

## Poster Presentations

### THE USE OF INTERMITTENT POSITIVE PRESSURE BREATHING IN ADULTS: A REVIEW OF THE EVIDENCE

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**Background** Intermittent positive pressure breathing (IPPB) is routinely used to provide short-term or intermittent mechanical ventilation for the purpose of augmenting lung expansion, preventing postoperative pulmonary complications (PPC), delivering aerosol medications, or assisting ventilation in patients with respiratory muscle weakness. The purpose of this review was to analyze the evidence supporting its use in the prophylaxis or treatment of numerous conditions for which IPPB is commonly prescribed.

**Methods.** Medline, CINAHL, HealthSTAR, Current Contents, and the Cochrane Database of Systematic Reviews databases were searched from their inception until February 2,002. Articles were limited to human studies in English, either randomized trials or systematic reviews that reported outcome measures. Reported outcomes included chest radiographs, physical examination, tests of lung function, response to bronchodilators, incidence of respiratory insufficiency, length of hospitalization and mortality.

**Results:** No systematic review was found. Twenty-one Randomized Controlled Trials (RCTs) were suitable or available for review. Seven studies evaluated the role of IPPB in the prevention and/or management of PPC after upper abdominal surgery. When compared to no treatment, IPPB was not better. Overall, IPPB was not better than or, at best, it was as effective as incentive spirometry (IS), deep breathing exercises (DBEx), or chest physiotherapy (CPTx). Similarly, IPPB failed to improve pulmonary dysfunction or gas exchange after open heart surgery and was not better than IS or blow bottles in the prevention of PPCs after coronary bypass surgery.

IPPB did not accelerate the recovery of patients who were being treated for pneumonia.

In patients with asthma, the clinical response to inhaled bronchodilators via IPPB was superior to those administered intravenously. However, IPPB was not superior to nebulized bronchodilators.

In patients with chronic bronchitis, the efficacy of inhaled bronchodilators was superior when IPPB was used. However, IPPB failed to prevent the progression to respiratory failure. Similarly, in patients with COPD, the administration of bronchodilators via MDI-IPPB improved FEV1. However, the route of delivery was not superior to use MDIs via a spacer or non-invasive mechanical ventilation.

In patients with severe scoliosis, IPPB improved lung volumes and respiratory muscle performance for up to 9 months, but it did not improve gas exchange.

**Conclusions:** The current available evidence does not support the routine use of IPPB during the perioperative period to decrease the incidence of postoperative pulmonary complications. Similarly, the routine use of IPPB to deliver aerosol medications for the management of acute bronchospasm is not supported by the current literature. Finally, although IPPB has been used to deliver aerosol medications to patients with respiratory muscle weakness, or at risk of respiratory failure because of decreased respiratory function secondary to kyphoscoliosis or neuromuscular disorders, the evidence supporting its usefulness in these clinical settings is lacking.

The role of IPPB for the management of atelectasis that have not improved with simpler therapies, or for the management of acute severe bronchospasm or exacerbated COPD that has failed to respond to other therapies needs to be evaluated.