

COVID-19 vaccine information for heart patients

The European Society of Cardiology Patient Forum has received many questions about vaccination for coronavirus (COVID-19). This is a compilation of useful recommendations from international authorities and medical societies.

This document provides basic information for heart patients on COVID-19 vaccines. It is not intended to take the place of medical advice, diagnosis or treatment.

- **Are all heart patients advised to receive the vaccine or are there specific exclusion criteria?**

It is important that all patients with cardiovascular conditions receive the COVID-19 vaccine. The vaccine does not necessarily prevent people from catching the COVID-19 infection, but it will reduce the likelihood of serious illness which may require hospital admission, and could result in death. People with heart disease may be at increased risk of dying from COVID-19 because the infection places stress on the heart through several mechanisms, including direct inflammation of the heart. Therefore, it is essential that all patients with heart disease accept the vaccination when offered.

Patients with heart disease and circulation conditions include those with atrial fibrillation, angina, cardiomyopathy, congenital heart disease, diabetes, dementia, heart attack, heart failure, heart transplant, pulmonary embolus (blood clot in the lungs), peripheral vascular disease (hardening of the arteries), stroke or transient ischaemic attack (minor stroke).

- **What is the impact of the vaccine on those who have an underlying cardiac condition (in an acute setting as well as when that condition is under control due to medication)?**

The COVID 19 vaccine trials included patients with heart disease and did not demonstrate any serious effects from the vaccine in such patients. The most common complaints in all patients included pain at the injection site, tiredness, headache, muscle pain or chills. The arm may be stiff and painful for a couple of days. Fatigue and chills are secondary to the effects of the immune system recognising the viral proteins as foreign. It does not mean that the vaccine has resulted in COVID 19 infection. It is possible that, during the second vaccine when the immune response to the vaccine is likely to be more exaggerated, patients who have severe heart disease and are generally breathless at rest may feel slightly more unwell due to a mild fever and flu-like symptoms. These effects will be short lived, lasting approximately 24-48 hours and respond to paracetamol and increased fluid intake.

A severe allergic reaction has the potential to make patients with heart disease very ill. This risk, however, is extremely rare, affecting one person out of 2 million. The benefits of being vaccinated far outweigh the risk of a serious allergic reaction and, therefore, the risk should not discourage people from receiving the vaccine.

- **Are there any known interactions of the vaccine with heart medications?**

There are no reported interactions between the vaccine and heart medications. It is essential that heart medications are not omitted prior to, or after, the vaccine. Some patients who are on blood thinning medications may develop tenderness, swelling and bruising around the injection site (see below).

- **I take an immunosuppressive medicine due to my heart transplant. Could immunosuppressive medicines conflict with the COVID-19 vaccine?**

The vaccines currently approved for use do not contain live virus, therefore, there is no risk of causing infection in patients with a weak immune system, including those who are taking immunosuppressant medications. Current vaccines consist of genetic material that enters the cells and promotes the synthesis of a spike protein of the virus. The spike protein alone is harmless but is enough to be recognised as foreign and trigger a defence reaction by the immune system. In the event of encountering the actual virus in the body, the memory of the immune system results in a strong response to the spike protein to destroy the virus.

Patients with a compromised immune reaction may not respond as strongly to the vaccine and will have to continue to take extra precautions even after being vaccinated.

- **I am on a blood thinning medication and normally get vaccines, like the flu shot, under the skin only, not into the muscle due to the bleeding risk. I have heard that the COVID-19 vaccines must be given into the muscle. What should I do to reduce my bleeding risk?**

Many patients with heart disease take anticoagulant medications such as warfarin (or other so called vitamin K antagonists) or direct oral anticoagulants (DOACs). Some patients also take combined anti-platelet drugs such as aspirin, clopidogrel, ticagrelor or prasugrel. Such patients are at an increased risk of bleeding after trauma, including a needle inserted into the arm muscle during COVID-19 vaccination. It is anticipated that the risk of bruising or swelling around the injection site will be slightly increased in these patients. A fine needle (23 or 25 gauge) should be used for the vaccination, followed by firm pressure applied to the site without rubbing for at least 2 minutes. The patient should be informed about the risk of haematoma from the injection. Patients who are on warfarin, are up to date with scheduled INR testing and with their INR below the upper level of the therapeutic range can receive intramuscular vaccination. Unlike the flu vaccine, the COVID-19 vaccine can only be given as an intramuscular injection.

- **Does a heart condition give you an enhanced vulnerability to contraindications (especially anaphylactic shock)?**

There is currently no evidence to suggest that heart conditions increase vulnerability to contraindications for the vaccine. As with all cases, patients with heart disease should inform health care professionals if they have ever had a severe anaphylactic reaction to an injectable vaccine and they should not be immunised. Individuals who have had severe reactions to other (non-vaccine related) substances, e.g., oral medications or shellfish, etc., may still receive the vaccine but will need to be monitored in clinic for up to 30 minutes afterwards. Patients should avoid the vaccine during febrile illness (illness with a fever).



- **After my first injection, can I go back to normal behaviour, e.g., can I mix with people, do I need to wear a mask, must I continue to sanitise my hands, can I hug people?**

The vaccine, being effective in 75-95% of the cases, does not fully prevent people from contracting the infection and becoming ill, although it does significantly reduce the severity of the illness in case of infection. It is also currently unclear whether an immunised individual can transmit the virus to others. However, based on what is known about the flu vaccine and information gained from individuals who have already had COVID-19 infection, researchers are hopeful that the vaccine will prevent transmission.

For all these reasons, people need to remain diligent about face coverings in public places, social distancing and meticulous hand-washing even after being vaccinated.

It is also important to emphasise that the immune response will not have started to respond sufficiently enough to prevent infection for up to 10 days after vaccination.

- **I understand that I need to get the vaccines two times. Must it be the same type of COVID-19 vaccine, or can you mix various types of vaccine from the first to the second vaccination?**

Ideally, the first and second dose should be of the same vaccine. You may get a different vaccine for each dose in exceptional circumstances, for example, if the same vaccine is no longer available, or there is not a record of which vaccine was given for the first dose. All the available vaccines are based on the spike protein, therefore it is likely the second dose will help to boost the response to the first dose, even if it is a different vaccine.

- **What will happen if you do not have your second vaccine dose within the recommended interval?**

Although immunity is acquired after 12 days of having the first dose of the vaccine, two doses are required to boost the immune response. Trial data from the Pfizer BioNTech vaccine suggests that 95% efficacy is achieved if the second vaccine is given after 21 days. There are no data to suggest that protection after 21 days is maintained in those who do not receive a second vaccine at this point, although it is likely that there will be some immunity until the second dose. Information collected by the Astra Zeneca vaccine investigators suggests that spacing out dosing by 8-12 weeks may increase the efficacy. Most countries are aiming to vaccinate as many individuals with the first dose as quickly as possible and delay the second dose by up to, but not more than, 12 weeks. This practice may mean that a significant number of individuals may not be as well protected until they have received the second dose and there is a theoretical risk that such a practice may foster the development of resistant strains.



- **How are vulnerable children with existing cardiac or respiratory conditions being treated or considered?**

COVID-19 vaccine research has only just started in children and therefore there are very limited data on safety and immune responses in this group. The COVID-19 vaccines approved so far have not been tested in children, but several companies are now beginning to enrol children in tests. Furthermore, data suggests that children under the age of 18 years represent only a very small percentage of all reported COVID-19 cases (in some countries as low as 1%), with relatively few deaths compared to other age groups and usually mild disease. Therefore, most children are not considered to be eligible for the vaccine at present stage. Children who are at high risk of catching the virus (immunodeficient or those with serious neurological disability) or being seriously ill with it (with serious heart and lung disease) are considered high-risk and will be given priority according to the standards in your particular country once the vaccines have been approved for use in children. Meanwhile, because in some countries vaccination of unpaid carers has been proposed in order to prevent high-risk populations from being infected by their own caregivers, this opportunity might be offered to the parents of highly vulnerable children.

- **I am a heart patient and have children under 18 years. I have read that they are not eligible for the vaccine. What does that mean for me? Even if I get the vaccine myself, will I be at higher risk for catching the virus from my children?**

Getting the vaccine reduces your risk of becoming seriously ill or dying from COVID-19 infection if you become infected. Serious infection and death from COVID-19 are very uncommon in children under 18 years old. Therefore, it is difficult to justify vaccines in this age group at a time when the vaccine supply is struggling to reach people in their seventies and eighties. You should remain diligent and encourage the children to maintain safe habits to reduce their risk of contracting the virus. You should feel more reassured that the vaccine will protect you from serious consequences in the event of COVID-19 infection.

Resources

[European Medicines Agency \(EMA\): Treatments and vaccines for COVID-19](#)

[European Commission: Questions and Answers: COVID-19 vaccination in the EU](#)

[British Heart Foundation \(BHF\): Coronavirus vaccine: your questions answered](#)

[American Heart Association \(AHA\): Heart disease and stroke medical experts urge public to get COVID-19 vaccinations](#)

[American College of Cardiology \(ACC\). CardioSmart. COVID-19 Vaccines](#)

[COVID 19 FAQs Medication Treatment and Vaccines | Arthritis Foundation](#)

[Public Health England: COVID-19 vaccination: guide for older adults](#)

[Public Health England: Guidance. COVID-19: the green book, chapter 14a. Coronavirus \(COVID-19\) vaccination information for public health professionals](#)

[Information for Healthcare Professionals on COVID-19 Vaccine AstraZeneca - GOV.UK \(www.gov.uk\)](#)

[Mayo Clinic: COVID-19 \(coronavirus\) in babies and children](#)

[Helio: Q&A When will a COVID-19 vaccination be widely for all children](#)