

Our Editor's Choice paper this month relates to the economic outcomes of ECMO with and without ambulation as a bridge to lung transplantation. Bain and colleagues conducted a single center, retrospective cohort analysis of subjects supported with ECMO as a bridge to lung transplantation. Subjects supported with ambulatory ECMO had a 22% reduction in total hospital cost, 73% reduction in post-transplant ICU cost, and 11% reduction in total cost when compared to non-ambulatory ECMO subjects. As stated by Spinelli and Protti, muscle strength is a major determinant of lung transplant outcome and therefore lung transplant candidates, even those who are critically ill, should "get fit" for it. Ambulatory ECMO can turn a risky waiting time into an opportunity to actively rehabilitate, and for achieving the best outcome.

Spurious hypoxemia has been described in case reports during extreme hyperleukocytosis, which led to recommendations for immediate sample cooling and analysis of arterial blood gases (ABG). Van de Louw et al sought to determine, in samples processed as recommended, the magnitude of spurious hypoxemia in subjects with acute leukemia and hyperleukocytosis. They found that, despite cooling and quickly analyzing the samples, there was poor correlation and agreement between  $S_{pO_2}$  and  $S_{aO_2}$ , which was unacceptably low for a white blood cell count greater than  $100 \times 10^9/L$ . Albert and Swenson remind us that there are numerous ways in which erroneous values or oxygen saturation discrepancies can lead to confusing and misleading ABG interpretations. Minimizing errors and recognizing spurious values will help diminish errant conclusions and ultimately improve patient care by avoiding the larceny of excessive cost and possible harm arising from a mistaken diagnosis.

During noninvasive ventilation (NIV) of patients with COPD, delayed cycle of pressure support can cause patient-ventilator asynchrony and NIV failure. Moerer et al used a lung simulator with settings similar to COPD, connected to an ICU-ventilator via helmet or face mask, to evaluate this issue. Augmenting the cycle criterion above the default setting (20 to 30% peak inspiratory flow) improved patient-ventilator synchrony in their model, suggesting that an individual approach to cycle criteria should be considered. As stated by Rettig, in an effort to improve synchrony based on physiologic measures, we must not lose sight of patient comfort; this will require study in human subjects.

Ciprandi et al conducted a cross-sectional study of a visual analogue scale to assess perception of asthma symptoms and lung function measured by spirometry. The results of this study suggest that asthma symptoms assessment by a visual analogue scale might be a reliable tool in the management of patients with asthma.

A quality improvement project was designed by Modrykamien and colleagues to assess whether liberal manipulations of ventilator settings affect the rate of tracheostomy and 28-day ventilator-free days. Ventilator changes were considered as major changes if manipulations included a change in the mode of ventilation. They found that the number of major ventilator manipulations was associated with rate of tracheostomy and length of stay on the ventilator.

Ozsancak et al determined characteristics and outcomes associated with use of NIV for acute respiratory failure in different age groups. NIV use and do-not-intubate status were more frequent in subjects greater than 65 y of age, especially for those with cardiogenic pulmonary edema. Over-

all, NIV success and mortality rates were similar between age groups.

The role of mean platelet volume (MPV) in COPD exacerbations was assessed by Agapakis and colleagues. They found that MPV may be an inflammatory marker in COPD exacerbation and that the measurement of MPV values may be useful to identify patients who are at increased risk for exacerbations of illness.

Basso-Vanelli et al evaluated the effects of inspiratory muscle training (IMT) and calisthenics-and-breathing exercises in subjects with COPD with and without respiratory muscle weakness. Both interventions increased exercise capacity and decreased dyspnea during physical effort. However, IMT was more effective in the increment of inspiratory muscle strength and endurance. Subjects with respiratory muscle weakness who performed IMT had higher gains in inspiratory muscle strength and endurance, but not of dyspnea and submaximal exercise capacity.

Toussaint and colleagues conducted a prospective randomized study of the effect of air stacking via a volume-controlled home ventilator versus a resuscitator bag in subjects with Duchenne muscular dystrophy. No difference in cough effectiveness was found between these approaches. Thus, an inexpensive resuscitator bag, which is easy to use, can effectively improve cough capacity.

The aim of the study by Wilson et al was to examine patterns of physical activity and mediators of behavior change across stages of change in individuals with non-cystic fibrosis (CF) bronchiectasis. The pattern of physical activity across stages of change was consistent with the predictions of the transtheoretical model, which provides support to explore transtheoretical model-based physical activity interventions in individuals with non-CF bronchiectasis.

Sharma and colleagues hypothesized that a pharmacologic dose of zinc administered daily for 12 months would reduce the need for antibiotics in children with CF. They did not find any significant difference in the need for antibiotics, pulmonary function tests, hospitalization, or colonization for *Pseudomonas* of children with CF receiving zinc supplementation of 30 mg/day.

The bedside significance of improved filtering of pulse oximeter monitoring alarms in the neonatal intensive care unit was evaluated by Stefanescu et al. Although filtering reduced some nuisance alarms, its specificity to nurse-identified desaturations events does not improve significantly.

Mukhopadhyay et al compared the frequency of blood gas measurements adjusted for mechanical ventilation duration, occurrence of extreme  $P_{CO_2}$  values, and clinical outcomes among ventilated neonates managed with and without transcutaneous  $P_{CO_2}$  monitors ( $P_{tcCO_2}$ ). They found that, despite only moderate agreement between simultaneous  $P_{tcCO_2}$  and  $P_{aCO_2}$ ,  $P_{tcCO_2}$  use resulted in a decreased frequency of blood gas measurements in ventilated neonates, without affecting duration of mechanical ventilation or clinical outcomes at discharge. The authors suggest that the clinical impact of this technology appears to be minimal.

The purpose of the study by Stieglitz and colleagues was to evaluate nocturnal measurement of  $P_{tcCO_2}$  in hypercapnic subjects. They found a good agreement between  $P_{tcCO_2}$  and capillary  $P_{CO_2}$ . Because  $P_{CO_2}$  fluctuates in patients with respiratory failure, the authors recommend that continuous  $P_{tcCO_2}$  may be a method of choice for the diagnosis of nocturnal hypercapnia.