

In this issue of RESPIRATORY CARE, we publish the second group of papers from the Journal Conference, Noninvasive Ventilation in Acute Care: Controversies and Emerging Concepts.

Acute cardiogenic pulmonary edema (ACPE) is a common cause of acute respiratory failure (ARF). Mehta and colleagues discuss the evidence supporting the use of noninvasive ventilation (NIV) in this setting. Both continuous positive airway pressure (CPAP) and NIV have been used in patients with ACPE, and both of these therapies improve vital signs, physiologic variables, and reduce the need for endotracheal intubation. Interestingly, the available evidence shows that NIV does not offer any advantages regarding intubation rate or mortality when compared with CPAP. However, there is also no risk of harm for NIV compared with CPAP in patients with ACPE. Because the same equipment is typically used for CPAP and NIV, the choice between these techniques is usually based on clinician preference and patient response.

Another area of interest in the use of NIV is to shorten the duration of invasive mechanical ventilation. As reviewed by Epstein, randomized controlled trials indicate that NIV may be an effective weaning tool in a subset of patients with acute-on-chronic respiratory failure from chronic obstructive pulmonary disease (COPD). For this application, patients are extubated directly to NIV. NIV may also be useful in patients at high risk for extubation failure. Here again, patients are extubated directly to NIV. However, the evidence of effectiveness of NIV to treat established post-extubation respiratory failure is unclear. In the setting of established post-extubation respiratory failure, NIV should probably be considered only for patients with COPD.

In addition to established uses such as an exacerbation of COPD and ACPE, there are also several novel uses of NIV. Benditt describes the use of CPAP and NIV for postoperative hypoxemia, preventing intubation in high-risk bronchoscopy, respiratory failure in pandemics, obesity hypoventilation syndrome, and respiratory support during percutaneous endoscopic gastrostomy tube placement.

An area of much controversy is the use of NIV in the patient with advanced directives of “Do-Not-

Intubate.” As pointed out by Kacmarek, the most critical issue regarding NIV in these patients is informed consent. If informed consent and control of care decisions are assured, then NIV can be appropriate in patients who are do-not-intubate and comfort-measures-only. In this setting, NIV is used to reverse ARF that is not necessarily life-terminating, or to improve patient comfort, or to delay death for reasons such as to transfer the patient from the hospital to home or to give distant family members time to reach the patient's bedside).

NIV is underutilized, despite robust evidence supporting its use in appropriately selected patients with ARF. Hess addresses the issue of how to initiate an NIV program. There are a number of barriers to the use of NIV that must be overcome in order for the program to be successful. This paper offers a number of pragmatic suggestions to implement a successful NIV program in any acute-care setting.

Gay addresses the issue of complications of NIV. Although the use of NIV for ARF has become widespread, there are nonetheless potential complications of this therapy. One complication that is *avoided* with the use of NIV is the risk of nosocomial pneumonia. Most complications, such as facial injury due to the mask, are minor although others such as aspiration and hemodynamic compromise can be more serious. Evidence shows that, if NIV is inappropriately applied for too long, the consequences may lead to death, presumably due to excessive delay until intubation. Sedation is probably underutilized during NIV. Although not a clinical complication, there may be less reimbursement for NIV than for invasive mechanical ventilation.

The conference summary by Kallet ties together each of the presentations from this conference. NIV clearly improves outcomes for patients with COPD exacerbation and ACPE when instituted as a first-line therapy. Although the evidence is less persuasive, initial intervention with NIV might also benefit a carefully selected subset of patients with acute lung injury, as well as those who are immunocompromised with ARF. The papers from this Journal Conference provide an informative guide for clinicians attempting to implement NIV in their institutions.