

# Adaptive Support Ventilation: Evidence-based benefits

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## Introduction

Adaptive support ventilation (ASV) is a fully automatic system of ventilation, able to maintain a predetermined rate of minute ventilation, at an optimal respiration-rate/tidal-volume combination, within prescribed safety limits. Although first described (Laubscher, IEEE 1994<sup>1</sup>), and investigated in patients (Linton, CHEST, 1994<sup>2</sup>), some years ago, the evidence for the role of ASV in mechanically-ventilated patients is yet to be fully determined.

## Methods

Medline and several major medical journals were used to find the last three years' publications on the subject of ASV. Only original clinical trials in English-language publications were considered.

## Results

Four major studies were selected.

The first (Sulzer, Anesthesiology 2001<sup>3</sup>) was a prospective randomized controlled study in patients recovering from cardiac surgery, which found that patients receiving ASV required a shorter time of mechanical ventilation than patients receiving Pressure Support-Synchronized Intermittent Mechanical Ventilation (PS-SIMV).

The second (Tasseaux, Crit Care Med 2002<sup>4</sup>), helps us to understand why: this was a crossover prospective study in a mixed group of mechanically-ventilated patients, which found that at a similar level of minute ventilation, patients receiving ASV had a lower level of respiratory drive (P0.1) and lower work of breathing (based on EMG respiratory muscle activity) than with PS-SIMV.

The third study (Cassina J., of Cardiothoracic Vasc Anesth, 2003<sup>5</sup>), was a prospective observational study of a cohort of 155 patients, which confirmed the safety aspects of ASV: namely, all patients were safely ventilated and weaned with ASV, and none required reintubation.

The fourth study (Petter, Anesth Analg 2003<sup>6</sup>), confirmed the possibility of saving resources with ASV. This prospective randomized controlled study found that patients receiving ASV required significantly fewer ventilatory setting manipulations, and endured fewer high-inspiratory-pressure alarms.

## Conclusion

Evidence-based analysis strongly suggests that ASV offers a major advance in the management of patients receiving mechanical ventilation by shortening the duration of ventilation, and by economizing on human medical resources without compromising patient safety.



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## References

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