

Optimal Respiratory Support for COVID-19 Patients



Non-invasive respiratory support is an essential part of critical care. Non-invasive ventilation and high-flow nasal oxygen (HFNO) are commonly used in patients with acute hypoxaemic respiratory failure.

Non-invasive respiratory support can alleviate respiratory distress, improve oxygenation and reduce the need for invasive mechanical ventilation. It can also help reduce mortality by reducing the need for tracheal intubation. However, it is important to note that non-invasive ventilation can also delay tracheal intubation and increase the risk of patient self-inflicted lung injury.

In the Randomized Evaluation of COVID-19 Therapy-Respiratory Support (RECOVERY-RS) trial, investigators assessed whether non-invasive ventilation or HFNO was more effective than conventional oxygen therapy for patients hospitalised with COVID-19. The study included patients with hypoxaemia despite receiving oxygen.

The RECOVERY-RS trial functioned as two trials that shared a single control group (continuous positive airway pressure [CPAP] vs conventional oxygen therapy and HFNO vs conventional oxygen therapy). The primary outcome of the study was a composite of tracheal intubation or mortality within 30 days.

A total of 1273 patients were enrolled in the trial. Three hundred eighty patients were randomised to CPAP, 480 patients to HFNO and 475 patients to conventional oxygen therapy. The frequency of the primary outcome was 36.3% for the CPAP group vs 44.4% for the conventional therapy group. The primary outcome for the HFNO group was 44.3% vs 45.1% for the conventional oxygen therapy group. The reduction between CPAP and conventional oxygen therapy was primarily driven by a reduction in the need for invasive mechanical ventilation and not by differences in mortality.

In a post hoc analysis that compared CPAP with HFNO, CPAP was associated with an absolute reduction of 10% for the primary outcome. Adverse events were reported in 34.2% of patients in the CPAP group, 20.6% patients in the HFNO group and 13.9% patients in the conventional oxygen therapy group.

A major finding from the RECOVERY-RS trial was that non-invasive ventilation reduced tracheal intubation but not mortality. While the need to reduce tracheal intubation is clinically relevant, its interpretation can be challenging without a reduction in mortality. It is entirely possible that if an intervention reduced the need for tracheal intubation but not mortality, the reduction was among patients with less severe illness. These patients would have eventually survived had they received invasive mechanical ventilation.

Overall, findings from the RECOVERY-RS trial suggest that non-invasive ventilation is beneficial to reduce the need for invasive mechanical ventilation in patients with COVID-19 who have acute respiratory failure. However, the role of HFNO in these patients remains unclear. Therefore, CPAP may be recommended as first-line therapy with combination HFNO or other hybrid approaches.

Source: [JAMA](#)

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