



## Immunization Updates

**Shengyi "Jing-Jing" Mao, MD, FACP, FAAP**

Associate Director of Med-Peds Clinical Operations  
Lead Physician, OSU Internal Medicine & Pediatrics at Grandview  
Associate Professor – Clinical, Division of General Internal Medicine  
*The Ohio State University Wexner Medical Center*

MedNet21  
Center for Continuing Medical Education

THE OHIO STATE UNIVERSITY  
WEXNER MEDICAL CENTER

1

## Background



- Several new vaccine products have been introduced in the past couple of years.
- Every year, vaccine recommendations are updated.
- Several big changes were made to the ACIP/CDC childhood vaccination schedule in 2025 and 2026.
- Professional societies released their own vaccination schedules in 2025 and 2026.
- Public attitudes towards vaccines have shifted.

2

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

2

## Objectives

- Be familiar with current US vaccine schedules.
- Be familiar with the new vaccines available and their use.
- Be familiar with common vaccine myths.
- Develop strategies for approaching vaccine hesitancy.

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

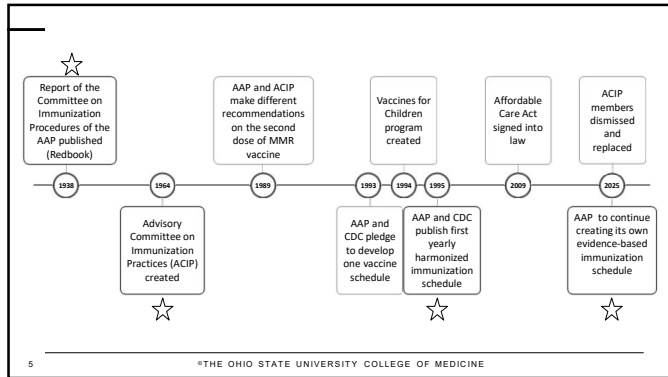
3

## Not Covered Today

- Dengue vaccine
- Mpox Vaccine
- Travel vaccines
- Vaccines not available in the United States

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

4



5

### CDC/ACIP vaccine schedule

<https://www.cdc.gov/vaccines/hcp/>

Immunization Schedules

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

6

### CDC/ACIP Immunization Schedule

**Hepatitis B vaccination**  
(minimum age: birth)

Legend: R Routine, C Catch-up, S Special situations, P Contraindications and Precautions

| Category                          | Recommendation                                               |
|-----------------------------------|--------------------------------------------------------------|
| Routine vaccination               | 1 dose at birth, 1 dose at 1-2 months, 1 dose at 6-18 months |
| Catch-up vaccination              | 1 dose at 1-2 months, 1 dose at 6-18 months                  |
| Special situations                | 1 dose at birth, 1 dose at 1-2 months, 1 dose at 6-18 months |
| Contraindications and Precautions | None                                                         |

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

7

### AAP Immunization Schedule

**Policy Statement released Jan 26, 2026**

Endorsed by:

- American Academy of Family Physicians (AAFP)
- American College of Nurse-Midwives (ACNM)
- American College of Obstetrics and Gynecology (ACOG)
- American Medical Association (AMA)
- American Pharmacists Association (APhA)
- Council of Medical Specialty Societies (CMSS)
- Infectious Diseases Society of America (IDSA)
- National Association of Pediatric Nurse Practitioners (NAPNP)
- National Medical Association (NMA)
- Pediatric Infectious Diseases Society (PIDS)
- Pediatric Pharmacy Association (PPA)
- Society for Adolescent Health and Medicine (SAHM)

PEDIATRICS  
Recommended Childhood and Adolescent Immunization Schedule:  
United States, 2026: Policy Statement

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

8

**AAP/Red Book Vaccination Schedule**

**Table 1 Recommended Child and Adolescent Immunization Schedule for Ages 18 Years or Younger, United States, 2025**

American Academy of Pediatrics  
PEDIATRIC SOCIETY OF THE AMERICAN ACADEMY OF PEDIATRICS

These recommendations must be read with the **Background Notes**. For those who do not follow an order, please notify your physician of the order. Immunization recommendations are subject to change without notice. © 2025 American Academy of Pediatrics. All rights reserved.

For the most up-to-date version, visit [AAP.org/ImmunizationSchedule](https://AAP.org/ImmunizationSchedule)

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

9

**Table 1 Recommended Child and Adolescent Immunization Schedule for Ages 18 Years or Younger, United States, 2025**

**Table 1 Recommended Adult Immunization Schedule by Age Group, United States, 2025**

**Child (birth to 18 years old) Immunization Schedules**

**Adults Ages 19 and Older Immunization Schedules**

This version of the immunization schedules has been adopted by the American Academy of Family Physicians. The CDC's 2025 immunization schedules, which are not endorsed by the AAP, can be found [here](https://www.cdc.gov/vaccines/imz/downloads/).

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

10

**AAFP Adult Vaccine Schedule**

How does the AAFP adult vaccine schedule differ from the CDC recommendations?

A) COVID-19 vaccine recommendations  
B) Influenza vaccine recommendations  
C) Hepatitis B vaccine recommendations  
D) Trick question – no difference

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

11

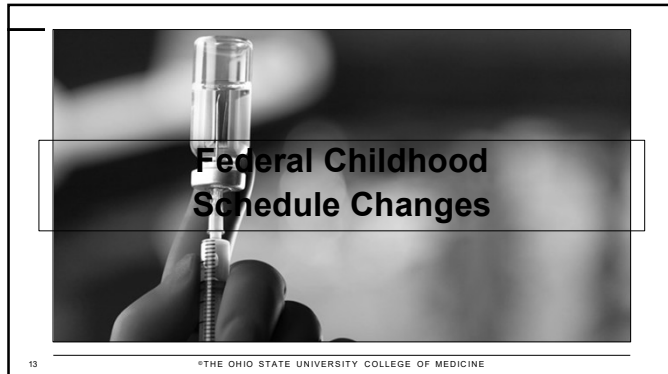
**AAFP Adult Vaccine Schedule**

How does the AAFP adult vaccine schedule differ from the CDC recommendations?

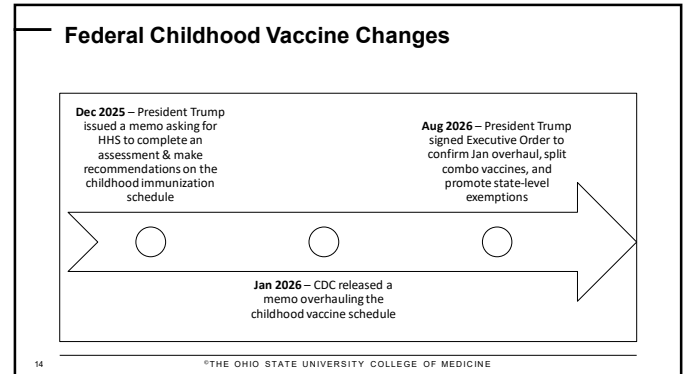
**A) COVID-19 vaccine recommendations**  
B) Influenza vaccine recommendations  
C) Hepatitis B vaccine recommendations  
D) Trick question – no difference

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

12



13



14

### Federal Vaccine Changes

- 3 New classifications
- Decreased routine diseases covered from 18 to 11

15 ©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

15

### Federal Childhood Vaccine Changes

#### New ACIP Vaccine Classifications

| Recommended for All Children                                                         | Shared Clinical Decision-making                                                       | Certain High-Risk Groups or Populations                                               |
|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |

16 ©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

16

### Federal Childhood Vaccine Schedule Changes Recommended for All (No Change)

| Vaccine            | Prior CDC Status | New Classification           |
|--------------------|------------------|------------------------------|
| DTaP & Tdap        | Universal        | Recommended for all children |
| Hib                | Universal        | Recommended for all children |
| Pneumococcal (PCV) | Universal        | Recommended for all children |
| Polio (IPV)        | Universal        | Recommended for all children |
| MMR                | Universal        | Recommended for all children |
| Varicella          | Universal        | Recommended for all children |

<https://www.hhs.gov/childhood-immunization-schedule/index.html>  
©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

17

### Federal Childhood Vaccine Schedule Changes Changed from prior schedule

| Vaccine     | Prior CDC Status      | New Classification           | Clinical Implication                                                                                                    |
|-------------|-----------------------|------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| HPV         | Universal (2–3 doses) | Recommended for all children | Reduced to 1 dose at 11-12                                                                                              |
| Rotavirus   | Universal             | Shared decision-making       |                                                                                                                         |
| Hepatitis B | Universal             | Risk-based / shared decision | Only recommended for infants of mother with Hep B. 1 <sup>st</sup> dose for shared decision moved to 2 months or later. |
| Hepatitis A | Universal             | Risk-based / shared decision | 1 dose recommended for travelers, 2-dose series at 12 months is shared decision                                         |
| MenACWY     | Universal             | Risk-based / shared decision | Asplenia or college students living in residential housing.                                                             |
| MenB        | At risk groups        | Risk-based / shared decision | Asplenia or outbreak, doesn't mention residential housing.                                                              |

18

18

### Federal Childhood Vaccine Schedule Changes Seasonal Vaccines and Immunoprophylaxis

| Vaccine   | Prior CDC Status                             | New Classification                      | Clinical Implication                                                                                                                                      |
|-----------|----------------------------------------------|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Influenza | Universal                                    | Shared decision-making                  | Counseling and individual risk assessment                                                                                                                 |
| COVID-19  | Universal                                    | Shared decision-making                  | Counseling and individual risk assessment                                                                                                                 |
| RSV       | Seasonally if mother did not receive vaccine | Certain High-Risk Groups or Populations | No Change – still recommended for all infants who's mother did not receive vaccination in 1 <sup>st</sup> season and 2 <sup>nd</sup> season for high-risk |

19

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

19

### Federal Vaccine Changes Response

AAP reaffirms its 2026 vaccination schedule.

"Vaccine recommendations from the American Academy of Pediatrics are tailored to the health of children living in the United States and are based on decades of research and systematic tracking of real-world experiences. Pediatricians recommend children receive certain vaccines at specific ages based on when children's immune systems will respond best and when they are most vulnerable to certain diseases. Sometimes this means children will receive a single shot that protects against multiple diseases, or they may receive multiple vaccines at one visit."

>200 organizations opposed and denounced the executive order.

20

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

20

## Federal Vaccine Changes

"All vaccines currently recommended by CDC will remain covered by insurance without cost sharing,"

21

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

21

## New Vaccines

22

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

22

## Immunizations to Protect Against Severe RSV

| Who Does it Protect?                                                                                   | Type of Product                                                       | Who Is It Recommended For?                                                                                                                         | When Is It Available?                                                             |
|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  Adults 50 and over | RSV vaccine                                                           | Adults ages 50-74 who are at increased risk of severe RSV<br>AND<br>Everyone ages 75 and older                                                     | Available any time, but best time to get vaccinated is late summer and early fall |
|  Babies             | RSV antibody given to baby                                            | All infants whose mother did not receive RSV vaccine during pregnancy, and some children ages 8-19 months who are at increased risk for severe RSV | October through March*                                                            |
|  Babies             | OR<br>RSV vaccine (Pfizer's ABRYSVO) given to mother during pregnancy | All pregnant women during weeks 32-36 of their pregnancy                                                                                           | September through January                                                         |

[www.cdc.gov/rsv](http://www.cdc.gov/rsv)

\*Recommended timing of administration in most of the continental United States. Recommended timing of administration may differ in some states, based on state laws or territorial guidance.



23

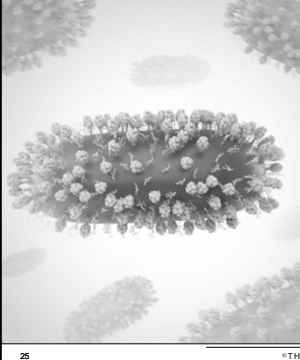
## RSV Vaccines Adult products

- Arexvy (GSK) – adult
- Mresvia (Moderna) – adult
- Abrysvo (Pfizer) – adults, including pregnant

24

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

24



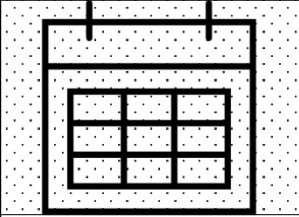
**RSV Vaccines**  
**Adult Recommendations**

- Everyone 75 yo+
- 50-74yo at increased risk of severe RSV
  - Chronic medical conditions such as lung, heart disease
  - Live in nursing homes
- 1 time dose, ideally given late summer/early fall
- Available at the pharmacy under Medicare part D

25 THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

25

**RSV Vaccines**  
**Adult Products**



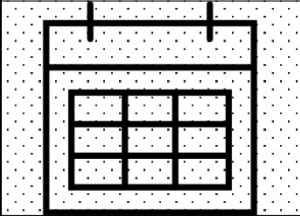
**When should maternal RSV vaccine be given?**

- A) All year round
- B) September through January
- C) October through March
- D) It changes every year

26 THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

26

**RSV Vaccines**  
**Adult Products**

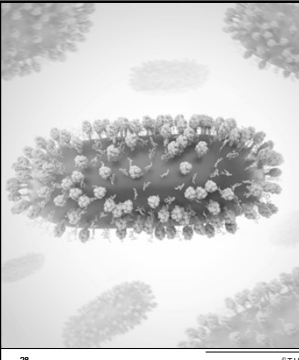


**When should maternal RSV vaccine be given?**

- A) All year round
- B) September through January**
- C) October through March
- D) It changes every year

27 THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

27



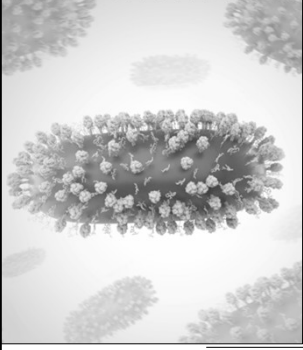
**RSV Vaccines**  
**Adult Recommendations**

- Pregnancy
  - September through January
  - Between 32 and 36 wks gestation
  - At least 14d before delivery
  - Only recommended ONCE (do not repeat for future pregnancies)
  - Reduces risk of RSV hospitalization for babies by 57% in the first 6 months

ONLY Abrysvo vaccine

28 THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

28

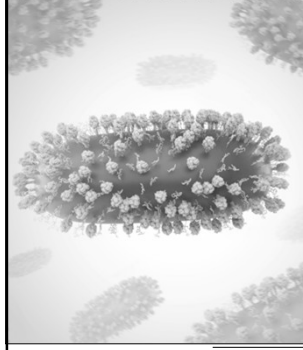


**RSV Immunizations**  
**Pediatrics**

- Nirsevimab (Beyfortus)
- Clesrovimab (Enflonsia)
- Palivizumab (Synagis) approved from market and removed

29 THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

29



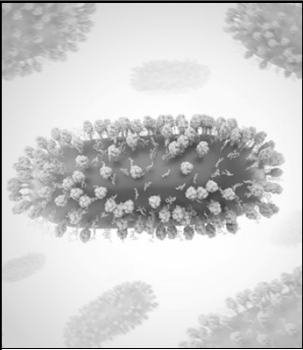
**RSV Immunizations**  
**Pediatrics**

Which of the following babies should receive RSV mAb?

- Newborn in Jan, mom received Abrysvo at 37 weeks, baby born full term at 38 weeks
- 9-month old at WCC who's mother did not receive Abrysvo
- Newborn seen in June with cleft palate.
- 4mo at WCC in Oct, mom did not receive Abrysvo

30 THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

30



**RSV Immunizations**  
**Pediatrics**

Which of the following babies should receive RSV mAb?

- Newborn in Jan, mom received Abrysvo at 37 weeks, baby born full term at 38 weeks
- 9-month old at WCC who's mother did not receive Abrysvo
- Newborn seen in June with cleft palate.
- 4mo at WCC in Oct, mom did not receive Abrysvo

31 THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

31

**RSV Immunizations**  
**Pediatrics**

**AAP issued expanded indications for babies to receive MAB in 2<sup>nd</sup> RSV season on Sept 2, 2026.**

Nirsevimab 200mg is recommended for patients 8-19 months of age at high risk for severe RSV disease entering their second RSV season. The 4 new high risk indications are:

- All children born preterm, at <32 weeks, 0 days gestation
- Children with hemodynamically significant congenital heart disease
- Children with anatomic pulmonary abnormalities or neuromuscular disorders putting them at risk for severe RSV disease
- Children with Down syndrome or other chromosomal differences placing them at higher risk of severe RSV disease

**• All babies in 1<sup>st</sup> RSV season (usually Oct 1-Mar) <8 months old if birth parent did not receive Abrysvo at 32-36 weeks + at least 14d before delivery.**

*This is in addition to the original 4 indications which still apply:*

- Children with chronic lung disease attributable to prematurity or other significant neonatal conditions (eg meconium aspiration, congenital diaphragmatic hernia) who require medical support (ie, chronic corticosteroids, diuretics, or oxygen) at any time during the 6-month period before the start of the second RSV season
- Children with severe immunocompromise
- Children with cystic fibrosis who have either:
  - Manifestations of severe lung disease or
  - Weight-for-length that is less than 10<sup>th</sup> percentile
- American Indian or Alaska Native children

32 THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

32

| RSV        |          |       |                  |
|------------|----------|-------|------------------|
|            | Positive | Total | Percent Positive |
| 4/11/2025  | 26       | 217   | 12%              |
| 4/4/2025   | 39       | 241   | 16%              |
| 3/28/2025  | 26       | 238   | 11%              |
| 3/21/2025  | 42       | 234   | 18%              |
| 3/14/2025  | 54       | 314   | 17%              |
| 3/7/2025   | 48       | 295   | 16%              |
| 2/28/2025  | 49       | 276   | 18%              |
| 2/21/2025  | 62       | 308   | 20%              |
| 2/14/2025  | 42       | 230   | 18%              |
| 2/7/2025   | 40       | 223   | 18%              |
| 1/31/2025  | 44       | 220   | 20%              |
| 1/24/2025  | 66       | 271   | 24%              |
| 1/17/2025  | 39       | 243   | 16%              |
| 1/10/2025  | 39       | 282   | 14%              |
| 1/3/2025   | 63       | 314   | 20%              |
| 12/27/2024 | 31       | 255   | 12%              |
| 12/20/2024 | 22       | 294   | 7%               |
| 12/13/2024 | 17       | 248   | 7%               |
| 12/6/2024  | 13       | 230   | 6%               |
| 11/29/2024 | 15       | 211   | 7%               |
| 11/22/2024 | 16       | 268   | 6%               |
| 11/15/2024 | 11       | 258   | 4%               |
| 11/8/2024  | 11       | 259   | 4%               |
| 11/1/2024  | 4        | 213   | 2%               |

## RSV Immunizations

### Pediatrics

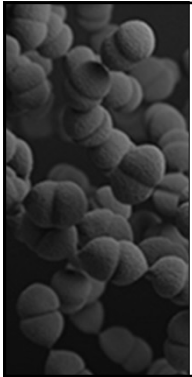
Abrysvo for pregnancy – Sept 1 through **Mar 1**  
ACOG updated season end date on Sept 2, 2026

Nirsevimab & Clesrovimab – Oct through Mar\*\*  
Can vary due to local RSV activity

**The CDC reported continued RSV activity so  
VFC has extended RSV season to end of April  
2026**

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

33



## Pneumococcal Vaccines

### Pneumococcal Conjugate Vaccines

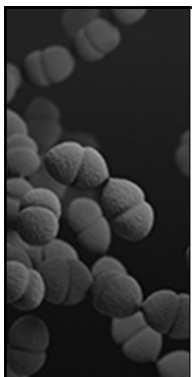
- PCV15 (Vaxneuvance) – 6 weeks+
  - Approved for pediatric patients in 2022
- PCV20 (Pevnar 20) – 6 weeks+
  - Approved for pediatric patients in 2023
- PCV21 (Capvaxine) – adults 18+

### Pneumococcal Polysaccharide Vaccines

- PPSV23 (Pneumovax)

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

34



## Pneumococcal Vaccines

### Pediatrics

Routine vaccination: 4-dose series

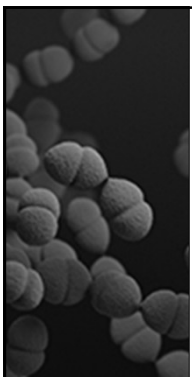
- 2 month
- 4 month
- 6 month
- 12-15 months

Additional notes:

- using PCV15 or PCV20 for routine childhood vaccination & catch-up vaccination
- For **children 2-18 with any risk condition** received PCV13 or PCV15 for routine vaccinations, they should receive a single dose of PCV20 or PPSV23

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

35



## Pneumococcal Vaccines

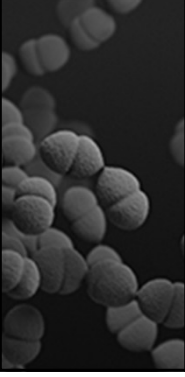
### Adults

**Routine:**

- All adults 50yo+ should get PCV (15, 20, 21)
- If giving PCV15, give PPSV23 1 year later (if not already received)

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

36



**Pneumococcal Vaccines**  
**Adults**  
**19-49yo with risk condition:**

- 1 dose of PCV (15, 20, 21)
- If giving PCV15, give PPSV23 1 year later (8 wks if immunocompromised)

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

37

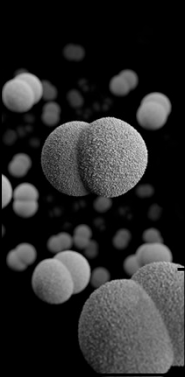
**Pneumococcal Vaccines**



Confusing! CDC offers:  
PneumoRecs VaxAdvisor free app

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

38



**Meningococcal Vaccines**  
**Schedule Change**  
**MenB** – 2-dose series based on Shared-decision

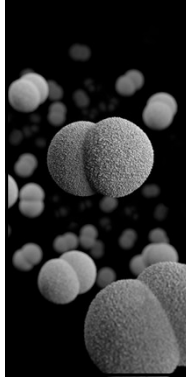
- 16-23 (preferred 16-18) years
- Now 2 doses at 0 and 6 months is standard for both products

**Risk Based (3-dose for high risk):**

- Complement deficiency (including from meds)
- Asplenia (including functional)
- Some occupations (microbiologist, military)
- College student living in residence hall
- Local outbreak

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

39



**Meningococcal Vaccines**  
**Change in products**  
**MenACWY**

Menactra removed from market 2022

- Menveo – 2-4 dose series depending on age of initiation (2m-24mo)
- MenQuadfi – 2-dose series starting age 2yr

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

40



**Meningococcal Vaccines**  
**Change in products**  
**MenACWY** – routine 2-dose series

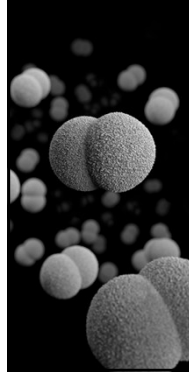
- 11-12 years
- 16 years

**Risk Based:**

- Complement deficiency (including from meds)
- Asplenia (including functional)
- HIV
- Travel to locations with risk (eg meningitis belt in Sub-Saharan Africa)
- Some occupations (microbiologist, military)
- College student living in residence hall
- Local outbreak

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

41



**Meningococcal Vaccines**  
**Combo products**

Pentavalent meningitis vaccines– MenABCWY  
 MenACWY + MenB in a single product

- Penmenvax – Bexsero + Menveo
- Penbraya – Trumenba + Nimenrix
  - 10-25 year olds
  - 2 doses, 6months apart

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

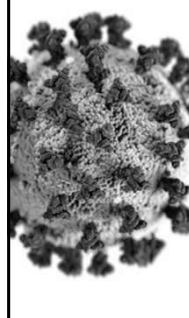
42



**Seasonal Vaccines**

43 ©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

43

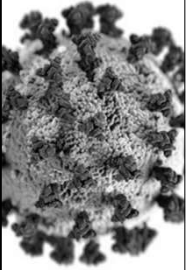


**Seasonal Vaccines**  
**COVID-19**  
**2026-2027 formulation** – approved by FDA late Aug 2026

- Spikevax (Moderna) – 6mo+
- Comirnaty (Pfizer-BioNTech) – 5yr+
- mNexspike (Moderna) – 12yr+
- Nuvaxovid (Novavax-Sanofi) – 12yr+

44 ©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

44



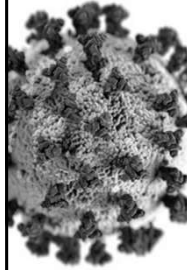
**Seasonal Vaccines**  
**COVID-19**  
**2026-2027 formulation**  
 AAP & AAFP recommends:

- everyone 6-23 months: routine vaccination
  - 2 dose series: 0, 4-8 weeks (Spikevax)
- 2-18 at high risk of severe COVID-19, congregate settings, never been vaccinated against COVID-19, household contacts at risk for severe COVID-19, or parent/guardian desire protection.
  - Single dose of age appropriate COVID-19 vaccine

**\*\*moderately or severely immunocompromised have different recommendations**

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

45



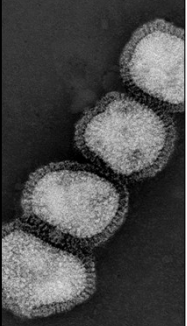
**Seasonal Vaccines**  
**COVID-19**  
**2026-2027 formulation**  
 AAFP adult recommendations

- All adults
  - 19-64: Single dose of COVID-19 vaccine
  - 65y+: 2 doses separated by 6mo

**\*\*moderately or severely immunocompromised have different recommendations**

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

46



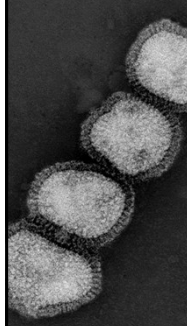
**Vaccine Mythbuster**

**Which vaccines contain Thimerosal?**

- A) None since 2001
- B) MMR and Varicella
- C) Multi-dose influenza
- D) Pneumococcal conjugate vaccines

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

47



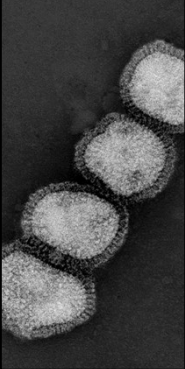
**Vaccine Mythbuster**

**Which vaccines contain Thimerosal?**

- A) None since 2001
- B) MMR and Varicella
- C) Multi-dose influenza**
- D) Pneumococcal conjugate vaccines

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

48

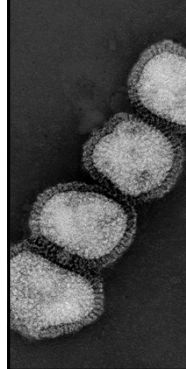


**Seasonal Vaccines**  
**Influenza**  
**2026-2027 formulation – Trivalent only**

- an A/Missouri/11/2025 (H1N1)pdm09-like virus;
- an A/Darwin/1454/2025 (H3N2)-like virus; and
- a B/Tokyo /EIS13-175/2025 (B/Victoria lineage)-like virus.

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

49



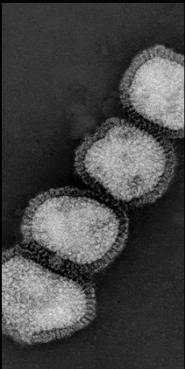
**Seasonal Vaccines**  
**Influenza**  
**mFlusiva is a new mRNA Flu vaccine**  
 Approved 8/5/2026

- Adults 50y+
- For 65y+, accelerated approval based on immune response, clinical benefit is pending
- Phase 3 trial shows statistical non-inferiority, superiority to standard and high-dose egg-based flu vaccines
- Increased adverse reactions vs traditional

Soenn M, Azanwioranich J, Hicks B, Lucas KI, Cardona J, Sher L, Livermore G, Schafer K, Henry C, Choi A, Avasteev A, Chen R, Du E, Pucci A, Das R, Miller J, Nachbagauer R. A phase 3 randomized safety and immunogenicity trial of mRNA-1010 seasonal influenza vaccine in adults. *Vaccine*. 2025 May 19;50:126847. doi:10.1016/j.vaccine.2025.126847. Epub 2025 Feb 7. PMID: 39919447.

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

50



**Seasonal Vaccines**  
**Influenza**  
**2026-2027 formulation**  
 AAP, AAPF, ?CDC

- Recommended for **All** patients 6mo and older

**Peds:**

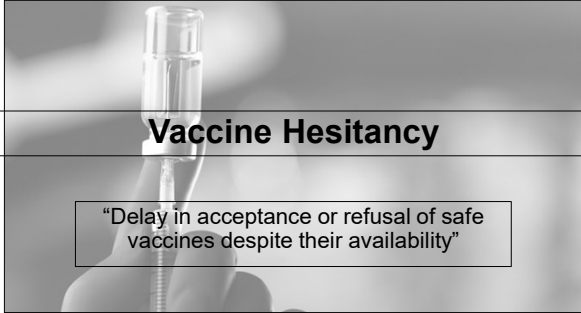
- 2 doses for 1<sup>st</sup> season between 6mo and 8year

**Adults:**

- High dose preferred 65y+

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

51



**Vaccine Hesitancy**

“Delay in acceptance or refusal of safe vaccines despite their availability”

52

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

52

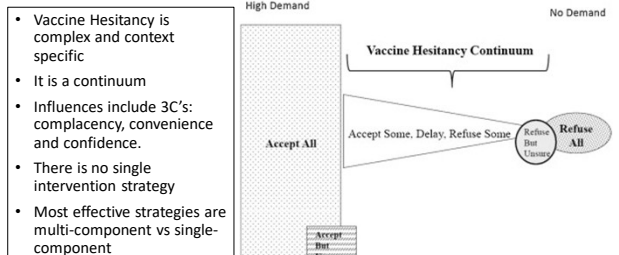
## Vaccine Hesitancy



53

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

## WHO SAGE Vaccine Hesitancy findings



54

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

## WHO SAGE Vaccine Hesitancy findings

- Regional vaccine coverage rates can be misleading.
- Even those accepting vaccines can have doubts and fears about vaccines.
- Vaccine hesitancy is increasing in developed countries

55

MacDonald NE; SAGE Working Group, 2015  
©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE  
CC BY 4.0

## CASE STUDY

### 2018-2019 NYC measles outbreak

- 649 cases
- 85% patients were unvaccinated
- No deaths, 7.6% were hospitalized
- 1 year cost \$8.4 million
  - Missed work, lost income
  - Missed school/educational opportunity
  - Disproportionately affected the poor

56

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

### Why should we care?

- Vaccine preventable diseases
- Extra time spent counseling
- Value based care

57

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

### Clinician's role in Vaccine Hesitancy

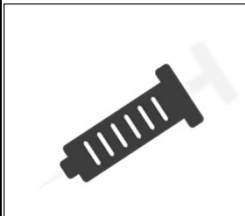
- 2008 study by Gust et al:  
The largest proportion of parents who changed their minds about delaying or not getting a vaccination for their child listed "information or assurances from health care provider" as the main reason.

58

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

### Addressing Vaccine Hesitancy

#### AAP 2024 Clinical Report: Strategies for Improving Vaccine Communication and Uptake



- 20% US parents "hesitant" (CDC's National Immunization Survey 2019-22)
- 1-3% refuse all vaccines
- On-time vaccination decreased in years following COVID-19 pandemic
- Receiving a vaccine strongly correlated with perceived disease risk or susceptibility

59

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

### Addressing Vaccine Hesitancy

#### AAP 2024 Clinical Report: Strategies for Improving Vaccine Communication and Uptake



#### \*Disparities

- Racial
- Ethnic
- Socioeconomic

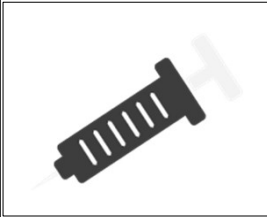
<https://www.immunize.org/clinical/vaccine-confidence/topic/vaccine-hesitancy/>

60

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

## Addressing Vaccine Hesitancy

AAP 2024 Clinical Report: Strategies for Improving Vaccine Communication and Uptake



### Vaccine Safety

- Rigorous approval process
- VAERS for after market surveillance
- Vaccine Safety Datalink (VSD)

<https://www.immunize.org/clinical/vaccine-confidence/topic/vaccine-hesitancy/>

61

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

61



## Vaccine Myths

- Vaccines cause autism.
- Natural immunity is better.
- Too many vaccines overwhelms the system.
- Vaccines contain toxic ingredients like mercury and aluminum.
- Vaccines give you the disease.

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

62

## Pain, fear of needles

### Techniques to reduce discomfort

- No aspiration
- Injecting least to most painful (if multiple)
- Simultaneous injections for infants (not for 1+)
- Vastus lateralis for infants
- Breastfeeding, pacifier
- Skin-to-skin
- Sucrose solutions
- Kids younger than 3 should be held
- External vibrating device
- 5% topical lidocaine/prilocaine



63

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

63

**To reduce discomfort, oral analgesics can be given before vaccination and is shown to decrease risk of febrile seizures.**

FALSE

- Oral analgesics have NOT been shown to decrease risk of febrile seizures

AND

- Oral analgesics (acetaminophen, ibuprofen) can decrease the efficacy of vaccines and are not recommended for pretreatment before vaccines

64

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

64

## Vaccine Hesitancy Strategies - Communication

- Strong Recommendation
- Presumptive Format
- Motivational interviewing

65

©THE OHIO STATE UNIVERSITY COLLEGE OF MEDICINE

65

## References

- NCH Weekly Pathogens Report: <https://www.nationwidechildrens.org/specialties/laboratory-services/for-providers/pathogen-surveillance-reports-antibiograms>
- <https://www.cdc.gov/media/releases/2024/s-0626-vaccination-adults.html>
- <https://www.fda.gov/vaccines-blood-biologics/safety-availability-biologics/fda-requires-guillain-barre-syndrome-gbs-warning-prescribing-information-rsv-vaccines-abrysvo-and>
- Moline HL, Tannis A, Goldstein L, et al. Effectiveness and Impact of Maternal RSV Immunization and Nirsevimab on Medically Attended RSV in US Children. *JAMA Pediatr.* 2026;180(3):314–324. doi:10.1001/jamapediatrics.2025.5778
- Dubé E, Gagnon D, MacDonald NE; SAGE Working Group on Vaccine Hesitancy. Strategies intended to address vaccine hesitancy: Review of published reviews. *Vaccine.* 2015 Aug 14;33(34):4191–203. doi: 10.1016/j.vaccine.2015.04.041. Epub 2015 Apr 18. PMID: 25896385
- Deborah A. Gust, Natalie Darling, Allison Kennedy, Ben Schwartz. Parents With Doubts About Vaccines: Which Vaccines and Reasons Why. *Pediatrics* October 2008; 122 (4): 718–725. doi:10.1542/peds.2007-0538
- Brendan Nyhan, Jason Reifler, Sean Richey, Gary L. Freed. Effective Messages in Vaccine Promotion: A Randomized Trial. *Pediatrics* April 2014; 133 (4): e835–e842. doi:10.1542/peds.2013-2365
- İyi Z, İyler A, Özer Z. Effectiveness of ShotBlocker application on reducing the pain of needle-related procedures in children: A systematic review and meta-analysis. *J Pediatr Nurs.* 2024 Sep-Oct;78:e438–e447. doi: 10.1016/j.pedn.2024.08.006. Epub 2024 Aug 10. PMID: 39129083
- O'Leary ST, Opel DJ, Cataldi JR, Hackell JM; COMMITTEE ON INFECTIOUS DISEASES; COMMITTEE ON PRACTICE AND AMBULATORY MEDICINE; COMMITTEE ON BIOETHICS. Strategies for Improving Vaccine Communication and Uptake. *Pediatrics.* 2024 Mar 1;153(3):e2023065483. doi: 10.1542/peds.2023-065483. PMID: 38404211.
- <https://publications.aap.org/aapnews/news/11163/ID-Snapshot-How-to-reduce-pain-during-vaccination>
- <https://www.cdc.gov/media/releases/2023/p0922-RSV-maternal-vaccine.html>
- <https://www.cdc.gov/vaccines/hcp/by-disease/rsv.html>

66

 THE OHIO STATE UNIVERSITY  
COLLEGE OF MEDICINE

66