NCP Respiratory

Irish Thoracic Society

Guidance for the clinical management of COVID -19 in COPD and Asthma

Glossary
High Frequency Nasal Oxygen (HFNO): Therapy for type 1 respiratory failure or hypoxia

Aerosol –Generating Procedures (AGP): certain medical and patient care activities that can result in the release of airborne particles (aerosols). AGPs can create a risk of airborne transmission of infections that are usually only spread by droplet transmission

1.0 Introduction

This document aims to provide up-to-date guidance pertaining to aspects of the clinical management of COPD and asthma in relation to Covid -19. Given the rapidly evolving landscape with respect to Covid -19, the evidence-base for providing guidance is often limited. The guidance provided here is based on currently available evidence and consensus opinion from specialists in the HSE. The guidance is to be used as an adjunct to clinical judgment and can be adjusted to suit individual clinical environments.

The over-arching principle of this document is that the care received by patients with diagnosed or suspected Covid- 19 should be coherent and cohesive across the variety of care-settings in Ireland. The model is also cognisant of the potential risk to healthcare workers that Covid -19 poses.

The clinical presentation of Covid-19 varies widely, ranging in severity from asymptomatic infection to mild illness to severe or fatal illness. Furthermore, the transition between these categories of disease severity may occur rapidly. It remains unclear whether or not patients with asthma or COPD are more prone to Covid -19 and also whether or not the disease has a more fulminant course in people with these conditions. However, it would appear from early data that chronic respiratory illness is a co-morbidity associated with an increased risk of severe illness.

2.0 Asymptomatic/Mild disease:

In many cases asymptomatic or mild COVID -19 in both COPD and Asthma will not require hospitalisation. However, due to the at times unpredictable nature of the illness, all patients should remain vigilant with a low threshold from healthcare professionals to re-evaluate a patient's clinical signs and symptoms.

The decision to monitor as an inpatient or outpatient will be made on an individual basis dependent on a number of factors including the clinical presentation, the patient's ability to engage in monitoring, home isolation and the risk of transmission in the home. The severity of the patient's underlying asthma or COPD may also be a factor when deciding on the appropriateness or otherwise of hospital admission.

Where possible the clinical management in this scenario will aim to facilitate and support care and patient self-management at home and in the community. This will be led by the patient's GP and public health policy, including prompt implementation of recommended infection prevention and control measures and supportive management of complications.

Please see up to date IPC guidance on www.hpsc.ie

This may be achieved through the successful instigation of the community assessment hubs and intermediate care in the community, (further information available in COVID - 19 Model of Care).

Although oral steroids are not generally of therapeutic use in patients with COVID-19, in patients with co-existent asthma and COPD they may be necessary.

Current treatments

Asthma and COPD patients should continue all current treatments to improve their overall level of disease control, thereby reducing the risk of exacerbation.

- COPD and asthma patients should continue to take their regular preventer inhaler and all other inhalers as prescribed.
- COPD and asthma patients should use their action plans/communication cards to help them to manage and recognise symptoms (see resources section for links). The use of the action plan is recommended for both COPD and Asthma patients to help in the prevention and prompt treatment of exacerbations when they occur.
- COPD and asthma patients who use Non- invasive ventilation, Airvo or humidified LTOT at home should continue to use this as prescribed.

As Non- invasive ventilation, Airvo and humidified LTOT are considered AGPs, advice should be given to patients that there is a risk of increasing the virus spread to others so they should distance themselves from other household contacts when using them. Patients are advised to contact the home service provider for further advice if needed. For infection control and prevention updates on using these treatments please see www.hpsc.ie

- Asthma patients who attend for anti-IL5 or omalizumab treatment should continue to attend for this where possible (unless they have COVID-19 or are contacts)

- Where patients are on regular antibiotics such as Azithromycin these should be continued unless the clinician feels an alternative is appropriate.

- Patients on long-term oral steroids should continue to take their medication unless advised to discontinue by their physician.

Smoking cessation is important as there is some evidence that smokers may have an increased susceptibility to severe COVID-19 and should therefore consider quitting. This will have a higher chance of success with support.

Smoking is already a well-established risk factor for acute respiratory infections like influenza – both the number of infections and severity is greater in people who smoke. Smoking is also emerging as a potential risk factor for infection with Covid-19 and more severe disease in patients infected.

There are a number of ways in which smoking could transmit COVID and lead to more severe infections:

- Smoking increases the likelihood of someone touching their face, in particular their mouth
- Smoking can bring people in closer proximity to other people and cigarettes are often shared between people
- Smoking dampens the natural barriers in lungs to infection and may actually make it easier for COVID to attach itself to your lung surface and infect lung tissue
- Smoking affects the function of the heart and lungs making it harder to respond to an acute infection

- Smoking cause inflammation within the lungs as does infection. Smoking and COVID infection together might cause an exaggerated inflammatory response within the lungs.

Advice for patients on how to do this, access the online quit supports on quit.ie, Facebook HSEquit Facebook and through a personalised QuitPlan

New symptoms
The respiratory symptoms associated with COVID-19 are similar to those experienced by patients with asthma/COPD, including shortness of breath and cough. There is likely to be some overlap between the symptoms, however the main symptom which appears to differentiate usual asthma or COPD exacerbations from COVID-19 is the presence of a "new" fever. Fever is the most common of any symptom in confirmed cases of COVID-19.The HSE diagnostic pathways are particularly focusing on any patient who is experiencing a "new" fever or a "new" cough.

3.0 Moderate, severe and critical illness

Chronic respiratory disease such as COPD and asthma are possible factors associated with an increased risk for severe disease. One of the main complications of COVID-19 is respiratory failure with severe shunt and hypoxia in more severe cases. Patients with this level of disease will require hospital- based management.
BiPaP remains the GOLD standard for treatment of Type II respiratory failure in COPD patients, ideally in a negative pressure room or isolation. Asthma patients may tend to follow the type I failure pathway and may be more suited to either AIRVO or CPAP.

See Appendix 1 for Joint ITS/NCP Guideline on Respiratory Management of COVID-19

4.0 Treatments

4.1 High Frequency Nasal Oxygen (HFNO): AIRVO

HFNO is an acceptable therapy for hypoxic (Type I) failure in patients with Asthma and COPD with Covid-19. Please see up-to date IPC guidance prior to using this treatment on www.hpsc.ie . Patients with worsening hypercapnia, acidaemia, excessive work of breathing, fatigue, altered mental status or haemodynamic instability at any point should be considered for early invasive mechanical ventilation, if appropriate.

4.2 NIV

BiPaP remains the GOLD standard for treatment of Type II respiratory failure in COPD patients, ideally in a negative pressure room or isolation.

Asthma patients may tend to follow the type I failure pathway and may be more suited to CPAP.

NIV / CPAP for Covid-19 hypoxic respiratory failure is associated with a high failure rate and risk of delayed intubation. The *routine use* of NIV for Covid19 is not recommended but where required may provide a bridge to intubation or an alternate care pathway.

Well-fitted newer NIV hoods in the first instance or masks if not available to attempt to minimise the risk of airborne transmission. . Please see up to date IPC guidance prior to using this treatment on www.hpsc.ie.

Given the very high potential for failure of NIV in this population, close observation and a shorter

than usual trial period (approx. 1hour) should apply. Ideally this should take place in an environment where escalation to invasive mechanical ventilation is readily available (ED/ICU), though circumstances may not always allow this.

For any patient receiving NIV a clear plan for treatment failure should be established in advance.

Patients with altered mental status, haemodynamic instability or multi-organ failure should not be considered for NIV and should be considered for early invasive mechanical ventilation, where appropriate.

4.3 Aerosol Generating Procedures requiring increased vigilance

There are many treatments for Chronic Respiratory Disease such as asthma and COPD which are considered as aerosol generating procedures. These include NIV/CPAP, AIRVO, bronchoscopy, airway suctioning, Intubation and extubation and Respiratory Physiotherapy. Please see up to date IPC guidance prior to using these treatments on www.hpsc.ie.

4.4 Nebulisers

For sputum induction: Administration of hypertonic saline by nebuliser for sputum induction is an aerosol-generating procedure as it prompts coughing; it requires appropriate precautions see https://www.hpsc.ie/a-z/respiratory/coronavirus/novelcoronavirus/guidance/infectionpreventionandcontrolguidance/aerosolgeneratingprocedures/AGPs%20for%20confirmed%20or%20possible%20COVID19_v2.0_23032020.pdf

Although the administration of other nebulised medication is not considered an AGP, the use of bronchodilators through a spacer in asthma and COPD patients may have advantages including shorter duration of administration, ability to deliver through NIV Hood and patient can self-administer medication without health -care provider entering room.

5.0 Resources

Information on Infection control and prevention:
(https://www.hpsc.ie/a-z/respiratory/coronavirus/novelcoronavirus/).

Action plans COPD & Asthma
https://www.hse.ie/eng/about/who/cspd/ncps/copd/resources/copd-communication-card.pdf

https://www.hse.ie/eng/about/who/cspd/ncps/copd/resources/copd-self-care-plan.pdf

https://www.hse.ie/eng/about/who/cspd/ncps/asthma/resources/my-asthma-action-plan-asthma-society-of-ireland.pdf

Information on treatment in community
(https://www.icgp.ie/index.cfm?spKey=in_the_practice.clinical_hub.covid_19_coronavirus)

Information on AIRVO, Fisher & Paykel (https://www.fphcare.com/en-gb/covid-19/)

Patient information on
https://www.asthma.ie/news/coronavirus-covid-19-advice
http://copd.ie/covid-19-advice-for-people-living-with-copd/

6.0 Acknowledgements

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- Clinical Lead Desmond Murphy
- Programme Manager Susan Curtis
- Respiratory Physiotherapists representative Brenda Deering and Anne Lanigan

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The NCP Respiratory would also like to thank the Respiratory Service in CUH for allowing access to their pathways and documents already developed for the management of COVID 19.

7.0 References:

1. Joint ITS/ HSE NCP Respiratory Guideline on Respiratory Management of COVID-19 https://irishthoracicsociety.com/wp-content/uploads/2020/03/Respiratory-Management-Guideline-COVID-30.03-1.pdf
2. Guidance for infection prevention and control in healthcare settings (2020) issued by DHSC wales, NI, Scotland and England.
3. ECDC Technical report Infection prevention and control for Covid -19 in healthcare settings 2020
4. Chartered Society Physiotherapy UK Guidance on Covid 19
5. Rachel Moses (2020) Covid 19 Respiratory physiotherapy on call information and guidance version 2.
6. HPSC Aerosol Generating Procedures Guidance 17th March 2020
7. Infection prevention & control of suspected/confirmed influenza in healthcare settings 2013 HSE HPSC. The list of aerosol-generating procedures does not include nebulisation "based on current WHO recommendations derived from systematic review (Tran 2012)"
8. Guidance on www.asthma.ie
   www.asthma.ie /news/coronavirus-covid-19-advice 19th March 2020
   Approved by clinical programme and HSE
9. NIV (https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/03/clincial-guide-acute-niv-ventilation-v1-19-march-2020.pdf)

Appendix 1
Respiratory Management of Patients with COVID-19
V1 27.03.2020

Respiratory symptoms
COVID-19 +ve or suspected

Isolate/Full PPE.
NIV/HFNO only in –ve pressure (preferred) or single room.

For resuscitation/ ICU level care*

YES

NO

Categorize patient by O_2 saturations, Respiratory Rate and O_2 requirement.
CRS A/B/C/D (Page 2)
Target O_2 saturations
Sa02>94%, RR<20

Suspected Type 2 respiratory failure (Hx COPD/altered mental status/other)- Take ABG
Type II: pCO_2> 6 plus pH<7.35*

Local Policy*

Categorize patient by O_2 saturations and Respiratory Rate and O_2 requirement
CRS A/B/C*(Page 2)
Target O_2 saturations
Sa02>94%, RR<20

NO

YES

Monitor and repeat ABG if clinical deterioration

NIV -BIPAP per Hospital Protocol. **AGP Procedure- PPE**
SEE TABLE FIGURE 2 FOR ADVICE RE MASK AND HOOD.
Close Observation-Early Intubation if appropriate*

COVID RESPIRATORY SCALE (CRS) A/B/C/D**
A: Nasal cannula ≤ 3L min
B: Nasal cannula > 3 L min/ Venturi Mask 24-60%
C1: High Flow Nasal 0_2 C2: NIV
D: ICU +/- Intubate

In patients <u>for intubation</u> **failing 0_2 therapy** (hypoxia/agitation/ Confusion) **<u>Escalate Directly</u> to CRS D (Intubate +/- ICU)**

*Resus status and decision for **ICU level Respiratory Care (Intubation/NIV/AIRVO)** will depend on patients advanced directive, frailty, co-morbidities and local hospital ICU protocol and availability.
**Discussion between Institution Lead for Respiratory Medicine, ICU lead and Clinical Engineering re Hospital Oxygen Supply

CRS CATEGORY A **NO 0_2 REQUIREMENT/ NASAL CANNULA ≤ 3L** Sa02>94%, RR<20	• These patients can be managed in the first instance while stable on designated isolation general medical wards. However, single side rooms should in the first instance be reserved for patients requiring High flow oxygen (HFO) or NIV. • Nasal cannula up to 3 L/ min
CRS CATEGORY B **NASAL CANNULA > 3 L min/ VENTURI 24-60%** $Sa0_2$<94%, RR>20 but respond well to Nasal cannula	• These patients can be managed as above BUT need an increased level of vigilance as may escalate to categories C and D **QUICKLY.** • Use tight fitting Venturi mask e.g. 40% RED Valve (venturi available from 24-60%) • Non re-breather mask (100% at 15 L/min with tight fitting mask) OPTION if no response as a bridge to Category C/D • See **WHO guidance on Clinical Management of severe acute respiratory infection** when novel coronavirus (nCoV) infection is suspected
IF FAILURE OF CRS A/B- ESCALATE TO D IF FOR INTUBATION AND AGITATION/CONFUSION OR MULTIORGAN FAILURE. CONSIDER C1 OR C2 ON A CASE BY CASE BASIS	
CRS CATEGORY C1 * **HIGH FLOW NASAL O2 (HFNO) (AIRVO) (**AGP)** SaO_2<94%, RR>20: poor response to Venturi mask **EVALUATE AFTER 1 HOUR. CONSIDER ESCALATION IF FAILURE (WHO)**	• These patients need to be managed INITIALLY IF APPROPRIATE on designated COVID ISOLATION WARD with RESPIRATORY MEDICINE input in close consultation with ICU colleagues. Ensure a clearly established ceiling of care and whether patient is deemed suitable for escalation to CRS CATEGORY D – intubation and ventilation. • AIRVO/ (HFNO)-Flow rate*** 30 L/min, FiO_2>70% via nasal cannula or mask. Titrate FiO_2 to target O_2 sat >90%. • **VIDEO Link: How to set up AIRVO** • **PLACE SURGICAL MASK ON PATIENT OVER HFNO.** Use may be influenced by National Medicinal Oxygen Availability
CRS CATEGORY C2 * **NIV (**AGP)** SaO_2<94%, RR>20 poor response to Venturi mask **HIGH RISK OF FAILURE WITH DELAYED INTUBATION, EVALUATE AFTER 1 HOUR. CONSIDER ESCALATION IF FAILURE** **CPAP preferred mode†**	• NIV with CPAP and high flow oxygen – initial pressures of 8-10 cm H_20 and FiO_2 start 70% and titrate to O_2 sat >90% - Ventilate using HOOD if possible to minimise aerosolization. However limited availability of HOOD will necessitate use of Face mask. • **BOTH HOOD AND MASK REQUIRE 2 HEALTHCARE PROVIDERS TO PLACE PROPERLY (OR PATIENT TO HOLD MASK IF CAPABLE). VIRAL FILTERS ON EXPIRATORY PORT.** • **NHS link of set up of NIV with well-fitting full facial mask and filter on exhalation port** • **VIDEO Link: How to place HOOD** • Titrate if needed to pressure 10-15 cm H_20 and titrate FIO_2 to 100% -in the event you need to do this you are heading to CRS CATEGORY D– • NIV with Bi-level ventilation (Figure 1) is appropriate in type 2 respiratory failure as per usual practice.
CRS CATEGORY D: **ICU +/- INTUBATE (**AGP)** SaO_2<94%, RR>20 but poor response to HFNO/ NIV	• Inform ICU on call IMMEDIATELY-IF patient previously deemed suitable for ventilation. • These patients need to go straight to ICU depending on ventilator availability and proposed ceiling of care.

Nebulizers: Although nebulisers are not considered AGP procedure by several healthcare organizations, the use of bronchodilators through a spacer in asthma and COPD patients may have advantages including shorter duration of administration, ability to deliver through NIV Hood and patient can self-administer medication without health care provider entering room. If nebulisation absolutely required, perform in a single room where feasible. Nebulizer can be delivered through an in-line connector if using NIV Facemask (Video Link to demonstration)

*Although NHS recommends NIV rather than HFNO, aerosol generation and success has not been compared and 0_2 consumption varies depending on equipment and leak. Decision of which to use depends on patient factors, staff training, tolerability and equipment availability. Discussion between Institution Lead for Respiratory Medicine, ICU lead and Clinical Engineering re **Hospital Oxygen Supply and Local Respiratory Devices (e.g. NIV/HFNO) oxygen usage** recommended.

****AGP Procedures:** See HPSC Guidance. There is controversy at present regarding HPSC stating HFNO is not an AGP procedure (based on data from: Leung CCH, J Hosp Infect. 2019;101(1):84-7; Hui DS, Eur Respir J. 2019;53(4); Hui DS, Chest. 2015;147(5):1336-43).

The ITS, HSE and NCP Respiratory recommend that patients on HFNO wear a tight-fitting mask and both **HFNO and chest physiotherapy** be considered AGP procedures unless local policy states otherwise.

*****HFNO Flow Rate: AIRVO**-Fisher & Paykel recommend no less than 30L/ min (influence of flow on aerosolization potential not studied formally).

†CPAP preferred mode: https://emcrit.org/pulmcrit/cpap-covid/ - Not formally evaluated- COVID-19 usually causes profound hypoxemia but normal lung compliance.

Infection Control and Prevention: HSE PPE Guidance for Staff

Further Information: Irish Thoracic Society