COVID-19: updates on follow-up & long-term effects

16th December 2020

**guidance & national develoments**

**Title:** **POST COVID-19 PATHWAY AND GUIDANCE**

**Source**: Leeds CCG, 2020 [updated]

This guidance has been developed by involving local clinicians from Primary Care, Leeds Teaching Hospitals NHS Trust and Leeds Community Healthcare NHS Trust to support Primary Care on assessing and managing patients with ongoing needs post COVID -19 infection. It applies to patients both with confirmed or suspected COVID- 19 infection who have either been admitted to hospital or cared for in the community.

NB. This guidance has not been clinically validated and should not replace individual clinical judgement based on patient assessment by clinicians in practice. The responsibility for care remains with the assessing clinician.

Who is the COVID-19 Rehabilitation Pathway for?  
The COVID-19 Rehabilitation Pathway has been developed to help people in Leeds who are experiencing new, long lasting problems after a confirmed or suspected COVID-19 infection which are significantly impacting how they are able to function in day to day life.

<https://www.leedsccg.nhs.uk/about/covid-19-primary-care/resources-for-professionals/post-covid-19-pathway-and-guidance/>

**research papers**

**Title:** **PATIENT OUTCOMES AFTER HOSPITALISATION WITH COVID-19 AND IMPLICATIONS FOR FOLLOW-UP: RESULTS FROM A PROSPECTIVE UK COHORT**

**Source**: Thorax Published Online First: 03 December 2020

Abstract: The longer-term consequences of SARS-CoV-2 infection are uncertain. Consecutive patients hospitalised with COVID-19 were prospectively recruited to this observational study (n=163). At 8–12 weeks postadmission, survivors were invited to a systematic clinical follow-up. Of 131 participants, 110 attended the follow-up clinic. Most (74%) had persistent symptoms (notably breathlessness and excessive fatigue) and limitations in reported physical ability. However, clinically significant abnormalities in chest radiograph, exercise tests, blood tests and spirometry were less frequent (35%), especially in patients not requiring supplementary oxygen during their acute infection (7%). Results suggest that a holistic approach focusing on rehabilitation and general well-being is paramount.

<https://thorax.bmj.com/content/early/2020/12/02/thoraxjnl-2020-216086?utm_source=alert&utm_medium=email&utm_campaign=thorax&utm_content=latest&utm_term=07122020>

**Title:** **SHORT- AND POTENTIAL LONG-TERM ADVERSE HEALTH OUTCOMES OF COVID-19: A RAPID REVIEW**

**Source**: Emerging Microbes & Infections; Dec 2020; vol. 9 (no. 1); p. 2190-2199

Abstract: The coronavirus disease 2019 (COVID-19) pandemic has resulted in millions of patients infected worldwide and indirectly affecting even more individuals through disruption of daily living. Long-term adverse outcomes have been reported with similar diseases from other coronaviruses, namely Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). Emerging evidence suggests that COVID-19 adversely affects different systems in the human body. This review summarizes the current evidence on the short-term adverse health outcomes and assesses the risk of potential long-term adverse outcomes of COVID-19. Major adverse outcomes were found to affect different body systems: immune system (including but not limited to Guillain-Barré syndrome and paediatric inflammatory multisystem syndrome), respiratory system (lung fibrosis and pulmonary thromboembolism), cardiovascular system (cardiomyopathy and coagulopathy), neurological system (sensory dysfunction and stroke), as well as cutaneous and gastrointestinal manifestations, impaired hepatic and renal function. Mental health in patients with COVID-19 was also found to be adversely affected. The burden of caring for COVID-19 survivors is likely to be huge. Therefore, it is important for policy makers to develop comprehensive strategies in providing resources and capacity in the healthcare system. Future epidemiological studies are needed to further investigate the long-term impact on COVID-19 survivors.

<https://www.tandfonline.com/doi/full/10.1080/22221751.2020.1825914>

**TITLE: THREE-MONTH FOLLOW-UP STUDY OF SURVIVORS OF CORONAVIRUS DISEASE 2019 AFTER DISCHARGE**

**Source**: Journal of Korean Medical Science; Dec 2020; vol. 35 (no. 47); p. e418

Abstract: BACKGROUND Most patients including health care workers (HCWs) survived the coronavirus disease 2019 (COVID-19), however, knowledge about the sequelae of COVID-19 after discharge remains limited. METHODSA prospectively observational 3-month follow-up study evaluated symptoms, dynamic changes of severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) IgG and IgM, lung function, and high resolution computed tomography (HRCT) of survivors of COVID-19 after discharge at Wuhan Union Hospital, China. RESULTS Seventy-six survivors (55 females) with a mean age of 41.3 ± 13.8 years were enrolled, and 65 (86%) were HCWs. A total of 69 (91%) patients had returned to their original work at 3-months after discharge. Most of the survivors had symptoms including fever, sputum production, fatigue, diarrhea, dyspnea, cough, chest tightness on exertion and palpitations in the three months after discharge. The serum troponin-I levels during the acute illness showed high correlation with the symptom of fatigue after hospital discharge (r = 0.782; P = 0.008) and lymphopenia was correlated with the symptoms of chest tightness and palpitations on exertion of patients after hospital discharge (r = -.285, P = 0.027; r = -.363, P = 0.004, respectively). The mean values of forced expiratory volume in 1 second (FEV1), forced vital capacity (FVC), FEV1/FVC, total lung capacity and diffusion capacity were all normal (> 80% predicted) and lung HRCTs returned to normal in most of the patients (82%), however, 42% of survivors had mild pulmonary function abnormalities at 3-months after discharge. SARS-CoV-2 IgG turned negative in 11% (6 of 57 patients), 8% (4 of 52 patients) and 13% (7 of 55 patients), and SARS-CoV-2 IgM turned negative in 72% (41 of 57 patients), 85% (44 of 52 patients) and 87% (48 of 55 patients) at 1-month, 2-months and 3-months after discharge, respectively. CONCLUSION Infection by SARS-CoV-2 caused some mild impairments of survivors within the first three months of their discharge and the duration of SARS-CoV-2 antibody was limited, which indicates the necessity of long-term follow-up of survivors of COVID-19.

<https://pubmed.ncbi.nlm.nih.gov/33289374/>

**Title:** **A PROSPECTIVE STUDY OF 12-WEEK RESPIRATORY OUTCOMES IN COVID-19-RELATED HOSPITALISATIONS**

**Source**: Thorax Published Online First: 03 December 2020.

Abstract: The long-term respiratory morbidity of COVID-19 remains unclear. We describe the clinical, radiological and pulmonary function abnormalities that persist in previously hospitalised patients assessed 12 weeks after COVID-19 symptom onset, and identify clinical predictors of respiratory outcomes. At least one pulmonary function variable was abnormal in 58% of patients and 88% had abnormal imaging on chest CT. There was strong association between days on oxygen supplementation during the acute phase of COVID-19 and both DLCO-% (diffusion capacity of the lung for carbon monoxide) predicted and total CT score. These findings highlight the need to develop treatment strategies and the importance of long-term respiratory follow-up after hospitalisation for COVID-19.

<https://thorax.bmj.com/content/early/2020/12/02/thoraxjnl-2020-216308?utm_source=alert&utm_medium=email&utm_campaign=thorax&utm_content=latest&utm_term=07122020>

**Title:** **PERSISTENT SYMPTOMS 1.5–6 MONTHS AFTER COVID-19 IN NON-HOSPITALISED SUBJECTS: A POPULATION-BASED COHORT STUDY**

**Source**: Thorax Published Online First: 03 December 2020

Abstract: This study assessed symptoms and their determinants 1.5–6 months after symptom onset in non-hospitalised subjects with confirmed COVID-19 until 1 June 2020, in a geographically defined area. We invited 938 subjects; 451 (48%) responded. They reported less symptoms after 1.5–6 months than during COVID-19; median (IQR) 0 (0–2) versus 8 (6–11), respectively (p<0.001); 53% of women and 67% of men were symptom free, while 16% reported dyspnoea, 12% loss/disturbance of smell, and 10% loss/disturbance of taste. In multivariable analysis, having persistent symptoms was associated with the number of comorbidities and number of symptoms during the acute COVID-19 phase.

<https://thorax.bmj.com/content/early/2020/12/02/thoraxjnl-2020-216377?utm_source=alert&utm_medium=email&utm_campaign=thorax&utm_content=latest&utm_term=07122020>

**Title:** **REHABILITATION OF PATIENTS WITH COVID-19**

**Source**: Expert Review of Respiratory Medicine; Dec 2020; vol. 14 (no. 12); p. 1249-1256

Abstract: INTRODUCTION In 2020, due to severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), coronavirus disease (COVID-19) has become a pandemic. As of 11 August 2020, the cumulative number of confirmed cases worldwide had reached 19 million, with 700,000 reported deaths, indicating this pandemic's significant global impact. AREAS COVERED We reviewed the application of rehabilitation therapy in the clinical treatment of COVID-19 patients. A systematic search was performed using PubMed, Springer, CNKI, and Wanfang Data of database up to 1 August 2020. The search terms included the English terms and their Chinese equivalents: 'COVID-19,' 'ARDS,' 'rehabilitation,' 'critically ill patients,' 'physiotherapy,' 'respiratory rehabilitation,' 'traditional Chinese medicine,' and 'psychotherapy. 'EXPERT OPINION’ Rehabilitation research concerning patients with COVID-19 remains ongoing. Rehabilitation guidance for such patients with COVID-19 is based on previous experience. However, as different patients have differing degrees of dysfunction, personalized plans need to be designed according to the patients' age, sex, lifestyle, hobbies, occupation, and physical conditions. The rapid development of remote devices that can monitor patients' real-time physical conditions post-discharge may encourage better adherence to rehabilitation training.

<https://pubmed.ncbi.nlm.nih.gov/32799694/>

**Title:** **REHABILITATION OF A POST-INTENSIVE CARE UNIT PATIENT AFTER SEVERE COVID-19 PNEUMONIA**

**Source**: American Journal of Physical Medicine & Rehabilitation; Dec 2020; vol. 99 (no. 12); p. 1092-1095

Abstract: The recent novel severe acute respiratory syndrome coronavirus 2 infection resulted in a coronavirus disease 2019 pandemic that significantly strained healthcare systems globally. The early wave of patients in Singapore with severe pneumonia requiring intensive care units are gradually being referred for post-critical illness management with our inpatient medical rehabilitation unit. There is growing information regarding the actual rehabilitation process for patients severely affected by coronavirus disease 2019. This case report shares experiences and challenges faced during rehabilitation of severe coronavirus disease 2019 pneumonia and post-intensive care syndrome. It also describes the post-discharge rehabilitation program in a setting of strict nationwide safe distancing and stay-home policies.

<https://journals.lww.com/ajpmr/Fulltext/2020/12000/Rehabilitation_of_a_Post_Intensive_Care_Unit.3.aspx>

**Title:** **MANAGING THE REHABILITATION WAVE: REHABILITATION SERVICES FOR COVID-19 SURVIVORS**

**Source**: Archives of Physical Medicine and Rehabilitation; Dec 2020; vol. 101 (no. 12); p. 2243-2249

Abstract: The coronavirus disease 2019 (COVID-19) pandemic is having a profound effect on the provision of medical care. As the curve progresses and patients are discharged, the rehabilitation wave brings a high number of post-acute COVID-19 patients suffering from physical, mental, and cognitive impairments threatening their return to normal life. The complexity and severity of disease in patients recovering from severe COVID-19 infection require an approach that is implemented as early in the recovery phase as possible, in a concerted and systematic way. To address the rehabilitation wave, we describe a spectrum of interventions that start in the intensive care unit and continue through all the appropriate levels of care. This approach requires organized rehabilitation teams including physical therapists, occupational therapists, speech-language pathologists, rehabilitation psychologists or neuropsychologists, and physiatrists collaborating with acute medical teams. Here, we also discuss administrative factors that influence the provision of care during the COVID-19 pandemic. The services that can be provided are described in detail to allow the reader to understand what services may be appropriate locally. We have been learning and adapting real time during this crisis and hope that sharing our experience facilitates the work of others as the pandemic evolves. It is our goal to help reduce the potentially long-lasting challenges faced by COVID-19 survivors.

<https://www.sciencedirect.com/science/article/pii/S0003999320309552>

**Title:** **CHARACTERISING LONG-TERM COVID-19: A RAPID LIVING SYSTEMATIC REVIEW**

Source: Non peer-reviewed preprint from the medRxiv server | Published online 9th December 2020

[*This article is a preprint and has not been peer-reviewed. It reports new medical research that has yet to be evaluated and so should*not*be used to guide clinical practice.*](https://www.medrxiv.org/content/what-unrefereed-preprint)

ABSTRACT: Objective To understand the frequency, profile, and duration of persistent symptoms of covid-19 and to update this understanding as new evidence emerges. Design: A living systematic review produced in response to the rapidly evolving evidence base for ‘long covid’. Data sources Medline and CINAHL (EBSCO), Global Health (Ovid), WHO Global Research Database on covid-19, LitCOVID, and Google Scholar to 28th September 2020. Study selection Studies reporting long-term symptoms and complications among people with confirmed or suspected covid-19, both in those previously hospitalised and those never hospitalised. Only studies incorporating over 100 participants qualified for data extraction and were assessed for risk of bias. Results were analysed using descriptive statistics. Quality assessment Risk of bias was assessed using a quality assessment checklist for prevalence studies.

Results: Twenty-eight studies qualified for data extraction; 16 of these were cohort studies, ten cross-sectional, and two large case series. The analysis included 9,442 adults with covid-19 from 13 countries. The longest mean follow-up period was 111 (SD: 11) days post-hospital discharge. A wide range of systemic, cardiopulmonary, gastrointestinal, neurological, and psychosocial symptoms was reported, of which the most common were breathlessness, fatigue, smell and taste disturbance, and anxiety. Persistent symptoms were described across both previously hospitalised and non-hospitalised populations. The quality of evidence was low, with a high risk of bias and heterogeneity in prevalence. The incorporated studies demonstrated limited external validity, a lack of control subjects, and inconsistent data collection methods. Few studies were conducted in primary care, no studies focused solely on children, and no studies were set in low- and middle-income countries.

Conclusion: Our findings suggest that ‘long covid’ is a complex, heterogeneous condition; however, the limited evidence base currently precludes a precise definition of its symptoms and prevalence. There is a clear need for robust, controlled, prospective cohort studies, including different at-risk populations and settings, incorporating appropriate investigations, collected and recorded in a standardised way.

<https://www.medrxiv.org/content/10.1101/2020.12.08.20246025v1>

**Title:** **SEQUELAE OF COVID-19 IN HOSPITALIZED CHILDREN: A 4-MONTHS FOLLOW-UP**

Source: The Pediatric infectious disease journal; Dec 2020; vol. 39 (no. 12); p. e458

Abstract: Little is known about the sequelae of SARS-CoV-2 infection in children. In a COVID-19 dedicated clinic, we followed-up for 4 months 25 children previously hospitalized for COVID-19, performing clinical, laboratory, and lung ultrasound evaluation. Mid-term sequelae were rarely observed in our COVID-19 children's cohort.

<https://journals.lww.com/pidj/Fulltext/2020/12000/Sequelae_of_COVID_19_in_Hospitalized_Children__A.33.aspx>

**Title:** **CASE REPORT AND SYSTEMATIC REVIEW SUGGEST THAT CHILDREN MAY EXPERIENCE SIMILAR LONG-TERM EFFECTS TO ADULTS AFTER CLINICAL COVID-19**

Source: Acta Paediatrica (Oslo, Norway : 1992); Nov 2020

Abstract: AIM Persistent symptoms in adults after COVID-19 are emerging and the term long COVID is increasingly appearing in the literature. However, paediatric data are scarce .METHODS This paper contains a case report of five Swedish children and the long-term symptoms reported by their parents. It also includes a systematic literature review of the MEDLINE, EMBASE and Web of Science databases and the medRxiv/bioRxiv preprint servers up to 2 November 2020.RESULTSThe five children with potential long covid had a median age of 12 years (range 9-15) and four were girls. They had symptoms for 6-8 months after their clinical diagnoses of COVID-19. None were hospitalised at diagnosis, but one was later admitted for peri-myocarditis. All five children had fatigue, dyspnoea, heart palpitations or chest pain and four had headaches, difficulties concentrating, muscle weakness, dizziness and sore throats. Some had improved after 6-8 months, but they all suffered from fatigue and none had fully returned to school. The systematic review identified 179 publications and 19 of these were deemed relevant and read in detail. None contained any information on long COVID in children. CONCLUSION Children may experience similar long COVID symptoms to adults and females may be more affected.

<https://pubmed.ncbi.nlm.nih.gov/33205450/>

**Title:** **ENDOTHELIAL DYSFUNCTION IN COVID-19: A POSITION PAPER OF THE ESC WORKING GROUP FOR ATHEROSCLEROSIS AND VASCULAR BIOLOGY, AND THE ESC COUNCIL OF BASIC CARDIOVASCULAR SCIENCE**

Source: Cardiovascular Research; Dec 2020; vol. 116 (no. 14); p. 2177-2184

Abstract: The COVID-19 pandemic is an unprecedented healthcare emergency causing mortality and illness across the world. Although primarily affecting the lungs, the SARS-CoV-2 virus also affects the cardiovascular system. In addition to cardiac effects, e.g. myocarditis, arrhythmias, and myocardial damage, the vasculature is affected in COVID-19, both directly by the SARS-CoV-2 virus, and indirectly as a result of a systemic inflammatory cytokine storm. This includes the role of the vascular endothelium in the recruitment of inflammatory leucocytes where they contribute to tissue damage and cytokine release, which are key drivers of acute respiratory distress syndrome (ARDS), in disseminated intravascular coagulation, and cardiovascular complications in COVID-19. There is also evidence linking endothelial cells (ECs) to SARS-CoV-2 infection including: (i) the expression and function of its receptor angiotensin-converting enzyme 2 (ACE2) in the vasculature; (ii) the prevalence of a Kawasaki disease-like syndrome (vasculitis) in COVID-19; and (iii) evidence of EC infection with SARS-CoV-2 in patients with fatal COVID-19. Here, the Working Group on Atherosclerosis and Vascular Biology together with the Council of Basic Cardiovascular Science of the European Society of Cardiology provide a Position Statement on the importance of the endothelium in the underlying pathophysiology behind the clinical presentation in COVID-19 and identify key questions for future research to address. We propose that endothelial biomarkers and tests of function (e.g. flow-mediated dilatation) should be evaluated for their usefulness in the risk stratification of COVID-19 patients. A better understanding of the effects of SARS-CoV-2 on endothelial biology in both the micro- and macrovasculature is required, and endothelial function testing should be considered in the follow-up of convalescent COVID-19 patients for early detection of long-term cardiovascular complications.

<https://pubmed.ncbi.nlm.nih.gov/32750108/>

**Title:** **A LATE COVID-19 COMPLICATION: MALE SEXUAL DYSFUNCTION**

Source: Prehospital and disaster medicine; Dec 2020; vol. 35 (no. 6); p. 688-689

Abstract: Since the beginning of the coronavirus infectious disease 2019 (COVID-19) pandemic, an exponentially large amount of data has been published to describe the pathology, clinical presentations, and outcomes in patients infected with the severe acute respiratory syndrome novel coronavirus 2 (SARS-CoV-2). Although COVID-19 has been shown to cause a systemic inflammation predisposing the involvement of multiple organs, its mechanism affecting the urogenital system has not been well-documented. This case report presents the clinical course of two male patients with COVID-19 who developed sexual dysfunction, as anorgasmia, following recovery from the infection. Although no evidence of viral replication or inflammatory involvement could be identified in these cases' urogenital organs, a lack of other known risk factors for anorgasmia points to the role of COVID-19 as the contributing factor.

<https://pubmed.ncbi.nlm.nih.gov/32959752/>

**Title: Short of Breath for the Long Haul: Diaphragm Muscle Dysfunction in Survivors of Severe COVID-19 as Determined by Neuromuscular Ultrasound**

Source: Non peer-reviewed preprint from the medRxiv server | Published online 11th December 2020

[*This article is a preprint and has not been peer-reviewed. It reports new medical research that has yet to be evaluated and so should*not*be used to guide clinical practice.*](https://www.medrxiv.org/content/what-unrefereed-preprint)

Many survivors from severe coronavirus disease 2019 (COVID-19) suffer from persistent dyspnea and fatigue long after resolution of the active infection. In a cohort of 25 consecutive COVID-19 survivors admitted to an inpatient rehabilitation hospital (76% male), 80% of them had at least one sonographic abnormality of diaphragm muscle structure or function.

Specifically, when compared to established normative data, 76% had reduced diaphragm thickening ratio (impaired contractility), and 20% patients had reduced diaphragm muscle thickness (atrophy). These findings support neuromuscular respiratory dysfunction as a highly prevalent underlying cause for prolonged functional impairments after hospitalization for COVID-19.

<https://www.medrxiv.org/content/10.1101/2020.12.10.20244509v1>

**title: COVID-19 Symptoms: Longitudinal Evolution and Persistence in Outpatient Settings**

Source: Annals of Internal Medicine, Letters, 8 December 2020

Background: Coronavirus disease 2019 (COVID-19) has spread, causing a worldwide pandemic, and prolonged effects are emerging (1, 2). The term “long COVID” describes illness in persons who continue to report lasting effects after infection (3, 4). To date, little information exists about outpatient settings in this novel disease where 81% of cases are reportedly on the mild end of the spectrum (5). Informing patients and physicians about COVID-19 symptom evolution may help them recognize the time course of the disease, legitimize patients' concerns, and reassure them when possible. Messages around potentially persisting symptoms could also assist in reinforcing public health measures to avoid the spread of infection. Objective: To describe COVID-19 symptom evolution and persistence in an outpatient setting in Geneva, Switzerland, from day 1 through day 30 to 45 after diagnosis. …

Findings: Of 30 557 persons tested in Geneva during the study period, 18.1% tested positive (n = 5534); 22.2% of these were hospitalized (n = 1229), and 703 enrolled in COVICARE follow-up. Out of the initial cohort, 669 persons were ultimately included (Figure 1). The mean age was 42.8 years (SD, 13.7); 60% of included patients were women, 24.6% were health care workers, and 68.8% had no underlying risk factors. Forty participants were hospitalized during the study period. We included their data when available (up to hospitalization and again at day 30 to 45). Hospitalized patients were significantly older (mean age, 53.2 years [SD, 11.7]); 55% were male, 12.5% were health care workers, and 62.5% had underlying risk factors.

Figure 2 presents the proportion of the 669 patients with various symptoms over time. Cough and loss of taste or smell were common early in the clinical course. At 30 to 45 days (mean, 43 days) from diagnosis, at least 32% of the 669 originally included patients reported 1 or more symptoms. Fatigue, dyspnea, and loss of taste or smell were the main persistent symptoms. Participants not reached between days 30 and 45 (n = 159) had similar characteristics to those reached in that period (mean age, 41.8 years [SD, 14.8]; 58% were female, 25.9% were health care workers, and 67.9% had no risk factors). Forty of the participants were hospitalized during follow-up. Their data were included in the reported symptoms when available (up to hospitalization and again at day 30-45). COVID-19 = coronavirus disease 2019.

Discussion: Coronavirus disease 2019 can persist and result in prolonged illness. Our study shows persistence of symptoms in a third of ambulatory patients 30 to 45 days after diagnosis even if we assume that those lost to follow-up were all asymptomatic. Fatigue, dyspnea, and loss of taste or smell were the main persistent symptoms. These results are in line with a recent study of 274 participants that reported the persistence of symptoms 14 to 21 days after diagnosis (2). [continues…]

<https://www.acpjournals.org/doi/10.7326/M20-5926>

**TITLE: ECHOCARDIOGRAPHIC CHARACTERISTICS OF PATIENTS WITH SARS-COV-2 INFECTION**

Source: Clinical Research in Cardiology : official journal of the German Cardiac Society; Dec 2020; vol. 109 (no. 12); p. 1549-1566

Abstract: BACKGROUND Myocardial involvement induced by SARS-CoV-2 infection might be important for long-term prognosis. The aim of this observational study was to characterize the myocardial effects during SARS-CoV-2 infections by echocardiography. RESULTS AND METHODS An extended echocardiographic image acquisition protocol was performed in 18 patients with SARS-CoV-2 infection assessing LV longitudinal, radial, and circumferential deformation including rotation, twist, and untwisting. Furthermore, LV deformation was analyzed in an age-matched control group of healthy individuals (n = 20). The most prevalent finding was a reduced longitudinal strain observed predominantly in more than one basal LV segment (n = 10/14 patients, 71%). This pattern reminded of a "reverse tako-tsubo" morphology that is not typical for other viral myocarditis. Additional findings included a biphasic pattern with maximum post-systolic or negative regional radial strain predominantly basal (n = 5/14 patients, 36%); the absence or dispersion of basal LV rotation (n = 6/14 patients, 43%); a reduced or positive regional circumferential strain in more than one segment (n = 7/14 patients, 50%); a net rotation showing late post-systolic twist or biphasic pattern (n = 8/14 patients, 57%); a net rotation showing polyphasic pattern and/or higher maximum net values during diastole (n = 8/14 patients, 57%). CONCLUSION Myocardial involvement due to SARS-CoV-2-infection was highly prevalent in the present cohort-even in patients with mild symptoms. It appears to be characterized by specific speckle tracking deformation abnormalities in the basal LV segments. These data set the stage to prospectively test whether these parameters are helpful for risk stratification and for the long-term follow-up of these patients.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7428201/>

**TITLE: GLOBAL HEALTH-CARE SYSTEMS MUST PRIORITISE REHABILITATION**

Source: The Lancet, Published online: December 1, 2020

Rehabilitation is a set of interventions designed to optimise functioning and reduce disability in individuals with health conditions in interaction with their environment. Although a fundamental element of health care, rehabilitation has often been a deprioritised service, considered as being nice to have but often not valued by health-care systems that, instead, invest in what are regarded as more essential life-saving treatments of drugs, medical devices, and surgical treatments. However, health-care systems need to value and fund rehabilitation interventions and programmes as a core essential service. Addressing the unmet need for rehabilitation is a global priority.

<https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)32533-2/fulltext>

**Title: Clinical course and physiotherapy intervention in 9 patients with COVID-19**

Source: Physiotherapy; Dec 2020; vol. 109 ; p. 1-3

Abstract: Since the outbreak of the 2019 novel coronavirus (COVID-19), the role of physiotherapy for patients with COVID-19 infection has been highlighted by various international guidelines. Despite that, clinical information regarding the rehabilitation of patients with COVID-19 infection remains limited. In this case series, we provide a novel insight into the physiotherapy management in patients infected with COVID-19 in Singapore. The main findings are: (1) Respiratory physiotherapy interventions were not indicated in the majority of the patients with COVID-19 in this case series; (2) During rehabilitation, exertional or position-related desaturation is a common feature observed in critically ill patients with COVID-19 infection locally. This clinical phenomenon of exertional or positional-related desaturation has significantly slowed down the progression of rehabilitation in our patients. As such, it can potentially result in a significant burden on healthcare resources to provide rehabilitation to these patients. Based on these findings, we have highlighted several recommendations for the provision of rehabilitation in patients who are critically ill with COVID-19.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7320677/>

**TITLE:** **What Now for Rehabilitation Specialists? Coronavirus Disease 2019 Questions and Answers**

Source: Archives of Physical Medicine and Rehabilitation; Dec 2020; vol. 101 (no. 12); p. 2233-2242

Abstract: Recognizing a need for more guidance on the coronavirus disease 2019 (COVID-19) pandemic, members of the Archives of Physical Medicine and Rehabilitation Editorial Board invited several clinicians with early experience managing the disease to collaborate on a document to help guide rehabilitation clinicians in the community. This consensus document is written in a "question and answer" format and contains information on the following items: common manifestations of the disease; rehabilitation recommendations in the acute hospital setting, recommendations for inpatient rehabilitation and special considerations. These suggestions are intended for use by rehabilitation clinicians in the inpatient setting caring for patients with confirmed or suspected COVID-19. The text represents the authors' best judgment at the time it was written. However, our knowledge of COVID-19 is growing rapidly. The reader should take advantage of the most up-to-date information when making clinical decisions.

<https://pubmed.ncbi.nlm.nih.gov/32966809/>

**TITLE:** **BEYOND COVID-19: EVIDENCE-BASED CONSENSUS STATEMENT ON THE ROLE OF PHYSIOTHERAPY IN PULMONARY REHABILITATION IN THE INDIAN CONTEXT**

Source: The Journal of the Association of Physicians of India; Dec 2020; vol. 68 (no. 12); p. 82-89

Abstract: Post COVID-19 sequelae includes breathlessness, weakness, fatigue, decreased exercise tolerance and impaired quality of life. Physiotherapy based rehabilitation program is an essential component for post COVID-19 patients in facilitating maximum functional recovery. Expert consensus statements are available from the developed countries. There is a need for a guidelines to manage post COVID-19 sequelae in Indian context. The objective of this consensus statement is to provide evidence informed guidelines for post COVID-19 physiotherapy management as a component of pulmonary rehabilitation. This consensus statement was developed by expert panel across India. Published literatures were appraised and used to prepare the recommendations. This is the first of its kind of work providing preliminary guidelines for post COVID-19 physiotherapy.

<https://pubmed.ncbi.nlm.nih.gov/33247653/>

**TITLE: PROLONGED SHEDDING OF SEVERE ACUTE RESPIRATORY SYNDROME CORONAVIRUS 2 IN PATIENTS WITH COVID-19**

Source: Emerging Microbes & Infections; Nov 2020 ; p. 1-28

Abstract: Following acute infection, individuals with coronavirus disease 2019 (COVID-19) may still shed severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) RNA. However, limited information is available regarding the active shedding period or whether infectious virus is also shed. Here, we monitored the clinical characteristics and virological features of 38 patients with COVID-19 (long-term carriers) who recovered from the acute disease, but still shed viral RNA for over 3 months. The median carrying history of the long-term carriers was 92 days after the first admission, and the longest carrying history was 118 days. Negative and positive viral RNA-shedding fluctuations were observed. Long-term carriers were mostly elderly people (65 years old, median age) with a history of mild infection. Infectious SARS-CoV-2 RNA was isolated from the respiratory tract (sputum), where high viral RNA and protein levels were found. Real-time polymerase chain reaction experiments showed that the viral load in long-term carriers was significantly lower (median cycle threshold [Ct] = 32) than in patients with acute infection (median Ct = 27). All nine full-length genomes of samples obtained in March-April 2020 matched early viral clades circulating in January-February 2020, suggesting that these patients persistently carried SARS-CoV-2 and were not re-infected. IgM and IgG antibodies and neutralizing-antibody profiles were similar between long-term carriers and recovered patients with similar disease courses. In summary, although patients with COVID-19 generated neutralizing antibodies, they may still shed infectious SARS-CoV-2 for over 3 months. These data imply that patients should be monitored after discharge to control future outbreaks.

<https://www.tandfonline.com/doi/full/10.1080/22221751.2020.1852058>

**research updates, news & local SERVICE DEVelopments**

**TITLE: COVID-19: LUNG DAMAGE 'IDENTIFIED' IN STUDY**

Source: BBC | Published online 1 December 2020

‘Covid-19 could be causing lung abnormalities still detectable more than three months after patients are infected, researchers suggest. A study of 10 patients at Oxford University used a novel scanning technique to identify damage not picked up by conventional scans. It uses a gas called xenon during MRI scans to create images of lung damage. Lung experts said a test that could spot long-term damage would make a huge difference to Covid patients. The xenon technique sees patients inhale the gas during a magnetic resonance imaging (MRI) scan.

Prof Fergus Gleeson, who is leading the work, tried out his scanning technique on 10 patients aged between 19 and 69. Eight of them had persistent shortness of breath and tiredness three months after being ill with coronavirus, even though none of them had been admitted to intensive care or required ventilation, and conventional scans had found no problems in their lungs.

The scans showed signs of lung damage - by highlighting areas where air is not flowing easily into the blood - in the eight who reported breathlessness. The results have prompted Prof Gleeson to plan a trial of up to 100 people to see if the same is true of people who had not been admitted to hospital and had not suffered from such serious symptoms. He is planning to work with GPs to scan people who have tested positive for Covid-19 across a range of age groups.

The aim is to discover whether lung damage occurs and if so whether it is permanent, or resolves over time. He said: "I was expecting some form of lung damage, but not to the degree that we have seen." The risk of severe illness and death increases markedly for the over 60s. But if the trial discovers that the lung damage occurs across a wider age group and even in those not requiring admission to hospital "it would move the goalposts," according to Prof Gleeson’.

<https://www.bbc.co.uk/news/health-55017301>

**TITLE: LAUNCH OF THE PIMCO STUDY**

Source: Trainee Research in Intensive Care Network| 28th Nov 2020

‘The PIMCO (Psychological Impact of Covid-19) study has started! 2 patients from one site recruited already, and loads more sites signed up and ready to go!’

<https://twitter.com/PIMCOstudy/status/1332060732167491588>

**TITLE: 590 PEOPLE'S STORIES OF LEAVING HOSPITAL DURING COVID-19: A JOINT REPORT BETWEEN HEALTHWATCH ENGLAND AND THE BRITISH RED CROSS**

Source: British Red Cross| Dec 2020

During lockdown, the British Red Cross helped patients come home from hospital. Capturing nearly 600 people’s experiences of hospital discharge during the pandemic, this new report assesses the impact of new hospital discharge emergency measures implemented in 2020 to free up beds for coronavirus (Covid-19) patients.

Key findings:

Overall, patients and families were very positive about healthcare staff, praising their efforts during such a difficult time.

82% of respondents did not receive a recommended follow-up visit and assessment at home after discharge from hospital. Almost one in five of those also reported having unmet needs, such as equipment, medication or advice.

Some people felt their discharge was rushed, with around one in five (19%) feeling unprepared to leave hospital.

Over a third (35%) of respondents and their carers did not get a contact for further advice, despite this being a component of the national policy.

<https://www.redcross.org.uk/about-us/what-we-do/we-speak-up-for-change/peoples-stories-of-leaving-hospital-during-covid-19##>

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We also produce a range of subject-specific news feeds to ensure our clinical and professional teams stay up to date with developments in their work areas. Please visit our [website](http://www.trftlibraryknowledge.com/) for more information

<https://www.trftlibraryknowledge.com/health-newsfeeds.html>