



Reports of myocarditis/pericarditis after COVID-19 vaccination

FAQ for health-care providers

Summary:

The Public Health Agency of Canada (PHAC), Health Canada and Public Health Ontario (PHO) are closely monitoring rare reports of potential myocarditis/pericarditis following a COVID-19 mRNA vaccine, including those among youth. In Canada, there have been a small number of these reports and no conclusive association has been established between myocarditis/pericarditis and mRNA vaccines at this point.

Based on the reports received, Health Canada and PHAC are not yet seeing higher rates of myocarditis/pericarditis than would normally be expected in the general population. To date, PHO has received reports of a small number of cases of myocarditis/pericarditis in the 12 to 17 age group in Ontario.

Preventing the spread of COVID-19 remains extremely important, and COVID-19 vaccines continue to be recommended for all eligible individuals, including youth. Countries using mRNA vaccines in young adults and adolescents are continuing to recommend their use, but are following the emerging evidence on this topic very closely as further information is obtained.

The benefits of the mRNA vaccines continue to outweigh their risks in the authorized populations, as there are clear benefits of mRNA vaccines in reducing deaths and hospitalizations due to COVID-19 infections.

Q&A:

1) What symptoms should I look for?

Myocarditis and pericarditis involve inflammation of the heart muscle or the sac in which it sits in the chest, respectively, in response to an infection or some other trigger. Symptoms can include shortness of breath, chest pain, or the feeling of a rapid or abnormal heart rhythm. Healthcare providers should consider myocarditis and pericarditis in their evaluation of acute chest pain or pressure, arrhythmias, shortness of breath or other clinically compatible symptoms after vaccination.

2) What course of action should I take? Is there a pathway for referral?

All suspected cases of post-vaccine myocarditis/pericarditis should be assessed by a physician for an in-person evaluation. If clinically concerned about the presence of myocarditis/pericarditis then consult with a cardiologist, who may consider doing an electrocardiogram (ECG), troponins, or an echocardiogram. It would also be important to rule out other potential causes of myocarditis and pericarditis. Consultation with an infectious diseases specialist and/or rheumatologist may be advisable to assist in this evaluation, particularly for acute COVID-19 infection (e.g., PCR testing), prior SARS-CoV-2 infection (e.g., detection of SARS-CoV-2 nucleocapsid antibodies), and other viral etiologies

(e.g., enterovirus PCR and comprehensive respiratory viral pathogen testing). For patients in the Greater Toronto Area (GTA), a referral can be made to the Special Immunization Clinic at SickKids after their acute episode has resolved for further evaluation and advice on their second dose. For patients outside the GTA, please proceed along your usual referral pathways.

3) What do we know about previous cases?

International reports of myocarditis/pericarditis following vaccination with COVID-19 mRNA vaccines have emerged, including from Israel and the United States ([see PHO document for more information](#)). These international reports indicate that:

- Cases were more commonly reported after the second dose
- Symptom onset was typically within several days after vaccination
- Cases were mainly adolescents and young adults
- Cases were more often males compared to females
- Cases experienced mild illness, responded well to conservative treatment and rest, and their symptoms improved quickly.

4) How are these patients being treated?

Treatment modality depends on the severity of the presentation. Mild cases may be treated with non-steroidal anti-inflammatory drugs (NSAIDs) for symptomatic relief. Moderate to severe cases may require further treatments, which should be discussed with a cardiologist, an infectious diseases specialist and a rheumatologist.

5) What is the follow up?

All cases should be followed clinically with their treating physician. Cases with abnormal cardiologic investigations may require further follow-up by a cardiologist.

6) What happens if these patients don't seek medical attention?

The currently available data shows that myocarditis and pericarditis after vaccination is overall a mild disease that is self-resolving, and symptomatic relief can be achieved with NSAIDs alone. Anyone developing symptoms of myocarditis/pericarditis should see their doctor.

7) What are the long-term complications? Should they be followed for long-term effects?

Data are still being generated on this condition. At this early time, the small number of cases seen among adolescents to date in Ontario have been mild and have resolved without any concerns about potential long-term complications. Moderate and severe myocarditis/pericarditis may require more extensive investigation and longer follow-up by a cardiologist.

8) If a patient develops myocarditis/pericarditis after vaccination, should I also be concerned about concurrent MIS-C?

For patients who develop myocarditis, it is important to rule out MIS-C based on their overall clinical presentation using [these criteria](#). However, all reported cases of myocarditis/pericarditis after vaccination in Ontario and other countries have not shown any evidence of associated MIS-C.

9) Who should I report these cases to?

In Ontario, health care professionals should submit any reports of myocarditis and pericarditis following COVID-19 vaccines to their [local public health unit](#) using the [Ontario AEFI reporting form](#). Public Health Ontario (PHO) is monitoring this issue as part of enhanced COVID-19 vaccine safety surveillance and produces a [weekly summary](#) of all COVID-19 AEFIs in Ontario, including myocarditis/pericarditis.

10) If the patient has developed myocarditis/pericarditis after the first dose of the COVID-19 vaccine, should they be receiving a second dose?

Further guidance will be issued on this. In the interim, the decision to administer a second dose of the vaccine should be made on a case-by-case basis, until further data on this condition and the possible causality between mRNA vaccines and myocarditis/pericarditis are generated. For children in the GTA, a referral to an infectious diseases specialist through the Special Immunization Clinic at SickKids is recommended to assist with the decision regarding the second dose of the vaccine.