The objective of our Editor's Choice paper, by Mola et al, was to determine whether a respiratory care bundle dependent on bedside caregivers resulted in a sustained decrease in the incidence of bronchopulmonary dysplasia (BPD) in infants <30 weeks' gestation. They found that implementation of the bundle was successful in increasing the use of less invasive respiratory support in this patient population. However, it failed to show sustained reduction in the incidence of BPD. As Betit writes, the respiratory care bundle evaluated by Mola may not have had the expected effect on BPD, but significant strides were made early in its implementation and the creation of an evidence-informed guideline and subsequent appraisal should be lauded.

The study by Genet and colleagues described staff satisfaction and process outcomes associated with respiratory therapist (RT)-led interdisciplinary rounds in the neonatal intensive care unit (NICU). They found that implementation of RT-led rounds improved staff satisfaction and the timeliness of completing respiratory orders. Although hidden in the details, Marshall suggests that the authors should be applauded for advancing RT-led team leadership in a practical, patient-centered demonstration of knowledge and skill to their NICU teammates.

The study by Rialp et al examined the effects of hyperoxia on the respiratory drive in subjects with COPD. Hyperoxia was followed by an increase in P_{aCO_2}, but it did not significantly modify the respiratory drive or the ventilatory response to hypercapnia. Littleton points out that the authors' findings might be used in the setting of a spontaneous breathing trial. Hyperoxia during a spontaneous breathing trial causes only modest hypercapnia and should not cause a significant change in respiratory drive or minute ventilation. An increase in P_{aCO_2} of 10 mm Hg or more should be interpreted as a sign of respiratory failure, and the patient should either be extubated to noninvasive ventilation or remain intubated on the ventilator.

Itagaki et al investigated oxygenation in mechanically ventilated subjects in the ICU, and evaluated factors related to hyperoxemia at 48 hours after mechanical ventilation started. In mechanically ventilated critically ill subjects, P_{aO_2} increased and F_{IO_2} decreased. They found that 1 in 4 subjects were hyperoxemic at 48 hours and this persisted on the day of extubation.

Chikata and colleagues evaluated the performance of ventilators compatible with magnetic resonance imaging (MRI). None of the MRI compatible ventilators maintained V_T, F_{IO_2} and PEEP at set levels. Patients with unstable respiratory mechanics should be closely monitored during MRI imaging.

Outcomes in subjects 90 years or older admitted to the ICU was evaluated by Sim et al. The mortality in this cohort was 28.8%. High glucose, poor nutrition, high SAPS II scores, DNR order, and requirement of vasopressor were independent predictive factors for mortality. An increase in clinical risk factors was associated with higher mortality rates. All subjects with more than 5 risk factors died.

Zou and colleagues evaluated the efficiency of a portable two-channel sleep apnea device for screening OSA. They reported that the SleepView device exhibited acceptable diagnostic accuracy for OSA in a Chinese population, especially in the severe group. Further studies are required to validate the diagnostic efficiency of SleepView in the home environment and different populations.

In a bench model, Grazioli et al evaluated the performance of 4 neonatal devices for high frequency oscillatory ventilation, compared to the Sensormedics HFOV. They found that these new generation neonatal ventilators were able to deliver adequate V_T under conditions simulating preterm infants, but not for term infants' respiratory system conditions. The clinical relevance of these findings needs to be determined.

Poli et al designed a study to evaluate the magnitude of lung volume oscillations in an infant mechanical lung model while pressurized using 4 different bubble CPAP systems. The major finding was that bubble CPAP might provide measureable ventilation effects. Additional study is needed in spontaneously breathing infants to determine whether a physiologic benefit exists when using bubble CPAP systems.

Yanez et al compared oxygen saturation and patient satisfaction with a portable oxygen concentrator or with a system consisting of a fixed device and a portable device for ambulation. Subjects preferred using a single portable oxygenation system, both at home and during ambulation. Portable systems alone, however, did not supply the same level of oxygenation. Additional studies are needed to determine best-practice protocols for adjustment of daytime and nighttime oxygenation settings.

To determine if smoking cessation may influence mucociliary clearance, Ito et al evaluated ex-smokers with COPD, smokers with COPD, current smokers with normal lung function, and non-smokers with normal lung function. One year after smoking cessation, subjects with COPD had improved mucociliary clearance.

The aim of the study by Lanza and colleagues was to determine expiratory reserve (ERV) volume during ELTGOL. ELTGOL utilized more than 80% of ERV in a subject with moderate airway obstruction, and there was no difference in ERV during the technique applied by a physiotherapist or by the subject. The authors concluded that ELTGOL is a reproducible technique.

Bennett and colleagues examined the relationship between crackles and measurements of conductive airways and emphysema score obtained from high resolution computed tomography (HRCT). Although there were some significant correlations between crackle characteristics and measurements of the conductive airways and emphysema score, the possibility that these correlations occurred by chance cannot be ruled out. Therefore this study provides no conclusive evidence that crackle characteristics are related to HRCT variables in COPD.

Cox et al established the feasibility and acceptability of a specifically developed Internet-based program to monitor and encourage physical activity participation in adults with cystic fibrosis (CF). They found that use of an Internet-based program to encourage physical activity participation was both feasible and acceptable for adults with CF. Feasibility might be further improved with the ability to access the program through a mobile application.

The objective of the study by Hegewald and colleagues was to assess instrument performance across hospital PFT laboratories using a D_{LCO} simulator that produces precise and repeatable D_{LCO} values. D_{LCO} instrument accuracy was unacceptable in 43% of devices. Inaccuracy was attributed to errors in inspired volume measurement. The authors suggest that D_{LCO} instrument performance might be improved by regular testing with a simulator. Caution should be used when comparing D_{LCO} results reported from different laboratories.

The objective of the study by McAdams and colleagues was to describe implementation of a Respiratory Severity Score (RSS) and bubble CPAP in a rural Ugandan NICU. They found that implementing bubble CPAP in low and middle-income countries is feasible. The RSS may be a simple and useful tool for monitoring a neonate's respiratory status and for guiding CPAP management.