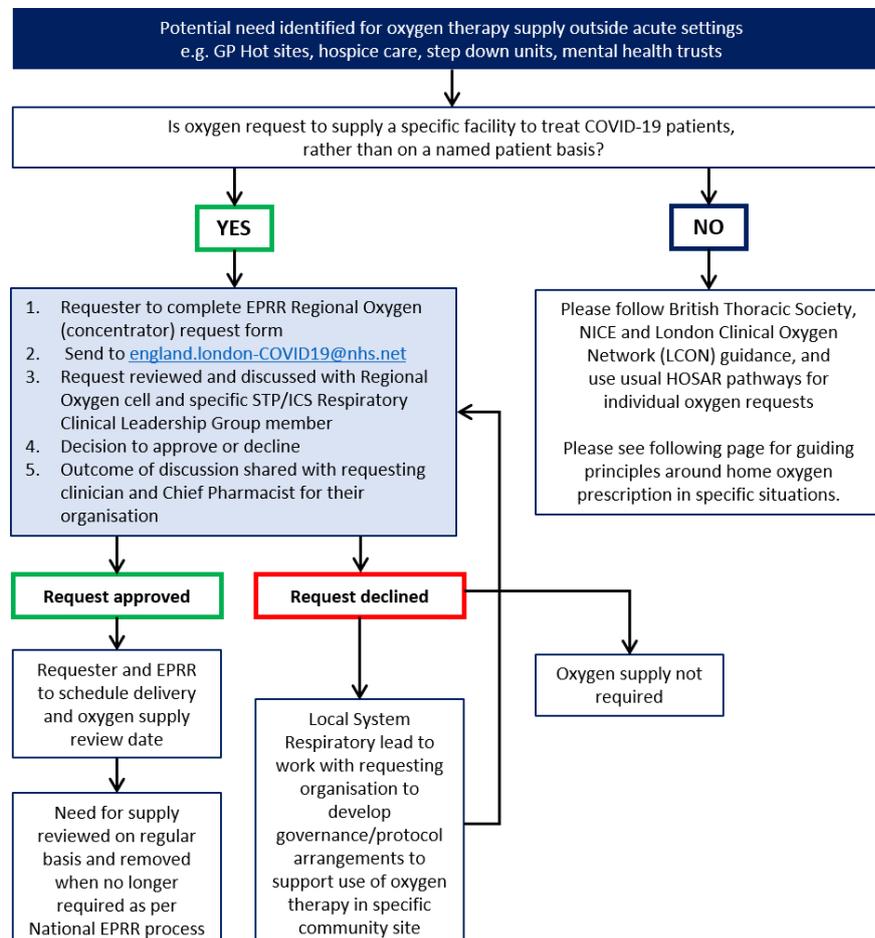


## Oxygen therapy outside acute settings during the COVID 19 pandemic vOct2020

This document has been developed to support clinicians in London with provision of oxygen therapy for COVID19 patients outside the acute hospital setting.

Before considering this, healthcare professionals are asked to adhere to three key principles to ensure prescription and supply of oxygen is safe, effective and as evidence based as possible:

1. The local respiratory clinical lead, palliative care clinical lead and/or local Home Oxygen Assessment and Review Service (HOSAR) are aware of and have ratified the oxygen treatment pathway proposed.
2. The pathway is supported by a clinical oxygen protocol specific to the setting of care and cohort of patients (e.g. intermediate care facility) which is consistent with principles of good medical oxygen practice namely:
  - a) administration of oxygen to treat hypoxia not breathlessness (see London Clinical Oxygen Network responsible oxygen prescribing messages [www.networks.nhs.uk/nhs-networks/london-lungs](http://www.networks.nhs.uk/nhs-networks/london-lungs) )
  - b) setting and documentation of appropriate target oxygen saturations for each patient in line with guidance (<https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/04/C0256-specialty-guide-oxygen-therapy-and-coronavirus-9-april-2020.pdf>)
  - c) documented prescription of oxygen for each patient to include appropriate interface and range of flow rates to achieve target oxygen saturations
  - d) appropriate training of staff in administration, monitoring and weaning of oxygen and use and storage of oxygen equipment
3. There is a nominated clinical lead responsible for ensuring that this clinical oxygen pathway has appropriate local governance approval and ongoing review.



This section has been developed to support clinical decision making in the use of oxygen therapy for specific patient groups or settings.

## 1. Patients with suspected or confirmed COVID19 assessed within primary care hot sites

This is defined as emergency oxygen and therefore falls under the remit of British Thoracic Society Emergency Oxygen guidance 2017<sup>1</sup>

<https://brit-thoracic.org.uk/quality-improvement/guidelines/emergency-oxygen>

<p><b>Purpose of this document:</b> this guide was produced for health care professionals working in hot sites with guidance on the use of emergency oxygen therapy to treat patients with hypoxaemia associated with suspected or confirmed COVID 19. It has been developed using the British Thoracic Society guidelines for Emergency Oxygen<sup>1</sup> and expert clinical consensus across London.</p>		
<p><b>Indications for emergency oxygen therapy in patients without underlying lung disease</b></p> <p>It is recommended that emergency oxygen must only be used to maintain target saturations in patients who have been assessed face to face and <b>are waiting for transfer to hospital.</b></p> <p>At the time of writing, specific clinical indications are:</p> <ol style="list-style-type: none"> <li>1) Patients who are breathless and have oxygen saturations (presuming no underlying lung disease) <b>&lt;94%</b></li> <li>2) Patients who are not breathless (silent hypoxaemia) and have oxygen saturations <b>&lt;92%</b></li> </ol>	<p><b>Signs of respiratory deterioration:</b></p> <ul style="list-style-type: none"> <li>↑ Respiratory rate (especially if &gt;25 per minute)</li> <li>↓ Oxygen saturations by pulse oximetry</li> <li>↑ Oxygen dose needed to maintain target sats (see algorithm below)</li> </ul> <p><b>Signs of CO<sub>2</sub> retention are:</b></p> <ul style="list-style-type: none"> <li>• Drowsiness</li> <li>• Headache</li> <li>• Flushed face</li> <li>• Flapping Tremor</li> </ul>	
<p><b>Assessment and monitoring</b></p> <ul style="list-style-type: none"> <li>• Pulse oximetry and staff appropriately trained in its use must be available in all locations where emergency oxygen is being used</li> <li>• Continuous monitoring and close observation of the patient whilst using oxygen therapy is advised</li> <li>• The oxygen saturation should be monitored continuously until the ambulance arrives and receives handover</li> </ul>	<p><b>Emergency oxygen treatment algorithm</b></p> <pre> graph TD     A[Patient identified as needing emergency oxygen (please see indications)] &lt;--&gt; B[Simple face mask or nasal cannulae 2 l/min]     B &lt;--&gt; C[Simple face mask or nasal cannulae 4 l/min]     C &lt;--&gt; D[Simple face mask 8 l/min]     D &lt;--&gt; E[* Change to Reservoir mask 15 l/min]     E &lt;--&gt; F[Continue to give 15 L via Reservoir mask (unless pt at risk of Co2 retention)]     </pre>	<p><b>The key aim/s:</b> to maintain target sats at <b>94-96% until the ambulance arrives.</b></p> <ul style="list-style-type: none"> <li>• The oxygen flow should be <b>adjusted upwards or downwards to maintain a saturation of 94%</b> for most patients (apart from those who may be more at risk of CO<sub>2</sub> retention (see above for signs).</li> <li>• Target saturations for people <b>with COPD at risk of CO<sub>2</sub> retention are 88-92%.</b></li> </ul>
<p><b>Recommended supply:</b></p> <p>Emergency oxygen should be available in primary care sites, preferably using oxygen cylinders fitted with high-flow regulators (delivering over 6 L/min) must be used.</p>	<p><b>Recommended disposables:</b></p> <p>It is recommended that the following delivery devices should be available:</p> <ol style="list-style-type: none"> <li>1. High concentration reservoir mask (non-rebreathe mask) for high-dose oxygen therapy</li> <li>2. Nasal cannulae (preferably) or simple face mask for medium dose oxygen therapy</li> </ol>	<p><b>Information for safe supply and storage of oxygen and associated delivery devices</b></p> <ul style="list-style-type: none"> <li>• It is recommended that <b>all Hot sites have 1-2 people who are responsible</b> for overseeing the supply, delivery devices and safe storage of their specific sites' emergency oxygen supply</li> <li>• This is to ensure the partners listed below can expedite potential solutions to queries as they arise</li> <li>• All systems containing compressed gases in UK are subject to Pressure Systems Safety Regulations 2000</li> </ul>
	<p><b>Training on set up: This guide does not replace the training</b> provided by AirLiquide on delivery of site-specific oxygen supply.</p> <p>It is recommended that each site nominate 1-2 oxygen leads to support safe and effective use within primary care sites.</p>	<p><b>Helpful contacts for London:</b> should the designated oxygen lead for your hot/cold site require assistance please contact:</p> <ol style="list-style-type: none"> <li>1) Air Liquide: <a href="mailto:alhomecare.hcpsupport@nhs.net">alhomecare.hcpsupport@nhs.net</a></li> <li>2) London Oxygen Team: <a href="mailto:Nelcsu.hosnelcsu@nhs.net">Nelcsu.hosnelcsu@nhs.net</a></li> <li>3) Local Home Oxygen Service Assessment and Review (HOSAR)</li> </ol>

<sup>1</sup> BTS Emergency Oxygen Therapy – 2017 <https://www.brit-thoracic.org.uk/quality-improvement/guidelines/emergency-oxygen/>

## **2. Patients with suspected or confirmed COVID19 discharged from emergency departments and/or hospital wards who are for full active treatment (non-palliative)**

Patients being discharged from the emergency department should have oxygen saturations  $\geq 94\%$  on air (or 88-92% if at risk of type 2 respiratory failure) and be risk assessed and safety netted according to national and regional criteria. Patients who are acutely hypoxic should be admitted to hospital and therefore provision of oxygen therapy outside the acute setting should not be considered in this group.

Admitted patients may be considered safe to discharge from hospital if their hypoxia has improved, they are achieving stable oxygen saturations  $\geq 92\%$  on air as part of an improving general clinical picture, and do not desaturate significantly on exertion. Therefore, provision of oxygen therapy (including ambulatory oxygen) outside the acute setting should not be considered in this group.

Inpatients who desaturate significantly on exertion should be investigated to identify and treat additional complications such as secondary infection or pulmonary embolism. Patients admitted to hospital with COVID-19 who also have COPD, another long-term respiratory condition or identified and treated complications such as pulmonary embolism or pulmonary fibrosis may be considered for hospital discharge with home oxygen, if clinically appropriate, in which case BTS Home Oxygen and NICE COPD guidance should be followed. An appropriately trained respiratory clinician and local HOSAR team must be involved where oxygen therapy is to be considered on discharge to ensure safe follow up and monitoring outside of hospital.

## **3. Patients with COVID19 being discharged from hospital to a step down or rehabilitation facility**

Patients should be clinically stable, medically fit for transfer and have improved oxygen saturations to be eligible for safe step down from the acute setting and therefore provision of oxygen therapy should not generally be considered in this group. Individual patients who fulfil criteria for long term home oxygen therapy as described above should be assessed and prescribed home oxygen in line with BTS Home Oxygen and NICE COPD guidance. An appropriately trained respiratory clinician and local HOSAR team must be involved in the care and follow up of these patients.

## **4. Patients with suspected or confirmed COVID19 whose preferred place for treatment is within their home, or nursing home**

There is no recommended emergency oxygen pathway for supporting and monitoring patients with COVID-19 within their home, or within nursing/care home settings. Initiation of emergency oxygen therapy in this situation is not generally recommended. Care planning in these cases should be individualised and involve the patient, their family, their GP, and the local respiratory/HOSAR team, with expert support from palliative care/other specialists as appropriate, for example gerontology.

In the case of an individual patient who is acutely hypoxic due to COVID19 (saturations  $< 90\%$  on air) and who does not wish to be treated in hospital, a senior decision maker such as a GP or palliative care physician may consider a trial of supported emergency home oxygen therapy. This can be arranged on one of two ways;

- i. **During working hours 9-5pm (Mon- Fri):** this should be discussed with the local HOSAR team to support with arranging oxygen and ongoing support through usual pathways.
- ii. **Outside working hours (or weekends/bank holidays):** a responsible clinician (GP or palliative care clinician) is required to complete and submit a **Part A Home Oxygen**

**Order Form (HOOF A)** on the Air Liquide online portal <https://www.airliquidehomehealth.co.uk/hcp/HOOF>. Before prescribing emergency oxygen and submitting the HOOF A, the responsible clinician must consider the likely prognosis, gain the patient's consent, and carry out a risk assessment to ensure that the patient and/or carers understand safety advice around the use of oxygen, including the dangers of smoking cigarettes and e-cigarettes near to oxygen equipment. If there is concern that safety advice will not be followed, oxygen should not be ordered.

The responsible clinician must document consent and risk assessment on the **Home Oxygen Consent Form (HOCF)** and **Initial Home Oxygen Risk Mitigation Form (IHORM)** on the portal <https://www.airliquidehomehealth.co.uk/hcp/Content/HORM.pdf>. A copy of the signed form should be stored in the patient's record. The patient's local HOSAR service must be notified of the decision to prescribe home oxygen as soon as possible within working hours so that they can support safe follow up. Patients in this situation will require close on-going clinical review and supportive care by a senior clinician.

## 5. Home oxygen prescription for patients with suspected or confirmed COVID19

Any clinician prescribing home oxygen (including privately) for a patient must abide by the principles of Good Medical Practice as they apply to the prescribing and managing of medicines. They must therefore:

- a) be aware that they are clinically responsible for the prescription and administration of this medical gas
- b) ensure that the prescription is safe, and evidence based, supported by a clearly documented clinical indication
- c) ensure that the prescription sets out the correct dose (flow rate) and duration of treatment
- d) document appropriate risk assessment and mitigation (such as around smoking, falls etc)
- e) document that they have given appropriate information to the patient, their carers and family about safe use of home oxygen, any potential adverse effects, likely duration of treatment, and arrangements for monitoring and follow up
- f) ensure that information about the patient's home oxygen therapy is shared with other professionals as appropriate e.g. community healthcare professionals, the local HOSAR service and the fire and rescue services
- g) demonstrate that they have appropriate and up to date training in home oxygen therapy and use

All clinicians are required to be familiar with GMC guidance on prescribing and managing medicines and devices, and need to be aware that serious or persistent failure to follow this will put their registration at risk.

<https://www.gmc-uk.org/ethical-guidance/ethical-guidance-for-doctors/prescribing-and-managing-medicines-and-devices/about-this-guidance>

## 6. Patients with suspected or confirmed COVID19 at the end of life

For patients with COVID-19 who are in the last days or hours of life, oxygen therapy is unlikely to be more effective than opioids and sedatives for the symptomatic management of breathlessness and associated distress<sup>2</sup>. Oxygen therapy is likely to be burdensome in this situation, a barrier between family members and the patient, and a cause of additional anxiety related to equipment

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<sup>2</sup> Alsop M, Ziegler L, Fu Y, Rudd S, Bennett MI; Oxford COVID-19 Evidence Service Team. Is oxygen an effective treatment option to alleviate the symptoms of breathlessness for patients dying with COVID-19 and what are the potential harms? CEBM, 2020. <https://www.cebm.net/covid-19/is-oxygen-an-effective-treatment-option-to-alleviate-the-symptoms-of-breathlessness-forpatients-dying-with-covid-19-and-what-are-the-potential-harms/>

and deliveries. Measuring oxygen saturations in this setting is unlikely to be helpful. The focus of care should be on palliation using evidence-based pharmacological and non-pharmacological interventions, and individualised support to the person and those important to them.

### List of contributors/members of the London Oxygen Task Group for COVID 19

The following people are thanked for their time and valuable contribution to this document.

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