

PublisherInfo		
PublisherName	:	BioMed Central
PublisherLocation	:	London
PublisherImprintName	:	BioMed Central

## Effects of noninvasive positive pressure ventilation

ArticleInfo		
ArticleID	:	4253
ArticleDOI	:	10.1186/ccf-2000-4372
ArticleCitationID	:	4372
ArticleSequenceNumber	:	41
ArticleCategory	:	Paper Report
ArticleFirstPage	:	1
ArticleLastPage	:	3
ArticleHistory	:	RegistrationDate : 2000-2-10 OnlineDate : 2000-2-10
ArticleCopyright	:	Current Science Ltd2000
ArticleGrants	:	
ArticleContext	:	1305433

## Keywords

Noninvasive mechanical ventilation, respiratory failure

---

## Comments

This interesting study provides objective evidence to support the clinical observation that patients improve with noninvasive positive pressure ventilation (NPPV) if they have developed respiratory failure after extubation. However, the limitations mentioned in the discussion mean that the results should be cautiously applied to other groups of patients. Nevertheless, I agree with the authors that controlled clinical trials to investigate the role of NPPV in early extubation are warranted.

## Introduction

Early discontinuation of mechanical ventilation may reduce the incidence of nosocomial pneumonia and therefore be beneficial. There is an increasing body of literature supporting the use of NPPV in patients with chronic obstructive pulmonary disease and respiratory failure caused by other diseases.

## Aims

To examine the effect of NPPV on pulmonary gas exchange, breathing pattern, intrapulmonary shunt fraction, oxygen consumption, resting energy expenditure and weaning success.

## Methods

Patients who had been ventilated were included if they met clearly defined criteria. Further criteria for weaning eligibility (eg frequency / tidal volume ( $F/VT \leq 190$  breaths per minute) were applied before patients were extubated. Fifteen patients who then developed persistent respiratory insufficiency (again well defined) entered the full protocol. Patients were their own controls and were treated with

continuous positive airway pressure (CPAP) for 30 min followed by pressure support ventilation (15 cm H<sub>2</sub>O) for 30 min. If study values proved beneficial, pressure support ventilation (PSV) with positive end-expiratory pressure (PEEP) for a minimum of 30 min was administered at least six times per day.

## Results

Median duration of NPPV was 2 days. However, four patients were weaned from NPPV within 24 h. Two patients had to be reintubated in the first 48 h. Oxygenation and ventilatory parameters improved during both modes of NPPV. There were statistically significant beneficial changes in: PaO<sub>2</sub>, pH, VT respiratory rate (RR), F/VT pulmonary shunt fraction (Q<sub>s</sub>/Q<sub>t</sub>), oxygen uptake (VO<sub>2</sub>) and resting energy expenditure (REE) during NPPV when compared with spontaneous ventilation with CPAP. There were no significant differences in haemodynamic parameters during the different phases of ventilation.

## Discussion

The study demonstrated that NPPV is a feasible way of treating acute respiratory failure following early extubation. The improvement in oxygenation and ventilatory parameters, and the stable haemodynamic parameters, have been found in several other studies. The threshold set to enter the weaning protocol was much lower than those set in several other weaning studies. This suggests that without intermittent NPPV the majority of extubations would have been unsuccessful. There are number of limitations in the study: there was no control group, no crossover design (ie NPPV always followed CPAP) and there was a high number (11 out of 15) of transplant patients.

## References

1. Kilger E, Briegel J, Haller M, Frey L, Schelling G, Stoll C: Effects of noninvasive positive pressure ventilatory support in non-COPD patients with acute respiratory insufficiency after early extubation. *Intensive Care Med.* 1999, 25: 1374-1380.