Update on Vaccines and Myocarditis

December 6, 2021

19 TO ZERO
UNITED AGAINST COVID-19

What is Myocarditis/Pericarditis?

Myocarditis is inflammation of the heart muscle, and pericarditis is inflammation of the lining around the heart.

Myocarditis/Pericarditis in Canada

By November 26, 2021, there were **1,376** cases of myocarditis and/or pericarditis with reports submitted to the Public Health Agency of Canada (PHAC) and Health Canada from over 59 million administered doses of COVID-19 vaccines [1]. This equals a rate of **22.9** in 1 million.
Of these cases, 853 cases received the Pfizer-BioNTech vaccine, 495 cases received the Moderna vaccine, 25 cases received the COVISHIELD/AstraZeneca vaccine, and 3 were not specified.

Vaccine Adverse Event Reporting System (VAERS)

- Among males receiving an mRNA COVID-19 vaccine, the highest rate of myocarditis was in adolescents age 16-17, with a rate of **69.1** per million [2].
- 169,740,953 doses of mRNA vaccine have been administered to males as of Oct 6, 2021.

Reporting rates (per 1 million doses administered) of myocarditis among males after mRNA COVID-19 vaccines (n=797)

	Pfizer		Moderna	
	(Males)		(Males)	
Ages	Dose 1	Dose 2	Dose 1	Dose 2
12-15	**4.2**	**39.9**		
16-17	**5.7**	**69.1**		
18-24	**2.3**	**36.8**	**6.1**	**38.5**
25-29	1.3	**10.8**	**3.4**	**17.2**
30-39	0.5	**5.2**	**2.3**	**6.7**
40-49	0.3	**2.0**	0.2	**2.9**
50-64	0.2	0.3	0.5	0.6
65+	0.2	0.1	0.1	0.3

Reporting rates exceed background incidence**

Myocarditis in Kids

In the clinical trial of the Pfizer-BioNTech COVID-19 vaccine in children age 5 to 11, there were **no cases of myocarditis or pericarditis** (n=1518). A 5-year follow-up study will be done to evaluate the long term sequelae of myocarditis/pericarditis after vaccination [3].

Patients with vaccine-related myocarditis return to normal cardiac function very quickly

A retrospective cohort study compared patients <21 years of age with classic pre-pandemic viral myocarditis (n=43), MIS-C myocarditis (n=149) and COVID-19 vaccine-related myocarditis (n=9) [4].

Within three days of hospitalization, **100% of those with vaccine-related myocarditis had returned to normal ejection fractions**, compared to 47% of those with classic myocarditis and 76% of those with MIS-C myocarditis.

References
1. Government of Canada. Reported side effects following COVID-19 vaccination in Canada. Available at: https://health-infobase.canada.ca/covid-19/vaccine-safety/. Accessed November 22, 2021.
2. Food and Drug Administration (FDA). Vaccines and Related Biological Products Advisory Committee Meeting. mRNA COVID-19 Vaccine-Associated Myocarditis. Available at: https://www.fda.gov/media/153514/download. Accessed November 22, 2021.
3. Food and Drug Administration (FDA). Vaccines and Related Biological Products Advisory Committee October 26, 2021 Meeting Document. Available at: https://www.fda.gov/media/153409/download. Accessed October 27, 2021.
4. Patel, T. et al. Comparison of MIS-C Related Myocarditis, Classic Viral Myocarditis, and COVID-19 Vaccine related Myocarditis in Children. medRxiv 2021.

Update on Vaccines and Myocarditis

December 6, 2021

National Advisory Committee on Immunization (NACI) Recommendations

- Vaccination for adolescents and young adults is recommended as the **benefits of vaccination to prevent COVID-19 outweigh very rare cases of myocarditis/pericarditis.**
- NACI recommends **two 10µg doses** of the Pfizer vaccine for children 5-11 years of age.
- For children, **longer intervals (≥ 8 weeks) between doses is recommended** as they result in higher effectiveness that may last longer and may be associated with lower risk of myocarditis.
- Children 11 years old who receive the 10µg dose but turn 12 before their 2nd dose may receive a 30µg dose.
- Children who had **MIS-C should postpone vaccination until recovery** or after 90 days since diagnosis.
- Individuals who have experienced myocarditis or pericarditis following vaccination with a first dose of an mRNA COVID-19 vaccine **should defer the second dose in the vaccination series until more information is available.**

References
1. Government of Canada. Recommendations on the use of COVID-19 vaccines. Available at: https://www.canada.ca/en/public-health/services/immunization/national-advisory-committee-on-immunization-naci/recommendations-use-covid-19-vaccines.html. Accessed November 22, 2021.
2. National Advisory Committee on Immunization (NACI). Recommendation on the use of the Pfizer-BioNTech COVID-19 vaccine (10 mcg) in children 5-11 years of age. Available at: https://www.canada.ca/content/dam/phac-aspc/documents/services/immunization/national-advisory-committee-on-immunization-naci/recommendations-use-covid-19-vaccines/pfizer-biontech-10-mcg-children-5-11-years-age/pfizer-biontech-10-mcg-children-5-11-years-age.pdf. Accessed November 22, 2021.