

ORIGINAL ARTICLE

Noninvasive Positive-Pressure Ventilation for Respiratory Failure after Extubation

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ABSTRACT

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N Engl J Med 2004;350:2452-60.
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BACKGROUND

The need for reintubation after extubation and discontinuation of mechanical ventilation is not uncommon and is associated with increased mortality. Noninvasive positive-pressure ventilation has been suggested as a promising therapy for patients with respiratory failure after extubation, but a single-center, randomized trial recently found no benefit. We conducted a multicenter, randomized trial to evaluate the effect of noninvasive positive-pressure ventilation on mortality in this clinical setting.

METHODS

Patients in 37 centers in eight countries who were electively extubated after at least 48 hours of mechanical ventilation and who had respiratory failure within the subsequent 48 hours were randomly assigned to either noninvasive positive-pressure ventilation by face mask or standard medical therapy.

RESULTS

A total of 221 patients with similar baseline characteristics had been randomly assigned to either noninvasive ventilation (114 patients) or standard medical therapy (107 patients) when the trial was stopped early, after an interim analysis. There was no difference between the noninvasive-ventilation group and the standard-therapy group in the need for reintubation (rate of reintubation, 48 percent in both groups; relative risk in the noninvasive-ventilation group, 0.99; 95 percent confidence interval, 0.76 to 1.30). The rate of death in the intensive care unit was higher in the noninvasive-ventilation group than in the standard-therapy group (25 percent vs. 14 percent; relative risk, 1.78; 95 percent confidence interval, 1.03 to 3.20; $P=0.048$), and the median time from respiratory failure to reintubation was longer in the noninvasive-ventilation group (12 hours vs. 2 hours 30 minutes, $P=0.02$).

CONCLUSIONS

Noninvasive positive-pressure ventilation does not prevent the need for reintubation or reduce mortality in unselected patients who have respiratory failure after extubation.

