# Immunization Update

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OHIO PHARMACISTS ASSOCIATION

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# Disclosure Statement

Olivia Kinney has consulted for Pfizer, Moderna, and Janssen. All relevant financial relationships listed have been mitigated.

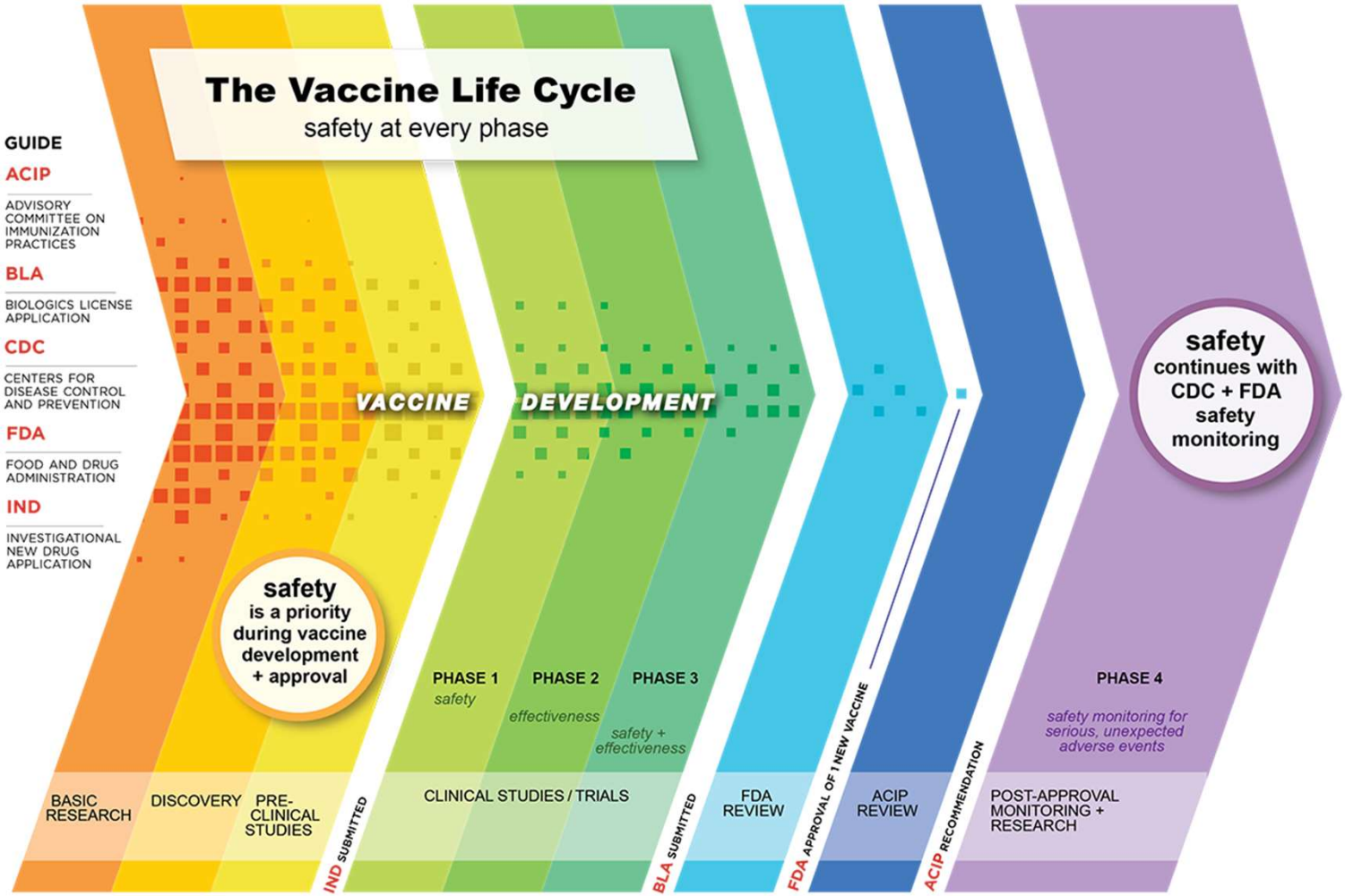
None of the planners for this activity have relevant financial relationships with ineligible companies to disclose.

# Learning Objectives

At completion of this activity, the participant will be able to:

- Discuss the latest changes in vaccine guidance for flu, COVID-19, pneumonia, and other vaccines.
- Assess implications of changes to vaccine guidance for pharmacy teams.

# Regulatory Process




How Vaccines are Developed and Approved for Use | Vaccines & Immunizations | CDC

# Pneumococcal Vaccine

*Bottom line up front: ACIP recommends a conjugate vaccine for a PCV-naïve adults aged 50 years and older*

# What is a conjugate vaccine?

| Polysaccharide | Conjugate |
| --- | --- |
| Contains polysaccharide to trigger immune system into producing a protective response | Attaches a polysaccharide molecule to a carrier protein |
| Example: PPSV23 | Examples: PCV15, PCV20, PCV21 |

# What's the difference between available vaccines?

| *Serotypes* | 1 | 3 | 4 | 5 | 6A | 6B | 7F | 9V | 14 | 18C | 19A | 19F | 23F | 22F | 33F | 8 | 10A | 11A | 12F | 15B | 2 | 9N | 17F | 20 | 15A | 15C | 16F | 23A | 23B | 24F | 31 | 35B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PCV15** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **PCV20** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **PPSV23** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **PCV21** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

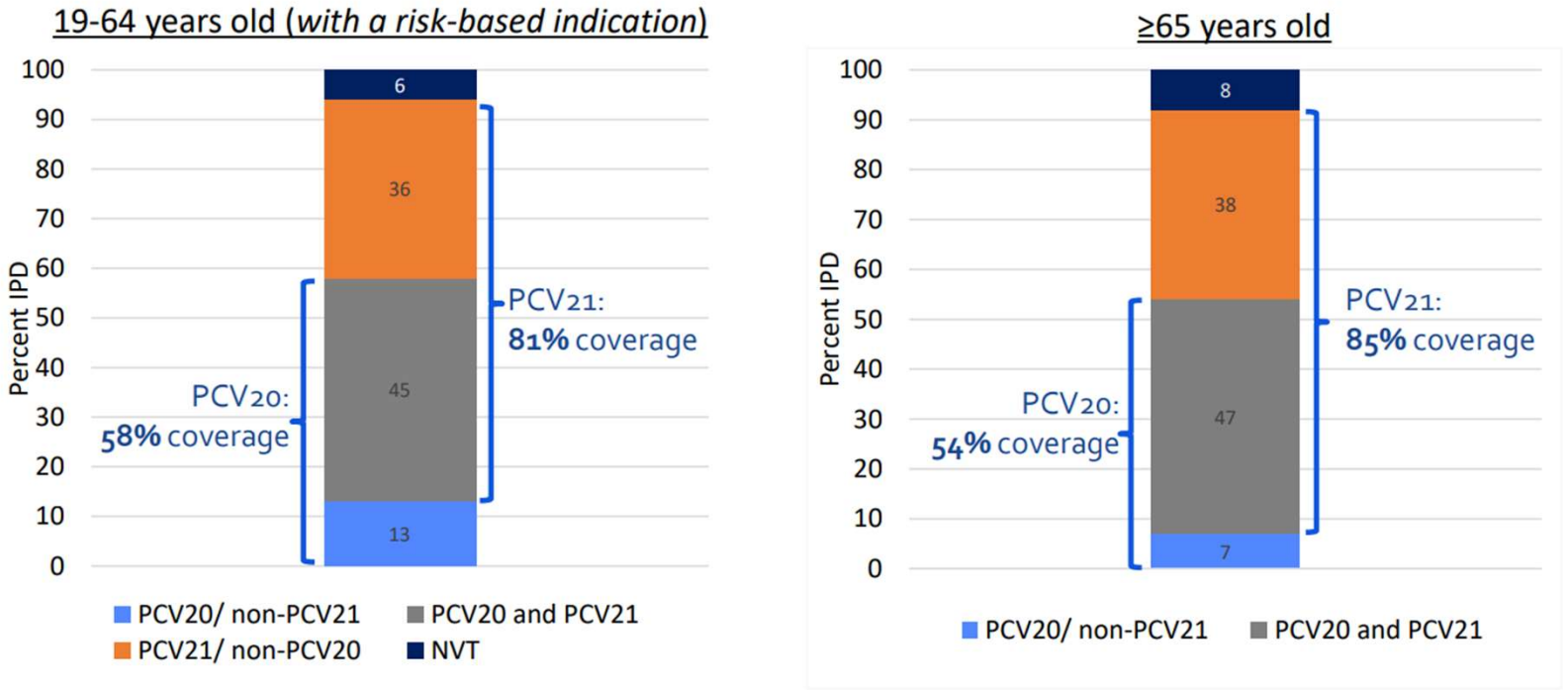
**21-valent pneumococcal conjugate vaccine (CAPVAXIVE™, Merck):**

- Approved by the FDA for adults aged ≥18 years on June 17, 2024[1]

CDC Presentation

# What's the difference between available vaccines?

**Proportion of IPD by vaccine-type among adults with a pneumococcal vaccine indication, 2018–2022**




PCV20/ non-PCV21 serotype: 1, 4, 5, 6B, 9V, 14, 18C, 19F, 23F, 15B
PCV20/ in-PCV21 serotypes: 3, 6A, 7F, 19A, 22F, 33F, 8, 10A, 11A, 12F, +6C
PCV21/ non-PCV20 serotypes: 9N, 17F ,20, 15A, 15C, 16F, 23A, 23B, 24F, 31, 35B

Gierke February 2024 ACIP meeting presentation

CDC Presentation

# Clinical Trial Data

Safety data:

- no vaccine-related serious adverse events reported for PCV15 and 20
- 2 vaccine-related serious adverse events reported for PCV21

Immunogenicity data:

- PCV15 **noninferior** to PCV13 for all shared serotypes
- PCV20 **noninferior** to PCV13 for all shared serotypes
- PCV20 **noninferior** to PPSV23 for 6/7 shared serotypes
- PCV21 **noninferior** to PCV20 for 10/10 shared serotypes

CDC Presentation

# Proposed Clinical Guidance

## PCV-naïve adults (or adults with unknown history) DRAFT

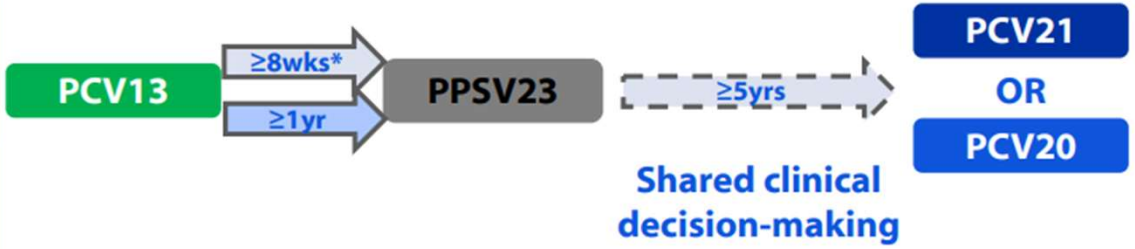
| Underlying conditions | Previous vaccination history | Age 19–49 years | Age ≥50 years |
|---|---|---|---|
| None | None | No vaccine recommendation | PCV21 OR PCV20 OR PCV15 ≥1yr PPSV23* |
| Chronic medical conditions | None | PCV21 OR PCV20 OR PCV15 ≥8wks† ≥1yr PPSV23* | |
| CSF leak, cochlear implant | None | | |
| Immuno-compromised | None | | |

*If adults previously received PPSV23 before receiving a dose of PCV15, it need not be followed by another dose of PPSV23
†A minimum interval of 8 weeks can be considered for adults with an immunocompromising condition, cochlear implant, or cerebrospinal fluid leak

CDC Presentation

# Proposed Clinical Guidance

## PCV13-experienced adults who completed the recommended vaccine series DRAFT (no change from current)

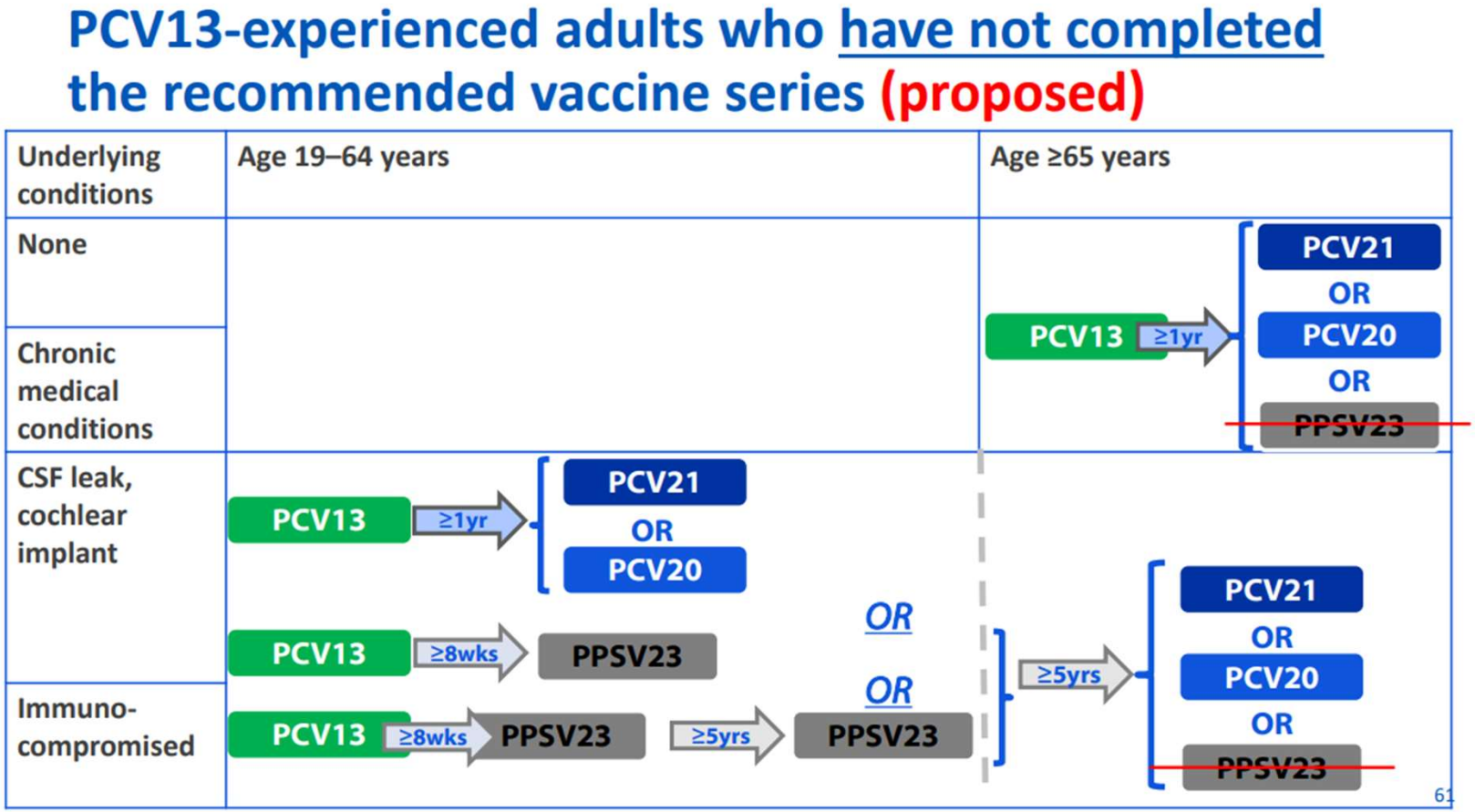
| Underlying conditions | Age ≥65 years |
|---|---|
| None |  |
| Chronic medical conditions | |
| CSF leak, cochlear implant | |
| Immuno-compromised | |



*A minimum interval of 8 weeks can be considered for adults with an immunocompromising condition, cochlear implant, or cerebrospinal fluid leak

CDC Presentation

# Proposed Clinical Guidance




CDC Presentation

# What's Next?

## New Adult Pneumococcal Vaccines in Advanced Stages of Development

| | 1 | 3 | 4 | 5 | 6A | 6B | 7F | 9V | 14 | 18C | 19A | 19F | 23F | 22F | 33F | 8 | 10A | 11A | 12F | 15B | 2 | 9N | 17F | 20 | 15A | 15C | 16F | 23A | 23B | 24F | 31 | 35B | 7C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCV15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PCV20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PPSV23 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PCV21 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pn-MAPS24v | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| VAX-24 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| VAX-31 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

### 24-valent pneumococcal vaccines:

- **Pn-MAPS24v (GSK):** Completed phase 1/2 study for adults; Breakthrough Therapy Designation granted and next steps in preparation; undergoing phase 2 studies in infants[1]
- **VAX-24 (Vaxcyte):** Completed enrollment for phase 2 studies in infants[2]; topline results anticipated **in 2025**

### 31-valent pneumococcal vaccine (VAX-31, Vaxcyte):

- Reported topline results of phase 1/2 study in adults aged ≥50 years[3]; plan to initiate phase 3 pivotal non-inferiority study by **mid-2025**
- Plans to initiate VAX-31 Infant Phase 2 Study in **Q1 of 2025** following IND submission and clearance

1. Chichili et al. Vaccine 2022; 2. Vaxcyte Completes Enrollment of Phase 2 Study Evaluating VAX-24 for the Prevention of Invasive Pneumococcal Disease (IPD) in Infants - Vaxcyte, Inc.; 3. VAX-31 Phase ½ Study Topline Results in Adults Aged 50 and Older, September 3, 2024

24-valent and 31-valent vaccines

Booster dose(s)

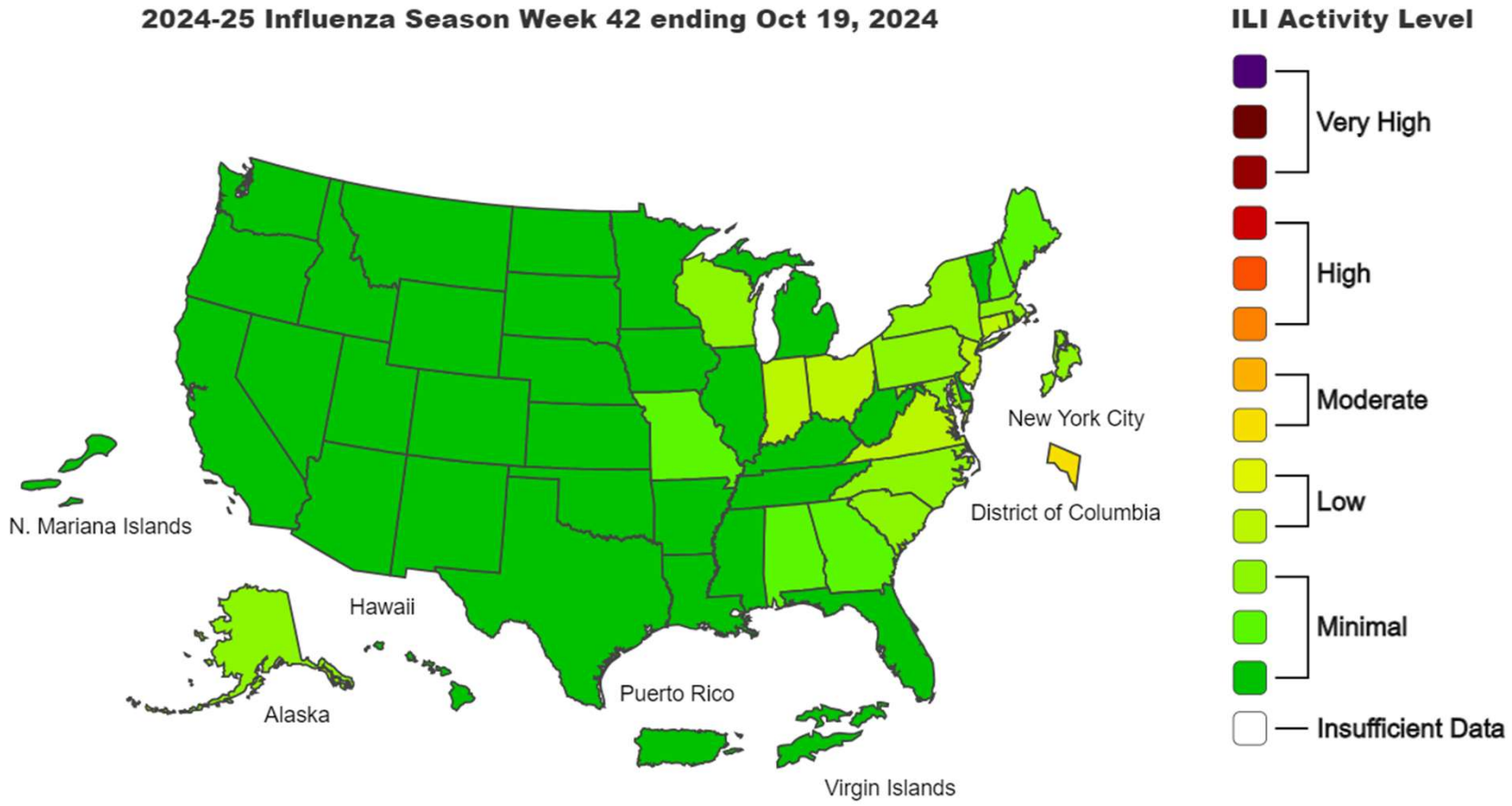
Removing polysaccharide vaccines

CDC Presentation

# Influenza

*Bottom line up front: 2024-25 flu vaccines remain recommended for everyone age 6 months and older*

# Weekly Flu Surveillance




FluView | FluView | CDC

# Avian (Bird) Flu Update

**A**

- Can cause seasonal epidemics
- H1N1 and H3N2 infect humans
- **H5N1** infects animals **(bird flu)**

**B**

- Can cause seasonal epidemics
- B/Victoria and B/Yamagata lineages infect humans

**C**

Infects humans, usually children, and animals.

Mild and doesn't mutate often.

**D**

Infects animals; no known risk to humans

Types of Influenza Viruses | Influenza (Flu) | CDC

# Avian (Bird) Flu Update

Human case summary during the 2024 outbreak, by state and exposure source

**Exposure Source**

| State | Cattle | Poultry | Unknown | State Total |
|---|---|---|---|---|
| California | 15 | 0 | 0 | 15 |
| Colorado | 1 | 9 | 0 | 10 |
| Michigan | 2 | 0 | 0 | 2 |
| Missouri | 0 | 0 | 1 | 1 |
| Texas | 1 | 0 | 0 | 1 |
| Washington | 0 | 5 | 0 | 5 |
| **Source Total** | **19** | **14** | **1** | **34** |

CDC Presentation | Avian Influenza

# FluMist Update

FluMist is a live attenuated, trivalent influenza vaccine

- On 9/20/24, the FDA approved it for self or caregiver administration
- For this season, flu vaccines only available from a healthcare provider
- It is anticipated that in 2025-26 season, FluMist will be available for self or caregiver administration

PowerPoint Presentation (cdc.gov)

# What's Next?

Moderna Announces Positive Phase 3 Data for Combination Vaccine Against Influenza and COVID-19

June 10, 2024

Pfizer and BioNTech Provide Update on mRNA-based Combination Vaccine Program Against Influenza and COVID-19 in Individuals 18-64 Years of Age

Friday, August 16, 2024 - 06:45am

Oct 16, 2024 PRESS RELEASE

COVID-19

**Update on Novavax's COVID-19-Influenza Combination and Stand-alone Influenza Phase 3 Trial**

September 13, 2024

**Combo COVID-19 and Flu mRNA Vaccine Falls Short of Total Flu Protection**

Samantha Anderer

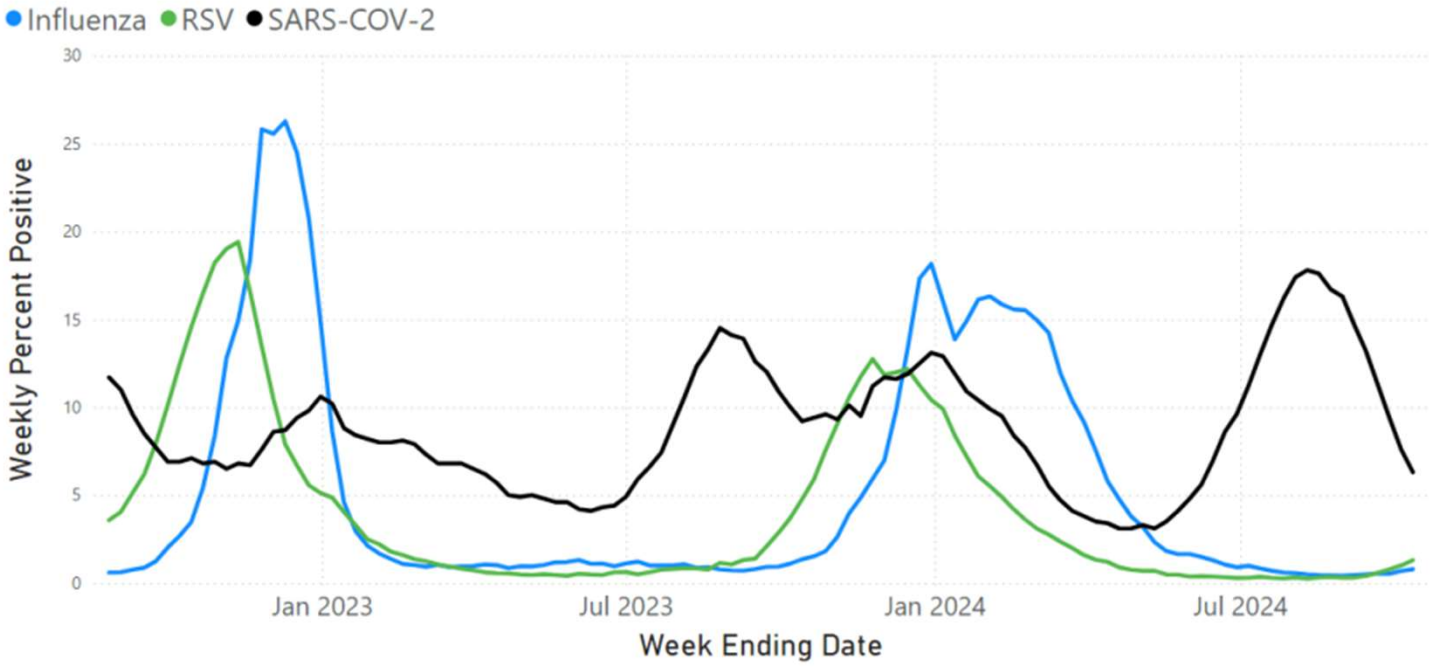
*JAMA*. 2024;332(14):1133. doi:10.1001/jama.2024.18194

# COVID-19

*Bottom line up front: ACIP now recommends a second dose of 2024-25 COVID-19 vaccine for people aged 65 years and older, and people aged 19-64 with a weakened immune system*

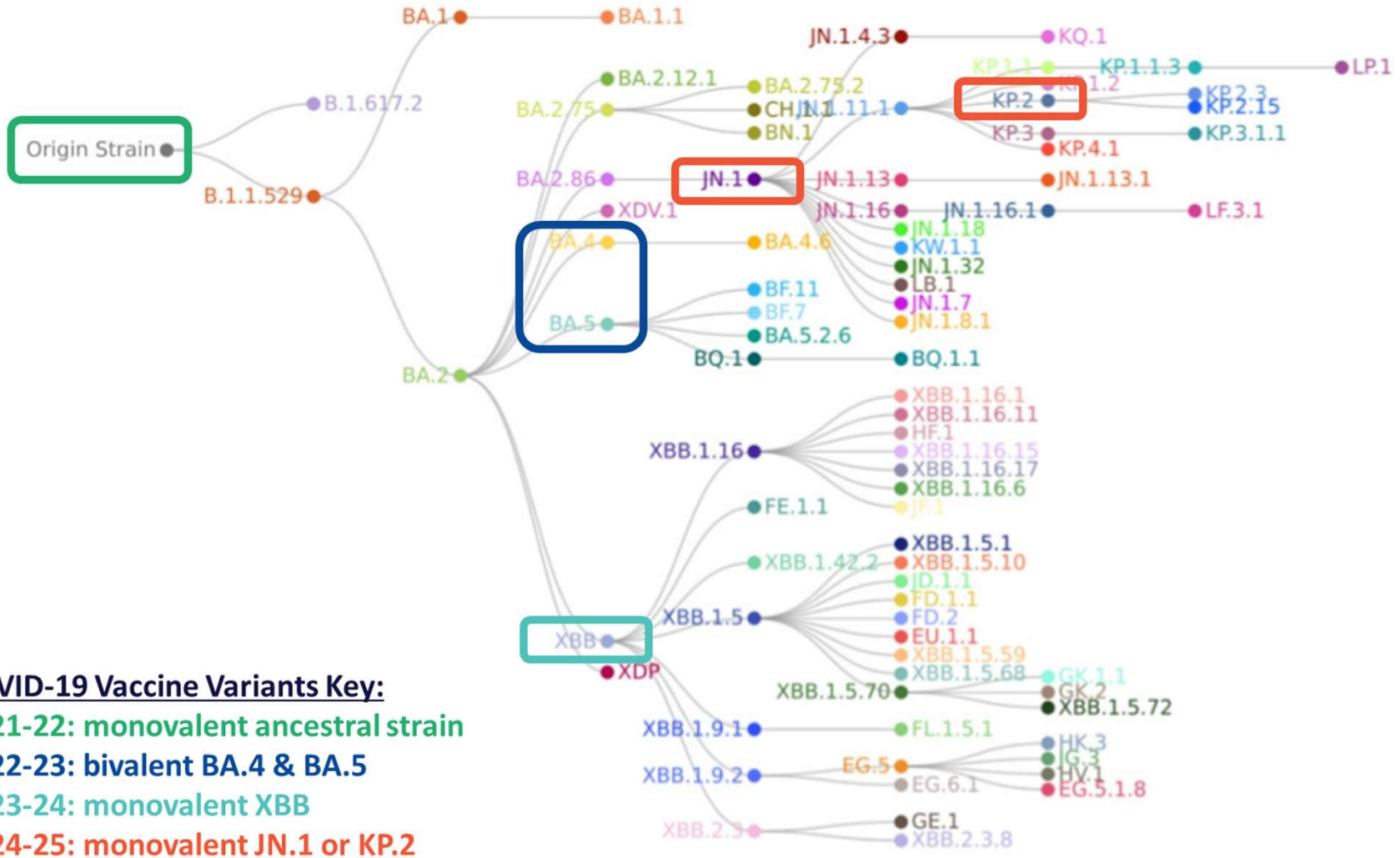
# COVID-19 circulates year-round.

**National weekly percent positive for SARS-COV-2, RSV and influenza reported to NREVSS, August 27, 2022 through October 12, 2024**




Reported was last updated on October 16, 2024.
All results presented from nucleic acid amplification tests which represent >90% of the diagnostic tests reported to NREVSS. The last three weeks of data may be less complete. NREVSS is an abbreviation for the National Respiratory and Enteric Virus Surveillance System. For more information on NREVSS, please visit www.cdc.gov/surveillance/nrevss.
SARS-COV-2: Severe acute respiratory syndromic coronavirus type 2
Flu: Influenza viruses types are combined but reported by type and subtype depending on the testing capabilities of each contributing laboratory.
RSV: Respiratory Syncytial Virus. Types A and B are reported but not shown separately in this report.
https://www.cdc.gov/nrevss/php/dashboard/index.html

CDC Presentation




**COVID-19 Vaccine Variants Key:**

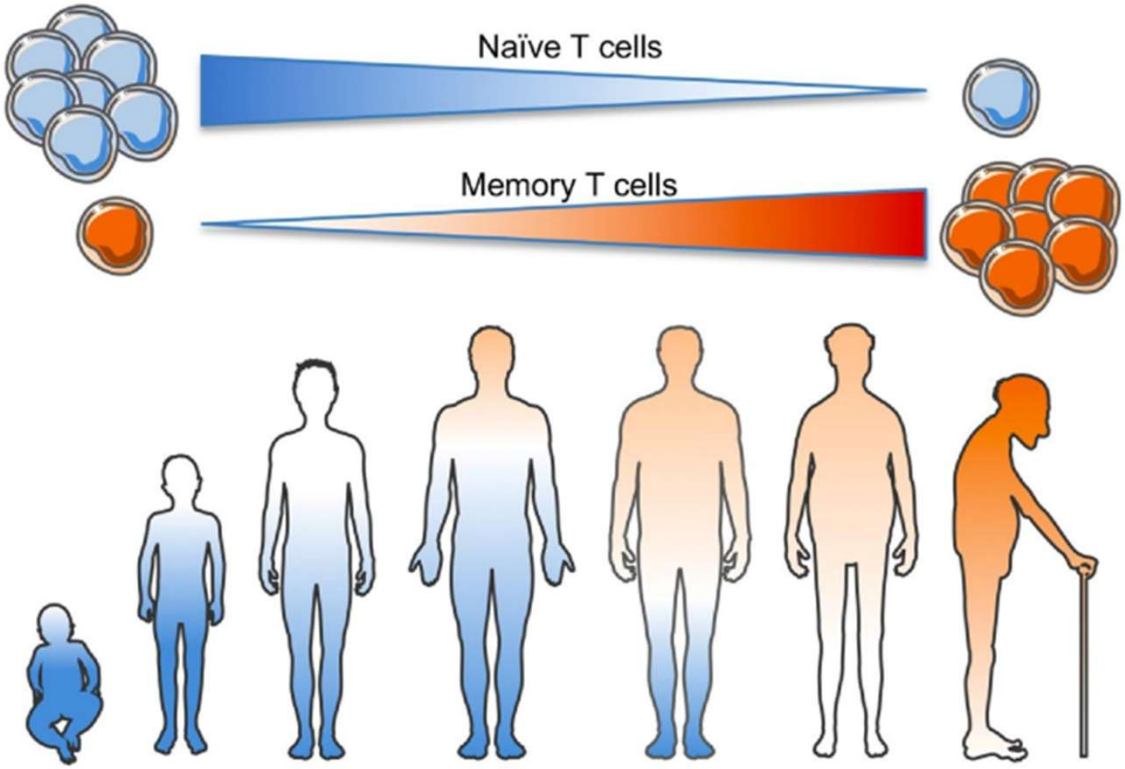
**2021-22: monovalent ancestral strain**

**2022-23: bivalent BA.4 & BA.5**

**2023-24: monovalent XBB**

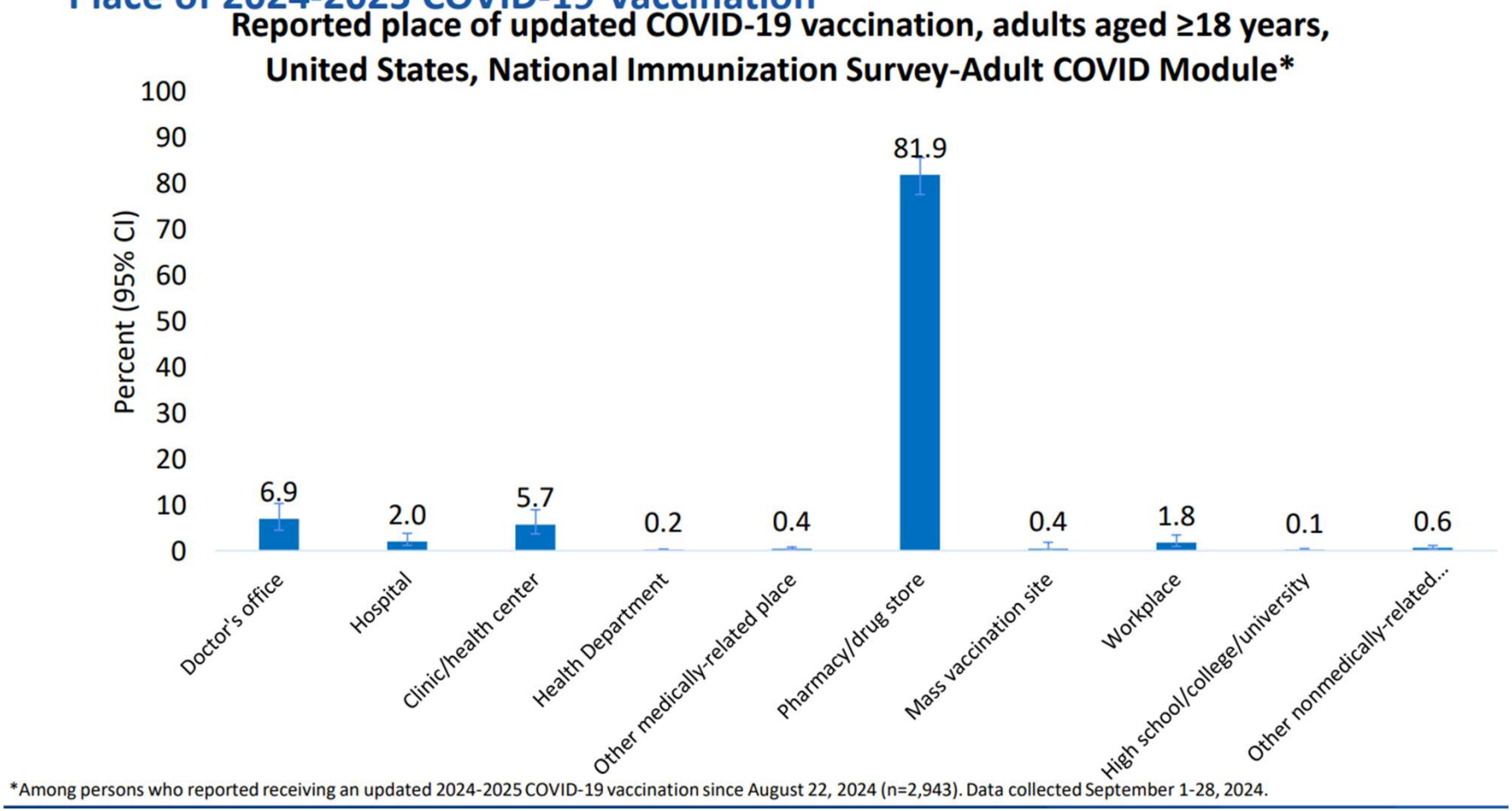
**2024-25: monovalent JN.1 or KP.2**

# Why recommend a second dose?




CDC Presentation

# Place of 2024-2025 COVID-19 Vaccination




*Among persons who reported receiving an updated 2024-2025 COVID-19 vaccination since August 22, 2024 (n=2,943). Data collected September 1-28, 2024.

CDC Presentation

# Routine vaccination

Children ages 6 months–4 years
- Unvaccinated: Should receive a multidose initial series with a 2024–2025 mRNA vaccine
- Previously completed an initial series: Should receive 1 dose of a 2024–2025 mRNA vaccine from the same manufacturer as the initial series

People ages 5–64 years:
- Should receive 1 dose of an age-appropriate 2024-2025 COVID-19 vaccine*

People ages 65 years and older:
- Should receive 2 doses of any 2024–2025 COVID-19 vaccine, spaced 6 months apart

# Immunocompromised

Initial vaccination:
- Should receive a multidose vaccination series with an age-appropriate 2024–2025 vaccine and receive 1 2024–2025 dose 6 months after completing the initial series

Previously completed an initial series:
- Should receive 2 doses of an age-appropriate COVID-19 2024–2025 vaccine, spaced 6 months apart

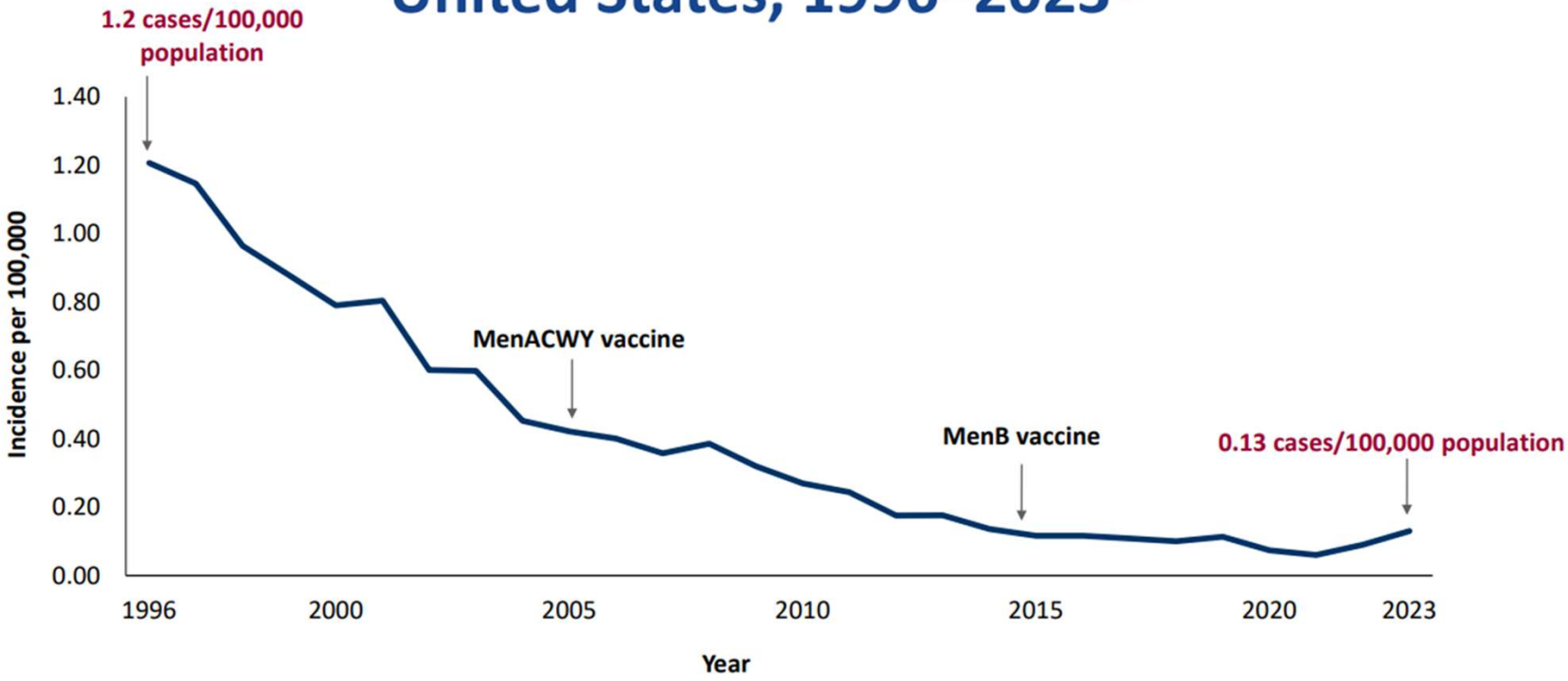
May receive additional age-appropriate 2024–25 COVID-19 vaccine doses under shared clinical decision-making.

Clinical Considerations for use of 2024-25 COVID-19 Vaccines (cdc.gov)

# Meningococcal

*Bottom line up front: Bexsero (meningitis B vaccine) dose schedule now harmonizes with Trumenba dose schedule.*

# Meningococcal Disease Incidence – United States, 1996–2023*




Abbreviations: MenACWY vaccine = quadrivalent (serogroups A, C, W, and Y) meningococcal conjugate vaccine; MenB vaccine = serogroup B meningococcal vaccine
Source: 1996–2023 NNDSS Data. *2023 NNDSS data are preliminary.

Meningococcal Presentation | CDC

# Meningitis B Vaccines

Routine schedule of Bexsero vs. Trumenba:

- *Bexsero*: 2 dose series at 0 and at least 1 month → now updated to 0 and 6 months
- *Trumenba*: 2 dose series at 0 and 6 months

Higher risk schedule due to asplenia, during outbreak, etc.:

- *Bexsero*: 2 dose series at 0 and at least 1 month → now updated to 0, 1-2, and 6 months
- *Trumenba*: 3 dose series at 0, 1-2, and 6 months

Meningococcal Presentation | CDC

# Pfizer and GSK MenABCWY Vaccines

| | Pfizer (Penbraya) | GSK* |
|---|---|---|
| **ACWY component** | Nimenrix (not licensed in U.S.) | Menveo |
| **B component** | Trumenba | Bexsero |
| **Schedule** | 2 doses, 6 months apart | 2 doses, 6 months apart* |
| **Age** | 10–25 years | 10–25 years* |

*Vaccine not yet licensed in U.S. and this slide represents anticipated schedule and age indications



What's next?

- Revisiting the adolescent meningococcal vaccine schedule to include pentavalent meningitis vaccines at a 2025 ACIP Meeting

Meningococcal Presentation | CDC

# Chikungunya

*Bottom line up front: the workgroup is considering a virus-like particle vaccine submitted to FDA for licensure.*

# Chikungunya Vaccines

A virus-like particle vaccine will provide an option for people aged 12+ years.
The live virus is available for people aged 18+ years.

What's next?

- Need for booster dose currently unknown
- Additional safety and effectiveness data to be collected
- The Work Group will review and present policy for a vote at a future meeting

Chikungunya Vaccine (cdc.gov)

# RSV

*Bottom line up front: no changes to recommendations yet, but consideration is ongoing for adult age expansion and pediatric options.*

# Available RSV Vaccines

Protein subunit:

- *GSK Arexvy, adjuvanted*
  - ACIP-approved for adults aged 60+; FDA-approved for 50+
- *Pfizer Abrysvo, no adjuvant*
  - ACIP-approved for adults aged 60+ and pregnant people; FDA-approved for 18+

mRNA:

-*Moderna mResvia, no adjuvant:*

- ACIP-approved for adults aged 60+

Given the considerable benefits and evidence of safety, the Work Group continues to feel **coadministration is acceptable**

While uncertainty remains in the magnitude of **GBS risk** associated with protein subunit RSV vaccination, the Work Group continues to believe **benefits outweigh risks**

PowerPoint Presentation (cdc.gov)

# Maternal/Pediatric RSV Updates

MAB options for infants:

-Nirsevimab has a longer half-life than Clesrovimab (71 days vs. 42), however efficacy against severe RSV appeared sustained at 180 and 150 days, respectively)

Pre-term births and hypertensive disorders in maternal RSV vaccine recipients:

- Differences vs. placebo were not statitstically significant and data were insufficient to establish or exclude a causal relationship
- ACIP again judged the benefits of maternal RSV vaccine to outweigh potential risks

What's next?

- ACIP could vote on clesrovimab as early as February 2025 (depends on FDA licensure)

CDC Presentation

# HPV

*Bottom line up front: evidence is accumulating on efficacy of HPV vaccination with fewer doses and beginning at a younger age.*

# Current HPV vaccination recommendations, United States

**Routine vaccination**

- Age 11 or 12 years
- Can be started at age 9 years

**Catch-up vaccination**

- Through age 26 years

**Shared clinical decision-making**

- Age 27–45 years

**Number of doses**

2 doses (0, 6-12 months)
if starting series before 15th birthday

3 doses (0,1-2, 6 months)
if starting series on or after 15th birthday or
if immunocompromising condition

What's next?

-Workgroup plans to share additional data, modeling, and partial evidence to recommendations at February 2025 ACIP meeting in support of beginning the series at age 9 instead of 11. A vote won't be earlier than June2025.

ACIP Presentation Slides: October 23-24, 2024 Meeting | ACIP | CDC

# CMV

*Bottom line up front: a mRNA vaccine candidate is expecting results next year, so a workgroup is being formed in preparation.*

# New Workgroup for cytomegalovirus

CMV is a common virus that infects people of all ages.

- In the United States, nearly 1 in 3 children is already infected with CMV by age 5.
- Over half of adults have been infected with CMV by age 40.

To date, no licensed vaccine, however, mRNA candidate has results expected next year.

What's next?

-At February ACIP meeting, workgroup will review burden of CMV

Cytomegalovirus (CMV) Vaccines Work Group (cdc.gov)

# MPox

*Bottom line up front: There is an Mpox outbreak in DRC, but risk is considered very low for U.S. travelers and the general U.S. population.*

# Mpox Update

What's next?

- Workgroup considering bringing to an ACIP vote, use of JYNNEOS in persons 12-17 years of age at risk during mpox outbreaks
- Planning publication of ACIP recommendations in MMWR for persons 12+

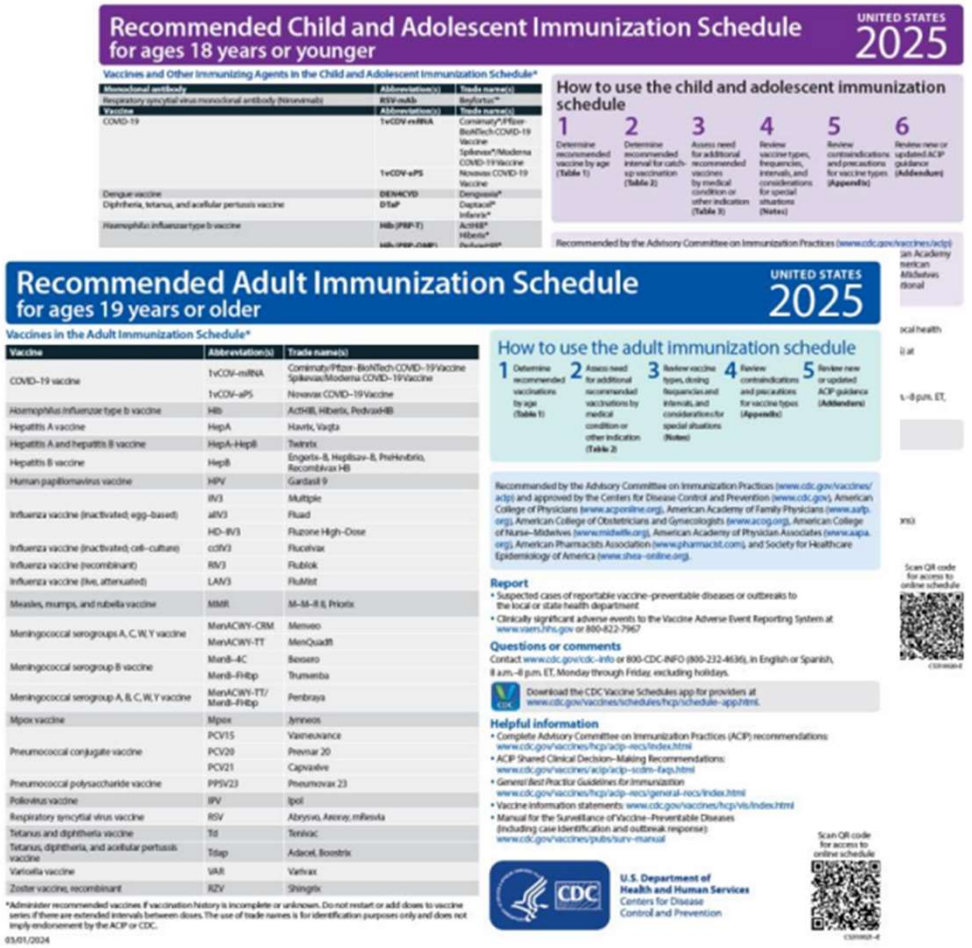
CDC Presentation

# Immunization Schedules

*Bottom line up front: 2025 U.S. immunization schedules are approved*

# 2025 Updates

- Harmonizes the child/adolescent and adult schedules
- Updates changes in guidance
- VFC schedule changes have been implemented to match



Recommended Child and Adolescent Immunization Schedule
for ages 18 years or younger
UNITED STATES 2025

Vaccines and Other Immunizing Agents in the Child and Adolescent Immunization Schedule*

| Monoclonal antibody | Abbreviation(s) | Trade name(s) |
|---|---|---|
| Respiratory syncytial virus monoclonal antibody (Nirsevimab) | RSV-mAb | Beyfortus™ |
| **Vaccine** | **Abbreviation(s)** | **Trade name(s)** |
| COVID-19 | 1vCOV-mRNA | Comirnaty®/Pfizer-BioNTech COVID-19 Vaccine, Spikevax®/Moderna COVID-19 Vaccine |
| | 1vCOV-aPS | Novavax COVID-19 Vaccine |
| Dengue vaccine | DENV4CYD | Dengvaxia® |
| Diphtheria, tetanus, and acellular pertussis vaccine | DTaP | Daptacel®, Infanrix® |
| Haemophilus influenzae type b vaccine | Hib (PRP-T) | ActHIB®, Hiberix®, |

How to use the child and adolescent immunization schedule

1 Determine recommended vaccine by age (Table 1)
2 Determine recommended interval for catch-up vaccination (Table 2)
3 Assess need for additional recommended vaccines by medical condition or other indication (Table 3)
4 Review vaccine types, frequencies, intervals, and considerations for special situations (Notes)
5 Review contraindications and precautions for vaccine types (Appendix)
6 Review new or updated ACIP guidance (Addendum)

Recommended by the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/acip)

Recommended Adult Immunization Schedule
for ages 19 years or older
UNITED STATES 2025

Vaccines in the Adult Immunization Schedule*

| Vaccine | Abbreviation(s) | Trade name(s) |
|---|---|---|
| COVID-19 vaccine | 1vCOV-mRNA | Comirnaty/Pfizer-BioNTech COVID-19 Vaccine, Spikevax/Moderna COVID-19 Vaccine |
| | 1vCOV-aPS | Novavax COVID-19 Vaccine |
| Haemophilus influenzae type b vaccine | Hib | ActHIB, Hiberix, Pedvax HIB |
| Hepatitis A vaccine | HepA | Havrix, Vaqta |
| Hepatitis A and hepatitis B vaccine | HepA-HepB | Twinrix |
| Hepatitis B vaccine | HepB | Engerix-B, HepBsav-B, PreHevbrio, Recombivax HB |
| Human papillomavirus vaccine | HPV | Gardasil 9 |
| Influenza vaccine (inactivated; egg-based) | IIV3 | Multiple |
| | aIIV3 | Fluad |
| | HD-IIV3 | Fluzone High-Dose |
| Influenza vaccine (inactivated; cell-culture) | ccIIV3 | Flucelvax |
| Influenza vaccine (recombinant) | RIV3 | Flublok |
| Influenza vaccine (live, attenuated) | LAIV3 | FluMist |
| Measles, mumps, and rubella vaccine | MMR | M-M-R II, Priorix |
| Meningococcal serogroups A, C, W, Y vaccine | MenACWY-CRM | Menveo |
| | MenACWY-TT | MenQuadfi |
| Meningococcal serogroup B vaccine | MenB-4C | Bexsero |
| | MenB-FHBp | Trumenba |
| Meningococcal serogroup A, B, C, W, Y vaccine | MenACWY-TT/MenB-FHBp | Penbraya |
| Mpox vaccine | Mpox | Jynneos |
| Pneumococcal conjugate vaccine | PCV15 | Vaxneuvance |
| | PCV20 | Prevnar 20 |
| | PCV21 | Capvaxive |
| Pneumococcal polysaccharide vaccine | PPSV23 | Pneumovax 23 |
| Poliovirus vaccine | IPV | Ipol |
| Respiratory syncytial virus vaccine | RSV | Abrysvo, Arexvy, mResvia |
| Tetanus and diphtheria vaccine | Td | Tenivac |
| Tetanus, diphtheria, and acellular pertussis vaccine | Tdap | Adacel, Boostrix |
| Varicella vaccine | VAR | Varivax |
| Zoster vaccine, recombinant | RZV | Shingrix |

*Administer recommended vaccines if vaccination history is incomplete or unknown. Do not restart or add doses to vaccine series if there are extended intervals between doses. The use of trade names is for identification purposes only and does not imply endorsement by the ACIP or CDC.

03/01/2024

How to use the adult immunization schedule

1 Determine recommended vaccinations by age (Table 1)
2 Assess need for additional recommended vaccinations by medical condition or other indication (Table 2)
3 Review vaccine types, dosing frequencies and intervals, and considerations for special situations (Notes)
4 Review contraindications and precautions for vaccine types (Appendix)
5 Review new or updated ACIP guidance (Addendum)

Recommended by the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/acip) and approved by the Centers for Disease Control and Prevention (www.cdc.gov), American College of Physicians (www.acponline.org), American Academy of Family Physicians (www.aafp.org), American College of Obstetricians and Gynecologists (www.acog.org), American College of Nurse-Midwives (www.midwife.org), American Academy of Physician Associates (www.aapa.org), American Pharmacists Association (www.pharmacist.com), and Society for Healthcare Epidemiology of America (www.shea-online.org).

**Report**
- Suspected cases of reportable vaccine-preventable diseases or outbreaks to the local or state health department
- Clinically significant adverse events to the Vaccine Adverse Event Reporting System at www.vaers.hhs.gov or 800-822-7967

**Questions or comments**
Contact www.cdc.gov/cdc-info or 800-CDC-INFO (800-232-4636), in English or Spanish, 8 a.m.–8 p.m. ET, Monday through Friday, excluding holidays.

Download the CDC Vaccine Schedules app for providers at www.cdc.gov/vaccines/schedules/hcp/schedule-app.html.

**Helpful information**
- Complete Advisory Committee on Immunization Practices (ACIP) recommendations: www.cdc.gov/vaccines/hcp/acip-recs/index.html
- ACIP Shared Clinical Decision-Making Recommendations: www.cdc.gov/vaccines/acip/acip-scdm-faq.html
- General Best Practice Guidelines for Immunization: www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html
- Vaccine information statements: www.cdc.gov/vaccines/hcp/vis/index.html
- Manual for the Surveillance of Vaccine-Preventable Diseases (including case identification and outbreak response): www.cdc.gov/vaccines/pubs/surv-manual

Scan QR code for access to online schedule

U.S. Department of Health and Services
Centers for Disease Control and Prevention

[ACIP Immz Schedule Updates]

# References


- How Vaccines are Developed and Approved for Use | Vaccines & Immunizations | CDC
- ACIP Presentation Slides: October 23-24, 2024 Meeting | ACIP | CDC
- About Pneumonia | Pneumonia | CDC
- Weekly US Influenza Surveillance Report: Key Updates for Week 42, ending October 19, 2024 | FluView | CDC
- H5 Bird Flu: Current Situation | Bird Flu | CDC
- Update on Novavax's COVID-19-Influenza Combination and Stand-alone Influenza Phase 3 Trial - Oct 16, 2024
- About Cytomegalovirus | Cytomegalovirus (CMV) and Congenital CMV Infection | CDC
- CDC Recommends Lowering the Age for Pneumococcal Vaccination from 65 to 50 Years Old | CDC Newsroom
- CDC Recommends Second Dose of 2024-2025 COVID-19 Vaccine for People 65 Years and Older and for People Who are Moderately or Severely Immunocompromised | CDC Newsroom

# Contact Info

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OHIO PHARMACISTS ASSOCIATION

2024 Midyear Meeting & Trade Show
November 3, 2024