

# Editor's Commentary

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This month we publish 3 editorials, 6 original research papers, a review, and 2 teaching cases. We also publish several letters and book reviews. This month's issue illustrates that the Journal has become increasingly international in scope, with papers from 7 countries. There are papers related to acute care, long-term care, chronic obstructive pulmonary disease, cystic fibrosis, post-surgical care, invasive mechanical ventilation, and noninvasive mechanical ventilation.

Those of us who care for mechanically ventilated patients should be interested in the study by Raurich et al, in which they determined whether a decreased response to hypercapnia was associated with failure to successfully complete a spontaneous breathing trial. Patients who failed a spontaneous breathing trial or extubation had less response to hypercapnia than those who successfully completed a spontaneous breathing trial and did not need re-intubation. However, the hypercapnia test was not useful in predicting success of a spontaneous breathing trial or extubation success. As pointed out in an accompanying editorial by Sassoon, patients who fail to wean from mechanical ventilation often have respiratory muscle weakness and impaired respiratory mechanics rather than a depressed respiratory drive. The study by Raurich et al does not support the use of CO<sub>2</sub> challenge to predict weaning success.

Performing spirometry well requires careful attention to technique, which is supported by the spirometry guidelines and recommendations of societies such as the American Thoracic Society and European Respiratory Society. Pérez-Padilla et al report the results of a centralized spirometry quality-control program developed for a population-based survey in 5 cities in Central and South America. Using the same handheld spirometer at all sites, using centralized training, and providing feedback from a quality control center resulted in good quality at low cost. As Stoller points out in an accompanying editorial, this study offers important reminders for investigators, respiratory therapists, and supervisors of pulmonary function laboratories.

After open-heart surgery, especially in the early postoperative period, cough function may be impaired by difficulty in performing deep breathing, reduced intrathoracic pressure generation, or thoracic pain. In this patient population, Fiore et al evaluated the effect of thoracic support on cough peak expiratory flow, cough expiratory volume, and incision pain during cough in the early period after open heart surgery. They found that maximal inspiration increased objective measures of cough, but the method used for thoracic support did not reduce pain during cough or influence the cough values measured. As pointed out in the editorial by Sobush, this paper adds support to the axiom that a cough is only as effective as the deep breath preceding it.

Patients with cystic fibrosis can become chronically colonized by many organisms, of which aspergillus can be particularly troublesome. When it acts as an allergen, as-

pergillus can induce a hypersensitivity reaction in the lung, leading to allergic bronchopulmonary aspergillosis, or ABPA. Chotirmall et al determined the rate of aspergillus colonization and ABPA in a population of Irish patients with cystic fibrosis. The authors report that aspergillus-positive sputum is not a poor prognostic sign in terms of lung function, but ABPA produces short-term reversible declines in lung function and responds to treatment. A low threshold for the diagnosis of ABPA should be maintained in any patient with CF who does not improve with antibiotics.

The paper by Johnson et al evaluated the use of noninvasive measures of CO<sub>2</sub> during ventilator weaning and during bronchoscopies on ventilated patients in a specialized weaning unit. They found that transcutaneous P<sub>CO<sub>2</sub></sub> more closely matches arterial CO<sub>2</sub> than does end-tidal P<sub>CO<sub>2</sub></sub>. They suggest that monitoring transcutaneous P<sub>CO<sub>2</sub></sub> is useful in ventilated patients to assess and manage patients undergoing spontaneous breathing trials, during the first night off the ventilator, and during bronchoscopy. While these results are interesting, whether the use of transcutaneous P<sub>CO<sub>2</sub></sub> improves patient safety is unknown. Also unknown is whether similar results would be found in patients weaning from mechanical ventilation in the acute care setting. It is of interest to note that one of the last physiologic parameters to be affected during a failed spontaneous breathing trial is arterial P<sub>CO<sub>2</sub></sub>, suggesting that parameters other than blood gases, such as breathing pattern changes, might better indicate a failed spontaneous breathing trial.

Long-term oxygen therapy is a well-established therapy that can improve survival in patients with COPD. It is also well known that COPD has a high impact on health-related quality of life. Tsara et al report that quality of life in patients with COPD on long-term oxygen therapy is low and is influenced by dyspnea, mental status, and incapacity, rather than by physiological variables. They recommend a therapeutic approach that targets symptom-control and support of activities of daily living to improve the patients' overall quality of life. This paper should stimulate clinicians caring for patients with COPD to be more attentive to the quality of life of their patients.

The use of noninvasive ventilation has increased tremendously in recent years. The review by Scala and Naldi provides a detailed overview of ventilators used for noninvasive ventilation. This review should be of particular interest to respiratory therapists and others responsible for the selection of a ventilator for noninvasive ventilation and for the initiation of this therapy.

We also publish two teaching cases. The case by Baernstein et al discusses the common and uncommon causes of bluish appearance and suggests a diagnostic approach to such patients. The case by Haynes describes how manipulation of rise time and breath-termination criteria facilitates better patient-ventilator synchrony in a sleeping patient receiving pressure support ventilation.