



COVID-19 Therapeutic Alert

CEM/CMO/2021/015

02 September 2021

Continuous positive airway pressure (CPAP) in patients hospitalised due to COVID-19 with acute respiratory failure

Summary

The National Institute for Health and Care Excellence (NICE) has updated its rapid [guideline](#) to recommend the consideration of continuous positive airway pressure (CPAP), alongside optimised pharmacological and non-pharmacological management strategies (including body positioning), in patients hospitalised with COVID-19 when:

- they have hypoxaemia that is not responding to supplemental oxygen with a fraction of inspired oxygen of 0.4 (40%) or more, **and**
- escalation to invasive mechanical ventilation would be an option but it is not immediately needed, **or**
- it is agreed that respiratory support should not be escalated beyond CPAP.

High-flow nasal oxygen (HFNO) should not be routinely offered as the main form of respiratory support in people with COVID-19 but may be considered for people having continuous positive airway pressure (CPAP) when they need:

- a break from CPAP, such as at mealtimes
- humidified oxygen
- weaning from CPAP

Evidence from two randomised controlled trials (Perkins et al, 2021¹ and Grieco 2021²) was included in the analysis. CPAP significantly reduces tracheal intubation or mortality at 30 days [adjusted odds ratio (OR) 0.67 (95% CI 0.48 - 0.94)] in people with COVID-19 and acute respiratory failure. Median time to intubation was longer [adjusted hazard ratio (HR) 0.67 (95% CI 0.52 - 0.86)] while admission to critical care [adjusted OR 0.69 (95% CI 0.49 - 0.96)] was significantly reduced in the group receiving CPAP compared with conventional oxygen in people with COVID-19.

No difference was observed between CPAP and conventional oxygen for mortality, length of hospital stay and length of critical care stay. CPAP was associated with a greater number of adverse events than conventional oxygen (seven in the CPAP arm, one in the conventional oxygen arm).

¹ Link to preprint: <https://www.medrxiv.org/content/10.1101/2021.08.02.21261379v1>

² Link to article: <https://jamanetwork.com/journals/jama/fullarticle/2778088>

No difference was observed between high flow nasal oxygen (HFNO) and conventional oxygen for any outcome measured.

Compared with HFNO, helmet non-invasive ventilation followed by HFNO significantly reduced intubation within 28 days from enrolment [risk ratio (RR) 0.58 (95% CI 0.36 - 0.95)], intubation within 28 days from enrolment after adjudication of intubation criteria by external experts [RR 0.55 (95% CI 0.33 - 0.9)] and increases the number of invasive ventilation free days at 28 days [Mean difference 3 more (95% CI 0 more - 7 more)].

No difference was observed between helmet non-invasive ventilation followed by HFNO and HFNO for mortality at 28 and 60 days, in-hospital mortality, intensive care mortality, respiratory support free days, invasive ventilation free days (at 60 days), duration of hospital stay and duration of ICU stay.

Action

NHS acute trusts / health boards / health and social care organisations are asked to take the following immediate steps to support treatment of adult patients hospitalised due to COVID-19:

Ensure front line clinical teams are aware of NICE's updated guideline, recommending the use of CPAP in patients hospitalised with COVID-19 with acute respiratory failure, alongside optimised pharmacological and non-pharmacological management strategies (including body positioning). CPAP should only be delivered by staff with appropriate skills and competencies.

For people with COVID-19 having continuous positive airway pressure, ensure:

- **there is access to critical care providers for advice, review and prompt escalation of treatment if needed (such as when treatment has failed)**
- **regular review by an appropriate senior clinician (such as every 12 hours) and more frequent review if needed, in line with the [British Thoracic Society guidance](#) on respiratory support units and the [Faculty of Intensive Care Medicine guidelines](#) on the provision of intensive care services**
- **regular assessment and management of symptoms alongside non-invasive respiratory support.**

NICE is an independent body that provides national guidance and advice to improve health and social care in England. In Northern Ireland, NICE rapid COVID-19 guidelines are automatically endorsed by the Department of Health for implementation in Health and Social Care (HSC) organisations from the date of publication by NICE, in line with the process outlined in Circular [HSC-SQSD-12-20](#).

Intervention

Continuous positive airway pressure (CPAP) is a type of positive airway pressure that delivers a set pressure of airflow to the airways. This pressure is maintained throughout the respiratory cycle, both when the person is breathing in (inspiration) and breathing out (expiration). A CPAP device consists of a unit that generates airflow, which is delivered to the airway through a tight-fitting mask or other airtight interface.

Monitoring, tracking and follow-up

Monitoring of longer-term progress is recommended via recruitment of patients hospitalised with confirmed or suspected COVID-19 to the [ISARIC-CCP study](#).

Distribution

NHS Trusts (NHS boards in Scotland and Wales, HSC Trusts in Northern Ireland)

Regional Medical Directors

Trust/Hospital Medical Directors to circulate to medical and nursing staff managing COVID-19 patients