

# Prone positioning reduces the need for breathing tubes in COVID-19 patients, suggests in-depth analysis

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Patients admitted to the hospital with severe breathing difficulties due to COVID-19 are less likely to need a breathing tube if they lie face down

in a prone position, but evidence for its effect on mortality or other outcomes is inconclusive, suggests an in-depth analysis of the latest evidence published by *The BMJ* today.

Since the 1970s, prone positioning has been [standard care](#) for patients with severe acute respiratory distress syndrome, as it encourages a larger part of the lung to expand, so patients can take bigger breaths.

Usually, it is done for [critically ill patients](#) who are sedated and intubated (breathing through a tube attached to a mechanical ventilator). But in February, 2020, reports emerged that prone positioning of conscious patients with COVID-19 might also be helpful, and it was widely adopted.

Since then, several studies have examined its effectiveness in conscious patients with COVID-19, but results have been conflicting.

To try and resolve this uncertainty, researchers trawled databases for randomized trials comparing conscious prone positioning to usual care for [adult patients](#) with COVID-19 hypoxemic respiratory failure (a serious condition that develops when the lungs can't get enough oxygen into the blood).

They found 17 suitable trials involving 2,931 non-intubated patients who were able to breathe without mechanical assistance and who spent an average of 2.8 hours per day lying prone.

Twelve trials were at low risk of bias, three had some concerns, and two were at high risk, but the researchers were able to allow for that in their analysis.

The main measure of interest was endotracheal intubation (a breathing tube inserted into the windpipe to allow mechanical ventilation). Other

(secondary) outcomes included mortality, ventilator-free days, [intensive care unit](#) (ICU) and hospital length of stay, change in oxygenation and respiratory rate, and adverse events.

High certainty evidence from a pooled analysis of 14 trials showed that conscious prone positioning reduced the risk of endotracheal intubation compared with usual care (24.2% with conscious prone positioning vs. 29.8% with usual care). On average, conscious prone positioning resulted in 55 fewer intubations per 1,000 patients.

However, high certainty evidence from a pooled analysis of 13 trials evaluating mortality did not show a significant difference in mortality between the two groups (15.6% with conscious prone positioning vs. 17.2% with usual care), but the study may have lacked statistical power to detect a difference.

Conscious prone positioning did not significantly affect other secondary outcomes either, including ventilator-free days, and length of stay in the ICU or hospital, based on low- and moderate-certainty evidence.

The researchers acknowledge several limitations, such as lack of individual patient data, differences between the targeted and achieved duration of conscious prone positioning, and variation in the definition and reporting of certain outcomes across studies.

But further sensitivity analysis supported these results, suggesting a high probability of benefit for the endotracheal intubation outcome and a low probability of benefit for mortality.

As such, the researchers conclude, "Conscious prone positioning compared with usual care reduces the risk of endotracheal intubation in adults with hypoxemic respiratory failure due to COVID-19 but probably has little to no effect on [mortality](#) or other outcomes."

In a linked editorial, researchers point out that the benefits of prone positioning in patients with COVID-19 may be confined to those with more severe hypoxemia and longer duration of prone positioning, and they say it may be wise to focus efforts on these particular groups.

Several unanswered questions remain, including the ideal daily duration of treatment, the level of hypoxemia that should prompt prone positioning, and how best to improve patient comfort and encourage adherence, they write.

These questions may never be answered definitively in patients with COVID-19, as fortunately, far fewer are experiencing hypoxemic respiratory failure or critical illness, they explain.

"The pandemic should, however, renew interest and encourage further evaluation of conscious prone positioning—an intervention that may benefit a wide range of [patients](#) with hypoxemia," they conclude.

**More information:** Efficacy of awake prone positioning in patients with covid-19 related hypoxemic respiratory failure: systematic review and meta-analysis of randomised trials, *The BMJ* (2022). [DOI: 10.1136/bmj-2022-071966](#)

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