# Addressing Concerns About Vaccinating Children and Teens

## The Issue

Parents (or caregivers) may be reluctant to have their child or adolescent get vaccinated against COVID-19, even if they chose to get vaccinated themselves. Chief among parents' concerns is a sense that there is not enough information about the vaccine for children or that more research needs to be done. Many parents also cite concerns about vaccine side effects and potential long-term effects.

## Sound Bites

- COVID-19 vaccination is an important tool to help protect children and teens, especially from severe disease, hospitalization, or death.
- Half of children younger than 18 years of age hospitalized with COVID-19 have no underlying medical conditions.
- COVID-19 vaccination reduces the likelihood of multisystem inflammatory syndrome in children (MIS-C).
- COVID-19 vaccination provides added protection for children and teens who previously were infected with SARS-CoV-2 (e.g., by further reducing the risk of reinfection).
- The rare risk of myocarditis and pericarditis associated with mRNA COVID-19 vaccines—mostly among male persons between the ages of 12 and 39 years—may be further reduced with a longer time between the first and second dose. COVID-19 illness is a bigger risk factor for myocarditis in children and teens younger than 16 years of age than vaccination is.

## Questions for Exploring Patient Concerns

- What do you know about the risk of serious COVID-19 disease in children/teens?
- What is your biggest concern about the extent of vaccine testing in children/teens?
- What is your understanding of [possible vaccine side effects/potential long-term effects]?
- What information would make you more comfortable about vaccinating your child/teen against COVID-19?
- What would have to be true for you to think it was important for your child/teen to get a COVID-19 vaccine?

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## What We Know

In the United States, children and teens became eligible for COVID-19 vaccination in phases. The initial emergency use authorization (EUA) for the Pfizer-BioNTech vaccine (now approved and marketed as Comirnaty) in December 2020 included individuals 16 years of age and older. Adolescents 12 to 15 years of age became eligible for the Pfizer-BioNTech vaccine in May 2021, and children 5 to 11 years of age became eligible in October 2021.Children younger than 5 years of age were the last group to become eligible for COVID-19 vaccination in June 2022. (As of September 2022, all of these age groups are eligible for either the Pfizer-BioNTech vaccine or the Moderna vaccine, which is approved and marketed as Spikevax for use in adults 18 years of age and older.)

Throughout this rollout, vaccine uptake among children and adolescents has lagged behind uptake among adults. As of September 2022, approximately 78% of adults 18 years of age and older were fully vaccinated, compared with 61% of adolescents 12 to 17 years of age and 31% of children 5 to 11 years of age.[1]

The relatively lower uptake of the COVID-19 vaccine among children and adolescents reflects hesitancy on the part of parents—including some parents who had been vaccinated themselves. Adults who were willing to accept a novel vaccine proved to be more cautious about accepting the vaccine for their children or teens. In a survey conducted in December 2021, 59% of parents cited concerns about the vaccine's side effects and potential long-term effects, suggesting that parents did not assume safety for adults would translate to safety for children.[2]

Polling also suggests parents apply a different decisional balance for children and teens. In the December 2021 survey, 57% of parents stated they were worried about whether the vaccine had been tested enough.2 Given that COVID-19 illness is generally accepted to be milder in children than in adults, many parents do not believe the SARS-CoV-2 virus is dangerous enough to warrant "risking their child's health" on this vaccine.[3]

Other parents may feel that vaccination is unnecessary. The Centers for Disease Control and Prevention (CDC) estimates that as of February 2022, approximately 75% of children and adolescents had serologic evidence of previous infection with SARS-CoV-2.[4] Parents may not see any value in seeking out a vaccine for children or teens who already had COVID-19.

Parents may not be aware that children and teens can and do experience severe COVID-19 disease. More than 1,000 children and teens in the United States have died from COVID-19.[5] This makes COVID-19 a leading cause of death in children and adolescents 0 to 19 years of age; according to a recent analysis, COVID-19 ranks #9 among all causes of childhood death, #5 in disease-related causes of childhood death (excluding accidents, assault, and suicide), and #1 in childhood death caused by infectious/respiratory diseases.[6] Approximately half of children younger than 18 years of age hospitalized with COVID-19 have no underlying medical conditions. Children and teens also are at risk for post-COVID conditions—a wide range of new, returning, or ongoing health problems that may occur 4 or more weeks after initial SARS-CoV-2 infection (i.e., "long COVID"). These complications can appear after mild or severe COVID-19.

Parents also may not be aware of the possibility of multisystem inflammatory syndrome in children (MIS-C)—a rare but serious condition associated with COVID-19 in which various body parts become inflamed, including the heart, lungs, kidneys, brain, skin, eyes, or gastrointestinal organs. Patients with MIS-C usually present with persistent fever, abdominal pain, vomiting, diarrhea, skin rash, mucocutaneous lesions, and, in severe cases, hypotension and shock. MIS-C may begin weeks after a child is infected with SARS-CoV-2; in some cases, the child and caregivers may not even know the child had been infected. Post-COVID conditions have been reported after MIS-C.

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Educating parents about the considerable benefits of COVID-19 vaccines in children and teens can help to shift the decisional balance in favor of vaccination. A growing body of evidence supports the effectiveness of COVID-19 vaccines in:

- **Protecting children and teens from severe disease, hospitalization, or death.** During the Omicron variant surge (December 2021 to February 2022), two doses (i.e., primary series) of the Pfizer-BioNTech vaccine reduced the risk of COVID-19 hospitalization by 68% among children 5 to 11 years of age.[7] Among adolescents 12 to 18 years of age, the effectiveness of vaccination against any hospitalization for COVID-19 was lower during the Omicron surge (40%) than during the Delta surge (July to December 2021; 92%), but vaccination prevented critical illness caused by either variant.[7]
- **Reducing the likelihood of MIS-C.** Data collected by the Overcoming COVID-19 Network from July to December 2021 showed that 95% of children 12 to 18 years of age hospitalized with MIS-C were not vaccinated.[8] COVID-19 vaccination reduced the likelihood of MIS-C in children 12 to 18 years of age by 91%.
- **Providing added protection for children and teens who previously were infected with SARS-CoV-2** (e.g., by further reducing the risk of reinfection).[9]

Parents also should be reassured about the safety of COVID-19 vaccines in children and teens. Mild injection-site and systemic reactions are common and expected; serious adverse events are rare.[10,11] When serious reactions are reported, they occur most frequently the day after vaccination.

Some parents may be concerned about reports of rare cases of myocarditis (inflammation of the heart muscle) and pericarditis (inflammation of the heart's outer lining), mostly among male adolescents and young adult men who received an mRNA COVID-19 vaccine. As of April 21, 2022, there had been 657 verified reports of myocarditis among people younger than 18 years of age, as follows[12]:

- For children 5 to 11 years of age, 18 verified reports after more than 18 million vaccine doses were administered.
- For adolescents 12 to 15 years of age, 345 verified reports after 23 million doses were administered.
- For adolescents 16 to 17 years of age, 294 verified reports after 12.6 million doses were administered.

New studies have shown that the rare risk of myocarditis and pericarditis may be further reduced with a longer time between the first and second dose of mRNA vaccines. It is important to note that COVID-19 itself can cause myocarditis; one study found that children and teens younger than 16 years of age with COVID-19 had 36 times the risk for myocarditis compared with those without COVID-19.[13]

Vaccination is an important tool to help protect children and teens from COVID-19 and its complications. The CDC recommends that all eligible children and teens get vaccinated for COVID-19 and stay up to date with the latest recommendations (e.g., for booster doses). Current recommendations can be found on the CDC "Stay Up to Date" webpage.

After reviewing available data on the risks and benefits, CDC and the Advisory Committee on Immunization Practices determined that the benefits (e.g., prevention of COVID-19 and its severe outcomes) outweigh the rare risk of myocarditis or pericarditis after receipt of Moderna, Novavax, and Pfizer-BioNTech COVID-19 vaccines in all populations for which vaccination has been recommended. Extending the interval to 8 weeks between the first and second primary series doses of Moderna, Novavax, or Pfizer-BioNTech COVID-19 vaccines for some people may reduce the rare risk of vaccine-associated myocarditis and pericarditis.[14]

People receiving Moderna, Novavax, and Pfizer-BioNTech COVID-19 vaccines, especially male persons ages 12 to 39 years, should be made aware of the rare risk of myocarditis or pericarditis following receipt of these vaccines and the benefit of COVID-19 vaccination in reducing the risk of severe outcomes from COVID-19, including the possibility of cardiac sequelae. Counseling should include seeking care if symptoms of myocarditis or pericarditis, such as chest pain, shortness of breath, or tachycardia, develop after vaccination, particularly in the week after vaccination. In younger children, symptoms of myocarditis also may include non-specific symptoms such as irritability, vomiting, poor feeding, tachypnea, or lethargy.

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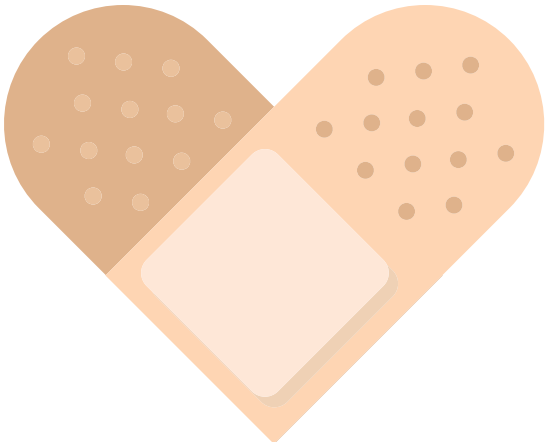

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