Title: Recommended use of non-invasive ventilation (NIV) during the COVID-19 pandemic.

Question:

1) What guidance should be given to frontline clinicians when trying to decide whether to proceed with using NIV for a COPD exacerbation or CHF?

2) What is the evidence for helmet CPAP use? Is it a reasonable alternative to NIV/HHF02?

3) What guidance should be given to frontline clinicians for use of ongoing CPAP or BiPAP therapy on hospital wards for patients who use home CPAP or BiPAP as chronic therapy?

Context:

• Questions have arisen from the respiratory and emergency department health care professional community about whether the use of NIV is preferable to intubation in the context of patients not felt to have COVID-19.

• This review does not address the use of chronic NIV or the use in settings such as neuromuscular disease or obesity hypoventilation syndrome

Recommendations – Provided by: AHS COVID-19 Scientific Advisory Group

Question 1: What guidance should be given to frontline clinicians when trying to decide whether to proceed with using NIV for a COPD exacerbation or CHF?

Please note: Recommendations for this are intended for patients with M GOC only; R and C GOC are out of scope of these recommendations.

1. Current evidence and clinical guidelines do not recommend NIV for individuals with suspect or confirmed COVID-19 and acute hypoxemic respiratory failure (non-AECOPD or CHF).

2. Patients with suspect or confirmed COVID-19 and acute hypoxemic respiratory failure due to CHF may be considered for NIV; a short BiPAP trial should be undertaken only in a private, four-wall room with full PPE precautions (including N-95).

3. Patients with suspect or confirmed COVID-19 and acute hypercapnic respiratory failure due to COPD may be considered for NIV; a short BiPAP trial should be undertaken only in a private, four-wall room with full PPE precautions (including N-95). Per AHS protocol, if after two hours of NIV, an ABG reveals pH <7.25 and clinical parameters are not improving, then it would be strongly recommended to discontinue NIV and consider alternate treatment strategy (e.g., palliation). Otherwise, providers can continue BiPAP until no longer clinically indicated.

Question 2: What is the evidence for helmet CPAP use? Is it a reasonable alternative to NIV/HHF02?

1. CPAP helmet (also called a hood) is not currently used within AHS; therefore it is not considered an alternative therapy to NIV/HHF02.
Question 3: What guidance should be given to frontline clinicians for use of ongoing CPAP or BiPAP therapy on hospital wards for patients who use home CPAP or BiPAP as chronic therapy?

1. Home NIV is often used to manage chronic issues (e.g., CPAP for Obstructive Sleep Apnea (OSA)), and discontinuation of home NIV in these situations is unlikely to result in respiratory decompensation. Given that nocturnal CPAP is an AGMP it should not be routinely used for patients with OSA while in hospital. If NIV is essential (e.g., hypoventilation in patients with neuromuscular compromise), consult pulmonary medicine regarding continuation of home therapy per AHS protocol. If NIV/BiPAP is life-sustaining, then the patient must be cared for in a private room with Contact, Droplet and Aerosol precautions including door closed, PPE and N95 whenever the therapy is used.

Summary of evidence:

- NIV is an aerosol generating medical procedure (AGMP), which has an increased risk of viral transmission and requires expanded personal protection equipment (PPE) precautions.
- Current evidence and clinical guidelines do not recommend NIV for individuals with suspect or confirmed COVID-19.
- Patients with a known history of COPD/CHF may benefit from NIV. However due to the possibility that their disease worsening is associated with a viral infection, patients should be treated as suspect COVID-19 and healthcare workers should use expanded PPE precautions.
- As the CPAP helmet (also called a hood) is not currently used within AHS, it is not considered an alternative therapy to NIV/HHF02.
- Although R and C level GOC patients are out of scope for the recommendations associated with question 1 above, for patients with R level GOC with respiratory failure, critical care involvement is necessary due to very high failure rates of NIV and the need to be ready for emergent intubation. In a patient who is a candidate for intubation or ventilation, decisions around NIV should be made by critical care physicians. NIV is not appropriate for C level GOC given that it is an AGMP.

Key messages:

- Questions have risen from the respiratory and emergency department healthcare professional community about whether the use of NIV is preferable to intubation in the context of patients not felt to have COVID-19.
- Current evidence and clinical guidelines do not recommend NIV for individuals with suspect or confirmed COVID-19.
- Patients may benefit from NIV if they have a known history of COPD/CHF however, due to the risk of virus exposure and transmission, all eligible patients should be treated as suspect COVID-19 within a four-wall room, and healthcare workers should use personal protective equipment precautions, including an N95 respirator.
- Patients with influenza like illness should be assessed for the need for additional precautions as per AHS guidelines.
- Where these precautions cannot be practiced (e.g., due to space limitations), NIV should not be implemented. Alternative treatment strategies (e.g., intubation) should be used.
- Suspected or confirmed COVID-19 patients that receive NIV in the home setting should remain in a separate, well-ventilated room away from family members to avoid potential spread of the virus.

**Background**
- When using NIV for any patients during a pandemic, careful considerations are required.
- NIV is an AGMP associated with an increased risk of viral transmission, including COVID-19.