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Noninvasive Ventilation and Nosocomial Infections

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Invasive life-support techniques are a major risk factor for nosocomial infection. Noninvasive ventilation (NIV) can be used to avoid endotracheal intubation and may reduce morbidity among ICU patients. Girou and colleagues from the Hôpital Henri Mondor, Creteil, France, conducted a study to determine whether the use of NIV is associated with decreased risk of nosocomial infections and improved survival in everyday clinical practice among patients with acute exacerbation of chronic obstructive pulmonary disease (COPD) or hypercapnic cardiogenic pulmonary edema (CPE).

A matched case-control study was conducted in the medical ICU of a French

university hospital from January 1996 through March 1998. Included were 50 patients with acute exacerbation of COPD or severe CPE who were treated with NIV for at least 2 hours and 50 patients treated with mechanical ventilation between 1993 and 1998 (controls), matched on diagnosis, Simplified Acute Physiology Score II, Logistic Organ Dysfunction score, age, and no contraindication to NIV. The main outcome measures were rates of nosocomial infections, antibiotic use, lengths of ventilatory support and of ICU stay, ICU mortality, compared between cases and controls.

Rates of nosocomial infections and of nosocomial pneumonia were significantly lower in patients who received NIV than those treated with mechanical ventilation (18% vs 60% and 8% vs 22%; $P < .001$ and $P = .04$, respectively). Similarly, the daily risk of acquiring an infection (19 vs

39 episodes per 1,000 patient-days; $P = .05$), proportion of patients receiving antibiotics for nosocomial infection (8% vs 26%; $P = .01$), mean (standard deviation [SD]) duration of ventilation (6 [6] vs 10 [12] days; $P = .01$), mean (SD) length of ICU stay (9 [7] vs 15 [14] days; $P = .02$), and crude mortality (4% vs 26%; $P = .002$) were all lower among patients who received NIV than those treated with mechanical ventilation.

The authors concluded that the use of NIV is associated with a lower risk of nosocomial infections, less antibiotic use, shorter length of ICU stay, and lower mortality.

FROM: Girou E, Schortgen F, Delclaux C, Brun-Buisson C, Blot F, Lefort Y, et al. Association of noninvasive ventilation with nosocomial infections and survival in critically ill patients. *JAMA* 2000;284:2361-2367.