

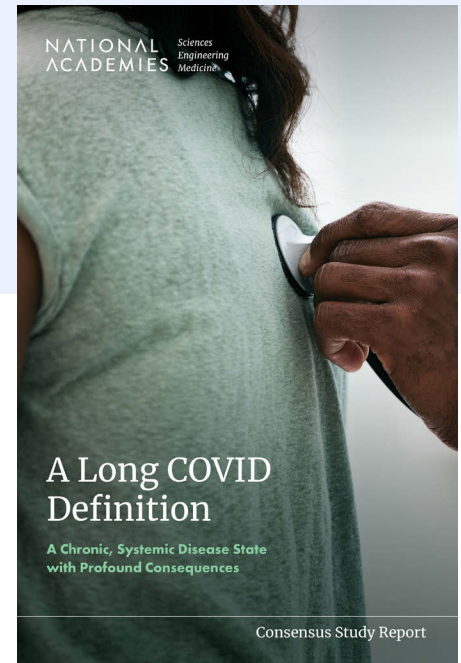
A Long COVID Definition

A Chronic, Systemic Disease State with Profound Consequences

Millions of individuals worldwide are experiencing a diversity of symptoms and health impacts after acute infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). These long-term health effects are known as Long COVID. Long COVID has serious medical, social, and economic consequences worldwide and can profoundly impact patients' health, functioning, quality of life, and work capacity.

At the request of the Administration for Strategic Preparedness and Response and the Office of the Assistant Secretary for Health (OASH), a committee convened by the National Academies of Sciences, Engineering, and Medicine developed a consensus definition for Long COVID that can be applied for broad uses. The committee comprised technical experts across disciplines and members whose lived experience as patients could inform the process of developing a definition.

Disease definition is an essential tool in health care that aids diagnosis, treatment, and research; it also has implications for access to supportive services post diagnosis. Government bodies, health organizations, and researchers have published working definitions and descriptions of Long COVID, but there is not yet a common, agreed-upon definition for Long COVID. Inconsistencies in definitions have created challenges, and a consensus definition could promote consistency in diagnosis, aid awareness efforts, help patients access appropriate care, services, and benefits, and help harmonize Long COVID research and surveillance. This report, *A Long COVID Definition: A Chronic, Systemic Disease State with Profound Consequences*, presents the **2024 NASEM Long COVID Definition**, summarizes the evidence



and considerations underlying this definition, and provides guidance for clinicians, researchers, and public health practitioners in applying the proposed definition.

2024 NASEM LONG COVID DEFINITION

The committee chose to put forth a single definition (see Box 1 and Figure 1) that can apply to adults and children. The definition refers to Long COVID as a disease state and categorizes Long COVID as an infection-associated chronic condition (IACC), which applies to a variety of chronic conditions that can be triggered by viruses, bacteria, fungi, or parasites.

KEY CONSIDERATIONS

The **2024 NASEM Long COVID Definition** is intentionally inclusive to ensure that all affected individuals suffering from Long COVID can receive a diagnosis. The definition states that Long COVID occurs after acute SARS-CoV-2

infection but does not require laboratory evidence of a previous infection. Symptoms or conditions must be present for a duration of at least 3 months, but the timing of those 3 months is unspecified. It is not necessary for symptoms to be present continuously from the time of the acute infection.

More than 200 symptoms and diagnosable conditions have been reported to occur with Long COVID, some patients have a fluctuating time course or delayed onset of symptoms, and no definitive Long COVID biomarker has yet been discovered. The definition provides a list of possible Long COVID symptoms and conditions, but many other manifestations are possible. Symptoms can range from mild to severe and can cause functional impairment. Long COVID may be diagnosed alongside associated conditions.

BOX 1

2024 NASEM Long COVID Definition

Long COVID (LC) is an infection-associated chronic condition (IACC) that occurs after SARS-CoV-2 infection and is present for at least 3 months as a continuous, relapsing and remitting, or progressive disease state that affects one or more organ systems.

LC manifests in multiple ways. A complete enumeration of possible signs, symptoms, and diagnosable conditions of LC would have hundreds of entries. Any organ system can be involved, and LC patients can present with

- **single or multiple symptoms, such as:** shortness of breath, cough, persistent fatigue, post-exertional malaise, difficulty concentrating, memory changes, recurring headache, lightheadedness, fast heart rate, sleep disturbance, problems with taste or smell, bloating, constipation, and diarrhea.
- **single or multiple diagnosable conditions, such as:** interstitial lung disease and hypoxemia, cardiovascular disease and arrhythmias, cognitive impairment, mood disorders, anxiety, migraine, stroke, blood clots, chronic kidney disease, postural orthostatic tachycardia syndrome (POTS) and other forms of dysautonomia, myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS), mast cell activation syndrome (MCAS), fibromyalgia, connective tissue diseases, hyperlipidemia, diabetes, and autoimmune disorders such as lupus, rheumatoid arthritis, and Sjogren's syndrome.

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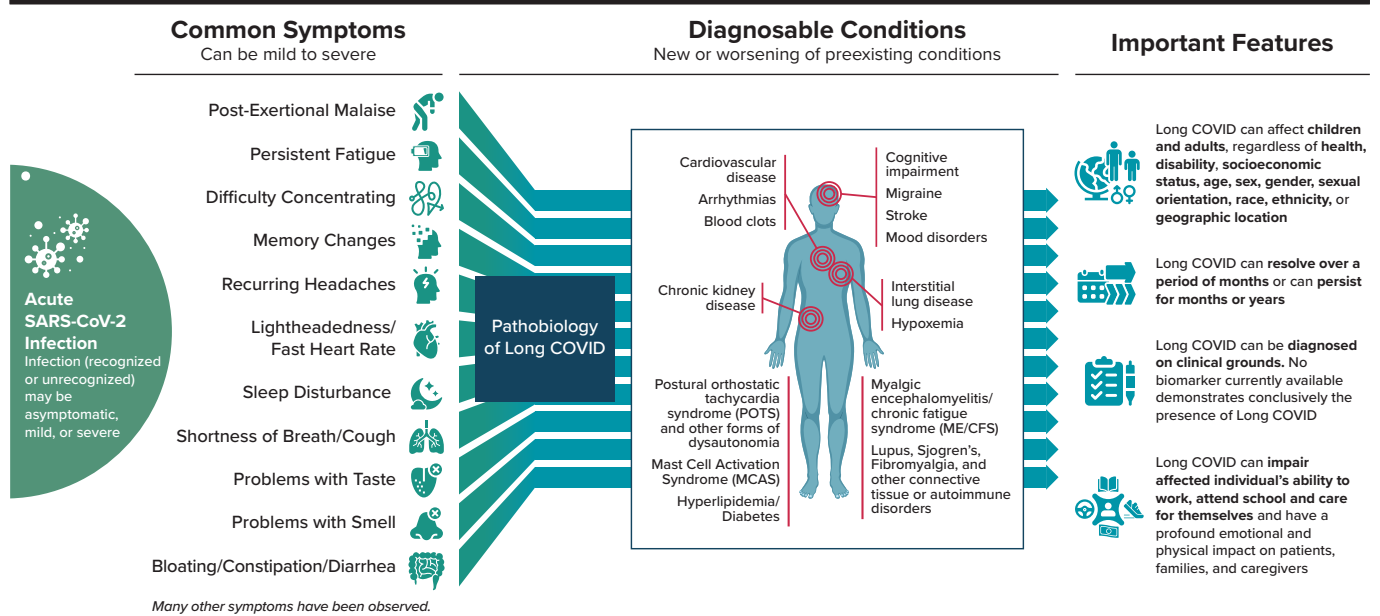
BOX 1 Continued

Important Features of LC:

- LC can follow asymptomatic, mild, or severe SARS-CoV-2 infection. Previous infections may have been recognized or unrecognized.
- LC can be continuous from the time of acute SARS-CoV-2 infection or can be delayed in onset for weeks or months following what had appeared to be full recovery from acute infection.
- LC can affect children and adults, regardless of health, disability, or socioeconomic status, age, sex, gender, sexual orientation, race, ethnicity, or geographic location.
- LC can exacerbate pre-existing health conditions or present as new conditions.
- LC can range from mild to severe. It can resolve over a period of months or can persist for months or years.
- LC can be diagnosed on clinical grounds. No biomarker currently available demonstrates conclusively the presence of LC.
- LC can impair individuals' ability to work, attend school, take care of family, and care for themselves. It can have a profound emotional and physical impact on patients and their families and caregivers.

The Disease State of Long COVID

An Infection-Associated Chronic Condition (IACC)



Can be continuous from acute infection or delayed in onset

Diagnosable when symptoms/conditions are intermittently or continuously present for at least 3 months

FIGURE 1 2024 NASEM Long COVID Definition.

Long COVID can affect anyone, regardless of the patient's identity, demographics, or previous state of health. Various risk factors, such as underlying comorbid conditions, may influence the risk and presentation of COVID-19 and Long COVID in a particular individual, but risk factors are not included explicitly in the definition.

ADOPTION AND IMPLEMENTATION

Federal, state, tribal, local, and territorial health authorities; clinical societies and associations; public health practitioners; clinicians; payers; researchers; drug industry; employers; educators; international organizations; and patients should adopt the **2024 NASEM Long COVID Definition** and should use the term Long COVID. The definition is intended to be applied to many purposes (clinical, research, and public health surveillance), but the committee notes that there is flexibility within the broad definition; for example, to restrict research eligibility to a subset of Long COVID patients.

MONITORING AND UPDATES

The **2024 NASEM Long COVID Definition** will need to be paired with a dissemination and education campaign to inform the public and key stakeholders. It will be valuable to have mechanisms in place for gauging how the **2024 NASEM Long COVID Definition** is understood,

how it is being used, what other elements need to be added, and whether it is being applied in a consistent and standardized way. The OASH Office of Long COVID Research and Practice and the Long COVID Coordination Council should lead the coordination and collaboration efforts across federal, state, tribal, local, and territorial agencies and other relevant entities, including international organizations.

The **2024 NASEM Long COVID Definition** will evolve as new evidence emerges and the understanding of Long COVID matures. A research agenda to improve the definition could focus on the key elements articulated above. In no more than 3 years, or when triggered by the emergence of relevant new knowledge, the OASH Office of Long COVID Research and Practice should convene a multi-disciplinary group, including individuals with lived experience, to reexamine and update the definition.

CONCLUDING REMARKS

The **2024 NASEM Long COVID Definition** recognizes the heterogeneity and complexity of Long COVID presentations and how Long COVID can affect individuals in multiple and profound ways. It is imperative to foster greater awareness, understanding, and support for those with Long COVID.

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FOR MORE INFORMATION

This Consensus Study Report Highlights was prepared by the Board on Health Sciences Policy based on the Consensus Study Report *A Long COVID Definition: A Chronic, Systemic Disease State with Profound Consequences* (2024).

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Copies of the Consensus Study Report are available from the National Academies Press, (800) 624-6242 or <https://nap.nationalacademies.org/catalog/27768>.

To read the full report, visit nationalacademies.org/long-covid-definition.

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