



**Philippine Society of Pediatric Cardiology
in cooperation with
Philippine Heart Association
Council of Congenital Heart Disease and
Council of Rheumatic Fever and Rheumatic Heart Disease**

**STATEMENT ON COVID VACCINATION FOR CHILDREN 12-17 y/o and Its Effect on the
CARDIOVASCULAR SYSTEM**

Coronavirus Disease-19 or COVID 19 has been affecting our country and the whole world since 2020. Globally, over 200 million confirmed cases of Covid 19 have been reported. For those who were affected, several complications have been described such as acute respiratory distress syndrome, cardiovascular, thromboembolic, inflammatory, and neurologic complications, and an overall case fatality rate of 2.3 %.

Among children, initial studies reported that they were largely spared from severe Covid and were often asymptomatic. To date and with the increasing number of children being tested in the United States, children < 18 years old account for approximately 14-16 % of confirmed cases. Although the clinical findings in children with COVID-19 are diverse, symptoms appear to be milder although severe cases have also been reported. Cardiovascular abnormalities like heart failure, arrhythmias, myocarditis, pericarditis, cardiogenic shock have been reported in some case series.

In April of 2020, cases of **Multisystem inflammatory syndrome in children (MIS-C)** which is a rare complication that typically happens 2 to 6 weeks after SARS-CoV-2 infection have been reported. The child exhibits symptoms such as fever without an obvious cause after having COVID-19 or after being exposed to someone who had the disease. MIS-C can get worse quickly and should be cared for in a pediatric/cardiac intensive care unit (PICU) whenever possible. In the United States, 60%–70% of patients are admitted to intensive care and 1%–2% succumb to death.^{3,4}

In the Philippines, DOH reported 183,747 pediatric COVID cases age 0 -20 y/o which is 10% of total cases. As of September 2021, *The Salvation Surveillance and Analysis of COVID 19 in Children Nationwide* of Philippine Pediatric Society reported that children affected with COVID 19 was 32.3% and with age ranging from 11 – 18 years old. Of the cases reported, 89% were hospitalized, 24.5% presented with moderate symptoms and 16.1% in severe to critical state. The overall mortality was 8.2%.

Considering the result of this Surveillance, the different variants of the virus now circulating and the development of SARS-CoV-2-related syndromes in the pediatric population, the risks of being unvaccinated and becoming ill with COVID-19 far outweigh any rare vaccine side effects. Children and adolescents, although with comparatively less chance of acquiring the

disease compared to adults, are still at risk of developing severe illness and complications from COVID-19 as well as contribute to the transmission of the disease in households and communities. Thus, the ***Philippine Society of Pediatric Cardiology, in collaboration with the Philippine Heart Association Councils of Congenital Heart Disease and Rheumatic Fever and Rheumatic Heart Disease*** has come up with answers to frequently asked questions and statements regarding the vaccination of children 12 – 17 y/o and its cardiovascular complication in this population. These statements will be updated as more current international and local data are made available.

Is it justified to prioritize the vaccination of Children and adolescents with underlying medical conditions aged 12 – 17 y/o?

Children with underlying medical conditions are prioritized for vaccination due to their increased risk of contracting severe COVID-19. Included in this population are children and adolescents with underlying cardiac medical conditions with **stable** chronic heart and vascular disease such as Congenital heart disease, cardiomyopathy, individuals with arrhythmia, chronic rheumatic heart disease, pulmonary hypertension with right heart failure, chronic heart failure, with NYHA Functional classification II.⁸

What are the possible cardiac reactions to children receiving the COVID 19 Vaccine

As of June 2021, there have been reports of myocarditis after COVID-19 vaccination in children 12-18 y/o in the US. Out of 2.1 million children vaccinated with mRNA, **myocarditis** was noted in 147 cases (0.007 %), 19 were females and 128 were males. Post-vaccination myocarditis was noted to occur 0 – 7 days after vaccination with the following presentation: chest pain, shortness of breath, fever, fatigue, headache, and nausea. These symptoms are less severe compared to those with active COVID infection, and the clinical course and outcomes are good and reassuring. **Pericarditis**, which is the inflammation of the outer lining of the heart may also occur post vaccination. Most patients with myocarditis or pericarditis who received care responded well to medicine and rest. However continued monitoring is important, and the significance and long-term implications of this vaccine associated cardiac involvement should be further studied.

If myocarditis or pericarditis occurs after the first dose of mRNA COVID-19 vaccine and prior to 2nd dose, defer 2nd dose until further work-up is done. However, if the patient has recovered, the 2nd dose can be given after a thorough evaluation and clearance with the pediatric cardiologist and discussed with the patient, guardian and other clinical team. **Patients can usually return to their normal daily activities after their symptoms improve.**

All children and teens should get fully immunized against COVID-19 as soon as they are eligible to prevent SARS-COV-2 infection. The known risks of COVID-19 illness and its related severe complications, such as long-term health problems, hospitalization, and even death, far outweigh the potential risks of having a rare adverse reaction to vaccination, including the possible risk of myocarditis or pericarditis.

Frequently Asked Questions

- 1. Can I get COVID-19 vaccine even if I have Congenital Heart Disease or Rheumatic Heart Disease**

ANS: Yes. There is no contraindication to receive the vaccine if you have congenital heart disease or Rheumatic Heart Disease. As with other eligible vaccinees, the benefits of getting the vaccine outweigh the possible side effects of the vaccine. However, in cases with dilated heart or poor heart function (NYHC FC III and IV) due to the heart disease, evaluation should be sought from Pediatric Cardiologist prior to the vaccination.

2. Am I at risk for more and worse adverse reactions from COVID-19 vaccine if I have Congenital or Acquired heart Disease?

ANS: No. There is no current evidence that pediatric patients with Congenital or Acquired Heart Disease heart disease are at increased risk of developing myocarditis and/or pericarditis or other side effects or adverse reactions after a dose of an mRNA COVID-19 vaccine.⁷ Just like with any vaccine, adverse reactions may occur, but these are usually mild and just last for a few days.

3. Do patients with cyanosis and uncorrected congenital heart disease have a higher risk of severe reactions from COVID-19 vaccine?

ANS: No. There are no studies suggesting severe adverse reactions from the vaccine. There may be reported cases of severe adverse events; but the incidence of adverse events in those who received the vaccine is similar in the unvaccinated general population. On the other hand, studies have shown that adults with cyanotic congenital heart disease have a higher risk of complicated and severe COVID-19 infection. Thus, COVID-19 vaccine is highly recommended in this population.

4. I have a Congenital Heart Disease and I'm currently taking cardiac medications for heart failure. Will COVID-19 vaccine make my symptoms worse, or interact with my medications?

ANS: No. There are no studies suggesting worsening of heart failure symptoms, or interaction with any cardiac medication. Patients with congenital heart disease with heart failure are at higher risk of developing severe COVID-19 and have poorer outcome. Therefore, it is best for you to get COVID-19 vaccine. However, clearance from Pediatric Cardiologist should be done for patients with high risk conditions (poor EF, etc)

5. Can the vaccine be given to patients taking warfarin or aspirin for Rheumatic Heart Disease, with or without a mechanical valve?

ANS: Yes. Among children less than 18 years old who underwent valve replacement - Intramuscular injection of similar vaccines like Flu and Pneumococcal is not contraindicated especially if given in the upper extremity. Direct pressure for at least 2 minutes is however recommended to lessen the risk of hematoma. There are no known vaccine complications that can affect the valve or alter results of laboratory tests, specifically the INR.

6. What is the best COVID-19 vaccine for a patient with Congenital Heart Disease or Rheumatic Heart Disease?

ANS: There are good data on the efficacy and safety of ALL COVID-19 vaccines. Any COVID-19 vaccine authorized through Emergency Use Authorization by the US Food and Drug

Administration, recommended by the CDC, and appropriate by age and health status can be used for COVID-19 vaccination in children and adolescents.¹⁰ In our setting, the best vaccine is the one which is readily available and is recommended by the the Philippine Food and Drug Authority.

7. What are the risks of not getting vaccinated for a patient with congenital or rheumatic heart disease?

ANS: The risks of not receiving the COVID-19 vaccine include the following: Risk of getting severe COVID-19 infection such as MIS-C. There's also the risk of spreading the virus to your family and the community. Getting the vaccine does not only mean protecting yourself but protecting the community through herd immunity. Being vaccinated means helping our country recover from this pandemic fast and soon.

8. I am a TOF patient who just received my annual Flu vaccine. When is the best time for me to receive Covid-19 vaccine? Can I be vaccinated with another vaccine?

ANS: The minimum interval is at least 2 weeks. Regarding co-administration with other vaccines, none of the currently authorized COVID-19 vaccines are live virus vaccines. However because data are lacking on the safety and efficacy of COVID-19 vaccines administered simultaneously with other vaccines, the vaccine series should routinely be administered alone, with a minimum interval of 14 days before or after administration of any other vaccine.

9. Are all heart diseases equal for covid vaccine prioritization?

ANS: YES. The Department of Health (DOH) announced last September 29, 2021, that COVID-19 vaccinations among minors aged 12 to 17 will begin with children who have underlying medical conditions. Also, the National Vaccination Operation Center declared to prioritize the vaccination of children with A3 Category. Children with Cardiovascular Disease and Obesity are among those in the list.

10. I have Rheumatic Heart Disease and receiving Benzathine penicillin injection every 21 days. Am I at risk for more and worse adverse reactions from COVID-19 vaccine?

ANS: No. Presently there are no data suggesting that those receiving medications like Benzathine have a higher risk of developing side effects or adverse reactions. Just like with any vaccine, adverse reactions may occur, but these are usually mild and just last for a few days.

Statements:

1. If patient is diagnosed with Myocarditis or pericarditis prior to vaccination, PFDA approved age appropriate COVID 19 Vaccine may be administered if the heart condition is stable as assessed by a Pediatric Cardiologist.
2. If a patient has a history of multisystem inflammatory syndrome (MIS-C), consider delaying COVID-19 vaccination until full recovery from this illness and for 90 days after the date of diagnosis of MIS-C

3. In cases of suspected myocarditis or pericarditis post-vaccination, the following symptoms may typically appear within 0-7 days post vaccination and include chest pain, palpitations (irregular heartbeat), syncope (fainting) or shortness of breath, fever, nausea, malaise. People who experience any of these symptoms after having COVID-19 vaccine should seek prompt medical attention.
4. Initial investigations for patients presenting with symptoms or signs of myocarditis or pericarditis should include ECG, troponin, chest X-ray, and other investigations for other differential diagnoses.⁷
5. Pediatric patients with a history of any of the following conditions can receive PFDA approved age-appropriate vaccine but should consult a Pediatric cardiologist about the best timing of vaccination and whether any additional precautions are recommended:
 - a. Recent (i.e. within the last 6 months) or current inflammatory cardiac illness e.g., myocarditis, pericarditis, endocarditis
 - b. Acute rheumatic fever or acute rheumatic heart disease (ie with evidence of active inflammation)
 - c. Acute decompensated heart failure⁷
6. There is no current evidence that patients with heart disease are at increased risk of developing myocarditis and/or pericarditis after a dose of an mRNA COVID-19 vaccine.^{7,9}
7. In general, elective cardiac surgery should be scheduled 4 week after vaccination. However, in cases of urgent or emergency surgery, cardiac surgery may be done 2 weeks after vaccination.
8. Blood pressure should be taken in the pre vaccination area. If BP is elevated, BP should be remeasured after 15 minutes 2x to make pre- vaccination BP < 160/100
 - a. IF BP remains elevated with medications / diagnosed with systemic hypertension, may proceed with vaccination with due precautions
 - b. IF BP remains elevated and without medications or undiagnosed, consider evaluation and deferment of vaccination
9. After vaccination, the child may resume normal daily activities. However, he / she must refrain from any strenuous physical activity 0 – 7 days post vaccination.
10. One is considered fully vaccinated 2 weeks after the second dose of the vaccine.
11. **Currently, the benefits still clearly outweigh the risks for COVID-19 vaccination in adolescents and young adults**^{1,2, 3,9}

References

1. Megan Wallace, MD and Sara Oliver, MD. ACIP Meeting June 23, 2021. COVID-19 mRNA vaccines in adolescents and young adults: Benefit-risk discussion
2. Mayme Marshall. Et al. Symptomatic Acute Myocarditis in Seven Adolescents Following Pfizer-BioNTech COVID- 19 Vaccination
3. Supriya S. Jain, MD, et al. COVID-19 Vaccination-Associated Myocarditis in Adolescents
4. Larson, Kathryn F. et al. Myocarditis After BNT162b2 and mRNA-1273 Vaccination
5. Biykem Bozkurt, MD PhD et al. Myocarditis With COVID-19 mRNA Vaccines
6. Shay, David K. MD, MPH, et al. Myocarditis Occurring After Immunization With mRNA-Based COVID-19 Vaccines
7. Guidance on Myocarditis and Pericarditis after mRNA COVID-19 Vaccines. Australian Technical Advisory Group on Immunisation (ATAGI) and the Cardiac Society of Australia and New Zealand (CSANZ). Version 2 – 15 September 2021
8. Ministry of Health, Malaysia. CLINICAL GUIDELINES ON COVID-19 VACCINATION FOR ADOLESCENTS (12-17 YEARS) IN MALAYSIA
9. Royal College of Physicians in Ireland. National Immunisation Advisory Committee: RECOMMENDATIONS for COVID-19 VACCINATION FOR THOSE AGED 12-15 YEARS NIAC | 03.08.2021 FIRST PUBLISHED 26.07.2021
10. American Academy of Pediatrics. COVID-19 Vaccines in Children and Adolescents Committee on Infectious Diseases
11. UptoDate 2021

Acknowledgement

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