Communications for this section will be published as space and priorities permit. The comments should not exceed 350 words in length, with a maximum of five references; one figure or table can be printed. Exceptions may occur under particular circumstances. Contributions may include comments on articles published in this periodical, or they may be reports of unique educational character. Please include a cover letter with a complete list of authors (including full first and last names and highest degree), corresponding author's address, phone number, fax number, and email address (if applicable). An electronic version of the communication should be included on a 3.5-inch diskette. Specific permission to publish should be cited in the cover letter or appended as a postscript. CHEST reserves the right to edit letters for length and clarity.

Cost-effective Strategies Following Extubation of Trauma Patients

To the Editor:

I enjoyed reading the recent article by Munshi et al (October 1999) regarding cost-effective clinical practice strategies for critically ill trauma patients following extubation. I have several questions for the authors.

First, is the difference in cost between noninvasive positive airway pressure (NPPV) without supplemental oxygen vs low-flow supplemental oxygen less important than a comparison of the two strategies? Second, why does supplemental oxygen in your hospital cost $4.37/h, when Medicare will pay an oxygen company (in Florida) approximately $200/mo (ie, about 26 cents/h, in a 31-day month) to supply a patient with continuous home oxygen? Third, when a trauma patient on NPPV needs to travel (for example, for an abdominal CT scan), is the technology available to supply portable NPPV, or is the patient either intubated and placed on mechanical ventilation for the trip, or temporarily converted to low-flow supplemental oxygen? Was that cost factored in? The "Materials and Methods" section mentions that the protocol was applied "in a normally eucapnic patient." Why were hypercapnic patients excluded from NPPV, which would appear to be a physiologically ideal therapy for hypercapnic patients?

I believe a better study would have incorporated a control (ie, oxygen) group, because cost needs to be assessed both in terms of daily cost and in terms of duration of therapy. It may not be true that both groups would require therapy for the same time. I would like to see a prospective randomized study comparing NPPV without supplemental oxygen, against low-flow supplemental oxygen, in extubated critically ill trauma patients, in terms of patient comfort, complications, outcome, and cost.

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References


To the Editor:

We are pleased to respond to the commentaries of Dr. Lipson. We agree that a comparison of the two strategies is more important than the cost difference. As mentioned in the introduction, we chose to examine the necessity of routine postextubation oxygen supplementation. Routine postextubation supplemental oxygen use is an unnecessary expense that may contribute to absorption atelectasis and may mask progressive postoperative atelectasis, a problem that is better managed with the early use of noninvasive positive airway pressure (NPPV), thus optimizing functional residual capacity and, therefore, avoiding reintubation. A comparison of the Medicare payment for the cost of oxygen at home vs that in the hospital is not valid. Oxygen supplied to a person at home includes the oxygen cylinder ($7) and an oxygen concentrator ($39/mo), and does not include overhead expenses, at this time. The cost of oxygen in the hospital is calculated differently; not only does the cost include the cost of oxygen per hour, but includes overhead, oxygen rounds, flow regulators, and infrastructure depreciation (multiplied by a factor of three) to obtain the patient charge. Subsequently, a cost-to-charge ratio, determined by the hospital, is used to calculate the cost of oxygen per hour.

At this time, we do not have the technology to supply portable NPPV. The patient is not intubated and placed on mechanical ventilation for trips outside the ICU. Patients who need to go for an abdominal CT scan or other procedures are supported with a self-inflating bag/mask combination, or breathe spontaneously with supplemental oxygen, if indicated (pulse oximetric saturation < 90%). We agree that NPPV is an effective first-line therapy in patients with acute respiratory insufficiency due to hypercapnia and hypercarbia. It is useful as well in the management of acute hypoxemic and postextubation respiratory insufficiency. We chose to limit our patient population to those patients with acute postextubation respiratory insufficiency due to hypoxemia and normocarbia, which is often treated by clinicians with supplemental oxygen rather than NPPV. We don’t see patients admitted for exacerbations of chronic hypercarbia, who would be treated with mechanical ventilation. Finally, we agree with Dr. Lipson that a prospective randomized study is needed, comparing NPPV without supplemental oxygen, against low-flow supplemental oxygen, in extubated critically ill trauma patients, in terms of patient comfort, complications, outcome, and cost.

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