

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

Question: 1) What guidance should be given to front line clinicians when trying to decide whether to proceed with using noninvasive ventilation (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 front line 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 front line clinicians when trying to decide whether to proceed with using noninvasive ventilation (NIV) for a COPD exacerbation or CHF? Please note: The recommendations for question 1 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/confirmed COVID-19 and acute hypoxemic respiratory failure (non-AECOPD or CHF).
2. Patients with suspect/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, 4 wall room with full PPE precautions (including N-95).
3. Patients with suspect/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, 4 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 (i.e. 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 front line 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 (ie. 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 (ie.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:

- Noninvasive ventilation (NIV) is an aerosol generating medical procedure (AGMP), which has an increased risk of viral transmission and therefore requires expanded personal protection equipment (PPE) precautions.
- Current evidence and clinical guidelines do not recommend NIV for individuals with suspect/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 health care 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/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:

- Alberta Health Services is working proactively to support staff and patients during COVID-19.
- Alberta Health Services is connecting with clinicians, operations, researchers and other experts to review emerging evidence and guidance of national and international bodies to provide information for focused areas of health care.
- Current evidence and clinical guidelines do not recommend NIV for individuals with suspect/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 and health care workers should use expanded PPE precautions.

- Patients with influenza like illness (ILI) should be assessed for the need for additional precautions as per AHS (<https://www.albertahealthservices.ca/assets/healthinfo/ipc/hi-ipc-respiratory-additional-precautions-assessment.pdf>)
- Where these precautions cannot be practiced (e.g. due to space limitations) NIV should not be implemented; alternative treatment strategies (i.e.intubation) should be used.
- Further detail of NIV use in appropriate populations can be found at the following link: <https://insite.albertahealthservices.ca/Main/assets/Policy/clp-non-invasive-ventilation-acute-respiratory-failure-protocol.pdf#search=Non%20Invasive%20Ventilation%20in%20Management%20of%20Acute%20Respiratory%20Failure>
- Suspected/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.

Social media messages (if required):

To be shared as a thread on Twitter:

- Alberta Health Services is connecting with clinicians, operations, researchers and other experts to review emerging evidence and guidance of national and international bodies to provide information for focused areas of health care.
- NIV is not currently recommended to be used on any patient - due to high risk of COVID-19 transmission & exposure - except under conditions of increased precautionary PPE measures
- Alberta Health Services will continue to monitor the research and evidence for the appropriate application of NIV as a treatment strategy for eligible patients.

Media statement (if required):

Alberta Health Services is connecting with clinicians, operations, researchers and other experts to review emerging evidence and guidance of national and international bodies to provide information for focused areas of health care.

Current clinical guidelines recommend administering noninvasive ventilators (NIV) for COVID-19 confirmed/suspected patients with acute hypoxemic respiratory failure due to AECOPD or CHF only if specific precautionary PPE requirements are met due to the high risk of virus exposure & transmission.

Alberta Health Services will continue to monitor the research and evidence for appropriate application of NIV as a treatment strategy for eligible patients.

Key contacts	
Individual accountable	<i>Brandie Walker</i>

Spokesperson/contact	<i>Name and title of who can provide more information and/or speak to media if required</i>
Information brief required? (Y/N)	Y
Reviewed by <NAME> on <DATE>	<i>Braden Manns: April 1, 2020 AHS Issues Management: <DATE> AHS ECC Communications: <DATE></i>
Approved by <NAME> on <DATE>	<i>Braden Manns: <DATE> Lynora Saxinger: <DATE> AHS Issues Management: <DATE> AHS ECC Communications: <DATE></i>