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MONTHLY UPDATES ABOUT VACCINES ACROSS THE LIFESPAN

DOES MY CHILD BENEFIT FROM A COVID-19 VACCINE?

March 2023

We have learned a lot about COVID-19 since the start of the pandemic in early 2020, including the fact that children are not among those at greatest risk of severe infection or death when infected with SARS-CoV-2, the virus that causes COVID-19. Unfortunately, this perception of risk, coupled with an array of concerns about the vaccines and their safety, has led many parents to decide against COVID-19 vaccination of their children, despite medical recommendations to the contrary. In fact, by mid-February 2023, fewer than half of all children between 6 months and 17 years of age had received even a single dose of COVID-19 vaccine. These data are even more startling when we start to look at specific age groups, so this month, we thought it might be helpful to take a deeper dive into COVID-19 vaccines and kids.

Trivia Corner

What is the name for the part of a bacteria or virus that induces an immune response?

a) Bacterial factor

b) Immunologic component

c) Modules

d) Viral factor

Where are we with COVID-19 vaccination?

In mid-February 2023, most children remain unvaccinated against COVID-19.

6 months to 4 years of age: Only 12% of children in this age group have received at least one dose of COVID-19 vaccine. Approximately, 15 million children in this age group have not received any doses. Given that the youngest of these children are less likely to have been previously infected, they are more susceptible to infection, and not all COVID-19 infections are mild. In fact, between August 2021 and July 2022, the greatest proportion of child deaths from COVID-19 occurred in those less than 1 year old.

5 to 11 years of age: About 4 of 10 children in this age group (39%) have received at least one dose of COVID-19 vaccine. When looking at children in this group who received two doses, the number falls to about 3 in 10 children. More than 17 million children in this age group have not received a single dose. While many of these children were likely exposed and their death rates when infected were among the lowest, this was also the age group most likely to experience a delayed-onset condition called multisystem inflammatory syndrome in children, or MIS-C. Rates of this condition have been decreasing with newer variants, but they have not disappeared.

12 to 17 years of age: This group has the highest immunization rates among children, with 58% receiving at least a single dose; however, more than 8 million in this age group have not received any doses of COVID-19 vaccine. While myocarditis, a temporary inflammation of the heart muscle, has been a more likely side effect in the older teens in this age group, particularly males, the rates of myocarditis after COVID-19 infection have consistently been higher than following COVID-19 vaccination. As such, avoiding vaccination does not remove the risk of experiencing myocarditis. This group, 15- to 19-year-olds, had the second greatest proportion of child deaths from COVID-19 between August 2021 and July 2022, after those less than 1 year of age.

What about COVID-19 immunity due to prior infection?

It is fair to assume that at this point many people have been naturally exposed to the virus that causes COVID-19 and have, therefore, developed some natural immunity. However, a couple of caveats to this assumption are worth mentioning:

1. Even if someone has had a COVID-19 infection, we can't be sure what level of immunologic memory they developed. Immunologic memory is a determinant of long-term protection against severe infection and hospitalization. The memory response following infection often depends on the severity of disease, with mild or asymptomatic infections inducing a lesser immune response than severe infections.
2. Studies have demonstrated that while natural infection or vaccination offer protection, those that have experienced both natural infection and vaccination tend to have the strongest immunity.
3. Infants are less likely to have any protection, particularly as rates of COVID-19 have decreased in some areas.

But, COVID-19 isn't severe in kids, right?

While COVID-19 is typically mild in children, some children have experienced severe disease and, sadly, some have died. Additionally, some have experienced longer-term consequences of infection, including MIS-C and "long COVID," a wide array of symptoms following COVID-19 infection for which the mechanisms and length of time they will linger remain unclear.

While COVID-19 severity in kids has been traditionally compared with its severity in adults, a recent scientific paper by Flaxman and colleagues evaluated COVID-19 deaths in children compared with other causes of death in children. This paper also compared COVID-19 deaths with those caused by other preventable diseases before a vaccine was available to protect against them. So, let's take a look at what they found:

- Between August 1, 2021, and July 31, 2022, 821 children and young adults from birth to 19 years of age died from COVID-19. This is a very small number compared with the 82 million children and young adults in this age group, but the authors pointed out that the overall risk of death is very low among this age group, so it is more useful to evaluate COVID-19 as a cause of death relative to other causes of death among people of this age.

[Continued on next page]

Trivia Answer: The correct answer is B. Immunological components are the parts of bacteria and viruses that induce an immune response. Vaccines are created using these immunological components in a way that they induce an immune response without causing illness.

Go to **vaccine.chop.edu/trivia** *to play* ***Just the Vax***, the Vaccine Education Center's trivia game, where you can find this question and others like it.

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- Compared with other causes of death during the same period, the number of COVID-19-related deaths represented 2% of all deaths in this age group. COVID-19 was the eighth most common cause of death. If only considering disease-related causes of death, COVID-19 ranked fifth, and if only considering infectious or respiratory diseases, COVID-19 caused the most deaths.
- When the authors compared the number of deaths of young people during the study period of August 2021 through July 2022 (821 deaths) with the annual number of childhood deaths caused by other vaccine-preventable diseases in the period before those vaccines became available, they found that COVID-19 caused many more deaths. For example, measles used to cause about 495 deaths per year; chickenpox caused about 50 deaths per year; rotavirus caused 20 to 60 deaths per year; rubella caused about 17 deaths per year, and hepatitis A led to three deaths per year. Safe and effective vaccines have stopped or dramatically reduced these numbers, making the risk of these deaths unnecessary.

A link to the paper with this information can be found in the "Resources" section of this article.

Takeaways

When a child dies, their family and others around them are irrevocably changed, particularly because of the overwhelming sense of the child's lost opportunity to experience life and realize their full potential in this world. Infectious diseases, a previously common cause of many childhood deaths, have been controlled for decades by safe and effective vaccines. Parents now have the opportunity to protect their children from another occasionally fatal and potentially life-changing virus with the COVID-19 vaccine. In this article, readers learned:

- How many children have been vaccinated against COVID-19
- The benefits of vaccination compared with natural infection
- A comparison of COVID-19 deaths in children and young adults compared with other causes of death as well as other vaccine-preventable diseases

At this point, children who remain unvaccinated against COVID-19 remain unnecessarily susceptible because the risks presented by infection, no matter how small, are still greater than the risks presented by vaccination. As parents, healthcare providers, and scientists who have studied the data, we hope moving forward more parents will choose to take control against this virus and opt in to COVID-19 vaccinations for their children.

For links to resources, visit the Feature Article online, bit.ly/3IZKz05.

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