Perspective

Vaccination of Children in the United States against COVID-19: An Ounce of Prevention

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As of October 28, 2021, the United States was the epicenter of the coronavirus disease 2019 (COVID-19) pandemic. The United States accounts for >45.6 million of the >244 million cases of COVID-19 worldwide, or 18.5% in a population of <5% of the world. Accounting for deaths, >940,000 of the >4.95 million deaths worldwide have occurred in the United States since February 2020, a death rate that exceeds that of the "Spanish" flu in 1918 to 1919. As such, deaths in the United States account for approximately 15% of all deaths from COVID-19. At present, >1 in 500 Americans have died from COVID-19.[1] Although cases and hospitalizations are decreasing, on August 15, 2021, Arkansas, Florida, Louisiana, and Mississippi were each recording >500,000 new cases per week.[2,3]

Approximately 54% of the US public are fully vaccinated—the highest rates among older adults at 85% and lowest among children at 32%.[4] Furthermore, 85% trust their healthcare providers, more than 95% of whom are vaccinated.[4] In this perspective, we provide our scientific rationale to support the urgent plea to vaccinate children and young adults who make up 27% of cases, virtually all of them among unvaccinated people, compared with 3% in 2020.[5]

Primary healthcare providers and pediatricians play major roles in the prevention and treatment of illness in US children. These circumstances have increased since January 19, 2020, when the first cases of COVID-19 were introduced into the United States by travelers from Wuhan, China, the initial epicenter of the subsequent pandemic.[6] In the United States, mitigation strategies were not performed promptly and containment strategies varied based on the responses of individual states.[7]

Primary healthcare providers and pediatricians are in a unique position to use their effective, knowledgeable, and trusted voices to educate patients and their families to increase rates of vaccination. Primary healthcare providers and pediatricians routinely administer and patients and their families routinely accept. These include vaccines against polio (92.6%), measles, mumps, and rubella (90.8%), hepatitis B (90.6%), and varicella (90.2%).[8]

Primary care providers and pediatricians should emphasize to the parents and families of children that the COVID-19 vaccines have better safety and efficacy profiles than all of the routinely administered vaccines. With respect to safety, serious adverse effects of the COVID-19 vaccine occur at an extremely low rate. In the largest and most recently published real-world study of COVID-19 vaccine safety, the authors concluded that "in contrast to the relatively small number of adverse effects associated with the vaccine, high rates of multiple serious adverse events were associated with coronavirus infection among unvaccinated patients." For example, with respect to myocarditis, the number of nonvaccinees who developed COVID-19 were 11 excess cases per 100,000 population. In contrast, vaccinees experienced 2.7 excess cases of myocarditis per 100,000, a fourfold difference. Furthermore, the rates of myocarditis were highest among men aged 20 to 34 years. The database was large, but the lower limit of age was 16. In addition, the findings may be restricted in generalizability because the patients were Israeli and the vaccine was manufactured by Pfizer.[9]

In regard to the efficacy of COVID-19 vaccines, the rates exceed 95% compared with approximately 50% of that for influenza. In addition, the mortality rate from COVID-19 is 30-fold higher, and a positive patient will transmit COVID-19 to approximately 5 to 6 other individuals compared with 1 to 2 for influenza.[10] This situation is exacerbated by the prevalence of the Delta and Omicron variants, which have even greater infectivity and virulence than the conventional strain of COVID-19. Although vaccinated patients may become positive when exposed, it is important to note that the majority of breakthrough infections are asymptomatic positive tests.

Collaborations among academicians, industry, and government previously led to vaccines for COVID-19 in adults to be developed, approved, and distributed in record time throughout the United States under emergency use authorizations by the US Food and Drug Administration (FDA). In addition, both the FDA and the Centers for Disease Control and Prevention granted full and permanent approval of the Pfizer vaccine. Moderna was launched later and was approved by the FDA on January 31, 2022.

At present, primary healthcare providers and pediatricians should emphasize to parents and other family members that among those who develop symptoms, they are less likely to experience severe infection and the virus is less transmissible to others. In addition, parents and family should be made aware that COVID-19 vaccines offer almost complete protection against hospitalization and death. Finally, they should emphasize that in randomized trials among 300 children, there were no reported cases of myocarditis.[9]

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On October 26, 2021, the FDA Vaccine Advisory Committee[11] and on November 2, 2021, the Centers for Disease Control and Prevention[10] recommended approval of the Pfizer vaccine for use in children 5 to 11 years of age. Although children are less likely to develop serious illnesses, among those 5 to 11 years of age, there have been >1.9 million infections, >8300 hospitalizations, and > 1500 inflammatory disorders.[10]

In the United States, the epidemic in 2021 was occurring mainly among unvaccinated individuals and in 2020 mainly among those who did not practice masking, social distancing, crowd avoidance, and frequent handwashing.[12] Primary care providers and pediatricians may wish to explain efficacy and safety to parents and families and to reinforce the possibilities for school-based efforts. For children younger than 5 years of age, randomized data on efficacy and safety are beginning to emerge suggesting that the benefit to risk ratio may not be favorable.[11] In the meantime, it is our perspective that there is a need for primary health education of parents of unvaccinated children to attempt to restrict their surroundings to vaccinated individuals who are masked.

For US children aged 5 to 18 years old, we believe that primary care providers and pediatricians face clear and achievable clinical challenges. Specifically, there is an urgent need to achieve higher vaccination rates against COVID-19 in United States children as soon as possible. The urgency derives, in part, because during the summer of 2021 pediatric hospitalizations in the United States were at their highest level at the time that generally corresponds to the nadir of the respiratory virus season. The omicron surge that occurred in the late fall of 2021 implies that herd immunity has been achieved through vaccinations and the high infection rates. Thus, continued replication of the virus will sooner or later lead to the emergence of a vaccine-resistant strain. Primary care providers and pediatricians also can educate and influence entire families at a critical moment that will decrease morbidity and mortality.

The large racial inequalities in deaths from COVID-19 have been decreasing, not because deaths in Blacks are decreasing, but because deaths in largely unvaccinated Whites are increasing, especially in children and younger adults.[13] Although the absolute risks of hospitalizations and deaths in children are low, the relative risks are highest in those US states with rates of vaccinations that are lower than the national average and mainly among people who are not vaccinated.[11]

Approximately 30% of vaccine-hesitant parents reported that they were awaiting full FDA approval before accepting vaccinations.[8] As such, it is our belief that this is an important moment for primary health providers and pediatricians to discuss with all of their patients and families the efficacy and safety of the COVID-19 vaccines. They may also wish to emphasize that in the United States >550 million doses have been administered and globally >10 billion.[13,14]

It is also our perspective to do the most good for the most patients rather than following a strategy of risk avoidance. Based on the available evidence, the benefits of COVID-19 vaccination of children aged 5 to 18 years of age outweigh the risks. Furthermore, we believe that increasing vaccination rates among children eligible to receive the COVID-19 vaccine would have major clinical and public health benefits by reducing hospitalizations and deaths. We are fortunate to live in a country where COVID-19 vaccines are so readily available and accessible and applaud the recent actions by the US government to protect our children. We hope that US primary healthcare providers and pediatricians will agree and act on this perspective, as there is a real and impending threat of increasing cases and deaths unless more children and young adults are vaccinated. Last but not least, our perspective to primary health care providers and pediatricians is to apply to parents and families of children the Benjamin Franklin axiom that "an ounce of prevention is worth a pound of cure" by increasing the vaccination rates of US children against COVID-19.

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