



Long COVID

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COVID-19 Actuaries Response Group – Learn. Share. Educate. Influence.

What is ‘Long COVID’?

“Long covid” is a term used to describe illness in people who have either recovered from COVID-19 but are still report lasting effects of the infection, or have had the usual symptoms for far longer than would be expected.

Symptoms include fatigue, chronic joint and muscle pain, insomnia, reduced exercise tolerance, shortness of breathe, mental health issues and headaches. Clinical follow-up finds that even in mild cases, damage to the heart, lungs and brain may be permanent.

This worrying emerging condition may represent a material future morbidity burden, with some studies reporting up to 95% of people with mild cases experiencing symptoms more than 3 months from onset of the initial disease.

Symptoms

The UK government published guidance¹ on the possible long-term health effects of COVID-19 on 7 September and identified a number of persistent health problems that have so far been reported by people with mild or more severe disease. These are included in the following table which covers the main reported symptoms in those considered to have ‘long COVID’.

Respiratory	Chronic cough	Shortness of breath
	Lung inflammation	Pulmonary fibrosis
	Pulmonary vascular disease	
Cardiovascular	Chest tightness	Acute myocarditis
	Heart failure	
Mental Health	Depression	Anxiety
	Cognitive difficulties/confusion	
Gastrointestinal	Nausea/vomiting	Diarrhoea
Quality of Life	Chronic fatigue/weakness	Insomnia/sleep problems
	Chronic pain/headaches	Prolonged loss of taste/smell
Other	Skin rashes	Clotting problems
	Liver dysfunction	Kidney dysfunction

¹ <https://www.gov.uk/government/publications/covid-19-long-term-health-effects/covid-19-long-term-health-effects>

Post-viral health problems are not a new phenomenon. Post-infectious fatigue² is known to be associated with a number of viruses including SARS and influenza, but also others such as human herpesvirus 6 & 7, HIV, herpes simplex, and hepatitis C. Symptoms include extreme fatigue, muscle pain, joint pain, sleep disorders, headache and psychoneurotic symptoms.³ If these symptoms persist, the condition is categorised as chronic fatigue syndrome (CFS).

With particular reference to on-going respiratory problems, long-term follow-up from the previous SARS outbreak reports that lung function continues to be compromised many years following the onset of symptoms. In particular, pulmonary fibrosis, in which the lungs become scarred with functional compromise, has been observed in SARS survivors, even in those with relatively mild disease.^{4 5}

Prevalence

A key question is of course how many people in the population are affected? The main challenge is that it is likely that many of those who are affected may have suffered mild disease, and so may not have had testing or any contact with health professionals at onset.

The CDC published a report in July 2020 which addressed the symptom duration and risk factors for delayed return to usual health among patients with mild COVID-19.⁶

This study reports that around a third of those interviewed had not returned to usual health 3 weeks after testing positive, and that around 20% of young adults aged 18–34 years with no chronic medical conditions reported that they had not returned to their usual state of health. Pre-existing medical conditions and increasing age appeared to be key risk factors for prolonged symptoms.

A survey⁷ carried out by the Dutch Lung Foundation reported that of 1,600 people who were asked about returning to normal activities after largely ‘mild’ (non-hospitalised) COVID-19, 95% indicated that they continued to experience problems including fatigue, shortness of breath, chest pressure, headaches and muscle aches more than three months following typical COVID-19 symptoms. Almost half reported that they are no longer able to exercise.

Similarly, research⁸ from Italy has also identified that a high proportion of patients recovering from COVID-19 reported persistence of at least one symptom, particularly fatigue and shortness of breathe.

Challenges and Support

The many unknowns around SARS-CoV-2 now extend to recognising and managing long COVID. Many social media groups have emerged, and in the UK, a support group⁹ formed in partnership with The Sepsis Trust has written to Jeremy Hunt MP, Chair of the Health and Social Care Committee asking that the UK government set up a multi-disciplinary Long Covid taskforce, including researchers, professional bodies, and representatives of peer-led groups, to address the urgent needs of people living with persistent, ongoing symptoms of COVID-19.

Further afield, a citizen scientists’ group known as the Body Politic COVID-19 Support Group¹⁰ with a global membership, published analysis of a Prolonged COVID-19 Symptoms Survey¹¹ in May 2020, which identified similar symptoms to those listed in the previous section. The group is now working on

² http://www.med.or.jp/english/pdf/2006_01/027_033.pdf

³ **Memory impairment, confusion, impaired concentration and depression**

⁴ [https://www.thelancet.com/journals/lanres/article/PIIS2213-2600\(20\)30222-8/fulltext](https://www.thelancet.com/journals/lanres/article/PIIS2213-2600(20)30222-8/fulltext)

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https://journals.lww.com/thoracicimaging/Fulltext/2020/07000/Long_term_Pulmonary_Consequences_of_Coronavirus.11.aspx

⁶ https://www.cdc.gov/mmwr/volumes/69/wr/mm6930e1.htm?s_cid=mm6930e1_w

⁷ https://www.biomax.com/lib/press-releases/Initial-Result-Announcement_English.pdf

⁸ <https://jamanetwork.com/journals/jama/fullarticle/2768351>

⁹ <https://www.longcovid.org/>

¹⁰ <https://www.wearebodypolitic.com/covid19>

¹¹ <https://patientresearchcovid19.com/research/report-1/>

a follow-up study to fill in gaps in their first report, including examining antibody testing results, neurological symptoms, and the role of mental health.

A letter¹² published in the BMJ on 15 September and signed by 39 British doctors all affected by persisting symptoms of suspected or confirmed COVID-19 called for a clear definition of recovery from COVID-19. "Failure to understand the underlying biological mechanisms causing these persisting symptoms risks missing opportunities to identify risk factors, prevent chronicity, and find treatment approaches for people affected now and in the future," they wrote.

Research to evaluate the long-term health and psychosocial effects of COVID-19 continues. Major studies include the Post-Hospitalisation COVID-19 study¹³ in the UK and the International Severe Acute Respiratory and emerging Infection Consortium (ISARIC) global COVID-19 long-term follow-up study¹⁴.

Management

Trisha Greenhalgh and colleagues published guidance¹⁵ in August 2020 on the management of post-acute COVID-19 in primary care. The guidance covers respiratory symptoms, fatigue, cardiopulmonary complications, mental health and wellbeing, thromboembolism and social and cultural considerations. The key to management, say the authors, is to consider that post-acute COVID-19 is a multi-system disease, requiring a whole patient perspective. The wide-ranging damage caused by SARS-CoV-2 cannot be underestimated; the long-term course is unknown.

Long-term Impact

The lengthy list of long COVID symptoms coupled with the fact that as yet, the exact pathophysiology of the virus is largely unknown(though more knowledge is gained all the time), means that we may be faced with a significant morbidity burden.

Follow-up of COVID-19 patients, even those with what is considered to be a mild case, has shown that damage extends to the heart, the brain and the clotting mechanism. Cardiac scans of a group of patients has revealed cardiac involvement in 78% of the patients studied and ongoing myocardial inflammation in 60%, independent of pre-existing conditions, severity and overall course of the acute illness, and time from the original diagnosis.¹⁶

There is potential that this will increase the risk of myocardial infarction, stroke and even Parkinson's disease and Alzheimer's disease in relatively young people.

The ongoing research projects will reveal the extent and impact of 'long COVID', not just to understand the disease's long shadow, but also to predict who's at the highest risk of developing persistent and chronic symptoms and the associated health problems, as well as to identify potential treatments that may be able to prevent them.

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¹²

https://www.bmj.com/content/370/bmj.m3565?ijkey=8abdf55c0b7baf571557260e7d8191930c44b482&keytype2=tf_ipsecsha

¹³ <https://www.phosp.org/>

¹⁴ <https://www.ox.ac.uk/news/2020-09-11-global-consortium-launches-new-study-long-term-effects-covid-19>

¹⁵ <https://www.bmj.com/content/bmj/370/bmj.m3026.full.pdf>

¹⁶ <https://jamanetwork.com/journals/jamacardiology/fullarticle/2768916>