

Wallet et al assessed the relationship between recruited lung volume (V_{rec}) and change in density on digitally processed chest x-rays measured at 2 different levels of plateau pressure corresponding to 2 PEEP levels in patients with ARDS. Digital chest x-ray done at the bedside was able to detect a reduction in density between PEEP 5 cm H_2O and PEEP 15 cm H_2O , which correlated with V_{rec} . Further work is needed to determine whether this will be clinically useful for setting PEEP. As Rouby and colleagues point out in their editorial, there are a number of methods that can be used to monitor alveolar recruitment at the bedside. These include assessment of the pressure-volume curve, stress index, lung volume, and ultrasound. What remains to be determined is whether any method is superior to another.

Indoor air pollution and exposure to biomass smoke are risk factors for pulmonary diseases among women in developing countries. Köksal et al evaluated clinical and functional parameters in female patients with biomass smoke exposure. They found that using animal dung as fuel is related to risk of deterioration of FEV₁/FVC when compared to other biomass fuels. In his related editorial, Miller addressed the conundrum of properly diagnosing COPD in a non-smoker, who may have exposures other than cigarette smoke, or a pathologic process in the absence of inhaled noxious agents.

The effect on resource utilization of physician-ordered aerosol therapy versus respiratory therapist (RT)-driven aerosol protocol was evaluated by Kallam et al. They found that application of an RT-driven bronchodilator protocol could potentially reduce the frequency of bronchodilator treatments, compared with a physician-ordered strategy, and that this could result in a reduction of costs in patients who require bronchodilator therapy. As Maselli and Fernandez indicate in their editorial, the use of RT-driven protocols leads to better allocation of respiratory care and at a lower cost.

The effect of respiratory therapy organizational factors on respiratory resource utilization was reported by Parker and colleagues. They evaluated a multi-component intervention, including an increase in RT-to-patient ratio, improved RT orientation, and establishment of a core staffing model. This was associated with increased respiratory resource utilization and evidence-based practice—specifically in obtaining lower respiratory tract cultures and performing spontaneous breathing trials.

The contribution of the central respiratory drive in the hypercapnic respiratory failure of neuromuscular diseases is controversial. Rialp et al found that subjects with acute hypercapnic respiratory failure due to neuromuscular disease had reduced hypercapnic drive response, compared to a group of quadriplegic patients with ICU-acquired weakness. The duration of weaning was also longer in subjects with reduced hypercapnic drive response.

Volsko et al used pre-post testing to determine whether the curriculum provided in the Girl Scouts Asthma Awareness Patch Program improved recipients' knowledge. They found that participation in the program enhanced participants' knowledge of lung function, trigger identification, asthma pathophysiology, and treatment.

The purpose of the study by Gonzales and colleagues was to investigate the impact of minimum and maximum rise time and inspiratory cycling criteria settings on 6 current generation ventilators. They found that significant differences in exhaled tidal volume, inspiratory time, and peak flow occurred by adjusting rise time and cycling criteria. They also found

major differences among ventilator manufacturers when considering inspiratory rise time and cycling criteria.

Maximum rate of pressure development (MRPD) and maximal relaxation rate (MRR) of respiratory muscles in patients with cystic fibrosis (CF) were evaluated by Dassios et al. Compared to normal control subjects, the subjects with CF exhibited increased MRR and decreased MRPD during maximal respiratory effort. These findings suggest that patients with CF are at increased risk of respiratory muscle fatigue.

The effect of percutaneous tracheostomy on gas exchange in hypoxemic and non-hypoxemic mechanically-ventilated patients was explored by Bellani and colleagues. Percutaneous tracheostomy did not worsen gas exchange in a cohort of ICU subjects, and in hypoxemic subjects it appeared to improve oxygenation and ventilation.

The study by Benton and Wagner evaluated the effect of single-set resistance training (SSRT) on quality of life (QOL) in subjects with COPD enrolled in a pulmonary rehabilitation (PR) program. They found that the addition of SSRT to traditional PR did not affect overall improvements in QOL that are influenced primarily by an increase in upper body strength. This suggests a threshold effect for exercise training, such that, once a threshold stimulus has been achieved, further improvements in QOL are not dose-dependent.

Wallace et al compared the effect of 3 positions on peak expiratory flow (PEF) maneuvers in healthy subjects. Because there were significant differences in PEF between standing, lying, and sitting, they concluded that clinicians should measure PEF with patients out of bed and in the standing position.

The typical oxygen delivery methods used for long-term oxygen therapy are continuous flow oxygen (CFO) and demand oxygen delivery (DOD). Lee and colleagues found that there is a region of compromise between oxygen saving and patient comfort that is filled by use of synchronized DOD. Synchronized DOD conserves oxygen while offering an equivalent F_{IO_2} , and may provide more comfortable oxygen delivery.

The primary reasons for referral for pulmonary function testing (PFT) were studied by Pretto et al. They found that the majority of PFTs are performed to follow disease progression or response to treatment. This has implications for the interpretation of test results and the clinical utility of PFT that should be considered by those performing the tests and interpreting the test results.

Because there is paucity of information on the weaning of nasal CPAP (NCPAP) in preterm infants, Rastogi et al evaluated gradual versus sudden approaches. There was no difference in the success of weaning off NCPAP between the 2 methods. Thus, it is important for clinicians to appreciate that the method used to wean CPAP is less important than other factors such as pulmonary maturity.

Lin et al evaluated survival in patients requiring an integrated system of reduced intensive respiratory care (ISRIRC) by the Taiwan Bureau of National Health Insurance. The 1-year survival rates of the subjects before and after ISRIRC were 21.0% and 37.2%, respectively, suggesting an improved survival rate for subjects who need PMV.

Admitting patients with interstitial lung disease (ILD) to the ICU is controversial. Güngör and colleagues evaluated the mortality for patients with ILD requiring ICU support for acute respiratory failure. Survival for patients who received invasive or noninvasive ventilation was poor. Because of this high mortality, mechanical ventilation should be used cautiously in the management of patients with ILD and acute respiratory failure.