

New Mexico Medical Advisory Team (MAT) Assessment

Workgroup Name: Clinical Care - ICU and Ventilators

Date: 3/29/20

Question or request: What is the role of BiPAP and CPAP in treatment of COVID? Has this been approved?

Recommendation/s in bullet form:

Definitions:

High Flow Nasal Cannula (HFNC) BiPAP (Bilevel Positive Airway Pressure)

CPAP (Continuous Positive Airway Pressure) NIPPV (Non-Invasive Positive Pressure Ventilation)

The Society of Critical Care Medicine recommends using HFNC over BiPAP and CPAP (both also referred to as NIPPV) due to the risk of the BiPAP and CPAP machines aerosolizing the infection. In adults with COVID-19 and acute hypoxemic respiratory failure, if HFNC is not available and there is no urgent indication for endotracheal intubation, the recommendation is to try NIPPV with close monitoring and short-interval assessment for worsening of respiratory failure. All adults with COVID-19 receiving NIPPV or HFNC should be closely monitored for worsening of respiratory status, and early intubation should be performed in a controlled setting if worsening occurs.

FDA approval: If the number of ventilators in a facility is running low, clinicians can consider alternative devices capable of delivering breaths or pressure support to satisfy medically necessary treatment practices for patients requiring such ventilatory support. Health care providers should use their judgment based on the condition of the patient and the circumstances in the facility to choose the best option.

Assessment:

BiPAP and CPAP machines are themselves mechanical ventilators and have been shown to benefit patients by improving oxygenation and ventilation. Some types of BiPAP/CPAP machines such as the Phillips V60 can convert into invasive ventilation machines quickly and may be used as a third line therapy until a ventilator becomes available. The clinical benefit of BiPAP and CPAP for patients in acute hypoxia due to community acquired bacterial and viral pneumonia is undetermined.

BiPAP enhances ventilation or expiration, which can be most beneficial for those patients with acute exacerbation of severe obstructive lung disease (COPD/Asthma) by reducing the need for endotracheal intubation among immunocompromised patients with pneumonia. It can also serve as a “bridge” after extubation from endotracheal intubation in patients with severe obstructive lung disease (COPD/Asthma). CPAP provides a clear mortality benefit to patients with obstructive sleep apnea / obesity related lung disease and both chronic and acute exacerbations of heart failure. The machine itself is a mechanical ventilator and the Physicians in the MAT Clinical Care workgroup are actively exploring the best approach to convert these from “non-invasive” to “invasive” ventilation just as we are investigating how to utilize the mechanical ventilator on “anesthesia machines.”

Red flags and concerns:

The clinical recommendation is a “trial” of NIPPV usually for 1-2 hours, which may allow a percentage of patients to avoid mechanical ventilation or the need for oral endotracheal intubation. The risk of this approach is that the oral mask used with these devices may leak and aerosolize the infection, which occurred during SARS. This risk is mitigated by placing the patient in a negative pressure or air isolation room. Additional details are provided in the pages that follow. HFNC with flow of up to 10 liters per minute is unlikely to contaminate; for flow needs greater than 10 LPM, it is recommended that the patient be in negative pressure airborne isolation or progress to oral endotracheal intubation with mechanical ventilation. Health care providers should take appropriate precautions with environmental control (for example, negative pressure) or additional filtration where feasible. Ventilating patients.

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Resources/Reference: n/a