Guidelines for the Respiratory Care of COVID-19 Patients at UHB Outside of Critical Care

<table>
<thead>
<tr>
<th>CATEGORY:</th>
<th>Guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLASSIFICATION:</td>
<td>Clinical</td>
</tr>
<tr>
<td>PURPOSE</td>
<td>This document outlines the guidelines for the respiratory care of COVID-19 patient at University Hospital Birmingham NHS trust outside of critical care.</td>
</tr>
<tr>
<td>Controlled Document Number:</td>
<td>C002</td>
</tr>
<tr>
<td>Version Number:</td>
<td>3.0</td>
</tr>
<tr>
<td>Document Author:</td>
<td>Dr Simon Gompertz, Dr Ben Sutton, Dr Davinder Dosanjh and Dr Shyam Madathil with input from respiratory teams cross site</td>
</tr>
<tr>
<td>Approved By:</td>
<td>Medical Scientific Advisory Group (COVID-19)</td>
</tr>
<tr>
<td>Date / Time:</td>
<td>18/06/2021</td>
</tr>
<tr>
<td>Review Date:</td>
<td>18/12/2021</td>
</tr>
<tr>
<td>Distribution:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Essential Reading for: All healthcare professionals providing patient-facing care</td>
</tr>
<tr>
<td></td>
<td>• Information for: Wards Managers, Senior Nurses, ADNs, Divisional Directors</td>
</tr>
</tbody>
</table>
Guidelines for the respiratory care of COVID-19 patients at UHB outside of Critical Care

1 Have either clinical or radiological evidence of pneumonia or influenza like illness (fever ≥37.8°C and at least one of the following respiratory symptoms, which must be of acute onset: persistent cough [with or without sputum], shortness of breath, altered taste and/or smell)

2 On PICS at QE

3 Clinical Ethics Committee – if difficult ethical decision – contact via email ClinicalEthicsQueries@uhb.nhs.uk

4 Non-invasive ventilation

5 Target sats 92-96% / 88-92% if chronic respiratory disease at risk of hypercapnic respiratory failure

6 COVID Severity Assessment:


8 Tocilizumab should be considered for patients requiring oxygen and have a CRP of ≥75mg/L, or those that require advanced respiratory support (CPAP/HFNO/intubation). See Trust Tocilizumab guideline: https://www.uhb.nhs.uk/coronavirus-staff/clinical-info-pathways/clinical-info-pathways-downloads/c156-tocilizumab-treatment-protocol.pdf


11 Constipation, urinary retention, other sources of infection (cellulitis, urine etc.), pain, alcohol withdrawal, sedatives etc.

12 End of Life care – see Trust – use structured prescribing functions on e-prescribing.
**General principles in management of respiratory failure in COVID-19 patients**

a) **Continuous Positive Airway Pressure (CPAP)** and **High Flow Nasal Oxygen (HFNO)** have been used for the management of COVID-19 associated pneumonia; however, the published evidence to date remains limited. If the patient is for escalation to critical care, arrange early ITU review, who will consider intubation/CPAP/HFNO if appropriate.

b) CPAP/HFNO may also be provided in a limited number of beds on Respiratory Support Units (RSUs) with enhanced monitoring for patients appropriate for escalation to intensive care. The RSUs are on ward 516 (QEHB), ward 24 (BHH) and AMU (GHH).

c) Patients with COVID-19-associated pneumonia, who are not for escalation to critical care, should not routinely be offered ward-based CPAP or HFNO.

d) CPAP and HFNO are aerosol generating procedures (AGPs) and patients receiving this should be managed with full PPE including FFP3 respirators (or hood if not yet mask-fit tested or failed mask-fit testing), full gown, eye protection, gloves, and appropriate circuit and mask (see technical details below).

e) Titrate oxygen to the appropriate safe target saturations (92 - 96%; or 88 – 92% if known CO₂ retainer). This will also help conserve oxygen while ensuring patient safety.

f) Use metered dose inhalers (MDIs) instead of nebulisers if appropriate.

g) If patients are not for escalation, then DNACPR/TEAL or ReSPECT forms must be completed for all patients so that the plan is clear. This should be clearly documented and discussed with the patient’s next of kin, where it is appropriate to do so (i.e. patient consents and/or the patient does not have capacity to be involved in these discussions).

h) If you need help making difficult decisions contact the clinical ethics committee via this email address: ClinicalEthicsQueries@uhb.nhs.uk

**Indications for CPAP/HFNO outside of ITU in an appropriately monitored AGP area**

i. **Those who would have met the recruitment criteria for the RECOVERY-RS trial** (patients must be for full escalation and requiring FiO₂ ≥40%) – RECOVERY-RS trial results pending.

ii. **As a bridging measure for patients deemed for escalation to ITU**: In a small group of patients awaiting a critical care bed imminently, it may be appropriate to have a short period of HFNO/CPAP as a short-term time-limited bridging measure after explicit discussion and agreement between ITU and the Respiratory Team (or Acute Medical Team at GHH).

iii. **ITU stepdown**: HFNO/CPAP may also be appropriate for stepping down a small number of patients after successful treatment in critical care to free up ITU capacity. This should only be done in instances where overwhelming demand for ITU beds necessitates this move. This must be agreed in consultation with the Respiratory Team (or Acute Medical Team at GHH).
Please note:

- The decision to start a patient on HFNO/CPAP will be a combined one between the respiratory and critical care clinicians.
- HFNO/CPAP is not to be offered in patients who are for palliation.

Indications for Bi-Level Non-invasive Ventilation (NIV) on Respiratory wards:

i. **Acute hypercapnic respiratory failure** in patients with an evidenced-based indication (COPD, obesity related respiratory failure, chest wall deformity and neuromuscular disorders*) but without established (COVID or non-COVID) pneumonia.

ii. Patients with the above conditions who are already on home NIV

Please note:

- NIV is not to be commenced on any patients in the Emergency Department, or other open ward areas due to the aerosol generating risk. Patients will be started in a designated area or through the use of access beds (side rooms) on the respiratory wards.
- An access bed (side room) is to be reserved on each of the following respiratory wards for patients requiring NIV/HFNO setup: wards 515, 516 at QE, ward 24 at BHH, and ward 24 or AMU at GHH (up to date as of 30/12/2020 – situation may evolve).
- For COVID-19 positive or suspected patients, NIV or HFNO should only be used on designated wards in single rooms, unless in exceptional cases when the entire cohort in a bay is proven COVID-19 positive.

*Ward based NIV for neuromuscular respiratory failure during COVID19 pandemic

Attempts should be made to optimise treatment at home and avoid admission if possible. If appropriate, palliative support should be arranged.

1. Patients with KNOWN neuromuscular respiratory failure:

   a) ALREADY on home NIV:

   - **WITH established COVID-19 pneumonia** - should not be offered acute NIV on the ward outside of the HGS (Heartlands & Good Hope) NIV Units. Whether to continue with their home machine will depend on individual circumstances and palliative care input.
   - **WITHOUT established COVID-19 pneumonia** - should be optimised on their home NIV machine and managed medically on the ward.

   b) NOT currently on home NIV, OR with a first presentation of suspected chronic, progressive neuromuscular respiratory failure (e.g. motor neurone disease):

   - Can be offered NIV on the ward, assuming there is the infrastructure and safe staffing ratios to do so. Appropriate AGP PPE and infection control procedures will need to be followed. The aim is to establish them on home NIV for discharge.
   - Under normal circumstances, the presence of a significant pneumonia in these patients would require invasive ventilation – in the context of a patient with a significant pneumonia during a significant surge of COVID admissions in whom invasive ventilation is thought to be inappropriate, NIV would not be offered on the ward outside of the HGS (Heartlands & Good Hope) NIV Units and they would be managed medically +/- active palliation.

2. Patients with rapidly progressive and potentially reversible acute neuromuscular respiratory failure (e.g. Guillain-Barre syndrome or myasthenia gravis):

   - ITU should consider admission to Critical Care, provided they have capacity to do so. Ward NIV is not suitable for this group of patients.

3. Patients with a long term tracheostomy and mechanical ventilator:

   - Should not be managed outside of a Critical Care area without continuous, direct nursing supervision.
Technical aspects of NIV

Masks:
- Well-fitting oronasal facemasks, masks over the whole face or helmets should produce the least droplet dissemination.
- Vented masks could increase contamination of the surrounding environment.
- Any patient on acute NIV should be managed with a non-vented mask and an exhalation port in the circuit.
- Ensure that the ventilator mode employed supports the use of non-vented masks and exhalation ports.
- Sequence of actions when turning the NIV machine on and off: NIV mask on >ventilator on; ventilator off >NIV mask off.

Filters:
- A viral/bacterial filter should be placed in the circuit between the mask and the exhalation port.
- This viral/bacterial filter can replace any filter at the machine end of the circuit.
- Viral/bacterial filters should ideally be changed every 24 hours or sooner. (There is a risk that they will become wet from exhaled gas and this may increase resistance to flow).
- An external humidifier must not be used.
- Blocked filters can be mistaken for clinical deterioration; this issue is remedied by changing filters.

For patients already managed under the home ventilation services who are admitted to hospital with or without coronavirus infection:

During the COVID-19 pandemic home CPAP and NIV machines should:
- NOT be started on open wards, in ED, AMU* or in non-cohorted areas.
- ONLY be initiated and continued in an appropriate area – side room (or cohorted “hot” area).
- ONLY be delivered to patients with a positive Coronavirus swab and/or a high clinical suspicion of COVID-19 pneumonia on a designated respiratory ward**
- Be regarded as AGPs even in those with a low suspicion of Coronavirus infection and negative swabs - appropriate precautions should be taken, including only delivering CPAP/NIV within a side room (or cohorted area).
- Be managed according to AGP PPE guidelines.

*Exception - AMU side room Good Hope.
**Exception – or other appropriate designated “hot” respiratory area.
Patients on home CPAP or NIV:

- Should NOT use their home machines in hospital without changes to the circuit***.
- Do not normally require emergency setup of their home machines out of hours - this can be done the next working day. If they are acutely unwell or deteriorate out of hours they should have a medical assessment including an arterial blood gas - if they develop a respiratory acidosis they should be referred to the general medical registrar who will liaise with the on-call NIV physio for an acute set-up if required.

***Vented masks should be changed for a non-vented mask and an exhalation port put into the circuit. A viral/bacterial filter should be placed in between the mask and the exhalation port for NIV and CPAP. For any patient who has a humidifier in the community, the humidifier should be removed from the circuit. In order to arrange this for your patient:

For QEH:
Monday – Friday, refer to the Lung Function and Sleep department via PICS. Saturdays and Sundays 0830 – 1630, please contact the NIV physio team on bleep 2374. Please do not contact the NIV physio on-call outside of these hours. Acute NIV/CPAP mask circuits and filters are located on wards 515 and 516.

For BHH:
If a patient has domiciliary NIV, please contact the NIV team via switchboard during normal working hours. If a patient has a domiciliary CPAP machine, the patient in question should be discussed with a Respiratory Consultant to assess whether CPAP is a clinical need during their inpatient stay. If deemed necessary please contact Respiratory Physiology to arrange for the necessary mask and circuit changes.

For GHH:
If a patient has domiciliary NIV, please contact the Lung Function & Sleep department. If a patient has a domiciliary CPAP machine, the patient in question should be discussed with a Respiratory Consultant to assess whether CPAP is clinically necessary during their inpatient stay. If deemed necessary please contact the Lung Function & Sleep department to arrange for the appropriate mask and circuit changes.

The Lung Function & Sleep department at GHH can be contacted on ext. 47229, Monday to Friday 9:00 – 16:00; please discuss with a team member or (if unavailable or out of hours) leave a message and the department will arrange for a review to set up a non-vented circuit during normal hours.

For out of hours, the on-call physiotherapist should only be called if there is acute deterioration of a patient who is usually on home CPAP or home domiciliary Non Invasive Ventilation (NIV).

The patient should be changed back to their own mask and circuit at discharge.