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

7th January 2021

**guidance & national develoments**

**Title:** **NICE, RCGP AND SIGN PUBLISH GUIDELINE ON MANAGING THE LONG-TERM EFFECTS OF COVID-19**

**Source**: NICE, 18th December 2020

NICE, the Royal College of General Practitioners (RCGP) and the Scottish Intercollegiate Guidelines Network (SIGN) have today (18 December 2020) published a guideline on the management of the long-term effects of COVID-19 (also known as Long COVID).

<https://www.nice.org.uk/news/article/nice-rcgp-and-sign-publish-guideline-on-managing-the-long-term-effects-of-covid-19>

**TITLE: THE PREVALENCE OF LONG COVID SYMPTOMS AND COVID-19**

**Source**: ONS, 16th December 2020

The Office for National Statistics (ONS) has announced plans for estimating the prevalence of, and risk factors for, "long COVID" symptoms and health complications following coronavirus (COVID-19) infection. An initial set of early experimental results has also been released.

<https://www.ons.gov.uk/news/statementsandletters/theprevalenceoflongcovidsymptomsandcovid19complications>

**research papers**

**TITLE: CARDIOPULMONARY RECOVERY AFTER COVID-19 - AN OBSERVATIONAL PROSPECTIVE MULTI-CENTER TRIAL**

**Source**: The European Respiratory Journal; Dec 2020

Abstract: BACKGROUND After the 2002/2003 SARS outbreak, 30% of survivors exhibited persisting structural pulmonary abnormalities. The long-term pulmonary sequelae of coronavirus disease 2019 (COVID-19) are yet unknown, and comprehensive clinical follow-up data are lacking. METHODS In this prospective, multicentre, observational study, we systematically evaluated the cardiopulmonary damage in subjects recovering from COVID-19 at 60 and 100 days after confirmed diagnosis. We conducted a detailed questionnaire, clinical examination, laboratory testing, lung function analysis, echocardiography, and thoracic low-dose computed tomography (CT).RESULTS Data from 145 COVID-19 patients were evaluated, and 41% of all subjects exhibited persistent symptoms 100 days after COVID-19 onset, with dyspnea being most frequent (36%). Accordingly, patients still displayed an impaired lung function, with a reduced diffusing capacity in 21% of the cohort being the most prominent finding. Cardiac impairment, including a reduced left ventricular function or signs of pulmonary hypertension, was only present in a minority of subjects. CT scans unveiled persisting lung pathologies in 63% of patients, mainly consisting of bilateral ground-glass opacities and/or reticulation in the lower lung lobes, without radiological signs of pulmonary fibrosis. Sequential follow-up evaluations at 60 and 100 days after COVID-19 onset demonstrated a vast improvement of both, symptoms and CT abnormalities over time. CONCLUSION A relevant percentage of post-COVID-19 patients presented with persisting symptoms and lung function impairment along with pulmonary abnormalities more than 100 days after the diagnosis of COVID-19. However, our results indicate a significant improvement in symptoms and cardiopulmonary status over time.

<https://erj.ersjournals.com/content/early/2020/11/26/13993003.03481-2020>

**TITLE: DYSPNOEA, LUNG FUNCTION AND CT FINDINGS THREE MONTHS AFTER HOSPITAL ADMISSION FOR COVID-19**

Source: The European Respiratory Journal; Dec 2020

Abstract: The long-term pulmonary outcomes of coronavirus disease 2019 (COVID-19) are unknown. We aimed to describe self-reported dyspnoea, quality of life, pulmonary function, and chest CT findings three months following hospital admission for COVID-19. We hypothesised outcomes to be inferior for patients admitted to intensive care units (ICU), compared with non-ICU patients. Discharged COVID-19-patients from six Norwegian hospitals were consecutively enrolled in a prospective cohort study. The current report describes the first 103 participants, including 15 ICU patients. Modified Medical Research Council dyspnoea scale (mMRC), EuroQol Group's Questionnaire, spirometry, diffusion capacity (DLCO), six-minute walk test, pulse oximetry, and low-dose CT scan were performed three months after discharge. mMRC was >0 in 54% and >1 in 19% of the participants. The median (25th-75th percentile) forced vital capacity and forced expiratory volume in one second were 94% (76, 121) and 92% (84, 106) of predicted, respectively. DLCO was below the lower limit of normal in 24%. Ground-glass opacities (GGO) with >10% distribution in ≥1 of 4 pulmonary zones were present in 25%, while 19% had parenchymal bands on chest CT. ICU survivors had similar dyspnoea scores and pulmonary function as non-ICU patients, but higher prevalence of GGO (adjusted odds ratio [95% confidence interval] 4.2 [1.1, 15.6]) and performance in lower usual activities. Three months after admission for COVID-19, one fourth of the participants had chest CT opacities and reduced diffusion capacity. Admission to ICU was associated with pathological CT findings. This was not reflected in increased dyspnoea or impaired lung function.

<https://erj.ersjournals.com/content/early/2020/11/26/13993003.03448-2020>

**TITLE: CLINICAL SEQUELAE OF COVID-19 SURVIVORS IN WUHAN, CHINA: A SINGLE-CENTRE LONGITUDINAL STUDY**

**Source**: Clinical Microbiology and Infection : the official publication of the European Society of Clinical Microbiology and Infectious Diseases; Jan 2021; vol. 27 (no. 1); p. 89-95

Abstract: OBJECTIVES To describe the prevalence, nature and risk factors for the main clinical sequelae in coronavirus disease 2019 (COVID-19) survivors who have been discharged from the hospital for more than 3 months. METHODS This longitudinal study was based on a telephone follow-up survey of COVID-19 patients hospitalized and discharged from Renmin Hospital of Wuhan University, Wuhan, China before 1 March 2020. Demographic and clinical characteristics and self-reported clinical sequelae of the survivors were described and analysed. A cohort of volunteers who were free of COVID-19 and lived in the urban area of Wuhan during the outbreak were also selected as the comparison group. RESULTS Among 538 survivors (293, 54.5% female), the median (interquartile range) age was 52.0 (41.0-62.0) years, and the time from discharge from hospital to first follow-up was 97.0 (95.0-102.0) days. Clinical sequelae were common, including general symptoms (n = 267, 49.6%), respiratory symptoms (n = 210, 39%), cardiovascular-related symptoms (n = 70, 13%), psychosocial symptoms (n = 122, 22.7%) and alopecia (n = 154, 28.6%). We found that physical decline/fatigue (p < 0.01), postactivity polypnoea (p= 0.04) and alopecia (p < 0.01) were more common in female than in male subjects. Dyspnoea during hospitalization was associated with subsequent physical decline/fatigue, postactivity polypnoea and resting heart rate increases but not specifically with alopecia. A history of asthma during hospitalization was associated with subsequent postactivity polypnoea sequela. A history of pulse ≥90 bpm during hospitalization was associated with resting heart rate increase in convalescence. The duration of virus shedding after COVID-19 onset and hospital length of stay were longer in survivors with physical decline/fatigue or postactivity polypnoea than in those without. CONCLUSIONS Clinical sequelae during early COVID-19 convalescence were common; some of these sequelae might be related to gender, age and clinical characteristics during hospitalization.

[https://www.clinicalmicrobiologyandinfection.com/article/S1198-743X(20)30575-9/fulltext](https://www.clinicalmicrobiologyandinfection.com/article/S1198-743X%2820%2930575-9/fulltext)

**TITLE: CHARACTERISTICS, INTERVENTIONS, AND LONGER TERM OUTCOMES OF COVID-19 ICU PATIENTS IN DENMARK-A NATIONWIDE, OBSERVATIONAL STUDY**

**Source**: Acta Anaesthesiologica Scandinavica; Jan 2021; vol. 65 (no. 1); p. 68-75

Abstract: BACKGROUND Most data on intensive care unit (ICU) patients with COVID-19 originate in selected populations from stressed healthcare systems with shorter term follow-up. We present characteristics, interventions and longer term outcomes of the entire, unselected cohort of all ICU patients with COVID-19 in Denmark where the ICU capacity was not exceeded. METHODS We identified all patients with SARS-CoV-2 admitted to any Danish ICU from 10 March to 19 May 2020 and registered demographics, chronic comorbidities, use of organ support, length of stay, and vital status from patient files. Risk factors for death were analyzed using adjusted Cox regression analysis. RESULTS There were 323 ICU patients with confirmed COVID-19. Median age was 68 years, 74% were men, 50% had hypertension, 21% diabetes, and 20% chronic pulmonary disease; 29% had no chronic comorbidity. Invasive mechanical ventilation was used in 82%, vasopressors in 83%, renal replacement therapy in 26%, and extra corporeal membrane oxygenation in 8%. ICU stay was median 13 days (IQR 6-22) and hospital stay 19 days (11-30). Median follow-up was 79 days. At end of follow-up, 118 had died (37%), 15 (4%) were still in hospital hereof 4 in ICU as of 16 June 2020. Risk factors for mortality included male gender, age, chronic pulmonary disease, active cancer, and number of co-morbidities. CONCLUSIONS In this nationwide, population-based cohort of ICU patients with COVID-19, longer term survival was high despite high age and substantial use of organ support. Male gender, age, and chronic co-morbidities, in particular chronic pulmonary disease, were associated with increased risk of death.

<https://onlinelibrary.wiley.com/doi/10.1111/aas.13701>

**TItle:** **CHARACTERIZING LONG COVID IN AN INTERNATIONAL COHORT: 7 MONTHS OF SYMPTOMS AND THEIR IMPACT**

Source: Non peer-reviewed preprint from the medRxiv server | Published online 27th 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 characterize the symptom profile and time course in patients with Long COVID, along with the impact on daily life, work, and return to baseline health. Design: International web-based survey of suspected and confirmed COVID-19 cases with illness lasting over 28 days and onset prior to June 2020. Setting: Survey distribution via online COVID-19 support groups and social media. Participants 3,762 respondents from 56 countries completed the survey. 1166 (33.7%) were 40-49 years old, 937 (27.1%) were 50-59 years old, and 905 (26.1%) were 30-39 years old. 2961 (78.9%) were women, 718 (19.1%) were men, and 63 (1.7%) were nonbinary. 8.4% reported being hospitalized. 27% reported receiving a laboratory-confirmed diagnosis of COVID-19. 96% reported symptoms beyond 90 days. Results: Prevalence of 205 symptoms in 10 organ systems was estimated in this cohort, with 66 symptoms traced over seven months. Respondents experienced symptoms in an average of 9.08 (95% confidence interval 9.04 to 9.13) organ systems. The most frequent symptoms reported after month 6 were: fatigue (77.7%, 74.9% to 80.3%), post-exertional malaise (72.2%, 69.3% to 75.0%), and cognitive dysfunction (55.4%, 52.4% to 58.8%). These three symptoms were also the three most commonly reported overall. In those who recovered in less than 90 days, the average number of symptoms peaked at week 2 (11.4, 9.4 to 13.6), and in those who did not recover in 90 days, the average number of symptoms peaked at month 2 (17.2, 16.5 to 17.8). Respondents with symptoms over 6 months experienced an average of 13.8 (12.7 to 14.9) symptoms in month 7. 85.9% (84.8% to 87.0%) experienced relapses, with exercise, physical or mental activity, and stress as the main triggers. 86.7% (85.6% to 92.5%) of unrecovered respondents were experiencing fatigue at the time of survey, compared to 44.7% (38.5% to 50.5%) of recovered respondents. 45.2% (42.9% to 47.2%) reported requiring a reduced work schedule compared to pre-illness and 22.3% (20.5% to 24.3%) were not working at the time of survey due to their health conditions.

Conclusions Patients with Long COVID report prolonged multisystem involvement and significant disability. Most had not returned to previous levels of work by 6 months. Many patients are not recovered by 7 months, and continue to experience significant symptom burden.

<https://www.medrxiv.org/content/10.1101/2020.12.24.20248802v2>

**TITLE: READMISSION AND DEATH AFTER INITIAL HOSPITAL DISCHARGE AMONG PATIENTS WITH COVID-19 IN A LARGE MULTIHOSPITAL SYSTEM**

**Source**: JAMA (Research Letter), 14th December 2020

Although more patients are surviving severe coronavirus disease 2019 (COVID-19), there are limited data on outcomes after initial hospitalization. We therefore measured the rate of readmission, reasons for readmission, and rate of death after hospital discharge among patients with COVID-19 in the nationwide Veterans Affairs (VA) health care system.

In this national cohort of VA patients, 27% of survivors of COVID-19 hospitalization were readmitted or died by 60 days after discharge, and this rate was lower than matched survivors of pneumonia or heart failure. However, rates of readmission or death were higher than pneumonia or heart failure during the first 10 days after discharge following COVID-19 hospitalization, suggesting a period of heightened risk of clinical deterioration. Study limitations include the inability to measure readmissions to non-VA hospitals and an older, male-predominant study population, who may be at higher risk of severe manifestations of COVID-19. Public health surveillance or clinical trials focused exclusively on inpatient mortality may substantially underestimate burdens of COVID-19.

<https://jamanetwork.com/journals/jama/fullarticle/2774380>

**TITLE:** **HOSPITAL READMISSION IS COMMON AMONG COVID-19 SURVIVORS**

**Source**: JAMA, published online 22/29 Dec 2020

Nearly 1 in 10 patients who were discharged after receiving inpatient care for coronavirus disease 2019 (COVID-19) earlier this year were [readmitted](https://www.cdc.gov/mmwr/volumes/69/wr/mm6945e2.htm?s_cid=mm6945e2_w) within 2 months, according to a recent study. To help fill the knowledge gap about posthospitalization COVID-19 outcomes, CDC investigators analyzed hospital records and administrative data for 126 137 patients with COVID-19 who were admitted between March and July. They found that 15% of the patients died during their initial hospitalization. Among survivors, 9% were readmitted to the same hospital within 2 months of discharge and 1.6% were readmitted more than once. Fifteen percent of patients discharged to nursing home care were readmitted to a hospital, as were 12% who were discharged to home health care and 7% who didn’t need professional care at home. Fewer than 0.1% of readmitted patients died. Diseases of the circulatory, respiratory, or digestive systems were readmitted patients’ most common discharge diagnoses.

Having preexisting pulmonary disease, heart failure, diabetes, or chronic kidney disease increased patients’ odds of readmission. Patients discharged to home-based or self-care were less likely to be readmitted, but two-thirds of those who were had 1 or more of those chronic conditions. Although Black and Hispanic patients were overrepresented among the hospitalized patients, they were less likely than White patients to be readmitted. The data add new urgency to the need to curb surging US COVID-19 infections—particularly among high-risk populations—as hospitals across the country become overwhelmed. The findings may also help physicians determine the best discharge plans for inpatients. “Continued public health messaging and interventions to prevent COVID-19 among older persons and those with underlying medical conditions is essential,” the authors wrote.

<https://jamanetwork.com/journals/jama/fullarticle/2774420?utm_source=silverchair&utm_campaign=jama_network&utm_content=covid_weekly_highlights&utm_medium=email>

**TITLE: PERSISTENT SYMPTOMS AFTER COVID-19: QUALITATIVE STUDY OF 114 “LONG COVID” PATIENTS AND DRAFT QUALITY CRITERIA FOR SERVICES**

E. Ladds, A. Rushforth, S. Wieringa, S. Taylor, C. Rayner, L. Husain, T. Greenhalgh.

Source: BMC Health Services Research| Published online 20th December2020

Abstract Background Approximately 10% of patients with Covid-19 experience symptoms beyond 3-4 weeks. Patients call this “long Covid”. We sought to document the lived experience of such patients, their accounts of accessing and receiving healthcare, and their ideas for improving services. Method We held 55 individual interviews and 8 focus groups (n = 59) with people recruited from UK-based long Covid patient support groups, social media and snowballing. We restricted some focus groups to health professionals since they had already self-organised into online communities. Participants were invited to tell their personal stories and comment on others’ stories. Data were audiotaped, transcribed, anonymised and coded using NVIVO. Analysis incorporated sociological theories of illness, healing, peer support, the clinical relationship, access to care, and service redesign. Results The sample was 70% female, aged 27-73 years, and comprised White British (74%), Asian (11%), White Other (7%), Black (4%), and Mixed (4%). 27 were doctors and 23 other health professionals. 10% had been hospitalised. Analysis revealed a confusing illness with many, varied and often relapsing-remitting symptoms and uncertain prognosis; a heavy sense of loss and stigma; difficulty accessing and navigating services; difficulty being taken seriously and achieving a diagnosis; disjointed and siloed care (including inability to access specialist services); variation in standards (e.g. inconsistent criteria for seeing, investigating and referring patients); variable quality of the therapeutic relationship (some participants felt well supported while others felt “fobbed off”); and possible critical events (e.g. deterioration after being unable to access services). Emotional touch points in participants’ experiences informed ideas for improving services. Conclusion Quality principles for a long Covid service should include ensuring access to care, reducing burden of illness, taking clinical responsibility and providing continuity of care, multi-disciplinary rehabilitation, evidence-based investigation and management, and further development of the knowledge base and clinical services.

<https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-020-06001-y>

**TITLE:** **LONG COVID GUIDELINES NEED TO REFLECT LIVED EXPERIENCE**

**Source**: The Lancet (Comment), published online 21 December 2020

Since May, 2020,1 increasing attention has been given to the experiences of people with COVID-19 whose symptoms persist for 4 or more weeks. According to the Office for National Statistics (ONS), an estimated 186 000 people (95% CI 153 000–221 000) in private households in England currently have COVID-19 symptoms 5–12 weeks or longer after acute infection.2 The ONS estimate that one in five people have symptoms that persist after 5 weeks, and one in ten have symptoms for 12 weeks or longer after acute COVID-19 infection.2 Research on long COVID is growing, including into the underlying pathology, consequences, and sequelae, as well as rehabilitation for patients. Evidence suggests that a considerable proportion of people with long COVID have severe complications.3, 4, 5

We have lived experiences of long COVID, with a range of symptoms lasting for more than 6 months. Staff in the UK National Health Service (NHS) have been variously supportive or disbelieving of our ongoing, often worsening, symptoms. Before our illness we were fit, healthy, and working in demanding roles, including as doctors, nurses, and other health professionals. Our symptoms of acute COVID-19 included dyspnoea, dry cough, fever, anosmia, and debilitating fatigue. Throughout 2020 we also experienced other symptoms and conditions, never experienced before our acute illnesses (panel). All of these conditions began during, or shortly after, acute COVID-19. We each are experiencing different patterns and varied severity of symptoms; we all share difficulties accessing adequate health-care services; some of us have received misguided assessment and treatment in some of the UK's recently established long COVID clinics and encountered dismissive behaviour from some health professionals.6, 7, 8 We share these experiences with thousands of people we engage with in rapidly growing online support groups.

[https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)32705-7/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736%2820%2932705-7/fulltext)

**TITLE: COVID-19: FROM AN ACUTE TO CHRONIC DISEASE? POTENTIAL LONG-TERM HEALTH CONSEQUENCES**
Source: Critical Reviews in Clinical Laboratory Sciences; Dec 2020 ; p. 1-23

Abstract: Coronavirus disease 2019 (COVID-19) is caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Despite pulmonary impairments being the most prevalent, extra-pulmonary manifestations of COVID-19 are abundant. Confirmed COVID-19 cases have now surpassed 57.8 million worldwide as of 22 November 2020. With estimated case fatality rates (number of deaths from COVID-19 divided by number of confirmed COVID-19 cases) varying between 1 and 7%, there will be a large population of recovered COVID-19 patients that may acquire a multitude of long-term health consequences. While the multi-organ manifestations of COVID-19 are now well-documented, the potential long-term implications of these manifestations remain to be uncovered. In this review, we turn to previous similar coronaviruses (i.e. SARS-CoV-1 and Middle East respiratory syndrome coronavirus [MERS-CoV]) in combination with known health implications of SARS-CoV-2 infection to predict potential long-term effects of COVID-19, including pulmonary, cardiovascular, hematologic, renal, central nervous system, gastrointestinal, and psychosocial manifestations, in addition to the well-known post-intensive care syndrome. It is necessary to monitor COVID-19 patients after discharge to understand the breadth and severity of long-term effects. This can be accomplished by repurposing or initiating large cohort studies to not only focus on the long-term consequences of SARS-CoV-2 infection, but also on acquired immune function as well as ethno-racial group and household income disparities in COVID-19 cases and hospitalizations. The future for COVID-19 survivors remains uncertain, and if this virus circulates among us for years to come, long-term effects may accumulate exponentially.

<https://www.tandfonline.com/doi/full/10.1080/10408363.2020.1860895>

**TITLE: REHABILITATION LEVELS IN PATIENTS WITH COVID-19 ADMITTED TO INTENSIVE CARE REQUIRING INVASIVE VENTILATION. AN OBSERVATIONAL STUDY**

**Source**: Annals of the American Thoracic Society; Jan 2021; vol. 18 (no. 1); p. 122-129

Abstract: Rationale: Patients with severe coronavirus disease (COVID-19) have complex organ support needs that necessitate prolonged stays in the intensive care unit (ICU), likely to result in a high incidence of neuromuscular weakness and loss of well-being. Early and structured rehabilitation has been associated with improved outcomes for patients requiring prolonged periods of mechanical ventilation, but at present no data are available to describe similar interventions or outcomes in COVID-19 populations. Objectives: To describe the demographics, clinical status, level of rehabilitation, and mobility status at ICU discharge of patients with COVID-19.Methods: Adults admitted to the ICU with a confirmed diagnosis of COVID-19 and mechanically ventilated for >24 hours were included. Rehabilitation status was measured daily using the Manchester Mobility Score to identify the time taken to first mobilize (defined as sitting on the edge of the bed or higher) and highest level of mobility achieved at ICU discharge. Results: A total of n = 177 patients were identified, of whom n = 110 survived to ICU discharge and were included in the subsequent analysis. While on ICU, patients required prolonged periods of mechanical ventilation (mean 19 ± 10 d), most received neuromuscular blockade (90%) and 67% were placed in the prone position on at least one occasion. The mean ± standard deviation time to first mobilize was 14 ± 7 days, with a median Manchester Mobility Score at ICU discharge of 5 (interquartile range: 4-6), which represents participants able to stand and step around to a chair with or without assistance. Time to mobilize was significantly longer in those with higher body mass index (P < 0.001), and older patients (P = 0.012) and those with more comorbidities (P = 0.017) were more likely to require further rehabilitation after discharge. Conclusions: The early experience of the COVID-19 pandemic in the United Kingdom resembles the experience in other countries, with high acuity of illness and prolonged period of mechanical ventilation required for those patients admitted to the ICU. Although the time to commence rehabilitation was delayed owing to this severity of illness, rehabilitation was possible within the ICU and led to increased levels of mobility from waking before ICU discharge. Clinical trial registered with ClinicalTrials.gov (NCT04396197).

<https://pubmed.ncbi.nlm.nih.gov/32915072/>

**TITLE: POST-ACUTE COVID-19 REHABILITATION NETWORK PROPOSAL: FROM INTENSIVE TO EXTENSIVE AND HOME-BASED IT SUPPORTED SERVICES**

**Source**: International Journal of Environmental Research and Public Health; Dec 2020; vol. 17 (no. 24)

Abstract: Management of COVID-19 post-acute syndrome is an emerging health issue in rehabilitation. This article aims to present a proposal, based on the principles of clinical governance, health management and information technology (IT), and to respond to the need for a structured organization model for post-acute COVID-19 rehabilitation. The authors present a regional-based model of a network of clinicians and healthcare managers using a dedicated IT platform to achieve both effectiveness and efficiency objectives, to ensure coordination of the available resources and the most appropriate rehabilitative treatment for patients. The proposed post-acute COVID-19 rehabilitation network has been designed according to the model of a clinical management project within the Italian national healthcare system, and its context is an easily adjustable model for the European healthcare systems.

<https://pubmed.ncbi.nlm.nih.gov/33327384/>

**TITLE: POST-COVID-19 FATIGUE AND ANHEDONIA: A CROSS-SECTIONAL STUDY AND THEIR CORRELATION TO POST-RECOVERY PERIOD**

**Source**: Neuropsychopharmacology reports; Dec 2020

Abstract: BACKGROUND Individuals infected by the novel coronavirus (SARS-CoV-2) have experienced different psychiatric manifestations during the period of infectivity and post-COVID-19 infection. Fatigue and anhedonia are among the frequently reported manifestations after recovery from this novel viral pandemic, leading to early evaluation of those patients and proper management of their complaints which have a drastic burden on different domains of life. Also, the period after recovery might have an effect on the severity of these two psychiatric presentations. AIM OF THE WORK This cross-sectional observational study aimed to investigate the occurrence of post-COVID-19 fatigue and anhedonia and whether the duration after 2 consecutive PCR-negative tests has an implication on the severity of the above-mentioned psychiatric manifestations. METHODS Socio-demographic characteristics of 200 post-COVID-19 patients were collected, and also, the self-assessment anhedonia scale was used to evaluate the degree of anhedonia. Fatigue assessment scale used to investigate this domain. The study targeted to find a possible correlation between the period after recovery and the other variables including anhedonia and fatigue. RESULTS The study revealed high scores of different subtypes of self-assessment anhedonia scale (including total intensity, total frequency, and total changes scores) in the studied group, also high score of fatigue assessment scale in those patients. Positive statistically significant correlation between anhedonia and fatigue in post-COVID-19 group, also negative statistically significant correlation between duration after recovery and the other 2 variables(anhedonia and fatigue) in the examined patients.CONCLUSIONPost-COVID-19 fatigue and anhedonia were prevalent and commonly reported in the post-COVID-19 period, also the duration after 2 consecutive negative PCR tests has an implication on the severity rating scale of both anhedonia and fatigue. These findings directed our attention to those reported manifestations which affected the socio-occupational functioning of the individuals during this whole world pandemic.

<https://onlinelibrary.wiley.com/doi/10.1002/npr2.12154>

**TITLE: INCIDENCE OF SYMPTOMATIC, IMAGE-CONFIRMED VENOUS THROMBOEMBOLISM FOLLOWING HOSPITALIZATION FOR COVID-19 WITH 90-DAY FOLLOW-UP**

**Source**: Blood Advances; Dec 2020; vol. 4 (no. 24); p. 6230-6239

Abstract: Although COVID-19 has been reported to be associated with high rates of venous thromboembolism (VTE), the risk of VTE and bleeding after hospitalization for COVID-19 remains unclear, and the optimal hospital VTE prevention strategy is not known. We collected retrospective observational data on thrombosis and bleeding in 303 consecutive adult patients admitted to the hospital for at least 24 hours for COVID-19. Patients presenting with VTE on admission were excluded. Data were collected until 90 days after admission or known death by using medical records and an established national VTE network. Maximal level of care was ward based in 78% of patients, with 22% requiring higher dependency care (12% non-invasive ventilation, 10% invasive ventilation). Almost all patients (97.0%) received standard thromboprophylaxis or were already receiving therapeutic anticoagulation (17.5%). Symptomatic image-confirmed VTE occurred in 5.9% of patients during index hospitalization, and in 7.2% at 90 days after admission (23.9% in patients requiring higher dependency care); half the events were isolated segmental or subsegmental defects on lung imaging. Bleeding occurred in 13 patients (4.3%) during index hospitalization (1.3% had major bleeding). The majority of bleeds occurred in patients on the general ward, and 6 patients were receiving treatment-dose anticoagulation, highlighting the need for caution in intensifying standard thromboprophylaxis strategies. Of 152 patients discharged from the hospital without an indication for anticoagulation, 97% did not receive thromboprophylaxis after discharge, and 3% received 7 days of treatment with low molecular weight heparin after discharge. The rate of symptomatic VTE in this group at 42 days after discharge was 2.6%, highlighting the need for large prospective randomized controlled trials of extended thromboprophylaxis after discharge in COVID-19.

<https://pubmed.ncbi.nlm.nih.gov/33351117/>

**TITLE: INNOVATIVE CARE DELIVERY OF ACUTE REHABILITATION FOR PATIENTS WITH COVID-19: A CASE REPORT**

**Source**: Physical Therapy; Dec 2020

Abstract: OBJECTIVES The novel coronavirus 2019 (COVID-19) has impacted acute rehabilitation delivery by challenging the reliance on in-person care and the standard practice of delivering separate physical and occupational therapy services. Healthcare systems are rapidly developing innovative models of care that provide essential acute rehabilitation services while mitigating viral spread. We present two case reports to illustrate how we used technology and COVID-19 specific decision-making frameworks to deliver acute rehabilitation. METHODS We iteratively developed two decision-making models regarding care delivery and discharge planning in the context of the challenges to delivering care in a pandemic. We leveraged use of video communication systems installed in all COVID-19 rooms to reduce the number of in-room providers and frequency of contact. Two patients were admitted to the hospital with symptomatic COVID-19 (males, ages 65 and 40 years).RESULTS With the use of video communication system and the decision-making frameworks for care delivery and discharge planning, we avoided 7 in-person sessions. Both patients demonstrated functional gains and were discharged home. CONCLUSIONT he two case reports highlight the innovative use of a technology and COVID-19 specific decision-making processes to provide patient-centered care given the challenges to care delivery during the COVID-19 pandemic. IMPACT STATEMENT The use of technology and decision-making models allows for delivery of safe acute rehabilitation care that minimizes contact, conserves personal protective equipment, and prepares for COVID-19 surges. The discussion points raised have applicability to patients without COVID-19 and other healthcare systems. Future research is needed to determine the effectiveness, costs, and downstream effects of our novel approach to acute rehabilitation for patients with COVID-19.

<https://academic.oup.com/ptj/advance-article/doi/10.1093/ptj/pzaa204/6031810>

**TITLE: FEASIBILITY OF SUBACUTE REHABILITATION FOR MECHANICALLY VENTILATED PATIENTS WITH COVID-19 DISEASE: A RETROSPECTIVE CASE SERIES**

**Source**: Source: International Journal of Rehabilitation Research; Dec 2020

Abstract: In this case series study, we aimed to evaluate the feasibility of a subacute rehabilitation program for mechanically ventilated patients with severe consequences of COVID-19 infection. Data were retrospectively collected from seven males (age 37-61 years) who were referred for inpatient rehabilitation following the stay in the ICU (14-22 days). On admission, six patients were still supported by mechanical ventilation. All patients were first placed in isolation in a special COVID unit for 6-22 days. Patients attended 11-24 treatment sessions for the duration of rehabilitation stay (13-27 days), including 6-20 sessions in the COVID unit. The treatment included pulmonary and physical rehabilitation. The initially nonventilated patient was discharged prematurely due to gallbladder problems, whereas all six mechanically ventilated patients were successfully weaned off before transfer to a COVID-free unit where they stayed for 7-19 days. At discharge, all patients increased limb muscle strength and thigh circumference, reduced activity-related dyspnea, regained functional independence and reported better quality of life. Rehabilitation plays a vital role in the recovery of seriously ill post-COVID-19 patients. Facilities should develop and implement plans for providing multidisciplinary rehabilitation treatments in various settings to recover functioning and prevent the development of long-term consequences of the COVID-19 disease.

<https://journals.lww.com/intjrehabilres/Abstract/9000/Feasibility_of_subacute_rehabilitation_for.99344.aspx>

**TITLE: SIX MONTH FOLLOW-UP OF SELF-REPORTED LOSS OF SMELL DURING THE COVID-19 PANDEMIC**

Source: Rhinology; Dec 2020

Abstract: INTRODUCTION Loss of smell and taste is now recognised as amongst the most common symptoms of COVID-19 and the best predictor of COVID-19 positivity. Long term outcomes are unknown. This study aims to investigate recovery of loss of smell and the prevalence of parosmia.METHODOLOGY6-month follow-up of respondents to an online surgery who self-reported loss of smell at the onset of the CO- VID-19 pandemic in the UK. Information of additional symptoms, recovery of loss of smell and the development of parosmia was collected.RESULTS44% of respondents reported at least one other ongoing symptom at 6 months, of which fatigue (n=106) was the most prevalent. There was a significant improvement in self-rating of severity of olfactory loss where 177 patients stated they had a normal smell of smell while 12 patients reported complete loss of smell. The prevalence of parosmia is 43.1% with median interval of 2.5 months (range 0-6) from the onset of loss of smell. CONCLUSIONS While many patients recover quickly, some experience long-term deficits with no self-reported improvement at 6 months. Furthermore, there is a high prevalence of parosmia even in those who report at least some recovery of olfactory func- tion. Longer term evaluation of recovery is required.

<https://pubmed.ncbi.nlm.nih.gov/33320115/>

**TITLE: COULD COGNITIVE BEHAVIOURAL THERAPY BE AN EFFECTIVE TREATMENT FOR LONG COVID AND POST COVID-19 FATIGUE SYNDROME? LESSONS FROM THE QURE STUDY FOR Q-FEVER FATIGUE SYNDROME**

**Source**: Healthcare (Basel, Switzerland); Dec 2020; vol. 8 (no. 4)

Abstract: An increasing number of young and previously fit and healthy people who did not require hospitalisation continue to have symptoms months after mild cases of COVID-19. Rehabilitation clinics are already offering cognitive behavioural therapy (CBT) as an effective treatment for long COVID and post-COVID-19 fatigue syndrome based on the claims that it is effective for myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS)-the most common post-infectious syndrome-as no study into the efficacy of CBT for post-COVID-19 fatigue syndrome has been published. Re-analyses of these studies, however, showed that CBT did not lead to objective improvements in heterogeneous groups of ME/CFS patients, nor did it restore the ability to work. The group of patients with long COVID and post-COVID-19 fatigue syndrome, on the other hand, is homogeneous. We therefore analysed the Dutch Qure study, as it studied the efficacy of CBT in a homogeneous group of patients who developed Q-fever fatigue syndrome-which affects up to 30% of patients-after the largest reported outbreak of Q-fever, to see if CBT might potentially be an effective treatment for long-haulers after COVID-19 infection. Our reanalysis found that the Qure study suffered from many serious methodological problems, which included relying on one subjective primary outcome in a study without a control group for the non-blinded CBT treatment group, using a post hoc definition of improvement, waiting 2 years before publishing their objective actometer results and ignoring the null effect of said results. Moreover, only 10% of participants achieved a clinically meaningful subjective improvement in fatigue as a result of CBT according to the study's own figures. Consequently, CBT has no subjective clinically meaningful effect in nine out of every ten patients that are treated with it. Additionally, the subjective improvement in fatigue was not matched by an improvement in disability, even though the disability was fatigue related according to the researchers. On top of this, CBT did not lead to an objective improvement in physical performance. Therefore, it cannot be said that CBT is an effective treatment for Q-fever fatigue syndrome either. It seems therefore unlikely that CBT will reduce disability or lead to objective improvement in long COVID or in post-COVID-19 fatigue syndrome.

<https://pubmed.ncbi.nlm.nih.gov/33322316/>

**TITLE: SYMPTOMATIC RELAPSE AND LONG-TERM SEQUELAE OF COVID-19 IN A PREVIOUSLY HEALTHY 30-YEAR-OLD MAN**

**Source**: BMJ case reports; Dec 2020; vol. 13 (no. 12)

Abstract: Much has been reported on the clinical course of severe COVID-19, but less is known about the natural history and sequalae of mildly symptomatic cases and the prospects of reinfection or recurrence of symptoms. We report a case of a patient with mildly symptomatic PCR-confirmed COVID-19 who, after being symptom-free for 2 weeks, redeveloped symptoms and was found to be PCR-positive again >4 weeks from original testing. Surprisingly, IgG and IgM antibody testing was negative 2 months after reinfection. Although no negative testing was performed between the two symptomatic bouts, this case raises the possibility of reinfection after controlling the virus and highlights the long period with which a patient can shed virus and experience symptoms after initial infection. Characterising variations in clinical symptoms and length of viral shedding after improvement is essential for informing recommendations on patients safely resuming contact with others.

<https://casereports.bmj.com/content/13/12/e239825>

**TITLE: COGNITIVE IMPACT OF COVID-19: LOOKING BEYOND THE SHORT TERM**

**Source**: Alzheimer's Research & Therapy; Dec 2020; vol. 12 (no. 1); p. 170

Abstract: COVID-19 is primarily a respiratory disease but up to two thirds of hospitalised patients show evidence of central nervous system (CNS) damage, predominantly ischaemic, in some cases haemorrhagic and occasionally encephalitic. It is unclear how much of the ischaemic damage is mediated by direct or inflammatory effects of virus on the CNS vasculature and how much is secondary to extracranial cardiorespiratory disease. Limited data suggest that the causative SARS-CoV-2 virus may enter the CNS via the nasal mucosa and olfactory fibres, or by haematogenous spread, and is capable of infecting endothelial cells, pericytes and probably neurons. Extracranially, SARS-CoV-2 targets endothelial cells and pericytes, causing endothelial cell dysfunction, vascular leakage and immune activation, sometimes leading to disseminated intravascular coagulation. It remains to be confirmed whether endothelial cells and pericytes in the cerebral vasculature are similarly targeted. Several aspects of COVID-19 are likely to impact on cognition. Cerebral white matter is particularly vulnerable to ischaemic damage in COVID-19 and is also critically important for cognitive function. There is accumulating evidence that cerebral hypoperfusion accelerates amyloid-β (Aβ) accumulation and is linked to tau and TDP-43 pathology, and by inducing phosphorylation of α-synuclein at serine-129, ischaemia may also increase the risk of development of Lewy body disease. Current therapies for COVID-19 are understandably focused on supporting respiratory function, preventing thrombosis and reducing immune activation. Since angiotensin-converting enzyme (ACE)-2 is a receptor for SARS-CoV-2, and ACE inhibitors and angiotensin receptor blockers are predicted to increase ACE-2 expression, it was initially feared that their use might exacerbate COVID-19. Recent meta-analyses have instead suggested that these medications are protective. This is perhaps because SARS-CoV-2 entry may deplete ACE-2, tipping the balance towards angiotensin II-ACE-1-mediated classical RAS activation: exacerbating hypoperfusion and promoting inflammation. It may be relevant that APOE ε4 individuals, who seem to be at increased risk of COVID-19, also have lowest ACE-2 activity. COVID-19 is likely to leave an unexpected legacy of long-term neurological complications in a significant number of survivors. Cognitive follow-up of COVID-19 patients will be important, especially in patients who develop cerebrovascular and neurological complications during the acute illness.

<https://alzres.biomedcentral.com/articles/10.1186/s13195-020-00744-w>

**TITLE: CATCHING OUR BREATH: RESHAPING REHABILITATION SERVICES FOR COVID-19**

**Source**: Disability and rehabilitation; Jan 2021; vol. 43 (no. 1); p. 112-117

Abstract: PURPOSE War and natural disaster have been spurs to the creation of rehabilitation services. The COVID-19 pandemic poses a different question for existing rehabilitation services: how best to respond to a disaster that is anticipated from afar, but whose shape has yet to take full form. METHODS Applying the 5-phase crisis management model of Pearson and Mitroff, we report our experience at one of Scotland's largest centres for rehabilitation, in planning to cope with COVID-19.RESULTSContingency rehabilitation planning can be framed in a 5-phase crisis management model that includes (i) signal detection; (ii) prevention/preparedness; (iii) damage limitation; (iv) recovery; and (v) learning. We have reported the impact of COVID-19 on rehabilitation services within a Scottish context and shared some of our learning.CONCLUSIONCOVID-19 has challenged healthcare worldwide and has served as an amplifier for the recognised ill effects of poverty and inequality. As rehabilitation clinicians, we are in a position to continue advocating for people facing disability, and also seeking and responding to signals of COVID-19's late effects in both COVID-19 and non-COVID-19 patients alike. IMPLICATIONS FOR REHABILITATION COVID-19 has resulted in unprecedented challenges in rehabilitation service planning. Contingency rehabilitation planning can be framed in a 5-phase crisis management model of Pearson and Mitroff, including (i) signal detection; (ii) prevention/preparedness; (iii) damage limitation; (iv) recovery; and (v) learning. COVID-19 has served as an amplifier for the recognised ill effects of poverty and inequality; as rehabilitation clinicians, we are in a position to continue advocating for people facing disability, and also seeking and responding to signals of COVID-19's late effects in both COVID-19 and non-COVID-19 patients alike.

<https://pubmed.ncbi.nlm.nih.gov/32853046/>

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

**TITLE: LONG COVID: HOSPITAL PATIENTS TO GET CHECKS AT SIX WEEKS**

Source: BBC | Published online 18th December 2020

Patients in hospital with coronavirus should be offered a follow-up six weeks later to check for "long Covid" symptoms, doctors are being advised. The guidance, drawn up by health officials across the UK, says the long-term effects can be "significant". They identified 28 of the most common symptoms, from breathlessness and dizziness to chest pain. Mental health problems including depression, anxiety and struggling to think clearly, have also been reported. "Because this is a new condition, there is still much that we don't know about it," said Paul Chrisp of the National Institute for Health and Care Excellence, which produces health guidance. The NHS has opened 69 specialist clinics across England to offer rehabilitation to people recovering from the disease.

<https://www.bbc.co.uk/news/health-55352409>

**TITLE: I'M A CONSULTANT IN INFECTIOUS DISEASES. 'LONG COVID' IS ANYTHING BUT A MILD ILLNESS**

Source: The Guardian| 27th Dec 2020

‘Nine months on from the virus, I am seriously debilitated. This is how the new NHS clinics need to help thousands of us…’

<https://www.theguardian.com/commentisfree/2020/dec/27/consultant-infectious-diseases-long-covid-not-mild-illness-seriously-debilitated-new-clinics>

**TITLE: THE MANY STRANGE LONG-TERM SYMPTOMS OF COVID-19, EXPLAINED**

Source: Vox| 15th Dec 2020

…On December 3, the National Institutes of Health held a two-day seminar on what has come to be called long Covid, or long-haul Covid — cases of lingering symptoms that can last for weeks or months after an initial infection. The Centers for Disease Control and Prevention (CDC) recently [created a list](https://www.cdc.gov/coronavirus/2019-ncov/long-term-effects.html?ACSTrackingID=USCDC_425-DM42580&ACSTrackingLabel=Weekly%20Summary%3A%20COVID-19%20Healthcare%20Quality%20and%20Worker%20Safety%20Information%20%E2%80%93%20November%2016%2C%202020&deliveryName=USCDC_425-DM42580) of some of the persistent symptoms patients are experiencing, which include chest pain, brain fog, fatigue, and hair loss — with patients reporting [many others as well](https://patientresearchcovid19.com/research/report-1/).

Because these patients don’t all have the same symptoms, they will need different kinds of post-Covid care. And the NIH made clear that there are still many more questions than answers — including whose symptoms might linger for months, and how to treat them. Almost a year into the pandemic, there have not yet been thorough, large-scale studies to determine the true prevalence of long Covid. But preliminary research suggests that somewhere between [10 percent](https://www.bmj.com/content/370/bmj.m3026) and [88 percent](https://jamanetwork.com/journals/jama/fullarticle/2768351) of Covid-19 patients will experience at least one symptom for many weeks or months. Some of these can be life-altering; one study found that 50 percent of non-ICU patients reported a significant change to their cognitive functioning.

Doctors at the seminar said they were surprised by the scope of long Covid and its potential socioeconomic impacts. “This is a phenomenon that is really quite real and quite extensive,” said Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases, who spoke at the event…

<https://www.vox.com/22166236/long-term-side-effects-covid-19-symptoms-heart-fatigue>

**TITLE:** **UK-WIDE POST-COVID REHAB PSYCHOLOGY NETWORK**

Source: David Murphy, BPS| 8th Dec 2020

‘Really great to participate in a UK-wide Post-Covid Rehab Psychology Network meeting today. Encouraging to hear about service developments in different settings, although a common theme is the need for more integrated, multi-disciplinary services’.
<https://twitter.com/ClinPsychDavid/status/1336343735265738752>

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We

[TRFT Library & Knowledge Service](https://www.trftlibraryknowledge.com/) aim to bring together the latest guidelines, research and news on Covid-19 through our [Covid-19 portal](https://www.trftlibraryknowledge.com/coronavirus.html). For daily updates on Covid-19 visit our '[Latest Health](https://trfthealthweeklydigest.wordpress.com/)' newsfeed, or use the hashtag [#covid19rftlks](https://twitter.com/hashtag/covid19rftlks?src=hashtag_click) to see our latest tweets on Covid-19 research, guidelines and news.

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>