NHS
Cambridgeshire and Peterborough
Clinical Commissioning Group

Cambridgeshire and Peterborough COVID Oximetry @home Monitoring Service

Standard Operating Procedure

1.1 PURPOSE

To outline the process of assessment and referral of patients with COVID, or suspected COVID, at risk of deterioration to the COVID Oximetry @home Monitoring Service, thereby enabling the early identification of the deteriorating patient and 'silent hypoxia' with the aim of reducing mortality.

1.2 SCOPE

Available to all patients who meet the entry criteria registered with a Cambridgeshire and Peterborough GP practice.

Entry Criteria

The COVID Oximetry @home pathway should be available to people who are:

i. Diagnosed with COVID-19; either clinically or positive test result **AND**
ii. Symptomatic **AND EITHER**
iii. Aged 65 years or older **OR**
iv. Under 65 years and *clinically extremely vulnerable to COVID.* (The *Clinically Extremely Vulnerable* to COVID list should be used as the primary guide (https://www.nhs.uk/conditions/coronavirus-covid-19/people-at-higher-risk/whos-at-higher-risk-from-coronavirus/). Clinical judgement can apply and *take into account multiple additional COVID risk factors*; recommend *all adults with Learning Disabilities* included in oximetry monitoring with help from carers)
v. Clinical criteria met:
    a. O_2 Sats 93 – 100%
    b. And all of the following (patient above these ranges should be considered for hospital admission)
        RR ≤24
        HR ≤130
        O2 Sats 0 - 4% less than patients usual (e.g. COPD)
        Exertion test (40 step walk or 1 minute sit to stand test) ≤3% reduction
vi. Patient and carers consent to admission to the COVID Oximetry @home service.

See Appendix 1 for C&P Primary Care COVID Oximetry @home triage pathway.

1.3 Patient Journey to Oximetry @home Service

Referral (Stage 1)

Systems should ensure timely referral of patients that may meet the entry requirements from all relevant providers operating within their area, at a later date 111, Covid Clinical Assessment Service (CCAS), Test and Trace and hospital emergency departments.

Patients should be advised to self-isolate in line with current guidance.

Patient advised to get a COVID test (by current routes) if not already done.

Triage (Stage 2)

Patients referred to the service should have a standard assessment (with potential for face to-face clinical assessment if deemed necessary), with **shared decision making** prior to entry onto the pathway and a discussion about any support requirements for patients or carers. This should happen as soon as possible, and ideally the same day as the referral. All patients will require baseline oximetry.

- If at a hot site, then assessment should be done face to face and a baseline pulse oximetry reading taken. Under the supervision of a clinician a 40-step walk or one-minute sit-to-stand test will be undertaken in patients with saturations of at least 93%. If that patients O2 saturation falls below 92% or if ≥ 3% reduction then patient should be considered for hospital admission.

- If contacted by phone or video arrange for baseline oximetry. Once the patient has a monitor if the saturations are at least 93% a 40-step walk or one-minute sit-to-stand test will be undertaken. If that patients O2 saturation falls below 92% or if ≥ 3% reduction then patient should be considered for hospital admission. Patients should be advised to terminate promptly if they develop any adverse symptoms (severe breathlessness, chest pain, dizziness).

  Delivery of the monitor should be obtained with minimal contact and best use of local services such as:

  - Collection of oximetry pack from GP surgery by symptom free relative/friend
  - Delivery of oximetry pack (obtained from GP surgery) by NHS/local volunteer scheme. Patient consent required to use this service.
  - Drive through check in surgery/111 car park
  - Face to face in 'hot area' of surgery
  - If already involved use of other services – JET/Ambulance/DN/EEAST
  - Other local service used by practice

Review oximetry:

1. If O_2 Sats are 95% or above and other criteria (in section 1.1 v. above) are satisfactory then self-care at home with worsening advice should be given. Clinical

consideration should be given to the option to join the COVID Oximetry @home Monitoring Service.

2. If O_2 Sats are 94% or 93%, and entry criteria is met, consider referral to COVID Oximetry @home Monitoring Service. Consider hospital admission if clinical concern
3. If O_2 Sats 92% or less, consider hospital admission.

Onboarding (Stage 3)

Patients entering the pathway should be provided with a pulse oximeter and supporting information (including a paper diary which is being made available in a variety of languages, or suitable app / regular call mechanism), contact details to report oximetry reading / symptoms, and clear safety netting instructions both in and out of hours. This should be supplied immediately if the patient is seen face to face or within 12 hours if the patient is assessed remotely. Patients should be instructed to attend their nearest emergency department within an hour or call 999 if their saturation reading is **92% or less**, or to contact 111/GP if 93% or 94%.

For patients not seen face to face, the patient will require an oximetry pack which will need to be provided to the patient. Oximetry packs will be made available to all GP's/services. The oximetry pack can be delivered by either:

- Collection of oximetry pack from GP surgery by symptom free relative/friend
- Local volunteer
- NHS Volunteer Responders (https://nhsvolunteerresponders.org.uk/referral)
- Drive through check in surgery car park
- Other local service used by practice.

Patients should be instructed to attend their nearest emergency department within an hour or call 999 if their saturation reading is 92% or less.

Patients should be encouraged to record oximetry readings daily, usually three times a day. Through a shared decision-making conversation, they are also given the option of a prompt at days 2, 5, 7, 10 and 12, by a non-clinician led check-in phone call. The patient can choose to self-monitor without these prompts.

Patients should have clear instructions regarding the recognition of deterioration and instructions on the appropriate course of action, with 24/7 access to advice and support. Contact details must be communicated clearly to patients.

Patients should agree in advance how they will return the oximeter, e.g., by either the practice or the patient arranging an NHS Volunteer Responder.

Onboarding data required – to be entered on clinical system template

- NHS number
- Given Name/ Forename
- Family Name/ Surname
- Date of birth
- Gender
- Address
- Full patient postcode
- Contact phone number
- COVID-19 test result, if available or date test appointment
- Referral source
- Consent to share
- Date of onboarding
- Current 0_2 Sats at rest
- Lowest O_2 Sats during 40-step walk or one-minute sit-to-stand test
- Date of symptom onset
- General text box for any other significant information – please include details of normal baseline 0_2 if patient has a known diagnosis of COPD or respiratory disease.
- Interpreter required
- Carer/Friend/Family-name and contact phone number
- Confirm Oximetry Pack issued and arrangements for return agreed
- Does patient live alone
- Are there any specific access arrangements (if needing to drop off a PO – i.e. key safe etc)
- Patient resident in Care/ Nursing Home
- Patient resident in other Social Care setting
- Patient has learning disability
- Patient has dementia.

Referral process:

Practices can refer patients to the COVID Oximetry @home monitoring service by using the direct booking appointments on SystmOne, or by completing the referral proforma that is available to all practices, either through the clinical support tool for S1, and has been sent to EMIS practices.

In the event of preferred routes of referral being unavailable, other options will be available.

Monitoring (stage 4)

Self-Monitoring

Patients who are self-monitoring will be asked to record oximetry readings three times a day at approximately the same time each day.

Patients will be asked to take an extra measurement if they feel a change in their health.

If the patient has their own thermometer, they will be asked to check their temperature with each recording, but this is not essential.

If O2 sats are 95% or above the patient can continue to monitor their oxygen levels at home.

If O2 sats are 93-94% the patient should call their GP surgery (or 111 if Out of Hours) for a same day review.

If O_2 Sats are 92% or lower the patient should be instructed to attend their nearest emergency department within an hour or call 999.

Patients that choose self-monitoring can enter the monitored option at any time up to day 14 from onset of symptoms.

Patients who are self-monitoring will receive a check-in call from a clinician on day 14 from onset of symptoms. Those who do not show signed of deterioration within 14 days of onset of symptoms should be actively discharged and advised to contact their own GP if worsening or ongoing symptoms, safe advice on how to return the oximeter to the issuing site.

If there is no answer from the patient on day 14 from onset of symptoms the monitoring service will contact the patient's friend/family contact. If there is no answer from both patient and the patients/friend family contact the patient again within 24 hours. If the second attempt results in no answer the GP practice will be informed and implement its local welfare check process.

Monitored Patients

Patients should receive check-in calls, as agreed during on boarding on Days 2, 5, 7, 10, 12 and 14 post onset of symptoms. Check-in calls will be made by non-clinical staff. If the patient reports an O_2 sat less than 95% the check-in call will be passed to a clinician. If O_2 Sats are 92% or lower the patient should be instructed to attend their nearest emergency department within an hour or call 999. If the O_2 are 95% or above then the non-clinical staff will complete the check-in call. As the O_2 sats are 95% or above the clinician will not receive notification of the call.

Record in the patients notes the diary information for day of call i.e. O_2 sats and pulse and if they feel better/same /worse and if their breathing is better/same/worse.

Patients who are monitored will be asked to record oximetry readings three times a day at approximately the same time each day.

Patients will be asked to take an extra measurement if they feel a change in their health.

If the patient has their own thermometer, they will be asked to check their temperature with each recording, but this is not essential.

Check-in calls should confirm that the patient is using the oximeter and diary correctly, and that the readings are 95% or over.

If O2 sats are 93-94% or less the patient will be advised to call 111 or their GP surgery for a review.

If O_2 Sats are 92% or lower the patient should be instructed to attend their nearest emergency department within an hour or call 999.

If there is no answer from the patient for a check-in call the monitoring service will contact the patients friend/family. If there is no answer from both patient and the patients/friend family the monitoring service will contact the patient again within 2 hours. If the second attempt results in no answer the GP practice or 111 if out of hours will be informed and implement its local welfare check process.

Patients can choose to change to the self-monitoring option any time up to day 14 from onset of symptoms.

Patients will receive a check-in call from a clinician on day 14 from onset of symptoms. Those who do not show signed of deterioration within 14 days of onset of symptoms should be actively discharged and advised to contact their own GP if worsening or ongoing symptoms, safe advice on how to return the oximeter to the issuing site.

If there is no answer from the patient on day 14 from onset of symptoms the monitoring service will contact the patient again within 24 hours. If the second attempt results in no answer the GP practice will be informed and implement its local welfare check process.

Recovery and discharge (stage 5)

Reason for discharge:

- 14 days post onset of symptoms completed and patient symptom free
- Admitted to hospital
- Self-discharge from the pathway
- Negative COVID test (monitoring service refer back to clinician to consider discharge)

Patients who do not show signs of deterioration within 14 days of onset of symptoms should be actively discharged and supplied with leaving information, safety netting and safe advice on how to return the oximeter (e.g., to hot site, by a friend or family member, or through NHS Volunteer Responders).

Patients who remain symptomatic or observations remain in the moderate category (refer to appendix 1) at 14 days should contact their own GP within 24 – 48 hours for consideration of clinical assessment.

Update sent to GP on discharge from service or admission to hospital within 24 hours to included details of patient journey, outcome and advice given.

1.4 Oximeter supply and safe re-use

Oximeters for home use must meet ISO 80601-2-61:2017.

Oximeter packs will be held at GP practices

Supply of Oximeter

- Collection of oximetry pack from GP surgery by symptom free relative/friend
- Local volunteer
- NHS Volunteer Responders (https://nhsvolunteerresponders.org.uk/referral)
- Drive through check in surgery car park
- If already involved use of other services e.g., JET, DN
- Other local service used by practice

CCGs can request suitable oximeters from NHS Supply Chain in batches of 100, to be stored locally as appropriate for anticipated demand. Oximeters can be requested by emailing england.home@nhs.net . Once the order is agreed, delivery to the requesting CCG should be made within three working days. When requesting oximeters, it is important to include the population numbers covered and where the service is sited. Prior to being distributed to patients, and on return from them, oximeters must be decontaminated in line with infection control policies for reusable electronic equipment. They must be checked that they are functional and safe for re-use prior to being allocated to new patients. This should be done in line with local and national guidance for reusable electronic clinical monitoring equipment. Oximeters must be available for same day distribution to patients, including out-of-hours. Patients should ideally not to have to wait more than 12 hours to receive an NHS oximeter.

A copy of the flowchart for the routine decontamination of reusable non-invasive patient care equipment can be found **here**.

1.5 Care Homes

People living in care homes should receive the same standard of care as someone in their own home. This should be facilitated by care home staff and other supporting services. This should include full escalation or emergency admission or potential emergency home oxygen treatment and palliative treatments where appropriate.

Care homes have already got Sats monitors and staff should have had training on how to use.

1.6 Coding, Record Keeping and Data Requirements

The following Snomed codes are now live in SystmOne and should be used for purposes of coding patients:

- 1325251000000106 Referral to telehealth pulse oximetry monitoring service (procedure)
  Synonym: Referral to remote virtual care pulse oximetry monitoring service
- 1325261000000109 Referral by telehealth pulse oximetry monitoring service (procedure)
  Synonym: Referral by remote virtual care pulse oximetry monitoring service
- 1325271000000102 Discharge from telehealth pulse oximetry monitoring service (procedure)
  Synonym: Discharge from remote virtual care pulse oximetry monitoring service
- 1325201000000105 Telehealth pulse oximetry monitoring ended (situation)
  Remote virtual care pulse oximetry monitoring ended
- 1325191000000108 Telehealth pulse oximetry monitoring started (situation)
  Synonym: Remote virtual care pulse oximetry monitoring started
- 1325211000000107 Provision of pulse oximeter (procedure)
- 1325221000000101 Telehealth pulse oximetry monitoring not appropriate (finding)
  Synonym: Remote virtual care pulse oximetry monitoring not appropriate
- 1325241000000108 Telehealth pulse oximetry monitoring declined (situation)
  Synonym: Remote virtual care pulse oximetry monitoring declined
- 1325281000000100 Discussion about telehealth pulse oximetry monitoring (procedure)
  Synonym: Discussion about remote virtual care pulse oximetry monitoring.

All relevant information should be recorded in the patient record including if a patient declines the pathway.

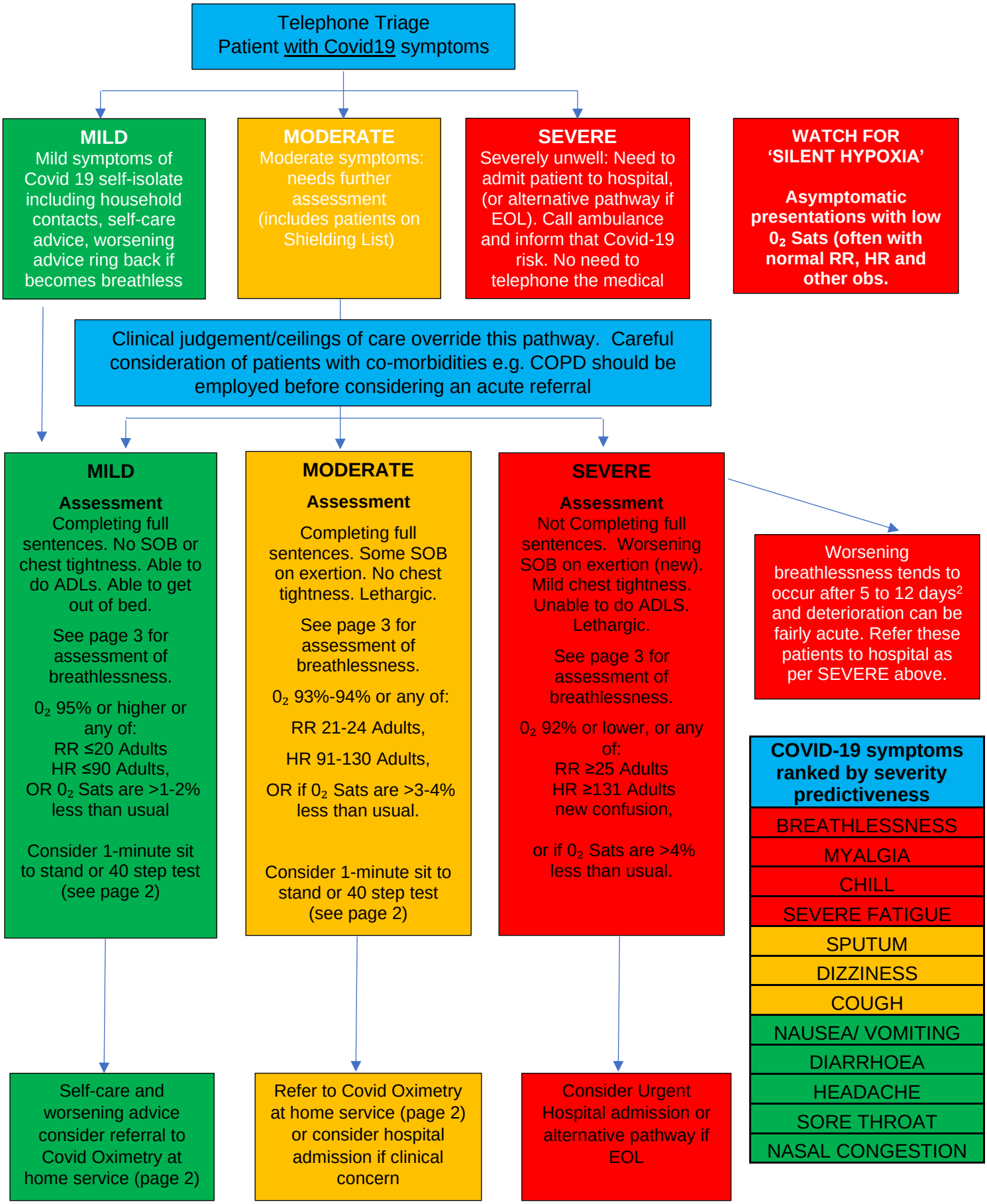
CCGs will be requested to provide routine information on caseload and return rate of oximeters. The model will be subject to ongoing evaluation and adaptation. A copy of the reporting requirements developed by NHSE/ I can be found at Appendix 3.

1.7 Communication

Admissions to hospital should include a referral letter

Update sent to GP on discharge from service or admission to hospital within 24 hours to included details of patient journey, outcome and advice given.

Appendix 1: C&P Primary Care COVID Oximetry @home Triage Pathway



COVID Oximetry @home

A link to the patient information, YouTube videos and other supporting documents can be found **here**.

Onboarding day: GP issues Sats monitor, COVID-19 diary and 'admission pack'

Monitoring: Symptoms and trend of 0_2 saturation at **Day 2, 5, 7, 10 and 12 of symptom onset,** clinical review as needed, escalation as required

Some patients may be suitable for self-monitoring with a clinical diary and escalation as required.

Discharge: to include **reminder to return monitor**: negative COVID-19 test result or if deterioration and admitted, or at **Day 14** from onset of symptoms

Day 14 from onset of symptoms: Follow up call, if patient asymptomatic and Sats stable then discharged with information and advised to return monitor, OR if symptomatic patient advised to review with their GP.

Follow up call at Day 14 (when recovery is expected)

- Check-up symptoms/ saturations

- Evaluation of project

- Reminder to return oximeter/ diary

Please ensure the following information is included when making a referral:

▪ NHS number ▪ Given Name/ Forename ▪ Family Name/ Surname ▪ Date of birth ▪ Gender ▪ Address ▪ Full patient postcode ▪ Contact phone number ▪ COVID-19 test result, if available or date test appointment ▪ Referral source ▪ Consent to share ▪ Date of onboarding ▪ Current 0_2 Sats at rest	▪ Lowest O_2 Sats during 40-step walk or one-minute sit-to-stand test ▪ Date of symptom onset ▪ General text box for any other significant information – please include details of normal baseline 0_2 if patient has a known diagnosis of COPD or respiratory disease. ▪ Interpreter required ▪ Carer/Friend/Family-name and contact phone number ▪ Confirm Oximetry Pack issued and arrangements for return agreed ▪ Does patient live alone ▪ Are there any specific access arrangements (if needing to drop off a PO – i.e. key safe etc)

Referrals:

Practices can refer patients to the COVID Oximetry @home monitoring service by using the direct booking appointments on SystmOne, or by completing the referral proforma that is available to all practices, either through the clinical support tool for S1, and has been sent to EMIS practices.

Exercise testing

1-minute sit-to-stand test ask the patient to go from sitting to standing as many times as they can in 1 minute

40-step test ask the patient to take 40 steps on the flat.

The test should be terminated if the patient becomes distressed or develop any adverse symptoms (severe breathlessness, chest pain, dizziness).

A 3% drop in O2 sats would be a cause for concern and admission should be considered

Please see the BMJ article Here on remote assessment of breathing in Covid 19 patients and extract below:

Remote assessment of breathlessness

There are no validated tests for the remote assessment of breathlessness in an acute primary care setting. A rapid survey of 50 clinicians who regularly assess patients by telephone revealed some differences of opinion. For example, most but not all rejected the Roth score (which times how long it takes for a patient to take a breath while speaking) on the grounds that it has not been validated in the acute setting and could be misleading.

However, there was consensus among respondents around the following advice:

1. Ask the patient to describe the problem with their breathing in their own words, and assess the ease and comfort of their speech. Ask open ended questions and listen to whether the patient can complete their sentences:
    - "How is your breathing today?"
2. Align with the NHS 111 symptom checker, which asks three questions (developed through user testing but not evaluated in formal research):
    - "Are you so breathless that you are unable to speak more than a few words?"
    - "Are you breathing harder or faster than usual when doing nothing at all?"
    - "Are you so ill that you've stopped doing all of your usual daily activities?"
3. Focus on change. A clear story of deterioration is more important than whether the patient currently feels short of breath. Ask questions such as
    - "Is your breathing faster, slower, or the same as normal?"
    - "What could you do yesterday that you can't do today?"
    - "What makes you breathless now that didn't make you breathless yesterday?"
4. Interpret the breathlessness in the context of the wider history and physical signs. For example, a new, audible wheeze and a verbal report of blueness of the lips in a breathless patient are concerning.
    - There is no evidence that attempts to measure a patient's respiratory rate over the phone would give an accurate reading, and experts do not use such tests. It is possible, however, to measure the respiratory rate via a good video connection. More generally, video may allow a more detailed assessment and prevent the need for an in-person visit.

Supplemental references:

[1]**Pointers to differentiating viral COVID-19 pneumonia from bacterial pneumonia** are listed in the NICE guidance on COVID-19 rapid guideline: managing suspected or confirmed pneumonia in adults in the community:
https://www.nice.org.uk/guidance/ng165/chapter/3-Diagnosis-and-assessment

[2]Clinical management in hospital includes information on **early recognition and clinical course of covid**: https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/03/clinical-management-of-persons-admitted-to-hospita-v1-19-march-2020.pdf

[3]Use of oxygen in hospital. Contains information on saturations whilst on prescribed oxygen. Target saturations for adults whilst on oxygen treatment are 92%-96%
https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/04/C0256-specialty-guide-oxygen-therapy-and-coronavirus-9-april-2020.pdf

Appendix 2: C&P COVID Oximetry @home Escalation Process

Admission to hospital- *via ambulance 999 or referral to attend ED within 1 hour*

- If sats 92% or less (or more than 4% less than normal)
- If pulse ≥131
- If RR ≥25

Seek Clinical Advice – within 1 hour, local variation either referred back to GP or clinical advice available in the monitoring service.

- If sats ≤94%
- Or pulse ≥91
- Or RR ≥21
- Or worsening breathlessness
- Or feeling worse
- Or NEW confusion

"Please advise the patient that based on your readings and symptoms you will need to speak to a clinician who will ring you back."

Patients should be asked for their readings from the sats monitor (O_2% and pulse) and asked if they feel (better/same /worse) and if their breathing is (better/same/worse), as per the diary.

The responses should be checked against the escalation criteria above and the escalation pathway followed.

If there is no reason for escalation the patient can be advised the following:

"From what you have just told me your observations are satisfactory and we will ring you back on …. day /date……. Please continue to fill in your diary 3 times a day and if you begin to feel worse or become more breathless or if your O_2 levels fall or you pulse rises please contact your own GP in hours or 111 if our of hours."

At discharge if patient has on going symptoms or observations still within amber zone (appendix 1) please advise the follow:

"Ideally you should contact your own GP practice within 24 to 48 hours for further assessment. If you are concerned your symptoms are worse and need assessment sooner contact your GP or 111 if out of hours."

Appendix 3: NHSE/ I Data Reporting Requirements

What data do CCGs / providers need to collect?

CCGs / providers will be asked to collect the below data when onboarding and offboarding patients

Data category	Data field that need to be collected	What format should the data be?
Data to be collected when onboarding a patient on to CO@h	NHS number	Numerical
	Given Name/Forename	Text
	Family Name/Surname	Text
	Full patient postcode	Text / Numerical
	Date of birth	DD/MM/YYYY
	COVID-19 test result	Categorical – Positive / Negative / Not performed / Pending / Null
	Referral source	Categorical – GP/111/CCAS/OOH/ED/Hospital discharge/ Null
	Date of onboarding	DD/MM/YYYY
	O2 sats at rest	Numerical
	Date of symptom onset	DD/MM/YYYY
	Patient service type	Categorical – Standard (manual diary entry) / Technology-enabled (diary entry on technology platform) / Mixed
Data to be collected when offboarding a patient from CO@h	Self-discharged	Categorical – Yes / No
	Date of offboarding	DD/MM/YYYY
	Patient service type	Categorical – Standard (manual diary entry) / Technology-enabled (diary entry on technology platform) / Mixed

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