



COVID-19



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Post-COVID Conditions: Information for Healthcare Providers

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Background

Some patients who have been infected with SARS-CoV-2 have symptoms and clinical findings that persist beyond four weeks or can recur following initial recovery. Persistent symptoms and clinical findings can occur regardless of the severity of acute COVID-19. Medical and research communities are still learning about these post-acute symptoms and clinical findings.

Post-COVID conditions are being referred to by a wide range of names, including post-acute COVID-19, long-term effects of COVID, long COVID, post-acute COVID syndrome, chronic COVID, long-haul COVID, late sequelae, and others, as well as the research term [post-acute sequelae of SARS-CoV-2 infection \(PASC\)](#). [\[link\]](#) Although standardized case definitions are still being developed, in the broadest sense, it can be considered a lack of return to a usual state of health following acute COVID-19 illness. It might also include development of new or recurrent symptoms that occur after the symptoms of acute illness have resolved.

Scientific knowledge is still limited about these effects, including what causes them and how often they occur. Interim terminology will be updated as more information becomes available.

Post-COVID Conditions

We use **post-COVID conditions** as an umbrella term for the wide range of health consequences that are present **more than four weeks** after infection with SARS-CoV-2, the virus that causes COVID-19 illness. The time frame of more than four weeks provides a rough approximation of effects that occur beyond the acute period, but the timeframe might change as we learn more.

It can be difficult to distinguish symptoms caused by post-COVID conditions from symptoms that occur for other reasons. Patients experiencing the acute and post-acute effects of COVID-19, along with social isolation resulting from pandemic mitigation measures, frequently suffer from symptoms of depression, anxiety, or mood changes. Alternative reasons for health problems, such as other diagnoses, unmasking of pre-existing health conditions, or even reinfection. For clinicians considering whether new symptoms could be explained by reinfection, please refer to the [CDC guidance on investigating suspected reinfection](#).

It is also possible that some patients with post-COVID conditions will not have had positive tests for SARS-CoV-2 because of a lack of testing or inaccurate testing during the acute period, or because of waning antibody levels or false-negative antibody testing during follow up.

Multiorgan System Effects of COVID-19

Multiorgan effects of COVID-19 have been documented in most, if not all, body systems including cardiovascular, pulmonary, renal, dermatologic, neurologic, and psychiatric. [Multisystem inflammatory syndrome \(MIS\)](#) and autoimmune conditions can also occur after COVID-19. A wide variety of health effects can persist after the acute illness has resolved (e.g., pulmonary fibrosis, myocarditis). It is unknown how long multiorgan system effects might last and whether or not the effects could lead to chronic health conditions.

Longer effects of COVID-19 Treatment or Hospitalization

The post-COVID conditions also can include the **effects of COVID-19 treatment or hospitalization**, for example tracheal stenosis from prolonged intubation, severe weakness, and deconditioning. Some of these effects are similar to those from hospitalization for other respiratory infections or other conditions. This category can also encompass post-intensive care syndrome (PICS), which includes a range of health effects that remain after a critical illness. These effects can include severe weakness and post-traumatic stress disorder. Though the effects of hospitalization may not be unique to COVID-19 illness, they are considered post-COVID conditions if they occur after a documented SARS-CoV-2 infection and persist for more than four weeks.

Long COVID

Long COVID encompasses a wide range of symptoms and clinical findings that can occur in people with varying degrees of illness from acute SARS-CoV-2 infection, including patients who had mild or asymptomatic SARS-CoV-2 infection. Patient advocacy groups often refer to this condition as **long COVID**. Many of the symptoms and clinical findings reported to be associated with long COVID-19 are described below. These effects can overlap with multiorgan complications, or with effects of treatment or hospitalization. This category is heterogeneous and will likely be modified in the future, as it can include patients who have clinically important but poorly understood symptoms that can be persistent or intermittent after initial acute infection with SARS-CoV-2.

Clinicians and researchers are still in the early stages of understanding long COVID. Ways in which SARS-CoV-2 infection leads to reported symptoms are still being evaluated. To date, the most commonly reported persisting symptoms include:

- **Fatigue**
- **Difficulty thinking or concentrating** (sometimes referred to as “brain fog”)
- **Difficulty breathing** (with and without abnormal imaging and pulmonary function testing)
- **Cough**
- **Painful joints or muscles**
- **Chest pain**
- **Depression or anxiety**
- **Headache**
- **Fever**
- **Palpitations**
- **Loss of smell or taste**
- **Dizziness on standing**

Post-exertional malaise (PEM), a worsening of symptoms after physical or mental activities, has been reported in patient-led surveys.

Research on Post-COVID Conditions

The natural history of SARS-CoV-2 infection is currently being investigated. Researchers are actively studying the prevalence, mechanism, duration, and severity of symptoms following acute SARS-CoV-2 infection, as well as risk factors associated with post-COVID conditions. Whereas older patients and those with underlying health conditions might have an increased risk for severe disease, young people, including those who were physically fit before SARS-CoV-2 infection, have also reported symptoms lasting several months after acute illness.

Post-acute COVID care clinics are being established at medical centers across the United States, bringing together multidisciplinary teams to provide a comprehensive and coordinated treatment approach to COVID-19 aftercare. Survivor support groups are connecting people, providing support, and sharing resources with survivors and others affected by COVID-19. Multi-year studies will be crucial in elucidating post-COVID conditions.

CDC continues active investigation into the full spectrum of COVID-19 illness, from the acute phase to longer term effects and conditions. This work will help to establish a more complete understanding of the natural history of SARS-CoV-2 infection and COVID-19 related illnesses, which can inform healthcare strategies, clinical decision-making, and the public health response to this virus.

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