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CHANGE

# The Hidden Pandemic: Long Covid

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# Contents

Foreword	3
Overview	4
Recap: What Is Long Covid?	5
The Unknowns	7
Long Covid: A Global Issue	8
The World Health Organisation and Long Covid	9
We Need to Better Monitor Long Covid and Collect Data	10
Approaches to the Treatment and Handling of Long Covid to Date	11
The Wider Consequences of Long Covid	15
Vaccines and Long Covid	18
Reducing Vaccine Hesitancy Around the World	21
Recommendations	22

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## Foreword

Long Covid remains, in many ways, the hidden pandemic.

While 130,000 people in the UK have died from Covid-19 to date, it is estimated that more than 1 million have experienced or continue to experience ongoing symptoms from their original infection, known as Long Covid. As the pandemic continues, these numbers will continue to grow.

The scale of Long Covid means that there are countless individual stories of people affected physically and mentally, but a macro picture also emerges that has a significant impact and implications for the future of our health services and the economy.

The government has made a number of pledges regarding its approach to Long Covid but much work still remains to be done to see if this is effective.

This paper clearly brings out the nature of Long Covid as a global problem, requiring governments around the world to take the right action to respond to it.

The King's College London/ZOE app collaboration is the largest longitudinal study of Covid symptoms in the world. Through our work, we have also examined the impact of vaccines on existing Covid-19 symptoms and the chance of developing Long Covid. While it is now widely known that double vaccination reduces the chance of getting infected by around 85 per cent, our work indicates that on top of this, vaccines also decrease the likelihood, if someone does get infected, of developing Long Covid by up to 30 per cent.

This has clear implications for the global vaccination policy. The more people are vaccinated, the less chance there is of them getting infected, and when they do get infected, they are more likely to be completely asymptomatic and less likely to get Long Covid.

Vaccinating the world in the coming year is a critical task, not just to avoid excess deaths but to avoid lasting health impacts on those who get the virus.

Tim Spector

*Professor of Genetic Epidemiology, King's College London*

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## Overview

We have written twice previously on the subject of Long Covid – once to explore the scale of the issue and a second time to examine the progress made regarding the treatment and support for those with Long Covid in the UK. For both papers we have collaborated with Professor Tim Spector at King's College London and had access to the data his team has collected together with the health-sciences company ZOE using their COVID Symptom Study app, which tracks symptoms and their duration.

Long Covid remains an acute issue in the UK. It is still poorly understood and has not received an effective response from the government.

The Office for National Statistics (ONS) estimated that over the four-week period ending 6 March 2021, 1.1 million people in private households in the UK had Long Covid.<sup>1</sup> That figure will continue to grow over time as more people contract Covid-19. This has a direct impact on people's physical and mental health, the NHS and the economy.

Long Covid is obviously not just a UK issue but an international one. This paper considers Long Covid from a global perspective and examines the scope of treatment in other countries.

We also look at emerging data and studies on the efficacy of vaccines in helping to mitigate Long Covid. The latest data shared with us by Dr Claire Steves at King's indicate that while double vaccination reduces the chance of Covid-19 infection in general by around 85 per cent (thus reducing an individual's risk of Long Covid), vaccination also provides additional protection against Long Covid: even if a vaccinated individual goes on to contract Covid-19, that person's chances of developing Long Covid are reduced by a further 30 per cent in the most at-risk age group.

Based on the emerging international picture, we argue that vaccinations clearly provide substantial protection from Covid-19 in general and additional protection from Long Covid specifically. Additional emerging evidence suggests that vaccination also alleviates the symptoms of Long Covid. On this basis the data should be articulated and deployed to help tackle the very real issue of vaccine hesitancy around the world, particularly among groups who feel they are less at risk from the virus directly.

We urge the government to increase investment in Long Covid research, especially to deepen investigation into the degree to which vaccinations impact the likelihood of getting Long Covid and alleviate long-standing symptoms for those with pre-vaccination Long Covid. This research needs to be large in scale and must begin urgently. The UK government should lead a wider call for evidence on Long Covid because the current research is limited to smaller-scale studies, many of which have taken place in the UK.

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## Recap: What Is Long Covid?

The term was initially coined by patients to describe recurring symptoms following a confirmed or suspected Covid-19 infection. The National Institute for Health and Care Excellence (NICE), the Scottish Intercollegiate Guidelines Network (SIGN) and the Royal College of General Practitioners (RCGP) in the UK use the following clinical definitions for Long Covid:

- Acute Covid-19: signs and symptoms of Covid-19 continue for up to four weeks.
- Ongoing symptomatic Covid-19: signs and symptoms of Covid-19 continue from four to 12 weeks.
- Post-Covid-19 syndrome: signs and symptoms that develop during or after an infection consistent with Covid-19, continue for more than 12 weeks and are not explained by an alternative diagnosis.

The most commonly reported long-term symptoms include:

- Fatigue
- Shortness of breath
- Cough
- Joint pain
- Intermittent fever
- Chest pain

Other reported long-term symptoms include:

- Difficulty with thinking and concentration (sometimes referred to as “brain fog”)
- Muscle pain
- Headache
- Fast-beating or pounding heart

More serious long-term complications appear to be less common but have been reported. These have been noted to affect different systems and parts of the body. They include:

- Cardiovascular: inflammation of the heart muscle
- Respiratory: lung-function abnormalities
- Renal: acute kidney injury
- Dermatological: rash, hair loss

- Neurological: smell and taste problems, sleep issues, memory problems
- Psychiatric: depression, anxiety, changes in mood

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## The Unknowns

While progress has been made in the field of Long Covid, there are still many questions to be answered and more research is desperately needed to fill this void. Below is a list of key questions that remain definitively unanswered:

- How many people have Long Covid in the UK? And how many are affected globally?
- How does Long Covid affect children? How many children are affected in the UK?
- Who is at risk? Why are some individuals at more risk than others?
- What is the best approach to treatment?
- How can we deepen understanding of the impact that vaccination has on individuals with existing Long Covid symptoms?
- How can we expand research into the extent to which vaccinated individuals who contract Covid-19 are less likely to experience Long Covid?

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## Long Covid: A Global Issue

According to data gathered by the King's College London/ZOE app, a similar prevalence of Long Covid was reported in the UK, US and Sweden. But without an internationally agreed-upon clinical definition of Long Covid, estimating the prevalence of the condition around the world is challenging. According to estimates published by the ONS in December and recently cited by the World Health Organisation (WHO), the prevalence of Long Covid is estimated to be as follows:<sup>2</sup>

- Around one in five respondents who test positive for Covid-19 exhibit symptoms for a period of five weeks or longer.
- Around one in ten respondents testing positive for Covid-19 exhibit symptoms for a period of 12 weeks or longer.

Estimates from studies around the world are indicating similar prevalence rates. For example, a study of relatively young, healthy adult health-care workers in Sweden found that just over one in ten respondents who had experienced mild cases of Covid-19 were exhibiting at least one moderate-to-severe symptom eight months after being infected.<sup>3</sup>

There are 176.2 million confirmed Covid-19 cases globally as of 16 June.<sup>4</sup> This could mean that, based on estimates from the UK's ONS, there are 35.2 million people (one in five) exhibiting symptoms for five weeks or longer and 17.6 million people (one in ten) for 12 weeks or longer.

Another challenge of attempting to pin down a global estimate of Long Covid is that these figures are based on *confirmed* cases of Covid-19; this only captures those individuals who took a test or were admitted to hospital. As we now know, you do not need to be hospitalised with Covid-19 to develop Long Covid. So, there is a risk that these estimates do not account for individuals who were not admitted to hospital and that they do not include people potentially infected in the first wave who didn't have access to testing in the community. For this reason, the actual number of people with Long Covid could be even higher than estimates based on confirmed cases suggest.

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## The World Health Organisation and Long Covid

In February 2021, the WHO urged countries to prioritise rehabilitation for the growing number of people dealing with the medium- and long-term consequences of Covid-19. The WHO is also working with experts and individuals with Long Covid from many countries to develop a clinical case definition of Long Covid – a milestone that will help coordinate data collection and diagnosis around the world.

The WHO has designed a post-Covid case report form (CRF) to collect standardised clinical data from individuals after hospital discharge or after acute illness to examine the medium- and long-term consequences of Covid-19 in a systematic manner. Technical working groups set up by the WHO are also collaborating to define research priorities.<sup>5</sup>

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## We Need to Better Monitor Long Covid and Collect Data

Given the rapid spread and devastating consequences of the Covid-19 pandemic, most countries now have daily reporting and surveillance systems in place that record and publish the total number of positive cases, hospital admissions, intensive care unit (ICU) admissions and deaths caused by the virus. More recently, vaccination rollout figures have been added to these data systems.

Existing surveillance systems developed to track the course of the pandemic have not recorded data on Long Covid. This is in part because there is not yet an agreed-upon case definition for the condition. Some countries report on the number of people who have “recovered” from the virus, but this figure tends to be informed by negative test results as opposed to individuals being free of symptoms.<sup>6</sup>

We have previously called for data to be collated into a publicly available, global database that allows us to build as full a picture as possible of Long Covid and better understand its prevalence around the world. This would require global coordination and could potentially be overseen and housed, for instance, by the WHO.<sup>7</sup>

## Approaches to the Treatment and Handling of Long Covid to Date

Because research has shown that the most effective course of treatment for Long Covid will likely require a multidisciplinary approach involving various specialists over time, the standardisation of any guidance for Long Covid must recognise the resources necessary for this to happen. Guidance must include not only clinical guidelines for treatment but also resource allocation, in terms of both service provision and the political decisions on where funding will come from. Countries without the necessary health-care infrastructure may not be able to cope with the wave of Long Covid patients awaiting treatment while still struggling to get acute infections, hospitalisations and deaths under control. Below is a non-exhaustive list of European and African countries with accompanying details looking at how Long Covid is being addressed in each place.

### UK

In the UK, NICE, RCGP and SIGN published initial guidance for Long Covid in December 2020.<sup>8</sup> The guidance focused on identifying, assessing and managing the long-term effects of Covid-19, and made recommendations for care in all health-care settings for adults, children and young people who have new or ongoing symptoms four weeks or more after the start of an acute Covid-19 infection.

Around the same time, the ONS began publishing statistics related to Long Covid. This research seeks to quantify Long Covid in terms of its prevalence, risk factors and symptoms following a confirmed or suspected infection, as well as characterise the nature of its complications.<sup>9</sup>

A few months earlier, in October 2020, the NHS announced £10 million of funding for Long Covid clinics in every area across England. These clinics are staffed by respiratory consultants, physiotherapists, other specialists and GPs who assess, diagnose and refer individuals with reported symptoms ranging from breathing difficulties, chest pain, fatigue, tachycardia and headaches to neurological issues and cognitive impairment.<sup>10</sup>

In February 2021, the Department of Health and Social Care (DHSC) announced an additional £18.5 million for research projects to better understand the causes, symptoms and treatment of Long Covid. The funding supports four studies seeking to identify effective therapies to treat people with Long Covid and to understand why some people develop the condition while others do not.<sup>11</sup> The following month, the National Institute for Health Research (NIHR) published its second themed review on Long Covid<sup>12</sup> and launched a second call for research proposals, pledging up to £20 million to fund research on

treatments, health-care services and diagnostics for adults and children with Long Covid who were not admitted to hospital. <sup>13</sup>

To date, across the NHS in England, 89 initial assessment services are supporting people with Long Covid. <sup>14</sup> The clinics function as assessment centres, serving as the first step in the referral system for those with Long Covid symptoms. Unfortunately, these clinics are not evenly distributed across the country, reportedly leaving some people with Long Covid feeling as though they have lost the “postcode lottery” because they lack access to the designated clinics. <sup>15</sup>

Although clinics have been announced, not all have been able to open and operate as intended. For example, the opening of several clinics was delayed by the second wave of infections in January; two trusts that were included in initial plans for clinics in England had none operating or planned as of the end of March, while another five trusts had not been able to set up their planned clinics by this point. A Long Covid clinic in Bolton was on hold while more staff were being recruited. <sup>16</sup>

According to Sky News, because Long Covid clinics are run by individual NHS trusts it is unclear how many people are using them. The chair of the National Long Covid Taskforce, Dr Kiren Collison, said that the clinics may be necessary for much longer than current funding facilitates. <sup>17</sup>

Scotland, Wales and Northern Ireland do not operate specific Long Covid referral systems or clinics; instead, those with Long Covid symptoms must seek help from existing NHS services. <sup>18</sup>

Most recently, on 14 June 2021 the NHS announced plans to set up 15 new paediatric hubs to treat children with Long Covid. The specialist young people’s services are part of a £100 million expansion for Long Covid care. <sup>19</sup> This is positive news for individuals with Long Covid, especially children who previously did not have any specialist clinics designed specifically for their age group, but only time will tell how effective the clinics are and how quickly they can begin seeing patients.

More generally, we recognise the government has made several commitments on Long Covid, which are to be broadly welcomed. But there is more the government should do both to deliver on existing promises and to go further in its response.

## **Czech Republic**

In early January 2021, the Czech Pneumological and Physiological Society of the J.E. Purkyně Czech Medical Association (ČLS JEP) published interim guidance for Long Covid that included a definition, diagnosis and classification of the condition. <sup>20</sup>

There are some instances where specialist centres have been set up, such as the Post Covid Care Centre at the Hradec Králové teaching hospital. Based on our research and [a policy brief by the WHO](#), it is not clear if these clinics are common or evenly distributed around the country.<sup>21</sup>

Patients with ongoing symptoms such as breathlessness have been advised by the Czech Pneumological and Physiological Society to seek help from a respiratory doctor, but no specific services seem to have been designed for Long Covid, according to the policy brief published by the WHO.<sup>22</sup>

## Germany

The Federal Ministry of Education and Research (BMBF) announced on 31 May that it will award €5 million in funding for research on Long Covid. The funding is primarily aimed at interdisciplinary research associations that already have access to patients, data and samples. Of particular interest to this research are projects on outpatient care, rehabilitation and care, and on the cooperation between specialised Long Covid outpatient clinics and primary care.<sup>23</sup>

The new funding was welcomed by scientists and researchers, while at the same time deemed by some to be substantially less than the amount needed to tackle the Long Covid situation in Germany.

In terms of existing treatment facilities, it appears that some university hospitals provide special consultation hours for patients with Long Covid, with some having offered multidisciplinary support from as early as July 2020.<sup>24</sup> According to Long Covid Deutschland, as of 4 June 2021 there were 49 Long Covid clinics in Germany, about 17 of which have an interdisciplinary focus, while two are designated clinics for myalgic encephalomyelitis (ME)/chronic fatigue syndrome (CFS).<sup>25</sup>

## Italy

On 1 June 2021 the Italian government announced it would allocate €50 million to help treat the estimated 164,000 people experiencing Long Covid in Italy. The funds will support regular check-ups on organs in patients, including the heart, lungs and kidneys, until the end of 2023. The funding is part of a wider strategy to research the long-term effects of the virus. Long Covid is also being treated in some areas by non-profit organisations.

For example, the non-profit association AbilityAmo was created to treat individuals with complex chronic disabilities and to enrich rehabilitation processes. In line with its focus on complex conditions that often require bespoke rehabilitation, AbilityAmo started a programme to treat Long Covid. The services provided include telemonitoring systems for clinical surveillance, specialist interventions (both in hospitals and at home), psychological support, and neurological, respiratory and cognitive post-admission

rehabilitation. The organisation is also gathering information about patients' experiences and plans to publish a report on life after Covid-19. <sup>26</sup>

## Nigeria

According to an article from February titled "Living with Long Covid in Lagos", the general perception of Covid-19 in Nigeria is that the virus can cause mild or debilitating illness – depending on the individual's underlying health issues – which lasts for a few weeks before most people recover. However, the growing number of Long Covid cases in Nigeria and the condition's extensive list of symptoms have complicated this understanding. <sup>27</sup>

Dr Ifeanyi Nsofor, the director of policy and advocacy at Nigeria Health Watch, has come to the same conclusion as many other researchers around the world: current research into Long Covid in Nigeria makes it difficult to determine what makes some patients more susceptible to persistent symptoms than others and how many people are actually experiencing this condition. <sup>28</sup>

Based on growing concern, Dr John Nkengasong, director of the Africa Centres for Disease Control and Prevention (Africa CDC), told the *Mail & Guardian* that the agency is in the process of convening experts across the continent to gain a better understanding of Long Covid in order to offer clear guidance to member states on how to provide care. <sup>29</sup>

## South Africa

South Africa was one of the first countries in Africa to develop a response to Long Covid. The South African Long Covid support group's Facebook page had almost 14,000 members as early as October 2020. One study announced in May involved the setting up of an online registry to better understand how many individuals have Long Covid in the country. Other objectives of the study include analysing the long-term side-effects of Long Covid as well as its effects on blood clotting and circulating inflammatory molecules.

## The Wider Consequences of Long Covid

Long Covid is interfering with people's physical and mental health and their ability to work, indicating significant ramifications for not only the NHS but also the economy. More research is necessary before drawing definitive conclusions, but data indicate that Long Covid will have impacts across all facets of society. Below are key findings from existing research on the repercussions of Long Covid on economies, health-care systems and mental health.

### Negative Economic Implications

Long Covid is preventing people from getting to work and doing their jobs. A study that followed 150 patients who were treated as outpatients for mild to moderate Covid-19 in France between March and June 2020 showed that 11 per cent were still on sick leave at day 60.<sup>30</sup> Similarly, an online survey of 3,762 individuals with Long Covid from 56 countries found that 45.2 per cent of respondents reported requiring a reduced work schedule compared to pre-illness and 22.3 per cent were not working at the time of the survey due to their health condition.<sup>31</sup>

A similar situation is apparent from the UK's data as well. The NIHR found that 80 per cent of people with Long Covid felt that the condition affected their ability to work and over one-third said it had affected their finances.<sup>32</sup>

A study of 1,325 individuals' 12-month experiences at the UK's first dedicated post-Covid clinical service, including both hospitalised and non-hospitalised patients, found that less than half of employed individuals felt able to return to work full-time at their first assessment. The study concluded that significant ongoing symptoms were exhibited by both previously hospitalised and non-hospitalised patients, with substantial continuing health-care needs identified for both cohorts.<sup>33</sup>

### Health-Care Systems Becoming Overwhelmed

Long Covid poses two risks to health systems: the first is that there is a growing population experiencing Long Covid symptoms that will need multidisciplinary medical treatment for months following a Covid-19 infection. This, on top of the mounting waiting list for treatment of other conditions (cancer, surgeries and so on) will be a burden on health systems long after Covid-19 infections stabilise.

For example, an analysis of the health-insurance records of nearly 2 million Americans who caught Covid-19 last year highlights the scale of the issue among the population. The study found that one

month or more after their infection, 23 per cent of respondents sought medical treatment for new conditions they did not have before contracting the virus.

These findings from one of the largest Long Covid studies in the US highlight the impending backlog for health systems following a spate of Covid-19 infections. All age groups were affected, including children. Even individuals who had mild or asymptomatic acute Covid-19 infections reported Long Covid symptoms.<sup>34</sup> The breakdown of those experiencing lingering symptoms, according to severity of infection, was as follows:

- Nearly half of patients who were hospitalised for Covid-19
- 27 per cent of people who had mild or moderate symptoms
- 19 per cent of people who said they were asymptomatic

The study reported that the most common new health problems were pain (including nerve pain and muscle pain), breathing difficulties, malaise and fatigue, among many others. Additional issues included intestinal symptoms, migraines, skin problems, heart abnormalities, sleep disorders, and mental-health conditions such as anxiety and depression.<sup>35</sup>

The second risk facing health systems is the number of health-care workers who have Long Covid themselves and cannot work as a result. In the UK, the already overstretched NHS is facing additional pressure due to the fact that at least 122,000 NHS workers are experiencing Long Covid, according to figures from the NHS. That figure is greater than for any other occupational group, followed by the 114,000 teachers who report having the condition.<sup>36</sup>

The Guardian reported that patient care has been particularly affected because many of the NHS workers struggling with Long Covid are only able to work part-time, are too unwell to perform their usual duties, or need time off because they are in pain, exhausted or have cognitive symptoms such as brain fog. Dr Andrew Goddard, president of the Royal College of Physicians, announced that in February 2021 there were more NHS staff off work with Long Covid symptoms than with acute Covid-19 infections.<sup>37</sup>

This is not just the case in the UK. In the French study mentioned above where 11 per cent of respondents were still on sick leave 60 days after being discharged from hospital, half of that cohort were health-care workers.

### **Exacerbating Mental-Health Issues**

As many people with chronic illnesses will know, having an illness for a long period of time can be stressful and detrimental to a person's mental health and emotional wellbeing. Long Covid is no

exception. In addition to the challenges of dealing with a condition that we do not yet know all that much about, many Long Covid symptoms can force lifestyle changes upon individuals. Additionally, some patients reported feeling that they were not being believed by health-care professionals, friends, family or employers.

A study published in the *British Medical Journal* (BMJ) highlights several key reasons Long Covid has such an impact on mental health including, but not limited to: [38](#)

- The challenge of learning to deal with drastically reduced physical function, compounded by the cognitive and psychological effects of Long Covid.
- The inability to find and interpret advice about physical activity that is appropriately tailored for the condition.
- The struggle to accept reduced function (even if only temporarily) and the fear of a permanent reduction in physical and cognitive ability.

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## Vaccines and Long Covid

Covid-19 vaccines can play a number of roles: reducing mortality, reducing transmission and reducing Long Covid symptoms as well as mitigating or reversing existing Long Covid symptoms. This section focuses on emerging data that investigates the impact vaccines have had on mitigating existing Long Covid symptoms, as well as sharing emerging data on Long Covid prevention.

### Symptom Mitigation

A study from the University of Bristol, although very small in scale (testing 44 vaccinated patients against 22 unvaccinated ones), found that people experiencing Long Covid who had been vaccinated were more likely to see their symptoms improve or stay the same, compared to patients who had not received a jab.<sup>39</sup> It is also worth noting, for those who are hesitant about specific vaccines, that the outcomes in this study were the same for both recipients of the Pfizer-BioNTech vaccine and recipients of the Oxford University/AstraZeneca vaccine.<sup>40</sup>

The advocacy group LongCovidSOS, in partnership with the University of Exeter and the University of Kent, launched a survey in March 2021 to determine how people with Long Covid responded to Covid-19 vaccines. The responses of just over 800 people who had been vaccinated with at least one dose were analysed to determine the impact of the different vaccines across 14 common Long Covid symptoms. An analysis of the survey's results, which has yet to be peer reviewed, showed that 56.7 per cent of respondents experienced an overall improvement in symptoms, 24.6 per cent reported no change in symptoms, and 18.7 per cent reported that their symptoms had got worse.<sup>41</sup>

As a self-reporting survey that recruited participants over social media, and given that more than 80 per cent of respondents were female and over 90 per cent were white, this sample is not representative of any population. Additionally, there was no control group and it cannot be ruled out that some individuals who reported an improvement in their symptoms were just getting better naturally as time went on, regardless of vaccination status. However, study limitations aside, we agree with the recommendation made by the study's authors that more structured, longitudinal trials need to take place in order to confirm and expand on the study's findings.<sup>42</sup>

## Preventing Long Covid

Among 1,102,192 vaccinated UK adults from the COVID Symptom Study, 2,394 (0.2 per cent) people caught Covid-19 after being vaccinated between 8 December 2020 and 1 May 2021. One study that followed these 2,394 people found that individuals who contracted Covid-19 after vaccination were less likely to develop as many symptoms (if any) as non-vaccinated individuals who contracted Covid-19. If there is a correlation between the initial number of symptoms during an acute infection and the likelihood of developing Long Covid, this could be another early indicator of the positive effect that vaccination can have on Long Covid. <sup>43</sup>

Speaking with us about emerging data on the efficacy of vaccines, Professor Spector and Dr Steves indicate that vaccinations reduce the chance of someone getting Long Covid across age groups. On top of the 85 per cent protection against Covid-19 provided by double vaccination, people who were vaccinated before catching Covid-19 were 28 per cent less likely to have symptoms for more than 28 days in the over-60 age group, which is the one most affected, than unvaccinated Covid patients in the same age group. In the younger age groups, there was a significantly increased chance that people were completely asymptomatic. Dr Steves said: “This data, along with other studies emerging, paints a clear picture: vaccinations dramatically reduce your chance of getting Covid. If you do go on to get it, vaccination then further reduces your chance of getting Long Covid.”

**Figures 1a and 1b – How vaccinations provide substantial protection from Covid-19 in general and additional protection from Long Covid specifically**

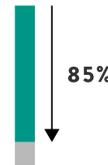
VACCINE DOSE 1



VACCINE DOSE 2



DOUBLE VACCINATION REDUCES  
OVERALL COVID INFECTION  
CHANCES BY 85%



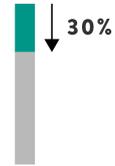
**VACCINE DOSE 1**



**VACCINE DOSE 2**



**DOUBLE VACCINATION REDUCES  
RISK OF DEVELOPING LONG COVID  
IF THEN INFECTED BY UP TO 30%**



While more comprehensive research into the impact of vaccination on Long Covid symptoms is needed, the existing preliminary evidence is growing, showing that it reduces symptoms and can prevent Long Covid emerging by up to 30 per cent.

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## Reducing Vaccine Hesitancy Around the World

Widespread vaccine hesitancy will slow our efforts to get Covid-19 under control and restrict our ability to return to some sort of permanent normality – not just in the UK, but globally. Until the whole world is vaccinated and safe, no single country is fully safe.

Because Long Covid appears to affect all ages, to varying degrees, effective Long Covid-awareness campaigns may help reduce hesitancy among those groups who feel at lower risk from the virus.

Emerging evidence suggests vaccines reduce the severity of symptoms of Long Covid, and the recent data shared with us by Professor Spector indicates that vaccination further reduces the chance of getting Long Covid, if infected, by up to 30 per cent.

Highlighting this data more clearly not just in the UK, but in countries around the world dealing with higher levels of vaccine hesitancy, will be important in ensuring all those who can be vaccinated get the jab.

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## Recommendations

1. **Conduct deeper investigations** into the potential relationship between vaccinations and Long Covid, building on existing evidence that: 1) Long Covid symptoms are alleviated post-vaccination, and 2) vaccinated individuals who still become infected are less likely to develop Long Covid afterwards.
2. **Continue funding Long Covid research.** With so many unanswered questions, this remains one of the highest priorities and one of the most promising routes to better treatment and a more comprehensive understanding of the condition.
3. **Ensure that existing Long Covid clinics are functioning effectively,** and that new clinics have enough resources to fully support patients, by **continuously monitoring their creation and performance** across the country.
4. **Carry out systematic population-level sampling** to determine if Long Covid causes permanent long-term damage to organs and if cognitive symptoms such as brain fog are permanent. The UK is in a position to lead on this because it has been at the forefront of Long Covid research thus far.
5. **Work jointly with the WHO** to address the issue of Long Covid at the global level, emphasising the need for additional research and coordination of data collection and allocating sufficient resources based on the UK's experience with Long Covid.
6. **Create Long Covid-awareness campaigns** as a way to drive vaccine uptake among hesitant groups, especially young people who do not view themselves at risk of a severe Covid-19 infection or its symptoms.
7. **Engage with support groups.** They have played a critical role in raising the issue of Long Covid to government and have provided essential support to those who have Long Covid.

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## Footnotes

1. ^ <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/prevalenceofongoingsymptomsfollowingcoronaviruscovid19infectionintheuk/1april2021>
  2. ^ <https://www.ons.gov.uk/news/statementsandletters/thevalenceoflongcovidssymptomsandcovid19complications>
  3. ^ <https://pubmed.ncbi.nlm.nih.gov/33825846/>
  4. ^ <https://covid19.who.int/>
  5. ^ <https://www.bmj.com/content/372/bmj.n405>
  6. ^ <https://www.nature.com/articles/d41586-020-02335-z>
  7. ^ <https://institute.global/policy/long-covid-reviewing-science-and-assessing-risk>
  8. ^ <https://www.nice.org.uk/news/article/nice-rcgp-and-sign-publish-guideline-on-managing-the-long-term-effects-of-covid-19>
  9. ^ <https://www.ons.gov.uk/news/statementsandletters/thevalenceoflongcovidssymptomsandcovid19complications>
  10. ^ <https://www.gov.uk/government/news/health-secretary-warns-of-long-term-effects-of-covid-19-as-new-film-released>
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