

## Monoclonal Antibodies for COVID-19

**Monoclonal antibodies, designed to mimic the body's natural immune response, are available as treatment for COVID-19 for patients at high risk of progression to severe disease.**

There are several approved treatments for coronavirus disease 2019 (COVID-19) in hospitalized patients but few for patients who are not sick enough to be hospitalized. Monoclonal antibodies are a new treatment for outpatients with COVID-19 who are at risk of progression to severe disease.

### What Is a Monoclonal Antibody?

An **antibody** is a protein that is naturally produced by the immune system in response to an infection. A monoclonal antibody is a molecule developed in a laboratory that is designed to mimic or enhance the body's natural immune system response against an invader, such as cancer or an infection. Monoclonal antibodies have an advantage over other types of treatment for infection because they are created to specifically target an essential part of the infectious process. A monoclonal antibody is created by exposing a white blood cell to a particular viral protein, which is then cloned to mass produce antibodies to target that virus. Prior to COVID-19, monoclonal antibodies were developed to treat several viral infections, such as Ebola and rabies.

### Monoclonal Antibody Treatment for COVID-19

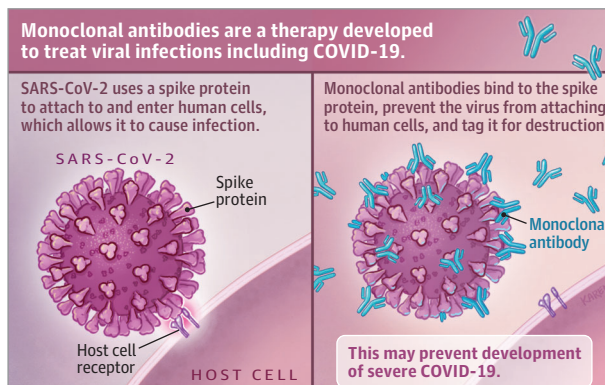
Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has a spike protein on its surface that helps the virus attach and enter human cells. Several monoclonal antibodies have been developed to bind to the spike protein of SARS-CoV-2 and block the virus from invading human cells. Patients with COVID-19 may receive an intravenous (IV) infusion of a monoclonal antibody, usually in an emergency department, an infusion center, or another outpatient setting (such as the patient's home or a nursing home).

### Monoclonal Antibodies for SARS-CoV-2 Variants

New variants of the SARS-CoV-2 virus have recently been detected. These variants emerge because of mutations in the genome of the virus. Monoclonal antibodies remain effective against the new SARS-CoV-2 variant called B.1.1.7 (first reported in the United Kingdom). However, some mutations may cause changes in the spike protein that could interfere with the effectiveness of currently available monoclonal antibodies.

### Potential Risks of Monoclonal Antibodies

Some patients could experience either an allergic or nonallergic infusion-related reaction. Both reactions are due to activation of the



immune system in response to the antibody but occur in different ways. Infusion-related reactions seem to be rare but can cause flushing, itching, shortness of breath, or low blood pressure. There are also potential side effects of receiving any IV medication, including pain, soreness, or bruising around the IV site.

### Who Should Have Monoclonal Antibody Treatment?

Currently, 2 monoclonal antibody products are being used to treat COVID-19 through a US Food and Drug Administration (FDA) Emergency Use Authorization. Although researchers are still learning which patients with COVID-19 are most likely to benefit from monoclonal antibody therapy, early data suggest greater benefit in high-risk patients, including those older than 65 years, with a suppressed immune system, or with certain medical conditions including obesity. Monoclonal antibodies are intended for patients recently diagnosed as having COVID-19 who are not sick enough to be in the hospital but who have some risk factors for severe infection. Giving the infusion as early as possible in the course of infection is important, so patients should seek medical care and testing as soon as they develop symptoms.

### FOR MORE INFORMATION

Centers for Disease Control and Prevention

[www.cdc.gov/coronavirus/2019-ncov/your-health/treatments-for-severe-illness.html](https://www.cdc.gov/coronavirus/2019-ncov/your-health/treatments-for-severe-illness.html)

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**Sources:** Kim PS, Read SW, Fauci AS. Therapy for early COVID-19: a critical need. *JAMA*. 2020;324(21):2149-2150. doi:10.1001/jama.2020.22813  
Gottlieb RL, Nirula A, Chen P, et al. Effect of bamlanivimab as monotherapy or in combination with etesevimab on viral load in patients with mild to moderate COVID-19. *JAMA*. Published online January 21, 2021. doi:10.1001/jama.2021.0202

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