

In our Editor's Choice paper, Mesquita et al evaluated the effect of nebulizer and Acapella configuration on pulmonary deposition of radio-tagged aerosol in healthy subjects. They found that placing the nebulizer distal to the Acapella, as recommended by the manufacturer, decreased intrapulmonary deposition, compared to placing the nebulizer between the Acapella and the patient airway, or delivering aerosol without the Acapella in the circuit. As Berlinski points out in his editorial, healthcare practitioners need to carefully evaluate the evidence available regarding the efficiency of different devices before considering their use.

Mhanna et al surveyed the use of extubation readiness parameters among pediatric critical care physicians. They found that most pediatric critical care physicians assess extubation readiness by checking air leak and suctioning need. Less often, they consider sedation score or the rapid shallow breathing index. As Cummings and Noviski write in their editorial, individual clinician interpretation and approach tends to override institutional practice. Moreover, no pediatric study has yet to improve upon the standard of when a clinician feels the patient is ready for extubation.

Using an in vitro model, Farney and colleagues evaluated aerosol delivery to the lungs via variable-flow nasal CPAP. Isotope delivery from an aerosol generator placed near the humidifier on variable-flow nasal CPAP was negligible, but delivery was significantly improved by locating the aerosol generator closer to the nasal CPAP interface. As Mazela states, future engineering should aim at decreasing aerosol deposition in the circuit, and future clinical studies should focus on establishing the optimal aerosol particle size and inhaled dose.

Meyer and colleagues evaluated the diagnostic performance and safety of combined blind nasotracheal suctioning and non-bronchoscopic mini-bronchoalveolar lavage (mini-BAL) to obtain respiratory secretion specimens from spontaneously breathing, non-intubated patients with pneumonia in intensive care. They found that non-bronchoscopic mini-BAL is a novel and feasible way to collect bronchial secretions without bronchoscopy. Blind nasotracheal suctioning confirmed via colorimetric capnography allows microbiological diagnosis, and can be enhanced by non-bronchoscopic mini-BAL.

The patterns and kinetics of changes in S_{pO_2} in the 6-min walk test (6MWT) and cycling test have not been addressed in patients with COPD. This provided the rationale for the study by Chuang and colleagues. They found that measurement of start-vs-nadir difference in S_{pO_2} rather than start-vs-end difference in S_{pO_2} during the 6MWT is recommended. Desaturation can be predicted with the oxygen-cost-diagram score, which has more capability to predict peak exercise performance than the 6MWT.

Chronic infection with *Pseudomonas aeruginosa* in patients with cystic fibrosis (CF) is associated with increased morbidity. Dassios et al found that subjects with CF and chronic *Pseudomonas* infection had decreased inspiratory muscle strength. In addition, chronic *Pseudomonas* infection independently impacts respiratory muscle function in patients with CF.

Grossman and colleagues evaluated the association between spirometry values and pulmonary artery systolic

pressure (PASP) in young subjects without lung disease. They found that no spirometric values significantly correlated with PASP. They concluded that lung mechanics probably do not contribute significantly to PASP in this population.

Little is known about the impact of exercise training in patients with chronic respiratory failure due to kyphoscoliosis. Cejudo and colleagues evaluated the effect of an exercise training program on exercise capacity, muscle strength, dyspnea, and quality-of-life indices in subjects with chronic respiratory failure due to kyphoscoliosis. They found that, in patients with chronic respiratory failure due to kyphoscoliosis, exercise training improved exercise capacity, peripheral muscle strength, dyspnea, and quality of life.

The administration of a high F_{IO_2} to patients with COPD may result in hypercapnia due to reversal of preexisting regional hypoxic pulmonary vasoconstriction, resulting in a greater dead space. Savi and colleagues investigated the response of CO_2 -retaining patients with COPD to an F_{IO_2} of 1.0 for 40 min. During noninvasive ventilation with an F_{IO_2} sufficient to maintain a normal P_{aO_2} , a further increase in F_{IO_2} did not increase P_{aCO_2} in these patients.

Tobramycin powder for inhalation (TIP) is a drug-device combination designed to reduce treatment time and improve ease of use, compared with tobramycin inhalation solution (TIS), in patients with cystic fibrosis. Geller et al found that subject satisfaction scores were greater in all subjects with TIP, irrespective of age group. With the exception of cough and dysphonia, the safety profile of TIP was comparable to TIS, irrespective of age.

The diagnosis of tuberculous pleural effusion (TBPE) has some limitations. Valdés and colleagues studied the efficacy of interleukin-27 (IL-27) in the diagnosis of TBPE. Their results point out some limitations in the use of IL-27 in this setting.

Current guidelines for performing the apnea test do not specify the size of insufflation catheter (IC) to use with each endotracheal tube (ETT) size, despite case reports describing procedure-related complications with the use of various IC sizes. Henry and Marshall studied the effect of the ratio of IC outer diameter to ETT inner diameter on the pressure and volume generated within the lungs during the apnea test. They found that an IC with an outer diameter < 70% of the ETT inner diameter, at 6 L/min, may prevent inappropriate lung pressure and volume during the apnea test.

Monteiro evaluated the opinions of family members about family and physician participation in life-sustaining treatment decisions and examined factors that influence those decisions. They found that the majority of the families relied on physicians to help in the decision-making process about life-sustaining treatments in patients with acute-on-chronic respiratory diseases. From the family's point of view, the principle of autonomy can be exercised by delegating the decision-making process to the physician.

The effects of volume-oriented incentive spirometry (VIS) versus flow-oriented incentive spirometry (FIS) on chest wall volumes, inspiratory muscle activity, and thoracoabdominal synchrony in the elderly is not well studied. Lunardi and colleagues found that incentive spirometry performance is influenced by age, and the differences between elderly and healthy adults response should be considered in clinical practice.