

# Limited recovery from long COVID one year after hospitalisation

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People who were hospitalized with COVID-19 and continued to experience symptoms at five months show limited further recovery one year after hospital discharge.

The latest results of the [PHOSP-COVID](#) study have been released as a pre-print on medRxiv today.

This has also confirmed earlier research that people who were less likely to make a full recovery from COVID-19 were female, obese, and required invasive mechanical ventilation to support their breathing during their [hospital stay](#).

The study is led by the National Institute for Health Research (NIHR) Leicester Biomedical Research Centre and jointly funded by the NIHR and UK Research and Innovation (UKRI).

Researchers from 53 institutions and 83 hospitals across the UK assessed 2,230 adults who had been hospitalized with COVID-19. All participants completed a five-month assessment. So far, 807 people have completed both the five-month and 12-month assessments.

Recovery was measured using patient-reported data, physical performance and organ function tests. Participant blood samples at the five-month visit were analyzed for around 300 substances linked to inflammation and immunity.

They found that one year after hospital discharge, less than three in 10 patients on the study reported they felt fully recovered, largely unchanged from 2.5 in 10 at five months. The most common ongoing symptoms were:

- fatigue
- muscle pain
- physically slowing down
- poor sleep
- breathlessness

Participants felt their health-related quality of life remained substantially worse one year after [hospital discharge](#), compared to pre-COVID. This suggests the physical and mental health impairments reported in the study are unlikely to be pre-existing conditions.

A [cluster analysis](#), which is a mathematical method to group participants according to similar traits and characteristics, identified four distinct groups based on the severity of physical, mental and cognitive impairments experienced at five months.

The number of persistent symptoms was much higher in the 'very severe' group compared to the 'mild' group.

In all of these clusters, there was little improvement in physical and mental health from the five-month to one-year assessments.

The researchers compared the blood profiles across the four clusters. They identified higher levels of substances associated with whole-body inflammation and molecules associated with tissue damage and repair, in participants with very severe-long COVID compared to mild.

They also found a pattern of substances linked to poor cognition in the cluster of patients reporting symptoms such as 'brain fog' or slowed thinking, suggesting possible neuro-inflammation.

## **Persistent symptoms**

Professor Chris Brightling, from the University of Leicester, and chief investigator for the PHOSP-COVID study, said:

"The PHOSP-COVID study is further evidence of the UK's ability to combine expertise across both disease area and geography to rapidly gather data to help us understand the longer-term implications of long-

COVID in hospitalized patients with persistent symptoms.

"Our findings show that people who were hospitalized and went on to develop long-COVID are not getting substantially better a year after they were discharged from hospital. Many patients in our study had not fully recovered at five months and most of these reported little positive change in their health condition at one year.

"When you consider that over half a million people in the UK have been admitted to hospital as a result of COVID-19, we are talking about a sizeable population at risk of persistent ill-health and reduced quality of life."

Dr. Rachael Evans, at the University of Leicester, and a lead author of the paper, said: "The findings that many patients had not fully recovered one year after leaving hospital indicate that [healthcare professionals](#) will need to proactively continue assessing their patients for some time to come in order to identify their ongoing healthcare needs and provide support.

"However, we urgently need healthcare packages and medicines that target the potentially treatable traits of long-COVID to help people feel better and get back to their normal lives. Without these, long-COVID has the potential to become highly prevalent as a new long-term condition."

### **Informing future development**

Professor Fiona Watt, Executive Chair of the Medical Research Council, which co-funded the study, said: "This new evidence from the PHOSP-COVID study provides us with vital information about the long-term effects associated with COVID-19 in patients who were treated in [hospital](#). The information will inform the development of effective ways

to help long-COVID patients."

The consortium acknowledges that there may be self-selection bias in the patients returning for one-year visits. Although, from the data it appears that there are no clear differences between the patients attending the one-year follow-up and the larger participant population in the wider study including their recovery at five months.

Assuming all the participants who had missing data at one year had either not recovered or were fully recovered, the adjusted figures are, two in 10 or six in 10, people recovering from COVID-19 at one year, respectively.

**More information:** Rachael Andrea Evans et al, Clinical characteristics with inflammation profiling of Long-COVID and association with one-year recovery following hospitalisation in the UK: a prospective observational study (2021). [DOI: 10.1101/2021.12.13.21267471](https://doi.org/10.1101/2021.12.13.21267471)

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