Consider Early Extubation to Noninvasive Ventilation in Patients with Chronic Obstructive Pulmonary Disease

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Mortality was lower with early weaning to noninvasive ventilation than with standard weaning.

Invasive mechanical ventilation is associated with ventilator-associated pneumonia and longer intensive care unit (ICU) stays. In an effort to shorten duration of invasive ventilation, researchers have conducted multiple studies to examine the effects of early extubation directly to noninvasive positive pressure ventilation (NPPV). In an update of a prior review (Cochrane Database of Systematic Reviews 2013; 12:CD004127), researchers analyzed data from 16 randomized, controlled trials (994 patients) in which NPPV was evaluated for weaning patients from invasive ventilation; 9 trials exclusively involved patients with chronic obstructive pulmonary disease (COPD), and 7 trials involved mixed populations.

Overall, risk for death was significantly lower with NPPV weaning than with standard weaning (risk ratio, 0.53). In 8 trials (605 patients), NPPV significantly lowered the likelihood of weaning failure (RR, 0.63), and, in 14 studies, NPPV was associated significantly with lower rates of ventilator-associated pneumonia (RR, 0.25); NPPV was associated with significantly shorter lengths of stay in the ICU and hospital and shorter duration of mechanical ventilation. Subgroup analysis suggested that NPPV provided a greater survival benefit in COPD patients than in other patients.

Comment: ICU providers should consider earlier extubation directly to noninvasive positive pressure ventilation in patients whose spontaneous breathing trial results are borderline for extubation. Distinguishing this approach from use of NPPV as rescue therapy after extubation failure, which is associated with higher mortality rates, is important. Future studies should focus on criteria for identifying the best candidates for weaning using NPPV. For now, we should target patients with chronic obstructive pulmonary disease.

Citation(s):