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Understanding long COVID: a modern medical challenge

As the COVID-19 pandemic continues, the need to understand and respond to long COVID is increasingly pressing. Symptoms such as persistent fatigue, breathlessness, brain fog, and depression could debilitate many millions of people globally. Yet very little is known about the condition. The term “long COVID” is commonly used to describe signs and symptoms that continue or develop after acute COVID-19. A NICE guideline, for example, includes both ongoing symptomatic COVID-19 (from 4 to 12 weeks) and post-COVID-19 syndrome (≥ 12 weeks), but there is no agreed upon definition. How distinct is long COVID from other post-viral syndromes? No clear biochemical or radiological features exist to aid diagnosis, and there are potentially several phenotypes with different presentations, prognosis, and outcomes. With no proven treatments or even rehabilitation guidance, long COVID affects people’s ability to resume normal life and their capacity to work. The effect on society, from the increased health-care burden and economic and productivity losses, is substantial. Long COVID is a modern medical challenge of the first order.

Clearly, the condition is of public health concern. In the UK, for example, an estimated 945 000 people (1.5% of the population) had self-reported long COVID on July 4, 2021, according to the UK Office for National Statistics, including 34 000 children aged 2–16 years. Prevalence was greatest in people aged 35–69 years, girls and women, people living in the most deprived areas, those working in health or social care, and those with another activity-limiting health condition or disability.

Most evidence about long COVID has been limited and based on small cohorts with short follow-up. However, in *The Lancet*, Lixue Huang and colleagues report 12-month outcomes from the largest longitudinal cohort of hospitalised adult survivors of COVID-19 so far. Including adults (median age 59 years) discharged from Jin Yin-tan Hospital in Wuhan, China, this study advances our understanding of the nature and extent of long COVID. At 1 year, COVID-19 survivors had more mobility problems, pain or discomfort, and anxiety or depression than control participants (matched community-dwelling adults without SARS-CoV-2 infection). Fatigue or muscle weakness was the most frequently reported symptom at both 6 months and 12 months, while almost half of

patients reported having at least one symptom, such as sleep difficulties, palpitations, joint pain, or chest pain, at 12 months. The study shows that for many patients, full recovery from COVID-19 will take more than 1 year, and raises important issues for health services and research.

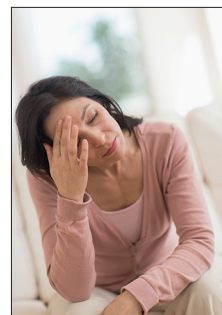
First, only 0.4% of patients with COVID-19 said that they had participated in a professional rehabilitation programme. The reason for such low use of rehabilitation services is unclear, but poor recognition of long COVID and lack of clear referral pathways have been common problems worldwide. Second, the effect of long COVID on mental health warrants further and longer-term investigation. The proportion of COVID-19 survivors who had anxiety or depression slightly increased between 6 months and 12 months, and the proportion was much greater in COVID-19 survivors than in controls. Third, the outcomes from this cohort cannot be generalised to other populations—eg, patients not admitted to hospital, younger people, and those from racially minoritised and other disadvantaged groups who have been disproportionately affected by the pandemic. Research in these populations needs to be prioritised urgently.

Tedros Adhanom Ghebreyesus, WHO’s Director-General, has called on countries to prioritise recognition, rehabilitation, and research for the long-term consequences of COVID-19, as well as collection of data for long COVID. A cohesive research agenda is needed to prevent research waste and improve outcomes for patients. The scientific and medical communities must collaborate to explore the mechanism and pathogenesis of long COVID, estimate the global and regional disease burdens, better delineate who is most at risk, understand how vaccines might affect the condition, and find effective treatments via randomised controlled trials. At the same time, health-care providers must acknowledge and validate the toll of the persistent symptoms of long COVID on patients, and health systems need to be prepared to meet individualised, patient-oriented goals, with an appropriately trained workforce involving physical, cognitive, social, and occupational elements.

Answering these research questions while providing compassionate and multidisciplinary care will require the full breadth of scientific and medical ingenuity. It is a challenge to which the whole health community must rise. ■ *The Lancet*



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For the 12-month outcomes of COVID-19 adult survivors research see [Articles](#) page 747

For the NICE guideline on the long-term effects of COVID-19 see <https://www.nice.org.uk/guidance/ng188>

For the UK Office for National Statistics data for long COVID see <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/prevalenceofongoingsymptomsfollowingcoronaviruscovid19infectionintheuk/5august2021>

For Tedros’s comments see <https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---21-august-2020>