

In our Editor's Choice paper, Wheeler and colleagues assessed the initial response to high-frequency jet ventilation (HFJV) in premature infants with hypercapnic respiratory failure. They found that lower postmenstrual age, improvements in capillary P_{CO_2} , pH at 1 h, and a reduction of F_{IO_2} were associated with good response to HFJV. These data might identify patients who are likely to benefit from HFJV in the neonatal intensive care unit. Carpi notes that, although there is still much to be learned, studies such as this help to identify preterm infants who can benefit from HFJV. Moreover, this may help to identify early infants who do not respond to this mode of ventilation.

Vernon et al surveyed respiratory therapy faculty to evaluate their knowledge and attitudes towards inter-professional education. All respondents recognized inter-professional education as an important component of respiratory therapy education. However, significant differences in knowledge and attitudes towards inter-professional education existed between faculty in associate versus baccalaureate and master's degree programs. Revisiting current accreditation standards may allow inter-professional education to take a more prominent role in respiratory therapy curricula. Becker and Schell point out that, although the rationale for inter-professional education does not appear to be questioned, the greater challenge is how to implement it into practice. Educators need to develop strategies to overcome barriers to its implementation.

The objectives of the study by Shealy et al were to assess the prevalence and types of education provided to subjects who use a metered-dose inhaler (MDI), to determine the prevalence of MDI misuse, and to determine if any associations exist between the education method and the participant's ability to properly use a MDI. They found that, although most participants received inhaler education, inhaler misuse was very common. No associations were found regarding method of education and proper inhaler technique. Faulkner appropriately points out that it should not be the norm that many patients misuse their inhalers – the device that is intended to alleviate symptoms, manage pulmonary diseases, and improve quality of life.

Lou and colleagues used an in vitro model to investigate factors that might affect the PEEP effect and compared performance among 3 devices for high flow nasal cannula. Mouth open or closed, gas flow, and simulated respiratory system compliance were the 3 major influencing factors of the PEEP effect. A performance difference between devices was found at higher flows.

The incidence and risk factors for cardiovascular collapse after unplanned extubations in the pediatric ICU was studied by da Silva et al. Of the 847 subjects, 109 unplanned extubations occurred (0.76 unplanned extubations/100 intubation days), with 21 subjects (19%) experiencing cardiovascular collapse, of which 10 required resuscitation. The authors concluded that cardiovascular collapse was a frequent complication of unplanned extubations, particularly in the youngest children. They suggest that bundles to prevent unplanned extubations might reduce morbidity related to these events.

The objective of the study by Grosu and colleagues was to determine whether thickness of the diaphragm changes after intubation and whether the degree of change affects clinical outcome. Although most subjects had evidence of diaphragm thinning, the authors were unable to find an association with the outcome of extubation. Thickening ratio or other measurement may be a more reliable indicator of diaphragm dysfunction and should be explored.

Brunet et al evaluated the performance of PRESERVE and RESP scores to predict death in subjects with severe ARDS receiving extracorporeal membrane oxygenation (ECMO). The clinical usefulness of these scores was limited because of their relatively poor performance in predicting death in subjects with severe ARDS receiving ECMO. These scoring systems should be tested in large prospective studies of subjects with severe ARDS undergoing ECMO treatment.

Mikesell et al used a monitoring device integrated into a high frequency chest wall compression (HFCWC) vest to measure adherence compared with self-reported adherence. Greater adherence to HFCWC measured directly by the monitoring device was associated with better baseline pulmonary function and fewer exacerbations in the pre-study and baseline period. Adherence decreased with age and prescribed therapy time, and increased with therapy assistance. Self-report over-estimation is large and thus not an accurate measure of adherence.

A simple model was developed by Oh et al to measure the exponential decay in airflow during forced exhalation to quantify the extent of dynamic airway obstruction and facilitate the clinical detection of obstructive airway diseases. They reported that flow decay distinguished subjects with obstructive lung defects from healthy subjects. This is a straightforward representation of spirometry data that provides a reproducible index to quantify dynamic airway obstruction.

The aim of the study by Chlif and colleagues was to assess inspiratory muscle performance during incremental exercise in obese men after aerobic exercise training using the inspiratory muscle tension-time index. They found that, in obese men, aerobic exercise at ventilatory threshold could induce significant improvement in respiratory muscle strength, maximal exercise capacity, inspiratory muscle performance, and decreased dyspnea perception.

Although use of cisatracurium in severe ARDS decreases mortality, whether this is cisatracurium-specific is unknown. Current et al compared outcomes in subjects with severe ARDS treated with cisatracurium versus atracurium. The use of atracurium versus cisatracurium within 72 h of admission was not associated with significant differences in clinical outcomes.

The purpose of the study by Chen and colleagues was to correlate airway parameters of COPD determined by low-dose high-resolution computed tomography (HRCT) with pulmonary function testing (PFT) results. Their results suggest that airway parameters in different GOLD COPD stages have no uniform correlation with PFT, but some HRCT parameters are correlated with some PFT parameters.

Though percutaneous dilatational tracheostomy (PDT) is considered a safe procedure, it is not considered suitable for patients requiring a permanent tracheostomy. Voelker and colleagues investigated long-term outcome parameters of PDT. They found that decannulations after PDT are easily done, and complications after PDT requiring a transformation to a surgical tracheostomy are rare. Elective surgical conversions are not necessary.

Christiansen et al describe a tracheostomy closure device intended to facilitate the use of noninvasive ventilation, improve pulmonary function, and permit vocalization in the newly decannulated patient. The biosafety and feasibility of the device were evaluated in an animal model. This device was feasible and biosafe in an animal model, but the design and quality of the materials need to be improved before clinical trials.