

# I-VAC Pediatric Learning Collaborative for COVID-19 Vaccination



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# Disclosures

- No one in a position to control the education content of the activity has any relevant financial disclosures with ineligible companies to disclose.
- What gets said here today may change based on new data and recommendations
  - Knowledge is shared more rapidly through ECHO



# COVID-19 Common Dosing Errors, Management and Prevention

# General Best Practice Guidelines for Immunization

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Clear Orders

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Right Patient

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Right Vaccine and Diluent

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Right Dose

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Right Site

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Right Route

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Right Needle Size

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Right Documentation

<https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/downloads/general-recs.pdf>

## COVID-19 vaccine products currently approved or authorized in the United States

### Pfizer-BioNTech

Age indication	Vaccine vial cap color	Label border color	Dilution required	Primary series		Booster doses	
				Dose	Injection volume	Dose	Injection volume
6 months–4 years	Maroon	Maroon	Yes	3 µg	0.2 mL	NA	NA
5–11 years	Orange	Orange	Yes	10 µg	0.2 mL	10 µg	0.2 mL
12 years and older	Purple	Purple	Yes	30 µg	0.3 mL	30 µg	0.3 mL
12 years and older	Gray	Gray	No	30 µg	0.3 mL	30 µg	0.3 mL

### Moderna

Age indication	Vaccine vial cap color	Label border color	Dilution required	Primary series		Booster doses	
				Dose	Injection volume	Dose	Injection volume
6 months–5 years	Dark blue	Magenta	No	25 µg	0.25 mL	NA	NA
6–11 years	Dark blue	Purple	No	50 µg	0.5 mL	NA	NA
12–17 years	Red	Light blue	No	100 µg	0.5 mL	NA	NA
18 years and older	Red	Light blue	No	100 µg	0.5 mL	50 µg	0.25 mL
18 years and older	Dark blue	Purple	No	NA	NA	50 µg	0.5 mL

### Janssen

Age indication	Vaccine vial cap color	Label border color	Dilution required	Primary series		Booster doses	
				Dose	Injection volume	Dose	Injection volume
18 years and older	Blue	No Color	No	5×10 <sup>10</sup> viral particles	0.5 mL	5×10 <sup>10</sup> viral particles	0.5 mL

### Novavax

Age indication	Vaccine vial cap color	Label border color	Dilution required	Primary series		Booster doses	
				Dose	Injection volume	Dose	Injection volume
18 years and older	Royal blue	No Color	No	5 µg rS and 50 µg of Matrix-M™ adjuvant	0.5 mL	N/A	N/A

# Right Vaccine, Dose and Diluent

- Check vaccine and diluent
  - Do not mix vaccine vials of the same or different vaccines together
  - **Use only diluent supplied with vaccine (Peds Pfizer only)**
    - Do not mix COVID-19 Vaccines from different vials
    - If you do not have enough for a full dose you need to waste
    - Adjust in ICARE
- Label each vaccine after drawing up
- **Do you have the correct vaccine for patient age?**
  - Ask the patient their age not birthdate!
- Check again just before giving to patient

**Pfizer COVID-19 Vaccine**  
Dose: 10 mcg/0.2 mL  
Lot # \_\_\_\_\_  
BUD: \_\_\_\_\_ date @ \_\_\_\_\_ time  
Age: 5 to 11 years

**Pfizer COVID-19 Vaccine**  
Dose: 30 mcg/0.3 mL  
Lot # \_\_\_\_\_  
BUD: \_\_\_\_\_ date @ \_\_\_\_\_ time  
Age: 12 years to adult

# Adverse Reactions and Contraindications

# Know Possible Side-effects

- Types and examples of most common adverse reactions
  - Local (swelling at injection site)
  - Systemic (fever)
  - Allergic (anaphylaxis)
  - Adenopathy
  - Syncope in adolescents
  - Rare to see anything else



# Allergic Reactions or Syncope

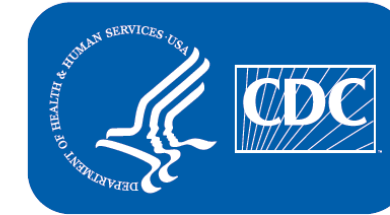
rare, but be prepared

- Prevent syncope (teens, young adults)
  - Sit or lie down for immunization
  - Wait 15-20 minutes after immunization
- Allergic reactions
  - Have a written plan, practice drill
  - Keep CPR certification current
  - Know where epinephrine and equipment to maintain airway are kept
  - Call for MD or NP and call 911
- Document – patient chart, VAERS, registry

# COVID-19:Administrative Errors and Deviations

# COVID-19 Vaccine

## Administration Errors and Deviations



A vaccine administration error is any preventable event that may cause or lead to inappropriate use of vaccine or patient harm. This table provides resources for preventing and reporting COVID-19 vaccine administration errors, as well as actions to take after an error has occurred. For completeness, it includes additional scenarios that deviate from CDC recommendations for vaccine intervals but are not considered administration errors.

### For all vaccine administration errors:

- Inform the recipient of the vaccine administration error.
- Consult with the state immunization program and/or immunization information system (IIS) to determine how the dose should be entered into the IIS, both as an administered dose and to account for inventory.
- Follow the revaccination guidance below, using an age-appropriate COVID-19 vaccine and formulation. Continue with the recommended schedule of subsequent dose(s) unless otherwise noted.
  - For doses recommended to be repeated, consider delaying the repeat dose for 8 weeks after the invalid dose based on the potential for increased reactogenicity and the rare risk of myocarditis from mRNA COVID-19 vaccines, particularly among males 12-39 years of age.
- The recommendations apply to all FDA-approved or FDA-authorized COVID-19 vaccines and all doses unless otherwise stated.
- Providers are required to report all COVID-19 vaccine administration errors—even those not associated with an adverse event—to VAERS.
- Determine how the error occurred and implement strategies to prevent it from happening again.

# Common Errors and Recommended Response

Type	Administration error/deviation	Interim recommendation
Site/route	<ul style="list-style-type: none"> <li>Incorrect site (i.e., site other than the deltoid muscle or vastus lateralis muscle)</li> </ul>	<ul style="list-style-type: none"> <li>Do not repeat dose.</li> </ul>
	<ul style="list-style-type: none"> <li>Incorrect route (e.g., subcutaneous)</li> </ul>	<ul style="list-style-type: none"> <li>Do not repeat dose.</li> <li>Inform the recipient of the potential for local and systemic adverse events.</li> </ul>
Age	<ul style="list-style-type: none"> <li>Unauthorized age group (recipients younger than age 6 months)</li> </ul>	<ul style="list-style-type: none"> <li>Do not give another dose at this time.*</li> </ul>
	<ul style="list-style-type: none"> <li>Unauthorized age group (recipients ages 6 months–17 years)</li> </ul>	<ul style="list-style-type: none"> <li>If Moderna vaccine administered:                             <ul style="list-style-type: none"> <li>As a booster dose, do not repeat the dose with Pfizer-BioNTech vaccine</li> </ul> </li> <li>If Novavax vaccine administered:                             <ul style="list-style-type: none"> <li>As a primary dose, do not repeat the dose with Moderna or Pfizer-BioNTech vaccine and continue the age-appropriate mRNA COVID-19 vaccine primary series</li> <li>As a booster dose, do not repeat the dose with Pfizer-BioNTech vaccine</li> </ul> </li> <li>If Janssen vaccine administered                             <ul style="list-style-type: none"> <li>As a primary dose, do not count the dose and begin or continue the age-appropriate mRNA COVID-19 vaccine primary series (<a href="#">Table 2</a>) at least 28 days after the Janssen vaccine dose</li> <li>As a booster dose, do not count the dose and repeat the dose with Pfizer-BioNTech vaccine at least 28 days after the Janssen vaccine dose</li> </ul> </li> </ul>

# Common Errors and Recommended Response

Type	Administration error/deviation	Interim recommendation
Product and dosage	<ul style="list-style-type: none"> <li>If the incorrect product/dosage is administered, resulting in a higher-than-authorized dose</li> </ul>	<ul style="list-style-type: none"> <li>Do not repeat dose.<sup>1*</sup></li> </ul>
	<ul style="list-style-type: none"> <li>If the incorrect product/dosage is administered, resulting in a lower-than-authorized dose</li> </ul>	<ul style="list-style-type: none"> <li>Repeat dose immediately (no minimum interval) with the age-appropriate product/dosage.</li> <li>Some experts suggest delaying the repeat dose for 8 weeks after the invalid dose based on the potential for increased reactogenicity and the rare risk of myocarditis from mRNA (i.e., Moderna or Pfizer-BioNTech) or Novavax COVID-19 vaccines, especially in males ages 12–39 years.<sup>3*</sup></li> </ul>
	<ul style="list-style-type: none"> <li>Higher-than-authorized dose volume administered of the correct product</li> </ul>	<ul style="list-style-type: none"> <li>Do not repeat dose.<sup>7</sup></li> </ul>
	<ul style="list-style-type: none"> <li>Lower-than-authorized dose volume administered of the correct product (e.g., leaked out of the syringe, equipment failure, recipient pulled away)</li> </ul>	<ul style="list-style-type: none"> <li>Repeat dose immediately (no minimum interval).<sup>5</sup></li> <li>However, if a half-volume dose of vaccine is administered to a patient recommended for the full volume, another half-volume dose can be administered on the same clinic day, and the 2 doses can count as 1 full dose.</li> </ul>

# Common Errors and Recommended Response

Type	Administration error/deviation	Interim recommendation
Storage and handling	<ul style="list-style-type: none"> <li>Dose administered after improper storage and handling (i.e., temperature excursion)</li> </ul>	<ul style="list-style-type: none"> <li>Contact the manufacturer for information on the stability of the vaccine. If the manufacturer does not have data to support the stability of the vaccine, repeat the dose immediately (no minimum interval).<sup>5</sup></li> </ul>
	<ul style="list-style-type: none"> <li>Dose administered past the expiration/beyond-use date</li> </ul>	<ul style="list-style-type: none"> <li>Contact the manufacturer for information on the stability of the vaccine. If the manufacturer does not have data to support the stability of the vaccine, repeat the dose immediately (no minimum interval).<sup>5</sup></li> </ul>
Intervals <sup>4</sup>	<ul style="list-style-type: none"> <li>An mRNA (i.e., Moderna or Pfizer-BioNTech) or Novavax primary series dose administered prior to the recommended interval<sup>6</sup></li> </ul>	<ul style="list-style-type: none"> <li>Repeat dose. Space repeat dose after the dose given in error by at least the recommended interval (<a href="#">Table 2</a> and <a href="#">Table 3</a>).<sup>5</sup></li> </ul>
	<ul style="list-style-type: none"> <li>Booster dose administered prior to the minimum interval (i.e., for the first booster dose, prior to 2 months after Janssen primary series or 3 months after mRNA vaccine primary series)</li> </ul>	<ul style="list-style-type: none"> <li>Repeat dose if this is the first booster dose. Space repeat dose after the dose given in error by at least the minimum interval.<sup>5</sup> <ul style="list-style-type: none"> <li>2-month minimum interval after Janssen vaccine primary series</li> <li>3-month minimum interval after mRNA vaccine primary series</li> </ul> </li> <li>Do not repeat dose if this is the second booster dose.</li> </ul>
	<ul style="list-style-type: none"> <li>Any COVID-19 vaccine dose administered at any interval after the recommended interval</li> </ul>	<ul style="list-style-type: none"> <li>Do not repeat dose. There is no maximum interval.</li> <li>This deviation from CDC guidance does not require VAERS reporting.</li> </ul>

<https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us-appendix.html#appendix-c>



# Common Errors and Recommended Response

Type	Administration error/deviation	Interim recommendation
Diluent (Pfizer-BioNTech COVID-19 Vaccine formulations only [purple cap and orange cap])	<ul style="list-style-type: none"> <li>ONLY diluent administered (i.e., sterile 0.9% sodium chloride)</li> </ul>	<ul style="list-style-type: none"> <li>Administer the authorized dose immediately (no minimum interval).</li> </ul>
	<ul style="list-style-type: none"> <li>No diluent, resulting in higher than authorized dose</li> </ul>	<ul style="list-style-type: none"> <li>Do not repeat dose.<sup>7</sup> Inform the recipient of the potential for local and systemic adverse events.</li> </ul>
	<ul style="list-style-type: none"> <li>Incorrect diluent type (e.g., sterile water, bacteriostatic 0.9% sodium chloride)</li> </ul>	<ul style="list-style-type: none"> <li>Contact the manufacturer for information on the stability of the vaccine. If the manufacturer does not have information to support the stability of the vaccine, repeat the dose immediately (no minimum interval).<sup>5</sup></li> </ul>
	<ul style="list-style-type: none"> <li>Vaccine is mixed with too little diluent</li> </ul>	<ul style="list-style-type: none"> <li>Do not repeat dose. Inform the recipient of the potential for local and systemic adverse events.<sup>7</sup></li> </ul>
	<ul style="list-style-type: none"> <li>Vaccine is mixed with too much diluent</li> </ul>	<ul style="list-style-type: none"> <li>Repeat dose immediately (no minimum interval).<sup>5</sup></li> </ul>
	<ul style="list-style-type: none"> <li>Single-use vial of diluent is used to mix multiple vials of vaccine</li> </ul>	<ul style="list-style-type: none"> <li>Do not repeat dose. Inform patient of the potential for bacterial infection.</li> </ul>
Diluent (Pfizer-BioNTech COVID-19 formulation that should not be mixed with diluent, i.e., gray cap)	<ul style="list-style-type: none"> <li>Vaccine is mixed with any diluent (i.e., any type or volume of diluent)</li> </ul>	<ul style="list-style-type: none"> <li>Contact the manufacturer for information on the stability of the vaccine. If the manufacturer does not have information to support the stability of the vaccine, repeat the dose immediately (no minimum interval).<sup>5</sup></li> </ul>

# Common Errors and Recommended Response

Type	Administration error/deviation	Interim recommendation
Mixed primary series	<ul style="list-style-type: none"><li>Incorrect COVID-19 vaccine product inadvertently administered as part of a 2- or 3-dose primary series</li></ul>	<ul style="list-style-type: none"><li>Do not repeat dose.</li><li>Children ages 6 months–4 years who receive different mRNA products for the first 2 doses of an mRNA COVID-19 vaccine series should follow a 3-dose schedule. A third dose of either mRNA vaccine should be administered 8 weeks after the second dose to complete the 3-dose primary series.</li><li>Children ages 5–17 years who receive a mixed mRNA COVID-19 vaccine primary series can follow the Pfizer-BioNTech COVID-19 Vaccine schedule and receive a booster dose.</li></ul>



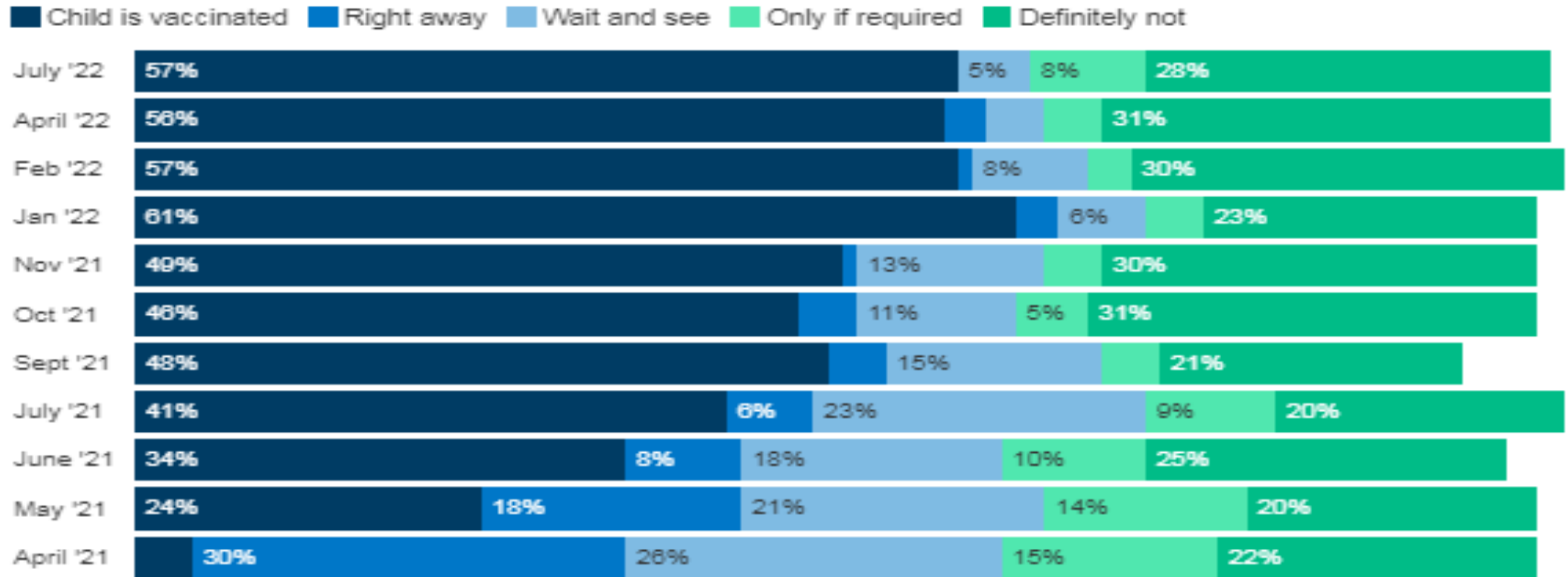
# COVID-19 Update



Figure 9

## Vaccination Rates Among Children Ages 12-17 Have Plateaued Since The Start Of The Year

Thinking about your child between the ages of 12 and 17, have they received at least one dose of a COVID-19 vaccine, or not? If not, do you think you will get them vaccinated...?



NOTE: Among parents or guardians of children between the ages of 12 and 17. April 2021 question wording: "Once there is a COVID-19 vaccine authorized and available for your child's age group, do you think you will...?" See topline for full question wording.

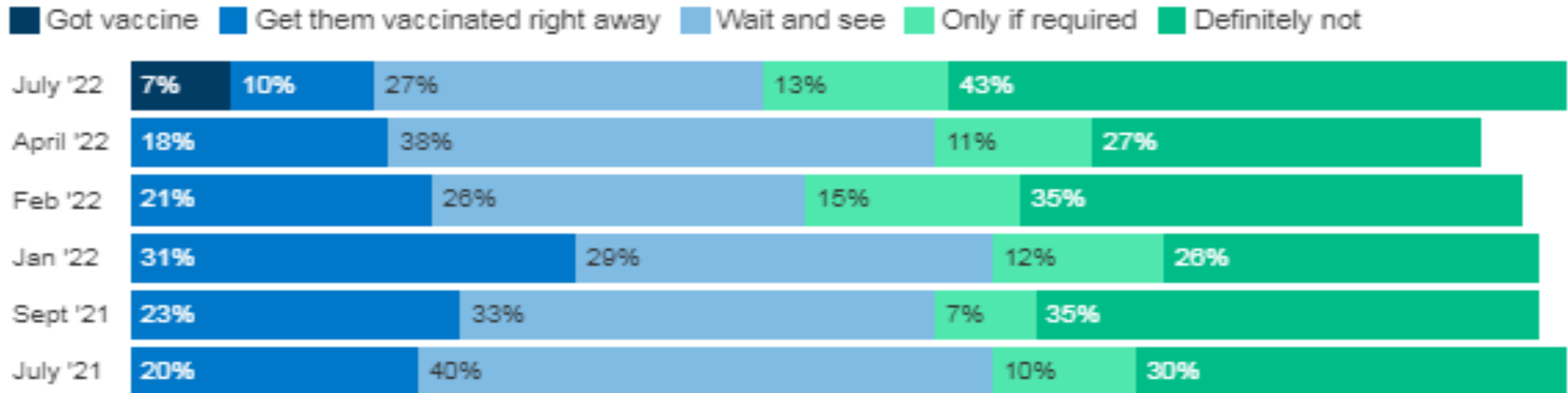
SOURCE: KFF COVID-19 Vaccine Monitor • PNG

KFF COVID-19  
Vaccine Monitor

Figure 1

## More Than Four In Ten Parents Of Children Under 5 Eligible For The Vaccine Say They Will "Definitely Not" Vaccinate Their Child For COVID-19

Thinking about your child between the ages of 6 months and 4 years, have they received at least one dose of a COVID-19 vaccine, or not? If not, do you think you will get them vaccinated...?



NOTE: Asked of parents or guardians of children between the ages of 6 months and 4 years. July 2021-April 2022 question was asked of parents or guardians of children under the age of five with question wording: "Once there is a COVID-19 vaccine authorized and available for your child's age group, do you think you will..." See topline for full question wording.

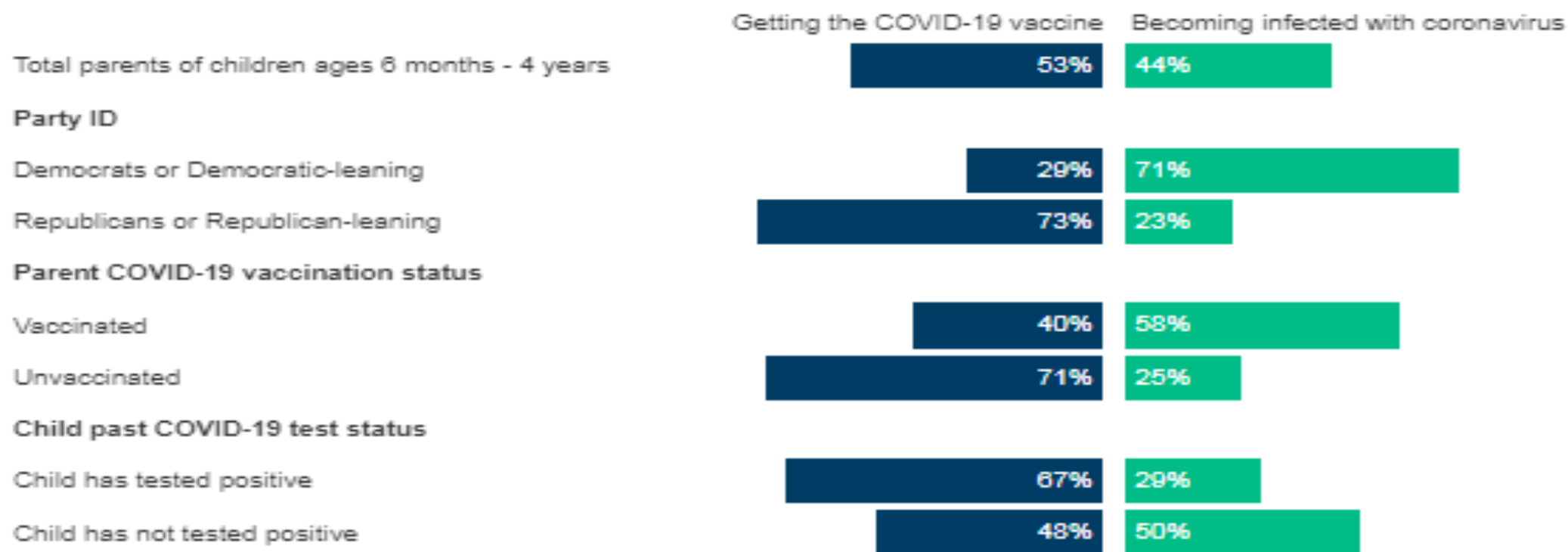
SOURCE: KFF COVID-19 Vaccine Monitor • PNG

KFF COVID-19  
Vaccine Monitor

Figure 6

## More Than Half Of Parents Of Children Between 6 Months And 4 Years Old Say The COVID-19 Vaccine Poses A Bigger Risk To Their Child's Health Than A Coronavirus Infection

Thinking about your child between the ages of 6 months and 4 years old, which of the following do you think would be a **bigger risk** to your child's health..?



NOTE: Asked of parents or guardians of children between the ages of 6 months and 4 years. See topline for full question wording.

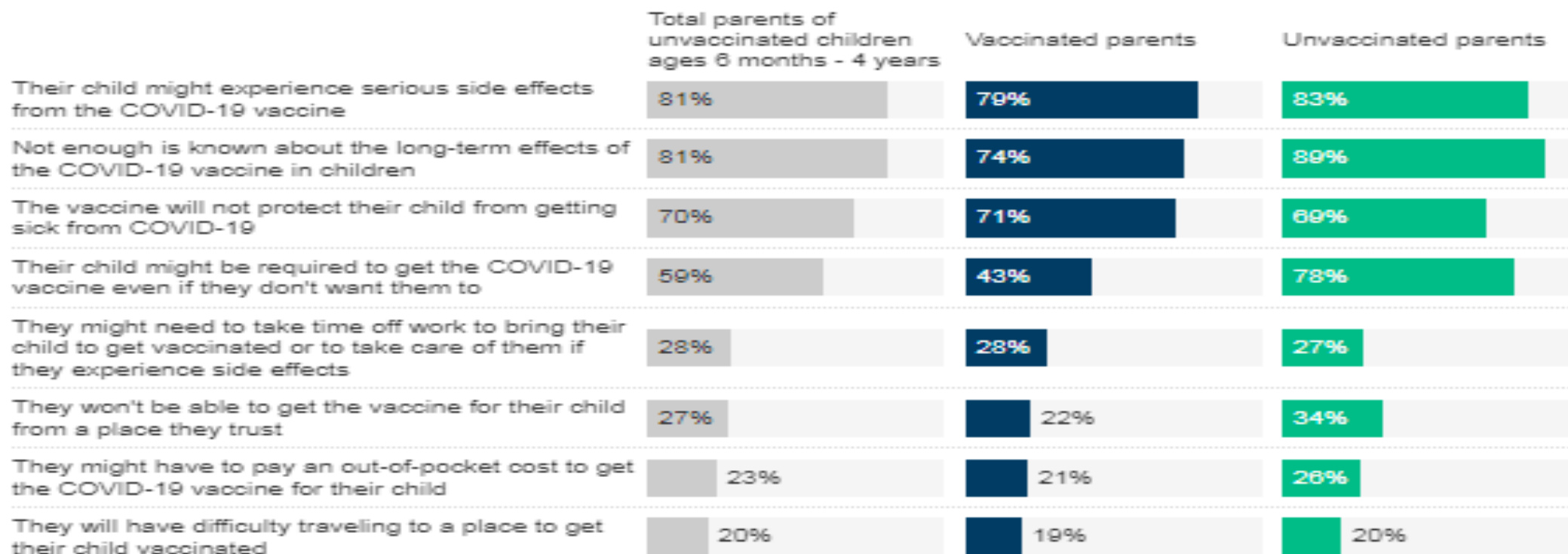
SOURCE: KFF COVID-19 Vaccine Monitor (July 7-17, 2022) • PNG

KFF COVID-19  
Vaccine Monitor

Figure 4

## Majorities Of Parents Of Children Between 6 Months and 4 Years Concerned About Long-Term, Serious Side Effects Of COVID-19 Vaccine In Children

Percent of parents of unvaccinated children between the ages of 6 months and 4 years who say they are **very** or **somewhat** concerned about the each of the following:



NOTE: Asked of parents or guardians of unvaccinated children between the ages of 6 months of 4 years. See topline for full question wording.

SOURCE: KFF COVID-19 Vaccine Monitor (July 7-17, 2022) • PNG

KFF COVID-19  
Vaccine Monitor



Figure 8

## Most Parents Of Children Between The Ages Of 6 Months And 4 Years Have Not Talked To A Pediatrician About The COVID-19 Vaccine For Their Child

Have you talked to a pediatrician or other health care provider about the COVID-19 vaccine for your child between the ages of 6 months and 4 years old?



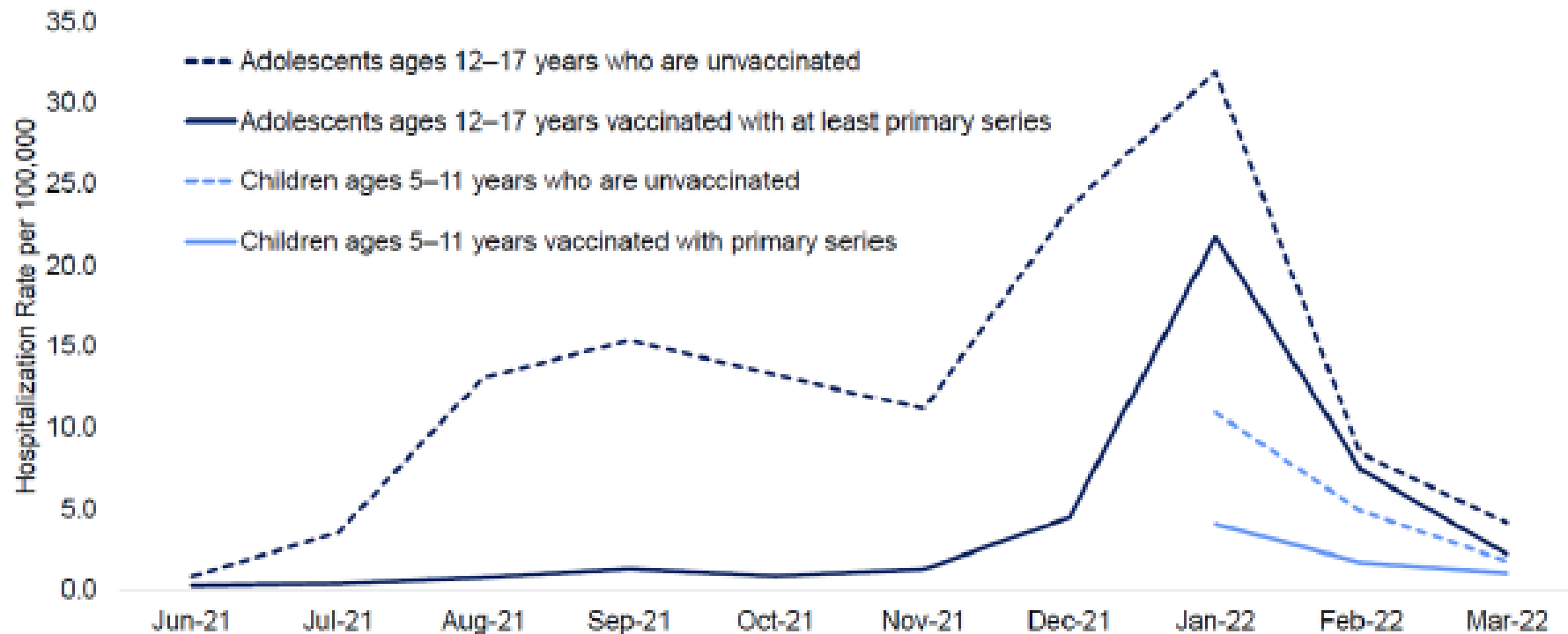
NOTE: Asked of parents or guardians of children between the ages of 6 months and 4 years. See topline for full question wording.

SOURCE: KFF COVID-19 Vaccine Monitor (July 7-17, 2022) • [PNG](#)

**KFF COVID-19  
Vaccine Monitor**

## Rates of monthly COVID-19-associated hospitalizations by vaccination status among children and adolescents 5–17 years, COVID-NET

June 2021 – March 2022



Source: CDC COVID Data Tracker: COVID-NET Hospitalizations by Vaccination Status. Accessed May 12, 2022.

# Percent of children ages 6 months–4 years with COVID-19 associated hospitalization with underlying health conditions

■ At least 1 underlying medical conditions    ■ No underlying medical conditions

New Vaccine Surveillance Network, March 2020  
– April 2022



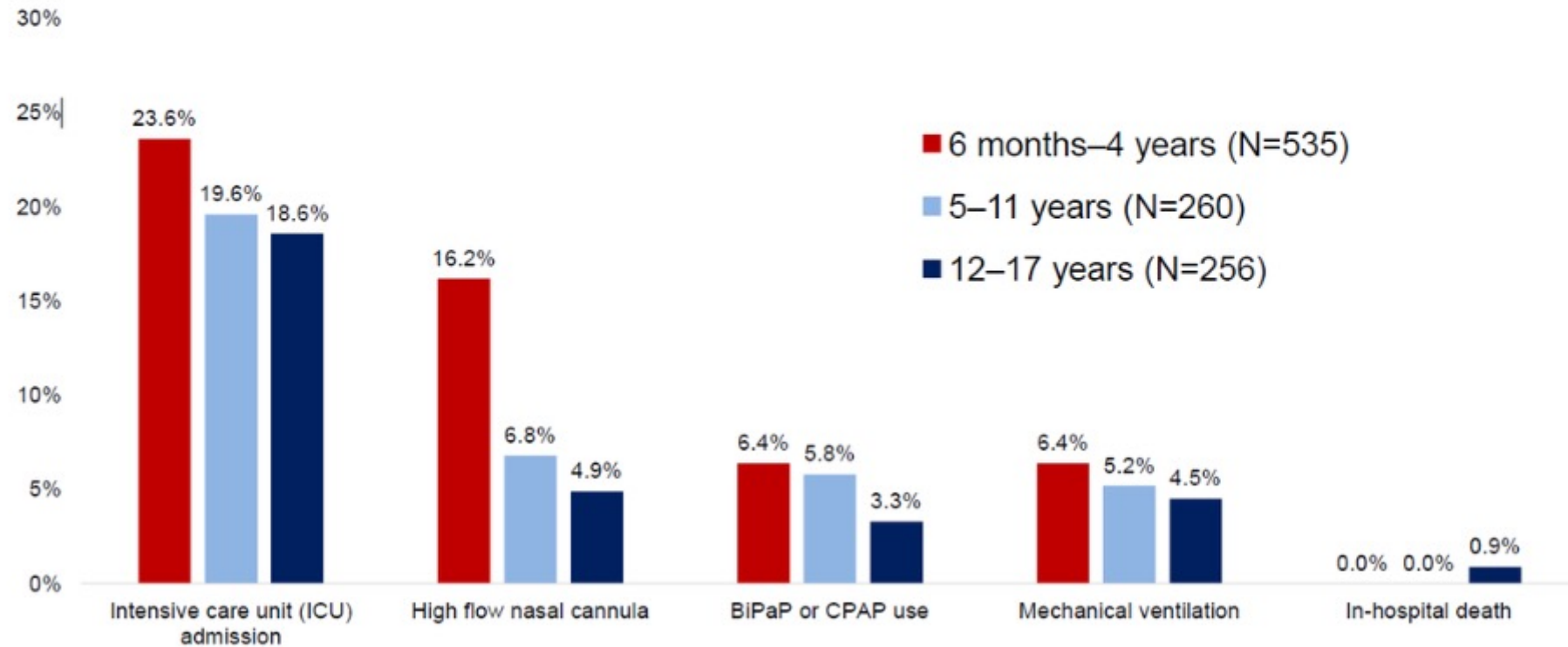
COVID-NET, March 2020 – March 2022



Source: 1. New Vaccine Surveillance Network. Preliminary data as of May 25, 2022, reflecting data from March 2020–April 2022  
COVID-NET data. Accessed May 21, 2022, reflecting data from March 2020–March 2022



# Severity of COVID-19-associated hospitalizations among children and adolescents 6 months–17 years, COVID-NET, December 19, 2021 – March 31, 2022 (Omicron period)



BiPAP: bilevel positive pressure, CPAP: continuous positive pressure  
Source: COVID-NET data. Accessed May 21, 2022.

## COVID-19 is a leading cause of death among children ages 0–19 years

March 1, 2020–April 30, 2022

Age group	Rank of COVID-19 among causes of death
<1 year	4
1–4 years	5
5–9 years	5
10–14 years	4
15–19 years	4

Based on death certificate data from the National Center for Health Statistics. COVID-19 based on cumulative total incidence of COVID-19 deaths from March 1, 2020–April 30, 2022.

Source: Flaxman S, Whittaker C, Semenova E et al. Covid-19 is a leading cause of death in children and young people ages 0-19 years in the United States. medRxiv 2022.05.23.22275458; doi: <https://doi.org/10.1101/2022.05.23.22275458>



**KEEP  
CALM  
AND  
MAKE IT  
HAPPEN**

<https://smarterchaos.com/make-it-happen-digital-marketing/>



# Cases



# Next Session: Tuesday, August 16<sup>th</sup>

For any questions, email us at  
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