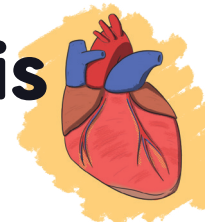


UPDATED: November 22, 2021

FREQUENTLY ASKED QUESTIONS

Myocarditis and Pericarditis After Covid-19 Vaccines



This guide was made for teens, their guardians, and young adults. We used information from the National Advisory Committee on Immunization (NACI), the Canadian Paediatric Society (CPS), the U.S. Centers for Disease Control and Prevention (CDC), and Public Health Ontario (PHO). **The data are from teens and adults.**

+ What are myocarditis and pericarditis?

Myocarditis is inflammation of the heart muscle (the myocardium). Pericarditis is inflammation of the sac (the pericardium) that goes around the heart. Inflammation happens when your immune system is activated. This can lead to reactions including swelling or pain in any part of the body. Healthcare professionals know about these conditions, and how to treat them.

+ What causes myocarditis and pericarditis?

These conditions can occur when the immune system is activated because of infections, injuries, medications, or other health problems.¹ Myocarditis and pericarditis can be caused by Covid-19 infections.^{1,2} These conditions have happened after mRNA Covid-19 vaccines (Moderna or Pfizer-BioNTech).³⁻⁷

+ What are the symptoms of myocarditis or pericarditis?

Symptoms can include chest pain (most common), feeling short of breath, and fluttering or pounding of the heart.¹ When these conditions occur after a Covid-19 vaccine, symptoms usually start in the first 7 days.^{1,3,6}

+ How are myocarditis and pericarditis diagnosed and treated?

Blood tests and an electrocardiogram (ECG) can be used to quickly diagnose myocarditis and pericarditis.¹ It is important to have these tests done while you have symptoms. The usual treatments are rest and anti-inflammatory medications.¹ Some people with these conditions may need more tests and treatment in hospital.¹ We are still learning about myocarditis and pericarditis after Covid-19 vaccines. Experts do not believe there will be long-term effects in most people who have these conditions after a Covid-19 vaccine.

+ How often do myocarditis and pericarditis happen after a Covid-19 infection?

Myocarditis and pericarditis happen **far more often after a Covid-19 infection** than after Covid-19 vaccines. In a study of hospitalized people of all ages in the United States between March 2020 and January 2021, the risk of myocarditis was **16 times higher** for people with Covid-19 infections. The overall rate of myocarditis for people hospitalized with Covid-19 was 1,456 per million (0.1456%).²

Covid-19 is very contagious. Most people will be exposed to Covid-19 in the next year. Unvaccinated people are much more likely to get Covid-19.

Focused Covid Communication is: Andrea Chittle, MD; Department of Family Medicine, McMaster University. Kelly Grindrod,

BScPharm, PharmD, MSc; School of Pharmacy, University of Waterloo. Noah Ivers, MD, PhD; Women's College Hospital-University of Toronto. Samira Jeimy, MD, PhD, FRCPC; Division of Clinical Immunology and Allergy, Department of Medicine, Western University. Kate Miller, MD; Department of Family Medicine, McMaster University. Menaka Pai, MSc, MD, FRCPC; Department of Medicine, McMaster University. Adrian Poon, BA; University of Waterloo. Sabina Vohra-Miller, MSc; Unambiguous Science. Kristen Watt, BScPhm, RPh. Holly Witteman, PhD; Department of Family & Emergency Medicine, Université Laval. Samantha Yammine, PhD; Science Sam Media.

Reviewed by: Rosemary Killeen, BScPhm, PGCert, RPh, School of Pharmacy, University of Waterloo. Lillian Lai, MHA, MD, Paediatric Cardiologist, Children's Hospital of Eastern of Ontario, Assistant Professor, University of Ottawa. Sherryn Rambihar, MD, MHPE, FRCPC, FASE, Adjunct Assistant Professor, Division of Cardiology, University of Toronto.





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♦ How often do myocarditis/pericarditis happen after a Covid-19 vaccine in teen and adults?

The rate of myocarditis and pericarditis in Ontario, Canada is 10.5 per 1 million doses of the Pfizer vaccine (0.0011%) and 24.7 per 1 million doses of the Moderna vaccine (0.0025%) (see Table 1).³ These conditions are most common in males.¹⁻⁷ They are most common in people younger than 30.¹⁻⁷ They happen more often after dose 2.¹⁻⁷ The risk seems to be higher after the Moderna vaccine.^{3,6} In some provinces, the Pfizer vaccine is preferred for people 24 years old and younger.^{8,9} NACI has advised dose 1 and 2 be separated by at least 8 weeks.⁶ This may lower the risk of myocarditis and pericarditis.

Table 1. Myocarditis and pericarditis after mRNA Covid-19 vaccines in Ontario, Canada (December 13, 2020 to September 4, 2021).³

Sex	Age	Dose 1 Rate of myocarditis and pericarditis per 1 million doses (%)		Dose 2 Rate of myocarditis and pericarditis per 1 million doses (%)	
		Pfizer 	Moderna 	Pfizer 	Moderna 
Female	12-17	7.9 (0.0015%)	N/A*	12.0 (0.0012%)	N/A*
	18-24	12.5 (0.0013%)	17.4 (0.0017%)	7.2 (0.0007%)	40.0 (0.0040%)
	25-39	5.3 (0.0005%)	7.5 (0.0008%)	13.2 (0.0013%)	14.5 (0.0015%)
	40+	1.6 (0.0002%)	6.6 (0.0007%)	3.8 (0.0004%)	2.7 (0.0003%)
Male	12-17	35.9 (0.0036%)	N/A*	91.6 (0.0092%)	N/A*
	18-24	28.1 (0.0028%)	15.2 (0.0015%)	43.4 (0.0043%)	283.4 (0.0283%)
	25-39	12.4 (0.0012%)	13.3 (0.0013%)	13.4 (0.0013%)	63.9 (0.0064%)
	40+	5.8 (0.0006%)	12.3 (0.0012%)	7.4 (0.0007%)	14.1 (0.0014%)

(Source: Public Health Ontario, 2021)³

*The Moderna vaccine has not been used in this age group.

♦ If someone notices symptoms, what should they do?

If symptoms are mild, see a healthcare provider within 24 hours.

If symptoms are severe, getting in the way of your normal activities, or are getting worse, see a healthcare provider right away.

People with heart problems do not seem to be at higher risk of these conditions. However, people with heart or lung disease can become very sick with myocarditis or pericarditis. Anyone with heart or lung disease who has these symptoms should see a healthcare provider right away.

♦ Is myocarditis or pericarditis after a Covid-19 vaccine a reason for medical exemption?

Yes. People who were diagnosed with myocarditis or pericarditis after a Covid-19 vaccine should not have any more doses at this time.⁶ Speak with your healthcare team for advice if you or your child had myocarditis or pericarditis after a Covid-19 vaccine. People with prior myocarditis or pericarditis should speak with their healthcare team for advice. For more information about medical exemptions to Covid-19 vaccines, visit: https://uwaterloo.ca/pharmacy/sites/ca.pharmacy/files/uploads/files/covid-19_vaccine_medical_exemptions_0.pdf

NACI's Recommendations on the Use of Covid-19 Vaccines are updated often. You can find the most recent guidelines here: www.canada.ca/en/public-health/services/immunization/national-advisory-committee-on-immunization-naci/recommendations-use-covid-19-vaccines.html

¹ www.cps.ca/en/documents/position/covid-19-vaccine-for-children

² www.cdc.gov/mmwr/volumes/70/wr/mm7035e5.htm

³ www.publichealthontario.ca/-/media/documents/ncov/epi/covid-19-myocarditis-pericarditis-vaccines-epi.pdf?sc_lang=en

⁴ www.cdc.gov/mmwr/volumes/70/wr/mm7027e2.htm

⁵ www.jamanetwork.com/journals/jamainternalmedicine/fullarticle/2784800

⁶ www.canada.ca/en/public-health/services/immunization/national-advisory-committee-on-immunization-naci.html

⁷ www.nejm.org/doi/full/10.1056/nejmoa2110475

⁸ www.health.gov.on.ca/en/pro/programs/publichealth/coronavirus/docs/vaccine/COVID-19_vaccination_rec_special_populations.pdf

⁹ www.health.gov.on.ca/en/pro/programs/publichealth/coronavirus/docs/vaccine/COVID-19_vaccine_administration.pdf