

POST COVID-19 CONDITION

OCSO BIWEEKLY SCAN OF EVIDENCE #24

May 21-June 3, 2022

SCOPE

This biweekly update presents an analysis of new evidence, guidance and issues related to post COVID-19 condition and synthesizes the current state of knowledge. Comprehensive lists of details and resources on this issue are available at the Office of the Chief Science Officer.

CURRENT STATE OF KNOWLEDGE

According to the World Health Organization (WHO), post COVID-19 condition (PCC) refers to persistent symptoms occurring 12 weeks or more after an acute COVID-19 infection, which persist or reoccur for a minimum of 8 weeks. The most common symptoms that we know of in adults include: fatigue, memory problems, sleep disturbances, shortness of breath, anxiety and depression, general pain and discomfort, difficulty thinking or concentrating and post-traumatic stress disorder (PTSD). There is still a lot that we don't know about post COVID-19 condition in children.

PCC is also referred to as long COVID, post-acute sequelae, post COVID-19 symptoms, and post-acute COVID-19 syndrome. Prior to the WHO definition, a number of studies reported on post-acute sequelae (PAS) from 4 to 12 weeks post diagnosis. The Public Health Agency of Canada (PHAC) released [a review of the current international evidence \(November 2021\)](#). Over 100 symptoms or difficulties conducting usual activities of daily living were reported.

There is limited data suggesting that the condition may be more likely to develop in those:

- who were hospitalized during acute infection;
- had more than 5 COVID symptoms during the acute phase;
- have pre-existing respiratory disease;
- are older;
- are women; and
- have other co-morbidities or have higher BMI.

There's currently no universally agreed-upon approach to diagnose and treat post COVID-19 condition. Early evidence suggests that vaccination with 2 or more doses may help reduce the risk of developing post COVID-19 condition if infected. Emerging evidence points to the importance of multidisciplinary care given the heterogeneity of symptoms associated with PCC. Multidisciplinary teams in "long COVID" clinics have been set up to include professionals from the following fields: rehabilitation, respiratory and cardiac consultants, physiotherapists, occupational therapists, psychologists, etc.

(UPDATED) People who have been hospitalized or who needed intensive care during recovery appear to be at greater risk of experiencing longer-term effects. However, recent research shows about [30% to 40%](#) of people who weren't hospitalized for their initial COVID-19 infection still report symptoms beyond 12 weeks. Canadians suffering from PCC and who are unable to work because of their symptoms may be eligible for support through: [Employment and Skills Development Canada's Employment Insurance \(EI\) Program](#) and [Canada Pension Plan Disability Benefits](#).

This week's scan includes a [US CDC Report](#) on post-COVID conditions among adult COVID-19 survivors, as well as a [review/meta-analysis](#) on the symptoms and signs of long COVID.

GUIDELINES OR STANDARDS

- **WHO** developed a [clinical case definition](#) of PCC in October 2021. This first version was developed by patients, researchers and others with the understanding that the definition may change as new evidence emerges.
 - *“Post COVID-19 condition 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 last 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.”*
 - **WHO:** Q&A [page](#) on Post-COVID-19 Condition (February 2022).
- **US CDC** describes [Post-COVID conditions](#) as a wide range of new, returning, or ongoing health problems that people experience after first being infected with the virus that causes COVID-19. The CDC posted [Interim Guidance](#) (Updated June 2021) for healthcare providers on Evaluating and Caring for Patients with Post-COVID Conditions. Post-COVID conditions can be considered a disability under the [Americans with Disabilities Act \(ADA\)](#). The CDC also released information on [Caring for People with Post-COVID Conditions](#) (Updated March 2022). CDC is using [science](#) to learn more about post-COVID conditions.
- **UK NICE:** Rapid [guidelines](#) for managing the long-term effects of COVID-19 (Updated March 2022).
- **Chartered Society of Physiotherapy** in UK published its COVID-19 [rehabilitation standards](#) (July 2021).
- [Guidelines](#) to help doctors manage long COVID patients published in *British Journal of General Practice* (August 2021).
- **UK NHS** [guidance](#) for Post-COVID syndrome assessment clinics (April 2021).
- [Guidance](#) for **Canadian Rehabilitation and Exercise Professionals** on Post COVID-19 condition and rehabilitation management strategies (August 2021).
- **Government of Canada:** [COVID-19 for health professionals - Post COVID-19 condition](#) (continuously updated)
- **Center for Effective Practice** – [COVID-19: Clinical Guidance for Primary Care Providers - Long-term symptoms / Post-acute sequelae of COVID-19 \(PASC\)](#) (last updated April 2022)
- *Wiener klinische Wochenschrift:* [Guideline S1: Long COVID: Diagnostics and treatment strategies](#) (December 2021)
- American Academy of Physical Medicine and Rehabilitation (**AAPM&R**): [Cognitive Symptoms Guidance](#) & [Breathing Discomfort Guidance](#) (December 2021).
- Royal Australian College of General Practitioners (**RACGP**) [guidance](#) for GPs caring for patients with post-COVID-19 conditions (December 2021).
- European Society of Clinical Microbiology and Infectious Diseases (**ESCMID**): [Rapid guidelines for assessment and management of long COVID](#) (February 2022)
- **ACAS** (UK-based Advisory, Conciliation and Arbitration Service): [Long COVID – advice for employers and employees](#) (last reviewed April 2022)
- **(RECENTLY ADDED) Ontario Health** [Post COVID-19 Condition - Guidance for Primary Care \(PDF\)](#)
- **(RECENTLY ADDED) Scottish Government Guidelines:** [Managing the long-term effects of COVID-19](#)

NATIONAL AND INTERNATIONAL DEVELOPMENTS (MAY 21-JUN 3)

CANADA

- **(NEW)** A team of researchers at the [University of Manitoba](#) are trying to better understand how long COVID is affecting Manitobans, and health-care providers here are working to help people with symptoms. Dr. Alan Katz, a physician and health services researcher at the Manitoba Centre for Health Policy, is part of a team using data from Manitoba health records to see whether those with a positive PCR test for COVID-19 went on to seek care for symptoms that could be related to long COVID. The team is launching a survey in the coming weeks to collect data from people who tested positive on a rapid antigen test.

UK

- **(NEW)** According to [data](#) published on June 1 by the UK Office for National Statistics, an estimated 2 million people living in private households in the UK (3.1% of the population) were experiencing self-reported long COVID (symptoms continuing for more than four weeks after the first suspected COVID-19 infection that were not explained by something else) as of May 1, 2022.

US

- **(NEW)** According to a recent US CDC [Report](#), as more persons are exposed to and infected by SARS-CoV-2, reports of patients who experience persistent symptoms or organ dysfunction after acute COVID-19 and develop post-COVID conditions have increased. COVID-19 survivors have twice the risk for developing pulmonary embolism or respiratory conditions; one in five COVID-19 survivors aged 18–64 years and one in four survivors aged ≥65 years experienced at least one incident condition that might be attributable to previous COVID-19.

EMERGING SCIENTIFIC EVIDENCE (MAY 21-JUN 3)*

EVIDENCE PRODUCTS

TITLE AND AUTHOR	EVIDENCE TYPE	SUMMARY
Postacute Sequelae of Severe Acute Respiratory Syndrome Coronavirus 2 Infection (Hope et al)	Review (Available in <i>Infect Dis Clin North Am</i>)	Postacute sequelae of SARS-CoV-2 or long COVID is an emerging syndrome characterized by multiple persisting or newly emergent symptoms following the acute phase of SARS-CoV-2 infection. For affected patients, these prolonged symptoms can have a relapsing and remitting course and may be associated with disability and frequent health care utilization. Although many symptom-driven treatments are available, management remains challenging and often requires a multidisciplinary approach. This article summarizes the emerging consensus on definitions, epidemiology, and pathophysiology of long COVID and discusses what is understood about prevention, evaluation, and treatment of this syndrome.
The Multifaceted Manifestations of Multisystem Inflammatory	Review (Available in <i>Pathogens</i>)	Although the first reports indicated that activity of the virus is centered in the lungs, it was soon acknowledged that SARS-CoV-2 causes a multisystem disease. This new pathogen causes a variety of syndromes, including asymptomatic disease; mild disease; moderate disease; a

Syndrome during the SARS-CoV-2 Pandemic (Pérez-Gómez et al)		<p>severe form that requires hospitalization, intensive care, and mechanical ventilation; multisystem inflammatory disease; and a condition called long COVID or postacute sequelae of SARS-CoV-2 infection. Some of these syndromes resemble previously described disorders, including those with no confirmed etiology, such as Kawasaki disease. After recognition of a distinct multisystem inflammatory syndrome in children, followed by a similar syndrome in adults, various multisystem syndromes occurring during the pandemic associated or related to SARS-CoV-2 began to be identified. A typical pattern of cytokine and chemokine dysregulation occurs in these complex syndromes; however, the disorders have distinct immunological determinants that may help to differentiate them. This review discusses the origins of the different trajectories of the inflammatory syndromes related to SARS-CoV-2 infection.</p>
Symptoms and signs of long COVID: A rapid review and meta-analysis (Healey et al)	Review (Available in <i>J Glob Health</i>)	<p>Aimed to synthesise the evidence on long COVID to guide future research, policy and practice. We searched Medline and Embase for longitudinal cohort studies from January 2020 to July 2021 that investigated adults with long COVID at least four weeks after acute infection. Risk of bias was assessed using the Joanna Briggs Institute checklist for cohort studies. Random-effects meta-analyses were performed with subgroup analysis by follow-up time (4-12 vs more than 12 weeks). 19 studies were included, 13 of which included patients hospitalised with COVID-19. The total sample size was 10 643 and the follow-up time ranged from 30 to 340 days. Risk of bias was assessed as high in one study, moderate in two studies and low in the remaining 16 studies. The most common symptoms and signs seen at any time point in long COVID were fatigue dyspnoea, olfactory dysfunction, myalgia, cough and gustatory dysfunction. High heterogeneity was seen for all meta-analyses and the presence of some funnel plot asymmetry may indicate reporting bias. No effect of follow-up time was found for any symptom or sign included in the subgroup analysis. We have summarised evidence from longitudinal cohort studies on the most common symptoms and signs associated with long COVID. High heterogeneity seen in the meta-analysis means pooled incidence estimates should be interpreted with caution. This heterogeneity may be attributable to studies including patients from different health care settings and countries.</p>

SELECTED RESEARCH

TITLE AND AUTHOR	SOURCE	SUMMARY
Symptom variation, correlations, and relationship to physical activity in Long Covid: intensive longitudinal study (Burton et al)	<i>medRxiv</i>	<p>People with Long Covid describe multiple symptoms which vary between and within individuals over relatively short time intervals. We aimed to describe the real-time associations between different symptoms and between symptoms and physical activity at the individual patient level. Methods and Findings Intensive longitudinal study of 82 adults with self-reported Long Covid (median duration 12-18 months). Data collection involved a smartphone app with 5 daily entries over 14 days and continuous wearing of a wrist accelerometer. Data items included 7 symptoms (Visual Analog Scales) and perceived demands in the preceding period (Likert scales). App data was suitable for analysis from 74 participants (90%) comprising 4022 entries representing 77.6% of possible</p>

		<p>entries. Symptoms varied substantially within individuals and were only weakly auto-correlated. The strongest between-subject symptom correlations were of fatigue with pain (partial coefficient 0.5) and cognitive difficulty with light-headedness (0.41). Symptoms, including fatigue, were inconsistently correlated with prior or subsequent physical activity: this may reflect adjustment of activity in response to symptoms. Delayed worsening of symptoms after the highest activity peak was observed in 7 participants. Symptoms of Long Covid vary within individuals over short time scales, with heterogenous patterns of symptom correlation.</p>
<p>Inflammation during early post-acute COVID-19 is associated with reduced exercise capacity and Long COVID symptoms after 1 year (Durstensfeld et al)</p>	<i>medRxiv</i>	<p>Mechanisms underlying persistent cardiopulmonary symptoms following SARS-CoV-2 infection (post-acute sequelae of COVID-19 "PASC" or "Long COVID") remain unclear. The purpose of this study was to elucidate the pathophysiology of cardiopulmonary PASC using multimodality cardiovascular imaging including cardiopulmonary exercise testing (CPET), cardiac magnetic resonance imaging (CMR) and ambulatory rhythm monitoring. We performed CMR, CPET, and ambulatory rhythm monitoring among adults > 1 year after PCR-confirmed SARS-CoV-2 infection in the UCSF Long-Term Impact of Infection with Novel Coronavirus cohort (LIINC; NCT04362150) and correlated findings with previously measured biomarkers. Cardiopulmonary symptoms and elevated inflammatory markers present early in PASC are associated with objectively reduced exercise capacity measured on cardiopulmonary exercise testing more than 1 year following COVID-19. Chronotropic incompetence may explain reduced exercise capacity among some individuals with PASC.</p>
<p>COVID-19 persistente y dolor crónico. ¿Estamos preparados? Presentación de tres casos clínicos y revisión de la literatura (Salazar et al)</p>	<i>Dolor</i>	<p>Long COVID is a term that describes a group of multiorganic symptoms that affect patients who have suffered from COVID-19 and who remain symptomatic for a sustained period of time after the acute phase of the disease. Amongst those symptoms, pain is one of the most frequently reported, shaping into different specific syndromes such as persistent thoracic pain, generalized pain, arthralgia, myalgia and cephalalgia. Multiple mechanisms can explain the onset and perpetuation of chronic pain in these patients. It is known that SARS-CoV-2 is a neurotropic virus that can alter the somatosensory nervous system and which can also cause an intense autoimmune response with effects on multiple organs and systems. We present three clinical cases of long COVID where pain was the main symptom altogether with anxiety, depression, insomnia, catastrophic thoughts related to pain, cognitive impairment and post-traumatic stress disorder. These all show the existing complexity in the management of this new-found entity. Given the extensive number of SARS-CoV-2 infections reported globally, chronic pain in relation to long COVID can become a public health issue. Therefore, it is necessary to make it visible and to establish strategies to prevent it and confront it.</p>
<p>Rehabilitation Therapy of Patients with Post COVID Symptoms in Nakhchivan "Duzdag" Physiotherapy Center (Allahverdiyeva et al)</p>	<i>Azerbaijan Med J</i>	<p>Rehabilitation is important for patients with post COVID-19 syndrome. Association of COVID-19 infection with multisystem involvement, as well as the existence of post-COVID syndrome has been proven. The use of modern opportunities of sanatorium and health resort treatment makes it possible to develop effective specialized post-COVID rehabilitation programs. Experience of working with patients with post-COVID syndrome demonstrated the importance and necessity of various rehabilitation programs, in particular speleotherapy. Speleotherapy is the perfect</p>

		<p>procedure for respiratory system recovery after COVID-19-related illness. Dry salt aerosol improves drainage function of respiratory tract and sodium chloride significantly reduces the swelling of the bronchial mucous membranes. Inhalation of finely dispersed salt particles prevents bacterial growth. Most importantly, speleotherapy has a positive effect on rehabilitation after acute respiratory distress syndrome. Underground rehabilitation center "DUZDAG" with potential opportunities related to the restoration of a curative environment and its continuous regeneration, which has no analogs in the world speleotherapy practice.</p>
Cognitive dysfunction following COVID-19 infection (Hadad et al)	<i>J Neurovirol</i>	<p>The present study aims to characterize cognitive performance in patients experiencing cognitive symptoms post-COVID infection. Patients evaluated at a post COVID clinic in Northern Israel who endorsed cognitive symptoms were referred for neurologic consultation. The neurologic work-up included detailed medical history, symptom inventory, neurological examination, the Montreal Cognitive Assessment (MoCA), laboratory tests and brain CT or MRI. Between December 2020 and June 2021, 46 patients were referred for neurological consultation (65% female), mean age 49.5. On the MoCA test, executive functions, particularly phonemic fluency, and attention, were impaired. In contrast, the total MoCA score, and memory and orientation subscores did not differ from expected ranges. Disease severity, premorbid condition, pulmonary function tests and hypoxia did not contribute to cognitive performance. Cognitive decline may affect otherwise healthy patients post-COVID, independent of disease severity. Our examination identified abnormalities in executive function, attention, and phonemic fluency.</p>
Whole-Body Cryostimulation: A Rehabilitation Booster in Post-COVID Patients? A Case Series (Piterà et al)	<i>Appl Sci</i>	<p>The purpose of this case series is to provide some preliminary evidence about the role of whole-body cryostimulation (WBC) as an effective adjuvant for the recovery of patients with the post-COVID-19 condition (PCC). We recruited seven patients with previously confirmed SARS-CoV-2 infection and symptoms of PCC of different severities for a comprehensive rehabilitation program, including WBC. The main symptoms were dyspnea, chronic and muscular fatigue, chronic pain, and poor sleep quality. Moreover, some patients presented high levels of hematological markers of inflammation. Because we provided a range of interventions, including nutritional and psychological support along with physical exercise and physiotherapy, we could not determine to what extent WBC may per se have accounted for the clinical and functional improvements. However, for all reported cases, it was observed that the introduction of WBC sessions represented a turning point in the patient's subjective and objective improvements related to health and functioning.</p>
A global systematic analysis of the occurrence, severity, and recovery pattern of long COVID in 2020 and 2021 (Hanson et al)	<i>medRxiv</i>	<p>Objective was to estimate by country and territory of the number of patients affected by long COVID in 2020 and 2021, the severity of their symptoms and expected pattern of recovery. We jointly analyzed ten ongoing cohort studies in ten countries for the occurrence of three major symptom clusters of long COVID among representative COVID cases. Analyses are based on detailed information for 1906 community infections and 10526 hospitalized patients from the ten collaborating cohorts, three of which included children. Globally, in 2020 and 2021, 144.7 million people suffered from any of the three symptom clusters of long COVID. This corresponds to 3.69% (1.38-7.96) of all infections. The fatigue, respiratory, and cognitive clusters occurred in 51.0%, 60.4% and 35.4% of long COVID cases, respectively. Those with milder acute COVID-</p>

		19 cases had a quicker estimated recovery (median duration 3.99 month]) than those admitted for the acute infection (median duration 8.84 months). At twelve months, 15.1% continued to experience long COVID symptoms.
Long COVID after breakthrough SARS-CoV-2 infection (Al-Aly et al)	<i>Nat Med</i>	The post-acute sequelae of SARS-CoV-2 infection have been described, but whether breakthrough SARS-CoV-2 infection (BTI) in vaccinated people results in post-acute sequelae is not clear. In this study, we used the US Department of Veterans Affairs national healthcare databases to build a cohort of 33,940 individuals with BTI and several controls of people without evidence of SARS-CoV-2 infection, including contemporary (n = 4,983,491), historical (n = 5,785,273) and vaccinated (n = 2,566,369) controls. At 6 months after infection, we show that, beyond the first 30 days of illness, compared to contemporary controls, people with BTI exhibited a higher risk of death and incident post-acute sequelae including cardiovascular, coagulation and hematologic, gastrointestinal, kidney, mental health, metabolic, musculoskeletal and neurologic disorders. The results were consistent in comparisons versus the historical and vaccinated controls. Compared to people with SARS-CoV-2 infection who were not previously vaccinated (n = 113,474), people with BTI exhibited lower risks of death and incident post-acute sequelae. Findings suggest that vaccination before infection confers only partial protection in the post-acute phase of the disease; hence, reliance on it as a sole mitigation strategy may not optimally reduce long-term health consequences of SARS-CoV-2 infection.
Long COVID: A proposed hypothesis-driven model of viral persistence for the pathophysiology of the syndrome (Buonsenso et al)	<i>Allergy Asthma Proc</i>	The purpose of report was to review causes of long COVID syndrome and suggest ways that can provide a basis for a better understanding of the clinical symptomatology for the of improved diagnostic and therapeutic procedures for the condition. Extensive research was conducted in medical literature data bases by applying terms such as "long COVID" associated with "persistence of the SARS-CoV-2 virus" "spike protein" "COVID-19" and "biologic therapies." In this model of the long COVID syndrome, the persistence of SARS-CoV-2 is hypothesized to trigger a dysregulated immune system with subsequent heightened release of proinflammatory cytokines that lead to chronic low-grade inflammation and multiorgan symptomatology. The condition seems to have a genetic basis, which predisposes individuals to have a diminished immunologic capacity to completely clear the virus, with residual parts of the virus persisting. This persistence of virus and resultant hyperproduction of proinflammatory cytokines are proposed to form the basis of the syndrome.
Symptom burden correlates to impairment of diffusion capacity and exercise intolerance in long COVID patients (Kersten et al)	<i>Sci Rep</i>	This study aimed to relate the physical and mental burden of symptoms of long COVID patients to the findings of a somatic evaluation. In patients with persistent long COVID symptoms three months after acute infection we assessed physical and mental health status using the SF-36 questionnaire. The cohort was dichotomised by the results (upper two quartiles vs. lower to quartiles) and compared with regard to transthoracic echocardiography, body plethysmography (including diffusion capacity), capillary blood gas analysis and 6-min walk test (6-MWT). From February 22 to September 13, 2021, 463 patients were prospectively examined, of which 367 completed the SF-36 questionnaire. A positive correlation between initial disease severity (need for hospitalization, intensive care medicine) and resulting symptom burden at

		<p>follow-up could be demonstrated. Patients with impaired subjective physical and mental status were significantly more likely to be women. Significant correlation between symptom severity and reduced exercise tolerance in the 6-MWT and diffusion capacity for carbon monoxide. In long COVID patients, initial disease severity is correlated with symptom burden after at least 3 months of follow-up. Highly symptomatic long COVID patients show impaired diffusion capacity and 6-MWT despite average or mildly affected mechanical lung parameters.</p>
Generalizable Long COVID Subtypes: Findings from the NIH N3C and RECOVER Program (Reese et al)	<i>medRxiv</i>	<p>Accurate stratification of patients with long COVID would allow precision clinical management strategies and could enable more focussed investigation of the molecular pathogenetic mechanisms of this disease. However, the natural history of long COVID is incompletely understood and characterized by an extremely wide range of manifestations that are difficult to analyze computationally. In addition, the generalizability of machine learning classification of COVID-19 clinical outcomes has rarely been tested. We present a method for computationally modeling long COVID phenotype data based on electronic healthcare records (EHRs) and for assessing pairwise phenotypic similarity between patients using semantic similarity. Using unsupervised machine learning (k-means clustering), we found six distinct clusters of long COVID patients, each with distinct profiles of phenotypic abnormalities with enrichments in pulmonary, cardiovascular, neuropsychiatric, and constitutional symptoms such as fatigue and fever. There was a highly significant association of cluster membership with a range of pre-existing conditions and with measures of severity during acute COVID-19. We show that the clusters we identified in one hospital system were generalizable across different hospital systems.</p>
Neuropsychological manifestations of long COVID in hospitalized and non-hospitalized Brazilian Patients (Braga et al)	<i>NeuroRehabilitation</i>	<p>Objective was to identify the cognitive and psychiatric disorders in patients with long COVID or Post-Acute Sequelae of COVID (PASC) and explore the association between disease severity during the acute phase and persistent neuropsychological manifestations. 614 adults were assessed an average of eight months post-infection. Participants were, on average, 47.6 y.o., who sought rehabilitation for neuropsychological problems. Patients were evaluated using the Barrow Neurological Institute Screen for Higher Cerebral Functions (BNIS), Phonemic Verbal Fluency and Clock Drawing tests (NEUPSILIN) for executive functions, and the Hospital Anxiety and Depression Scale (HADS). The BNIS score was significantly below reference values in all subscales, especially affect and memory. Verbal Fluency and Clock Drawing subtest results were also lower. Patients with PASC tested high for anxiety/depression, but there was no statistically significant relationship between HADS and BNIS scores.</p>

*Note: Content may have been published prior to this scan period but was only available through applying our search strategies during this period.

COMMENTARIES, LETTERS AND OPINION PIECES (MAY 21-JUN 3)

- [Long COVID in children and young people: uncertainty and contradictions \(Br J Gen Pract\)](#): It is not known whether all children with long COVID will recover and how long this will take. Parents' narratives suggest that symptoms can increase and decrease in severity, that symptoms may come and go, and that it is not uncommon to have a period of apparent recovery and then develop symptoms again 6 months later. Families report new symptoms over a year after infection, and that the course of the illness and 'recovery' are not linear. This uncertainty is difficult for young people and their

families to live with and compounds the direct impact of the condition on siblings and parents, including financial, when parents need to take time off work. The varied presentation of long COVID, particularly the neuropsychiatric complications, can cause uncertainty for GPs, making the diagnosis difficult. Whatever this uncertainty for clinicians, however, primary care must play a key role in supporting young people with long COVID and their families, liaising with schools where necessary. Children and young people need to be believed by their GP. At the time of writing, access to specialist long COVID clinics for children and young people is limited, with only 15 hubs across England, so GPs have the primary responsibility of managing children with long COVID.

- [A proposal to apply brain injury recovery treatments for cognitive impairment in COVID-19 survivors \(*Int J Neurosci*\):](#) There is still little information about the nature and broader prevalence of cognitive problems during post-infection in COVID-19 survivors. This is also the case for pathobiological findings related to these complications. In the meantime, there is mounting alarm regarding potential long-term outcomes of COVID-19, with descriptions of 'long COVID' symptoms keeping up into the chronic stage, which include 'brain fog'. The cognitive impairment or brain fog creates many difficulties in daily activities and makes problems for those who wish to successfully return to their job. The author proposes to apply brain injury recovery treatments for cognitive impairment in COVID-19 survivors.

MEDIA HIGHLIGHTS (MAY 21-JUN 3)

CANADA

- [COVID-19 data void in Canada could hamper understanding of virus's lingering impact, say experts \(*Globe and Mail*\):](#) A lack of data tracking Canadians who have had COVID-19 could hinder efforts to understand potential post-infection conditions, such as diabetes and brain fog, experts have warned. American data showed an additional 18 cases of diabetes per 1,000 people if they had COVID-19.

GLOBAL

- [Why do people get long COVID? A virus that may cause MS could reveal clues \(*US News Today*\):](#) Scientists are looking at reactivation of latent viruses, and other existing post-infection syndromes, for answers about long-haul COVID-19. Although the mechanisms of SARS-CoV-2 are different from those of true latent viruses – the coronavirus might not stick around in the body as long as or in the same ways as, say, EBV. Whether or not someone develops severe symptoms related to a viral infection also may depend on other factors such as the microbiome and genetics.

POST COVID-19 CONDITION RESOURCES

- **(NEWLY ADDED)** [C19 Recovery Awareness \(US\)](#): The mission of the Long Haul COVID Fighters is to provide support for those whose health has been affected by COVID-19, promote public awareness and education regarding lengthy COVID recovery, and advocate for the medical, mental health, and social interests of long haul COVID survivors.
- **(NEWLY ADDED)** [COVID-19 Virtual Library of Health Data and Evidence \(Canada\)](#): Resources to knowledge products, data and evidence on the impacts of COVID-19, which includes post COVID-19 condition. This is a searchable collection of products funded and published by the Government of Canada.
- [Lullabies for long COVID \(UK\)](#): An online program developed in collaboration with the English National Opera could help with rehabilitation, by improving mental health and symptoms of breathlessness.
- [Solve Long Covid Initiative \(US\)](#): The Solve ME/CFS Initiative is a non-profit organization that serves as a catalyst for critical research into diagnostics, treatments, and cures for myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS), Long Covid and other post-infection diseases.
- [PASC Guide \(University of Michigan\)](#): A resource for people with PASC/long COVID.
- [Health Education England \(HEE\) e-learning modules: long COVID programme](#)
- [Voices of Long COVID \(US\)](#): Voices of Long Covid campaign features testimonials from a diverse group of people ages 18-29 who are suffering from long-term complications of COVID-19 infection.

- [Dignity Health \(US\)](#): COVID-19 and Chronic Illness Recovery Program based in the U.S. has helped over 2,000 people struggling with COVID long-term effects ("COVID long haulers"). Treatment is exercise-based for lingering or long-term conditions (sequelae) from having the virus.
- [Altea \(Switzerland\)](#): A network for sharing evidence-based information on the long-term effects of COVID-19.
- [Pandemic-Aid Networks](#): Long COVID research library.
- [Post-COVID-19 Functional Status Scale](#): An overview of a patient self-reported scale that helps to support assessment of functional status and recovery after the SARS-CoV-2 infection.
- Ontario College of Family Physicians: [Resources on Post-COVID Condition](#).
- [Agency for Clinical Innovation \(Australia\)](#): Living Evidence - post acute sequelae of COVID-19.
- Pre-populated literature searches: [Long COVID search](#) (LitCovid) and [Long COVID search](#) (NIH)
- [PAHO](#) Webinar Series on Post COVID-19 Condition launched 17 February, 2022, from 10:30 am to 12:30 pm (EST).
- [Body Politic COVID-19 Support Group \(Global\)](#): Housed on the Slack app, group members have access to dozens of different channels, which give space for more personal discussion. Some of the channels include those specifically for medical professionals, parents of children with Covid-19, LGBTQ+ individuals, BIPOC+, and different regions around the world.
- [Patient-Led Research Collaborative \(Global\)](#): Self-organized group of Long COVID patients working on patient-led research around the Long COVID experience.
- [British Heart Foundation \(UK\)](#): UK-based foundation with resources on long COVID.
- [COVID Long Haul \(Canada\)](#): Canada's largest online platform for COVID survivors, their family members and anyone searching for the most up-to-date information about the pandemic. There is a COVID long-haulers [support group](#) and a [Report on Pan-Canadian Long COVID Impact Survey \(PDF\) \(June 2021\)](#)
- [BC ECHO for Post-COVID-19 Recovery \(Canada\)](#): BC ECHO for Post-COVID-19 Recovery is a learning community of specialists and community health-care providers who use case-based learning to improve care for those recovering from [symptoms post-COVID-19](#).
- [Long Covid Support \(UK\)](#): Peer support and advocacy group aiming to facilitate international peer support and campaigning in the UK for recognition, rehabilitation and research into treatments.
- [Long COVID SOS \(UK\)](#): Long-term sufferers formed the LongCovidSOS campaign to put pressure on the UK government to recognise the needs of those with Long Covid, and to raise awareness among the general public and employers.
- [Survivor Corps \(US\)](#): One of the largest and fastest growing grassroots movements connecting, supporting, and mobilizing COVID-19 Survivors to support research. They have a [list](#) of Post-COVID Care Centers (PCC) and a PCCC Best Practices [Guide](#).
- [The Center for Chronic Illness \(US\)](#): Aims to promote well-being and decrease isolation for those impacted by chronic illness through support and education. Their online support groups are professionally-facilitated and offer psychoeducational tools for coping.
- [Blooming Magnolia \(US\)](#): Mission is to empower others by providing a platform to strengthen & protect mental health and support those afflicted with Long-Covid through education and funding of therapeutic research. They have a list of support groups and resources on their website.
- [Long COVID Alliance \(US\)](#): US-based network of patient-advocates, scientists, disease experts, and drug developers who have joined together to leverage their collective knowledge and resources to educate policy makers and accelerate research to transform our understanding of post-viral illness.
- [Long COVID Kids \(UK/US/Canada\)](#): Parent & patient led advocacy & support group based in the UK.

- [Long COVID Physio \(US & UK\)](#): International peer support, education and advocacy group of Physiotherapists living with Long COVID, founded in November 2020 by Physiotherapists living with Long COVID from the UK and US.
- [Patient-Led Research Collaborative \(Global\)](#): Group of Long COVID patients working on patient-led research around the Long COVID experience.
- [CANCOV- Patient resources \(Canada\)](#): CANCOV is a research platform grounded in a prospective longitudinal 1-year cohort study of patients infected with COVID-19.
- [COVID Patient Recovery Alliance \(CPRA\) \(US\)](#): CPRA aims to bring together leaders in business, health care, research, academia, data and analytics, and patient advocacy to develop solutions that coordinate diverse data sources, inform models of care, and ensure adequate payment for long-COVID patients. Their [report](#) outlines recommendations for federal policymakers to promote recovery.
- [British Lung Foundation \(UK\)](#): UK-based charity sharing resources on navigating the NHS, breathlessness support, movement and energy support for long COVID patients.
- [Living with Long COVID \(US\)](#): COVID-19 Long-Haulers and Post-COVID Support Community.

Note: Previous OCSO Post COVID-19 Condition Scans can be found [here](#).