This month's Editor's Choice reviews the importance of humidification during mechanical ventilation in patients with COVID-19. Lavoie-Berard and colleagues compared physiologic variables and adverse outcomes in subjects with COVID-19 using heated humidifiers (HH) with heated wire circuits versus heat and moisture exchangers (HME). In a small sample of subjects, the HME subjects had higher arterial CO_2 despite higher minute ventilation. Surprisingly, 3 of 14 HH subjects experienced endotracheal tube occlusion. They found that alteration of care sites for infection control during COVID surges increased ambient temperatures, impacting HH efficiency. Following alterations to the maximum heater plate temperature, no further occlusions were seen. Branson provides an accompanying editorial reviewing the performance of humidification devices, the mechanical factors impacting ventilation, and unique issues with COVID-19. He describes how our well-intended responses to COVID-19 can have unexpected consequences.

Vines et al studied a tool to predict post-operative pulmonary complications (PPCs) and guide allocation of respiratory care procedures. The authors performed a retrospective review of non-intubated subjects in the surgical intensive care unit over a 7-month time frame. They created the RAAT (Respiratory Assessment and Allocation of Therapy) tool. The RAAT tool includes the presence of respiratory distress, chest radiograph findings, oxygen requirements, cough, breath sounds, and slow vital capacity. Each variable can be scored from 0–10 in increments of 5. An initial or second score of ≥10 was associated with the need for positive pressure ventilation (PPV). They concluded that the RAAT scoring tool was associated with the need for PPV using modifiable factors, and appeared to provide a quantitative method of determining if allocated respiratory therapy was effective. Stoller opines that determining respiratory care allocation – the right care, to the right patient, at the right time – is the holy grail of respiratory care. He reviews his long experience with respiratory care protocols and emphasizes the principles of protocol development and implementation.

Tawfik and others compared equations for determining power delivery during mechanical ventilation. In this bench study, they found that simplified estimates using airway pressure measurements that are routinely recorded were good estimates of power. Importantly, these measurements must be made during passive ventilation. Their results suggest that power could be measured and tracked within the ventilator without additional maneuvers or measures. Damiani provides commentary describing the importance of power or energy transformation on the development of ventilator-induced lung injury and patient outcomes.

Thind et al evaluated esophageal pressure (P_{es}) measurements in obese and non-obese subjects from an existing data set. They found that the average end-expiratory P_{es} was higher in the obese group by 2 cm H_2O. They compared PEEP settings in the obese group to the tables from the EP-Vent-2 trial of P_{es}-guided PEEP titration. The empirically derived PEEP setting was significantly lower than that suggested by the tables to maintain a positive end-expiratory P_{es}. They concluded that setting PEEP in obese patients should be guided by P_{es} measurements.

Rose and colleagues performed a retrospective analysis of subjects using mechanical insufflation-insufflation (MI-E) at home. They compared healthcare utilization before and after MI-E implementation. Following MI-E use, subjects required fewer hospital days, although there were no differences in emergency room visits or hospital admissions. Use of MI-E was associated with reduced acute care costs but increased homecare costs.

Gianni et al described the use of high dose inhaled nitric oxide (INO) delivered using compressed cylinders and an electric generator from air. INO was delivered at 160 ppm to health care providers 15 min daily, twice a day, over 14 days. INO potentially has powerful antiviral effects and the authors hypothesized that INO exposure might reduce the risk of SARS-CoV-2 infection. Twelve healthcare workers received 185 doses of INO with both delivery methods and demonstrated similar impact on methemoglobin, oxygen saturation, and heart rate. The authors concluded that both methods were safe for high dose delivery of INO. The introduction of vaccines truncated the trial before the intended outcome was achieved.

Bellon and colleagues performed a retrospective case-control study of tracheostomy decannulation in subjects with chronic disorders of consciousness. They found that improvements in level of consciousness as measured by the revised coma recovery score increased the chance of successful decannulation. However, they noted that some subjects in a persistent vegetative state could be successfully decannulated. Failure to improve consciousness and continued tracheostomy requirement were associated with mortality.

Crimi and coworkers provide a narrative review on high-flow nasal cannula (HFNC) use in subjects with COVID-19. This review covers the rationale, benefits, and risks of HFNC use. Clearly, the concerns of HFNC creating fugitive aerosols have been put to rest according to the authors. HFNC remains a first line treatment for moderate hypoxemia in COVID-19.

Saha et al provide a systematic review of the use of bronchoscopy in COVID-19. They found that bronchoscopy often results in a significant change in patient management and the transmission of SARS-CoV-2 appears to be low with consistent use of appropriate personal protective equipment.

Lipnick and coauthors provide a special article on the impact of skin color on pulse oximetry accuracy, a topic of recent intense discussion in the lay press. The authors describe this well-known phenomenon and discuss correction of this issue as part of a system to reduce racial inequities.

Blakeman and others provide AARC Clinical Practice Guidelines on suctioning the artificial airway. This is an update to a previous guideline using the new RAND/UCLA appropriateness method. This guideline covers neonates to adults.