentions, and job stress. Higher levels of protocol use were associated with higher levels of RT job satisfaction, lower levels of turnover intentions, and lower levels of job stress. RTs with greater experience had higher levels of job satisfaction and RTs working at teaching hospitals had lower levels of turnover intentions.

Kuo et al designed an artificial neural network for predicting successful extubation of mechanically ventilated subjects. The neural network improved the accuracy of predicting successful extubation. Clinical application might help clinicians select the earliest appropriate weaning time.

The purpose of the study by Ari and colleagues was to quantify and compare the efficiency of aerosol devices in a lung model of an intubated and mechanically ventilated adult with a tracheostomy tube. Aerosol drug delivery via tracheostomy tube was greater than by endotracheal tube, while delivery efficiency of the pressurized metered dose inhaler via either airway was greater than that of a jet nebulizer.

Ramos et al evaluated the acute response of mucociliary clearance to aerobic exercise in smokers and nonsmokers and compared with that found after acute smoking and smoking combined with exercise. They also investigated whether there is a correlation between mucociliary clearance and the autonomic nervous system. Although impaired in smokers, mucociliary clearance responded to the stimuli of exercise, as demonstrated by similar saccharin transit time in comparison to nonsmokers. This response was correlated with the autonomic nervous system in both groups. In smokers, mucociliary clearance also responded to the stimuli of smoking and exercise followed by smoking.

The purpose of the study by Ekici et al was to assess the impact of bronchiectasis, anxiety-depression, and parameters of severity of disease on Health Related Quality of Life (HRQOL) in subjects with COPD. They found that presence of bronchiectasis in COPD does not impact HRQOL and psychological disorders. However, disease severity, dyspnea levels, and anxiety score predicted poor HRQOL.

Ajmera and colleagues examined the association between multimorbidity and COPD medication receipt among Medicaid beneficiaries with newly diagnosed COPD. Prevalence of multimorbidity was very high among Medicaid beneficiaries with newly diagnosed COPD, which suggests poor COPD medication management among those with multimorbidity.

Catarina et al compared the effects of 2 aerobic training intensities in HRQOL, symptoms control and exercise tolerance in subjects with COPD. Aerobic training intensity of at least 60% maximal exercise capacity ($W_{max}$) had a positive impact in COPD patient-centered outcomes, with no additional benefit of increasing intensity to 80% $W_{max}$ in HRQOL, symptoms control and exercise tolerance, challenging the present clinical attitude of rehabilitation professionals.

The goal of the study by Gulhan et al was to determine the frequency and determinants of low cognitive ability in subjects with stable bronchiectasis. They found that low cognitive ability in subjects with bronchiectasis might be associated with reduced lung function, more serious hypoxemia, and higher depressive symptoms. Bronchiectasis in subjects with low cognitive ability felt more intense dyspnea than ones with high cognitive ability.

Bulun and colleagues examined the validity of a measure designed for COPD, Seattle Obstructive Lung Disease Questionnaire (SOLQ), in bronchiectasis. They also compared the quality of life in subjects with bronchiectasis and bronchial hyperresponsiveness to those without in order to identify the effective factors on the quality of life. The SOLQ was a valid instrument for determining quality of life in subjects with bronchiectasis. The subjects with bronchial responsiveness had a poorer quality of life, lower baseline spirometric values, and more exacerbations.

The purpose of the study by Witcher and colleagues was to obtain multiple perspectives on pulmonary rehabilitation (PR) to gain insight into factors that affect exercise participation among individuals diagnosed with COPD. In addition to enhancing task self-efficacy, their findings suggest exercise participation and adherence within the PR environment may be improved by adopting a gender-tailored approach.

Zhuang et al studied the level of monocyte-human leukocyte antigen-DR (mHLA-DR), an immune function-related biomarker, at 24 h after admission, to predict the outcomes of subjects with severe pneumonia. They found that mHLA-DR might be a reliable biomarker that can predict the outcomes of subjects with severe community-acquired pneumonia, with 27.2% as the cut-off value to predict the outcome.

Sfettina and colleagues evaluated the imbalances of the plasminogen activation (PA) system related to obstructive sleep apnea syndrome (OSAS), and assessed the effects of CPAP on the PA system. Their results suggest an imbalance of fibrinolysis related to OSAS and an improvement of the prothrombotic state after the CPAP treatment.