



Windsor
54 The Avenue Windsor VIC 3181

East Melbourne
132 Grey Street East Melbourne VIC 3002

Tel 03 9510 9020
Fax 03 9923 6627

www.victoriaheart.com.au
info@victoriaheart.com.au

VICTORIA HEART

Pfizer COVID-19 Vaccine & The Heart

Vaccination has emerged as an effective way to reduce the chance of developing COVID-19 related symptoms, hospitalisation, and death. A commonly used group of vaccines are the “mRNA-based vaccines”, which contain the genetic code for an important part of the SARS-CoV-2 virus, called the spike protein. After vaccination, the body makes copies of the spike protein allowing the body’s immune system to recognise and fight against the SARS-CoV-2 virus, which causes COVID-19 infection. The only current mRNA-based vaccine approved by the Therapeutic Goods Administration (TGA) in Australia is the Comirnaty (“Pfizer”) vaccine, provisionally approved for all people aged 12 years and older.

Researchers recently published data from the largest health care organization in Israel to evaluate the short-term safety of the “Pfizer” vaccine, where nearly 5 million people aged 16 and older had received two doses of this vaccine. The researchers found that the Pfizer COVID-19 vaccine was associated with an increased risk of myocarditis (inflammation of the heart muscle). They found that although myocarditis was rare, it was more common in the vaccinated group than the unvaccinated group, with an extra 2.7 cases of myocarditis for every 100,000 people in the vaccinated group, compared with the unvaccinated one. It appears that when this rare side effect does occur, young males appear to be at greatest risk.

COVID-19 infection was associated with an increased risk of heart attack, irregular heart beat, blood clots in the lungs or legs, kidney injury and bleeding inside the skull. For every 100,000 COVID-19 infections, there were an extra 25 heart attacks and 62 cases of blood clots in the lungs, for instance. Therefore, even in the worst-case scenarios of post-vaccination myocarditis modelled by the FDA, the benefits of vaccination still outweigh the risks.

So, what are the potential symptoms of myocarditis to look out for after receiving the Pfizer COVID-19 vaccine, and how long after the vaccine are they likely to occur? Our current data suggests that symptoms typically appear after 1-5 days of vaccination, most commonly after the second dose, and the most common symptom is chest pain, pressure, or tightness. This pain may be more pronounced with deep inspiration or lying flat and may be eased by sitting forward. Other associated symptoms may include palpitations (irregular heartbeat), syncope (fainting) or shortness of breath. Anybody who experiences any of these symptoms after having an mRNA COVID-19 vaccine should seek prompt medical attention, ideally by attending an Emergency Department.

Initial investigations for people presenting with symptoms or signs of myocarditis should include an **ECG**, blood tests to look for heart inflammation (cardiac troponin), chest x-ray, and an **echocardiogram**. In some instances, especially if the diagnosis is not clear using these tests, a cardiac MRI may also need to be performed. If myocarditis is confirmed, admission to hospital is usually required for cardiac monitoring, where supportive care may be instituted with anti-inflammatory and other medications. Following discharge, high intensity exercise and competitive sports should be avoided until complete resolution of symptoms and ECG changes, and normalisation of heart function on echocardiography. While we currently do not have long-term data regarding the prognosis of patients who develop myocarditis after vaccination, most cases seem to recover completely and have no ongoing impairment of cardiac function.



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Another common question is whether it safe to have the mRNA based COVID-19 vaccines if you have a history of heart problems? The answer is generally yes, including people with a history of the following conditions:

- myocarditis, pericarditis or endocarditis > 6 months prior to vaccination
- coronary artery disease, prior heart attack
- stable heart failure
- arrhythmia
- prior history of rheumatic heart disease
- most congenital heart disease
- patients with implantable cardiac devices such as pacemakers and defibrillators.

People with a history of any of the following conditions can also probably receive an mRNA-based COVID-19 vaccine but should consult their GP or cardiologist about the best timing of vaccination and whether any additional precautions are recommended:

- recent (i.e. within the past 6 months) or current inflammatory cardiac illness (e.g., myocarditis, pericarditis, endocarditis), acute rheumatic fever or acute rheumatic heart disease
- people aged 12-29 years with dilated cardiomyopathy, acute decompensated heart failure, complex or severe congenital heart disease including single ventricle (Fontan) circulation
- cardiac transplant recipients.

Finally, people who develop myocarditis attributed to their first dose of mRNA-based vaccines should defer further doses of an mRNA-based COVID-19 vaccine and discuss this with their treating doctor.

Finally, notwithstanding the mildly increased risk of myocarditis associated with mRNA-based COVID-19 vaccines, our advice is to ensure that we keep this in context with two important facts – firstly, that mRNA-based vaccines provide overwhelming protection against COVID-19 infection and its serious complications including hospitalisation and death, and secondly, that the risk of developing myocarditis is even higher among those who contract the COVID-19 virus compared to those that receive-mRNA based COVID-19 vaccination. Simply discuss any necessary precautions with your GP or cardiologist if you have pre-existing cardiac conditions and seek prompt medical care if you develop any potential symptoms of myocarditis after vaccination.

Reference:

Safety of the BNT162b2 mRNA Covid-19 Vaccine in a Nationwide Setting. *N Engl J Med.* 2021 Aug 25. N Barda, N Dagan, Y Ben-Shlomo et al.