

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





- National vaccination rates
- Prognosis
- COVID-19 Update
 - New FDA vaccine recommendations

COVID-19 Prognosis

Daniel Johnson, MD

Professor of Pediatrics

Founder and Director of ECHO-Chicago

Pediatric Infectious Diseases

University of Chicago Medicine/Comer Children's Hospital

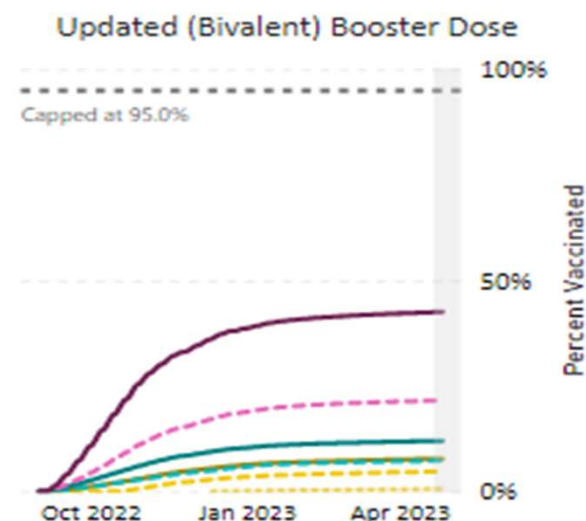
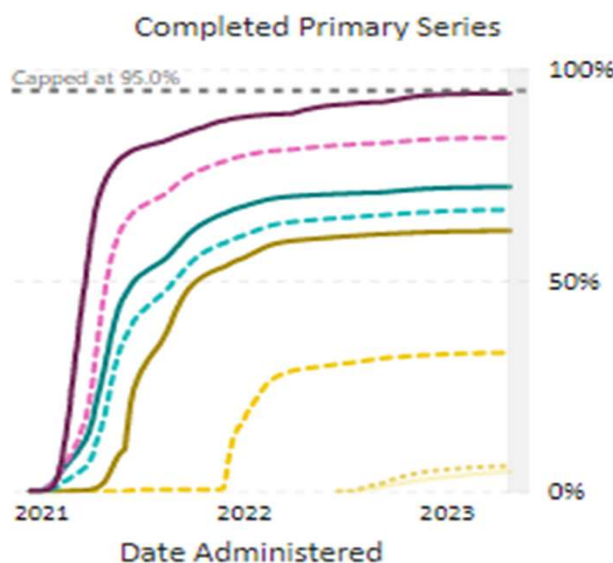
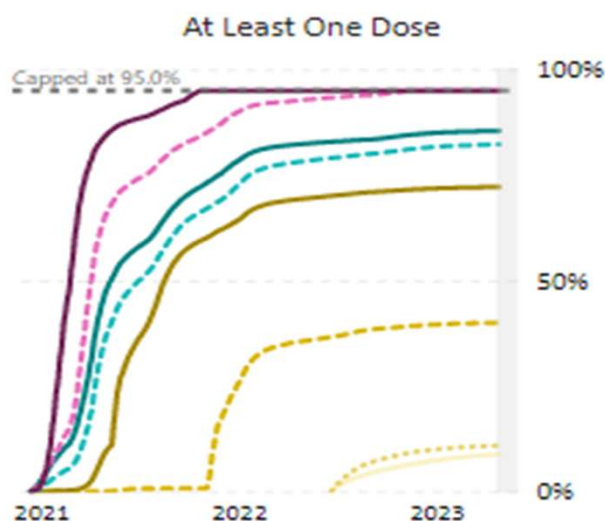
May 2, 2023



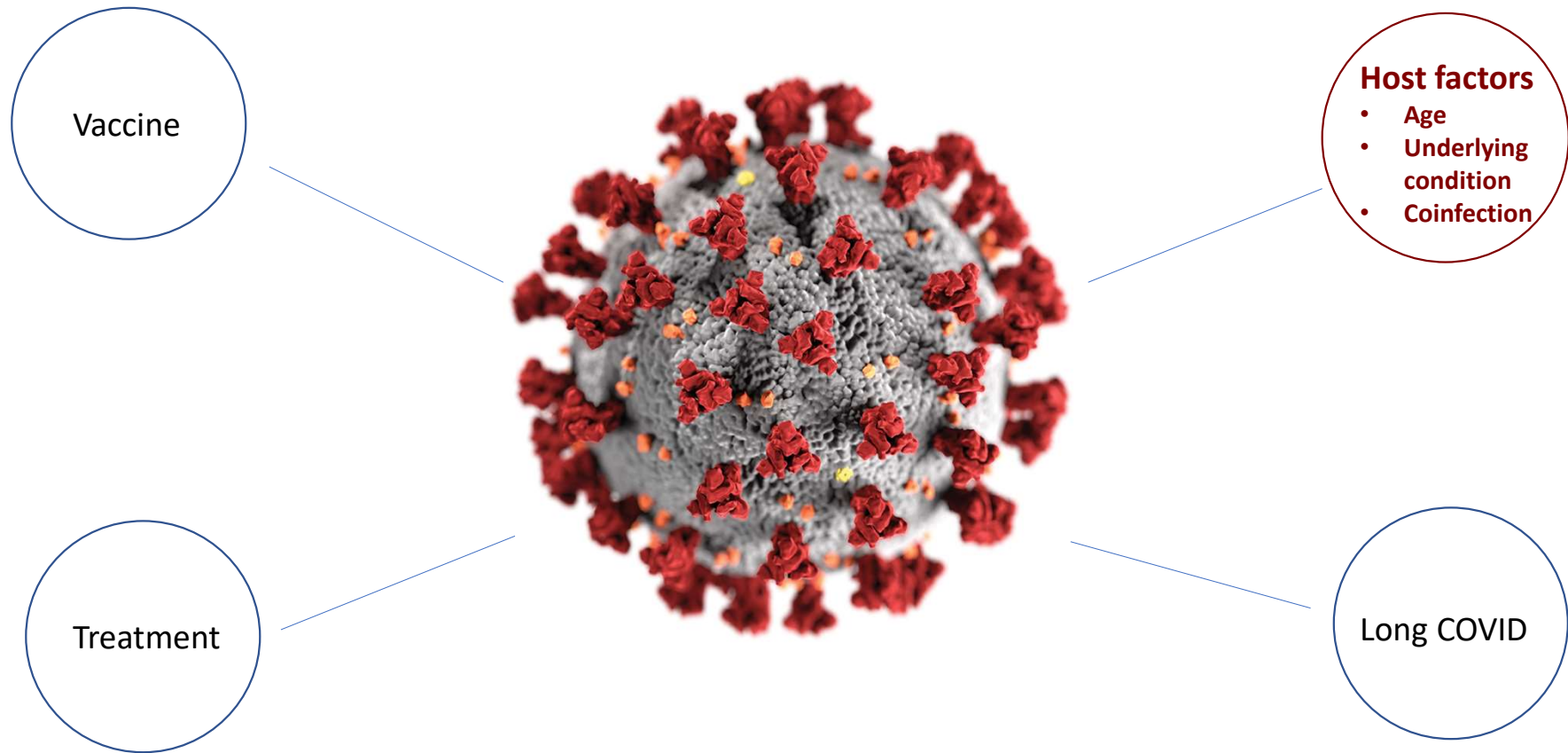
Percent of People Receiving COVID-19 Vaccine by Age and Date Administered, United States

December 14, 2020 – April 26, 2023

	<2 yrs	2-4 yrs	5-11 yrs	12-17 yrs	18-24 yrs	25-49 yrs	50-64 yrs	+65 yrs
At Least One Dose	8.8%	10.8%	40.0%	72.2%	82.3%	85.5%	95.0%	95.0%
Completed Primary Series	4.6%	6.0%	32.9%	61.8%	66.8%	72.2%	83.8%	94.3%
Updated (Bivalent) Booster Dose	0.6%	0.6%	4.7%	7.7%	7.3%	12.0%	21.5%	42.6%



COVID Prognosis



Cumulative COVID-19-Associated Hospitalizations per 100,000 Population by Age Group, COVID-NET, January 2, 2022 - January 14, 2023 (Omicron Variant Period)

Age group	Cumulative Rate
<6 months	902.0
6 - 23 months	260.9
2 - 4 years	88.4
5 - 11 years	40.1
12 - 17 years	66.4
18 - 49 years	245.1
50 - 64 years	488.2
65 - 74 years	977.9
75+ years	1803.0

High Risk for Hospitalization

- Those considered to be at moderate to high risk for complications with mild to moderate COVID-19
 - Obesity
 - BMI $\geq 95^{\text{th}}$ percentile for age and sex based on CDC growth charts
 - Immunosuppressive disease or receipt of immunosuppressive therapies resulting in moderate or severe immunocompromise
 - Neurodevelopmental disorders (e.g., cerebral palsy, trisomy 21) that result in impaired airway clearance
 - Medical complexity, including medical-related technological dependence that is not related to COVID-19 (e.g., tracheostomy, positive pressure ventilation, gastrostomy)
 - Severe heart disease
 - Severe chronic lung disease; severe asthma or other chronic respiratory disease that requires daily medication for control
 - Multiple moderate to severe chronic diseases
 - Pregnancy
 - Sickle cell disease
 - Diabetes (poorly controlled)
 - Chronic kidney disease
 - Chronic liver disease (e.g., cirrhosis, autoimmune hepatitis)

Children and Adolescents Presenting to US Children's Hospital EDs with COVID-19

- 20% were hospitalized; of these, 21% received care in the ICU
- Older children and adolescents had a lower risk for hospitalization but more severe illness when hospitalized

Factors Associated With Disease Severity in Children and Adolescents With COVID-19

aOR (95% CI)

Characteristic	Hospitalization ^a	Hospital disease severity ^b
Race/ethnicity		
White	Reference group	Reference group
Black	0.72 (0.64-0.82)	1.52 (1.20-1.93)
Hispanic	0.67 (0.61-0.75)	1.15 (0.92-1.43)
Other	1.05 (0.92-1.19)	1.62 (1.24-2.12)
Age, y		
a. 0-4	Reference group	Reference group
b. 5-11	0.50 (0.45-0.56)	2.66 (2.14-3.32)
c. 12-17	0.75 (0.69-0.82)	2.09 (1.71-2.55)
Sex		
Male	Reference group	Reference group
Female	0.89 (0.82-0.95)	0.91 (0.78-1.07)
Payor type		
Government	Reference group	Reference group
Private	1.16 (1.06-1.28)	1.09 (0.89-1.32)
Other	0.97 (0.81-1.16)	0.84 (0.54-1.30)

aOR (95% CI)

Characteristic	Hospitalization ^a	Hospital disease severity ^b
Cardiovascular CCC		
No	Reference group	Reference group
Yes	4.95 (4.25-5.76)	3.10 (2.56-3.74)
Neuromuscular CCC		
No	Reference group	Reference group
Yes	3.22 (2.70-3.85)	1.56 (1.23-1.96)
Obesity/type 2 diabetes mellitus		
No	Reference group	Reference group
Yes	10.44 (8.19-13.30)	2.16 (1.64-2.83)
Asthma		
No	Reference group	Reference group
Yes	1.41 (1.26-1.59)	0.93 (0.76-1.14)
Immunocompromised CCC		
No	Reference group	Reference group
Yes	5.85 (4.98-6.88)	1.14 (0.92-1.42)
Pulmonary CCC		
No	Reference group	Reference group
Yes	5.31 (3.44-8.22)	2.66 (1.83-3.86)

Codetections of Other Respiratory Viruses Among Children Hospitalized With COVID-19

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- Children with codetections were more likely to be <5 y/o, receive increased oxygen support, or be admitted to the ICU (P < .001)
- Among children <5 y/o, having any viral codetection or rhinovirus/enterovirus codetection was significantly associated with severe illness
- Among children <2 y/o, RSV codetections were also significantly associated with severe illness
- No significant associations were seen among children ≥5 y/o.

Pediatrics 2023.

<https://publications.aap.org/pediatrics/article/151/2/e2022059037/190475/Codetections-of-Other-Respiratory-Viruses-Among?autologincheck=redirected>



Interesting Note

PNAS


RESEARCH ARTICLE

MEDICAL SCIENCES

 OPEN ACCESS



Risk of severe COVID-19 infection among adults with prior exposure to children

Matthew D. Solomon^{a,b,1}, Gabriel J. Escobar^a, Yun Lu^a, David Schlessinger^a, Jonathan B. Steinman^c, Lawrence Steinman^{d,e,f,1} , Catherine Lee^a, and Vincent X. Liu^a

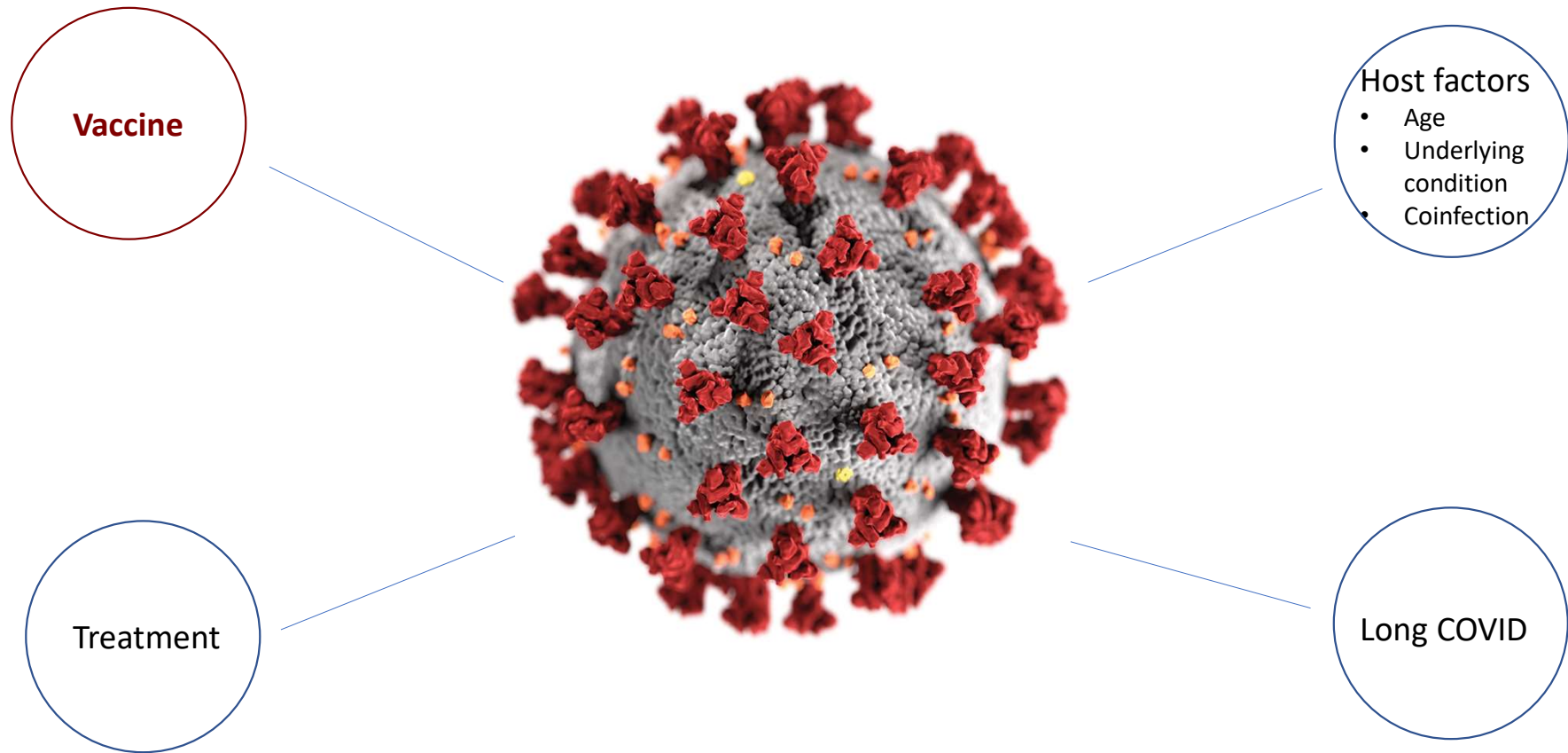
- Adults without exposure to children had lower rates of COVID-19 infection (IRR 0.85, [0.83–0.87]) (*i.e., children as vectors of SARS-CoV-2*) but significantly higher rates of COVID-19 hospitalization (IRR 1.49, [1.29–1.73]) and hospitalization requiring ICU admission (IRR 1.76, [1.19–2.58]) compared to those with children aged 0–5
 - Exposure to young children was associated with less severe COVID-19 illness
 - Endemic coronavirus cross-immunity may play a role in protection against severe COVID-19



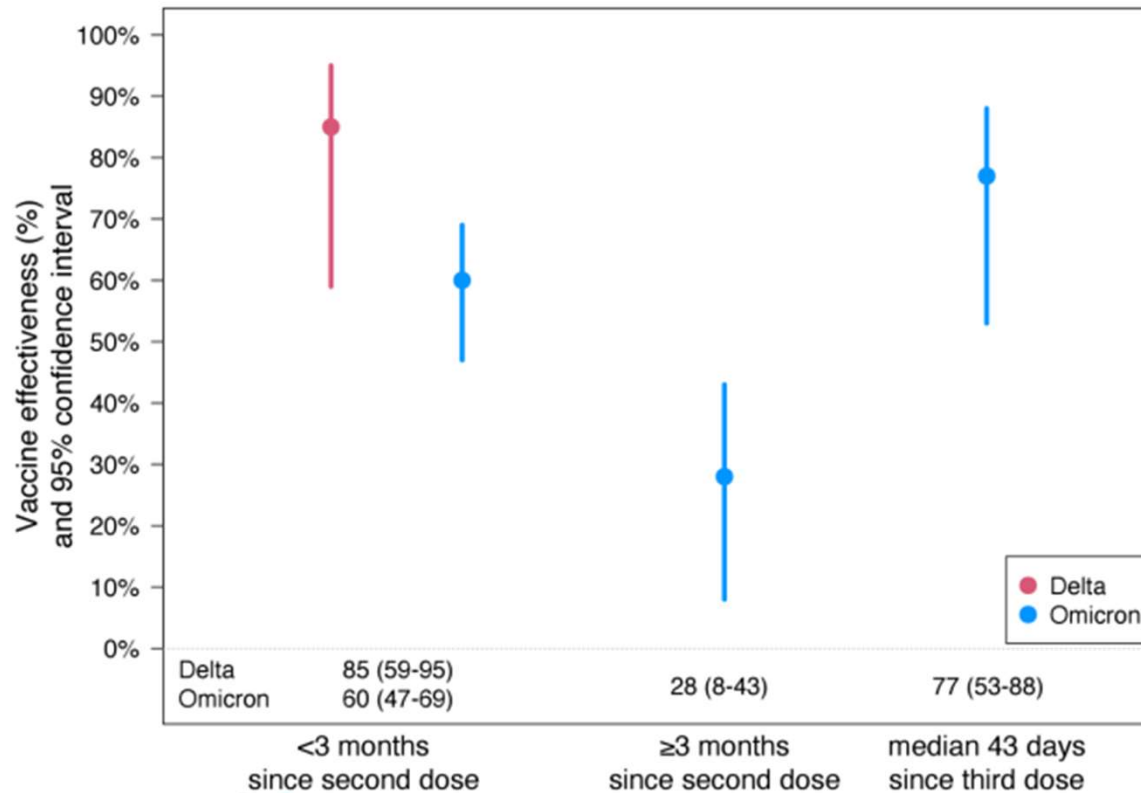
PNAS 2022. <https://www.pnas.org/doi/10.1073/pnas.2204141119>



COVID Prognosis



Pfizer Vaccine Reduces Risk of ED/Urgent Care Encounters in 5-11 Years Olds

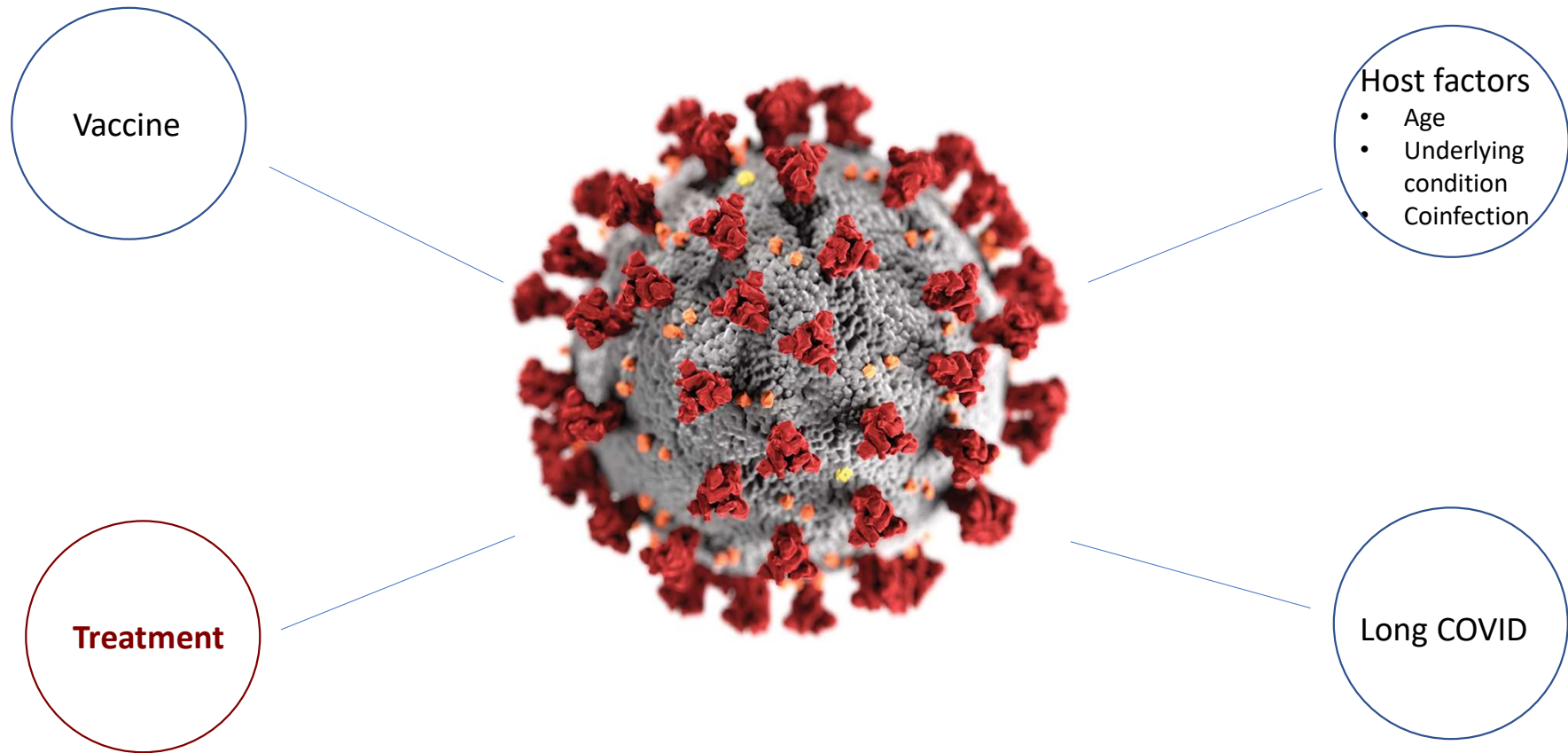


Vaccination Significantly Improves Prognosis

Although it changes over time due to waning immunity, vaccination reduces risk of:

- Needing to go to the ED/UC
- Hospitalization
- ICU care
- Development of MIS-C
- Development of long COVID
- Risk of spread
- Duration of shedding
- Duration of protection against reinfection

COVID Prognosis



Treatment In Kids

- Currently, no published results from pediatric clinical trials on the treatment of COVID-19
- Data evaluating the use of pharmacologic therapy in children with COVID-19 are limited largely to descriptive reports
- The current recommendations for treating COVID-19 in children have been extrapolated from recommendations for adults with COVID-19, treatment results of children with other viral infections, and expert opinion
 - Treatment of high-risk patients in the hospital is believed to improve outcome
 - Treatment of low-risk patients and patients not hospitalized may not be required and may not affect outcome
 - Adult data suggests that treatment could reduce future risk of complications

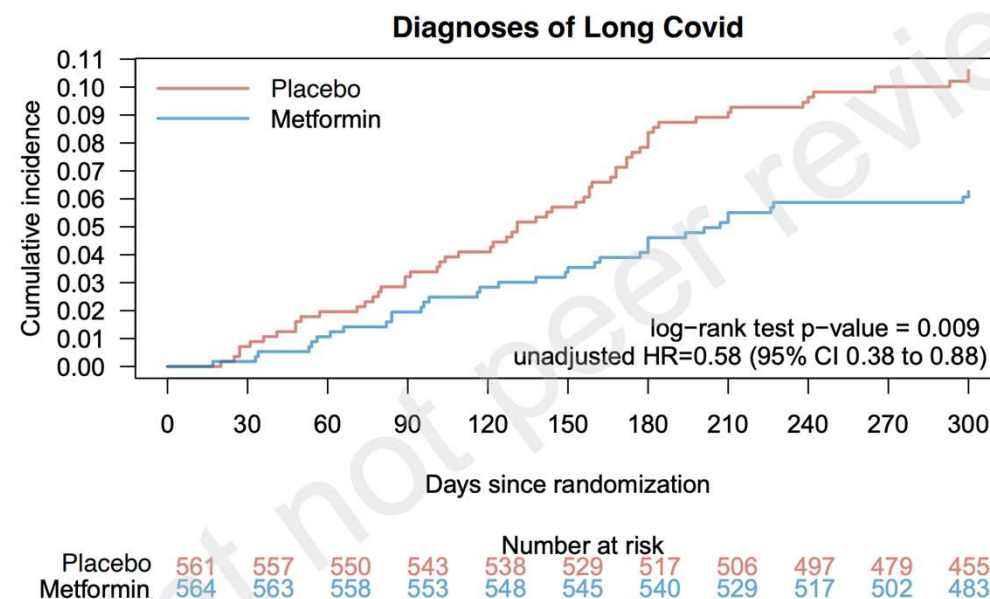
Breakthrough for Long COVID Prevention?

Preprints with THE LANCET

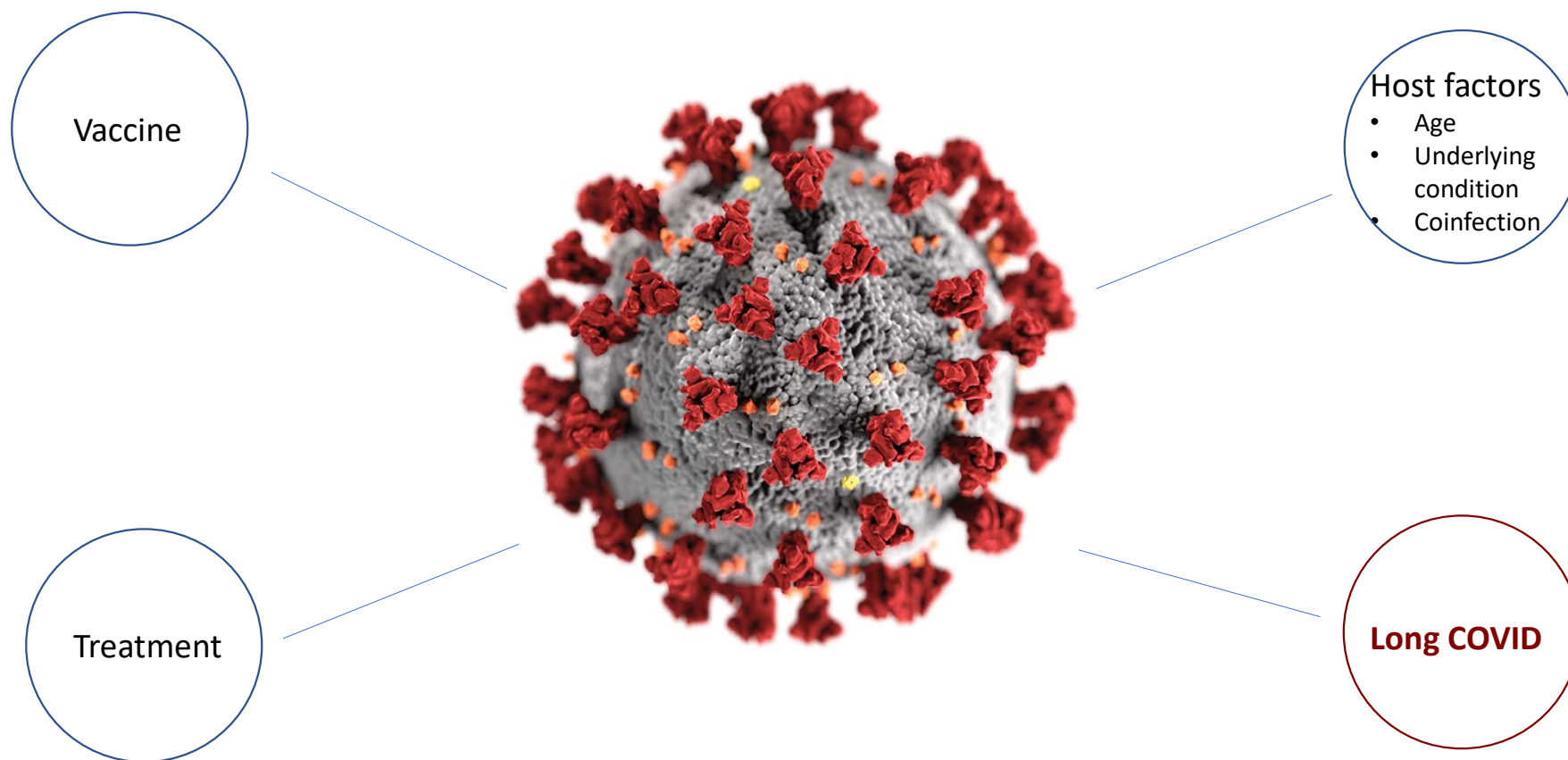
Outpatient Treatment of COVID-19 and the Development of Long COVID Over 10 Months: A Multi-Center, Quadruple-Blind, Parallel Group Randomized Phase 3 Trial

42 Pages • Posted: 6 Mar 2023

Treatment of adults with metformin associated with a 42% reduction of subsequent long COVID, an absolute decrease of 4.3%, i.e., 10.6% down to 6.3%
More studies needed but encouraging data



COVID Prognosis



Clinical Features and Burden of Postacute Sequelae of SARS-CoV-2 Infection in Children and Adolescents

Suchitra Rao, MBBS, MSCS; Grace M. Lee, MD, MPH; Hanieh Razzaghi, MPH; Vitaly Lorman, PhD; Asuncion Mejias, MD, PhD; Nathan M. Pajor, MD; Deepika Thacker, MD; Ryan Webb, MS; Kimberley Dickinson, BS; L. Charles Bailey, MD, PhD; Ravi Jhaveri, MD; Dimitri A. Christakis, MD, MPH; Tellen D. Bennett, MD, MS; Yong Chen, PhD; Christopher B. Forrest, MD, PhD

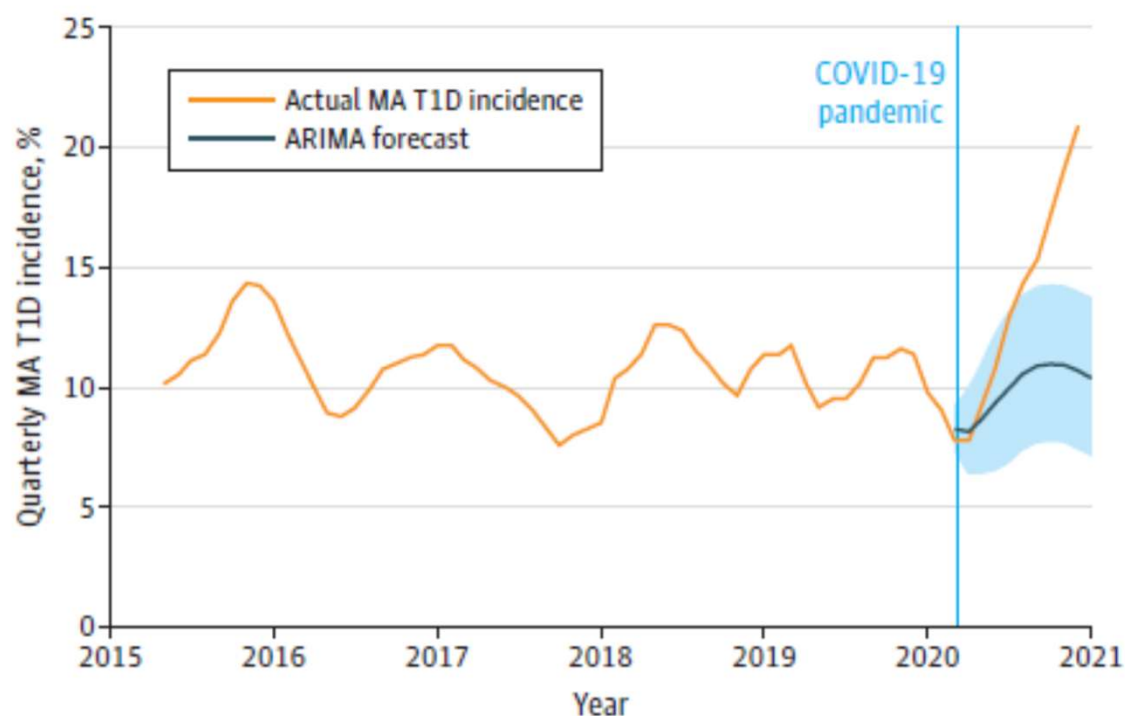
- A higher strength of association for long COVID was identified in those cared for in the intensive care unit during the acute illness phase, children ≤ 5 years, and individuals with complex chronic conditions

PASC feature	Incidences, No.		Persons, No.		Incidence proportion, % (95% CI)		Incidence proportion difference, % (95% CI)	Standardized morbidity ratio
	Viral test result positive	Viral test result negative	Viral test result positive ^a	Viral test result negative	Viral test result positive	Viral test result negative		
Syndromic ^b	10 657	108 906	54 061	548 304	19.7 (19.4-20.0)	19.9 (19.8-20.0)	-0.1 (-0.5 to 0.2)	1.07 (1.05-1.09)
Systemic ^b	7084	50 786	52 027	529 741	13.6 (13.3-13.9)	9.6 (9.5-9.7)	4.0 (3.7-4.3)	1.49 (1.45-1.52)
Medication	7871	73 651	40 742	425 741	19.3 (18.9-19.7)	17.3 (17.2-17.4)	2.0 (1.6-2.4)	1.19 (1.16-1.22)
Syndromic or systemic ^c	14 418	133 328	50 180	510 045	28.7 (28.3-29.1)	26.1 (26.0-26.3)	2.6 (2.2-3.0)	1.16 (1.14-1.18)
Syndromic, systemic, or medication ^d	17 498	162 228	41 756	424 215	41.9 (41.4-42.4)	38.2 (38.1-38.4)	3.7 (3.2-4.2)	1.15 (1.14-1.17)

JAMA Peds 2022.

https://jamanetwork.com/journals/jamapediatrics/fullarticle/2795569?utm_campaign=articlePDF&utm_medium=articlePDFlink&utm_source=articlePDF&utm_content=jamapediatrics.2022.2800

Incidence of New-Onset Type1 Diabetes Among US Children During the COVID-19 Pandemic



Health care providers should screen for diabetes symptoms in persons aged <18 years with a history of SARS-CoV-2 infection, including history of frequent urination, increased thirst, increased hunger, weight loss, tiredness or fatigue, stomach pain, and nausea or vomiting

Risk is greatest amongst those patients hospitalized with COVID, especially those who required ICU care

COVID-19 Update



New Vaccine Schedules

Jennifer Burns
Advanced Practice Nurse
Health4Chicago Medical Director

Pediatric Infectious Diseases
University of Chicago Medicine/Comer Children's Hospital
May 2, 2023



Association of SARS-CoV-2 Vaccination or Infection With Bell Palsy A Systematic Review and Meta-analysis

- Compared the incidence of Bell Palsy (BP) in mRNA vaccinated populations to unvaccinated and those with SARS-CoV-2 infection without vaccination to a vaccinated cohort
 - Vaccinated to non-vaccinated included RCTs and observational studies
 - Vaccinated versus infected were observational
- Pooling 4 RCTs showed significantly higher BP in recipients of SARS-CoV-2 vaccines (OR, **3.00**; 95% CI, 1.10-8.18)
 - Overall BP incidence in the general population is approximately **15-30/100 000** annually
 - In the RCTs of vaccinated people, the BP incidence was **18/100 000** among SARS-CoV-2 vaccine recipients
 - With SARS CoV-2 infection, the reported BP incidence is significantly higher at **32.3-82/100 000** patients.
- **No significant difference** in BP after administration of mRNA vaccines in pooling 8 observational studies of millions of patients
- BP was significantly more common after SARS-CoV-2 infection than after SARS-CoV-2 vaccinations (relative risk, **3.23**; 95% CI, 1.57-6.62)

AGES 6 MONTHS TO <5 YEARS

Additional Considerations

An 8-week interval between the first and second doses of Moderna and Pfizer-BioNTech COVID-19 vaccines might be optimal for some people ages 6 months–64 years, especially for males ages 12–39 years, as data suggests it reduces the small risk of myocarditis and pericarditis associated with these vaccines.

UNVACCINATED

dose/injection volume


Moderna Bivalent:
(Do NOT dilute before use)
Dark Blue Cap (gray label)

Pfizer Bivalent:
(dilute before use)
Maroon Cap

OR

PREVIOUSLY VACCINATED

dose/injection volume

 Previously Received
COVID-19 Vaccines

Moderna Bivalent:
(Do NOT dilute before use)
Dark Blue Cap (gray label)
Dark Pink Cap (yellow label)

Pfizer Bivalent:
(dilute before use)
Maroon Cap



AGES 6 MONTHS TO <5 YEARS - MODERATELY TO SEVERELY IMMUNOCOMPROMISED

For Pfizer, guidance for immunocompromised is to add a 4th dose to the current regimen

For Moderna for the unvaccinated, give an extra dose as indicated in the chart.

Certain kinds of immunocompromise refers to individuals who have undergone solid organ transplantation, or who are diagnosed with conditions that are considered to have an equivalent level of immunocompromise.

UNVACCINATED


dose/injection volume

Moderna Bivalent:
(Do NOT dilute before use)
Dark Blue Cap (gray label)

Pfizer Bivalent:
(dilute before use)
Maroon Cap

PREVIOUSLY VACCINATED

dose/injection volume

 Previously Received
COVID-19 Vaccines

Moderna Bivalent:
(Do NOT dilute before use)
Dark Blue Cap (gray label)
Dark Pink Cap (yellow label)

Pfizer Bivalent:
(dilute before use)
Maroon Cap



AGES 5 TO <6 YEARS

UNVACCINATED

dose/injection volume

Moderna Bivalent:
(Do NOT dilute before use)
Dark Blue Cap (gray label)

Pfizer Bivalent:
(dilute before use)
Orange Cap



PREVIOUSLY VACCINATED

dose/injection volume

Previously Received COVID-19 Vaccines

Moderna Bivalent:
(Do NOT dilute before use)
Dark Blue Cap (gray label)
Dark Pink Cap (yellow label)

Pfizer Bivalent:
(dilute before use)
Orange Cap



AGES 5 TO <6 YEARS: IMMUNOCOMPROMISED

Immunocompromised Guidance for Pfizer-BioNTech

For individuals with certain kinds of immunocompromise 5 years of age and older, a single additional age-appropriate dose of Pfizer-BioNTech COVID-19 Vaccine, Bivalent may be administered at least 2 months following the initial dose of a bivalent COVID-19 vaccine; additional age-appropriate doses of Pfizer- BioNTech COVID-19 Vaccine, Bivalent may be administered at the discretion of the healthcare provider, taking into consideration the individual's clinical circumstances.

Immunocompromised Guidance for Moderna

For individuals with certain kinds of immunocompromise 5 to <6 years of age who have received two 0.25 mL doses (Moderna COVID-19 Vaccine or Moderna COVID-19 Vaccine, Bivalent), an additional 0.25 mL dose of Moderna COVID-19 Vaccine, Bivalent (vial with a dark blue cap and a label with a gray border) may be administered at least 1 month following the most recent dose; additional doses of Moderna COVID-19 Vaccine, Bivalent may be administered at the discretion of the healthcare provider, taking into consideration the individual's clinical circumstances.

AGES 6 TO <12 YEARS

UNVACCINATED

dose/injection volume

Moderna Bivalent:
(Do NOT dilute before use)
Dark Blue Cap (gray label)

Pfizer Bivalent:
(dilute before use)
Orange Cap



PREVIOUSLY VACCINATED

dose/injection volume

☐ Previously Received COVID-19 Vaccines

Moderna Bivalent:
(Do NOT dilute before use)
Dark Blue Cap (gray label)
Dark Pink Cap (yellow label)

Pfizer Bivalent:
(dilute before use)
Orange Cap



AGES 6 TO <12 YEARS: IMMUNOCOMPROMISED

Immunocompromised Guidance for Pfizer-BioNTech

For individuals with certain kinds of immunocompromise 5 years of age and older, a single additional age-appropriate dose of Pfizer-BioNTech COVID-19 Vaccine, Bivalent may be administered at least 2 months following the initial dose of a bivalent COVID-19 vaccine; additional age-appropriate doses of Pfizer- BioNTech COVID-19 Vaccine, Bivalent may be administered at the discretion of the healthcare provider, taking into consideration the individual's clinical circumstances.

Immunocompromised Guidance for Moderna

For individuals with certain kinds of immunocompromise 6 years and who have received one 0.25 mL doses (Moderna COVID-19 Vaccine or Moderna COVID-19 Vaccine, Bivalent), an additional 0.25 mL dose of Moderna COVID-19 Vaccine, Bivalent (vial with a dark blue cap and a label with a gray border) may be administered at least 1 month following the most recent dose; additional doses of Moderna COVID-19 Vaccine, Bivalent may be administered at the discretion of the healthcare provider, taking into consideration the individual's clinical circumstances.

AGES 12 YEARS AND OLDER

UNVACCINATED

dose/injection volume

Moderna Bivalent:

(Do NOT dilute before use)

Dark Blue Cap (gray label)

Pfizer Bivalent:

(Do NOT dilute before use)

Gray Cap



PREVIOUSLY VACCINATED

dose/injection volume

☐ **Previously Received
COVID-19 Vaccines**

Moderna Bivalent:

(Do NOT dilute before use)

Dark Blue Cap (gray label)

Pfizer Bivalent:

(Do NOT dilute before use)

Gray Cap



ADDITIONAL DOSES

dose/injection volume

☐ **Previously Received
COVID-19 Vaccines**

Moderna Bivalent:

(Do NOT dilute before use)

Dark Blue Cap (gray label)

Pfizer Bivalent:

(Do NOT dilute before use)

Gray Cap

65 YEARS AND OLDER

People ages 65 years and older have the option to receive 1 additional bivalent mRNA vaccine dose at least 4 months after the first dose of a bivalent mRNA vaccine.



AGES 12 YEARS AND OLDER: IMMUNOCOMPROMISED

Immunocompromised Guidance for Pfizer-BioNTech

For individuals with certain kinds of immunocompromise 5 years of age and older, a single additional age-appropriate dose of Pfizer-BioNTech COVID-19 Vaccine, Bivalent may be administered at least 2 months following the initial dose of a bivalent COVID-19 vaccine; additional age-appropriate doses of Pfizer- BioNTech COVID-19 Vaccine, Bivalent may be administered at the discretion of the healthcare provider, taking into consideration the individual's clinical circumstances.

Immunocompromised Guidance for Moderna

For individuals with certain kinds of immunocompromise 6 years and older who have received one 0.25 mL doses (Moderna COVID-19 Vaccine or Moderna COVID-19 Vaccine, Bivalent), an additional 0.25 mL dose of Moderna COVID-19 Vaccine, Bivalent (vial with a dark blue cap and a label with a gray border) may be administered at least 1 month following the most recent dose; additional doses of Moderna COVID-19 Vaccine, Bivalent may be administered at the discretion of the healthcare provider, taking into consideration the individual's clinical circumstances.

Monovalent mRNA Vaccines

- ▷ No longer authorized.
- ▷ Should be **immediately removed from inventory.**
- ▷ **All monovalent Moderna and Pfizer-BioNTech mRNA vaccines** should be disposed of.
 - ▷ Medical waste disposal requirements may vary by jurisdiction.

Slide 32

GU0

I added "mRNA" to the title since Novavax and J&J are still monovalent. - KLL

Guest User, 2023-04-24T19:14:09.513

Free COVID testing will fade with US health emergency in May

By MATTHEW PERRONE yesterday

- When the COVID-19 public health emergency ends in the U.S. next month,” people will “still have access to a multitude of tests but...for the first time, you may have to pick up some or all of the costs, depending on insurance coverage and whether the tests are done at home or in a doctor’s office.” Although “some private insurers may continue to cover all or some home tests, there will be no longer be a nationwide rule.” One notable “exception will be for those enrolled in the government Medicaid program for low-income individuals and families, who will continue to receive free tests until September 2024.”
- Tell your patients to get tests while they can





Claim CME credits

You can claim CME credits for all IVAC Pediatric Learning Collaborative sessions between January - May 2023 together. Attendance will be sent out next week.

IVAC sessions will return in Fall 2023

For any questions, email us at
pgower@peds.bsd.uchicago.edu

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