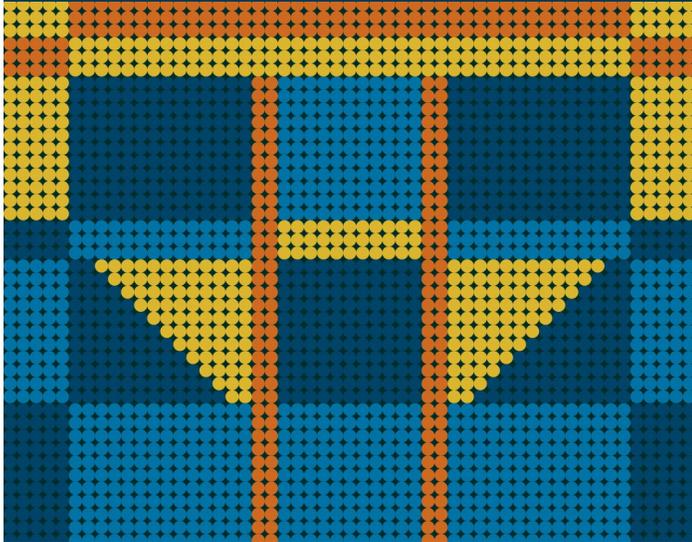


# Myocarditis, Pericarditis, and mRNA Vaccines



Increased cases of myocarditis and pericarditis have been reported in the United States after mRNA COVID-19 vaccination, particularly in adolescents and young adults.

This fact sheet contains information that will help providers understand myocarditis, pericarditis, and their possible link to some COVID-19 vaccines. It will also provide talking points for discussing these topics with their patients.

## What are myocarditis and pericarditis?

Myocarditis is an inflammation of the heart muscle. Pericarditis is an inflammation of the outer lining of the heart. The body's immune system can cause inflammation, often in response to an infection or some other trigger.<sup>1</sup>

## What do we know about the connection to COVID-19 vaccination?

The CDC has been monitoring reports of myocarditis and pericarditis after COVID-19 vaccination and has determined there is a probable association between myocarditis and pericarditis and mRNA COVID-19 vaccines (i.e., Pfizer-BioNTech and Moderna).

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Reports of myocarditis and pericarditis are rare overall. Cases have occurred more commonly in male adolescents and young adults under the age of 30, typically within the several days following COVID-19 vaccination.

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The CDC estimates rates of myocarditis or pericarditis in people who have received both doses of an mRNA COVID-19 vaccine are about 12 cases per million doses distributed. By contrast, rates of cardiac involvement following COVID-19 infection are about 1.5–2% in adults, or 15,000–20,000 cases per million adults.

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Most patients who developed myocarditis after vaccination responded well and felt better after rest and minimal treatment.<sup>2</sup>

## What are the symptoms of myocarditis?

CDC recommends that recently vaccinated people seek medical attention if they develop any of these symptoms after vaccination, particularly in the first week:

- Chest pain
- Shortness of breath
- Feelings of having a fast-beating, fluttering, or pounding heart<sup>2</sup>

## Diagnosing Myocarditis or Pericarditis after Vaccination

Consider myocarditis and pericarditis for adolescents or young adults experiencing chest pain, shortness of breath, or palpitations, as other coronary events are less likely to be the source of these symptoms for younger populations.

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Ask about prior COVID-19 vaccination and other relevant medical history if you identify symptoms related to myocarditis or pericarditis.

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Rule out other potential causes of myocarditis and pericarditis. Consider consultation with infectious disease and/or rheumatology to assist in this evaluation.

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If a patient develops myocarditis or pericarditis after the first dose of a COVID-19 vaccine, you can request a clinical consult before administering the second dose.

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Consider an ECG, troponin levels, and inflammatory markers such as C-reactive protein and erythrocyte sedimentation rate for initial evaluation. In the event of normal ECG, troponin, and inflammatory markers, myocarditis or pericarditis are unlikely.

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For suspected cases of myocarditis or pericarditis, consider consulting with cardiology. Evaluation and management may vary depending on patient age, clinical presentation, potential causes, or preferences of the provider and patient.

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Consult recommendations from the American Heart Association and the American College of Cardiology for follow-up care of patients with myocarditis or pericarditis.<sup>3</sup>

## Reporting Myocarditis or Pericarditis after Vaccination

Report all cases of myocarditis or pericarditis after vaccination to the Vaccine Adverse Event Reporting System (VAERS).

Reporting is mandatory and should be done by the provider diagnosing myocarditis or pericarditis. The responsibility lies with the diagnosing provider, not the vaccine administrator.

## Talking Points for Providers

It is normal for individuals to have concerns about the risks and benefits of COVID-19 vaccination. Here are some talking points that providers can use to discuss myocarditis or pericarditis and COVID-19 vaccination with their patients.

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The known and possible benefits of COVID-19 vaccination continue to outweigh the known and possible risks of vaccination, including the rare risk of myocarditis or pericarditis.

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The risk of myocarditis or pericarditis is rare and most respond well to rest and minimal treatment.

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CDC continues to recommend COVID-19 vaccination for everyone 12 years and older because the risk of serious complications related to COVID-19, such as hospitalization or death, is greater than the risk of mild complications from the vaccine such as myocarditis and pericarditis.

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Getting vaccinated is the best way to help protect yourself, your relatives, and your community from COVID-19.

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COVID-19 vaccines have also been shown to protect against newer, more dangerous variants of the virus and against Multi-System Inflammatory Syndrome (often called MIS-Children or MIS-C) and long-term symptoms related to COVID-19 (“long COVID”).

### More Information for Patients

CDC — Myocarditis and Pericarditis Following mRNA COVID-19 Vaccination [www.cdc.gov/coronavirus/2019-ncov/vaccines/safety/myocarditis.html](https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety/myocarditis.html)

### More Information for Providers

CDC — Clinical Considerations for Myocarditis and Pericarditis [www.cdc.gov/vaccines/covid-19/clinical-considerations/myocarditis.html](https://www.cdc.gov/vaccines/covid-19/clinical-considerations/myocarditis.html)

### References

1. Myocarditis. Centers for Disease Control and Prevention. <https://www.cdc.gov/dhbsp/myocarditis.htm>. Last Updated May 28, 2021. Accessed July 2, 2021.
2. Myocarditis and Pericarditis Following mRNA COVID-19 Vaccination. Centers for Disease Control and Prevention. <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety/myocarditis.html>. Last Updated June 23, 2021. Accessed July 2, 2021.
3. Clinical Considerations: Myocarditis and Pericarditis after Receipt of mRNA COVID-19 Vaccines Among Adolescents and Young Adults. <https://www.cdc.gov/vaccines/covid-19/clinical-considerations/myocarditis.html>. Last Updated May 28, 2021. Accessed July 2, 2021.