

**Position Statement on the Role of
Rehabilitation Medicine Physicians in the
management of COVID-19 patients**



September 2022



RMSANZ

Rehabilitation Medicine Society of Australia and New Zealand

About the Rehabilitation Medicine Society of Australia and New Zealand (RMSANZ)

RMSANZ is a professional body representing Rehabilitation Medicine Physicians and trainees in Australia and Aotearoa, New Zealand. It offers a supportive and collegial environment of professional development, policy review and advocacy for people living with a disability. Members of RMSANZ are active in teaching and research within the discipline of Rehabilitation Medicine. It also functions as an advocacy group, committed to improving the quality of care of persons living with disabilities. RMSANZ aims to work closely with consumer groups, medical colleges, government, and health organisations, and national and international associations to improve and develop services for rehabilitation in the community. The objectives of RMSANZ are focused on a set of common goals including the advancement of Rehabilitation Medicine, advocacy for patients and the specialty of Rehabilitation Medicine, and promoting the profile of the specialty, by facilitating research and innovation and maintaining collaborative relationships with the profession, the community and government.

Acknowledgements

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Disclaimer: This is an evolving document and it may change as new evidence emerges and our understanding of the consequences of COVID-19 continues to evolve.

Please Note: Post COVID is the current term approved by WHO, previously known as Post-Acute Sequela of COVID (PASC) and commonly known as Long COVID. Throughout this document these terms are used interchangeably.

Executive Summary

- The World Health Organisation (WHO) recognises that COVID-19 increases rehabilitation needs both for patients who are critically unwell with the disease and for those who continue to experience the long-term sequelae of their illness. (1)
- The World Health Organisation defines a Post COVID-19 condition as that which occurs in individuals with a history of probable or confirmed SARS CoV-2 infection, usually 3 months from the onset of COVID-19 with symptoms and that lasts for at least 2 months and cannot be explained by an alternative diagnosis. Common symptoms include fatigue, shortness of breath, cognitive dysfunction but also others and generally have an impact on everyday functioning. Symptoms may be new onset following initial recovery from an acute COVID-19 episode or persist from the initial illness. Symptoms may also fluctuate or relapse over time.⁽²⁾
- Multidisciplinary teams led by a Rehabilitation Medicine Physician will often work collaboratively with Pulmonary Rehabilitation staff in managing COVID 19 patients in inpatient, outpatient, and home-based settings.
- Most people who develop COVID-19 recover fully, but current evidence in Global Diseases Burden submitted version suggests approximately 10%-20% of people experience a variety of mid and long-term effects after they recover from their initial illness. These mid and long-term effects are collectively known as post COVID-19 condition or “long COVID.”⁽³⁾
- Health services will need to accommodate extra patients, and this will require a review of the clinical capacity of subacute health services.
- Rehabilitation Medicine Physicians play a role in collaborating with primary health networks, Aboriginal and Torres Strait Islander and Māori communities and other organisations to ensure equitable access and efficiency of post COVID-19 rehabilitation services for these vulnerable groups including those with disability.

What is Rehabilitation Medicine?

Rehabilitation is defined as “a set of interventions designed to optimize functioning and reduce disability in individuals with health conditions in interaction with their environment”.⁽⁴⁾

Rehabilitation Medicine Physicians are trained and experienced to manage all patient types who experience disability due to illness or injury affecting all body systems and are experts in appropriate assessment, treatment, and management. Also, they are trained in injury prevention, conditioning, fitness, and wellness. Rehabilitation Medicine Physicians engage in the delivery of a variety of healthcare services to provide a holistic approach, have experience in integrated care with primary care physicians and are trained in leading multidisciplinary teams.

How Rehabilitation Medicine Physicians are contributing to the National and State-wide COVID-19 response?

- Multidisciplinary rehabilitation involves a team approach to deliver goal oriented coordinated therapies including medical treatments. It is led by a Rehabilitation Medicine Physician and delivered by a variety of therapists, physicians, and nurses and in a variety of settings including in-reach inpatient, outpatients, outreach or community and tele-rehabilitation. Rehabilitation Teams have been assisting in the virtual management of COVID patients both in the hospital and community settings.
- Rehabilitation Medicine Physicians contribute to the management of public health planning of COVID-19 by assisting in patient flow, managing people with disabilities (PWD) in their homes and advocating for PWD who are admitted to hospital or/and need vaccination, as well as participating in management of strategic planning for service deliveries to whole communities.
- Rehabilitation Medicine Physicians have an advocacy, consultative and supportive role in the management of all people including those living with disabilities in the community with Post COVID or Post-acute sequelae of COVID-19, commonly referred to as Long COVID, including the return to vocational and avocational activities.

What is the difference between Pulmonary Rehabilitation and Multidisciplinary Rehabilitation?

- For COVID-19 patients in the community who have exclusively pulmonary symptoms, pulmonary rehabilitation services are most suitable for ongoing delivery of services for the symptoms such as wheeze, dyspnoea, cough and functional limitations that arise from these symptoms.
- For COVID-19 patients with broader ranging symptoms that involve other systems in addition to the respiratory system or those who are suffering from functional or psychological decline, assessments by multidisciplinary rehabilitation services are clinically indicated.

Purpose of Position Statement

The purpose of this position statement is to guide public health authorities, hospital administrators and health professionals to understand the utility, available infrastructure, and the skills and workforce available to the Australian and Aotearoa Public and their health system from Australia's and Aotearoa's rehabilitation services for the purposes of responding to the COVID 19 pandemic.

Background

Introduction

The COVID-19 pandemic represents an international disaster, and the WHO endorses Rehabilitation Medicine as an integral part of the immediate disaster response and to the recovery phase. ⁽¹⁾

COVID-19 is a multisystem and multi-organ disease that affects cognition, respiration, cardiac function, mobility, mental health, special senses, haematological and gastrointestinal systems.

In Australia and Aotearoa, New Zealand paediatric and indigenous populations are recognised as priority groups in the community. Therefore, planning and delivery of multidisciplinary rehabilitation services to COVID-19 affected paediatric and indigenous population is crucial.

Principles

Rehabilitation Medicine is a Principal Specialty practiced by Rehabilitation Medicine Physicians for whom rehabilitation is delivered via a multidisciplinary approach which routinely focuses on the management of functional loss, activity limitation arising out of illness or injury and includes the management of a variety of conditions including:

- deconditioning from prolonged hospital admissions (Post Intensive Care Syndrome), cancer-related illness and respiratory illnesses (lung transplant, pneumonia, lung cancer);
- orthopaedic conditions (fractures, multitrauma, joint replacements);
- neurological conditions (traumatic brain injury, stroke, hypoxic brain injury, spinal cord injury);
- amputee management;
- developmental disabilities and;
- geriatric conditioning (post infective, falls, cognitive decline)

Such multidisciplinary rehabilitation is an integral part of patient flow and assists hospital services in transitioning patients from acute to a subacute setting such as a rehabilitation ward and into the community.

Rehabilitation Services for COVID-19 Patients

Planning, Management and Research

Rehabilitation Medicine Physicians are experts in the delivery of medical and rehabilitation services to those with newly acquired and established disabilities.

The Federal Government in Australia and the Ministry of Health in Aotearoa, New Zealand have identified those living with a disability as vulnerable to COVID-19 infections. Therefore, Rehabilitation Medicine Physicians have a role to play in the development of health services for COVID-19.

The Global estimated pooled Post COVID or Post-Acute Sequelae of COVID 19 (PASC) prevalence ranges from 3.7% to 20%,^(5,6,7) with a higher pooled PASC prevalence estimate among those hospitalized during the acute phase of infection. These PASC symptoms will result in functional loss and activity limitation. Rehabilitation Medicine Physicians will be required to offer multidisciplinary treatments to many current and previously infected patients.

Incidental findings of COVID-19 positive in “business as usual” patients with chronic illness admitted to hospitals are vulnerable to deconditioning and functional deterioration due to isolation and these patients might also require multidisciplinary rehabilitation.

Health services will need to accommodate extra patients, and this will require a review of the clinical capacity of subacute health services. As such, Rehabilitation Medicine Physicians who lead the delivery of these services in almost all jurisdictions in Australia and Aotearoa are a vital part of state-wide and national planning for a health response to COVID-19.

An integrated multidisciplinary rehabilitation service has been shown to be a cost-effective therapy, which improves patient flow and hospital bed capacity. A Council of Australian Government Subacute Program (COAG) funded study in NSW 2009/10-2011/12, showed that for each \$1 spent in a rehabilitation service \$4.33 are saved in bed days. Further, the COAG investment in rehabilitation services, decreased length of stay by 10-15% and increased subacute care capacity by 50%, providing improved patient flow through faster turnover of beds.⁽⁸⁾

There is a need for further research and guidance regarding rehabilitation specific to COVID-19. Existing guidance includes self-management and a multidisciplinary approach.^(9,10,11,12)

Paediatric Population Rehabilitation Services

The paediatric population are at risk of COVID-19 and PASC. Accurately determining the risk of PASC in children and adolescents has been difficult. The prevalence of PASC in children has

been reported as ranging from 0% to 44.8%. Risk factors associated with PASC in children include allergies, asthma, eczema and one or more pre-existing conditions. ^(13,14,15)

Paediatric Rehabilitation Physicians play a leadership role in maintaining the delivery of services for children, young adults, and their families (whanau) with disabilities during the COVID-19 pandemic.

They also play a leading role in planning, organising, and delivering family centered care for children and young adults with acquired brain injury, cerebral palsy, those suffering from traumatic injuries and newly found disabilities during the COVID-19 pandemic. ⁽¹⁶⁾

Paediatric Rehabilitation Physicians have designed and delivered enhanced telehealth delivery platforms and hybrid models of care for children and young adults living with disabilities and their families.

Indigenous Population Rehabilitation Services

Aboriginal and Torres Strait Islander (ATSI) and Māori people constitute vulnerable populations in Australia and Aotearoa, New Zealand. Many live in rural and remote areas.

In Aotearoa, New Zealand, the Ministry of Health along with other health providers are obliged under Te Tiriti o Waitangi to ensure iwi, hapū, whānau and Māori communities and organisations are active partners in preventing and addressing potential impacts of COVID-19.⁽¹⁷⁾ Rehabilitation Medicine Physicians play a role in collaborating with primary health networks, Aboriginal and Torres Strait Islander and Māori communities and organisations to ensure equitable access and efficiency of post COVID-19 rehabilitation services for these vulnerable groups.

Rehabilitation Medicine Physicians recommend that a patient's individual post COVID-19 rehabilitation program needs to consider bi-cultural and cultural practices, values, and beliefs to ensure that treatment and rehabilitation is culturally safe and appropriate to the person to ensure all people receive beneficial rehabilitation. Any rehabilitation program must address the longer term physiological, psychological, and social effects of COVID-19 and reduce inequity.

Tele-rehabilitation has the potential to close the gap between the less resourced and adequately resourced areas in health services. Rehabilitation Medicine Physicians play an educative role using Telerehabilitation for training of ATSI and Māori health workers and clinicians in rural and remote sites.

Therefore, it is essential that Rehabilitation Medicine Physicians and rehabilitation services have sufficient community focused resources as well as subacute bed numbers to make provision for increased demand for rehabilitation services by acute COVID-19 and PASC patients.

Referral Criteria

Inpatients who are recovering from COVID-19 should be referred for rehabilitation medicine assessment and management as early as possible, preferably in the Intensive Care Unit (ICU) and/or acute ward environment. Early rehabilitation intervention has been shown to improve patient outcomes.

Under this subacute Model of Care (MOC) assessment, a patient's clinical and functional status, including requirement for rehabilitation, should take place at every care transition.

The following checklist may be used for the purpose of assessing the need for rehabilitation medicine referral. This checklist can be completed by medical, nursing and/or allied health staff provided they can refer to the appropriate service.

Referrals in hospital or from the primary health sector should be based on acknowledgement of ongoing symptoms. Some patients may require reconditioning and optimisation via general multidisciplinary rehabilitation prior to commencing pulmonary rehabilitation. Other patients may be suitable for direct referral to pulmonary rehabilitation.

Table 1: Indicators for Referral to Pulmonary Rehabilitation

7 or more days of invasive or non-invasive ventilation
Oxygen desaturation $\geq 3\%$ on exertion e.g. one-minute sit to stand test ⁽¹⁸⁾
Evidence of deconditioning but able to mobilise independently and safe for discharge home
Breathlessness at rest
Cough and sputum production
People on home oxygen
General fatigue

Table 2: Indicators for Referral to Multidisciplinary Rehabilitation

Inability to mobilise independently (may require inpatient rehabilitation)
Weight loss > 10% from admission
Dysphagia/dysphonia
Intercurrent illness (including stroke, venous thromboembolism, acute kidney injury)
Critical illness myopathy or neuropathy
Persistent new cognitive impairment (not delirium)
Pain affecting function > 4 out of 10 visual analogue scale
Pre-existing disability (e.g. previous stroke, brain injury, spinal cord injury, developmental disability)
Request by single discipline therapist for additional therapy support
Request by intensivist/acute care physician for rehabilitation assessment
Respiratory indicator: 7 or more days of invasive or non-invasive ventilation
Respiratory indicator: Oxygen desaturation $\geq 3\%$ on exertion e.g. one-minute sit to stand test ⁽¹⁹⁾

Where a patient has **respiratory only indicators** present, ongoing management by the Respiratory Team should be maintained and the patient referred to Pulmonary Rehabilitation where appropriate. Referral for general rehabilitation assessment and management may be sought by the Respiratory Team if indicated.

A patient who has two or more extra-pulmonary indicators with or without respiratory symptoms should be referred to rehabilitation medicine for assessment and management.

COVID-19 Patient Rehabilitation Needs

COVID-19 patients' rehabilitation needs could be divided into acute, subacute and Post-Acute Sequelae of COVID-19 (PASC) or Long COVID or Post COVID. COVID-19 patients who need rehabilitation are broadly classified into inpatients and non-inpatients.

Inpatient Setting

The inpatient setting is further divided into (1) acute care and in reach rehabilitation; (2) ICU and/or acute ward setting and (3) subacute care in a rehabilitation ward.

Acute Care and In-Reach Rehabilitation

Early rehabilitation of the COVID-19 patients can enhance pulmonary, respiratory function, reduce complications, and improve function, cognitive impairments and quality of life.⁽²⁰⁻²⁴⁾ Up to 20% of those infected with the Delta strain of COVID-19 are admitted to hospital.⁽²⁵⁾ They populate acute or respiratory wards, isolation wards or ICU. Rehabilitation physicians (and/or allied health/nursing) should be included in the interdisciplinary acute-hospital COVID-19 treating teams. Rehabilitation physicians are not only trained in diagnosis and treatment of general health conditions but are also experts in disability and ‘functioning’. They can coordinate member roles, in the context of patients’ clinical and rehabilitation needs.⁽²⁶⁾ Where available, rehabilitation services in metropolitan and regional centres have developed a consultation service and/or an in-reach mobile rehabilitation team. These have been developed based on international literature indicating that rehabilitation that is delayed can result in complications associated with prolonged bed rest and have a negative impact on patient outcomes and patient flow parameters⁽²⁶⁾. Rehabilitation services should be delivered to patients with indicated symptoms (as described in the tables above) in consultation with treating acute physicians. Multidisciplinary rehabilitation can be delivered virtually or face to face; with appropriate Personal Protective Equipment (PPE) during the infective period of COVID-19.

ICU and/or Acute Ward Setting

Rehabilitation Medicine Physicians in partnership with acute care physicians can identify those patients infected with COVID-19 and provide in-reach rehabilitation in the acute wards. Rehabilitation Medicine Physicians play a role in the early assessment and triaging of COVID-19 patients in the acute hospital to offer services that mitigate against deconditioning as well as to plan service delivery when the patient is de-isolated.⁽²⁷⁾ “Business as usual” patients who are found to be COVID-19 positive might need in-reach rehabilitation to prevent deconditioning during isolation.

Subacute Care in a Rehabilitation Unit

Multidisciplinary inpatient rehabilitation led by a Rehabilitation Medicine Physician could be provided in a rehabilitation ward for de-isolated patients who have significantly deconditioned and/or have impairments which limit their functional participation and activity.

Non-Inpatient Setting

Community Care

Primary care doctors deliver most medical services for people infected with COVID-19 in the community. They also offer vaccination and testing for the community. Some patients with PASC without significant limitation / complexity can be managed in the community by GPs with/without additional inputs from a single discipline allied health person as a simple form of rehabilitation. If symptoms or function deteriorate or continue to be a significant limitation, referral to the relevant specialised service should be considered.

Rehabilitation Medicine Physicians have a collaborative role to assist primary care physicians in managing symptoms in those with pre-existing disabilities and chronic long-term illnesses and have a consultative and supportive role in the management of COVID-19 in people living with disabilities in the community.

Rehabilitation Medicine Physicians have a role in assisting primary care in advocating for services in the home to support People Living with Disabilities (PLWD) including care services, in-reach vaccination services and specialist services. Outpatient or Day Hospital Rehabilitation services may be required for some people with newly acquired limitations from COVID living in the community.

Virtual Care/Telerehabilitation

Many patients infected with COVID-19 will be managed in their homes or in special housing (Hotel Quarantine for example) using virtual care services or hospital in the home programs. Rehabilitation Medicine Physicians and rehabilitation services play a role in offering virtual in-reach services to those who develop symptoms beyond respiratory symptoms. They may also play a role in undertaking telehealth consultation of patients to determine rehabilitation needs and to prescribe an in-reach rehabilitation program.

Post-Acute Sequelae of COVID-19 (PASC)/Long COVID/ Post COVID

Rehabilitation Medicine Physicians have an advocacy, consultative and supportive role in the management of people including those specifically living with disabilities in the community with PASC. Rehabilitation Medicine Physicians and rehabilitation services play a role in offering ambulatory rehabilitation for a variety of symptoms such as immobility, cognitive impairment, fatigue management and return to work.

Rehabilitation Medicine Physicians have a role in establishing and managing post-acute care clinics in collaboration with respiratory and other acute care physicians. To assess and treat persisting COVID-19 symptoms, Rehabilitation Medicine Physicians together with respiratory or acute care physicians play a role in triaging patients to multidisciplinary rehabilitation or pulmonary rehabilitation alone.

Multidisciplinary rehabilitation services play a role in delivering tailored rehabilitation programs for persisting symptoms and disabilities in the post-acute care period. This could be

delivered either in an outpatient setting for those de-isolated or in a community or rehabilitation in the home setting.

Rehabilitation Medicine Physicians have a role to assist primary care physicians in managing PASC symptoms, particularly in those who are not responding to simple measures. Rehabilitation services currently provide referral pathways for primary care in the management of complex PASC.

Rehabilitation Medicine Physicians have core expertise in assisting patients return to work and study following disabilities as well as avocational activities. Rehabilitation Medicine Physicians are trained in the delivery of multidisciplinary rehabilitation, the prevention of disability, and self-management of disabling conditions. They have the skills and scope of practice to lead and support public health teams or allied health teams in the delivery of self-management programs and can offer advice and consultation services for people living with disabilities.

Conclusion

In states and territories of Australia and in Aotearoa, New Zealand, leaders in rehabilitation medicine have been integral to the management of a health response to COVID-19. To date they have played a role in management and planning as well as the delivery of clinical services. The prevalence of people with functional limitations associated with COVID-19 infection will increase, including those with persisting limitations. It is likely that COVID-19 will become part of the case mix addressed by both acute and subacute services for the foreseeable future. The importance of Rehabilitation Medicine Physicians and rehabilitation services in the national COVID-19 response is both pragmatic and essential.

REFERENCES

1. World Health Organization. Rehabilitation needs of people recovering from COVID-19, 2021. <https://www.who.int/publications/i/item/WHO-2019-nCoV-Sci-Brief-Rehabilitation-2021.1>
2. World Health Organization. A clinical case definition of post COVID-19 condition by a Delphi consensus, 6 October 2021 [internet] Switzerland: WHO; 6 Oct 2021 [accessed on 22 Nov 2021] Available from: [https://www.who.int/publications/i/item/WHO-2019-nCoV-Post COVID-19 condition-Clinical case definition-2021.1](https://www.who.int/publications/i/item/WHO-2019-nCoV-Post-COVID-19-condition-Clinical-case-definition-2021.1).
3. World Health Organization. Coronavirus disease (COVID-19): Post COVID-19 condition [Internet]. Switzerland: World Health Organization; 2021 [cited 2022 May 26]. Available from: [https://www.who.int/news-room/questions-and-answers/item/coronavirus-disease-\(covid-19\)-post-covid-19-condition](https://www.who.int/news-room/questions-and-answers/item/coronavirus-disease-(covid-19)-post-covid-19-condition).
4. WHO Rehabilitation Definition <https://www.who.int/news-room/fact-sheets/detail/rehabilitation>
5. Chen C, Hauptert SR, Zimmermann L, et al. Global Prevalence of Post-Acute Sequelae of COVID-19 (PASC) or Long COVID: A Meta-Analysis and Systematic Review. medRxiv. 2021:2021.11.15.21266377. DOI: 10.1101/2021.11.15.21266377
3. Groff D, Sun A, Ssentongo AE, et al. Short-term and Long-term Rates of Postacute Sequelae of SARS-CoV-2 Infection: A Systematic Review. JAMA Netw Open. 2021;4(10):e2128568-e. DOI: 10.1001/jamanetworkopen.2021.28568
6. Groff D, Sun A, Ssentongo AE, et al. Short-term and Long-term Rates of Postacute Sequelae of SARS-CoV-2 Infection: A Systematic Review. JAMA Netw Open. 2021;4(10):e2128568-e. DOI: 10.1001/jamanetworkopen.2021.28568
7. Fernández-de-Las-Peñas C, Palacios-Ceña D, Gómez-Mayordomo V, et al. Prevalence of postCOVID-19 symptoms in hospitalized and non-hospitalized COVID-19 survivors: A systematic review and meta-analysis. Eur J Intern Med. 2021;92:55-70. DOI: 10.1016/j.ejim.2021.06.009
8. Council of Australian Governments Subacute Program St Vincent's Hospital Rehabilitation 2009/10-2011/12.
9. Guidance for the rehabilitation of people with or recovering from COVID-19 in Aotearoa New Zealand. National Institute for Health and Care Excellence. COVID-19 rapid guideline: managing the long-term effects of COVID-19 [internet] United Kingdom: NICE; 11 Nov 2021 [cited 22 Nov 2021] Available from: <https://www.nice.org.uk/guidance/ng188>.
10. Herrera JE, Niehaus WN, Whiteson J, et al. Multidisciplinary collaborative consensus guidance statement on the assessment and treatment of fatigue in postacute sequelae of SARS-CoV-2 infection (PASC) patients. Pm r. 2021 Sep;13(9):1027-43. DOI: 10.1002/pmrj.12684
11. Décary S, Dugas M, Stefan T, et al. Care Models for Long COVID : A Rapid Systematic Review. medRxiv. 2021:2021.11.17.21266404. DOI: 10.1101/2021.11.17.21266404
12. <https://www.health.govt.nz/system/files/documents/publications/guidance-rehabilitation-people-with-recovering-covid-19-aotearoa-new-zealand-8july2020.pdf>

13. Lewis D. Long COVID and kids: scientists race to find answers. *Nature*. 2021 Jul;595(7868):482-3. DOI: 10.1038/d41586-021-01935-7
14. Radtke T, Ulyte A, Puhan MA, et al. Long-term Symptoms After SARS-CoV-2 Infection in Children and Adolescents. *JAMA*. 2021;326(9):869-71. DOI: 10.1001/jama.2021.11880.
15. Asadi-Pooya AA, Nemati H, Shahisavandi M, et al. Long COVID in children and adolescents. *World J Pediatr*. 2021;17(5):495-9. DOI: 10.1007/s12519-021-00457-6.
16. Grumi, S., Provenzi, L., Gardani, A., Aramini, V., Dargenio, E., Naboni, C., ... & Engaging with Families through On-line Rehabilitation for Children during the Emergency (EnFORCE) Group. (2021). Rehabilitation services lockdown during the COVID-19 emergency: the mental health response of caregivers of children with neurodevelopmental disabilities. *Disability and Rehabilitation*, 43(1), 27-32.
17. Ministry of Health. COVID-19: Higher risk people. <https://www.health.govt.nz/covid-19-novel-coronavirus/covid-19-information-specific-audiences/covid-19-higher-risk-people>
18. Rehabilitation Community of Practice: Multidisciplinary rehabilitation communication and referral: information for acute care physicians and allied health <https://www.health.nsw.gov.au/Infectious/covid-19/communities-of-practice/Pages/guide-multidisciplinary-rehab.aspx>
19. Greenhalgh, T. et al. What is the efficacy and safety of rapid exercise tests for exertional desaturation in covid-19? Oxford COVID-19 Evidence Service Team – Centre for Evidence Based Medicine, Nuffield Department of Primary Care Health Services, University of Oxford. Available at: <https://www.cebm.net/covid-19/what-is-the-efficacy-and-safety-of-rapid-exercise-tests-for-exertional-desaturation-in-covid-19/>
20. Mao L, Wang M, Chen S, He Q, Chang J, Hong C, et al. Neurological Manifestations of Hospitalized Patients with COVID-19 in Wuhan, China: a retrospective case series study. medRxiv 2020. <https://www.medrxiv.org/content/10.1101/2020.02.22.20026500v1>.
21. Talan J. COVID-19: Neurologists in Italy to colleagues in US: Look for poorly-defined neurologic conditions in patients with the coronavirus. *Neurology Today*, American Academy of Neurology 2020 Mar 27. https://journals.lww.com/neurotodayonline/blog/breakingnews/pages/post.aspx?PostID=920&fbclid=IwAR2omdLXmhl7DEa0vLB8WVIMJp5CaI4w_gVQaJ6uPeKUNnAfpaGxy7fn3V0.
22. Xiang YT, Zhao YJ, Liu ZH, Li XH, Zhao N, Cheung T, et al. The COVID-19 outbreak and psychiatric hospitals in China: managing challenges through mental health service reform. *Int J Bio Sci* 2020; 16: 1741–1744. <https://pubmed.ncbi.nlm.nih.gov/32226293/>
23. Grabowski DC, Joynt Maddox KE. Postacute Care Preparedness for COVID-19: Thinking Ahead. *JAMA* 2020 Mar 25 <https://jamanetwork.com/journals/jama/fullarticle/2763818%20>
24. Boldrini P, Bernetti A, Fiore P. Impact of COVID-19 outbreak on rehabilitation services and Physical and Rehabilitation Medicine (PRM) physicians' activities in Italy. An official document of the Italian PRM Society (SIMFER). *Eur J Phys Rehabil Med* 2020 Mar 16

https://www.researchgate.net/publication/339985021_Impact_of_COVID-19_outbreak_on_rehabilitation_services_and_Physical_and_Rehabilitation_Medicine_PRM_physicians'_activities_in_Italy_An_official_document_of_the_Italian_PRM_Society_SIMFER

25. Hospital admission and emergency care attendance risk for SARS-CoV-2 delta (B.1.617.2) compared with alpha (B.1.1.7) variants of concern: a cohort study Katherine A Twohig*, Tommy Nyberg*, Asad Zaidi, Simon Thelwall, Mary A Sinnathamby, Shirin Aliabadi, Shaun R Seaman, Ross J Harris, Russell Hope, Jamie Lopez-Bernal, Eileen Gallagher, Andre Charlett, Daniela De Angelis, the COVID-19 Genomics UK (COG-UK) consortium†, Anne M Presanis, Gavin Dabrera
26. Khan F, Amatya B. Medical rehabilitation in pandemics: towards a new perspective. *J Rehabil Med* 2020; 52: jrm00043.
27. Phillips, M., Turner-Stokes, L., Wade, D., & Walton, K. (2020). Rehabilitation in the wake of Covid-19-a Phoenix from the ashes. *British Society of Rehabilitation Medicine*, 1(2), 1-20.