

How Common are New Symptoms and Conditions After COVID-19? Results from PCORnet

Why is this research needed?

Some people who are infected with the virus that causes COVID-19 continue to have symptoms, or develop new symptoms or health conditions, more than 4 weeks after first being infected. It is important to know which new symptoms or conditions might be more common among people who test positive for SARS-CoV-2, the virus that causes COVID-19, compared with people who tested negative for COVID-19.

Researchers studied the following symptoms and conditions:

- Shortness of breath
- Tiredness or fatigue
- Muscle weakness
- Brain fog (difficulty thinking or concentrating)
- Neurological and psychiatric disorders
- Type 2 diabetes

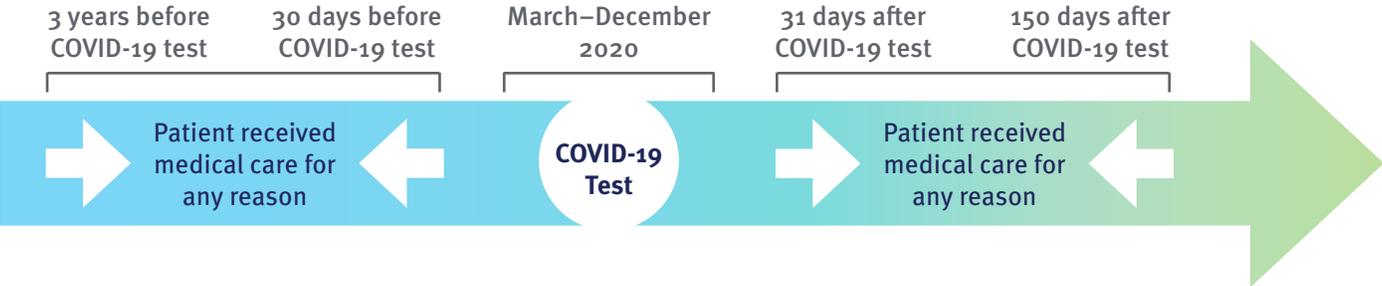
Research is needed to determine whether certain symptoms or conditions are associated with COVID-19. Information gleaned from this research will be useful to patients with COVID-19 for monitoring symptoms and making healthcare decisions. The research will also help doctors provide better medical treatment to patients who have tested positive for COVID-19.

Who participated in the study?

This study was conducted by the Centers for Disease Control and Prevention using PCORnet®, the National Patient-Centered Clinical Research Network. Researchers studied data from electronic health records of 1.8 million adults and 300,000 children from 42 PCORnet® network partners.

Patients were included in this study if they met 3 conditions:

The patient was **tested for COVID-19** between March and December of 2020. **AND** The patient received medical care, for any reason, 3 years to 30 days **before** they were tested for COVID-19. **AND** The patient received medical care, for any reason, 31 days to 150 days **after** they were tested for COVID-19.



What happened during the study?

Patients who were included in the study were separated into 4 groups.*

- COVID-19 positive and hospitalized
- COVID-19 positive and non-hospitalized
- COVID-19 negative and hospitalized
- COVID-19 negative and non-hospitalized

* Hospitalization status was based on the highest level of care received during the 16 days after the patients COVID-19 test.

Researchers used the patients’ medical records to find new symptoms and health conditions that started 31 to 150 days after the patient was tested for COVID-19.

What did researchers learn?

Researchers found that a small number of patients with a positive COVID-19 test were diagnosed with new symptoms and conditions such as shortness of breath, fatigue, and diabetes after illness or hospitalization. Patients who tested positive for COVID-19 were more likely to develop new symptoms and conditions than patients who tested negative for COVID-19.

The most common symptoms among adults 20 years and older who tested positive for COVID-19 included shortness of breath, fatigue, and sleep disorders. The most common symptoms among children and young adults under 20 years old who tested positive for COVID-19 were change in bowel habits, fatigue, and shortness of breath.

Researchers learned that the more severe a patient's COVID-19 symptoms were, the more likely they were to be diagnosed with new symptoms and conditions one to five months after testing positive for COVID-19. Among hospitalized adult patients who tested positive for COVID-19 patients who had been on a ventilator experienced new diagnoses of symptoms and conditions at a much higher rate than patients who had not been on a ventilator. In addition, hospitalized patients who tested positive for COVID-19 were more likely to experience new symptoms or conditions compared to non-hospitalized patients who tested COVID-19 positive.

	Mechanically Ventilated	Hospitalized	Non-hospitalized
Shortness of Breath	1.69 (1.55-1.84)	1.89 (1.85, 1.94)	1.09 (1.06, 1.12)
Fatigue	1.98 (1.85-2.10)	1.35 (1.30, 1.40)	0.95 (0.92, 0.98)
Sleep Disorders	1.11 (0.93-1.30)	1.12 (1.06, 1.18)	0.82 (0.79, 0.85)
Headache	0.78 (0.40-1.17)	0.97 (0.89, 1.06)	0.93 (0.90, 0.97)
Heart Rate Abnormality	1.24 (1.06-1.41)	1.26 (1.20, 1.32)	0.99 (0.96, 1.03)
Cognitive Dysfunction	1.16 (0.98-1.34)	1.17 (1.11, 1.23)	0.85 (0.82, 0.89)
Change in Bowel Habits	1.14 (0.94-1.35)	0.97 (0.90-1.03)	0.76 (0.72, 0.80)
Anxiety/Depression	1.13 (0.94-1.31)	0.89 (0.82-0.95)	0.90 (0.86-0.95)
Type 2 Diabetes	2.24 (2.08-2.40)	2.02 (1.96-2.08)	0.90 (0.86-0.95)
Peripheral nerve disorders	2.04 (1.83-2.40)	0.96 (0.86-1.05)	0.75 (0.70-0.80)
Myoneural disorders	5.77 (5.50-6.04)	2.11 (1.94-2.28)	0.82 (0.65-0.99)

Prevalence Ratio of new symptoms and conditions for Mechanically Ventilated, Hospitalized, and Non-hospitalized **adults**

Prevalence Ratio is a statistical term that researchers use to determine how much more likely a person in one group will experience an outcome than a person in another group. For example, in this study, researchers learned that the prevalence ratio for diabetes in adult hospitalized patients was 2.0. That means that adult hospitalized patients who tested positive for COVID-19 were 2 times more likely to develop diabetes than patients who tested negative for COVID-19.

Doctors should monitor the health of COVID-19 patients for longer than 1 month after the patient has tested positive for COVID-19.

Who conducted the study?

This study was conducted in collaboration with researchers participating in PCORnet® Network Partners, the National Patient-Centered Clinical Research Network, and researchers from the Centers for Disease Control and Prevention.

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