This month's Editor's Choice is a retrospective study of high frequency jet ventilation (HFJV) used as rescue therapy in premature infants with respiratory failure. Wheeler and colleagues describe the outcomes of 53 subjects treated with HFJV over a 4-year timeframe. They report that an oxygen saturation index > 5.5 after 4 h of HFJV, female sex, and closed ductus arteriosus were independent predictors of mortality. Miller and Bartle provide an accompanying editorial lamenting the lack of large randomized trials of HFJV in infants as have been done for high frequency oscillation. Fifty years since the advent of high frequency ventilation the activity surrounding HFJV has often created more noise than light.

Ranallo et al performed a bench evaluation of inhaled nitric oxide (INO) delivery device function and ventilator performance in an infant simulation. The INO device added a small amount of INO during gas delivery and removed gas from the circuit at 230 mL/min for sampling. The authors report that the sampling system led to errors in tidal volume (V_T) reported by the ventilator, which might be misleading to clinical staff. Betit and others opine that respiratory therapists should understand the function of INO delivery devices and ventilators, as well as the interplay between the two, to assure patient safety.

Morris and others describe a quality improvement initiative to reduce unplanned extubations (UE) in the neonatal ICU. A primary objective was to reduce endotracheal tube (ETT) tips positioned below the first thoracic vertebrae on chest radiograph. Combined with a UE bundle addressing ETT securement and assessment, correct ETT position resulted in a 14% reduction in UE. Lauderbaugh and Sutherland comment comparing the rate of UE to previous trials and stated patient safety goals.

Liu et al evaluated a single-use flexible bronchoscope using a survey of operators following a procedure. Operators determined that maneuverability between reusable and disposable scopes was similar. Disposable scopes have the advantage of reducing cross-contamination.

Inukai and coworkers evaluated the incidence of postoperative pulmonary complications (PPC) in subjects with an open abdomen following surgical intervention. They found traditional pre-operative risk factors of PPC remained, but that the postoperative fluid balance was the primary driver of PPC. A positive fluid balance of 3 L was associated with PPC.

Marques et al evaluated the impact of positioning on cough peak flow (CPF) and electromyographic activation in subjects with Duchenne muscular dystrophy (DMD) and a group of normal volunteers. They found that DMD subjects demonstrated a reduction in CPF with changes in posture as well as the relative contribution of the ribcage and abdominal compartments to tidal volume. However, posture did not impact electromyographic activation.

Mortensen and others conducted a retrospective study using routinely collected clinical data to develop a prognostic model for time to decannulation in subjects with brain injury. The prognostic model for decannulation included age, diagnosis, days from injury until admission for rehabilitation, swallowing ability and overall functional level as measured with the Early Functional Abilities score. The strongest predictors of decannulation were age and a combination of overall functional abilities and swallowing ability.

Wu et al describe the development of quality assistance (QA) and quality control (QC) guidelines for respiratory oscillometry studies. They compared the QA/QC audits after an initial training of operators and following development of a checklist and additional training. Following implementation of the checklist, the number of oscillometry tests considered unacceptable based on a high coefficient of variation was reduced from 5% to < 1%. They conclude that a standing operating procedure, a training program, a QA/QC checklist, and regular audits improved the quality of oscillometry studies.

Savani and coworkers evaluated long-term oxygen therapy in a group of veterans with COPD and resting hypoxemia. A retrospective audit of a Veterans Administration healthcare facility including nearly 500 subjects found that two-thirds of subjects were prescribed continuous flow oxygen for resting hypoxemia, while 10% had nocturnal use prescriptions, and 6% received oxygen for exertional desaturation. In this cohort, 99% of subjects met Medicare criteria for home oxygen therapy. They also reported that re-evaluating subjects at a 3-month follow up identified subjects no longer requiring oxygen.

Strickland and colleagues report on the results of a survey of 1,400 physicians from 6 subspecialities regarding the need for a non-physician advance practice provider (NPAPP) to offset physician shortages in pulmonary/critical care. Three-quarters of physicians agreed or strongly agreed that an NPAPP could be important to improve the cardiopulmonary care of patients. Most felt the NPAPP could improve productivity, patient outcomes, and patient experience. An advanced practice respiratory therapist would meet this need.

Boussaïd et al performed a cross-sectional prospective survey of 190 subjects with DMD on mechanical ventilation and quality of life. Subjects using noninvasive ventilation (NIV) reported better sleep quality but more ineffective cough than invasively ventilated subjects. The authors conclude that NIV and invasive mechanical ventilation did not affect DMD subjects' perceptions of their quality of life, apart from more insomnia related to caregiving.

Gehlbach and colleagues performed a prospective observational cohort study of mechanically ventilated pediatric subjects over a 12-month period. They evaluated the utility of deadspace to tidal volume ratio (V_D/V_T) measures in predicting the need for escalation of care following extubation. In 189 subjects, of whom 166 were successfully extubated, there was no relationship between V_D/V_T and extubation success, but V_D/V_T was associated with the level of respiratory support provided on extubation.

Wang and others provide a systematic review of high-flow nasal cannula (HFNC) versus conventional oxygen therapy following cardiothoracic surgery. They suggest that HFNC might reduce the need for an escalation in respiratory support and the re-intubation rate, and possibly reduce ICU length of stay. Bhattarai and colleagues provide a systematic review of the barriers to and the strategies for improving medication adherence in subjects with COPD. They conclude that adherence to medications was low, with the majority of studies identifying the presence of depression and concern about adverse effects as barriers to adherence.

Mirabella et al present a narrative review on patient-ventilator asynchrony identification and resolution. Chiang and others discuss controversies in tracheostomy for subjects with COVID-19. Divo and colleagues also provide a review of the transition from tracheostomy to spontaneous breathing in COVID-19.