



COVID-19 Vaccination: A Pediatric Hospitalist Perspective

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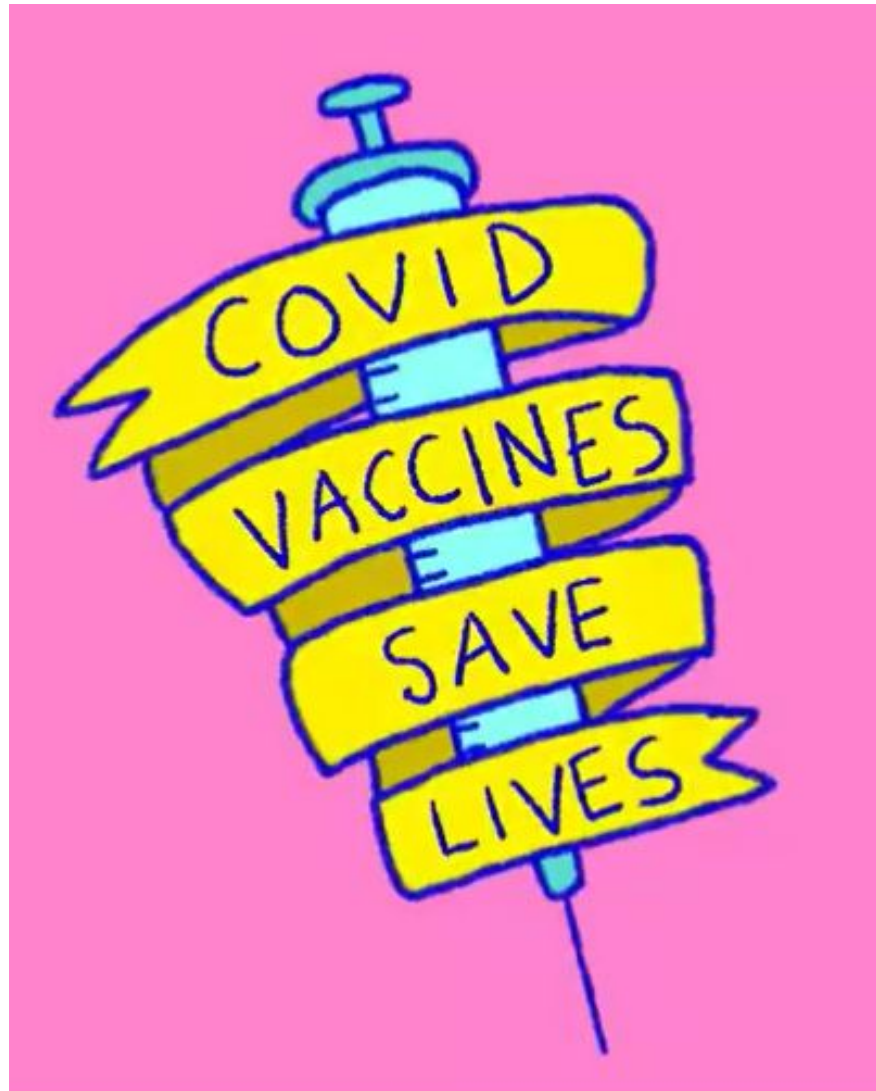


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Other vaccine preventable diseases: Deaths per year prior to recommended vaccines

	Hepatitis A ¹	Meningococcal (ACWY) ²	Varicella ³	Rubella ⁴	Rotavirus ⁵	COVID-19
Age	<20 years	11–18 years	5–9 years	All ages	<5 years	5–11 years
Time period	1990–1995	2000–2004	1990–1994	1966–1968	1985–1991	Oct 2020– Oct 2021
Average deaths per year	3	8	16	17	20	66

¹Vogt TM, Wise ME, Bell BP, Finelli L. Declining hepatitis A mortality in the United States during the era of hepatitis A vaccination. *J Infect Dis* 2008; 197:1282–8.

²National Notifiable Diseases Surveillance System with additional serogroup and outcome data from Enhanced Meningococcal Disease Surveillance for 2015–2019.

³Meyer PA, Seward JF, Jumaan AO, Wharton M. Varicella mortality: trends before vaccine licensure in the United States, 1970–1994. *J Infect Dis*. 2000;182(2):383–390. doi:10.1086/315714

⁴Roush SW, Murphy TV; Historical comparisons of morbidity and mortality for vaccine-preventable diseases in the United States. *JAMA* 2007; 298:2155–63.

⁵Glass RI, Kilgore PE, Holman RC, et al. The epidemiology of rotavirus diarrhea in the United States: surveillance and estimates of disease burden. *J Infect Dis*. 1996 Sep;174 Suppl 1:S5–11.

Children and Adolescents Do Die from COVID-19

Deaths due to COVID-19 Higher than Other Vaccine Preventable Diseases

Disease	Deaths (Per Year)	Date Range	Age (Years)
COVID-19	117-364	2020-2022	5-17
Influenza	76-112	2018-2020	5-17
Varicella	50	1970-1994 (pre-vaccine)	< 15
Rubella	17	1966-1968 (pre-vaccine)	All
Hepatitis A	3	1990-1995 (pre-vaccine)	< 20 +
Rotavirus	20-60	1999-2007 (pre-vaccine)	< 5

Anderson EJ, et al. *Clin Infect Dis* 2021; 73:336-340. doi: 10.1093/cid/ciaa1425.

<https://gis.cdc.gov/grasp/fluview/pedfludeath.html>

<https://data.cdc.gov/NCHS/Provisional-COVID-19-Deaths-by-Week-Sex-and-Age/vsak-wrfu> and <https://gis.cdc.gov/grasp/fluview/pedfludeath.html>

BREAKING NEWS!



ACIP unanimously recommends the use of Pfizer-BioNTech COVID-19 vaccine for children 5-11 years old!

- ➔ **NO** adverse event of special interest were observed (anaphylaxis, myocarditis/pericarditis and bell palsy) during trials
- ➔ Efficacy against symptomatic infection is reported to be ~90.7%
- ➔ 10 ug dosage administered in a 2-dose regimen, 21 days apart



THE BENEFITS OUTWEIGH THE RISKS



Many vaccine sites will be ready to start vaccination tomorrow

THE
UNBIASED
SCIENCE
PODCAST

VRBPAC COVID-19 VACCINE SUMMARY



VRBPAC **voted unanimously** to recommend expansion of the EUA for the Moderna COVID-19 vaccine to include children 6 months – 6 years.

**21
YES**

**0
NO**

**(THERE WERE
ALSO NO
ABSTENTIONS)**

This is a 2-dose series, 25 ug per dose, administered 4 weeks apart.

VRBPAC **voted unanimously** to recommend expansion of the EUA for the Pfizer COVID-19 vaccine to include children 6 months – 5 years.

**21
YES**

**0
NO**

**(THERE WERE
ALSO NO
ABSTENTIONS)**

This is a 3-dose series, 3 ug per dose, dose 2 administered 3 weeks after dose 1, and dose 3 administered 8 weeks after the second.

MODERNA COVID-19 VACCINE SUMMARY



The Moderna COVID-19 vaccine for kids under 6 is given in a two-dose regimen, four weeks apart.

Each dose contains a quarter of the amount of vaccine contained in an adult dose of the Moderna vaccine (25 micrograms).



It was tested in more than 6,600 children under the age of 6: 3,100 children aged 2 to 5 and 1,911 children aged 6 to 23 months. At least half the children were followed for at least two months after dose two.

Efficacy: Depending on the definition of COVID case used, vaccine efficacy against symptomatic illness ranged from 43.7% to 53.5%.

Tolerability: Reactogenicity was similar to adult populations. Some kids felt sick and feverish for a few days, particularly after the second dose.



PFIZER COVID-19 VACCINE SUMMARY



The Pfizer-BioNTech COVID-19 vaccine for kids under 5 is given in a three-dose regimen: the second dose is given 3 weeks after the first, and the third is given 8 weeks after the second.

Each dose contains one tenth the amount of vaccine contained in an adult dose of the Pfizer vaccine (3 micrograms).



1,768 children under 5 were enrolled in the clinical trial, although only 535 received dose 3.

Efficacy: Pfizer reported vaccine efficacy after two doses in briefing documents of 28.3%. After dose 3, they report efficacy jumps to over 80%, but that is based on a small sample of 7 children.

Tolerability: Very few side effects; Reported adverse events were very similar between the vaccine and placebo groups.



Most children who get COVID-19 experience very mild symptoms.

SO, WHY SHOULD KIDS GET THE VACCINE?

645 children have died from COVID-19 in the US. Thousands have been hospitalized.

We now have a safe and highly effective preventive tool that makes any future child death from COVID-19 unacceptable.



The vaccines are safe and highly effective. In clinical trials, there were no serious adverse events related to the vaccine, including myocarditis or anaphylaxis.

Clinical trials in children ages 5-11 years found the vaccine to be **90.7% effective in preventing symptomatic COVID-19**. Safety data from the trials, which included more than 3,000 children who received the vaccine, found the most common reactions were pain at the injection site, fatigue and headache.



The benefits of the vaccines far outweigh the risks.

Clinical trial data have been analyzed and statistical modeling has been conducted to predict outcomes based on different scenarios. While benefits of vaccination are highly dependent on the incidence of COVID-19, overall analysis predicts that the number of clinically significant COVID-related outcomes prevented would clearly outweigh the numbers of vaccine-associated excess myocarditis cases.



The death toll in the past year puts COVID-19 in the top 10 causes of death for children ages 5-11 years.

Per the American Academy of Pediatrics: Since the start of the pandemic, about 1.9 million children ages 5-11 years have been infected, about 9% of all U.S. cases. More than 8,300 have been hospitalized and 94 have died, according to federal data.



COVID-19 outcomes are not binary. Death is not the only possible outcome of the virus.

A significant number of children experience **long-term symptoms of COVID**-- weeks or even months after they become infected, even if their initial illness was quite mild.

- Unusual fatigue
- Shortness of breath
- "Brain fog" causing memory loss or difficulty concentrating
- Sleep disorders
- Unexplained fevers
- Gastrointestinal symptoms
- Anxiety
- Depression

Children contribute to the spread of COVID-19. Getting kids vaccinated will slow transmission.

Many experts suggest that the pandemic may not end without getting a significant number of kids vaccinated. This will help slow the spread of the disease to the unvaccinated and to more at-risk adults, reducing its toll on everyone.

Vaccines will protect our children as well as the whole population.



We need to prioritize our children's physical and mental health.

While masking and ventilation continue to be important precautions to help keep children safe, **vaccination is the most effective protection there is.**

Getting our kids vaccinated could mean the safe return to schooling with a gradual relaxation of other mitigation measures, such as masking.



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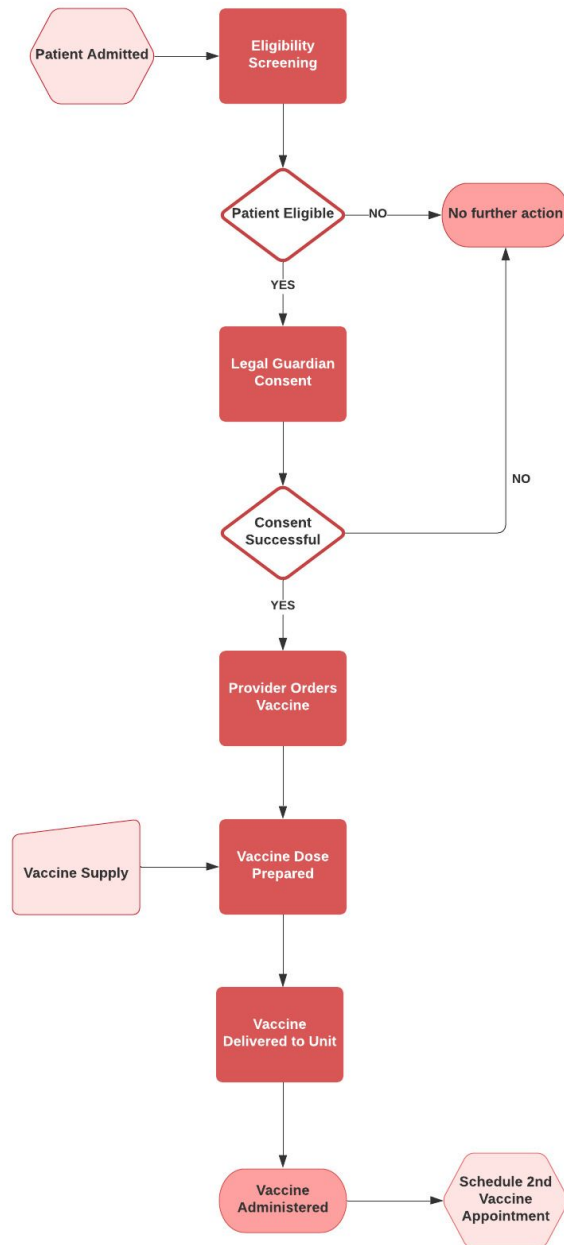
Implementation of an Inpatient Covid-19 Vaccination Program

Rebecca E. Berger, MD, Daniela C. Diaz, MD, Sharon Chacko, MD, Irene Louh, MD, PhD, Christopher Wheaton, PharmD, Cindy Ipolitti, PharmD, Richard Trepp, MD

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COVID-19 Vaccination Program for Inpatients



"Walk the Talk"



Brandon, Age 3 years
Pfizer Phase 1 Clinical Trial
April 2021



Leo, Age 9 months
Moderna Phase 2/3 Clinical Trial
November 2021



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