

# Respiratory physiotherapy guidelines for managing patients with COVID-19 infection

4 SEPTEMBER 2020

## The role of respiratory physiotherapy in managing patients with COVID-19

Physiotherapists may have a role in the management and physical rehabilitation of patients with confirmed COVID-19 or those who meet the clinical or HIS criteria. Covid-19 is a multi-system disease, but it primarily affects the respiratory system. Some people will have a mild illness, others may develop respiratory failure and /or require admission to an ICU. Although a productive cough is a less common symptom in patients with COVID-19, physiotherapy may be indicated in patients with copious secretions from pre-existing lung conditions, because of secondary bacterial infections, and/or in those patients who are not able to independently clear their airway.

World Physiotherapy, the Australian Physiotherapy Association, and other international organisations have endorsed guidelines for the physiotherapy management of adult patients with suspected or confirmed COVID-19

[https://world.physio/sites/default/files/2020-06/FINAL-Physiotherapy\\_Guideline\\_COVID-19\\_V1\\_Dated16April2020\\_endorsed.pdf](https://world.physio/sites/default/files/2020-06/FINAL-Physiotherapy_Guideline_COVID-19_V1_Dated16April2020_endorsed.pdf)

## Infection Prevention and Control Precautions

Transmission of SARS-CoV-2 appears to be mainly via direct and indirect contact with infected saliva or respiratory secretions occurring during close contact with symptomatic cases. During activities such as coughing, sneezing, talking or singing, respiratory droplets, over a range of particle sizes, are expelled. Respiratory droplets > 5-10 microns in diameter are called droplets and those ≤ 5 microns are called aerosols or droplet nuclei. Droplets fall rapidly to the ground under the influence of gravity.

Aerosols or droplet nuclei are small and can stay suspended in the air over long distances and time. When inhaled they can cause infection; this is called airborne transmission. For infection to occur by this route the virus must remain viable in the aerosol, and the amount of virus present must be adequate to cause infection. Some medical procedures, termed aerosol generating procedures (AGPs), can generate droplet nuclei. This has been referred to as "opportunistic" airborne transmission as the aerosols are transmitted over limited distances only.

The hierarchy of infection prevention and control measures include source control, engineering and environmental control, administrative control, and personal protective equipment (PPE). Source control, engineering and environmental control, and administrative control are the first-line interventions. PPE adds a

further layer of protection and is essential when the other approaches cannot guarantee complete protection; it is not a substitute for the other measures.

To prevent transmission of infectious pathogens within healthcare settings Standard Precautions are used for all patient care episodes. They are based on a risk assessment of the likely exposure and make use of infection prevention practices and the use of PPE to protect healthcare workers from infection and to prevent the spread of infection from patient to patient.

In addition to Standard Precautions, a second tier of infection prevention practices, called Transmission-based Precautions, is required for patients who may be infected or colonized with certain infectious agents for which additional precautions are needed to prevent infection transmission.

- **Contact Precautions** - for patients with known or suspected infections that represent an increased risk for contact transmission
- **Droplet Precautions** -for patients known or suspected to be infected with pathogens transmitted by respiratory droplets
- **Airborne Precautions** - for patients known or suspected to be infected with pathogens transmitted by the airborne route (e.g. tuberculosis, measles, chickenpox, disseminated herpes zoster).

The use of **Contact and Droplet Precautions** is required when providing care for patients with suspected or confirmed COVID-19 infection.

Patients requiring Contact and Droplet Precautions should be cared for in a single room. Healthcare workers providing direct clinical care within 1 metre of the patient are required to wear the following PPE:

- Long sleeve impervious gown
- Single use non-sterile gloves
- Medical mask
- Eye protection – face shield or goggles

Hand hygiene should be performed before and after the donning and doffing of PPE.

When an AGP is being performed **Contact and Airborne Precautions** should be adhered to. The patient should be cared for in an airborne infection isolation room, if available, otherwise in a single room with the door closed. The air changes in the single room should be  $\geq 6$  per hour. The door should remain closed for one hour or until 6 air changes have occurred, whichever occurs first, after the AGP has been completed. The healthcare worker is required to wear the following PPE:

- Long sleeve impervious gown
- Single use non-sterile gloves
- Particulate respirator (N95)
- Eye protection – face shield or goggles

**Note:** Physiotherapists wearing particulate respirators need to be fit tested and be competent with performing a fit check each time they don a particulate respirator.

## Aerosol generating procedures

Aerosol generating procedures (AGPs) are those procedures that produce aerosols or droplet nuclei that are small enough to remain suspended around the patient zone for longer periods of time than larger droplets. Because of their small size they can be inhaled. They pose a higher infection risk for health professionals.

The following procedures are aerosol-generating:

- Tracheal intubation and extubation
- Non-invasive ventilation (NIV); bilevel continuous airway pressure- and CPAP
- Tracheotomy or tracheostomy procedures (insertion and removal)
- Manual ventilation
- Bronchoscopy
- High Frequency oscillating ventilation
- High flow nasal oxygen
- Induction of sputum using nebulisation
- Respiratory tract suctioning
- Dental procedures -high speed dental drills and ultrasound scalers
- High speed cutting instruments in surgery/post-mortem
- Upper ENT airway procedures that involve suctioning
- Upper gastro-intestinal endoscopy where there is open suctioning of the upper respiratory tract

Specific respiratory physiotherapy procedures associated with aerosol generating procedures include:

- Use of positive pressure breathing devices (eg IPPB), mechanical insufflation-exsufflation (MI-E) devices, intra/extra pulmonary high frequency oscillation devices (eg The Vest, MetaNeb, Percussionaire).
- PEP and oscillating PEP devices, including bubble PEP.
- Nasopharyngeal and oropharyngeal suctioning.
- Manual hyperinflation (MHI).
- Saline instillation via an open circuit/ endotracheal tube.
- Inspiratory muscle training, particularly if is required to be used with people who are intubated/ventilated and/or disconnected from a breathing circuit

For other procedures where physiotherapists may be exposed to respiratory secretions a risk assessment is required and these procedures include:

- Cough generating procedures (e.g. coughing and huffing during treatment).
- Positioning/gravity assisted drainage techniques and manual techniques (e.g. expiratory vibrations, percussion, manual assisted cough) that may trigger a cough and the expectoration of respiratory secretions.
- Any mobilisation or therapy that may result in coughing and/or expectoration of respiratory secretions.

## Guidance for undertaking a risk assessment.

For each patient care episode, the physiotherapist must first risk assess the situation and determine whether Contact and Droplet Precautions or Contact and Airborne Precautions should be adhered to. The following should be considered in the risk assessment:

- Need for face to face intervention
- Type of intervention
- Likelihood of repeated forceful coughing and respiratory secretions
- Proximity of therapist to patient of <1 metre
- Duration of intervention.

## PPE requirements during respiratory physiotherapy (including the use of aerosol generating procedures) for patients not diagnosed with COVID-19

Standard and Transmission-based Precautions should be followed for all patient care activities; this includes any medical procedure or intervention where exposure to blood and body fluids, including secretions or excretions, may occur.

Organisational guidance should be followed on how to put on and take off PPE safely including disposal of PPE. Hand hygiene should always be performed before putting on, and after taking off PPE.

Additional information on PPE can be found here: <https://www.health.govt.nz/PPE-use-health-care>

World Physiotherapy has also published the following guidance: <https://world.physio/resources/covid-19-information-hub>

<https://world.physio/sites/default/files/2020-07/Education-Briefing-paper-1-HEI.pdf>

[https://world.physio/sites/default/files/2020-06/airborne\\_factsheet\\_English.pdf](https://world.physio/sites/default/files/2020-06/airborne_factsheet_English.pdf)