CLINICAL GUIDELINES FOR PHYSIOTHERAPY MANAGEMENT OF PATIENT WITH COVID-19 IN ACUTE HOSPITAL SETTING IN NEPAL

Nepal Physiotherapy Association

(NEPTA)

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Foreword

The health systems globally are overburdened by the COVID-19 pandemic. COVID-19 has also taken lives of many health professionals globally. An evidence-based COVID-19 clinical practice guideline for health professionals not only save lives, but also reduce the spread of the virus and improve patient care. Several guidelines for the COVID-19 management have been developed and circulated internationally, both for medical and physiotherapy management. Although international guidelines are available, a guideline for the physiotherapy management of COVID-19 that is applicable and relevant to the local healthcare system is important and necessary to prevent the spread of the virus and add evidence-base and uniformity in the physiotherapy service delivery throughout Nepal.

Nepal Physiotherapy Association (NEPTA) timely recognized the need for physiotherapy guidelines for the COVID-19 pandemic in Nepal endorsed by the Ministry of Health and Population (MoHP), Nepal. This guideline is made on the initiation of NEPTA,taking references from the guidelines of WHO (World Health Organization) and WCPT (World Confederation for Physical Therapist) with the efforts of an experienced, representative, and capable team of Nepalese cardio-respiratory physiotherapist, working within and outside of Nepal, working in a variety of work settings including universities, non-governmental organizations, and private and government hospitals.

This guideline will provide background knowledge about COVID-19,effective treatment plan, and precautions that should be taken by physiotherapist when treating patients with COVID-19 cases in clinical settings of Nepal.

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Contents

LIST of ABBREVIATION

AGP	:Aerosol Generating Procedures
ARDS	: Acute Respiratory Distress Syndrome
CIM	: Critical Illness Myopathy
CIP	: Critical Illness Polyneuropathy
COVID-19	: Corona Virus Disease- 19
CPAP	: Continuous Positive Airway Pressure
HDU	: High Dependency Unit
HFNO	: High Flow Nasal Oxygen
HI	: Handicap International
ICU	: Intensive Care Unit
MoHP	: Ministry of Health and Population
NIV	: Non- Invasive Ventilation
PICS	: Post intensive care syndrome
PPE	: Personal Protective Equipment
NEPTA	: Nepal Physiotherapy Association
SARS- COV-2	: Severe Acute Respiratory Syndrome Corona Virus 2
WCPT	: World Confederation for Physical Therapist
WHO	: World Health Organization

Background

COVID-19, a highly contagious disease caused by novel coronavirus SARS-COV-2, first reported on December 2019 in China has globally affected more than 3 million population in following four months [1, 2]. The disease affects the respiratory system clinically presenting symptoms of fever, cough with or without sputum production, muscle pain/fatigue,shortness of breath, headache, sore throat, gastrointestinal symptoms and later leading to pneumonia as the disease progresses [3, 4]. It is reported than the 80 % of the infected are either asymptomatic or with mild symptoms. However, 15 % of the cases are severe, and around 5% of the cases are critical requiring ventilator support [5, 6].COVID-19 has greater impact on older population and those with underlying comorbidities particularly chronic diseases (cardiac conditions, respiratory, neurological, and oncological). The role of physiotherapy in management of these conditions is essential [7].

COVID-19 and Physiotherapy

Physiotherapist has a unique and expanding role in global health limited not just to direct patient care but also extending to advocating and developing rehabilitation programs [8, 9]. In regards to COVID-19 pandemic, physiotherapists are likely to have a role in the management of the patients admitted to hospital with confirmed cases. Cardiorespiratory physiotherapy which is an integral multidisciplinary approach, has a major role in management including rehabilitation of acute, chronic and critical respiratory conditions [10, 11].

Cardiorespiratory physiotherapy is offered to patient with respiratory conditions with a purpose to manage breathlessness, airway clearance and bronchial hygiene, improving or maintaining physical functioning and mobility [12].Cardiorespiratory physiotherapists are well equipped with skills and techniques in rehabilitation, exercise testing and prescription, secretion removal/ airway clearance, positioning and breathing interventions. [12, 13, 14]. Early mobilization in ICU facilitates in early recovery and discharge from ICU, reduce the need of mechanical ventilation and overall improve their physical functions especially during this COVID-19 pandemic [15, 16, 17]. Currently there is a need of delivering physiotherapy intervention and rehabilitation to the patients with COVID-19 in the countries with progressive spread of infection [18].

In the management of patient with COVID-19, the role of physiotherapy ever increases with increase in the disease severity. Long term illness of the disease will lead to patient acquiring Post-intensive care syndrome (PICS) [19]. Physiotherapist role in early mobilization of affected patients in ICU willhave a

better outcome for ICU-acquired neuromuscular weakness, which is the most common physical impairment of ICU survivors [20, 21, 22, 23]. Currently, physiotherapy recommendation and development during COVID-19 crisis includes physiotherapyinterventions in ventilator support/ weaning, chest physiotherapy and early rehabilitation.

Scope and purpose

The guideline is intended for physiotherapy interventions for COVID-19 cases in hospital setting. It is developed specifically adopting to the resource level setting of Nepal and it should be taken as a standard for physiotherapy services to be provided for the patients with COVID-19 in wards and in critical care.

Guideline development and adaptation

Nepal Physiotherapy Association (NEPTA) in collaboration with Handicap International (HI) and World Health Organization (WHO) initiated the physiotherapy management guidelines for COVID-19withincreasedCOVID-19 incidence in Nepal. The team of experienced cardiorespiratory physiotherapists in Nepal were formed and in consensus decided to adapt the World Confederation for Physical Therapy (WCPT) endorsed guideline by Thomas P et al published in 2020 - "Physiotherapy management for COVID-19 in the acute hospital setting: clinical practice recommendations"[24]. With the permissionfrom the corresponding author, the teambegan the process of culturally adapting itin the context of Nepal. AGREE II framework was used to develop the adapted physiotherapy guideline for patient with COVID-19 in Nepal [25].

The adapted physiotherapyguideline is focused on adult acute hospital settings and acute physiotherapy management of COVID-19 cases in Nepal.The recommendations for physiotherapists are outlined below in two sections.

Section A: Workforce planning and preparation including screening to determine indications for physiotherapy

This section is divided into four tables (Table1-4) and a sub-section of Medical management of COVID-19. Each table respectively describes the recommendations for physiotherapy workforce planning, clinical indication for physiotherapy, physiotherapy involvement in screening and ICU resources for physiotherapy management. The section of Medical management is prepared for physiotherapists to be aware of medical management for patients with COVID-19.

Table 1: Physiotherapy workforce planning and preparation recommendations

SN	Recommendations
1.1	Plan for an increase in the required physiotherapy workforce, recruiting physiotherapy staffs who are currently working in non-clinical roles.
1.2	Identify potential additional staff that could be deployed to areas of higheractivity associated with COVID-19 admissions. For example, the deployment to isolation wards, intensive care unit (ICU) and/or high dependency unit (HDU) and other acute areas.
1.3	Physiotherapists who do not have exposure to critical care and ICU experience should be trained and deployed to expanded ICU and wardsof hospitals.
1.4	All suspected or confirmed cases should be reported to the team leader so that it may be recorded in COVID-19 patient database. S/he should provide guidance to other physiotherapy team members for decision making for complex patients with COVID-19.
1.5	Identify existing learning resources for staff that could be deployed to ICU to access. For example: • eLearning package for Cardiorespiratory physiotherapy and Critical Care Management • Local physiotherapy staff ICU training • Personal protective equipment (PPE) training • Infection Prevention and Control training
1.6	Keep staff informed of COVID preparedness. Communication is crucial to the successful delivery of safe and effective clinical services.
1.7	Staffs who are judged to be of 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: • are pregnant • have significant chronic respiratory illnesses • are immunosuppressed, have immune deficiencies or treatments that produce immunodeficiency. • are older e.g. > 60 years of age • have severe chronic health conditions such as heart disease, lung disease, diabetes

1.8	Consider organizing the workforce into teams that will manage patient with COVID-19 versus non-infectious patients. Minimize or prevent movement of staff between teams within same day shift.
1.9	Comply with national government guidelines for infection control in health care facilities [27].
1.10	Physiotherapists should be involved in determining the appropriateness of physiotherapy interventions for patients with suspected and/or confirmed COVID-19 in consultation with senior medical staff and according to a referral guideline.
1.11	Identify hospital-wide plans for allocation / cohorting of patients with COVID-19. Utilize these plans to prepare resource plans that may be required. For example, Table 4 is an example of a resource plan for ICU physiotherapy (Table 4).
1.12	Physiotherapy resources that may be required for interventions must be rigorously monitored through defined process of storage, allocation and disinfecting the equipment in order to minimize the risk of cross infection as pandemic levels increase (i.e. to prevent movement of equipment between isolated and non-isolated areas)
1.13	Consider and/or promote debriefing and psychological support to staff.

Table 2: Indications for Physiotherapy

SN	**Recommendations**
2.1	Respiratory physiotherapy interventions are NOT indicated in mild COVID-19 patients with respiratory infection mostly associated with dry, non-productive cough and lower respiratory tract involvement with pneumonitis rather than exudative consolidation.
2.2	Respiratory physiotherapy interventions may be indicated in ICU or hospital wards in suspected or confirmed COVID-19 patients with concurrent or subsequent exudative consolidation, mucous hypersecretion and/or difficulty clearing secretions.
2.3	Physiotherapists will have an ongoing role in providing interventions for mobilization, exercise and rehabilitation, to prevent significant functional decline and ICU acquired weakness.
2.4	Physiotherapy interventions and review should only be provided when there are clinical

	indicators, with the intention to minimize staff exposure to patients with COVID-19 within their isolation room/areas and negative impact on PPE supplies.
2.5	Physiotherapists should coordinate 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 (**Table 3** provides a suggested framework).
2.6	Screening of patients for subjective review and basic assessment should be done with minimal to no contact and should minimize entering rooms where patients with suspected or confirmed COVID-19 are isolated. Wherever possible use telephonic interviews, video demonstrations, educational pamphlets, etc.

Table 3: Screening guidelines for physiotherapy involvement with COVID-19

	COVID-19 patient presentation (confirmed or suspected)	**Physiotherapy referrals**
Respiratory	**Mild symptoms without significant respiratory compromise**. e.g. fevers, dry cough, no chest x-ray changes.	Physiotherapy interventions are NOT indicated for airway clearance or sputum samples No physiotherapy contact with patient.
	Pneumonia presenting with features: • a low-level oxygen requirement (e.g. oxygen flow ≤5L/min for SpO2 ≥ 90%). • non-productive cough • or patient coughing and able to clear secretions independently.	Physiotherapy interventions are NOT indicated for airway clearance or sputum samples. No physiotherapy contact with patient.
	Mild symptoms and/or pneumonia AND Co-existing respiratory or neuromuscular comorbidity e.g. COPD, Bronchiectasis, Spinal cord injury, neuromuscular disease AND	Physiotherapy referral for airway clearance. Staff to use airborne precautions. Where possible, patients should wear a surgical mask during any physiotherapy

	Current or anticipated difficulties with secretion clearance	
	Mild symptoms and/or pneumonia **AND** **Evidence of exudative consolidation with difficulty clearing or inability to clear secretions independently**e.g. weak, ineffective and moist sounding cough, tactile fremitus on chest wall, moist/wet sounding voice, and audible transmitted sounds.	Physiotherapy referral for airway clearance. Staff to use airborne precautions. Where possible, patients should wear a surgical mask during any physiotherapy.
	Severe symptoms suggestive of pneumonia / lower respiratory tract infection E.g. increasing oxygen requirements, fever, difficulty breathing, frequent, severe or productive coughing episodes, and chest x-ray / CT / lung ultrasound changes consistent with consolidation.	Consider Physiotherapy referral for airway clearance Physiotherapy may be indicated, particularly ifweak cough, productiveand/or evidence of pneumonia on imaging and/or secretion retention. Staff use airborne precautions. Where possible, patients should wear a surgical mask during any physiotherapy. Early optimization of care and involvement of ICU is recommended.
Mobilization, exercise and rehabilitation	Any patient at significant risk of developing or with evidence of significant functional limitations • e.g. patients who are frail or have multiple comorbidities impacting on their independence • e.g. mobilization, exercise and rehabilitation in ICU patients with significant functional decline and/or (at risk for) ICU-acquired weakness	Physiotherapy referral. Use droplet precautions Use airborne precautions if close contact required or possible AGPs. If not ventilated, patients should wear a surgical mask during any physiotherapy whenever possible.

Table 4: ICU Physiotherapy resource plan

Description and location of patient	**Physiotherapy staff to patient ratio in ICU**	**Equipment related to Physiotherapy respiratory care, mobilization, exercise and Rehabilitation.**	
		Basic	**Advanced**
All COVID 19 patients within existing ICU and HDU physical resources	1:6 [27]	High back sitting wheel chair	Pedal exerciser
		Low back sitting chair/ wheel chair	Tilt table
		Elastic resistance bands (single patient use)	Steps/blocks
		Rollator (single patient use)	Neuromuscular electric stimulator
		Walker(single patient use)	
Note: Additional resources may be required with increased number of COVID-19 patients			

Medical management of COVID-19

Physiotherapists should be aware of the medical management for patients with COVID-19.It is very important. Physiotherapists should adhere with recommendations available from national and international medical guidelines developed by professional societies. (Appendix 1)

Aerosol generating procedures (AGPs) which create an airborne risk of transmission of COVID-19. It includes – Intubation, Extubation, Bronchoscopy, High flow nasal oxygen use, Non-invasive ventilation, Tracheostomy, CPR prior to intubation.Physiotherapists should particularly be aware of AGPs related to physiotherapy techniques such as: High flow nasal oxygen (HFNO), Non-invasive ventilation (NIV), Oxygen therapy, Nebulization,Suctioning, Sputum Sampling, and Prone positioning.

Section 2: Recommendations for the delivery of physiotherapy interventions including pre-requirements

This section includes recommendation for physiotherapy management in respiratory care in critical/ non critical area (Table 5), physiotherapy management for musculoskeletal/ neurological/ cardiorespiratory rehabilitation through mobilization, exercise and rehabilitation (Table 6), and measures to prevent transmission of COVID-19 through PPE recommendation for physiotherapist (Table 7).

Table 5: Recommendation for Physiotherapy respiratory interventions

SN	Recommendations
5.1	PPE: During any respiratory physiotherapy intervention utilization of airborne precaution is strongly recommended. Refer national guideline for use of PPE-COVID-19 [28].
5.2	Cough etiquette: Both staff and patients should practice cough etiquette and hygiene. During techniques which may provoke a cough, education should be provided to enhance the cough etiquette and hygiene • Ask patient to turn head away during cough and expectoration • Patients who are able should cover their mouth with a tissue paper, dispose of tissue paper in closed dustbin and perform hand hygiene. If patients are unable to do this independently then staff should assist. • In addition, if possible, Physiotherapist should position themselves ≥ 2m from the patient and out of the line or direction of cough droplets.
5.3	Many respiratory physiotherapy interventions are potentially AGPs. Therefore, there is a risk of creating an airborne transmission of COVID-19 during treatments. Physiotherapists should evaluate the risk versus benefit to completing these interventions and use airborne precautions.
5.4	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. Entry and exit from the room should be minimized during the procedure.
5.5	Bubble PEP 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.
5.6	There is no evidence forbenefits of incentive spirometry in patients with COVID-19.

5.7	Where respiratory equipment is used, whenever possible use single patient use, disposable options e.g. single patient use PEP devices.Re-usable respiratory equipment should be avoided if possible. If it has to be re-used ensure the machine has been decontaminated before use.
5.8	Humidification or NIV or other AGPs should not be implemented by physiotherapist without consultation and agreement with senior medical doctor.
5.9	Sputum inductions should be performed only after wearing full airborne PPE. The handling of sputum samples should adhere to national guideline on infection prevention control[26].
5.10	Do not use saline nebulization as it increases the risk of aerosolization and transmission.
5.11	Manual Hyperinflation: As this process involves disconnecting/opening the ventilator circuit, avoid manual hyperinflation and use ventilator hyperinflation if indicated and necessary.
5.12	Physiotherapist can continue advising in the positioning requirements for patients for Gravity assisted drainage/Postural Drainage.
5.13	Prone Positioning: Prone ventilation for 12-16 hours/day is recommended in adult patients with COVID-19 and severe ARDS. Physiotherapists have a role in the implementing prone positioning in ICU.
5.14	Suctioning: Prefer closed- in line suction for secretion removal in ventilated cases. Open suctionand saline instillation during suctioningis not recommended.
5.15	Tracheostomy management: The presence of a tracheostomy and related procedures are potentially aerosol generating. • Closed, in line suction is recommended • The use of inspiratory muscle training, should not be attempted until patients are over acute infection and the risk of transmission is reduced. • Airborne precautions are recommended in infectious patients with COVID-19 with a tracheostomy.

Table 6: Recommendations for physiotherapy mobilization, exercise and rehabilitation interventions

SN	Recommendation

6.1	PPE: Droplet precautions should be appropriate for the provision of mobilization, exercise and rehabilitation in most circumstances. However, physiotherapists are likely to be in close contact with the patient e.g. for mobilization, exercise or rehabilitation interventions that require assistance. Mobilization and exercise may also result in the patient coughing or expectorating mucous. In these cases, consider use of category I national guideline for use of PPE- COIVD-19 [28]. Mobilize patients within the isolated area, and ensure the patient is wearing a surgical mask.
6.2	Direct physiotherapy interventions should be considered only when there is significant functional limitations (e.g. (risk for) ICU-acquired weakness, frailty, multiple comorbidities, advanced age).
6.3	Early Mobilizationmust be encouraged [29]. Mobilization and Exercise prescription should be consideration for clinically stable patient. Actively mobilize the patient early in the course of illness when safe to do so. [30, 31]
6.4	Patient should be encourage to maintain function as able to do within their room • sit to stand, • perform simple exercise and activities of daily living
6.5	Mobility and exercise equipment: The use of equipment should be carefully considered before using with patients with COVID-19 to ensure it can later be properly decontaminated. Use equipment that are single patient use.
6.7	Larger equipment (e.g. mobility aids, pedal, chairs, and tilt tables) must be thoroughly decontaminated. Avoid use of advanced equipment unless necessary for basic functional tasks.
6.8	While mobilizing or performing exercise with ventilated patients or patients with a tracheostomy, ensure preventing inadvertent disconnection of ventilator connections/tubing.

PPE Considerations

Patient with presumed or confirmed COVID-19 will be managed with either droplet or airborne precautions. Hospitals are often able to contain patients with droplet or airborne spread with dedicated

isolation rooms. It is imperative that physiotherapists understands the measures in place to prevent transmission of COVID-19 and recommended in Table 7.

Table 7: PPE recommendations for physiotherapists

SN	Recommendation
7.1	All Staff should be trained in correct donning and doffing of PPE.
7.2	Proper and appropriate PPE is required for airborne and droplet precautions. Refer national guideline for PPE use [28].
7.3	Use a step-by-step process for don/doff PPE as per national guidelines for PPE use [28].
7.4	All personal items should be removed before entering clinical areas and donning PPE. Stethoscope use should be minimized. If required, use dedicated stethoscopes within isolation areas. Hair should be tied back out of the face and eyes.Staff with beards should be encouraged to remove facial hair
7.5	When a unit is caring for a confirmed or suspected COVID-19 patient it is recommended that all donning and doffing are supervised by an additional appropriately trained staff member.
7.6	Wear an additional gown, if high volumes of fluid exposure is expected
7.7	If reusable PPE items are used, e.g. goggles – these must be cleaned and disinfected prior to re-use.

Further recommendations

COVID-19 pandemic has spread across all corners of the globe with rapid rate of infection. Few countries have witnessed exponential growth in infections, whereas there are reports of slower rates in some countries. Every day we are learning more about the novel coronavirus and with further knowledge and information, the clinical guidelines and practices could change to accommodate better clinical management of the patient with COVID-19. However, in respect to growing trends in worst impacted countries, we are in urgent need to prepare ourselves to more long- lasting aftershocks of the pandemic: recovery from consequences of severe respiratory illness and secondary disabilities that result from prolong ICU treatments, including Critical Illness Polyneuropathy (CIP), Critical Illness Myopathy (CIM) as a part of the Post Intensive Care Syndrome (PICS). It is also estimated that the outcome for low income countries will be worse than the others [20, 21, 22, 23]. In all these COVID-19 aftershocks, the

role of rehabilitation professionals has a major role in management of the patients with severe COVID-19. Necessary health planning and actions are required for rehabilitation across all sectors- both governmental and nongovernmental. Since physiotherapy being a key component for rehabilitation phase, physiotherapist will have a key/ vital role in patient management of severe COVID-19 in long term. Therefore the role of physiotherapy during rehabilitation of COVID-19 patient must be defined.

WHO's rehabilitation considerations during the COVID-19 outbreak are listed below in which physiotherapy would have a significant role [32].

Phases of Care	**Rehabilitation interventions**	**Service delivery settings**
Acute	While patients with severe COVID-19 are receiving ventilator support, rehabilitation professionals may be involved in supporting acute respiratory management, and the maintenance and improvement of functioning to facilitate early recovery	**ICU/HDU**
Sub-acute	Interventions during this period further aim to promote independence with activities of daily living, and to provide psychosocial support. Rehabilitation professionals also contribute significantly to discharge preparation and planning, which can be particularly complex for older patients and those with comorbidities	**Isolation wards /Step-down care facilities**
Chronic	Rehabilitation professionals can provide graded exercise, education on energy conservation and behavior modification, home modification, and assistive products, as well as rehabilitation for any specific individual impairments	**Rehabilitation Hospital/Centres/ Departments**

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Appendix 1

Following are list of national and international guidelines with necessary information required for physiotherapist in management of COVID-19:

- Ministry of Health and Population, Nepal. NMC Interim Guidance for Infection Prevention and Control when COVID-19 is suspected. URL: https://drive.google.com/file/d/1fdBGhve7htgNSHQRo0EWv4nC8s2qpeJ4/view

- Ministry of Health and Population, Nepal. Interim Clinical Guidance for Care of Patients with COVID-19 in Health Care Settings. URL: https://drive.google.com/file/d/1LezeHthMdjD2uLga_8K3mknojvKYbxNG/view

- Ministry of Health and Population, Nepal. COVID-19 Clinical Management Guideline. URL: https://drive.google.com/file/d/112-1rsAtXoVnojcz1LVyC8TfenuAelWV/view

- Ministry of Health and Population, Nepal. Pocket Book of Clinical Management of COVID-19 in Healthcare Setting. URL: https://drive.google.com/file/d/1w0MRqYl0YHWpzK485gJCHVUU4slAJFGT/view

- Ministry of Health and Population, Nepal. Guidelines for use of PPE -COVID-19. URL: https://drive.google.com/file/d/1yPWNQse6xC4eSLmvaeO3g_5GSo88sr4A/view

- World Health Organization (WHO): Clinical Management of severe acute respiratory infection when novel coronavirus (2019-nCoV) infection is suspected Interim Guidance V1.2. 13 Mar 2020. URL: 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 Physiotherapy Association. Physiotherapy management of COVID-19 in acute hospital settings: recommendations to guideclinical practice. URL: https://www.ersnet.org/covid-19-blog/international-guidelines-physiotherapy-management-covid-19

- Italian Thoracic Society. Joint Statement on the role of respiratory rehabilitation in the COVID-19 crisis: the Italian position paper. URL:http://www.aiponet.it/news/speciale-covid-19/2449-il-ruolo-della-riabilitazione-respiratoria-nell-emergenza-covid-21.html

- The Polish Chamber of Physiotherapists:Recommendations for physiotherapy of adult patients with COVID-19. URL: https://kif.info.pl/recommendations-of-the-polish-chamber-of-physiotherapists-for-physiotherapy-of-adult-patients-with-covid-19/

- Acute Care Physiotherapy Management of COVID-19 Patients in Qatar: Consensus-Based Recommendations. URL: https://www.preprints.org/manuscript/202004.0417/v1

- Asian Critical Care Clinical Trials Group.Intensive care management of coronavirus disease 2019 (COVID-19): challenges and recommendations https://doi.org/10.1016/S2213-2600(20)30161-2

- The Australian and New Zealand Intensive care society. COVID-19 guidelines version 1. URL: https://www.anzics.com.au/coronavirus/

- National institute for health and care excellence (NICE). Guidelines COVID-19 rapid guideline: critical care. URL: http://www.nice.org.uk/guidance/ng159