

Preparing for Respiratory Virus Season



David Zhang, MD

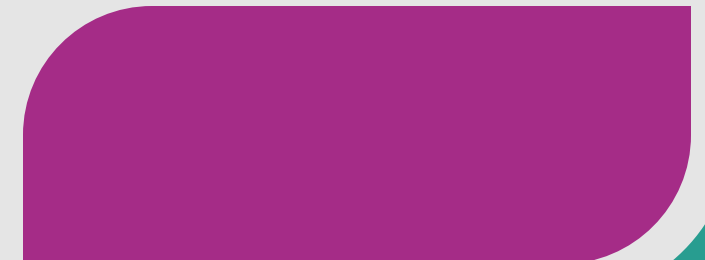


CME Accreditation Statement



The Illinois Chapter, American Academy of Pediatrics designates each live webinar for a maximum of *1 AMA PRA Category 1 Credit(s)*[™]. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Nurses and Nurse Practitioners can submit Certificates of Attendance to their accrediting board to claim credit for participation in the live webinars.





Disclosure Grid

Name and Credentials	Role in Activity	Was there a relevant Financial Disclosure	List of Mitigated Disclosures
Carissa Lee Holmes, MD	Planning Committee Member	No	N/A
Anita Chandra-Puri, MD, FAAP	Planning Committee Member	Yes	Consling Fees - Merck; Speakers Bureau - GSK
Shoji Samson, DO	Planning Committee Member	No	N/A
Ayezah Mir, MD	Planning Committee Member	No	N/A
David Zhang MD	Faculty/Presenter	No	N/A
Rutu Ezhuthachan MD	Planning Committee Member	No	N/A
Caroline Werenskjold, MPH	Staff	No	N/A
Monica Del Ciello, MPH	Staff	No	N/A
Craig Batterman, MD	Planning Committee Member	No	N/A
Brandi Vogt, CHES	Staff	No	N/A
Magale Avitia, MPH, CHES	Staff Moderator/Facilitator	No	N/A
Sharon Hovey, MD	Planning Committee Member	No	N/A
Shefali Parikh	Staff	No	N/A
Nina Alfieri MD	Planning Committee Member	No	N/A
Stephanie Atella, MPH, CHES	Staff	No	N/A
Erin Moore, MS	Staff	No	N/A
Wayne Franklin, MD	CME Reviewer	No	N/A
Joe Hageman, MD	CME Reviewer	Yes	Royalties- Owlet Inc
Alexandra Arca	Staff	No	N/A





David Zhang, MD

- Pediatrics Infectious Disease
- Assistant Professor of Pediatrics at the University of Chicago
- Associate Medical Director of Infection Control



Learning Objectives



As a result of attending this webinar, participants will be able to:

01

Summarize available 2024/2025 clinical guidance for use of COVID-19, flu, and RSV immunizations.

02

Recall considerations for administering multiple vaccines to eligible patients.

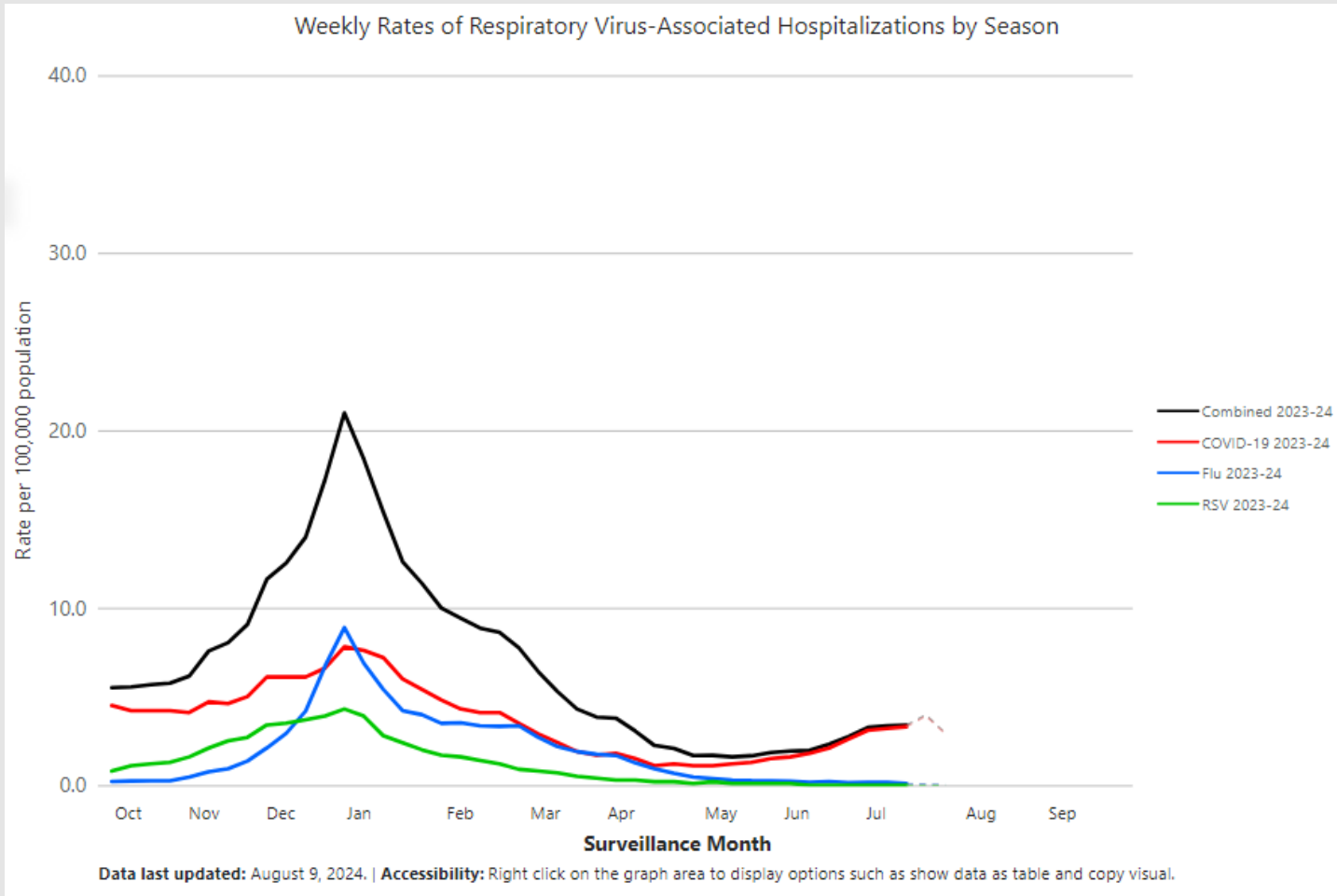
03

Recognize the impact of respiratory viruses on pediatric health outcomes.

04

Identify strategies to increase vaccine uptake during respiratory virus season.

2023-2024 Respiratory Virus Season



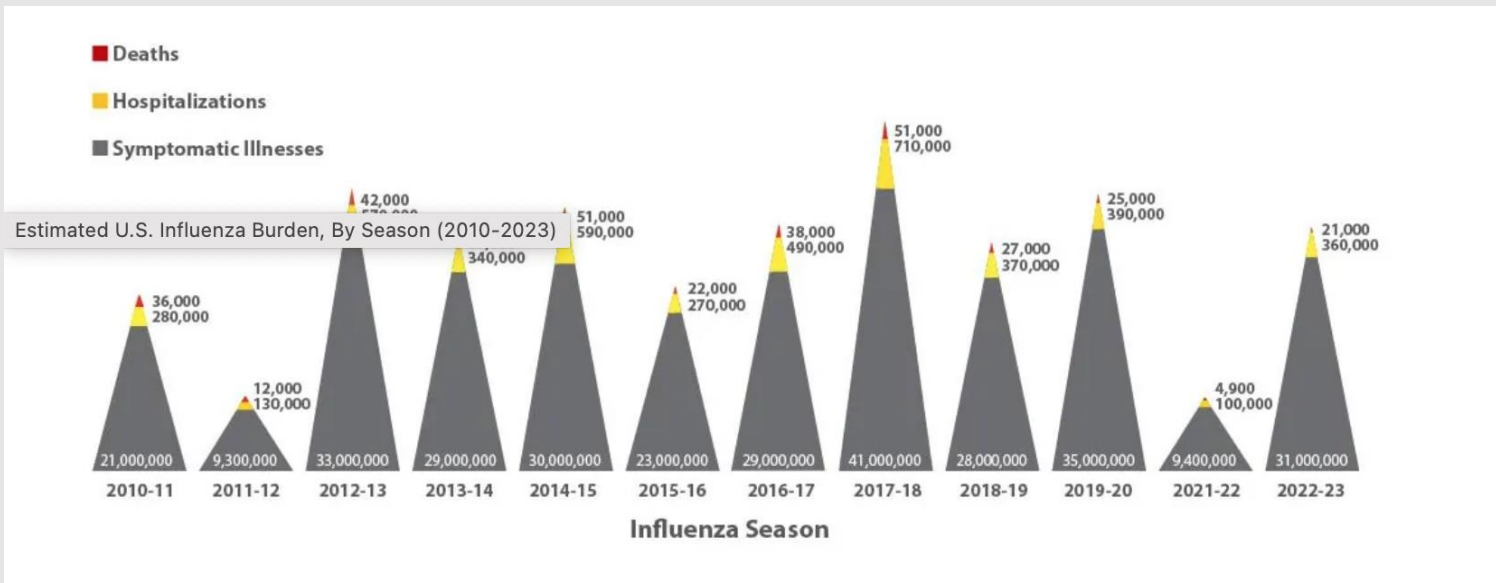


Flu Vaccines



2023-2024 Flu Disease Burden

- Exact flu rates change from year to year but always causes a substantial burden on our healthcare system.
- As of May 11, 2024:
 - **35-65 million illnesses, 390,000-830,000 hospitalizations, and 25,000-72,000 deaths total.**
 - 184 pediatric deaths.
 - Burden especially high on solid organ transplant (SOT) patients where manifestations of influenza can be more severe.



2023-2024 Pediatric Vaccination Rates

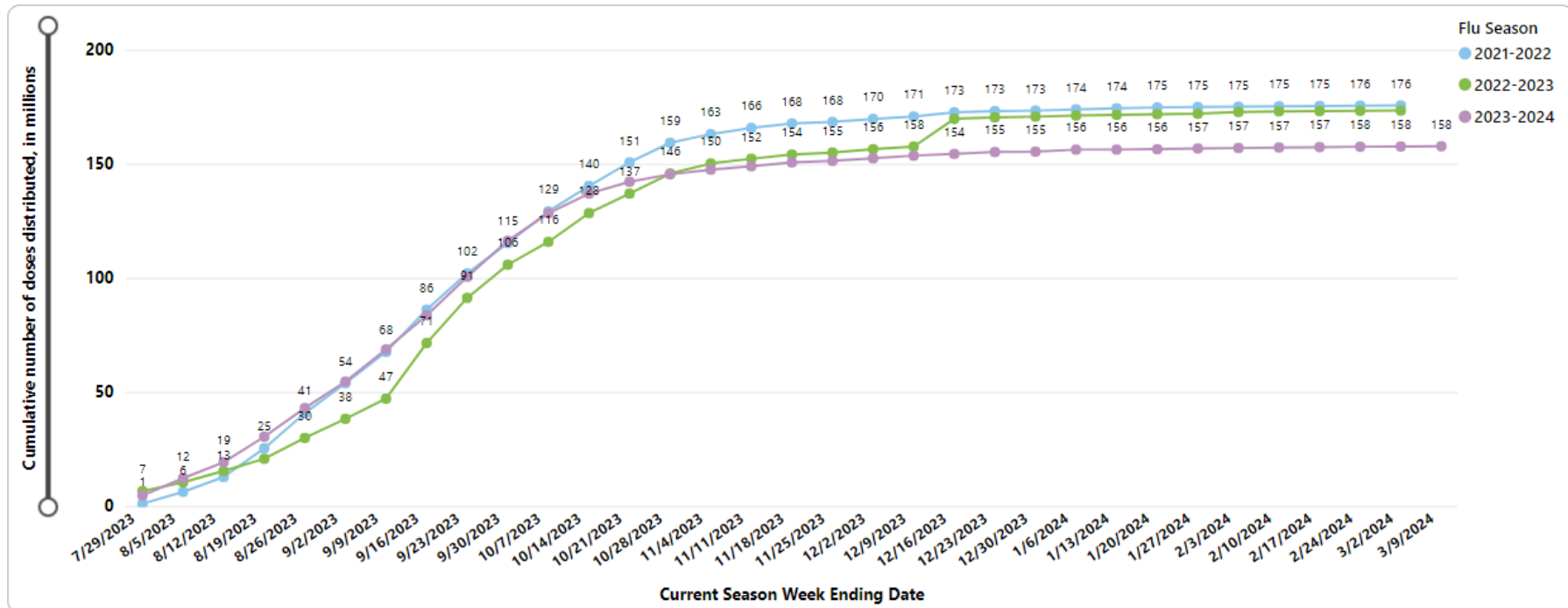


Figure 1. Weekly Cumulative Doses (in Millions) of Influenza Vaccines Distributed*
by Flu Season, United States

Data Source: CDC

Data are current through week ending March 9, 2024

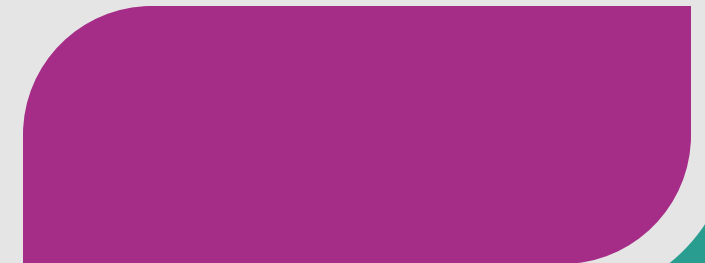
Flu Season
Multiple selections





Flu Vaccine Coverage

- Coverage for all children is 2.2 percentage points lower compared with the same time last season (53.9% vs. 56.0%)
- Coverage is 8.5 percentage points lower compared with pre-pandemic coverage at the same time in May 2020 (62.4%).
- Since the COVID-19 pandemic, there has been an overall increase in the numbers of doses of flu vaccine given in pharmacies but an overall decrease in the number of flu vaccine doses given in provider offices.





2023-2024 Flu Vaccine Effectiveness

- Vaccination reduced the risk of flu-related outpatient visits and hospitalization.
- Effective against influenza A and B.
 - More effective against influenza B.
 - Effectiveness against influenza A ranged from 46%-59% for children and adolescents.
 - Effectiveness against influenza B ranged from 64%-89% for pediatric patients in outpatient settings.
- Children and adolescents 6mo-17yrs, VE against influenza-associated outpatient visits range from 59%-67%.
- Against hospitalization ranged from 52%-61%.
- Among adults aged ≥ 18 yrs, VE against influenza-associated outpatient visits ranged from 33%-49% and against hospitalization from 41%-44%.



2024-2025 Flu Vaccines

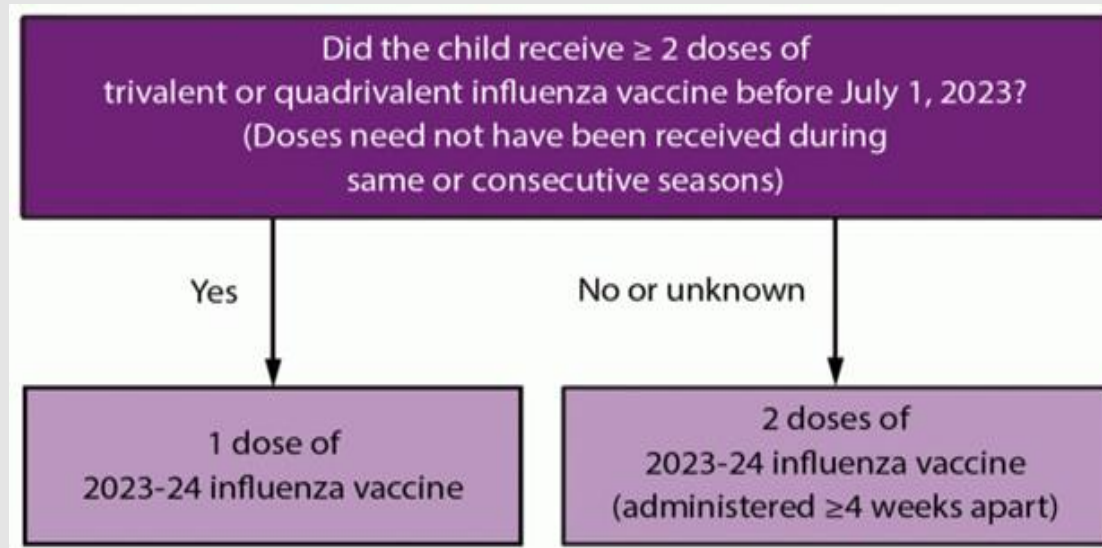
- Will be trivalent and will protect against an H1N1, H3N2 and a B/Victoria lineage virus.

- There will be no influenza B/Yamagata component, following no confirmed detections of wild-type influenza B/Yamagata viruses since March 2020
- U.S. influenza vaccine composition for 2024-25 includes an update to the influenza A(H3N2) component:
 - An A/Victoria/4897/2022 (H1N1)pdm09-like virus for egg-based vaccines or an A/Wisconsin/67/2022 (H1N1)pdm09-like virus for cell and recombinant vaccines;
 - **An A/Thailand/8/2022 (H3N2)-like virus for egg-based vaccines or an A/Massachusetts/18/2022 (H3N2)-like virus for cell and recombinant vaccines;**
 - A B/Austria/1359417/2021 (B/Victoria lineage)-like virus



Flu Recommendations

- Recommended for: Anyone over the age of 6 months.
- Vaccination generally recommended to begin in September-October.
 - Children that need two doses and pregnant people in the third trimester can consider vaccination during July or August.
- Certain children may require two doses (6 months to 8 years old):



Flu Products IDPH



PFS = Prefilled syringe

VFC = Vaccines for Children Program

AIP = Adult Immunization Program (formerly known in Illinois as Adult 317)

- Note: A limited subset of providers are eligible to provide AIP vaccines.

Age Group	Brand Name	Packaging	Manufacturer	Publicly Funded Program
36 months and older ¹	Afluria Trivalent	10 pack PFS	Seqirus	VFC and AIP
6 months and older ¹	Fluarix Trivalent	10 pack PFS	GSK	AIP ONLY
	FluLaval Trivalent	10 pack PFS	GSK	VFC ONLY
	Fluzone Trivalent	10 pack PFS	Sanofi Pasteur	VFC and AIP
	Flucelvax Trivalent	10 pack PFS	Seqirus USA	VFC and AIP
2 through 49 years ¹	FluMist Trivalent Live, intranasal	10 pack sprayers	AstraZeneca	VFC and AIP

¹ Vaccines for Children (VFC) vaccines are for children through 18 years of age who meet other eligibility criteria. Adult Immunization Program (AIP) vaccines are for ages 19 years and older who meet other eligibility criteria.



Flu Products CDPH

<i>NDC</i>	<i>Manufacturer</i>	<i>Brand</i>	<i>Description</i>	<i>Age</i>	<i>Preservative free</i>
19515-0810-52	GSK	Flulaval	0.5 mL single dose syringe, 10 pack	6 months and older	Yes
49281-0424-50	Sanofi	Fluzone	0.5 mL single dose syringe, 10 pack	6 months and older	Yes
70461-0654-03	Seqirus	Flucelvax	0.5 mL single dose syringe, 10 pack	6 months and older	Yes
66019-0311-10	AstraZeneca	Flumist	0.2 mL single dose sprayer, 10 pack	2-49 years	Yes



Flu Recommendations: Dosing

Children 6mo-35mo:

- 0.25mL Afluria.
- 0.5 Fluarix.
- 0.25mL or 0.5mL Fluzone.
- 0.5mL FluLaval.

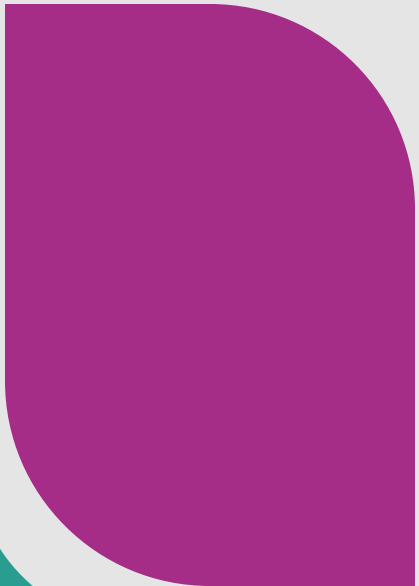
3yrs and older:

- 0.5mL for most vaccines.

The AAP does not prefer any product over another for children and adolescents with no contraindications.



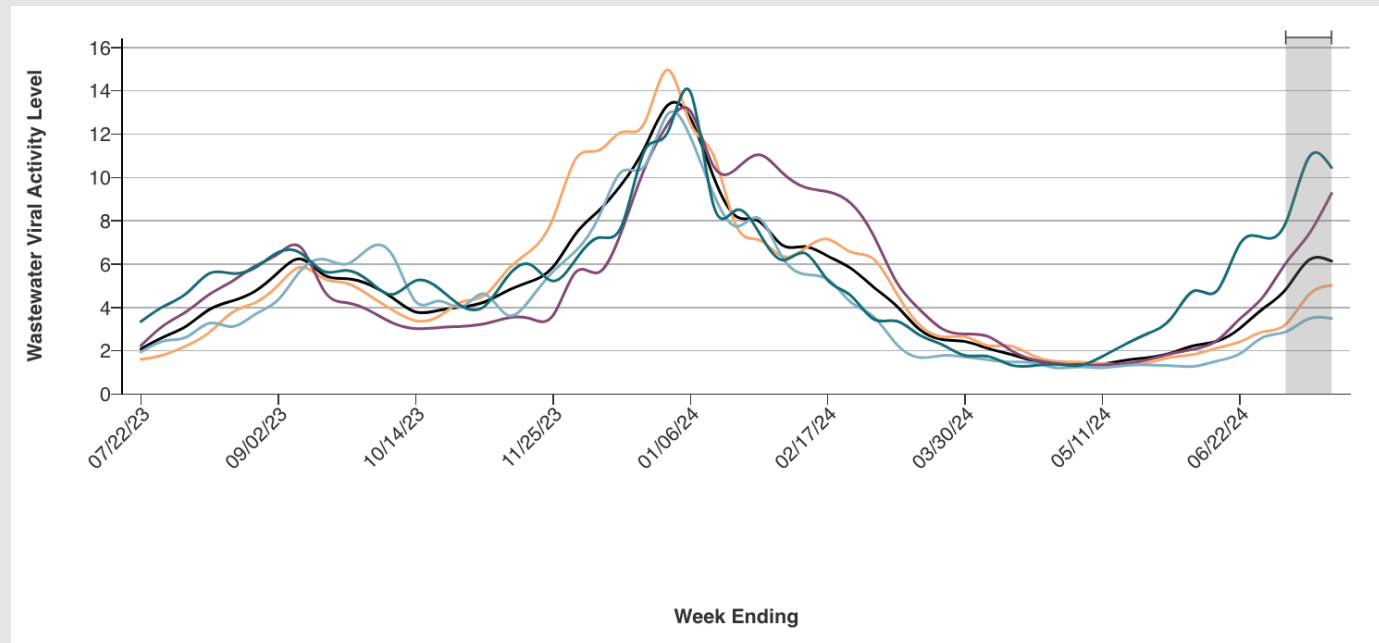
COVID-19 Vaccines





Current COVID-19 Landscape

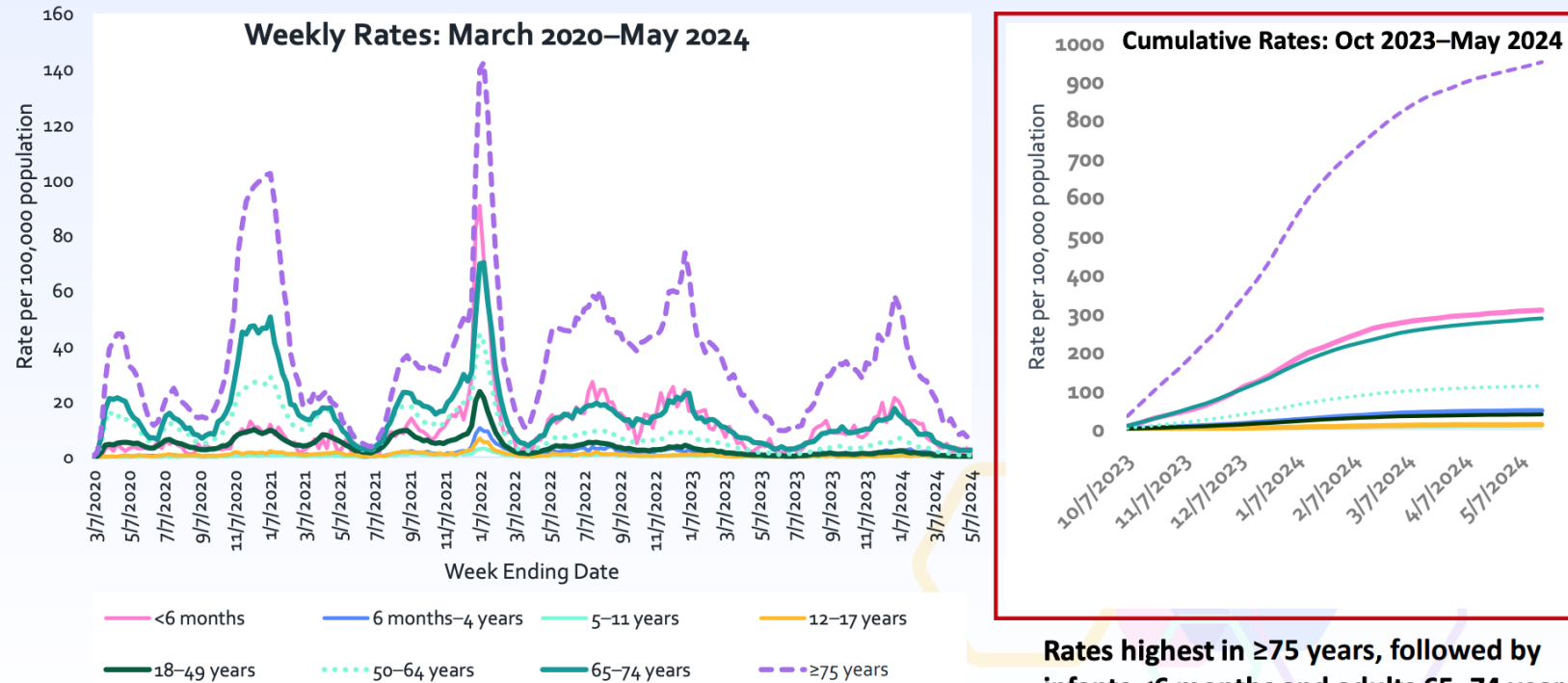
- As of July 16, 2024, CDC estimates that COVID-19 infections are growing or likely growing in 42 states, declining or likely declining in 0 states and territories, and are stable or uncertain in 6 states and territories.
- Nationally COVID-19 levels are designated high by the CDC.
- Levels are higher than last year's peak.
- Levels highest in the West.
- Severe illness and hospitalizations also increasing.





COVID-19 Associated Hospitalizations

Population-Based Rates of COVID-19-Associated Hospitalizations — COVID-NET, March 2020–May 2024

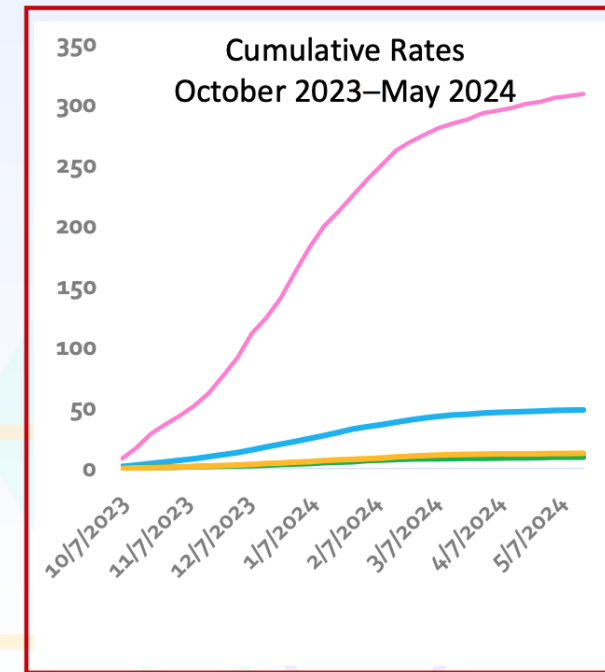
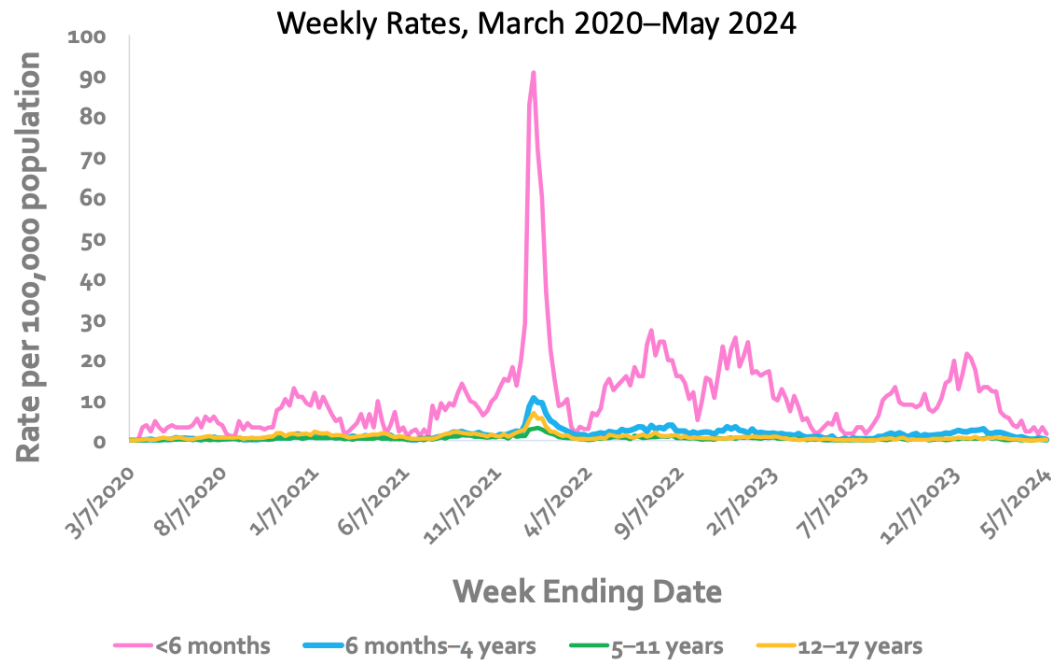


Rates highest in ≥75 years, followed by infants <6 months and adults 65–74 years

COVID-19 Associated Hospitalizations



Population-Based Rates of COVID-19-Associated Hospitalizations among Children and Adolescents Ages ≤ 17 Years — COVID-NET, March 2020–May 2024





COVID-19 Associated Hospitalizations

- As of June 26, 2024, rates of COVID-19-associated hospitalizations highest among those ≤ 4 years.
 - Rates highest among infants ages < 6 months who are not vaccine eligible and require a different approach for prevention (e.g., maternal vaccination).
 - **50% of all children admitted with COVID-19 have no underlying medical conditions.**
- Among children with no underlying medical conditions, 18% were admitted to the ICU October 2023–March 2024: 5% of hospitalized children 6 months – ≤ 17 years had received a 2023–2024 vaccine prior to admission.

2023-2024 COVID Vaccine Effectiveness



VISION: VE of 2023–2024 COVID-19 vaccine doses against ED/UC encounters was similar across age groups

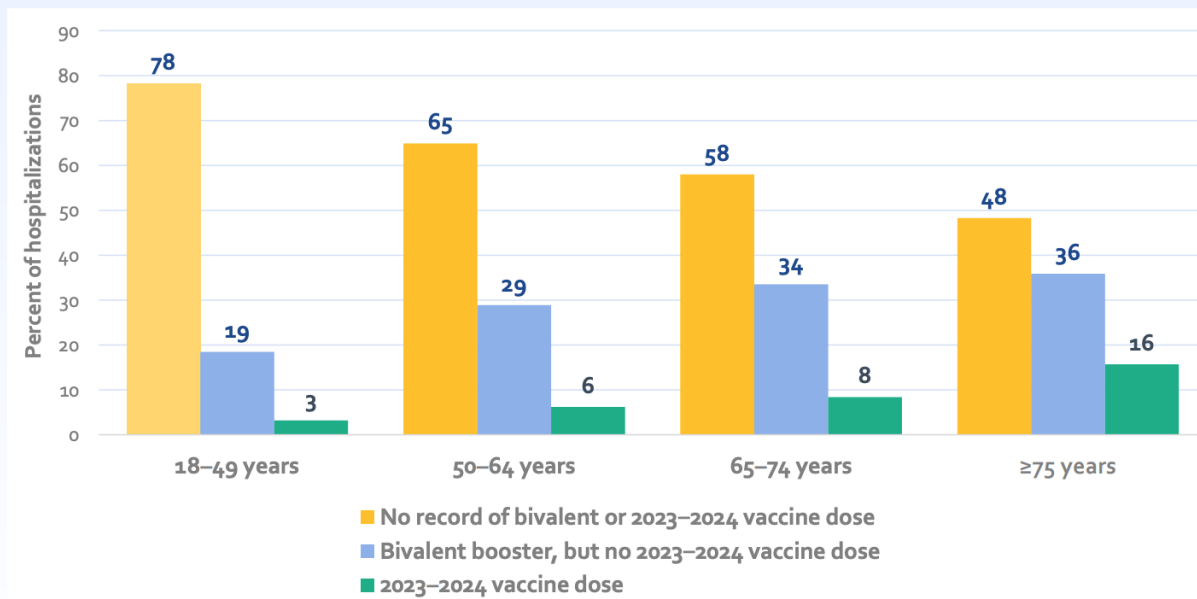
September 2023 – May 2024

Age group COVID-19 vaccination status	Total encounters	SARS-CoV-2-test-positive, N (%)	Median interval since last dose among those vaccinated, days (IQR)	Adjusted VE (95% CI)
No updated 2023-2024 COVID-19 vaccine dose*				
9 months-4 years	30,286	1,180 (4)	349 (236-443)	Ref
5-17 years	37,203	1,449 (4)	650 (449-769)	Ref
18-64 years	148,273	15,100 (10)	751 (573-887)	Ref
≥65 years	59,422	7,430 (13)	609 (399-803)	Ref
2023-2024 COVID-19 dose received 7-59 days earlier				
9 months-4 years	613	10 (2)	33 (19-46)	66 (36-82)
5-17 years	805	11 (1)	33 (19-47)	71 (47-84)
18-64 years	5,137	313 (6)	34 (20-47)	53 (47-58)
≥65 years	8,007	669 (8)	35 (21-47)	47 (42-51)
2023-2024 COVID-19 dose received 60-179 days earlier				
9 months-4 years	706	14 (2)	104 (80-137)	24 (-31-56)**
5-17 years	1,343	22 (2)	111 (86-138)	50 (22-68)
18-64 years	8,559	506 (6)	108 (82-137)	24 (17-31)
≥65 years	16,106	1,232 (8)	111 (84-142)	25 (20-30)

COVID-19 Vaccination Status and Hospitalizations



Vaccination Status among Adults Ages ≥ 18 Years with COVID-19-associated Hospitalization, by Age Group — COVID-NET, October 2023–March 2024

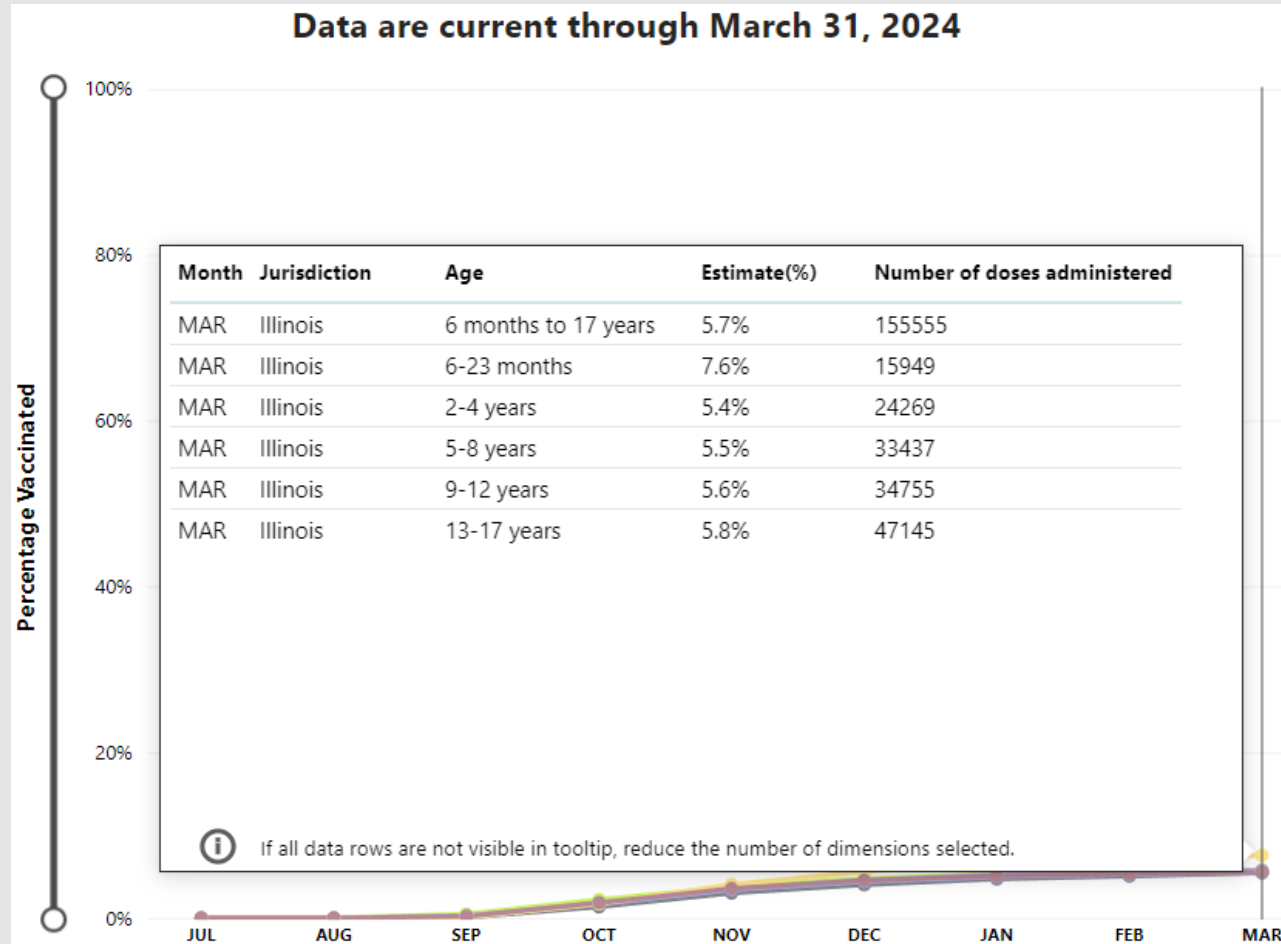


- **11%** of adults ages ≥ 18 years with COVID-19-associated hospitalizations **received a 2023–2024 vaccine dose.**
- **57%** of COVID-19-associated hospitalizations among adults ages ≥ 18 years had not received a COVID-19 vaccine after August 2022.

No record of bivalent or 2023–2024 vaccine dose: No recorded doses of COVID-19 bivalent or 2023–2024 vaccine dose since August 2022. *Bivalent booster, but no 2023–2024 vaccine dose:* Received COVID-19 bivalent booster vaccination but no record of receiving 2023–2024 vaccine dose since August 2022. *2023–2024 vaccine dose:* Received 2023–2024 vaccine dose. Persons with unknown vaccination status are excluded.



COVID Vaccine Coverage During 2023-2024 Season in Children (IL)

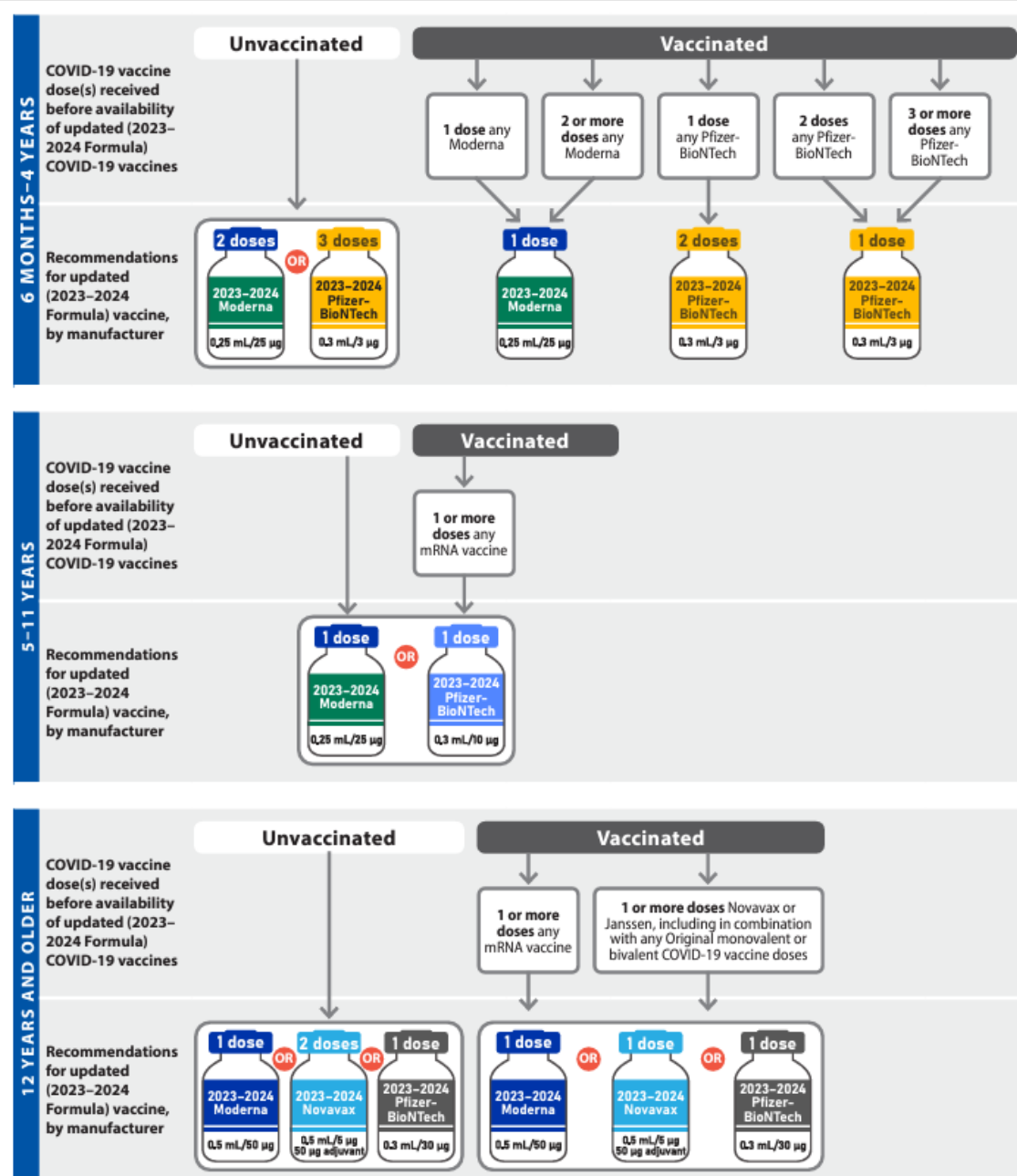




COVID-19 Vaccine Recommendations

- CDC recommends **everyone ages 6 months and older** receive an updated **2024-2025 COVID-19 vaccine** to protect against the potentially serious outcomes of COVID-19 this fall and winter whether they have ever previously been vaccinated with a COVID-19 vaccine.
- Updated COVID-19 vaccines will be available from Moderna, Novavax, and Pfizer between September and October of this year.
- This recommendation will take effect as soon as the new vaccines are available.


2023-2024 COVID-19 Vaccine Recommendations

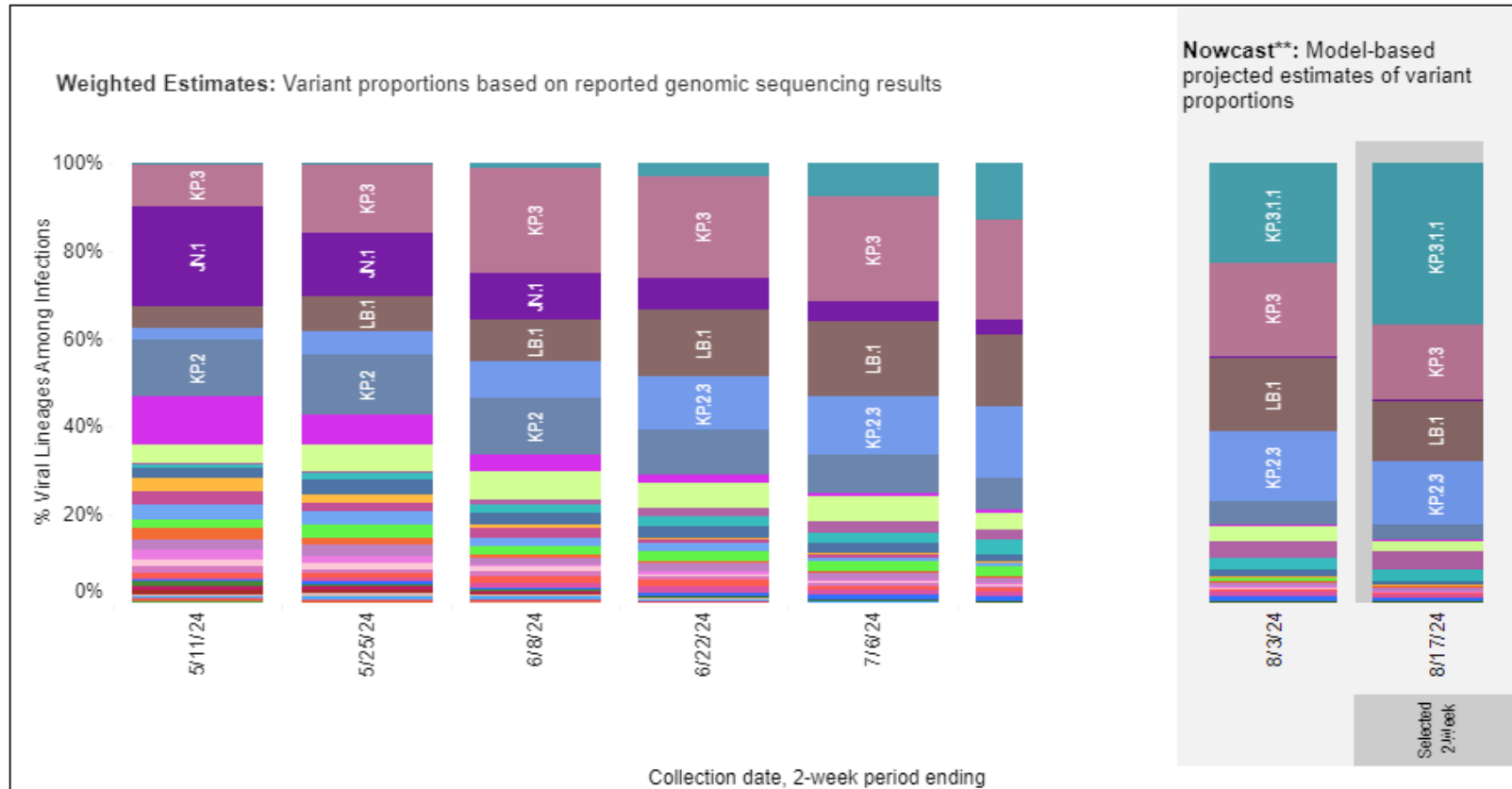




Currently Circulating Variants

Weighted and Nowcast Estimates in United States for 2-Week Periods in 4/28/2024 – 8/17/2024

 Hover over (or tap in mobile) any lineage of interest to see the amount of uncertainty in that lineage's estimate.





Variants, Summer Surges

- COVID-19 keeps mutating quickly—about twice as much as flu
- The latest variant, KP.3, specifically its descendant KP.3.1.1, dropped a mutation on the spike protein, which seems to be effective in getting past our first immunity wall.
- ~20-30% of the U.S. population was infected with COVID-19 this past winter, which means the virus has plenty of pathways to find due to low immunity
- COVID-19 vaccines continue to provide additional protection every year but wane at 4 months due to the emergence of new variants.
- Hospitalizations also appear to be rising and are significantly higher than they were in the spring, according to data from 300 hospitals in 13 states.



Available Treatments

- Ritonavir boosted nirmatrelvir (Paxlovid)
 - For those ≥ 12 years old
 - Watch out for drug-drug interactions
- Remdesivir
 - For those ≥ 28 days old
 - This is an IV medication
- Who to treat?
 - Those who are at high risk for progressing to severe COVID disease
- Pre-exposure prophylaxis - Pemivibart (Pemgarda)
 - For those with moderate or severe immunocompromise
 - For those ≥ 12 years old and weighing at least 88 lbs.



RSV

Prevention



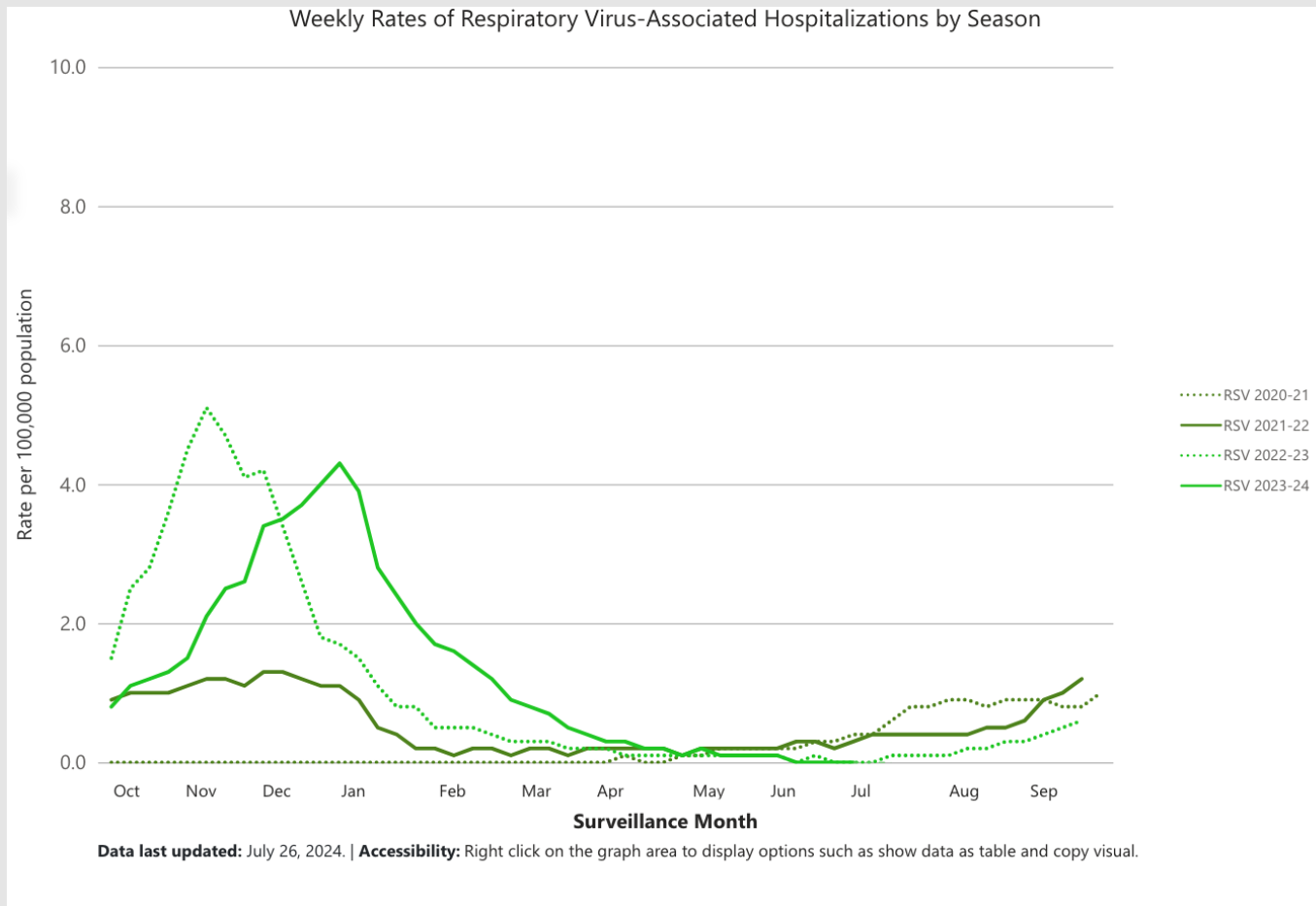
RSV Burden Estimates

Each year in the United States, RSV leads to approximately:

- 2.1 million outpatient (non-hospitalization) visits among children younger than 5 years old.
- 58,000-80,000 hospitalizations among children younger than 5 years old.
- 100–300 deaths in children younger than 5 years old.

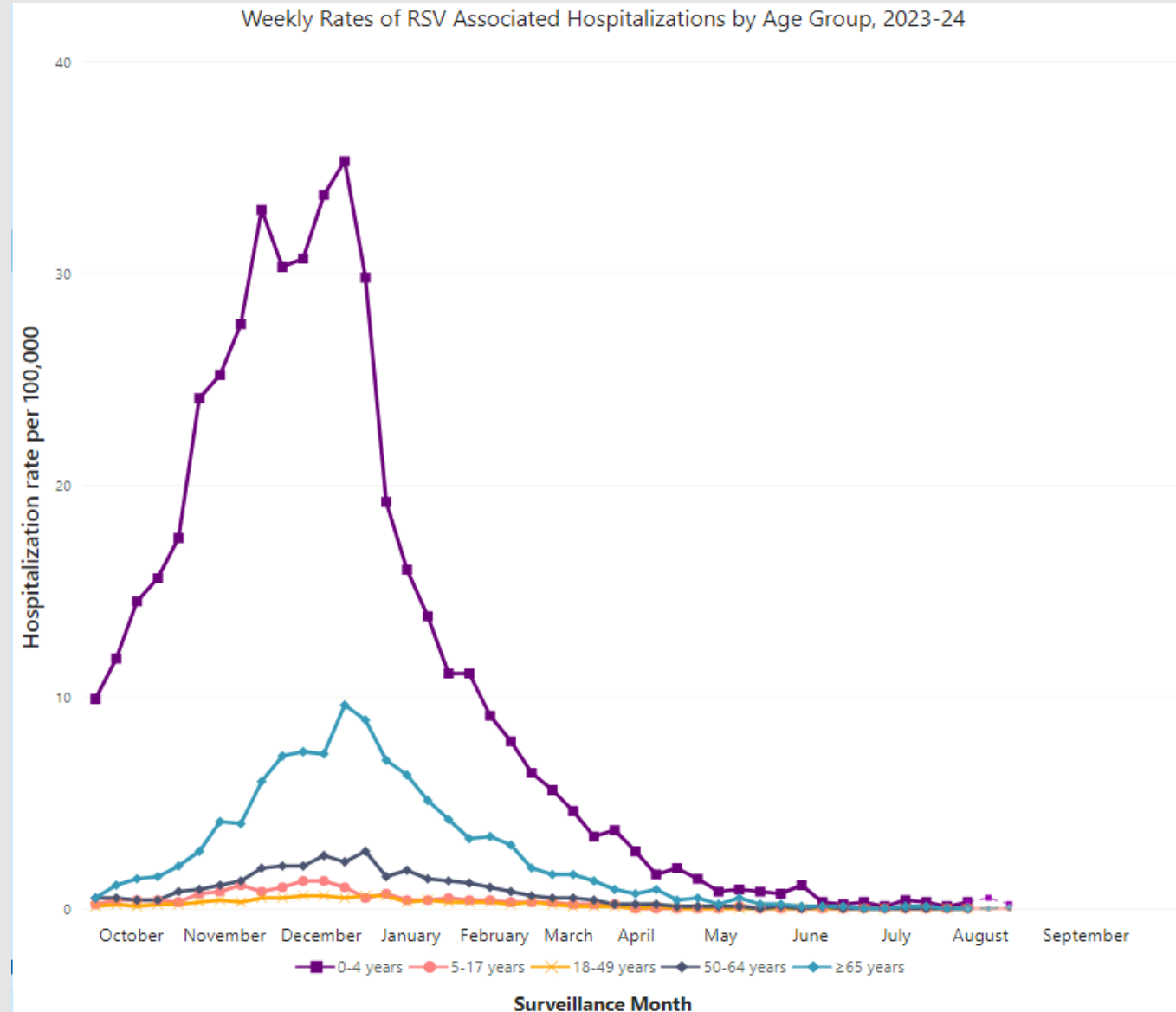


2023-2024 RSV Season



- RSV increase began later in the fall.
- Similar to pre-pandemic patterns.
- Activity peaked in December and has remained low.

RSV Associated Hospitalizations





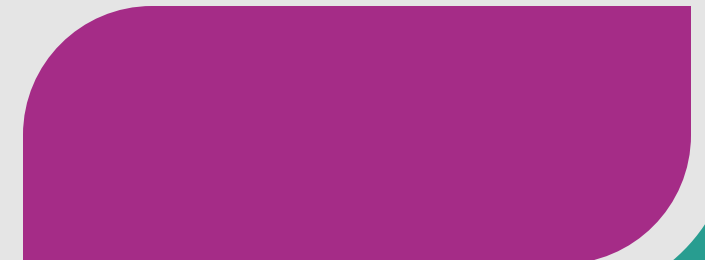
RSV Protection

- 51% of infants are estimated to be protected from RSV by either receipt of nirsevimab or maternal RSV vaccination (Abrysvo).
- Infants eligible for nirsevimab: 3,900,000.
 - **Those 0-7mo old during October 2023-March 2024.**
 - Assume 300,000 babies born each month.
 - 43% received nirsevimab (from February NIS-ACIM.)
- Infants eligible by maternal vaccination (subset of infants eligible for nirsevimab).
 - Born October 2023-March 2024.
 - Born to mothers 32-36 weeks gestation and eligible for vaccination (through January 202).
 - 17.8% of mothers received vaccination.
- Estimated number of infants who received nirsevimab – $0.430 \times 3,900,000 = 1,677,000$.
- Estimated number of infants protected by maternal RSV vaccination = $1.78 \times 1,800,000 = 32,400$.
- Percent of either = $1,677,000 + 32,400 / 3,900,000 = 51.2\%$.



Nirsevimab Recommendations

- Injectable monoclonal antibodies: nirsevimab (Beyfortus).
- One dose of nirsevimab is recommended for infants younger than 8 months of age who:
 - Were born shortly before or are entering their first RSV season (typically through spring)
 - The mother did not receive RSV vaccine during pregnancy.
 - The mother's RSV vaccination status is unknown.
 - The infant was born within 14 days of maternal RSV vaccination.
- Children aged 8-19 months are recommended to get a dose shortly before or during their second RSV season:
 - American Indian/Alaskan Native children.
 - Children with severe immunocompromise.
 - Children with severe cystic fibrosis or with lung disease of prematurity and require medical support.
- Children ages 8 months+ who are not at increased risk should not receive nirsevimab.





Nirsevimab Efficacy

- Data [collected](#) from Oct. 3, 2023-March 31, 2024, show nirsevimab was effective against RSV-associated emergency department (ED) encounters and hospitalization among infants in their first RSV season.
- Data from the VISION Multi-Site Network of Electronic Health Records of 127 emergency departments and 107 hospitals show nirsevimab was 77% effective at preventing RSV-associated hospitalization.
- More from ACIP on efficacy [here](#).





Co-Administration

- RSV vaccine can be co-administered with other routinely recommended vaccines.
- This can help avoid multiple appointments.
- Optimal timing and eligibility for respiratory virus prevention may vary by product.
 - E.g. an infant born in June should receive nirsevimab in October, but wouldn't be eligible for a COVID-19 vaccination until December.



Nirsevimab

Contraindications:

- Infants and children with a history of hypersensitivity reactions, including anaphylaxis, to nirsevimab or any of its excipients.
- Excipients: arginine hydrochloride, histidine, L-histidine, L-histidine hydrochloride monohydrate, polysorbate 80, sucrose, and water for injection.

Warnings/Precautions:

- Serious hypersensitivity reactions, including anaphylaxis, have been observed with other human immunoglobulin G1 (IgG1) monoclonal antibodies.
- Initiate appropriate medications and/or supportive therapy if signs and symptoms of a clinically significant hypersensitivity reaction or anaphylaxis occur.
- As with other intramuscular (IM) injections, nirsevimab-alip should be given with caution to infants and children with thrombocytopenia, any coagulation disorder, or to individuals on anticoagulation therapy.



Palivizumab or Nirsevimab? Both?

What should I do if nirsevimab is not available for my patient who is at high risk for severe RSV illness?

If nirsevimab is unavailable and the child is eligible to receive palivizumab, then palivizumab should be administered. If <5 doses of palivizumab are administered and nirsevimab becomes available, the child should receive 1 dose of nirsevimab. No further palivizumab should be administered following receipt of nirsevimab.

Is there a minimum interval between palivizumab and nirsevimab, if an infant has received at least 1 dose (but less than 5 doses) of palivizumab?

The recommended interval between the last dose of palivizumab and a dose of nirsevimab is 30 days (similar to the interval if the infant were to receive another dose of palivizumab).



Additional RSV Products

Pregnant People

- Abrysvo (Pfizer).
- One dose recommended during the 32nd-36th week of pregnancy.
- Should be given between September-January so baby is protected at birth.
- Infants born to people who received Abrysvo during a previous pregnancy should receive nirsevimab.

Older Adults

- Arexvy (GSK), Abrysvo(Pfizer), mRESVIA (Moderna).
- One dose recommended for all adults 70+ years.
- One dose recommended for adults 64-70 years at increased risk for severe disease.
- Those at increased risk include those with certain chronic health conditions, such as lung disease or heart disease or those who live in nursing homes.

*Products for pregnant people and older adults are intended for to be one lifetime dose.



Resources

- Standing orders – [Nirsevimab](#)
- Standing orders – [Maternal RSV vaccination](#)
- [Nirsevimab ordering](#)
- [RSV administration and dosing](#)
- [Payment and coding](#)
- CDC RSV [prevention](#)
- AAP [recommendations](#) for the prevention of RSV in infants and children
- Tips for [flu scheduling](#) and [best practices](#)
- CDC [preventing seasonal flu](#)
- Setting up a [flu vaccine clinic](#)
- AAP current COVID-19 [guidelines](#)
- Find vaccines – [vaccines.gov](#)



Increasing Vaccine Confidence

- When people spread misinformation, they often believe the information they are sharing.
- Disinformation is crafted and disseminated with the intent to mislead others.
- A strong recommendation from a trusted healthcare provider is the best predictor of vaccination.
- Increasing vaccine confidence can help combat misinformation and disinformation.

Increasing Vaccine Confidence



- The trust that patients, their families, and providers have in:
 - Recommended vaccines.
 - Providers who administer the vaccines.
 - The processes and policies that lead to vaccine development.
 - Licensure, or authorization.
 - Manufacturing.
 - Recommendations for use.
- Health literacy is important.



Increasing Vaccine Confidence

- Take time to walk through complicated concepts – what do these new terms mean and how will it impact them.
- Make a strong recommendation for routinely recommended vaccines and immunizations.
- “Your child is due for flu and COVID-19 vaccines today.
- Discuss why regular vaccinations are important.
- Take time to respond to questions and concerns.
- Use motivational interviewing -
 - Be empathetic and show genuine concern for the reasons behind vaccine hesitancy.
- For more information [Communicating With Families About How to Protect Against Fall and Winter Respiratory Viruses.](#)



Reminder Recall

- Strategies can include social media, patient portal communications, texts and phone calls, or auto-dialers.

Sample messages:

- **Needing Catch-up vaccine:** [PRACTICE NAME] is contacting you as our records indicate that your child is overdue for a vaccine. Please call [PRACTICE PHONE NUMBER] today to schedule your child's vaccination.
- **Routine, on-time vaccinations:** "Hi! [Practice Name] is offering a friendly reminder that your child's wellness visit and/or vaccinations are due. It is very important to stay on track with these appointments. Please call our office at [PRACTICE PHONE NUMBER] to schedule your child's appointment. See you soon!"
- More information on [Reminder and Recall](#) strategies



Increasing Vaccine Confidence

- Simplify scheduling.
- Alert patients when vaccines are coming.
- Automatically schedule return visits.
- Implementing outreach.
- Use phone calls, mail cards and reminders, text messages, and patient portals.
- Turn all visits into vaccinating visits.
- Be creative in Your Approach.
- Educate and encourage.
- Celebrate getting vaccinations.



August is National Immunization Awareness Month

All staff in healthcare practices, including non-clinical staff, play an important role in increasing vaccination.

- [Immunization Education and Training](#)
- [Proven strategies](#) for all providers and organizations.
- Pre-made [graphics and resources](#) that can be shared on your social media!



Pre-Ordering Flu Vaccines (IDPH VFC)

- Early ordering is now available.
- Ordering through VFC tab as normal but order intent **Pediatric / VFC Limited Qty** .
- Save order as **requested**.
- IDPH will review the request and approve requests as inventory allows.
- As the season progresses, providers will be notified once flu vaccines are available for regular ordering.

All Limited Quantity orders will be reviewed and processed by the VFC Program. Every attempt will be made to fill limited quantity orders at the quantities requested. If, due to supply constraints, orders cannot be completely filled, order quantities will be reduced and filled at the quantities available.

Order Intent:

- Pediatric/VFC Adult/317
 Pediatric/VFC Limited Qty Adult/317 Limited Qty



Pre-Ordering Flu Vaccines (CDPH VFC)

- Early ordering is now [available](#).
- Pre-booked doses must be able to be part of CHIP and VFC inventory.
- Aim to order enough vaccines to vaccinate an additional 10% of the VFC population that you were unable to vaccinate last year.

2024-25 Order						
VFC						
NDC	Manufacturer	Brand	Description	Age	Preservative free	Doses Requested (Units of 10)
19515-0810-52	GSK	Flulaval	0.5 mL single dose syringe, 10 pack	6 months and older	Yes	<input type="text"/>
49281-0424-50	Sanofi	Fluzone	0.5 mL single dose syringe, 10 pack	6 months and older	Yes	<input type="text"/>
70461-0654-03	Seqirus	Flucelvax	0.5 mL single dose syringe, 10 pack	6 months and older	Yes	<input type="text"/>
66019-0311-10	AstraZeneca	Flumist	0.2 mL single dose sprayer, 10 pack	2-49 years	Yes	<input type="text"/>
VFC TOTAL						<input type="text"/>



Pre-Ordering COVID-19 Vaccines

- Clinicians can reserve doses of the updated COVID-19 vaccines for the '24-'25 season while awaiting final approval.
- Single dose, prefilled vaccines from **Pfizer** available through [Pfizer Prime](#) or wholesalers.
 - Unused Pfizer vaccines are returnable until September 15, 2025.
 - Biweekly [COVID-19 Vaccine Training Webinars](#) for the latest info
- Moderna doses available through [Moderna](#) or wholesalers.
 - 100% of pediatric Moderna doses and 10% of adult doses can be returned.
- Novavax is available for pre-ordering [here](#).
 - Novavax returns are available based on the customer's agreement with Novavax.



Questions?



Upcoming Events

- IDPH VFC Summits – Registration still open:
 - Trinity International University: Wednesday, September 4
 - Oakton College: Thursday, October 10
- Vaccine Advocacy and Policy Webinar
 - Wednesday, September 18 at 12pm
- ICAAP Annual Education Conference – November 14 and 15

Register at illinoisaap.org/upcoming-events or scan the QR code:

