



# Myocarditis, pericarditis and the COVID-19 vaccines in New Zealand

## Key questions about myocarditis and pericarditis for vaccinators and other health professionals

An increased risk of heart inflammation (myocarditis, pericarditis, or both) has been observed in people who have received COVID-19 vaccines, particularly mRNA COVID-19 vaccines in males under 40 years of age after the second vaccine dose.

This factsheet gives further details about the risk factors and diagnosis of myocarditis and pericarditis following immunisation with Comirnaty (Pfizer/BioNTech mRNA COVID-19 vaccine).

### What are myocarditis and pericarditis, and can they occur after COVID-19 vaccination?

Heart inflammation can affect the heart muscle (myocarditis), the lining around the heart (pericarditis) or both. An increased risk of myocarditis and pericarditis has been observed in people who have received mRNA COVID-19 vaccines after any dose, particularly in males under 40 years after the second vaccine dose. However, these conditions may occur in both males and females at any age and after any dose.

For 1–3 days after vaccination, some people can feel unwell with headaches, tiredness muscles aches, chills or a mild fever, this a normal response, and is more common after the second dose and in younger people. If unwell, you are advised **to rest, drink plenty of fluids and to avoid vigorous exercise**, until you are feeling better. If symptoms persist or worsen after a few days, to seek medical advice.

### How do you recognise myocarditis and pericarditis?

A key symptom of both myocarditis and pericarditis is chest pain. Other symptoms include chest heaviness, discomfort or tightness; shortness breath or breathing difficulty; feeling lightheaded, faint or dizzy; heart palpitations, racing or fluttering heart, or a feeling of skipped beats. Fever has also been reported.

One or more of these symptoms can occur shortly after vaccination due to stress or anxiety. However, if anyone experiences these symptoms after receiving a COVID-19 vaccination from more than 6 hours to a few weeks (typically around 1 to 5 days), they should seek immediate medical attention

### How likely is myocarditis or pericarditis after Comirnaty?

The benefits of vaccination in protecting against COVID-19 greatly outweigh the risks of adverse events including myocarditis.

- Confirmed cases of myocarditis or pericarditis are rare.
- Cases of myocarditis are more common following the second dose and in males aged 12 to 30 years. Even in this group, risk has been reported internationally to be from 1 to 13 per 100,000 vaccine doses. There is increasing evidence that the rate declines as the interval between doses increases up to 8 weeks. The risk following booster doses is lower than after dose two.
- The risk of pericarditis is highest in people aged 18-39 and risk is similar in males and females. Rates of pericarditis in Australia following Comirnaty are 3.7 per 100,000 for those aged 18-29 and 4 per 100,000 for those aged 30-39 years.
- There have been very few cases of myocarditis and/or pericarditis following vaccination in children aged 11 years or younger.

### How severe is myocarditis?

Most reported cases of myocarditis and pericarditis, linked to mRNA vaccination, have required hospital care for assessment and monitoring, because sudden death is a rare complication of myocarditis.

More than 80% of the reported cases have recovered quickly with rest and commonly used

oral medications. Longer-term follow-up of these cases is ongoing.

### **Advice about being vaccinated**

Comirnaty continues to be recommended for all people from age of 5 years. The only contraindication to the vaccine is anaphylaxis to a vaccine component which is very rare and requires specialist review. All who receive a COVID-19 vaccine should be advised of the very rare risk of myocarditis and pericarditis, the

## **In-depth information for health practitioners**

### **Potential risk**

A risk of myocarditis and pericarditis has been rarely observed in people who have received mRNA COVID-19 vaccines after any dose, but myocarditis risk is particularly in males aged 12 to under 40 years after the second vaccine dose (around 1 to 13 per 100,000 second doses). Myocarditis has also been reported following vaccination in children but at a much lower and near background rate. Pericarditis is a higher risk and is seen equally in males and females.

It is also important to be aware that other COVID-19 vaccines (including Nuvaxovid) have been associated with a very small but increased risk of myocarditis and pericarditis. In Australia there have been 13 reports of pericarditis for every 100,000 doses of Nuvaxovid given. This risk appears higher than for the mRNA COVID-19 vaccines, this may change since only a small number of doses have been given globally to date, but it is important to be aware of the potential risk.

IMAC emphasises that the overwhelming benefits of vaccination in protecting against COVID-19 greatly outweigh the rare risk of these conditions, and Comirnaty (Pfizer mRNA vaccine) continues to be recommended for most people. COVID-19 can also cause myocarditis and pericarditis; the risk from Omicron variant is lower than earlier variants.

### **Outcomes**

Most myocarditis and pericarditis cases linked to mRNA vaccination receive hospital care for

possible symptoms and what to do if such symptoms develop.

If feeling unwell after vaccination, it is advised to rest, drink plenty of fluids and avoid vigorous activities, such as going to the gym. Seek medical advice if symptoms worsen or persist for longer than 3 days.

All episodes of myocarditis and pericarditis following Comirnaty should be reported to CARM.  
**For further clinical advice and for plans for the patient's next vaccination, please contact IMAC.**

assessment and monitoring. Most reported cases have been mild, and patients have recovered quickly with standard treatment. However, sudden death is a rare complication of myocarditis so careful assessment and management of suspected cases is important. A follow-up of over 500 patients who had myocarditis following an mRNA vaccination found that over 80% were considered by their healthcare provider to be fully recovered but 26% remained on medications at more than 90 days after diagnosis. Longer term follow up studies are in progress. Those who develop myocarditis following vaccination should be referred to a cardiologist for assessment and ongoing follow up.

### **Diagnosis**

Symptoms of myocarditis usually appear from 1 to 5 (median 2) days of vaccination and include acute chest pain or pressure, pain with breathing, palpitations, increased sweating, fainting or dizziness or shortness of breath or breathing difficulties with exercise, at rest or when lying down.

People who experience any of these symptoms after having a COVID-19 vaccine should seek prompt medical attention.

Symptoms such as palpitations, which may include racing, fluttering heart, or feeling of skipped beats, chest pain or feeling short of breath can occur in the first hours after vaccination in some people – symptoms appearing in this time frame are consistent with an immunisation stress reaction. This is too soon after vaccine receipt for heart inflammation due to vaccination to appear.

Initial investigations for people presenting with symptoms or signs which may be consistent with myocarditis or pericarditis should include ECG, troponin, +/- CRP, chest X-ray, and investigations for other differential diagnoses as clinically indicated.

- Findings consistent with myocarditis include elevated troponin and ECG changes including paroxysmal or sustained atrial or ventricular arrhythmias, AV node conduction delays, intraventricular conduction defects or frequent atrial or ventricular ectopy.
- Those suggestive of pericarditis include a pericardial rub, and with a large pericardial effusion pulsus paradoxus and distant heart sounds may be evident on clinical examination. ECG changes with pericarditis can include widespread ST segment elevation or PR depression.

If initial screening investigations are abnormal, patients should urgently be referred to hospital for further investigations and cardiac monitoring. Patients with more severe clinical presentations may require referral prior to full investigations.

If clinical suspicion of myocarditis or pericarditis is high, further advice should be sought, even if screening investigations are thought to be normal. Myocarditis and pericarditis may present atypically (e.g., absence of chest pain or with nonspecific symptoms). It is important to include cardiac issues in the differential diagnosis in someone with ongoing nonspecific symptoms in the 1-2 weeks

**Note:** Adverse reactions to vaccines, including the COVID-19 vaccine may be covered by ACC as a treatment injury. Treatment injury does not cover ordinary consequences of vaccination. More information here: <https://www.acc.co.nz/for-providers/treatment-safety/#lodging-treatment-injury-claims> (<https://tinyurl.com/ACC-treatment-injury-claim>)

**CALL 0800 IMMUNE (466 863) for clinical advice**

following a COVID vaccine.

More information to assist in the diagnosis is available from [COVID-19 vaccination – Guidance on Myocarditis and Pericarditis after mRNA COVID-19 vaccines](https://tinyurl.com/Australia-myocarditis) (<https://tinyurl.com/Australia-myocarditis>).

#### **Precautions to vaccination with cardiac conditions**

Most pre-existing cardiac conditions are not regarded as contraindications to Comirnaty vaccine. However, young people who have active or clinically unstable heart disease, should be advised to seek medical care promptly if they develop new or worsening pre-existing symptoms. A precautionary review in the days after their vaccination may also be advised. Those with a history of pericarditis or myocarditis, unrelated to Comirnaty, may have the vaccination if the condition is completely resolved, (i.e. no symptoms for at least 3 months and no evidence of ongoing heart inflammation).

#### **Future vaccination**

People who develop myocarditis or pericarditis attributed to a COVID-19 vaccination are advised to defer further doses. Seek clinical advice from IMAC before offering alternative vaccine options. The individual risks and benefits of further vaccination should be considered. Vaccination is not advised for anyone with current active cardiac inflammation. High intensity exercise should be avoided until complete resolution of inflammation and normalisation of cardiac function.

All suspected episodes of myocarditis and pericarditis following Comirnaty should be notified to CARM.

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