

In our Editor's Choice paper, Kobayashi et al evaluated the impact of ventilator-associated events (VAEs) in critically ill subjects receiving prolonged mechanical ventilation. Higher mortality was seen in subjects with ventilator-associated conditions (VAC) and infection-related ventilator-associated complication (IVAC), but not in subjects with ventilator-associated pneumonia (VAP). The authors concluded that VAEs were related to hospital mortality in critically ill subjects with prolonged mechanical ventilation, but that traditional VAP was not. Klompas reminds us that the arrival of VAEs criteria has created an opportunity for hospitals to reexamine and reimagine their approach to preventing complications and improving outcomes for mechanically ventilated patients. The practices most likely to prevent VAE are those that help to avoid intubation, minimize the duration of mechanical ventilation, and/or prevent the conditions that most commonly trigger VAEs such as pneumonia, volume overload, ARDS, and atelectasis.

The objective of the study by Anderson and colleagues was to determine differences in drug deposition based on different nebulizer positions in the ventilator circuit, using a mesh nebulizer, for delivery of epoprostenol. In their lung model simulating adult mechanical ventilation, the greatest amount of epoprostenol delivery resulted with the nebulizer placed at the humidifier inlet or outlet in a ventilator with bias flow. In his editorial, Davies suggests that this study does not provide us with the definitive answer as to where to place the nebulizer in the ventilator circuit because we do not know the particle size, we do not know if there were any functional discrepancies between the 4 controller units that could potentially explain some of the results, and we do not know the functional decay over time of the mesh nebulizers.

Readmission following a COPD hospitalization is associated with significant healthcare expenditure. In a single center retrospective study, Russo et al evaluated the impact of a multicomponent COPD post-discharge integrated disease management program intended to improve the care of patients with COPD and to reduce readmissions. They found that receiving any component of a program was associated with reduced 90-d readmission rate. Previous healthcare utilization and lung function impairment were strong predictors of readmission.

In a qualitative analysis of a large randomized study, Benzo and colleagues evaluated the effect of health coaching in severe COPD after a hospitalization. Content analysis revealed 4 predominant themes of the coaching intervention: health coaching relationship, higher participant confidence and reassurance, improved health care system access, and increased awareness of COPD symptoms. The strongest theme was the relationship with the health coach, including coach style and motivational interviewing approach. The authors concluded that health coaching forged partnerships and created a platform for patient engagement, which was confirmed by both participants and health coaches.

Thomas et al examined whether inhaler training could be delivered using Internet-based home videoconferencing and its effect on inhaler technique, self-efficacy, quality of life, and adherence. Participants reported increased confidence using inhalers, and inhaler adherence improved significantly after the intervention. The authors concluded that inhaler training using teach-to-goal methodology delivered by home videoconference was a promising means to provide training to subjects with COPD that can improve technique, quality of life, self-efficacy, and adherence.

Scraping the endotracheal tube can remove the biofilm and decrease airway resistance. The aims of the study by Scott and colleagues were to evaluate the impact of tube scraping on airway resistance, and to determine whether decreasing resistance would impact subsequent spontaneous breathing trial (SBT) success. They found that that endotracheal tube scraping did reduce airway resistance, but the decrease in resistance post scraping did not affect subsequent SBT success.

Narayanan and colleagues assessed the impact of simulated ventilation techniques using upright and conventional self-inflating neonatal resuscitators on delivered tidal volume and pressure. They analyzed videos of participants ventilating a manikin using the upright resuscitator and a conventional resuscitator under normal and low lung compliance. Mask hold, number of fingers squeezing the bag and degree of bag squeeze were compared with tidal volume and peak inspiratory pressure. Their results suggest that the design of the resuscitator and manner in which the device is utilized can both significantly influence the tidal volumes and pressures attained.

In a bench study, Perinel-Ragey et al evaluated variability of tidal volume in simulated patient-triggered mechanical ventilation in ARDS. They found that the risk of tidal volume greater than 6 mL/kg was significantly reduced with airway pressure-release ventilation (APRV) and pressure support with guaranteed tidal volume mode. APRV had the highest variability. These results require clinical validation.

The aim of the report by Schwartz and colleagues was to describe a series of subjects in the pediatric ICU who received a bedside tracheostomy while being supported on extracorporeal membrane oxygenation (ECMO). The authors examined the potential impact of this procedure on active rehabilitation and sedation requirements. They concluded that bedside tracheostomy could feasibly be performed on pediatric subjects being supported with ECMO as a way to improve mobility, promote ambulation, and decrease sedation. Timing and ideal surgical approach require further study to fully maximize benefits and minimize risks.

The aim of the study by Afshar et al was to determine the relationship between tobacco use, inhalation injury, and ARDS in burn-injured adults. This was an observational cohort of 2,485 primary burn admissions to a referral burn center between January 1, 2008 and March 15, 2015. Inhalation injury was the overwhelming predictor for ARDS development, while tobacco use had its strongest effect indirectly through inhalation injury. Subjects with at least moderate inhalation injury were at greatest risk for ARDS development despite baseline risk factors like tobacco use.

Moola and colleagues assessed the feasibility of a theoretically informed, parent-mediated counseling intervention in increasing habitual physical activity and quality of life among children and youth with cystic fibrosis. The findings of this study suggest that counseling is feasible for the cystic fibrosis community. An appropriately powered randomized controlled trial is required to investigate the utility of counseling as a means to enhance quality of life and physical activity behavior.

This month we publish a systematic review on the use of noninvasive ventilation during feeding tube placement. We publish a narrative review on the diagnosis and role of pharmacological agents for ventilator-induced diaphragmatic dysfunction. We also publish a special article on the 2017 Global Initiative for Chronic Obstructive Lung Disease Strategy Report and practice implications for the respiratory therapist.