

Early mobilization of critically ill patients has recently received increasing academic and clinical attention. It is thus timely that we report the paper by Bourdin et al describing their experience in early rehabilitation of critically ill patients. They report that early rehabilitation is feasible and safe in patients in the intensive care unit for longer than 1 week. The chair-sitting intervention was the most frequently used and was associated with a nonsignificant oxygenation improvement. As Hopkins points out in her editorial, critical care providers often think that patients are too sick to tolerate vigorous activity early in their illness. Although ambulation of these patients is difficult and potentially dangerous, accumulating evidence suggests that it is feasible and safe.

Another topic receiving much attention in respiratory care practice is the use of high-flow oxygen therapy. Roca et al compared comfort with a high-flow nasal cannula to that of a conventional face mask in 20 patients with acute respiratory failure. They report that a high-flow nasal cannula, compared to a face mask, was better tolerated, more comfortable, and associated with better oxygenation and lower respiratory rate. As Anderson points out in his editorial, oxygen therapy devices do little good if patients will not wear them. Beyond comfort, it is important for future studies to evaluate the mechanisms of potential benefit for a high flow nasal cannula.

There is increased risk of central and obstructive apnea after anesthesia. However, the vast majority of patients with OSA are undiagnosed preoperatively. Ramachandran et al developed a system that identifies patients with suspected or documented OSA and automatically alerts a respiratory therapist. The authors report that this program helps prevent sudden-onset acute respiratory compromise in postoperative patients with OSA or at risk of OSA. This relatively simple program could be implemented in other hospitals to improve the post-operative care of patients with OSA.

Delivery of bronchodilators to infants and small children from a pressurized metered-dose inhaler with valved holding chamber is limited by airway narrowness, short respiratory cycle time, and small tidal volume. DiBlasi et al describe a versatile valved holding chamber for delivering inhaled medications to neonates and small children. In a bench study, they evaluated this device during mechanical ventilation via endotracheal tube, manual resuscitation via an endotracheal tube, and spontaneous breathing by face mask. Although these data suggest that delivery of pressurized metered dose inhaler to pre-term and term neonates and small children with obstructive lung disease is possible, the results need to be clinically validated.

Everhart et al validated the Asthma Quality of Life Questionnaire with assessments of symptoms and functional limitations in 91 patients during their normal daily lives. In this ecological momentary assessment, they found that the Asthma Quality of Life Questionnaire was a valid tool for assessing asthma symptoms and functional limitations. It correctly predicted asthma symptoms, mood, sleep-interference, and activity restrictions in asthma patients' daily lives over a 1-week interval.

In recent years, portable oxygen concentrators have become commercially available. Chatburn and Williams evaluated performance of 4 of these devices. At the maximum settings, with all 4 devices, F_{IO_2} decreased as respiratory rate increased. The F_{IO_2} range was about 0.29 to 0.31 at 15 breaths/min and about 0.23 to 0.25 at 30 breaths/min. The 4 devices evaluated have markedly different performance, which emphasizes the need to adjust the setting on the device to meet the specific patient's needs at rest and with activity.

Baldwin et al developed a systematic method of cleaning and calibration-checking for the pneumotachometer tube of the SpiroPro portable spirometer that maximized spirometry accuracy in a population-based study in a remote area of Nepal. They found that the pneumotachometer tube can be cleaned and reused 5 to 9 times before it becomes inaccurate. However, rigorous rinsing in distilled water and repeated calibration checks, at various flows up to 12 L/s, are required for precise and accurate spirometry with the SpiroPro. Reusing the SpiroPro pneumotachometer in a remote setting may impose measurement bias, and thus single use of pneumotachometers will provide better data.

Textbooks provide estimates for the fraction of inspired oxygen (F_{IO_2}) for different oxygen delivery systems, but variations in inspiratory flow and tidal volume make precise measurement difficult. Markovitz et al developed a reliable method of measuring the effective F_{IO_2} in patients receiving supplemental oxygen. Effective F_{IO_2} was derived from plots of the fractional concentrations of $\dot{C}O_2$ versus O_2 . They report that exhaled gas sampled at the mouth accurately reflected the F_{IO_2} in the trachea. Interestingly, the effective F_{IO_2} was lower than what is conventionally thought. Compared to a nasal cannula, the transtracheal catheter approximately doubled the effective F_{IO_2} at a given flow rate.

Pelosi et al performed an in vitro evaluation of an active heat-and-moisture exchanger, the Hygrovent Gold. This is a hybrid device, meaning that it adds heat and water. They tested this device, with and without its supplemental heat and moisture options activated, and compared it to 2 other commercially available heat-and-moisture exchangers. They found that the passive Hygrovent Gold provided adequate heat and moisture during normothermia, but when used as an active device provided the highest humidity in both normothermia and hypothermia.

Recent guidelines concerning prevention of ventilator-associated pneumonia recommend that ventilator circuits should not be changed routinely, but in practice clinicians persist in making circuit changes at regular intervals. Han and Liu conducted a systematic review and meta-analysis on the effect of ventilator circuit changes on ventilator-associated pneumonia. There was a trend of reduced risk of pneumonia as circuit-change intervals were extended. In fact, frequent ventilator circuit changes are associated with a high risk of ventilator-associated pneumonia. As the authors correctly conclude, no routine circuit change is safe and justified. Hospital infection-control policies and bedside practitioners should translate this evidence into clinical practice.

In this month's case report, Rice et al describe a case of transudative chylothorax associated with sclerosing mesenteritis. The Teaching Case of the Month, by Salerno, describes a case of sarcoidosis pleural effusion.