

# Vaccination May Increase Risk of Developing Long COVID



People who receive two doses of a COVID-19 vaccine may be more likely to develop long-COVID—a condition commonly thought only to be associated with SARS-CoV-2 infection.

In a recently published study [published in PLOS One](#), researchers examined data from 487 and 371 individuals at four weeks and six months post-SARS-CoV-2 infection, respectively, to estimate the incidence, characteristics, and predictors of long COVID among patients. Long COVID symptoms were reported by 29.2 percent of participants four weeks following infection. This number dropped to 9.4 percent at six months, indicating symptoms may diminish over time.

Researchers found that the greater the severity of infection a patient had, the more likely they were to experience long COVID. The incidence of long COVID at four weeks of follow-up in those who experienced mild/moderate disease was 23.4 percent compared with 62.5 percent in those with severe cases.

At six months, the incidence of long COVID was considerably

lower. For those with mild/moderate infection, only 7.2 percent reported symptoms compared with 23.1 percent in those with severe/critical cases. The most commonly reported symptom was fatigue. Other symptoms included cough, cognitive dysfunction or brain fog, and loss of taste and smell.

During the four-week follow-up, patients were more likely to experience long COVID if they had preexisting medical conditions, a higher number of symptoms during the acute phase of COVID-19 illness, if their infection was more severe or resulted in hospitalization, or if they had received two COVID-19 vaccine doses.

Although previous vaccination was associated with long COVID, the authors could not find “any interaction effect of COVID-19 vaccination and acute COVID-19 severity on causing Long COVID.”

This implies that prior vaccination “was independently associated with the occurrence of long-COVID,” cardiologist Dr. Peter McCullough explained in a recent Substack post.

## **How COVID-19 Vaccines May Contribute to Long COVID**

Nearly [7% of U.S. adults](#) surveyed in 2022 said they’ve experienced long COVID. Although definitions of long COVID differ, the [Centers for Disease Control and Prevention](#) broadly defines long COVID as “signs, symptoms, and conditions that continue to develop after acute COVID-19 infection” that can last for “weeks, months, or years.” The term “long COVID” is also used to refer to post-acute sequelae of SARS CoV-2 infection (PASC), long-haul COVID, and post-acute sequelae of COVID-19.

U.S. regulatory agencies claim [vaccinating against COVID-19](#) can reduce the risk of developing long COVID. One theory is

that COVID-19 vaccines prevent severe disease, and as researchers noted in the PLOS One study, severe disease is a predictor of developing the condition. However, some [research suggests](#) the condition may be caused by an immune overreaction to the SARS-CoV-2 spike protein that COVID-19 vaccines use to induce antibodies.

One theory is that vaccination may cause some people to generate a second round of antibodies that target the first. These antibodies could function like spike protein, which targets the angiotensin-converting enzyme 2 (ACE2) receptor—a cell surface protein—and enables the virus to enter cells. Like spike protein, these “rogue antibodies” might also bind to the ACE2 receptor and disrupt ACE2 signaling, which can cause conditions associated with long COVID.

“In my practice, the most severe cases of long-COVID are in vaccinated patients who also had severe and or multiple episodes of SARS-CoV-2 infection,” [Dr. McCullough](#) wrote on X. In his recent [Substack post](#), he said he believes long COVID symptoms are due to the retention of SARS-CoV-2 spike protein in cells and tissues after SARS-CoV-2 infection.

When people receive an mRNA COVID-19 vaccine, this produces a “massive additional load of full-length Spike protein” that can circulate in the blood for [six months or longer](#), he wrote.

Scientists from the National Institutes of Health in 2022 [conducted an observational study](#) (posted as a preprint but never published) of 23 individuals with long COVID. Researchers found that a “variety of neuropathic symptoms may manifest after SARS-CoV-2 vaccinations and in some patients might be an immune-mediated process.”

In a February study published in the [Journal of Medical Virology](#), researchers examined the levels of spike protein and viral RNA circulating in patients hospitalized for COVID-19 with and without long COVID. They found that spike protein and

viral RNA were more likely to be present in patients with long COVID. In patients with long COVID, 30 percent were positive for spike protein and viral RNA, whereas none of the individuals without long COVID were positive for both.

In a 2023 study in the [European Review for Medical and Pharmacological Sciences](#), researchers analyzed the serum of 81 individuals with long COVID syndrome and found viral spike protein in one patient after the infection had cleared and yielded a negative COVID-19 test, and vaccine spike protein in two patients two months after vaccination.

“This study, in agreement with other published investigations, demonstrates that both natural and vaccine spike protein may still be present in long-COVID patients, thus supporting the existence of a possible mechanism that causes the persistence of spike protein in the human body for much longer than predicted by early studies,” the authors wrote.