

POST COVID-19 CONDITION

OCSO BIWEEKLY SCAN OF EVIDENCE #21

April 9-April 22, 2022

SCOPE

This biweekly update presents an analysis of new evidence, guidance and issues related to post COVID-19 condition (commonly referred to as 'long COVID') 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

The typical duration of acute COVID-19 illness is two to four weeks. However, some patients have described debilitating symptoms persisting or recurring for weeks or months after acute illness. The range of symptoms reported is broad, and can vary from mild to more severe and debilitating effects that can affect both young and older individuals, regardless of the severity of their initial COVID-19 symptoms in the acute stage. These symptoms are often described as, Post COVID-19 condition (WHO terminology), post-acute sequelae of SARS-CoV-2 infection (PASC), and long COVID (used by patient groups). Affected individuals are commonly referred to as COVID-19 long-haulers. While scientific knowledge on these conditions is building, there is still much that is unknown about this condition. There have been reports of more than 100 symptoms or difficulties with everyday activities.

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.

Typical therapeutic itinerary involves consultations with multiple specialists and puts emphasis on self-management (rest & relaxation, self-pacing, etc). Emerging evidence points to the importance of multidisciplinary care given the heterogeneity of symptoms associated with Post COVID-19 condition. Multidisciplinary teams in "long COVID" clinics have been set to include professionals from the following fields: rehabilitation, respiratory and cardiac consultants, physiotherapists, occupational therapists, psychologists, etc.

It is anticipated that [Post COVID-19 condition](#) will have medium and long-term impact on public health in Canada. Further research with an equity lens on the predisposing conditions and risk factors is needed. Based on research to date, and reviewed by the Public Health Agency of Canada as part of a living [systematic review](#), 56% of individuals who have had COVID-19 reported the presence of one or more symptoms 12 weeks after diagnosis. About 58% of children had 1 or more symptoms 4 weeks or more after their initial COVID-19 infection. Post COVID-19 condition will have implications for the economy, as well as federal programs including disability benefits, employment related measures and sick pay, among others. It is reported that 10% of adults are unable to return to work in the long term. The [WHO](#) has said that about one in 4 people infected with COVID-19 have experienced a post-COVID-19 condition for at least 1 month. One in 10 people experience symptoms lasting beyond 12 weeks.

This week's scan includes a [systematic review](#) published in the *Journal of Infectious Diseases* examining the global prevalence of Post COVID-19 Condition, as well as a [rapid review](#) published by *Public Health Ontario* on Post-Acute COVID-19 Syndrome (PACS) in adults.

GUIDELINES OR STANDARDS

- **WHO** has developed a [clinical case definition](#) of post COVID-19 condition by Delphi methodology that includes 12 domains, available for use in all settings. This first version was developed by patients, researchers and others with the understanding that the definition may change as new evidence emerges and our understanding of the consequences of COVID-19 continues to evolve.
 - *“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 range of new, returning, or ongoing health problems people experience four or more weeks after first being infected with the virus that causes COVID-19. The CDC highlights the various types of post-COVID conditions such as: Multiorgan Effects of COVID-19, Effects of COVID-19 Illness or Hospitalization, and ‘New or Ongoing Symptoms’. The CDC posted [Interim Guidance](#) 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](#).
- **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](#), which includes guidance about community-based rehab for people with COVID-19 and long COVID (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).
- **CIHI** [guidance](#) for clinicians to ensure that data supports monitoring for Post-COVID conditions.
- [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](#)
- **Center for Effective Practice** – [COVID-19: Clinical Guidance for Primary Care Providers - Long-term symptoms / Post-acute sequelae of COVID-19 \(PASC\)](#)
- [Guideline S1: Long COVID: Diagnostics and treatment strategies](#) (*Wiener klinische Wochenschrift*)
- American Academy of Physical Medicine and Rehabilitation (**AAPM&R**): [Cognitive Symptoms Guidance](#) and [Breathing Discomfort Guidance](#).
- Royal Australian College of General Practitioners (**RACGP**) [guidance](#) for GPs caring for ‘long COVID’ patients.
- European Society of Clinical Microbiology and Infectious Diseases (**ESCMID**): [Rapid guidelines for assessment and management of long COVID](#)
- **ACAS** (UK-based Advisory, Conciliation and Arbitration Service): [Long COVID – advice for employers and employees](#)

NATIONAL AND INTERNATIONAL DEVELOPMENTS (APR 9-APR 22)

CANADA

- **(NEW)** Public Health Ontario has released a rapid [review](#) on Post-Acute COVID-19 Syndrome (PACS) in adults. The report highlights hospitals could be strained by an increase in ER visits, patient care, and need for rehabilitation teams as more people deal with lingering effects of the virus.
- **(NEW)** Victoria (BC) has opened its first long-COVID [clinic](#) at Royal Jubilee Hospital.

UK

- **(UPDATED)** 90 long COVID [clinics](#) have been set up across England to provide specialist help to those who need it. Similar centres have opened in Northern Ireland, while in Scotland and Wales patients are referred to different services, depending on their specific symptoms.

US

- **(NEW)** Nearly 1 in 4 privately insured long COVID patients diagnosed between October 2021 and January 2022 have breathing abnormalities, while chronic cough or fatigue were diagnosed in about 1 in 5 patients each, according to data [analysis](#) by FAIR Health provided to Morning Consult.

EMERGING SCIENTIFIC EVIDENCE (APR 9-APR 22)*

EVIDENCE PRODUCTS

| TITLE AND AUTHOR | EVIDENCE TYPE | SUMMARY |
|---|--|---|
| Global Prevalence of Post COVID-19 Condition or Long COVID: A Meta-Analysis and Systematic Review (Chen et al) | Systematic Review (Available in <i>J Infect Dis</i>) | Study aims to examine the worldwide prevalence of post COVID-19 condition, through a systematic review and meta-analysis. 50 studies were included, and 41 were meta-analyzed. Global estimated pooled prevalence of post COVID-19 condition was 0.43. Hospitalized and non-hospitalized patients have estimates of 0.54 and 0.34, respectively. Regional prevalence estimates were Asia— 0.51, Europe— 0.44, and North America— 0.31. Global prevalence for 30, 60, 90, and 120 days after infection were estimated to be 0.37, 0.25, 0.32 and 0.49 respectively. Fatigue was the most common symptom reported with a prevalence of 0.23, followed by memory problems. |
| Long COVID and Long Chain Fatty Acids (LCFAs): Psychoneuroimmunity implication of omega-3 LCFAs in delayed consequences of COVID-19 (Yang et al) | Review (Available in <i>Brain Behav Immun</i>) | Mechanisms of neuropsychiatric complications of long COVID damages from direct CNS viral involvement, unresolved systemic inflammation and oxidative stress, maladaptation of the renin-angiotensin-aldosterone system and coagulation system, dysregulated immunity, the dysfunction of neurotransmitters and HPA axis, and the psychosocial stress imposed by societal changes in response to this pandemic. Long chain omega-3 PUFAs might have favorable effects on immunity, inflammation, oxidative stress and psychoneuroimmunity at different stages of SARS-CoV-2 |

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| | | infection. Omega-3 PUFAs and their metabolites, including specialized pro-resolvin mediators, accelerate the process of cleansing chronic inflammation, altering the HPA axis, modulating neurotransmission via lipid rafts and restoring tissue homeostasis, and offer a promising strategy for long COVID. |
| Common Molecular Pathways Between Post-COVID19 Syndrome and Lung Fibrosis: A Scoping Review (Bergantini et al) | Scoping Review (Available in <i>Front Pharmacol</i>) | Aim of scoping review was to identify and systematize main pathogenetic mechanisms believed to be involved in this phenomenon, in order to highlight the same molecular aspect of the lung. Authors identified all primary studies involving post COVID-19 syndrome with pulmonary fibrosis as a primary endpoint by performing data searches in various systematic review databases. Quality of study has been assessed through SANRA protocol. Total of 32 studies involving were included, included the possible involvement of inflammatory cytokines, concerned the renin-angiotensin system, the potential role of galectin-3, epithelial injuries in fibrosis, alveolar type 2 involvement, Neutrophil extracellular traps and the others implied other specific aspects. |

SELECT PRIMARY RESEARCH

| TITLE AND AUTHOR | SOURCE | SUMMARY |
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| Cardio-Pulmonary Dysfunction Evaluation in Patients with Persistent Post-COVID-19 Headache (Aparisi et al) | <i>Int J Environ Res</i> | Authors conducted a case-control analysis nested in a prospective cohort study. Individuals were recruited from August 2020 to December 2020. A cohort of 70 COVID-19 patients was evaluated. Patients with headaches (n=10; 14.3%) were more frequently female (100% vs. 58.4%) and younger. No between-group differences in laboratory analysis, resting echocardiography, cardio-pulmonary exercise test, or pulmonary function tests were observed. |
| Post-Acute Covid Neurological Symptoms among Doctors and Nurses in A Tertiary Care Hospital: An Observational Study from Bangladesh (Bhattacharjee et al) | <i>Mymensingh Med J</i> | Study aims to observe the post-acute neurological symptoms among doctors and nurses of Mymensingh Medical College Hospital, a tertiary care hospital in Bangladesh, after they recover from initial infection or among the asymptomatic cases. A total of 100 subjects were interviewed over the phone for the presence or absence of neurological symptoms four weeks post Covid-19 infection. Total 54 doctors and 46 nurses were evaluated; the male-female ratio was 1:1.77, the mean age was 35.6±7.6 years. Post-acute COVID neurological symptoms (PACNS) were present in 60% of respondents. Fatigue (51%) was the most common symptom, followed by sleep disturbance, headache, myalgia, loss of taste and smell. |
| Abnormal quantitative pupillary light responses following COVID-19 (Bitirgen et al) | <i>Int Ophthalmol</i> | Study aimed to characterize alterations in pupillary light reflex responses in subjects following coronavirus disease 2019 (COVID-19), especially those with long-COVID. The median time after the diagnosis of acute COVID-19 was 4 months. Dynamic pupillometry reveals significant alterations in contractile pupillary light responses, indicative of parasympathetic dysfunction after COVID-19. |
| COVID-19 patients require multi-disciplinary rehabilitation approaches to address persisting symptom profiles and restore pre-COVID quality of life (Faghy et al) | <i>Expert Rev Respir Med</i> | Study aimed to identify pertinent areas impacting quality of life (QoL) following a COVID-19 infection. Participant health was reduced because of COVID-19 symptoms ("Good health" to "Poor health" P<0.001). Survey respondents who work reported ongoing issues with performing moderate (83%) and vigorous (79%) work-related activities. |

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| <p>Serological Biomarkers at Hospital Admission Are Not Related to Long-Term Post-COVID Fatigue and Dyspnea in COVID-19 Survivors (Fernández-de-Las-Peñas et al)</p> | <p><i>Respiration</i></p> | <p>Cohort study aimed to investigate the association between serological biomarkers at the acute phase of infection at hospital admission with the development of long-term post-COVID fatigue and dyspnea. The prevalence of post-COVID fatigue and dyspnea was 72.8% and 17.2% at 6 months and 45.4% and 13.6% at 12 months after hospital discharge, respectively. Patients exhibiting post-COVID fatigue exhibited a lower hemoglobin level, higher lymphocyte count, and lower neutrophil and platelets counts, whereas those exhibiting post-COVID dyspnea had a lower platelet count and lower alanine transaminase, aspartate transaminase, and LDH levels. Lower platelet count and lower LDH levels were associated but just explaining 4.5% of the variance, of suffering from post-COVID fatigue and dyspnea, respectively.</p> |
| <p>Impact of the post-COVID-19 condition on health care after the first disease wave in Lombardy (Mannucci et al)</p> | <p><i>J Intern Med</i></p> | <p>Using the regional population administrative database including all the 48932 individuals who survived COVID-19 and became PCR negative for SARS-CoV-2 by May 2020, incident mortality, re-hospitalizations, attendances to hospital emergency room and outpatient medical visits were evaluated over a mid-term period of 6 months, in 20521 individuals managed at home, 26016 hospitalized in medical wards and 1611 in intensive care units (ICU). In individuals previously admitted to ICU and medical wards, re-hospitalizations, attendances to hospital emergency rooms and out-patient medical visits were much more frequent in the 6-month period after SARS-CoV-2 negativization than in the same pre-pandemic period. Performances of spirometry increased more than 50-fold, chest CT scans 32-fold in ICU-admitted cases and 5.5-fold in non-ICU cases, electrocardiography 5.6-fold in ICU cases and two-fold in non-ICU cases. Use of drugs and biochemical tests increased in all cases.</p> |
| <p>Developing a model for predicting impairing physical symptoms in children 3 months after a SARS-CoV-2 PCR-test: The CLoCk Study (Nugawela et al)</p> | <p><i>medRxiv</i></p> | <p>Objective was to develop and internally validate a model to predict children and young people most likely to experience at least one impairing physical symptom 3 months after a SARS-CoV-2 PCR-test and to determine whether the impact of these predictors differed by SARS-CoV-2 infection status. A total of 50,836 children and young people were approached; 7,096 (3,227 test-positives, 3,869 test-negatives) who completed a questionnaire 3 months after their PCR-test were included. 39.6% (1,279/3,227) of SAR-CoV-2 PCR-positives and 30.6% (1,184/3,869) of SARS-CoV-2 PCR-negatives had at least one impairing physical symptom 3 months post-test. The final model contained predictors: SARS-COV-2 status, number of symptoms at testing, sex, age, ethnicity, self-rated physical and mental health, feelings of loneliness and four EQ-5D-Y items before testing. Internal validation showed minimal overfitting with excellent calibration and discrimination measures.</p> |
| <p>Predictors of Persistent Symptoms after SARS-CoV-2 Infection among Healthcare Workers: Results of a Multi-site Survey (Pop-Vicas et al)</p> | <p><i>Infect Control Hosp Epidemiol</i></p> | <p>Goal of study was to characterize the post-acute sequelae of COVID-19 in health care workers (HCWs) 4 weeks after their initial COVID-19 diagnosis. Eligible participants included all HCW identified through occupational health to have had at least one laboratory-confirmed positive COVID-19 PCR diagnosis between March 1, 2020 – January 15, 2021.</p> |
| <p>Cardiac impairment in Long Covid 1-year post-SARS-CoV-2 infection (Roca-Fernández et al)</p> | <p><i>medRxiv</i></p> | <p>Study investigated the 12-month trajectory of cardiac impairment in individuals with Long Covid. The technical success of this multiorgan assessment in non-acute settings was 99.1% at baseline, and 98.3% at follow up, with 99.6% and 98.8% for CMR respectively. Of individuals with Long Covid, 102/534 19% had cardiac impairment at baseline; 71/102</p> |

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| | | had complete paired data at 12 months. Of those, 58% presented with ongoing cardiac impairment at 12 months. High sensitivity cardiac troponin I and B-type natriuretic peptide were not predictive of CMR findings, symptoms, or clinical outcomes. At baseline, low LVEF, high RVEDV and low GLS were associated with cardiac impairment. Low LVEF at baseline was associated with persistent cardiac impairment at 12 months. |
| Course of post COVID-19 disease symptoms over time in the ComPaRe long COVID prospective e-cohort (Tran et al) | <i>Nat Commun</i> | Researchers analysed data from 968 adult patients with a confirmed infection enrolled in the ComPaRe long COVID cohort, a prospective e-cohort in France that began in Dec 2020, with analysis up to Oct 2021. Day-by-day prevalence of post COVID-19 symptoms was determined from patients' responses to the Long COVID Symptom Tool, a validated self-reported questionnaire assessing 53 symptoms. Among patients symptomatic after 2 months, 85% still reported symptoms one year after symptom onset. Evolution of symptoms showed a decreasing prevalence over time for 27/53 symptoms (e.g., loss of taste/smell); a stable prevalence over time for 18/53 symptoms (e.g., dyspnoea); and increasing prevalence over time for 8/53 symptoms (e.g., paraesthesia). |
| Dysfunctional breathing diagnosed by cardiopulmonary exercise testing in 'long COVID' patients with persistent dyspnoea (Frésard et al) | <i>BMJ Open Respir Res</i> | Study aimed to describe occurrence and identify clinical predictors of dysfunctional breathing (DB) among patients following COVID-19 infection. Cardiopulmonary exercise testing was performed in 51 patients living with 'long COVID' and persistent dyspnoea. DB mostly without hyperventilation was found in 29.4% (n=15), respiratory limitation with gas exchange abnormalities (RL) in 54.9% (n=28) and O2 delivery/ utilisation impairment (D) in 15.7% (n=8). When compared with RL individuals, patients with DB were younger, had significantly less severe initial infection, a better transfer capacity for carbon monoxide, higher oxygen consumption, a better ventilatory efficiency slope and higher SpO2. |
| Health behaviours the month prior to COVID-19 infection and the development of self-reported long COVID and specific long COVID symptoms: A longitudinal analysis of 1,811 UK adults (Paul et al) | <i>medRxiv</i> | Study aims to assess the influence of health behaviours (e.g., exercise, smoking) immediately preceding an index infection. In the month before infection with COVID-19, poor quality sleep increased the odds of long COVID as did average quality sleep. Results point to the importance of sleep quality for long COVID, potentially helping to explain previously demonstrated links between stress and long COVID. Results also suggest that exercise and smoking may be modifiable risk factors for preventing the development of difficulty with self-care. |
| Risk factors and multidimensional assessment of long COVID fatigue: a nested case-control study (Margalit et al) | <i>Clin Infect Dis</i> | Fatigue is the most prevalent and debilitating long COVID symptom, however risk factors and pathophysiology of this condition remain unknown. Authors assessed risk factors for long COVID fatigue and explored its possible pathophysiology. |
| Long COVID occurrence in COVID-19 survivors (Sugiyama et al) | <i>Sci Rep</i> | Cross-sectional study aimed to investigate post-acute consequences of COVID-19. Among 127 patients who had recovered from COVID-19, 52.0% had persistent symptoms at a median of 29 days [IQR 23-128] after COVID-19 onset. Among patients with mild COVID-19, 49.5% had sequelae. The most frequent symptoms were olfactory disorders (15.0%), taste disorders (14.2%), and cough (14.2%). Multivariate analysis showed that age was an independent risk factor for sequelae (adjusted odds ratios AOR] for ≥ 60 years vs. < 40 years). Possible psychological distress was noted in 30.7% (17.9% of males, 45.0% of females). Female sex and the |

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| | | presence of sequelae were independent risk factors for psychological distress. Of all participants, 29.1% had possible impairments in work performance. Experiences of stigma and discrimination were reported by 43.3% of participants. |
| Post COVID – 19 neurological disorders; a single center experience; a case series (Ahmad et al) | <i>Ann Med Surg</i> | Study aims to estimate the neurological diseases which develop after COVID-19 infection. A total number of 59 patients infected with SARS-CoV2 were included. The majority of the patients had mild symptoms 32 (54%), 12 (20%) patients developed severe symptoms. Headache was the most common presenting symptom 27(46%) followed by fatigue in 8 (13.5%). The majority of the patients 55 (91.6%) presented with no focal signs. MRI was done for 27 (46%) patients without abnormal finding in 22 cases. Nearly 22 (37.3%) cases were diagnosed as recurrent episodes of migraine or new onset of migraine. All patients were managed according to the underlying pathology, only (28, 47.5%) patients were known to be completely recovered. |
| Persistent Overactive Cytotoxic Immune Response in a Spanish Cohort of Individuals With Long-COVID: Identification of Diagnostic Biomarkers (Galán et al) | <i>Front Immunol</i> | Study analyzed usefulness of several demographic, clinical, and immunological parameters as diagnostic biomarkers of Long-COVID in one cohort of Spanish individuals who presented signs and symptoms of this syndrome after 49 weeks post-infection, in comparison with individuals who recovered completely in the first 12 weeks after the infection. We determined that individuals with Long-COVID showed significantly increased levels of functional memory cells with high antiviral cytotoxic activity such as CD8+ TEMRA cells, CD8±TCRγδ+ cells, and NK cells with CD56+CD57+NKG2C+ phenotype. With the use of these immune parameters and significant clinical features such as lethargy, pleuritic chest pain, and dermatological injuries, as well as demographic factors such as female gender and O+ blood type, a Random Forest algorithm predicted the assignment of the participants in the Long-COVID group with 100% accuracy. |
| COVCOG 1: Factors Predicting Physical, Neurological and Cognitive Symptoms in Long COVID in a Community Sample. A First Publication From the COVID and Cognition Study (Guo et al) | <i>Front Aging Neurosci</i> | Study documented characteristics of our sample of 181 individuals who had experienced COVID-19 infection, and 185 who had not. We explore which factors may be predictive of ongoing symptoms and their severity, as well as conducting an in-depth analysis of symptom profiles. Finally, we explore which factors predict the presence and severity of cognitive symptoms, both throughout the ongoing illness and at the time of testing. The main finding from this first analysis is that that severity of initial illness is a significant predictor of the presence and severity of ongoing symptoms, and that some symptoms during the initial illness—particularly limb weakness—may be more common in those that have more severe ongoing symptoms. |

*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 (APR 9-APR 22)

- [Lessons from Long COVID: working with patients to design better research \(Nat Rev Immunol\)](#): For a condition that is still emerging, with poorly defined characteristics and underlying mechanisms, involving people with lived experiences can help to design studies that truly capture the reality of the condition. In Long COVID, the classical epidemiological approach of using health-care-based studies does not work well on its own, because there is huge variation and significant deficiency in diagnosis, clinical coding and management strategies. Scientific research sets the medical and care agenda for patients with chronic illnesses. It also influences the wider social and economic agenda for people living with these conditions.

- [Pediatric Long COVID and Myalgic Encephalomyelitis/Chronic Fatigue Syndrome: Overlaps and Opportunities \(Pediatr Infect Dis J\)](#): Overlap of symptoms between long COVID and ME/CFS is substantial and includes fatigue, post-exertional malaise, cognitive impairment, sleep disturbance and light-headedness. Both conditions are more frequent in females than males. Neither condition can be reliably diagnosed with laboratory findings, although such testing can help exclude other similar conditions. Treatment focuses on symptom management. While no single pharmacologic agent is effective for all long COVID or ME/CFS patients, this should not encourage therapeutic nihilism, as many effective treatments exist for the common features such as orthostatic intolerance, pain, headaches and insomnia. More work will be needed to identify whether the prevalence of orthostatic intolerance is as high in long COVID as it is in ME/CFS, and whether the risk factors for pediatric ME/CFS (including allergic inflammation, female sex, peak onset in adolescence and heritable risk factors such as joint hypermobility) apply to post-COVID conditions.

MEDIA HIGHLIGHTS (APR 9-APR 22)

CANADA

- [Could Paxlovid help treat long COVID? Here's what we know \(Global News\)](#): Reports of two patients who found relief from long COVID after taking Pfizer Inc's antiviral Paxlovid, including a researcher who tested it on herself, provide intriguing evidence for clinical trials. Scientists caution that these cases are "hypothesis-generating only" and not proof that the drug caused relief of lingering symptoms. But they lend support to a leading theory that long COVID may be caused by the virus persisting in parts of the body for months, affecting patients' daily lives long after acute symptoms disappear. Best evidence so far comes from a National Institutes of Health (NIH) study, currently under peer review, in which researchers conducted autopsies in 44 people who died of COVID-19 or another cause but were infected with COVID. They found widespread infection throughout the body, including in the brain, that can last more than seven months beyond the onset of symptoms. Paxlovid is currently authorized for use in the first days of a COVID infection to prevent severe disease in high-risk patients.
- [Women with long-haul COVID-19 have more symptoms than men, study finds \(CTV News\)](#): A new study has found that women who suffer from long-COVID typically experience more symptoms than their male counterparts. The report, published in [Journal of Women's Health](#), found that females were "significantly more likely" to exhibit difficulty swallowing, fatigue and chest pain at long-term follow-up compared to men. Previous studies show that women are less prone to developing severe disease than men in acute phase of COVID-19, however, researchers note few studies have assessed sex-differences in regards to long COVID.

GLOBAL

- [Long Covid: Ambulance worker credits food supplements to alleviate symptoms \(BBC\)](#): An ambulance worker who was off duty for 14 months with long Covid said taking a daily probiotic and food supplement had been "life-changing". He credits a treatment trial, led by scientists in Cambridge, for his improved health and return to work. Oncologist Prof Robert Thomas, who led the study, said the team concentrated natural substances which are available in common foods into capsule form. The capsules are classed as a food, not a drug, so are therefore unregulated and cannot be prescribed by the NHS, but are available to buy.
- [Thousands of long COVID patients feared to be missing out on disability benefits \(Independent\)](#): Just 1,584 people with the condition have been assessed by the government for Personal Independence Payment (PIP), and only 937 of these have successfully secured the benefit. But figures for last month show that 322,000 people in the UK were reporting that their ability to undertake day-to-day activities had been limited "a lot" by long Covid, according to the Office for National Statistics. Some 172,000 of these said they had struggled every day for the past 12 months. Politicians and campaign groups warn not enough has been done to remove barriers to applying for financial aid.

POST COVID-19 CONDITION RESOURCES

- **(NEWLY ADDED)** [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](#).