

Evidence check

28 March 2020

Rapid evidence checks are based on a simplified review method and may not be entirely exhaustive, but aim to provide a balanced assessment of what is already known about a specific problem or issue. This brief has not been peer-reviewed and should not be a substitute for individual clinical judgement, nor is it an endorsed position of NSW Health.

Prone position for COVID-19 patients

Rapid review question

What is the evidence for the prone position in patients with COVID-19?

In brief

- The World Health Organisation guidelines recommend prone ventilation for 12–16 hours per day for adult patients with severe acute respiratory infection with COVID-19
- A study of 12 people in Wuhan, China, with COVID-19-related acute respiratory distress syndrome has suggested that alternating supine and prone positioning was associated with increased lung recruitability
- Commentaries from the Lancet, JAMA insights and Anaesthesiology suggest the use of the prone position for COVID-19 patients

Background

Guidelines for adult patients with sepsis-induced acute respiratory distress syndrome (ARDS) strongly recommend using prone over supine position. (1, 2) This review aims to synthesise the evidence available on the prone position in patients with COVID-19.

Methods

PubMed and the grey literature (via google search engine) were searched on 28 March 2020 (Appendix one). Guidelines, peer-reviewed articles and other grey literature such as government reports were included.

Results

Guidelines

The World Health Organisation guidelines for the management of people with severe acute respiratory infection with COVID-19 which recommends prone ventilation for 12–16 hours per day for adult patients with severe ARDS. It may be considered for paediatric patients with severe ARDS but requires sufficient human resources and expertise to be performed safely. There is little evidence on prone positioning in pregnant women. (3)

A clinical guide published from the Defence Health Agency states that patients who are unable to adequately ventilate in the supine position may benefit from the prone position to improve oxygen saturation, pulmonary mechanics, and arterial blood gases, with anecdotal reports that patients usually responding well to early pronation. Specific recommendations include that;

- The length of pronation should be minimum 16 hours with a return to supine positioning at least once a day
- Performed as clinically indicated within 25 hours of severe hypoxemia diagnosis
- Use a manual protocol if mechanical beds are not available
- Pregnancy is not a contraindication (4)

Peer reviewed articles

A study of 12 people in Wuhan, China with COVID-19-related acute respiratory distress syndrome has suggested that alternating supine and prone positioning was associated with increased lung recruitability, while patients who did not receive prone positioning had poor lung recruitability. There are many news articles written about this study. (5)

Commentaries from the Lancet advise that prone positioning should be implemented for worsening hypoxaemia, PaO₂:FiO₂ (6), from JAMA insights that management of severe COVID-19 is not different from management of most viral pneumonia causing respiratory failure and should be treated accordingly including using the prone position (7) and that ventilation in the prone position improves lung mechanics and gas exchange and should be considered in the early stages of disease. (8) A further Lancet commentary discusses in relation to ECMO, stating some patients can be considered too unstable for prone positioning and may need rescue ECMO expeditiously if possible. There are few data to support prone positioning during ECMO. (9)

Appendix one

PubMed search string: ("prone position"[MeSH Terms] OR "prone position"[title/abstract] OR "prone ventilation"[title/abstract]) AND ((2019-nCoV[title/abstract] or nCoV[title/abstract] or covid-19[title/abstract] or covid19[title/abstract] or "covid 19"[title/abstract] OR "coronavirus"[MeSH Terms] OR "coronavirus"[title/abstract]))

Google search: "Prone position in COVID-19"

References

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