

[Vaccines & Immunizations Home](#)

Clinical Considerations: Myocarditis and Pericarditis after Receipt of mRNA COVID-19 Vaccines Among Adolescents and Young Adults

Summary

In April 2021, increased cases of myocarditis and pericarditis were reported in the United States after mRNA COVID-19 vaccination (Pfizer-BioNTech and Moderna). Data from multiple studies show a rare risk for myocarditis and/or pericarditis following receipt of mRNA COVID-19 vaccines. These rare cases of myocarditis or pericarditis have occurred most frequently in adolescent and young adult males, ages 16 years and older, within 7 days after receiving the second dose of an mRNA COVID-19 vaccine (Pfizer-BioNTech and Moderna). There has not been a similar reporting pattern observed after receipt of the Janssen COVID-19 Vaccine (Johnson & Johnson).

CDC continues to recommend [COVID-19 vaccination](#) for everyone 6 months of age and older. The Advisory Committee on Immunization Practices (ACIP) and CDC have determined that the benefits (such as prevention of COVID-19 cases and its severe outcomes) outweigh the risks of myocarditis and pericarditis after receipt of mRNA COVID-19 vaccines.

Background

Myocarditis is inflammation of the heart muscle, and pericarditis is inflammation of the lining outside the heart. In both cases, the body's immune system is causing inflammation in response to an infection or some other trigger. CDC has published case definitions for [myocarditis and pericarditis](#).

The severity of cases of myocarditis and pericarditis can vary. For most cases of myocarditis and pericarditis following vaccination with an mRNA COVID-19 vaccine, patients who presented for medical care have responded well to medications and rest and had prompt improvement of symptoms. CDC is assessing [long term outcomes](#) of myocarditis after mRNA COVID-19 vaccination. Preliminary data from surveys conducted at least 90 days after the myocarditis diagnosis showed most patients were fully recovered from their myocarditis.

Recommendations for Clinicians

- [Report all cases of myocarditis and pericarditis post COVID-19 vaccination to VAERS](#) [↗](#).
- Consider myocarditis and pericarditis in persons with acute chest pain, shortness of breath, or palpitations, particularly in adolescents and young adults. Younger children who have myocarditis or pericarditis may have non-specific symptoms such as irritability, vomiting, poor feeding, tachypnea, or lethargy.
- Ask about prior COVID-19 vaccination if you identify these symptoms, as well as relevant other medical, travel, and social history.
- For initial evaluation, consider an ECG, troponin level, and inflammatory markers such as C-reactive protein and erythrocyte sedimentation rate. In the setting of normal ECG, troponin, and inflammatory markers, myocarditis or pericarditis are unlikely.
- For suspected cases, consider consultation with cardiology for assistance with cardiac evaluation and management. Evaluation and management may vary depending on the patient age, clinical presentation, potential causes, or practice preference of the provider.

- For follow-up of patients with myocarditis, consult the guidance from the [American Heart Association](#) and [American College of Cardiology](#) .
- It is important to rule out other potential causes of myocarditis and pericarditis. Consider consultation with infectious disease and/or rheumatology to assist in this evaluation.
 - Where available, evaluate for potential causes of myocarditis and pericarditis, particularly acute COVID-19 infection (such as PCR testing), current or prior SARS-CoV-2 infection (such as, detection of SARS-CoV-2 antibodies), and other viral causes (such as, enterovirus PCR and comprehensive respiratory viral pathogen testing).
- After reviewing available data on the risks and benefits, ACIP and CDC determined that the benefits (such as prevention of COVID-19 cases and its severe outcomes) outweigh the risks of myocarditis and pericarditis after receipt of mRNA COVID-19 vaccines
- CDC continues to recommend [COVID-19 vaccination](#) for everyone 6 months of age and older
- If myocarditis or pericarditis is diagnosed after a dose of mRNA COVID vaccine, before giving additional doses, please refer to the latest guidance under the ‘Myocarditis and Pericarditis’ section of the [CDC Interim Clinical Considerations for Use of COVID-19 Vaccines](#).

For more information

- NIH materials on [myocarditis and pericarditis](#)
- Frequently asked questions about VAERS reporting for COVID-19 vaccines [VAERS – FAQs \(hhs.gov\)](#)
- How to report to [VAERS](#)

Page last reviewed: September 29, 2022