

This month's Editor's Choice describes implementation of a respiratory therapist (RT)-driven protocol for spirometry and asthma education in a pediatric outpatient primary care setting. Long and colleagues performed a quality improvement study aimed at increasing the frequency of spirometry testing and patient education. Subjects with asthma underwent spirometry and asthma education every 6 to 12 months, depending on severity of symptoms. Following protocol implementation, there was a nearly 50% increase in spirometry and education along with improved physician-RT communication. They concluded that the protocol was successful and demonstrated the vital role of RTs in asthma management. Baker provides an accompanying editorial. She concurs with the authors findings suggesting that future studies should evaluate healthcare utilization, length of visits, reimbursement, adherence to the care plan, and customer satisfaction.

Luo et al describe a retrospective review of patient-ventilator asynchrony in patients with acute brain injury. They focused specifically on ineffective efforts identified by investigators from 15-min tracings and also recorded $P_{0.1}$. They evaluated 852 datasets from 71 subjects ventilated for at least 3 days. Ineffective efforts were identified in 80% of datasets and an asynchrony index $> 10\%$ was seen in 30% of subjects. They found a relationship between low respiratory drive denoted as a $P_{0.1} < 1.1$ cm H_2O and greater ineffective effort. Kriner provides accompanying commentary reviewing the findings in head-injured patients that includes both ineffective efforts in this study and auto-triggering often seen in patients suffering brain death, which impacts organ donation.

McPeck, Moon, and coauthors contribute two papers on aerosol therapy during high-flow nasal cannula (HFNC). The first describes a model system validated by real-time gamma ratemeter technique using ^{99m}Tc . They found the major source of aerosol loss was at the nasal interface. They concluded that real-time analysis quantified effects of changes in nebulizer technology, infusion rate, gas flow, and ventilation during a given experiment. The second paper compared breath-enhanced jet nebulizers (BEJN) with vibrating mesh nebulizers (VMN) using methods described in the first. They found that increasing gas flow increased BEJN output and that at 60 L/min, BEJN delivered up to 5 times more aerosol compared to conventional VMN. Berlinski considers both papers in an accompanying editorial. He discusses the issues associated with multiple labs using varying models to test aerosol delivery devices, each leading to potentially different results. He also notes that the BEJN appears to offer customization without having to change the concentration of the solution. Finally, he urges evaluations of new technologies to consider costs.

Charlton and others completed a survey of RTs, speech-language pathologists (SLPs), physicians, advanced practice providers, and registered dietitians regarding feeding practices during HFNC. This international survey inquired about current practice and opinions regarding feeding. They found that few facilities had protocols to guide practice and that SLPs were more likely to suggest bedside swallowing exams before allowing oral intake.

Al Mukhaini et al report a retrospective review of the use of noninvasive respiratory support (NRS) in 299 children over a 19-month timeframe outside of the ICU in high dependency units. They found that 78% of subjects were effectively managed with CPAP or noninvasive ventilation. Failure of NRS was associated with elevated F_{IO_2} (> 0.50) and PEEP (> 7 cm H_2O). They concluded that NRS outside the ICU was safe and effective.

Becker and colleagues evaluated biologic quality control (BioQC) data from a completed multi-center inhaled medication trial to determine expected values for D_{LCO} BioQC using coefficient of variation (CV) and whether the mean ± 2 SD control rule provides the same precision as mean $\pm 12\%$ difference from the mean. They evaluated data from 168 subjects in the first year, with fewer subjects in years 2 and 3. They found that a D_{LCO} BioQC CV $\leq 6\%$ was achievable across multiple sites, technologists, and brands of equipment. They concluded that a control rule of mean ± 2 SD yielded similar results as the mean $\pm 12\%$ difference.

Shah et al contribute a short report evaluating aerosol production in children performing spirometry and found little ambient contamination. Stilma and others provide a short report on the quality of mucus in mechanically ventilated subjects in the ICU. They found no correlation between the clinical mucus classification and the biophysical properties of mucus as measured via rheology.

Zheng provides a narrative review on evaluating respiratory mechanics in assessment of lung recruitment. Aggarwal and others provide a systematic review of the impact of fingernail polish on the accuracy of pulse oximetry measurements. Mireles-Cabodevila and colleagues provide a primer on the use and interpretation of esophageal pressure measurements as part of the New Horizons Symposium.

This month includes a selection of papers from our symposium *Research and Publication in Respiratory Care*. These papers include how to conduct a systematic review and meta-analysis by Zaccagnini and Li, an overview of survey research by Goodfellow, and submitting a manuscript to a scientific journal by our Assistant Editor, Sara Moore.