



SOUTH AFRICAN SOCIETY OF PHYSIOTHERAPY

106 – 154 NPO

Vat No: 4390268409

PO Box 752378, Gardenview, Jhb, 2047  
Unit 4, Parade on Kloof Office Park, 1 The Parade,  
Bedfordview, 2007

Tel: +27 11 615 3170 [www.saphysio.co.za](http://www.saphysio.co.za)

Fax: 086 559 8237 [info@saphysio.co.za](mailto:info@saphysio.co.za)

Dear Members,

We, the NEC of the SASP, hope you are all well and doing all you can to stay safe during these unprecedented times. As the lockdown looms it is important that we have a strong stance on who we are and what we are about during an outbreak that needs to be curtailed. We are essential services! This needs to be balanced against the risk a patient takes to see you in an outpatient department / practice. We are essential to bolstering our country's response to this pandemic. If your patient does not require urgent attention (s)he should stay home. If you are able / willing, please consider donating your time and expertise to relieve those overworked in hard-hit facilities

Further to doing our bit with our patients, SASP staff at provincial as well as head office will be at home during the lockdown. Where possible they will work from home. The head-office staff will still be contactable via email.

As per attached guidelines from the SASP and WHO, outpatient departments / practices need to reschedule all their low risk of disability / complications patients until after 16 April. Acute / severe cases need to be managed effectively with as little contact as possible. Your facility needs to screen all patients for possible Covid-19 contact and refer accordingly. If your patients fall into the following then they should be seen

In the cases where there could be:

- Serious impairment to bodily functions
- Serious dysfunction of a bodily organ or part
- Reduced functional ability due to severe pain

Or when not seeing the patient:

- would place his/her life in jeopardy
- increase length of hospital stay
- prolong the expected rate of recovery

If your practice / department remains open, you need to screen all patients for Covid-19 contact / exposure and refer accordingly, it is important that you are part of the team detecting cases

We understand that there will be a loss of income for many of our fellow physiotherapists in the private sector and have decided as PEC to remove the April and May debit orders (DO) for membership, and we will see going forward if June DO also needs to be cancelled. The remaining amounts owing will be recalculated over the available months of the year.

We urge our Physiotherapy Community to remain calm, ethical and supportive during these times  
Stay strong, stay healthy

**Rogier van Bever Donker**

**President SASP**

Member and co-founder of





## **Practical guidance for physiotherapists in private and public sectors to consider related to COVID-19**

South African Society of Physiotherapy  
P.O. Box 752378  
Gardenview  
2047

Tel: +27 11 6153170  
Fax: +27 (0)865598237  
Email: [info@saphysio.co.za](mailto:info@saphysio.co.za)  
Website: [www.saphysio.co.za](http://www.saphysio.co.za)

*This document has been compiled by the SA Society of Physiotherapy (SASP)<sup>™</sup> as guidance to its members and includes the guidance available at the time of compilation.*

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## 1. Purpose of this Document

A national state of disaster has been declared in South Africa as a result of coronavirus disease-2019 (COVID-19) pandemic on 15 March 2020. This has been followed up by the declaration of a national lockdown that will apply from midnight on 26 March until 16 April 2020 during which period movements of all persons, other than a number of exempted persons such as healthcare practitioners, will be severely impacted. Details of the implications for physiotherapists during the period of lockdown are currently awaited.

It is critical for healthcare practices and facilities to continue to provide care for patients, irrespective of COVID-19 infection status. Practices and facilities may need to respond to a surge in patients requiring care. Concentrated efforts will be required to mobilise all aspects of healthcare to prevent transmission of disease, direct people to the right level of care, and decrease the burden on the healthcare system.

These guidelines have been prepared with the aim to advise physiotherapists who are employers or employees in both the private and public health sectors of their statutory obligations and to provide practical guidance to protect themselves and patients against COVID-19 in the physiotherapy setting. If there is any uncertainty, please obtain suitable professional advice.

## 2. What is the ‘Coronavirus’?

Coronaviruses are a large family of viruses which may cause respiratory infections ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). The most recent Coronavirus disease is COVID-19. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has been confirmed as the causative virus of Coronavirus disease 2019 (COVID-19). For an informative local overview of the disease, consider the following resource: <https://www.youtube.com/watch?v=IJVeSsn04HY>.

The following websites provide further information and regular updates on the disease:

- <https://www.gov.za/Coronavirus>
- <https://sacoronavirus.co.za/>
- <http://www.health.gov.za/index.php/outbreaks/145-corona-virus-outbreak/465-corona-virus-outbreak>

- <https://www.wcpt.org/news/Novel-Coronavirus-2019-nCoV>
- [https://physio-pedia.com/Coronavirus\\_Disease\\_\(COVID-19\)](https://physio-pedia.com/Coronavirus_Disease_(COVID-19))

### 3. Clinical and Preventative Information

An important source of clinical and preventative information is the National Institute of Communicable Disease's (NICD) website: <http://www.nicd.ac.za/>. The information is updated continuously.

An online assessment tool is available at <https://www.mediclinic.co.za/en/corporate/coronavirus/covid-19-risk-assessment-tool.html> to determine whether testing for COVID-19 must occur.

Consider also:

- <https://sacoronavirus.co.za/category/tool-kits/>
- [https://physio-pedia.com/Coronavirus\\_Disease\\_\(COVID-19\)](https://physio-pedia.com/Coronavirus_Disease_(COVID-19))
- <https://www.wcpt.org/news/Novel-Coronavirus-2019-nCoV>

### 4. Essential Principles

Physiotherapists should adhere to the following essential principles:

- Provide adequate and appropriate physiotherapy services to patients.
- Ensure continuity of care to patients.
- Ensure that physiotherapists and all support staff work in a safe environment and their well-being and health are protected.
- Ensure that capacity is available should the disease surge.
- Ensure that treating practitioners are familiar with the clinical management of infected patients.
- Ensure that adequate information is provided to treating physiotherapists, support staff and patients about the disease. Useful information, including preventative tips and information in all official languages, can be found at <https://sacoronavirus.co.za/> and <https://www.gov.za/sites/default/files/pictures/facts.pdf>.
- Ensure regular communication with the hospital or facility where practitioners work.

## 5. Duties of Employers

- 5.1. Employers must maintain a work environment that is safe and healthy. Health workers and health practitioners are by the nature of their work high risk and in some instances very high risk in terms of exposure to known or suspected sources of COVID-19. This places an increased burden on employers to ensure that the workplace is free from any risk to the health of its employees as far as it is reasonably practicable. This can, amongst others, be achieved by ensuring that the workplace is clean and hygienic, promoting regular hand-washing and good respiratory hygiene by employees and keeping employees informed on developments related to COVID-19.
- 5.2. As a health care provider, it is the responsibility of the practice owner or the practitioner in charge of, for example, a public facility, to take reasonable precautions to ensure the health and safety of physiotherapists providing care, other staff members and patients to try and prevent the spread of infection.
- 5.3. Employers, should in particular, -
  - 5.3.1. follow health advice and information provided by the World Health Organisation (WHO) (<https://www.who.int/emergencies/diseases/novel-coronavirus-2019>), the NICD (<http://www.nicd.ac.za/>) and the Department of Labour (<http://www.labour.gov.za/DocumentCenter/Publications/Occupational%20Health%20and%20Safety/COVID-19%20Guideline%20Mar2020.pdf>)
  - 5.3.2. communicate with employees regarding attendance at work and the spread of the infection
  - 5.3.3. prevent the spread of infection, amongst others, through:
    - 5.3.3.1. the provision of adequate facilities for employees to wash and/or sanitise their hands regularly
    - 5.3.3.2. sanitising surfaces such as worktops, computer terminals and telephones
    - 5.3.3.3. providing adequate Personal Protective Equipment (PPE) for employees treating confirmed COVID-19 cases or suspected cases (Persons under investigation - PUI); and
    - 5.3.3.4. screening patients and visitors entering the workplace.
  - 5.3.4. identify vulnerable workers and consider their protection
  - 5.3.5. implement suitable travel policies; and

- 5.3.6. update emergency contact information. The 24-hour hotline number of government is 0800 029 999.
- 5.4. Employer obligations relating to a healthy work environment can, amongst others, be found in the following legislation:
  - 5.4.1. Disaster Management Act (Act 57 of 2002) and its Regulations
  - 5.4.2. Occupational Health and Safety Act (OHSA) Act 85 of 1993) and its Regulations, especially the Regulations for Hazardous Biological Agents (in terms of OHSA)
  - 5.4.3. Regulations relating to the surveillance and the control of notifiable medical conditions (in terms of the National Health Act (Act 61 of 2003)).

## **6. Duties of Employees**

- 6.1. Employees cannot refuse to work due to the COVID-19 pandemic. Normal labour laws and sick leave rules apply to the employer-employee relationship. Where sick leave entitlements are exhausted, employees may claim illness benefits from the Unemployment Insurance Fund (UIF) (<http://www.labour.gov.za/easy-guide-for-employers-on-covid19>).
- 6.2. Where leave or self-quarantine is imposed on employees, employers should consider special paid leave, if these employees cannot work remotely.
- 6.3. In addition, employees also have duties under the Occupational Health and Safety Act. They must, in particular,
  - 6.3.1. take reasonable care for the health and safety of themselves and others affected by their conduct
  - 6.3.2. cooperate with the employer to ensure that the employer can discharge his/her legal duties
  - 6.3.3. carry out lawful orders and obey the health and safety rules and procedures of the employer and facility in the interest of health or safety
  - 6.3.4. report any situation, which is unsafe or unhealthy, as soon as practicable to the employer or the health and safety representative for the workplace; and
  - 6.3.5. report any incident, which may affect their health or has caused an injury to themselves, to the employer or the health and safety representative as soon as practicable.

6.4. In respect of sick and/or special leave to employees, employers should consider:

6.4.1. Workplace policies; and

6.4.2. Basic Conditions of Employment Act (Act 75 of 1997).

## 7. Patients: Standard Precautions

7.1. The following resources should be consulted to ensure adequate preventative measures are applied when treating patients:

- [https://www.who.int/publications-detail/infection-prevention-and-control-during-health-care-when-novel-coronavirus-\(ncov\)-infection-is-suspected-20200125](https://www.who.int/publications-detail/infection-prevention-and-control-during-health-care-when-novel-coronavirus-(ncov)-infection-is-suspected-20200125)
- [http://www.nicd.ac.za/wp-content/uploads/2020/03/Clinical\\_management\\_of\\_suspected\\_or\\_acute\\_COVID\\_V1.1\\_13.03.20\\_updated.pdf](http://www.nicd.ac.za/wp-content/uploads/2020/03/Clinical_management_of_suspected_or_acute_COVID_V1.1_13.03.20_updated.pdf) information in all official languages

7.2. A summary of the guidance provided by the WHO is briefly set out below and include:

- hand and respiratory hygiene
- the use of appropriate personal protective equipment (PPE) according to a risk assessment
- safe waste management
- proper linens
- environmental cleaning; and
- sterilisation of patient-care equipment.

7.3. Transmission-based precautions - droplet and contact:

- hand hygiene is the first and most essential aspect
- healthcare practitioner PPE consists of gloves, gown and a medical mask
- safe waste management



- use either disposable or dedicated equipment. If equipment needs to be shared among patients, clean and disinfect it between each patient use
- limit patient movement within the institution and ensure that patients wear medical masks when outside their rooms.

#### 7.4. Aerosol-Generating Procedures

7.4.1. Aerosol precautions are required when performing aerosol-generating procedures. These include taking respiratory tract samples for SARS-CoV-2 testing such as open suctioning of the respiratory tract.

7.4.2. Aerosol precautions for healthcare practitioners:

- Healthcare worker PPE consists of gloves, gown, a fit-tested particulate respirator (N95 respirator) and eye protection (goggles or face shield).
- Use an adequately ventilated single room when performing aerosol-generating procedures, with spacing between beds of at least 1-1.5 metres.

## 8. Practical Tips

### 8.1. Workplace

8.1.1. Consider the recommendations of the World Health Organisation (WHO) ([https://www.who.int/docs/default-source/coronaviruse/getting-workplace-ready-for-covid-19.pdf?sfvrsn=359a81e7\\_6](https://www.who.int/docs/default-source/coronaviruse/getting-workplace-ready-for-covid-19.pdf?sfvrsn=359a81e7_6)) and the Department of Labour (<http://www.labour.gov.za/DocumentCenter/Publications/Occupational%20Health%20and%20Safety/COVID-19%20Guideline%20Mar2020.pdf>) for the workplace.

8.1.2. Limit the number of staff members on site as far as possible.

8.1.3. Consider alternative work arrangements such as allowing non-clinical staff, accounts, etc. to work from home. Normal remuneration arrangements and employment benefits apply in these instances.

8.1.4. Conduct meetings by video or teleconference as far as possible.

8.1.5. Encourage hand washing and hygiene measures throughout the day.

8.1.6. Social distancing should be applied as far as possible. Implement a 'no handshake' policy and allow physical contact only for treating practitioners to treat patients.

8.1.7. Clean all surfaces, worktops, computer terminals, monitors and telephones.

- 8.1.8. Train staff to wear and dispose of protective clothing, where needed, correctly. Consider the following video: [https://drive.google.com/file/d/1u0NQeFz-I6F4ruc7u848EeyldxuN\\_d3H/view](https://drive.google.com/file/d/1u0NQeFz-I6F4ruc7u848EeyldxuN_d3H/view).
- 8.1.9. Any employee showing symptoms of the virus should immediately leave the practice / facility and be tested. Quarantine mechanisms must be considered and implemented where necessary.

## 8.2. Patient Care

- 8.2.1. Encourage patients who have travelled to high risk countries, were in contact with infected persons or show symptoms of the disease to rather reschedule non-urgent appointments.
- 8.2.2. Encourage patients to wash or sanitise their hands when entering the practice or the facility as well as at the end of their appointment.
- 8.2.3. Allow only one person at a time at the reception desk or 2 metres apart, if possible.
- 8.2.4. Do not allow family members to accompany patients to the consultation and waiting room unless absolutely necessary.
- 8.2.5. Reduce seating in the waiting room and try and keep all chairs 2 metres apart, if possible.
- 8.2.6. Impose access control to consulting areas.
- 8.2.7. Wipe down surfaces between patients, especially patient response buttons, door handles, bathrooms, etc.
- 8.2.8. Support patients remotely with exercises, etc. as may be appropriate.
- 8.2.9. Report to and have discussions with referring doctors by telephone or other internet-based mechanisms such as Skype.
- 8.2.10. Comply with the measures imposed by the hospitals and other facilities where physiotherapy services are provided.

## 9. **Medical Scheme Benefits**

- 9.1. According to the Council for Medical Schemes (CMS), diagnosis and management of uncomplicated COVID-19 infection is not included in the Prescribed Minimum Benefits (PMBs). COVID-19 infection may, however, result in various complications which are PMBs. Most of the complications are included in the PMBs and should be treated as specified for the specific condition.

9.2. If PMBs are not applicable, scheme-specific benefits apply to the testing and treatment of a condition.

9.3. Further details can be obtained from the following documents:

- <https://www.medicalschemes.com/files/CMScript/CMScript%201-2020.pdf>
- <https://www.medicalschemes.com/files/Press%20Releases/PressRelease3of2020.pdf>

## 10. Occupational Acquired COVID-19

For any occupationally acquired COVID-19, claims may be submitted under the Compensation for Occupational Injuries and Diseases Act (Act 130 of 1993). Further information is available at:

[https://www.gov.za/sites/default/files/gcis\\_document/202003/43126gen193.pdf](https://www.gov.za/sites/default/files/gcis_document/202003/43126gen193.pdf).

## 11. Contracts

11.1. Physiotherapy practices should consider the provisions in their contracts with, for example, landlords when they are unable to render services as a result of the pandemic.

11.2. Contracts often contain clauses pertaining to 'force majeure' or 'vis major events'. Epidemics or quarantines are included in conventional force majeure events. Force majeure provisions generally suspend the ordinary consequences of breach of contract, including specific performance or termination and the payment of damages and/or penalties, which are not applicable due to impossibility of performance.

11.3. Appropriate legal advice should be obtained, where necessary.

## 12. Liability

12.1. A physiotherapist, who is also an employer, could incur liability under the Occupational Health and Safety Act (Act of 1993) should he/she not ensure a safe working environment.

12.2. Furthermore, Regulation 11(6) of the Regulations published under the Disaster Management Act (Act 57 of 2002) provides that any person who **intentionally** exposes another person to COVID-19 may be prosecuted for an offence, including assault, attempted murder or murder.

- 12.3. Hence, it must be emphasised that all physiotherapists must take reasonable precautions at practice and/or facility level to prevent the spread of COVID-19. This would include measures such as imposing a period of quarantine on staff members who pose a risk or to impose self-quarantine of the physiotherapist poses a risk.

### **13. SASP Contact Information**

For any urgent assistance with respect to dealing with COVID-19 in the clinical setting or in the workplace, please send an e-mail to [president@saphysio.co.za](mailto:president@saphysio.co.za) or [profliaison.consultant@saphysio.co.za](mailto:profliaison.consultant@saphysio.co.za).

# **Physiotherapy Management for COVID-19 in the Acute Hospital Setting:**

**Recommendations to guide clinical practice**

**Version 1.0  
23 March 2020**

**TITLE:** **Physiotherapy management for COVID-19 in the acute hospital setting: Recommendations to guide clinical practice**

**DESCRIPTION AND OBJECTIVES:** This document outlines recommendations for physiotherapy management for COVID-19 in the acute hospital setting. It includes recommendations for physiotherapy workforce planning and preparation, a screening tool for determining requirement of physiotherapy, recommendations for the selection of physiotherapy treatments and personal protective equipment.

**TARGET AUDIENCE:** Physiotherapists and other relevant stakeholders in the acute care setting caring for adult patients with suspected and/or confirmed COVID-19

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**AUTHORS:** Peter Thomas  
Claire Baldwin  
Bernie Bissett  
Ilanthe Boden  
Rik Gosselink  
Catherine L. Granger  
Carol Hodgson  
Alice YM Jones  
Michelle E Kho  
Rachael Moses  
George Ntoumenopoulos  
Selina M. Parry  
Shane Patman  
Lisa van der Lee

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An international team of expert researchers and clinicians within the intensive care and acute cardiorespiratory fields have developed these recommendations. The recommendations are intended for use in adults only. This document has been constructed using existing medical guidelines, relevant literature and expert opinion. The authors have made considerable effort to ensure the information contained with the recommendation is accurate at time of publication. Further iterations of these guidelines will be published as new information arises. The information provided in this document is not designed to replace local institutional policies and should not replace clinical reasoning for individual patient management. The authors are not liable for the accuracy, information that may be perceived as misleading, or completeness of information in this document. The guideline group will review and update this guidance within 6-months, or if important new evidence emerges that changes the recommendations herein.

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[PeterJ.Thomas@health.qld.gov.au](mailto:PeterJ.Thomas@health.qld.gov.au)

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## **Management of Conflict of Interests**

All guideline panel members completed a World Health Organisation (WHO) conflict of interest (COI) form. Direct financial and industry related COIs were not permitted and were considered disqualifying. The development of this guideline did not include any industry input, funding, or financial or non-financial contribution. No member of the guideline panel received honoraria or remuneration for any role in the guideline development process. We explicitly discussed conflicts of interest, including those who held grants related to ICU rehabilitation (CH, MK, SMP) or received industry funding for HFNC research (IB); because none of these projects specifically involved COVID-19, the group agreed there were no relevant conflicts of interest.

## COVID-19 PHYSIOTHERAPY GUIDELINE AUTHORSHIP GROUP:

Name	Qualifications	Title and Affiliations
<b>Peter Thomas</b>	PhD, BPhy (Hons); FACP	Consultant Physiotherapist and Team Leader – Critical Care and General Surgery, Department of Physiotherapy, Royal Brisbane and Women’s Hospital, Brisbane, Australia
<b>Claire Baldwin</b>	PhD, B. Physio (Hons)	Lecturer in Physiotherapy, Caring Futures Institute, College of Nursing and Health Sciences, Flinders University, Adelaide, Australia
<b>Bernie Bissett</b>	PhD, BAppSc (Physio) (Honours)	Associate Professor & Discipline Lead Physiotherapy, University of Canberra Visiting Academic Physiotherapist, Canberra Hospital, Australia
<b>Ianthe Boden</b>	PhD Candidate, MSc, BAppSc (Physio)	Cardiorespiratory Clinical Lead Physiotherapist, Launceston General Hospital, Tasmania, Australia
<b>Rik Gosselink</b>	PT, PhD, FERS	Professor Rehabilitation Sciences, Specialist Respiratory Physiotherapist, Dept Rehabilitation Sciences, KU Leuven, Belgium; Dept Critical Care, University Hospitals Leuven, Belgium
<b>Catherine L Granger</b>	PhD, B. Physio (Hons), Grad Cert in University Teaching	Associate Professor Department of Physiotherapy, The University of Melbourne, Australia
<b>Carol Hodgson</b>	PhD, FACP, BAppSc (PT), MPhil, PGDip (cardio)	Professor and Deputy Director, Australian and New Zealand Intensive Care Research Centre, Monash University, Specialist ICU Physiotherapist, Australia
<b>Alice YM Jones</b>	PhD, FACP, MPhil, MSc (Higher education), Cert PT	Honorary Professor, School of Health and Rehabilitation Sciences, The University of Queensland Honorary Professor, Discipline of Physiotherapy, Faculty of Health Sciences, The University of Sydney



		Specialist in cardiopulmonary physiotherapy
<b>Michelle E Kho</b>	PT, PhD	Associate Professor, School of Rehabilitation Science, McMaster University Canada Physiotherapist, St Joseph's Healthcare, Hamilton, ON, Canada Clinician-Scientist, The Research Institute of St Joe's, Hamilton, ON, Canada Canada Research Chair in Critical Care Rehabilitation and Knowledge Translation
<b>Rachael Moses</b>	BSc (Hons), PT, MCSP	Consultant Respiratory Physiotherapist, Lancashire Teaching Hospitals, United Kingdom
<b>George Ntoumenopoulos</b>	PhD, BAppSc, BSc, Grad Dip Clin Epid	Consultant Physiotherapist Critical Care, St Vincent's Hospital, Sydney, Australia
<b>Selina M Parry</b>	PhD, B. Physio (Hons), Grad Cert in University Teaching	Senior Lecturer, Cardiorespiratory Lead Dame Kate Campbell Fellow & Sir Randal Heymanson Fellow Department of Physiotherapy, The University of Melbourne, Australia
<b>Shane Patman</b>	PhD; BAppSc (Physio); MSc; Grad Cert Uni Teaching; Grad Cert NFP Leadership & Management; FACP; GAICD	Associate Dean (Programs Coordinator) Associate Professor & Cardiorespiratory Physiotherapy Stream Leader, School of Physiotherapy, The University of Notre Dame Australia, Perth, Australia
<b>Lisa van der Lee</b>	PhD Candidate, BSc (Physio)	Senior Physiotherapist, Intensive Care Unit, Fiona Stanley Hospital, Perth, Western Australia

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- Alison Blunt, Princess Alexandra Hospital, Australia; Australian Catholic University, Australia
- Jemima Boyd, Cairns Base Hospital, Australia
- Tony Cassar, Princess Alexandra Hospital, Australia
- Claire Hackett, Princess Alexandra Hospital, Australia
- Kate McCleary, Sunshine Coast University Hospital, Australia
- Lauren O'Connor, Gold Coast University Hospital, Australia; Chairperson QCRPN.
- Helen Seale, Prince Charles Hospital, Australia
- Dr Peter Thomas, Royal Brisbane and Women's Hospital, Australia.
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- Sarah Wright, Queensland Children's Hospital, Australia

## **ENDORSEMENTS:**

- Association of Chartered Society of Physiotherapist in Respiratory Care UK (ACPRC)

## KEY INTERNATIONAL DOCUMENTS RELATED TO THIS GUIDELINE:

The following guidelines within the field directly informed the design of this publication:

- **World Health Organisation (WHO):** Clinical Management of severe acute respiratory infection when novel coronavirus (2019-nCoV) infection is suspected Interim Guidance V1.2. 13 Mar 2020. [https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-\(ncov\)-infection-is-suspected](https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-(ncov)-infection-is-suspected). WHO Reference number WHO/2019-nCoV/clinical/2020.4
- **Society of Critical Care Medicine (SCCM) and European Society of Intensive Care Medicine (ESICM):** Alhazzani, et al (2020): Surviving sepsis campaign: Guidelines of the Management of Critically Ill Adults with Coronavirus Disease 2019 (COVID-19). Critical Care Medicine, Epub Ahead of Print March 20, 2020. <https://www.sccm.org/disaster>
- **Australian and New Zealand Intensive Care Society (ANZICS)** (2020): ANZICS COVID-19 Guidelines. Melbourne: ANZICS V1 16.3.2020 <https://www.anzics.com.au/coronavirus/>
- **National institute for Health and Care Excellence (NICE) Guidelines** COVID-19 rapid guideline: critical care. Published: 20 March 2020 [www.nice.org.uk/guidance/ng159](http://www.nice.org.uk/guidance/ng159)
- **French Guidelines: Conseil Scientifique de la Société de Kinésithérapie de Réanimation.** Reffienna et al. Recommandations sur la prise en charge kinésithérapique des patients COVID-19 en réanimation. Version 1 du 19/03/2020

## **BACKGROUND:**

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a new coronavirus that emerged in 2019 and causes Coronavirus Disease 2019 (COVID-19) [1, 2].

SARS-CoV-2 is highly contagious. It varies from other respiratory viruses in that it appears that human-to-human transmission occurs approximately 2 to 10 days prior to the individual becoming symptomatic [2-4]. The virus is transmitted from person to person through respiratory secretions. Large droplets from coughing, sneezing, or a runny nose land on surfaces within two meters of the infected person. SARS-CoV-2 remains viable for at least 24 hours on hard surfaces and up to eight hours on soft surfaces [5]. The virus is transferred to another person through hand contact on a contaminated surface then touching the mouth, nose, or eyes. Aerosol airborne infected particles created during a sneeze or cough remain viable in the air for at least three hours [5]. These airborne particles of SARS-CoV-2 can then be inhaled by another person or land on the mucosal membranes of the eyes.

Individuals with COVID-19 can present with an influenza like illness and respiratory tract infection demonstrating fever (89%), cough (68%), fatigue (38%), sputum production (34%) and/or shortness of breath (19%) [4]. The spectrum of disease severity ranges from an asymptomatic infection, mild upper respiratory tract illness, severe viral pneumonia with respiratory failure and/or death. Current reports estimate that 80% of cases are asymptomatic or mild; 15% of cases are severe (infection requiring oxygen); and 5% are critical requiring ventilation and life support [2].

Preliminary reports indicate that chest radiographs may have diagnostic limitations in COVID-19 [6]. Clinicians need to be aware of lung CT scan findings that often include multiple mottling and ground-glass opacity [7]. Lung ultrasound is also being utilised at the bedside with findings of multi-lobar distribution of B-lines and diffuse lung consolidation [8]

At present, the mortality rate is 3 to 5%, with new reports of up to 9%, in contrast to influenza, which is around 0.1% [2]. The rates of admission to an intensive care unit (ICU) are approximately 5% [4]. Half of patients admitted to hospital (42%) will require oxygen therapy [4]. Based on emerging data, individuals at highest risk of developing severe COVID-19 disease requiring hospitalisation and/or ICU support are those who are older, male, have at least one co-existing comorbidity, higher severity of illness scores (measured via SOFA scores), elevated d-dimer levels and/or lymphocytopenia [2, 4, 9-11].

## **PURPOSE:**

This document has been prepared to provide information to physiotherapists and acute care healthcare facilities about the potential role of physiotherapy in the management of hospital-admitted patients with confirmed and/or suspected COVID-19.

Physiotherapists who work in primary healthcare facilities are likely to have a role in the management of patients admitted to hospital with confirmed and/or suspected COVID-19. Physiotherapy is an established profession throughout the world. In Australia and overseas, physiotherapists often work in acute hospital wards and the ICU. In particular,

cardiorespiratory physiotherapy is focussed on the management of acute and chronic respiratory conditions and aims to improve physical recovery following an acute illness.

Physiotherapy may be beneficial in the respiratory treatment and physical rehabilitation of patients with COVID-19. Although a productive cough is a less common symptom (34%) [4], physiotherapy may be indicated if patients with COVID-19 present with copious airway secretions that they are unable to independently clear. This may be evaluated on a case-by-case basis and interventions applied based on clinical indicators. High risk patients may also benefit. For example, patients with existing comorbidities that may be associated with hypersecretion or ineffective cough (e.g. neuromuscular disease, respiratory disease, cystic fibrosis etc). Physiotherapists who practice in the ICU environment may also provide airway clearance techniques for ventilated patients who show signs of inadequate airway clearance and they can assist in positioning patients with severe respiratory failure associated with COVID-19, including the use of prone position to optimise oxygenation [12].

Given the intensive medical management for some COVID-19 patients including prolonged protective lung ventilation, sedation and use of neuromuscular blocking agents, patients with COVID-19 who are admitted to ICU may be at high risk of developing ICU acquired weakness (ICU-AW) [13]. This may worsen their morbidity and mortality [14]. It is therefore essential to anticipate early rehabilitation after the acute phase of ARDS in order to limit the severity of ICU-AW and promote rapid functional recovery. Physiotherapy will have a role in providing exercise, mobilisation and rehabilitation interventions to survivors of critical illness associated with COVID-19 in order to enable a functional return to home.

## **SCOPE:**

This document is focused on the adult acute hospital setting.

The recommendations for physiotherapists are outlined below and focus on the specific health questions of this guideline:

- SECTION 1: Workforce planning and preparation including screening to determine indications for physiotherapy.
- SECTION 2: Delivery of physiotherapy interventions including both respiratory and mobilisation / rehabilitation as well as PPE requirements.

It is recognised that physiotherapy practices vary across the world. When utilising this guideline, the scope of practice within the local context should be considered.

## **GUIDELINE METHODOLOGY AND CONSENSUS APPROACH:**

A group of international experts in cardiorespiratory physiotherapy came together to rapidly prepare a clinical practice guideline for physiotherapy management of COVID-19. Our guideline group initially convened on Friday March 20, 2020 at 10:00am (Australian Eastern Standard Time) to discuss the urgent need for acute care physiotherapy guidance world-

wide in relation to COVID-19. We quickly prioritised our efforts to develop specific guidance for physiotherapists in the acute care settings.

The AGREE II framework [15] was used to guide our development, recognising the expediency of our work required pragmatic, yet transparent reporting. We modelled our conduct after the GRADE Adolopment Process [16] and Evidence to Decision framework [17] for recommendations and decision-making. Our expertise includes ICU and acute inpatient physiotherapy (all), rehabilitation interventions in the intensive care unit (all), physiotherapy administration (PT, IB, RG, AJ, RM, ShP), systematic reviews (PT, CB, CG, RG, CH, MK, SP, ShP, LV), guideline methodology (PT, IB, RG, CH, MK, RM, ShP, LV), and epidemiology (CH, MK). We documented all conflicts of interest a priori using the World Health Organisation (WHO) form.

Through a web search and personal files, we identified recently developed guidelines for COVID-19 management of critically ill patients from international agencies (i.e. WHO), critical care professional societies or groups (e.g. Australia and New Zealand Intensive Care Society, Society of Critical Care Medicine / European Society of Intensive Care Medicine), or physiotherapist professional societies up to March 21 2020. These guidelines were used to inform the consensus guideline developed in conjunction with expert opinion of the guideline authorship group.

A priori we decided to develop a consensus guideline, given the time sensitive nature of our guidance. We agreed that we required  $\geq 70\%$  agreement for a recommendation. On Friday March 20, 2020 the lead author (PT) circulated draft recommendations to all guideline panel members. All guideline panel members returned comments to the lead author independently. The lead author (PT) collated all comments for further discussion. We discussed all guideline recommendations in a teleconference on Sunday, March 22, 2020 at 10:00am (Australian Eastern Standard Time).

14 people participated in the guideline process. We developed 66 recommendations. A consensus of  $>70\%$  was achieved for all items. Further discussion was focused on greater clarity in wording and/or reduction of items where overlap occurred.

We sought endorsement for our guideline from physiotherapy societies, physiotherapy professional groups and the World Confederation for Physical Therapy. We circulated our guideline to these groups on March 23, 2020 (Australia Eastern Standard Time) requesting endorsement. Endorsements will be updated as these are confirmed.

### **STRENGTHS OF THIS GUIDELINE:**

Our guideline has several strengths. We respond to an urgent need for clinical guidance for acute care physiotherapists worldwide. We base our guidance on the most recent, relevant COVID-19 clinical practice guidelines from highly respected organizations, national physiotherapy organizations, and from peer-reviewed studies and transparently report our evidence sources. We represent an international group of physiotherapists, with extensive clinical experience in the ICU and on the wards. We are also academic physiotherapists with experience in the leadership, conduct, and execution of rigorous systematic reviews,

clinical studies (including prospective cohort studies and international multi-centre trials), and clinical practice guidelines. We sought endorsement from international physiotherapy organizations.

### LIMITATIONS OF THIS GUIDELINE:

Our guideline also has limitations. Given the recency in presentation of COVID-19, clinical guidance may change as we learn more about the natural history of this disease. We extrapolated our recommendations based on best evidence for current management of critically ill patients and long-term outcomes in critical illness survivors. We did not include a patient in our guideline development group. While our guideline applies to physiotherapy interventions in the acute care setting, longer-term follow-up of survivors is needed.

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## SECTION 1: PHYSIOTHERAPY WORKFORCE PLANNING AND PREPARATION RECOMMENDATIONS

COVID-19 is placing significant demands on healthcare resources throughout the world. Table 1 outlines recommendations to assist the physiotherapy workforce to plan and respond to this demand. Tables 2 and 3 provide recommendations for determining whom physiotherapists should treat when patients have presumed or suspected COVID-19. Table 4 provides an example of a resource plan for ICU physiotherapy from Tier 0 (business as usual) through to Tier 4 (large scale emergency). Local context, resources and expertise should be considered when utilising this example resource plan.

**Table 1. Physiotherapy workforce planning and preparation recommendations:**

Recommendations	
1.1	Plan for an increase in the required physiotherapy workforce. For example: <ul style="list-style-type: none"> <li>• allow additional shifts for part-time staff</li> <li>• offer staff the ability to electively cancel leave</li> <li>• recruit a pool of casual staff</li> <li>• recruit academic and research staff, staff who have recently retired or who are currently working in non-clinical roles</li> <li>• work different shift patterns e.g. 12 hours shifts, extended evening shifts.</li> </ul>
1.2	Identify potential additional staff who could be deployed to areas of higher activity associated with COVID-19 admissions. For example, the deployment to infectious disease ward, intensive care unit (ICU) and/or high dependency unit and other acute areas. Prioritise staff for deployment who have previous cardiorespiratory and critical care experience.

1.3	Physiotherapists are required to have specialised knowledge, skills and decision making to work within ICU. Physiotherapists with previous ICU experience should be identified by hospitals and facilitated to return to ICU [12].
1.4	Physiotherapists who do not have recent cardiorespiratory physiotherapy experience should be identified by hospitals and facilitated to return to support additional hospital services. For example, staff without acute hospital or ICU training may facilitate rehabilitation, discharge pathways or hospital avoidance for patients without COVID-19.
1.5	Staff with advanced ICU physiotherapy skills should be supported to screen patients with COVID-19 assigned to physiotherapy caseloads and provide junior ICU staff with appropriate supervision and support, particularly with decision making for complex patients with COVID-19. Hospitals should identify appropriate physiotherapy clinical leaders to implement this recommendation.
1.6	<p>Identify existing learning resources for staff who could be deployed to ICU to access. For example:</p> <ul style="list-style-type: none"> <li>• eLearning package via Clinical Skills Development Service for Physiotherapy and Critical Care Management [18]</li> <li>• Local physiotherapy staff ICU orientation</li> <li>• Personal protective equipment (PPE) training.</li> </ul>
1.7	Keep staff informed of plans. Communication is crucial to the successful delivery of safe and effective clinical services.
1.8	<p>Staff who are judged to be at high risk should not enter the COVID-19 isolation area. When planning staffing and rosters, the following people may be at higher risk of developing more serious illness from COVID-19 and should avoid exposure to patients with COVID-19. This includes staff who:</p> <ul style="list-style-type: none"> <li>• are pregnant</li> <li>• have significant chronic respiratory illnesses</li> <li>• are immunosuppressed</li> <li>• are older e.g. &gt;60 years of age</li> <li>• have severe chronic health conditions such as heart disease, lung disease, diabetes</li> <li>• have immune deficiencies, such as neutropenia, disseminated malignancy and conditions or treatments that produce immunodeficiency [12].</li> </ul> <p>It is recommended that staff who are pregnant avoid exposure to COVID-19. It is known that pregnant women are potentially at increased risk of complications from any respiratory disease due to the physiological changes that occur in pregnancy. Presently there is not enough information available about the impacts of COVID-19 on the pregnant mother or their baby.</p>
1.9	Workforce planning should include consideration for pandemic specific requirements, such as additional workload from donning and doffing PPE, and the need to allocate staff to key non-clinical duties such as enforcing infection control procedures [12].



1.10	Consider organisation of the workforce into teams that will manage COVID-19 versus non-infectious patients. Minimise or prevent movement of staff between teams. Liaise with local infection control services for recommendations.
1.11	Be aware of and comply to relevant international, national, state and/or hospital guidelines for infection control in health care facilities. For example, World Health Organisation (WHO) “Guidelines for Infection prevention and control during health care when novel coronavirus infection is suspected” [19].
1.12	Senior physiotherapists should be involved in determining the appropriateness of physiotherapy interventions for patients with suspected and/or proven COVID-19 in consultation with senior medical staff and according to a referral guideline.
1.13	Identify hospital-wide plans for allocation / cohorting of patients with COVID-19. Utilise these plans to prepare resource plans that may be required. For example, <b>Table 4 below</b> is an example of a resource plan for ICU physiotherapy.
1.14	Identify additional physical resources that may be required for physiotherapy interventions and how the risk of cross-infection can be minimised (e.g. respiratory equipment; mobilisation, exercise and rehabilitation equipment, equipment storage).
1.15	Identify and develop a facility inventory of respiratory, mobilisation, exercise and rehabilitation equipment and determine process of equipment allocation as pandemic levels increase (i.e. to prevent movement of equipment between infectious and non-infectious areas).
1.16	It should be recognised that staff will likely have an increased workload with a heightened risk of anxiety both at work and at home [12]. Staff should be supported during and beyond the active treatment phases (e.g. via access to employee assistance programs, counselling, facilitated debriefing sessions).
1.17	Consider and/or promote debriefing and psychological support; staff morale may be adversely affected due to the increased workload, anxiety over personal safety and the health of family members [12].

**Table 2. Who should physiotherapists treat?**

Recommendations	
2.1	The respiratory infection associated with COVID-19 is mostly associated with dry, non-productive cough and lower respiratory tract involvement usually involves pneumonitis rather than exudative consolidation [20]. In these cases, respiratory physiotherapy interventions are not indicated.
2.2	Respiratory physiotherapy interventions in hospital wards or ICU may be indicated for patients who have suspected or confirmed COVID-19 and concurrently or subsequently develop exudative consolidation, mucous hypersecretion and/or difficulty clearing secretions.

2.3	Physiotherapists will have an ongoing role in providing interventions for mobilisation, exercise and rehabilitation e.g. in patients with comorbidities creating significant functional decline and/or (at risk) for ICU acquired weakness.
2.4	Physiotherapy interventions should only be provided when there are clinical indicators, so that staff exposure to patients with COVID-19 is minimised. Unnecessary review of patients with COVID-19 within their isolation room/areas will also have a negative impact on PPE supplies.
2.5	Physiotherapists should meet regularly with senior medical staff to determine indications for physiotherapy review in patients with confirmed or suspected COVID-19 and screen according to set/agreed guidelines ( <b>Table 3</b> provides a suggested framework).
2.6	Physiotherapy staff should not be routinely entering isolation rooms where patients with confirmed or suspected COVID-19 are isolated or cohorted just to screen for referrals.
2.7	Options for screening of patients via subjective review and basic assessment whilst not being in direct contact with the patient should be trialled first whenever possible e.g. calling the patients' isolation room telephone and conducting a subjective assessment for mobility information and/or providing education on airway clearance techniques.

**Table 3. Screening guidelines for physiotherapy involvement with COVID-19**

	COVID-19 patient presentation (confirmed or suspected)	Physiotherapy referral?
<b>RESPIRATORY</b>	<b>Mild symptoms without significant respiratory compromise</b> e.g. fevers, dry cough, no chest x-ray changes.	Physiotherapy interventions are not indicated for airway clearance or sputum samples [20]  No physiotherapy contact with patient.
	<b>Pneumonia presenting with features:</b> <ul style="list-style-type: none"> <li>a low-level oxygen requirement (e.g. oxygen flow <math>\leq 5\text{L}/\text{min}</math> for <math>\text{SpO}_2 \geq 90\%</math>).</li> <li>non-productive cough</li> <li>or patient coughing and able to clear secretions independently.</li> </ul>	Physiotherapy interventions are not indicated for airway clearance or sputum samples.  No physiotherapy contact with patient.
	<b>Mild symptoms and/or pneumonia AND co-existing respiratory or neuromuscular</b> comorbidity e.g. Cystic Fibrosis, neuromuscular disease, spinal cord injury, bronchiectasis, COPD <b>AND</b>	<u>Physiotherapy referral</u> for airway clearance.  Staff use <u>airborne</u> precautions.  If not ventilated, where possible, patients should wear a surgical mask during any physiotherapy.

	<p><b>current or anticipated difficulties with secretion clearance</b></p>	
	<p><b>Mild symptoms and/or pneumonia AND evidence of exudative consolidation with difficulty clearing or inability to clear secretions independently</b> e.g. weak, ineffective and moist sounding cough, tactile fremitus on chest wall, moist/wet sounding voice, audible transmitted sounds.</p>	<p><u>Physiotherapy referral</u> for airway clearance.</p> <p>Staff use <u>airborne</u> precautions.</p> <p>If not ventilated, where possible, patients should wear a surgical mask during any physiotherapy.</p>
	<p><b>Severe symptoms suggestive of pneumonia / lower respiratory tract infection</b> e.g. increasing oxygen requirements, fever, difficulty breathing, frequent, severe or productive coughing episodes, chest x-ray / CT / lung ultrasound changes consistent with consolidation.</p>	<p><u>Consider physiotherapy referral</u> for airway clearance.</p> <p>Physiotherapy may be indicated, particularly if weak cough, productive and/or evidence of pneumonia on imaging and/or secretion retention.</p> <p>Staff use <u>airborne</u> precautions. If not ventilated, where possible, patients should wear a surgical mask during any physiotherapy.</p> <p>Early optimisation of care and involvement of ICU is recommended.</p>
<p><b>MOBILISATION, EXERCISE, &amp; REHAB</b></p>	<p>Any patient at significant risk of developing or with evidence of significant functional limitations</p> <ul style="list-style-type: none"> <li>• e.g. patients who are frail or have multiple comorbidities impacting on their independence</li> <li>• e.g. mobilisation, exercise and rehabilitation in ICU patients with significant functional decline and/or (at risk for) ICU-acquired weakness</li> </ul>	<p><u>Physiotherapy referral.</u></p> <p>Use <u>droplet</u> precautions</p> <p>Use <u>airborne precautions</u> if close contact required or possible aerosol generating procedures.</p> <p>If not ventilated, patients should wear a surgical mask during any physiotherapy whenever possible.</p>

**Table 4. Example ICU physiotherapy resource plan**

Phase	Bed Capacity	Description & Location of patients	Physiotherapy Staffing	Equipment related to physiotherapy respiratory care, mobilisation, exercise and rehabilitation
<b>Business as usual</b>	e.g. 22 ICU Beds 6 HDU	All patients within existing ICU and high-dependency unit (HDU) physical resources.	e.g. 4 FTE	e.g. <ul style="list-style-type: none"> <li>• 6 stretcher chairs</li> <li>• 10 high back sitting chairs</li> <li>• 3 Rollators</li> <li>• 1 Tilt Table</li> <li>• 2 Cycle ergometers</li> <li>• Steps/blocks</li> <li>• Bariatric equipment</li> </ul>
<b>Tier 1</b>	e.g. expansion with additional number of ICU beds provided (e.g. opening previously non-commissioned beds)	<p>Less than 4 patients with COVID-19.</p> <p>Patients with COVID-19 only allocated to beds with reverse flow isolation rooms.</p> <p>There is limited availability of reverse flow rooms within most hospitals.</p>	<p>e.g. additional 1 FTE per 4 ICU beds<sup>[21]</sup>.</p> <p>1 Senior PT will screen patients with COVID-19 in consultation with an ICU medical Consultant.</p> <p>Patients will be provided treatment in isolation rooms.</p>	<p>If needed, 1 stretcher chair allocated and quarantined for use.</p> <p>1 Tilt table quarantined for use with COVID patients. Quarantined in room, or cleaned and located for storage in isolation.</p> <p>Additional respiratory equipment.</p>
<b>Tier 2</b>	e.g. Further expansion to maximum ICU capacity	The number of patients with COVID-19 exceeds the availability of isolation rooms necessitating the care of infectious patients outside the	<p>e.g. calculation for additional FTE as above.</p> <p>Infections ICU Pod PTs allocated, including 1 Senior PT</p>	<p>Additional chair resources may be required.</p> <p>Quarantine fleet of chairs / tilt tables etc for infectious and non-infectious patients.</p>

		<p>confines of a negative pressure rooms.</p> <p>Infectious patients will be cohorted on the open ward of the ICU.</p> <p>Normal ICU admission / non-infectious patients located in a separate part of ICU.</p>	<p>Non-infections ICU Pod PTs allocated, including 1 Senior PT</p> <p>Infectious and non-infectious staff allocated, including on weekends.</p>	
<b>Tier 3</b>	Additional ICU beds created outside of ICU (e.g in Anaesthetic areas).	<p>Surge in patients with COVID-19 exceeds the capacity of the allocated infectious area.</p> <p>Bed allocation for patients with COVID-19 allocated across the entire ICU.</p> <p>Non-infectious satellite ICU will be established in a separate location.</p>	e.g. calculation for additional FTE	<b>As above.</b>
<b>Tier 4</b>	Additional beds created across clinical areas in other parts of the hospital e.g. Cardiology; operating theatres	Large scale emergency	e.g. calculation for additional FTE	<b>As above.</b>

## Medical management of COVID-19:

It is important for physiotherapists to be aware of the medical management for patients with COVID-19. For the purposes of this guideline we have summarised some of the recommendations available from medical guidelines developed by professional societies as listed on page 6.

**Aerosol generating procedures (AGPs)** create an airborne risk of transmission of COVID-19. AGPs include:

- Intubation
- Extubation
- Bronchoscopy
- High flow nasal oxygen use
- Non-invasive ventilation
- Tracheostomy
- CPR prior to intubation [12, 22]

Additional AGPs related to physiotherapy techniques will be outlined below.

**High flow nasal oxygen (HFNO):** HFNO is a recommended therapy for hypoxia associated with COVID-19, as long as staff are wearing optimal airborne PPE [12].

HFNO (e.g. at flow rates 40-60L/min) does carry a small risk of aerosol generation. The risk of airborne transmission to staff is low when optimal PPE and other infection control precautions are being used [23]. Negative pressure rooms are preferable for patients receiving HFNO therapy [12].

Respiratory support via HFNO should be restricted to patients in airborne isolation rooms only. Limiting the flow rate to not greater than 30L/min might reduce potential viral transmission.

**Non-invasive ventilation (NIV):** Routine use of NIV is not recommended [12] as current experience with COVID-19 hypoxic respiratory failure reflects a high associate failure rate. If utilised e.g. with a patient with COPD or post-extubation it must be provided with strict airborne PPE [12].

**Oxygen therapy:** Oxygen therapy targets may vary depending on the presentation of the patient.

- For patients presenting with severe respiratory distress, hypoxaemia or shock, SpO<sub>2</sub> >94% is targeted [23]
- Once a patient is stable, the target is >90% [24] in non-pregnant adults and 92-95% in pregnant patients [23]
- In adults with COVID-19 and acute hypoxaemic respiratory failure, the SpO<sub>2</sub> target should not be maintained higher than 96% [22]

**Nebulisation:** The use of nebulised agents (e.g. salbutamol, saline) for the treatment of non-intubated patients with COVID-19 is not recommended as it increases the risk of aerosolization and transmission of infection to health care workers in the immediate vicinity.

Use of metered dose inhalers / spacers are preferred where possible [12]. If a nebulizer is required, liaise with local guidelines for directions to minimise aerosolization e.g. use of a Pari sprint with inline viral filter.

Use of nebulisers, NIV, HFNO and spirometry should be avoided and agreement to their use sought from senior medical staff [20]. If deemed essential, airborne precautions should be used.

For patients admitted to ICU, additional strategies may be utilised which are summarised below. With increasing acuity, there is an increased risk of dispersion of aerosolised virus into the healthcare environment due to the nature of critical illness, higher viral load and the performance of AGPs. It is recommended that airborne PPE precautions should be used to care for all patients with COVID-19 in ICU [12].

**Intubation and mechanical ventilation:** Patients with worsening hypoxia, hypercapnia, acidaemia, respiratory fatigue, haemodynamic instability or those with altered mental status should be considered for early invasive mechanical ventilation if appropriate [12].

The risk of aerosol transmission is reduced once a patient is intubated with a closed ventilator circuit [12].

**Recruitment manoeuvres:** Although current evidence does not support the routine use of recruitment manoeuvres in non-COVID-19 ARDS, they could be considered in patients with COVID-19 on a case by case basis [12].

**Prone positioning:** Anecdotal reports from international centres dealing with large numbers of critically ill patients with COVID-19 related ARDS suggest that prone ventilation is an effective strategy in mechanically ventilated patients [12].

In adult patients with COVID-19 and severe ARDS, prone ventilation for 12–16 hours per day is recommended [22, 23]. It requires sufficient human resources and expertise to be performed safely to prevent known complications including pressure areas and airway complications.

**Bronchoscopy:** Bronchoscopy carries a significant risk of aerosol generation and transmission of infection. The clinical yield is thought to be low in COVID-19 and unless there are other indications (such as suspected atypical / opportunistic superinfection or immunosuppression) it is strongly advised to avoid the procedure [12].

**Suctioning:** Closed inline suction catheters are recommended [12].

**Sputum samples:** In a ventilated patient, tracheal aspirate samples for diagnosis of COVID-19 are sufficient and BAL is not usually necessary [12].

Any disconnection of the patient from the ventilator should be avoided to prevent lung decruitment and aerosolization. If necessary, the endotracheal tube should be clamped and the ventilator disabled (to prevent aerosolization) [12].

**Tracheostomy:** Early tracheostomy could be considered in suitable patients to facilitate nursing care and expedite ventilator weaning. Reports indicate that some patients have a prolonged course and recovery following ARDS. However, the performance of

percutaneous tracheostomy with bronchoscopic guidance carries significant occupational risk of disease transmission due to generation of aerosols. Surgical tracheostomy may be a safer alternative, although the infectious risk is not eliminated. The merits of tracheostomy in patients with evolving multiple organ failure and / or sepsis would need to be weighed against the high reported mortality from COVID-19 in this group [12].

## SECTION 2: RECOMMENDATIONS FOR THE DELIVERY OF PHYSIOTHERAPY INTERVENTIONS INCLUDING PPE REQUIREMENTS

### Physiotherapy management principles – respiratory care:

Examples of physiotherapy led respiratory interventions (or chest physiotherapy) include:

- Airway clearance techniques. For example, positioning, active cycle of breathing, manual and/or ventilator hyperinflation, percussion and vibrations, positive expiratory pressure therapy (PEP), mechanical insufflation-exsufflation (MI-E).
- Non-invasive ventilation (NIV) and inspiratory positive pressure breathing (IPPB). For example, IPPB for patients with rib fractures, NIV application as part of airway clearance strategies, or in the management of respiratory failure, or during exercise.
- Techniques to facilitate secretion clearance. For example, assisted or stimulated cough manoeuvres, and airway suctioning.
- Exercise prescription and mobilisation.

Physiotherapists also play an integral role in the management of patients with a tracheostomy.

***COVID-19 poses significant considerations for respiratory physiotherapy interventions due to their aerosol generating potential.*** Table 5 outlines recommendations for providing respiratory care to patients with COVID-19.

**Table 5. Recommendation for physiotherapy respiratory interventions:**

	Recommendations
5.1	<b>PPE:</b> It is strongly recommended that airborne precautions are utilised during respiratory physiotherapy interventions.
5.2	<p><b>Cough etiquette:</b> Both patients and staff should practice cough etiquette and hygiene.</p> <p>During techniques which may provoke a cough, education should be provided to enhance cough etiquette and hygiene.</p> <ul style="list-style-type: none"> <li>• Ask patient to turn head away during cough and expectoration</li> <li>• Patients who are able should “catch their cough” with a tissue, dispose of tissue and perform hand hygiene. If patients are unable to do this independently then staff should assist.</li> <li>• In addition, if possible, physiotherapists should position themselves <math>\geq 2m</math> from the patient and out of the “blast zone” or line of cough.</li> </ul>



<p><b>5.3</b></p>	<p>Many respiratory physiotherapy interventions are potentially aerosol generating procedures. While there are insufficient investigations confirming the AGPs of various physiotherapy interventions [25], the combination with cough for airway clearance makes all techniques potentially AGPs.</p> <p>These include:</p> <ul style="list-style-type: none"> <li>• Cough generating procedures e.g. cough during treatment or huff.</li> <li>• 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 sputum</li> <li>• Use of positive pressure breathing devices (e.g. IPPB), mechanical insufflation-exsufflation (MI-E) devices, intra/extra pulmonary high frequency oscillation devices (e.g. The Vest, MetaNeb, Percussionaire)</li> <li>• PEP and oscillating PEP devices</li> <li>• BubblePEP</li> <li>• Nasopharyngeal or oropharyngeal suctioning</li> <li>• Manual hyperinflation (MHI)</li> <li>• Open suction</li> <li>• Saline instillation via and open circuit / endotracheal tube</li> <li>• Inspiratory muscle training, particularly if used with patients who are ventilated and disconnection from a breathing circuit is required</li> <li>• Sputum inductions</li> <li>• Any mobilisation or therapy that may result in coughing and expectoration of mucus.</li> </ul> <p>Therefore, there is a risk of creating an airborne transmission of COVID-19 during treatments. Physiotherapists should weigh up the risk versus benefit to completing these interventions and use airborne precautions.</p>
<p><b>5.4</b></p>	<p>Where AGPs are indicated and considered essential, they should be undertaken in a negative-pressure room, if available, or in a single room with the door closed. Only the minimum number of required staff should be present, and they must all wear PPE as described. Entry and exit from the room should be minimised during the procedure [12].</p> <p>This may not be able to be maintained when cohorting is required due to the volume of patients presenting with COVID-19.</p>
<p><b>5.5</b></p>	<p>BubblePEP is not recommended for patients with COVID-19 because of uncertainty around the potential for aerosolization, similar to the caution the WHO places on bubble CPAP [23].</p>
<p><b>5.6</b></p>	<p>There is no evidence for incentive spirometry in patients with COVID-19.</p>

5.7	<p>Avoid the use of MI-E, NIV, IPPB devices or HFO devices. However, if clinically indicated and alternative options have not been effective, consult with both senior medical staff and Infection Prevention and Monitoring Services within local facilities prior to use.</p> <p>If used, ensure machines can be decontaminated after use and e.g. protect machines with viral filters over machine and patient ends of circuits.</p> <ul style="list-style-type: none"> <li>• Use disposable circuits for these devices.</li> <li>• Maintain a log for devices that includes patient details for tracking and infection monitoring (if required).</li> <li>• Use airborne precautions.</li> </ul>
5.8	<p>Where respiratory equipment is used, whenever possible use single patient use, disposable options e.g. single patient use PEP devices.</p> <p>Re-usable respiratory equipment should be avoided if possible.</p>
5.9	<p>Physiotherapists should not implement humidification or NIV or other AGPs without consultation and agreement with a senior doctor (e.g. medical Consultant).</p>
5.10	<p><b>Sputum inductions</b> should not be performed.</p>
5.11	<p><b>Requests for sputum samples.</b> In the first instance, ascertain whether the patient is productive of sputum and able to clear sputum independently. If so, physiotherapy is not required for a sputum sample.</p> <p>If physiotherapy interventions are required to facilitate a sputum sample then full airborne PPE should be worn. The handling of sputum samples should adhere to local policies. Generally, once a sputum sample has been obtained the following points should be followed:</p> <ul style="list-style-type: none"> <li>• All sputum specimens and request forms should be marked with a biohazard label.</li> <li>• The specimen should be double-bagged. The specimen should be placed in the first bag in the isolation room by a staff member wearing recommended PPE.</li> <li>• Specimens should be hand delivered to the laboratory by someone who understands the nature of the specimens. Pneumatic tube systems must not be used to transport specimens.</li> </ul>
5.12	<p><b>Saline nebulisation.</b> Do not use saline nebulisation. It should be noted that some UK guidelines allow use of nebulisers, but this is currently not recommended in Australia.</p>
5.13	<p><b>Manual hyperinflation:</b> As it involves disconnection / opening of a ventilator circuit, avoid MHI and utilise ventilator hyperinflation (VHI) if indicated e.g. for suppurative presentations in ICU and if local procedures are in place.</p>
5.14	<p><b>Positioning including gravity assisted drainage:</b> Physiotherapists can continue to advise on positioning requirements for patients.</p>

5.15	<b>Prone positioning:</b> Physiotherapists may have a role in the implementation of prone positioning in ICU. This may include leadership within ICU “prone teams”, providing staff education on prone positioning (e.g. simulation-based education sessions), or assisting in turns as part of the ICU team.
5.16	<b>Tracheostomy management:</b> The presence of a tracheostomy and related procedures are potentially aerosol generating. <ul style="list-style-type: none"> <li>• Cuff deflation trials and inner tube changes/cleaning can be aerosol generating</li> <li>• Closed, in-line suction is recommended.</li> <li>• The use of inspiratory muscle training, speaking valves and leak speech should not be attempted until patients are over the acute infection and the risk of transmission is reduced.</li> <li>• Airborne precautions are recommended with infectious patients with COVID-19 with a tracheostomy.</li> </ul>

**Physiotherapy management principles – mobilisation, exercise and rehabilitation interventions:**

Physiotherapists are responsible for the provision of musculoskeletal / neurological / cardiopulmonary rehabilitation tasks including:

- Passive, active assisted, active, or resisted joint range of motion exercises to maintain or improve joint integrity and range of motion and muscle strength
- Mobilisation and rehabilitation (e.g. bed mobility, sitting out of bed, sitting balance, sit to stand, walking, tilt table, standing hoists, upper limb or lower limb ergometry, exercise programs).

Table 6 outlines recommendations for the implementation of these activities in patients with COVID-19.

**Table 6. Recommendations for physiotherapy mobilisation, exercise and rehabilitation interventions:**

	<b>Recommendations</b>
6.1	<b>PPE:</b> Droplet precautions should be appropriate for the provision of mobilisation, exercise and rehabilitation in most circumstances. However, physiotherapists are likely to be in close contact with the patient e.g. for mobilisation, exercise or rehabilitation interventions that require assistance. In these cases, consider use of a high filtration mask (e.g. P2/N95). Mobilisation and exercise may also result in the patient coughing or expectorating mucous or with ventilated patients there may be circuit disconnections.  Refer to local guidelines regarding ability to mobilise patients outside of their isolation room. If mobilising outside of the isolation room, ensure the patient is wearing a surgical mask.
6.2	<b>Screening:</b> Physiotherapists will actively screen and/or accept referrals for mobilisation, exercise and rehabilitation.

	When screening, discussion with nursing staff, the patient (e.g. via phone) or family is recommended before deciding to enter the patient's isolation room. For example, to try to minimise staff who come in to contact with patients with COVID-19, physiotherapists may screen to determine an appropriate aid to trial. A trial of the aid may then be performed by the nursing staff already in an isolation room, with guidance provided if needed by the physiotherapist who is outside the room.
6.3	Direct physiotherapy interventions should only be considered when there are significant functional limitations, e.g. (risk for) ICU-acquired weakness, frailty, multiple comorbidities and advanced age.
6.4	<b>Early mobilisation</b> is encouraged. Actively mobilize the patient early in the course of illness when safe to do so [23].
6.5	Patients should be encouraged to maintain function as able within their rooms <ul style="list-style-type: none"> <li>• Sit out of bed</li> <li>• Perform simple exercises and activities of daily living</li> </ul>
6.6	<b>Mobilisation and exercise prescription</b> should involve careful consideration of the patients' state (e.g. stable clinical presentation with stable respiratory and haemodynamic function) [26, 27].
6.7	<b>Mobility and exercise equipment:</b> The use of equipment should be carefully considered and discussed with local infection monitoring and prevention service staff before used with patients with COVID-19 to ensure it can be properly decontaminated.
6.8	Use equipment that can be single patient use. For example, use Theraband rather than distributing hand weights.
6.9	Larger equipment (e.g. mobility aids, ergometers, chairs, tilt tables) must be easily decontaminated. Avoid use of specialised equipment unless necessary for basic functional tasks. For example, stretcher chairs or tilt tables may be deemed appropriate if they can be decontaminated with appropriate cleaning and are indicated for progression of sitting / standing.
6.10	When mobilisation, exercise or rehabilitation interventions are indicated: <ul style="list-style-type: none"> <li>• Plan well <ul style="list-style-type: none"> <li>○ identify / use the minimum number of staff required to safely perform the activity [26]</li> <li>○ ensure all equipment is available and working before entering rooms</li> </ul> </li> <li>• Ensure all equipment is cleaned appropriately / decontaminated. <ul style="list-style-type: none"> <li>○ If equipment needs to be shared among patients, clean and disinfect between each patient use [23]</li> <li>○ Specific staff training for cleaning of equipment within isolation rooms may be required. <ul style="list-style-type: none"> <li>○ Whenever possible, prevent the movement of equipment between infectious and non-infectious areas.</li> <li>○ Whenever possible, keep dedicated equipment within the isolation zones, but avoid storing extraneous equipment within the patient's room.</li> </ul> </li> </ul> </li> </ul>

<b>6.11</b>	<ul style="list-style-type: none"> <li>When performing activities with ventilated patients or patients with a tracheostomy, ensure airway security is considered and maintained e.g. dedicated airway person to prevent inadvertent disconnection of ventilator connections/tubing.</li> </ul>
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### PPE considerations

It is imperative that physiotherapists understand the measures in place to prevent transmission of COVID-19. Table 7 provides recommendations for this. Patients with presumed or confirmed COVID-19 will be managed with either droplet or airborne precautions [12]. Additionally, they will be placed in isolation. Hospitals are often able to contain patients with droplet or airborne spread within dedicated isolation rooms. However, there are a limited number of negative pressure bays and pods and/or rooms across Australia and New Zealand [12], so isolation within dedicated rooms may not be possible with COVID-19 due to the large volume of patient admissions.

It is important for physiotherapists to understand the different types of isolation rooms which exist in hospitals. **Class S rooms** (standard single rooms, no negative pressure capability) which can be used for isolating patients capable of transmitting infection by droplet or contact routes [12] and **Class N rooms** (single negative pressure isolation rooms) which are beneficial in isolating patients with transmittable airborne infections [12]. The preference would be for patients with confirmed and/or suspected COVID-19 to be isolated in **Class N rooms** [12]. If this is not possible then Class S single rooms with clearly designated areas for PPE donning and doffing are recommended [12]. In the event of all single **Class N and S rooms** being fully occupied, then the recommendation is for patients with COVID-19 to be cohorted separate to patients without COVID-19 within the hospital [12]. In an open ICU or ward cohorted areas with one or more patients with COVID-19, it is recommended that staff members in the whole area are required to use airborne PPE precautions [12]. Table 7 describes how the movement from dedicated isolation rooms to open cohorting might evolve within an ICU.

**Table 7. PPE Recommendations for physiotherapists**

<b>Recommendations</b>	
<b>7.1</b>	All Staff will be trained in correct donning and doffing of PPE, including N95 “fit-checking”. A registry of staff who have completed PPE education and <u>fit checking</u> should be maintained.
<b>7.2</b>	“Fit testing” is recommended when available, but the evidence for <u>fit testing</u> effectiveness is limited and the variation in supply of N95 mask types may make any recommendation on fit testing difficult to implement from a practical perspective [12].
<b>7.3</b>	Staff with beards should be encouraged to remove facial hair to ensure good mask fit [24]
<b>7.4</b>	For all suspected and confirmed cases, at a minimum <b>droplet precautions</b> are implemented. Staff will wear the following items:

	<ul style="list-style-type: none"> <li>• Surgical mask</li> <li>• Fluid resistant long-sleeved gown</li> <li>• Goggles/face shield</li> <li>• Gloves [22]</li> </ul>
7.5	<p>Recommended PPE for staff caring for COVID-19 infected patients includes added precautions for patients with significant respiratory illness, when AGPs are likely and/or prolonged or very close contact with the patient is likely. In these cases, <b>Airborne precautions</b> are followed including:</p> <ul style="list-style-type: none"> <li>• An N95/P2 mask</li> <li>• Fluid resistant long-sleeved gown</li> <li>• Goggles/face shield</li> <li>• Gloves [24]</li> </ul>
7.6	<p>In addition, the following can be considered:</p> <ul style="list-style-type: none"> <li>• Hair cover for AGPs</li> <li>• Shoes that are impermeable to liquids and can be wiped down</li> </ul> <p>Recurrent use of shoe covers is not recommended as repeated removal is likely to increase the risk of staff contamination [12].</p>
7.7	<p>PPE must remain in place and be worn correctly for the duration of exposure to potentially contaminated areas. PPE, particularly masks should not be adjusted during patient care [24].</p>
7.8	<p>Use a step-by-step process for don/doff PPE as per local guidelines [24].</p>
7.9	<p>Check local guidelines for information on laundering uniforms and/or wearing uniforms outside of work if exposed to COVID-19. For example, changing into scrubs may be recommended in local guidelines [12] and/or staff may be encouraged to get changed out of their uniform before leaving work and to transport worn uniforms home in a plastic bag for washing at home.</p>
7.10	<p>Minimise personal effects in the workplace. All personal items should be removed before entering clinical areas and donning PPE. This includes earrings, watches, lanyards, mobile phones, pagers, pens etc.</p> <p>Stethoscope use should be minimised [12]. If required, use dedicated stethoscopes within isolation areas [19, 23].</p> <p>Hair should be tied back out of the face and eyes [24].</p>
7.11	<p>Staff caring for infectious patients must apply correct PPE irrespective of physical isolation. For example in ICU, if patients are cohorted into a Pod with open rooms, staff working within the confines of the ICU Pod but not directly involved in patient care should also wear PPE. The same would apply once infectious patients are nursed on an open ward. . Staff will then use plastic aprons, a change of gloves and hand hygiene when moving between patients in open areas.</p>

<b>7.12</b>	When a unit is caring for a patient with confirmed or suspected COVID-19 it is recommended that all donning and doffing are supervised by an additional appropriately trained staff member [12].
<b>7.13</b>	Avoid sharing equipment. Preferentially use only single use equipment.
<b>7.14</b>	Wear an additional plastic apron if high volumes of fluid exposure is expected [24].
<b>7.15</b>	If reusable PPE items are used, e.g. goggles – these must be cleaned and disinfected prior to re-use [24].

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