

The first Editor's Choice article of 2019 is an evaluation of the combined impact of a silver-coated endotracheal tube (ETT) and a device to clean the ETT inner lumen on bacterial colonization compared to standard ETT suctioning. Pirrone et al studied a small group of mechanically ventilated subjects ($N = 39$) and reported no difference in microbial load or tube colonization, but there was a trend towards a reduction in ETT biofilm. Changes did not reach statistical significance, possibly a reflection of the small sample size. In an accompanying editorial, Rouzé and colleagues discuss the limitations of this small trial and the possible need to combine a host of technologies, perhaps as an airway bundle, to address ventilator-associated pneumonia. This could include continuous cuff pressure control, subglottic suctioning, coated ETTs, and mechanical devices to reduce biofilm. However, this is currently speculative and requires well-designed pragmatic trials to answer these questions.

Itagaki and colleagues describe the impact of high-flow nasal cannula (HFNC) on thoraco-abdominal asynchrony in pediatric subjects following cardiac surgery. Using respiratory inductive plethysmography they evaluated HFNC at two flows (1 and 2 L/kg/min) and standard oxygen via face mask. Their findings demonstrated no difference in P_{aCO_2} but HFNC at 2 L/kg/min was associated with improved thoraco-abdominal synchrony and a reduced breathing frequency. This may be due to a PEEP effect. In an accompanying editorial, Walsh suggests that the definition of high flow in pediatrics requires further clarification and that elucidation of the mechanisms leading to success of HFNC remain to be fully understood.

Schreiber and coworkers describe the impact of physiotherapy on ventilator liberation of subjects requiring prolonged mechanical ventilation. This study of incremental steps of early mobilization over a 15-year period found that subjects able to maintain a sitting position in a chair (Step 2 of 4) were more likely to be weaned. However, age and underlying disease were major determinants of weaning success and the impact of early mobilization on weaning could not be defined. MacIntyre evaluates these findings in light of the current weaning guidelines and highlights the challenges of early mobility in critical care.

Zavorsky et al describe the impact of a marathon or half marathon on post-race spirometry in recreational runners. They found a reduction in FEV_1 post-race, which they hypothesize was caused by exercise-induced bronchospasm.

The use of neuromuscular blockade (NMB) has waxed and waned with the evidence over the last decade. Mouri and coworkers used a propensity-matched analysis to evaluate the impact of NMB in subjects with interstitial pneumonia exacerbations requiring mechanical ventilation. They found that NMB had no impact on mortality.

Sheppard and others evaluated functional tests of leg muscle strength in adult subjects with cystic fibrosis (CF). They measured quadriceps strength along with a number of functional tests to evaluate muscle function. They suggest

that quadriceps muscle strength and the association with clinical outcomes should be studied.

Gómez Punter and colleagues compared oxygen desaturation during 6-min walk test (6MWT) to nocturnal desaturation in subjects with CF. They did not find any relationship between desaturations during the two scenarios. However, they found that impairments in FEV_1 % of predicted and diffusion capacity of carbon monoxide identified an increase in desaturation during the 6MWT.

The incremental shuttle walk test (ISWT) is used to evaluate exercise capacity in patients with cardiorespiratory disease. Labadessa et al report on a cross-sectional observational study of three ISWTs on different days in 34 asthmatic subjects. They found that the ISWT presented good reliability in adult subjects with controlled asthma.

Hangaard and others evaluate the under-diagnosis of COPD from a large national health database. They found that undiagnosed subjects had fewer symptoms and better lung function compared to subjects diagnosed with COPD. This work highlights the importance of spirometry.

Bhatia and coworkers evaluated the use of an exercise-induced bronchoconstriction challenge test in pediatric subjects with exercise-induced dyspnea. In a retrospective review of non-asthmatic subjects, they found that an exercise-induced bronchoconstriction challenge did not provide sufficient data to elucidate the cause of exercise-induced dyspnea. More formal cardiopulmonary exercise testing is required.

Leppänen et al evaluated the impact of body mass index (BMI) on the apnea/hypopnea index (AHI) in subjects with sleep apnea. In a group of over 700 subjects treated with CPAP, the AHI increased with increasing BMI. However, the apnea proportion decreased with increasing BMI. An increase in BMI led to a decrease in the duration of individual apneas, hypopneas, and desaturations while desaturation depth increased in the most severe category. They conclude that these findings should be considered while estimating the severity of disease and risk of related adverse health effects.

Kronborg and colleagues evaluated the accuracy of COPD diagnosis based on pre-bronchodilator FEV_1/FVC . They report that diagnosing COPD based on pre-bronchodilator FEV_1/FVC contributed to the misdiagnosis of COPD. Adjusting the FEV_1/FVC threshold and diagnosing COPD based on a pre-bronchodilator FEV_1/FVC increased diagnostic accuracy.

This month's reviews include a meta-analysis of maximum oxygen uptake and its relationship with mortality in subjects with CF by Vendrusculo et al. Low levels of maximal oxygen uptake were associated with an increased risk of mortality in CF. Yang et al contribute a systematic review of pulmonary rehabilitation on quality of life in COPD subjects. Data from 17 trials demonstrated improved quality of life related to fatigue and dyspnea, but not emotional state.