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Science to Practice: Protecting Children from Respiratory Viruses in 2025-2026

Tracie Newman, MD, MPH, FAAP
Pediatrician, Associate Professor of Practice, & CIRE Medical Director
North Dakota State University

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Objectives

1. Describe current and emerging trends in pediatric respiratory viruses for the 2025-2026 season, including RSV, influenza, and COVID-19.
2. Identify risk factors and populations most vulnerable to severe outcomes from pediatric respiratory infections.
3. Discuss current evidence-based prevention and treatment options and evolving clinical guidelines for managing pediatric respiratory infections.

2

What the heck is going on?

VACCINES IN THE NEWS

CDC director is out after less than a month; other agency leaders resign
UPDATED AUGUST 27, 2025 · 9:10 PM ET — npr

FDA approves updated COVID-19 shots with limits for some kids and adults — AP

In break with current CDC recommendations, leading pediatrics group recommends Covid-19 shots for young children — CNN

COVID vaccines are no longer recommended for healthy children and pregnant women, Kennedy says — AP

Multiple medical groups say they have been barred from work on CDC's panel of vaccine advisers
HHS said experts will still be included but not based on their organization. — abcNEWS

Kennedy's new CDC panel includes members who have criticized vaccines and spread misinformation — AP

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Fall and Winter Immunization Guide: 2025-26

	Influenza (Flu) Vaccine	RSV Immunization	COVID-19 Vaccine
Kids	**All children 6 months and older** Some children 6 months to 8 years may need multiple doses AAP, CDC	**All infants <8 months old and children 8-19 months with risk factors** AAP, CDC **OR**	**All children 6-23 months** **Children 2-17 years old with risk factors or if parents desire vaccination** AAP
Pregnant Women	**All** At any point in pregnancy ACOG, CDC	**32-36 weeks gestation** ACOG, CDC	**All** At any point in pregnancy ACOG, CDC
Adults	**All** High-dose recombinant or adjuvated flu vaccine preferred for 65+, if available CDC	**All 75+ and adults 50-74 with risk factors** As of now, one lifetime dose CDC	**All** AAFP, CDC

Figure adapted from Your Local Epidemiologist, 2025.

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New HHS Childhood Immunization Schedule
(released January 5, 2026)

Recommended for all children
- Diphtheria
- Tetanus
- Acellular pertussis (whooping cough)
- Haemophilus influenza type b (Hib)
- Pneumococcal conjugate
- Polio
- Measles
- Mumps
- Rubella
- Human papillomavirus (HPV)
- Varicella (chickenpox)

Recommended for certain high-risk groups or populations
- RSV*
- Hepatitis A
- Hepatitis B
- Meningococcal

*Note: any children whose mother didn't have RSV vaccination during pregnancy should get one dose of RSV monoclonal antibody

Recommended based on shared clinical decision-making
- Rotavirus
- COVID-19
- Influenza (flu)
- Hepatitis A
- Hepatitis B
- Meningococcal

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Comparing Pediatric Vaccine Recommendations

Virus	AAP Recommendation (Aug 2025)	CDC/ACIP Recommendation (mid-2025)
COVID-19	6–23 months: Universal recommendation (vaccinate all) 2–17 years: Recommend for high-risk, and for others at parental discretion	**DIFFERENT from AAP:** CDC uses a "shared clinical decision-making" model for ages 6 months–17 years, rather than having a universal endorsement; parents should consult their provider
RSV	All infants <8 months + children 8-19 months with risk factors Typically Oct-March, if no maternal RSV vaccine	**SAME as AAP:** Infants < 8 months born to unvaccinated or unknown-status mothers High-risk 8–19 month-olds entering second season
Flu	Annual influenza vaccination for all children starting at 6 months Some children 6 months to 8 years may need multiple doses	**SAME as AAP:** Routine annual influenza vaccination for everyone aged ≥6 months

AAP, 2025; CDC, 2025

6

Slide 4

HK1 RSV-Adults should say 50-74! I think this was updated in another slide deck, so hopefully an easy copy and paste!
Hall, Kylie, 2025-12-10T20:25:05.720

LD1 0 Great catch! Updated!
Dybsand, Lauren, 2025-12-10T20:35:20.643

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Vaccine Integrity Project

WHAT IS IT?

University of Minnesota CIDRAP Vaccine Integrity Project, 2025.

"CIDRAP's Vaccine Integrity Project is an initiative dedicated to safeguarding vaccine use in the U.S. so that it remains grounded in the best available science, free from external influence, and focused on optimizing protection of individuals, families, and communities against vaccine-preventable diseases."

- Steering committee comprised of 8 members, with input from public health and vaccine experts
- Presented on safety and efficacy of respiratory virus immunizations on August 19th, 2025

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Proposed FDA Vaccine Standards:

Internal memo at the FDA in November 2025 proposes dramatically stricter vaccine requirements, including placebo-controlled, clinical endpoint trials for many new and updated vaccines.

What's happening	Why it matters for Flu & COVID	Big-picture implications
• Experts warn these standards are impractical, unethical for some groups (kids, pregnant people), and would slow or block access to essential vaccines.	• Annual updates could be delayed or impossible, reducing the effectiveness of seasonal vaccination. • Strain-specific seasonal vaccines (COVID and flu) may not meet proposed trial requirements in time to match circulating variants. • Reduced manufacturer participation if development becomes too slow or costly • Lower coverage = higher disease burden, especially in high-risk populations	• Could reverse progress in preventing severe flu/COVID outcomes • Risks loss of public trust, especially if access becomes restricted or messaging becomes inconsistent • Highlights tension between ideal evidence standards and real-world public-health needs

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CIDRAP, 2025

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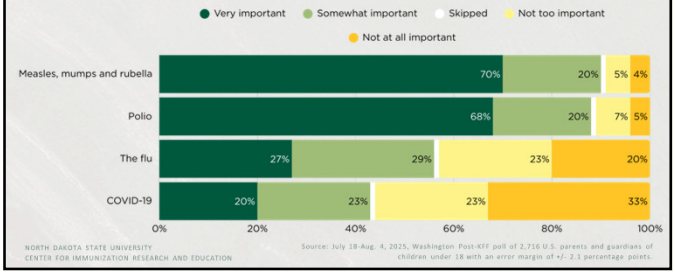
Parents overwhelmingly say measles and polio vaccines are important for children to get, but fewer say this about COVID or flu.



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Source: July 18-Aug. 4, 2025, Washington Post-KFF poll of 2,716 U.S. parents and guardians of children under 18 with an error margin of +/- 2.1 percentage points.

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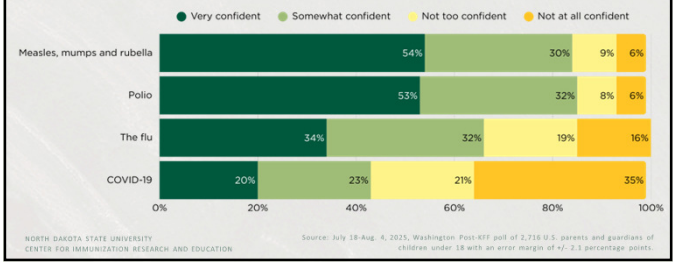
Most U.S. parents are confident MMR and polio vaccines are safe for kids - fewer state the same level of confidence about flu and COVID-19.



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Source: July 18-Aug. 4, 2025, Washington Post-KFF poll of 2,716 U.S. parents and guardians of children under 18 with an error margin of +/- 2.1 percentage points.

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As a healthcare provider, **YOU** are patients' most trusted source of vaccine information.

The Good News

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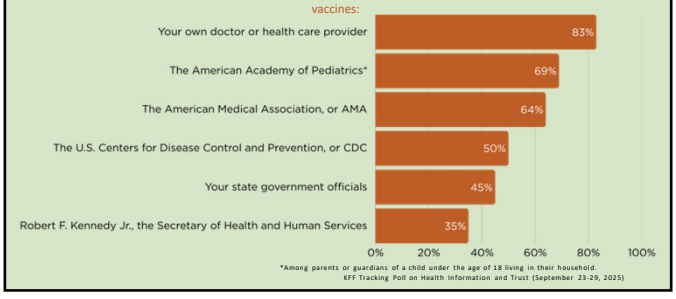
Most of the Public Trust Doctors' and Physicians' Associations for Reliable Vaccine Information

Percent who say they have a great deal or a fair amount of trust in the following to provide reliable information about vaccines:



*Among parents or guardians of a child under the age of 18 living in their household.
KFF Tracking Poll on Health Information and Trust (September 23-29, 2025)

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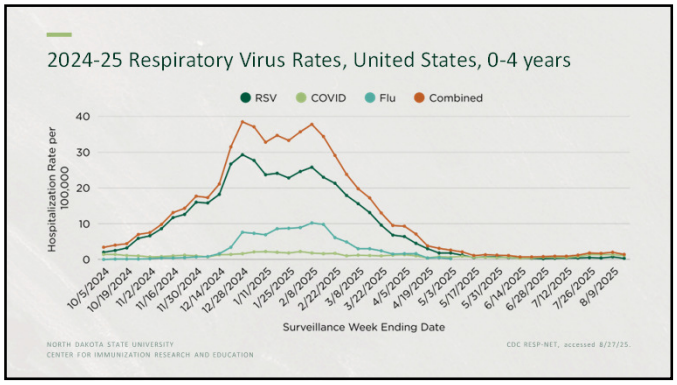

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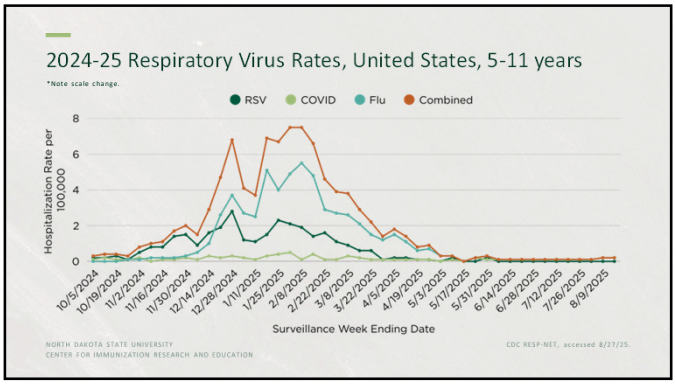

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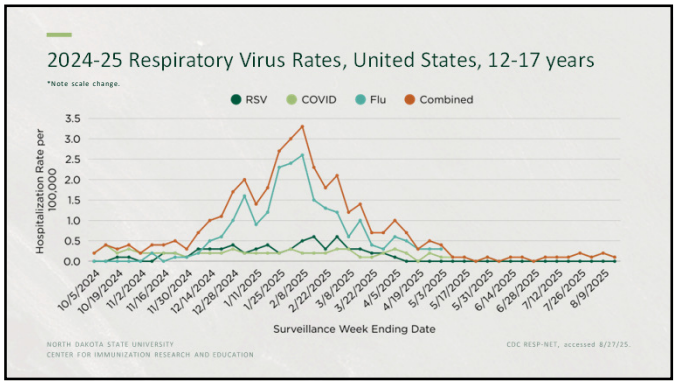

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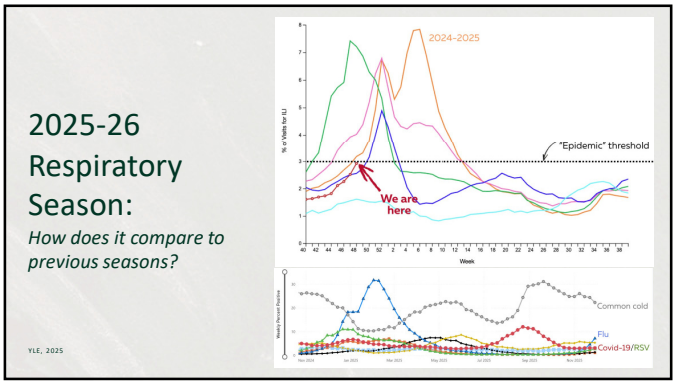

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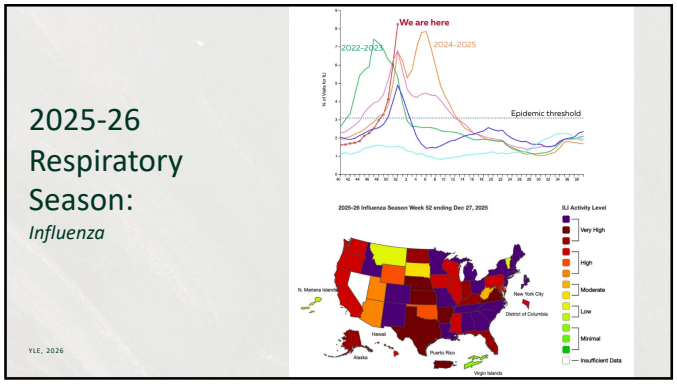

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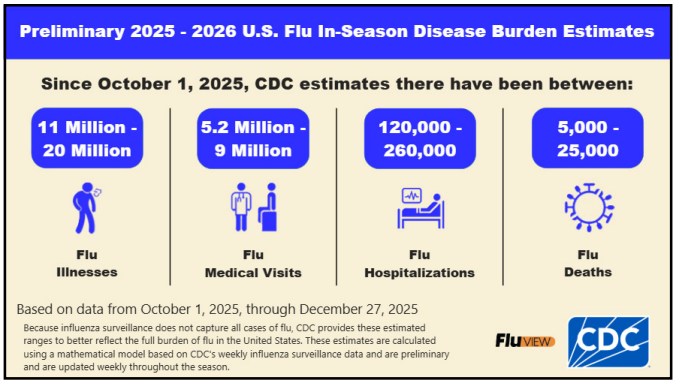

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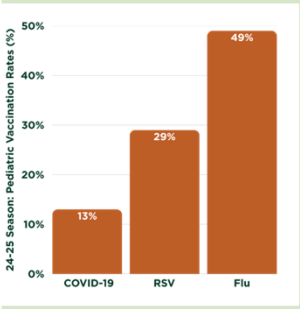
How did we do last season in the U.S.?



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CDC, 2025 - COVIDVaxView; FluVaxView
Boundy et al, MMWR, 2025

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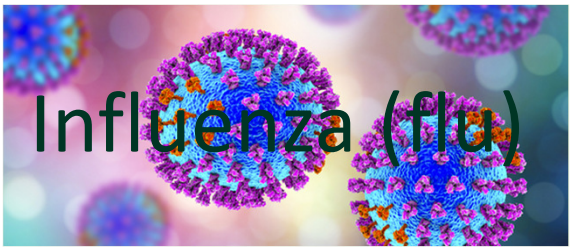

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Preliminary 2024-2025 U.S. Flu In-Season Disease Burden Estimates (All Ages)

BASED ON DATA FROM OCTOBER 1, 2024 - MAY 17, 2025

CDC, Preliminary Estimated Flu Disease Burden 2024-2025 Flu Season, May 2025.

47-82 MILLION FLU ILLNESSES

21-37 MILLION FLU MEDICAL VISITS

610,000 - 1.3 MILLION FLU HOSPITALIZATIONS

27,000 - 130,000 FLU DEATHS

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Influenza in Children

- Every year, 8-10% of U.S. children develop symptomatic influenza
- Hospitalization rates are highest in kids under 5 years of age
- Viral infections have been known to lead to invasive bacterial infections in kids, as well as acute necrotizing encephalopathy (ANE)
- 8-11% of hospitalized children experience neurologic complications (e.g., seizures, encephalopathy)

AAP Committee on Infectious Diseases, *Pediatrics*, July 2025.

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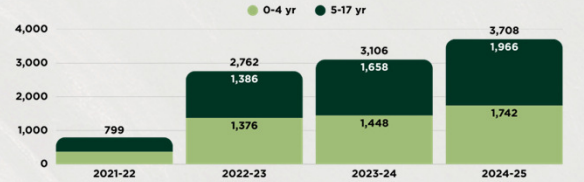
Influenza-Associated Hospitalizations by Age Group and Flu Season

As of November 15, 2025



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CDC, FluView Interactive, Accessed 11/26/2025.

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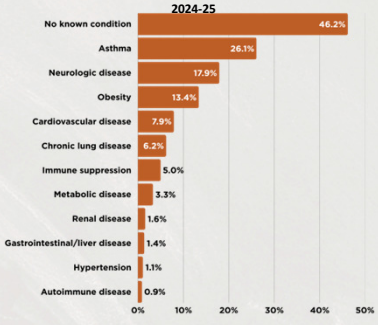
Pediatric (0-17) Influenza Hospitalizations by Selected Underlying Medical Conditions, 2024-25



Underlying Conditions Among Children Hospitalized with Influenza

- Almost half of kids hospitalized with influenza **did not have any known health conditions**
- Among kids hospitalized with influenza, the following conditions were the most common:
  - Asthma (26.1%)
  - Neurologic disease (17.9%)
  - Obesity (13.4%)

CDC FluView, accessed 10/26/2025.

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Acute Necrotizing Encephalopathy (ANE) & Influenza

A CASE SERIES

"We might see one case every couple years. It's just not common to see a cluster of cases."

-Keith Van Haren, MD
Pediatric Neurologist, Stanford University

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CASES OF ANE IN KIDS DURING PAST 2 RESPIRATORY VIRUS SEASONS
Appears to be higher than usual based on perceptions from senior pediatric neurologists

76%
OCCURRED IN KIDS WITH NO UNDERLYING MEDICAL CONDITIONS
63% of survivors left with moderate to severe disability after 90-day follow-up.

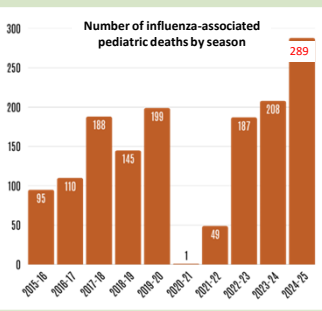
27%
MORTALITY RATE
All but one of the deaths occurred in unvaccinated children.

Influenza-Associated Acute Necrotizing Encephalopathy (IA-ANE) Working Group. JAMA; July 2025; Fiore, MedPage Today, July 2025; AAP Committee on Infectious Diseases, Pediatrics, July 2025

25

Pediatric Infuenza Deaths on the Rise

The 2024-25 season has seen the highest number of pediatric flu deaths in 15 years.



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CDC FluView Interactive, Accessed 12/15/2025; CDC Influenza-Associated Pediatric Mortality Surveillance System, accessed 12/15/2025.

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INFLUENZA-RELATED PEDIATRIC DEATHS IN THE 2024-2025 INFLUENZA SEASON

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occurred in children who **weren't fully vaccinated**.

Reinhart et al, MMWR, 2025; Jones, AAP, 2025

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Influenza Vaccines for Kids

2025-2026
RECOMMENDATIONS & UPDATES

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Influenza Vaccine

- Annual flu vaccine is recommended for **everyone 6 months and older** [HK1]
- Recommended dose(s) ideally received by the end of October
- Pregnant/postpartum individuals should receive the flu vaccine
- Can be coadministered with other vaccines
- New option: at home nasal spray flu vaccine available for patients 2 - 49 years

AAP Policy Statement, *Pediatrics*, July 2025.
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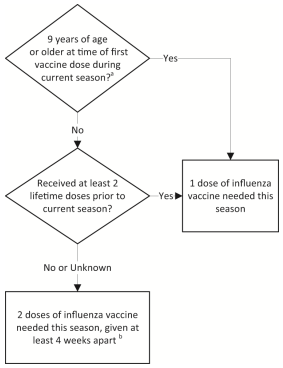

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25-26 Flu Season

WHAT ARE WE ANTICIPATING?

There has been an observed mismatch with the seasonal influenza vaccine strain and what is emerging as the dominant flu strain this season, H3N2 subclade K.

Data from the UK: Vaccination remains effective against clinical disease caused by influenza A(H3N2) viruses.

Kirsebom et al, Euro Surveill, 2025; Sabaiduc et al, Journal of the Association of Medical Microbiology and Infectious Disease Canada, 2025; CIDRAP, 2025

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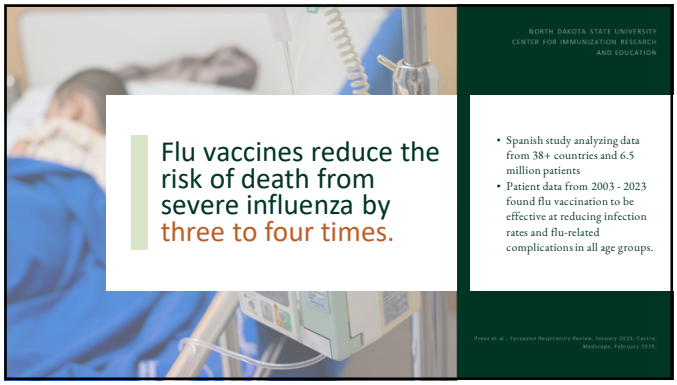
Slide 29

HK1 Curious about the NEW part here - should this be home delivery for flu mist?
Hall, Kylie, 2025-12-10T20:41:27.130



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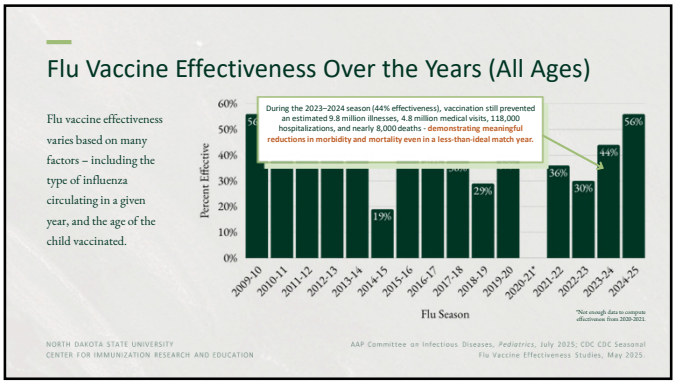

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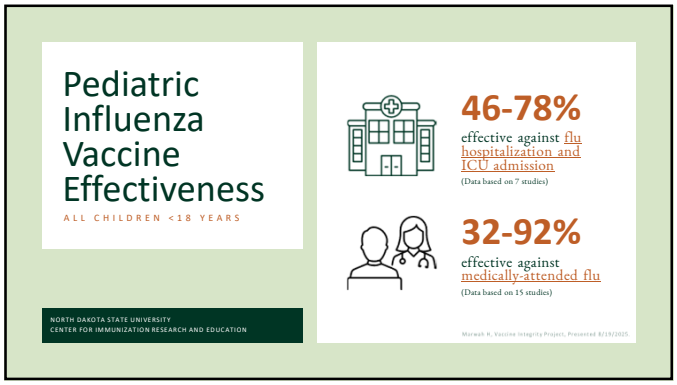

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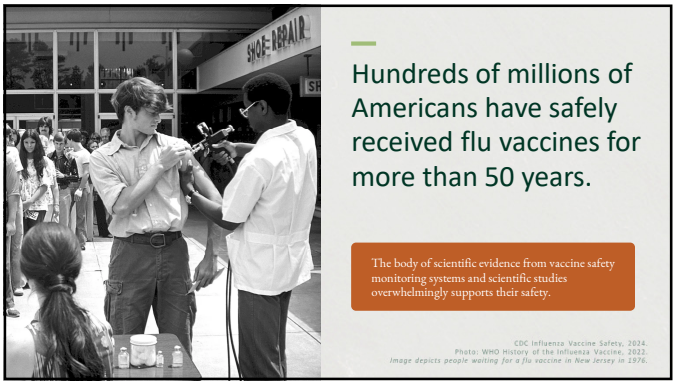

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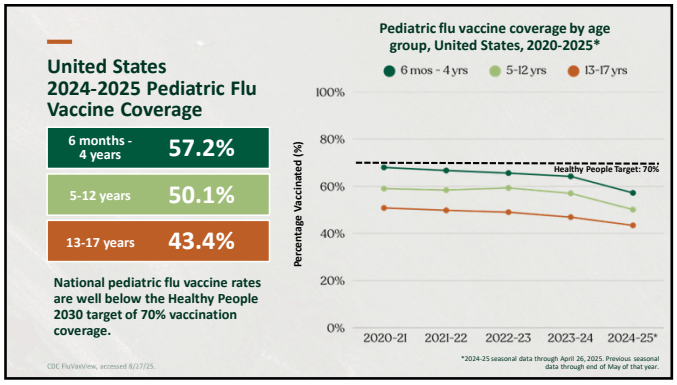

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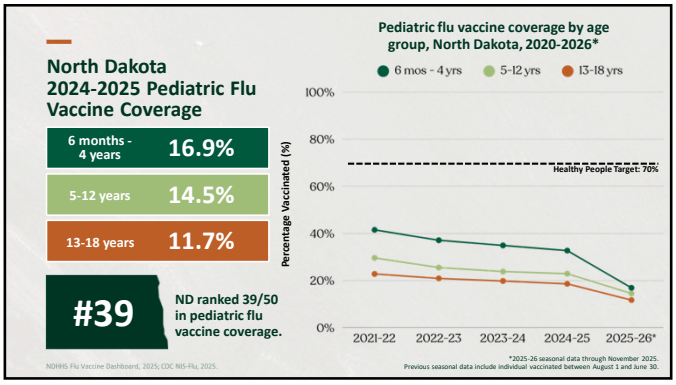

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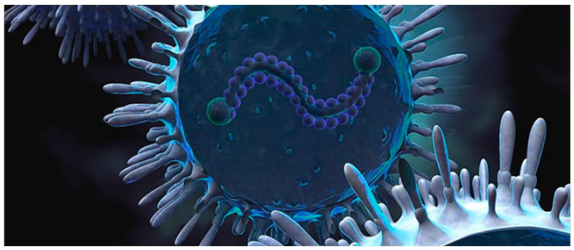

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RSV Epidemiology

- Most infants (68%) infected during the 1st year of life; nearly all (97%) by age 2
- Most common cause of hospitalization in U.S. infants (2-3% of young infants)
  - Prematurity/chronic disease increases risk, but most (79%) are in healthy, term infants
  - Risk of hospitalization higher in younger infants

Mazur et al, *The Lancet*, 2024.

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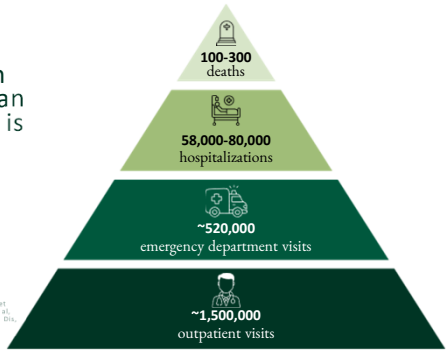
Each year in U.S. children aged less than 5 years, RSV is associated with...



*Estimate 80,000 hospitalization in infants <1 yrs.

Thompson et al, JAMA, 2003; Hansen et al, JAMA Network Open, 2022; Hall et al, NEJM, 2009; McLaughlin et al, J Infect Dis, 2022

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RSV Prevention for Kids

2025-2026
RECOMMENDATIONS & UPDATES

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Three Options for Infant Protection

MATERNAL VACCINATION: ABRYSVO

Recommended for pregnant individuals 32 -36 weeks gestation from September - January who have not received the RSV vaccine in a previous pregnancy

INFANT ANTIBODIES: NIRSEVIMAB

Recommended for infants <8 months born during or entering their first RSV season, and some children 8 - 19 months at increased risk of severe RSV entering their second RSV season

INFANT ANTIBODIES: CLESROVIMAB

Recommended for infants <8 months born during or entering their first RSV season

American Academy of Pediatrics, 2025.

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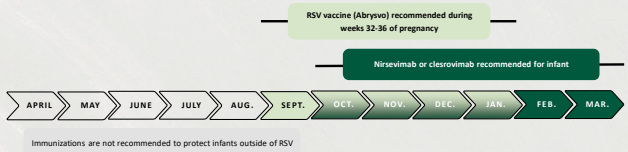
Seasonal Recommendations

It is important that babies have protection before RSV season peaks, typically between December and February.



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AAP Committee on Infectious Diseases, *Pediatrics*, August 2025; Moulia et al., MMWR, August 2025.

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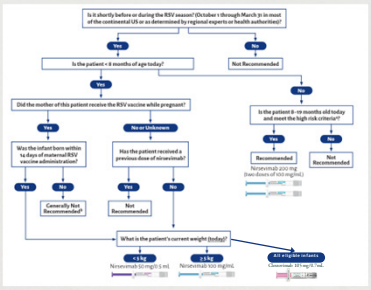
RSV Antibody Administration

- If the mother did not receive the maternal RSV vaccine, nirsevimab or clesrovimab should ideally be administered to babies born during October through March during their birth hospitalization, or within 1 week of birth.



American Academy of Pediatrics, 2025.
Image adapted from AAP 2024 Visual Guide.

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77%

of pediatricians had ever offered nirsevimab (N=200)

- Most pediatricians agreed that nirsevimab is safe (97%) and effective (96%) for infants.
- The top challenges pediatricians reported with offering nirsevimab were:
  - parent/caregiver concerns around safety (44%)
  - challenges knowing maternal RSV vaccination status to determine infant eligibility (34%)
  - financial burden associated with purchasing nirsevimab (31%)

63%

of OB/GYNs offered RSV vaccine to pregnant women (N=200)

- Most OB/GYNs agreed that maternal RSV vaccination is safe (92%) and effective (94%).
- The top challenges OB/GYNs reported with offering maternal RSV vaccination were:
  - patient concerns around safety (65.5%)
  - cost and reimbursement issues (46%)
  - patient concerns around effectiveness (28%)

CDC Pediatrician and OB/GYN Survey on RSV Immunization, published 11/14/2024.
Survey conducted October 2-10, 2024.

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Pediatric Nirsevimab Effectiveness

CHILDREN <24 MONTHS

64-93%
effective against RSV hospitalization
(Data based on 13 studies)

51-91%
effective against RSV ICU admission
(Data based on 6 studies)

17-89%
effective against medically-attended RSV
(Data based on 5 studies)

Marwah H, Vaccine Integrity Project, Presented 8/19/2025.

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Pediatric Clesrovimab Efficacy

CHILDREN <12 MONTHS

90.9%
effective against RSV hospitalization

60.4%
effective against medically-attended RSV

Moulia et al., MMWR, August 2025.

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Maternal RSV Vaccine Efficacy

DATA FROM PHASE 3 CLINICAL TRIALS

81.8%
Reduced risk of severe LRTD within 90 days of birth
(91.1% reduced risk among pregnant individuals 32-36 weeks gestation)

69.4%
Reduced risk of severe LRTD within 180 days of birth
(57.3% reduced risk among pregnant individuals 32-36 weeks gestation)

LRTD: lower respiratory tract disease

ACOG, Updated August 2025; Kampmann et al., NEJM, April 2023.

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Maternal RSV Vaccine Safety

ACOG, Practice Advisory, Updated August 2025.

Most common side effects: pain at injection site, headache, myalgia, nausea

Preterm birth
- A small numerical increase in preterm births was observed in clinical trials among Abrysvo recipients (5.7%) vs. placebo (4.7%).
- **No definitive causal link:** the balance of evidence makes a vaccine-caused increase in preterm birth less likely, but it cannot be ruled out yet.

Guillain-Barré syndrome (GBS)
- Updated Abrysvo's label for those 65+ to include possible increased risk of GBS (based on observational study)
- **Does NOT apply to pregnant people;** no current established causal link in this population.

Hypertensive disorder
- Some data suggests a possible, small increased risk of hypertensive pregnancy disorder among vaccinated individuals, but findings may relate to residual confounding and require further research.

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RSV Monoclonal Antibodies

Strong Safety Profile in Millions of Infants

CHOP, 2025; AAP, 2023; Zambrano et al, MMWR, 2025; Pelletier et al, JAMA, 2025; Drysdale et al, NEJM, 2023; Zar et al, NEJM, 2025

Side effects are rare, but may include: inject site reactions (redness, tenderness, swelling) and mild rash (<1 of 100 babies).

Large clinical trials:

- Across clinical trials, clesrovimab (>3,000 infants) and nirsevimab (>8,000 infants) have shown strong safety profiles **with no major concerns identified.**
- Side effects similar to placebo (mild fever, runny nose, irritability)

Real-world use:

- **6+ million infants protected worldwide** with no new safety concerns identified by regulators
- U.S. data shows **~80% reduction in RSV hospitalizations and ICU admissions** among infants who received nirsevimab

BOTTOM LINE:
RSV monoclonal antibodies are among the safest and most effective tools we have to prevent severe RSV in infants.

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	Advantages	Disadvantages
Maternal RSV Vaccine	◦ Immediate protection for baby after birth ◦ Reduces number of vaccines for infant at birth ◦ Can be given with other vaccines in pregnancy	◦ Potentially reduced protection in some situations (e.g., pregnant person is immunocompromised or infant born soon after vaccination) ◦ Potential risk of hypertensive disorders of pregnancy (recent data are reassuring)
Infant RSV Antibody Nirsevimab & Clesrovimab	◦ Protection may wane more slowly than from maternal RSV vaccine ◦ Direct receipt of antibodies rather than relying on transplacental transfer ◦ No risk for adverse pregnancy outcomes	◦ Requires infant injection ◦ Delay in administration could leave the infant unprotected

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RSV-associated hospitalization rates decreased during 2024-25 compared to RSV seasons before prevention products were available

Greatest reductions among infants aged 0-2 months born just before or during RSV season

These trends underscore the **importance of early protection** through maternal vaccination during pregnancy or infant immunization in their first week of life.

% hospitalization reductions in 2024-25	0-2 months	0-7 months
RSV-NET	47%	38%
NVSN	46%	31%

CDC Coronavirus and Other Respiratory Viruses Division, presented at ACIP, 9/25/2025.

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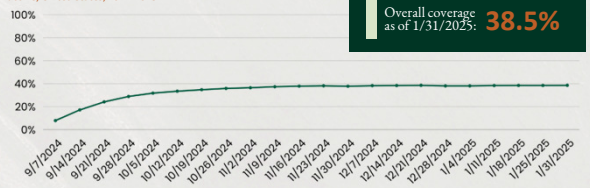
Maternal RSV Vaccine Uptake Increased from 2023-2024 Season

Percent of pregnant women ages 18-49 years vaccinated with RSV vaccine, United States, 2024-2025



Overall coverage as of 1/31/2024: **17.9%**
Overall coverage as of 1/31/2025: **38.5%**

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CDC RSVVaxView, accessed 8/28/2025.

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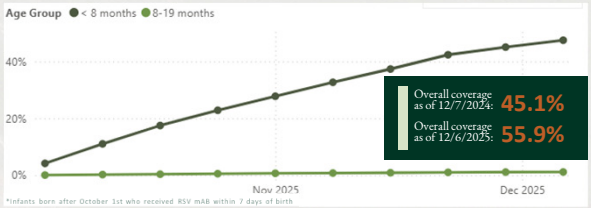
2025-2026 RSV Immunization in North Dakota: Coverage Rates by Week*



Overall coverage as of 12/7/2024: **45.1%**
Overall coverage as of 12/6/2025: **55.9%**

*Infants born after October 1st who received RSV mAB within 7 days of birth

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NDIIS Data accessed 12/9/2025.

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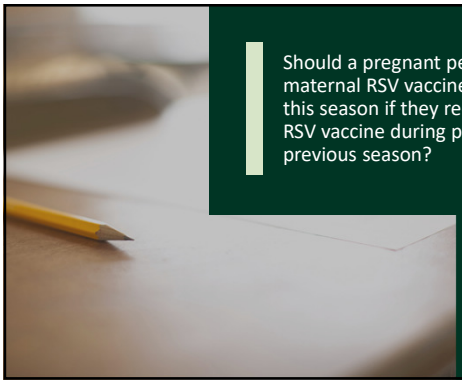

Should a pregnant person receive the maternal RSV vaccine during pregnancy this season if they received the maternal RSV vaccine during pregnancy in a previous season?

No.

Rather, the infant should receive nirsevimab or clesrovimab.

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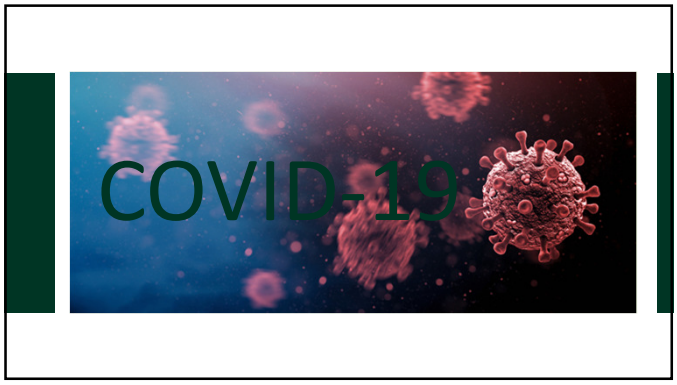

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Who is being hospitalized?

1 in 4 children hospitalized with COVID required ICU care.

9 in 10 children hospitalized were NOT up to date with COVID-19 vaccination.

COVID-19 impacts infants most:

- >50% of pediatric hospitalizations are in children <2 years
- Most hospitalized children <2 years had no underlying conditions
- Even in ICU, over half (53%) had no underlying conditions

MacNeil, Current Epidemiology of COVID-19, ACIP Meeting June 25, 2025; Free et al., Pediatrics, August 2025.

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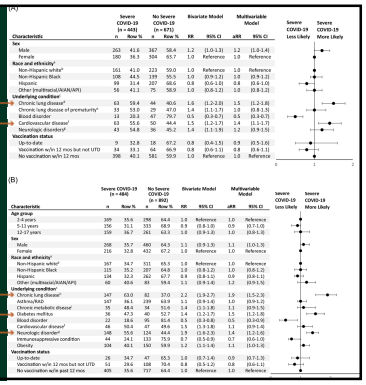
Clinical characteristics significantly associated with severe COVID-19 in children

(A) Children aged 6 to 23 months:
- Chronic lung disease (excluding asthma)
- Cardiovascular disease

(B) Children aged 2 to 17 years:
- Chronic lung disease (excluding asthma)
- Diabetes mellitus
- Neurologic disorders



Free et al., Pediatrics, August 2025.

(A) Demographic and clinical characteristics associated with severe COVID-19 among children aged 6 to 23 months. (B) Demographic and clinical characteristics associated with severe COVID-19 among children aged 2 to 17 years.

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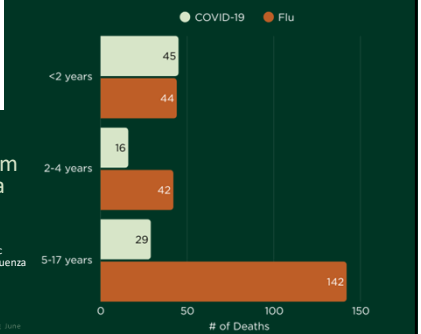
Pediatric Mortality from COVID-19 vs. Influenza (Jul 2024–Jun 2025, Ages 0–17)

The chart compares total number of pediatric deaths due to COVID-19 (green bars) and influenza (copper bars) across three age groups in the United States.



MacNeil, Current Epidemiology of COVID-19, ACIP Meeting June 25, 2025

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Long-Term Effects of SARS-CoV-2 Infection

IN KIDS

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Long COVID in Kids

- Difficult to define
- Inconsistent symptom manifestation
- Absence of diagnostic testing
- Kids unable to verbalize
- Minimal quality studies
- Lack of control group
- Small sample size

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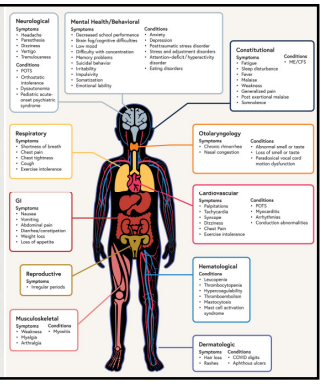

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Prevalence of Long COVID in kids varies based on study design and definitions

Source	Study Design	Outcome
Israel Ministry of Health, 2021	Prevalence Survey N = 13,834	11.2% children with Long COVID
Radtke T, JAMA 2021	Retrospective Cohort N = 1,355	No difference in outcomes; low prevalence of Long COVID
Borch L, Eur J Pediatrics 2022	Retrospective Cohort N = 37,522	0.8% SARS-CoV-2 + children had symptoms >4 weeks (Long COVID)
Vahratian A, NCHS Data Brief 2023	National Survey N = 7,464	1.3% U.S. kids had Long COVID
Funk AL, JAMA Netw Open 2022	Prospective Cohort N = 1,884	5.8% SARS-CoV-2 patients with PCCs
Dun-Dery F, JAMA Netw Open 2023	Prospective Cohort N = 1,026	At 6 months: 0.52% of SARS-CoV-2 + kids had Long COVID; 0.67% at 12 months
Camporesi A, eClinicalMedicine 2024	Prospective Cohort N = 1,296	23% Long COVID at 3 months; 7% at 24 months
Rao S, Pediatrics 2024	State-of-the-art Review	Range from 4 to 62% children with Long COVID

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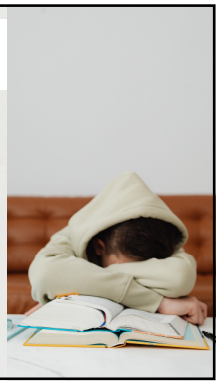
Long COVID in Kids
What's new?

Lancet Study (2024):
- Some children continued to experience symptoms of Long Covid for **up to 3 years after infection**.
- A meaningful proportion of children reported ongoing issues such as **fatigue, sleep disturbances, and difficulties with concentration.**

Nature Study (2024):
- **7.2% of children with prior COVID-19 consistently met research criteria for post-COVID-condition** at 3, 6, 12, and 24 months - experiencing 5–6 persistent symptoms.
- Higher symptom burden observed in reinfected children, older youth, females, and those from more deprived areas.



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D1

A retrospective cohort study looking at new diabetes diagnoses among 613,000 kids found an increase of:

55% (AT 1 MONTH)

48% (AT 3 MONTHS)

58% (AT 6 MONTHS)

in kids who had COVID vs those diagnosed with ORIs

The risk was elevated in kids that were:

Overweight/ Obese (2X higher)

Hospitalized (3x higher)

Miller, et al. JAMA Open, 2024

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COVID-19 Vaccines for Kids

2025-2026
RECOMMENDATIONS & UPDATES

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2025-26 COVID-19 vaccines will:

- Target JN.1 lineage of the Omicron variant, specifically the LP.8.1. strain
- Be "monovalent," meaning it is designed to protect against only one type of viral strain
- Continue to be monitored to assure their safety and effectiveness, along with the evolution of the SARS-CoV-2 virus

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PFIZER (COMIRNATY)
- 65 years of age and older, or
- 5-64 years of age with 1+ underlying condition that puts them at high risk for severe outcomes from COVID-19

MODERNA (SPIKEVAX)
- 65 years of age and older, or
- 6 months - 64 years of age with 1+ underlying condition that puts them at high risk for severe outcomes for COVID-19

NOVAVAX (NUVAXOVID) & MODERNA (MNEXSPIKE)
- 65 years of age and older, or
- 12-64 years of age with 1+ underlying condition that puts them at high risk for severe outcomes from COVID-19

EUA PULLED FOR PFIZER'S USE IN YOUNGEST
FDA intends to renew the emergency use authorization (EUA) for Pfizer's COVID-19 vaccine for children ages 6 months to 4 years old for the upcoming respiratory virus season.

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2025-2026 FDA Approved*
COVID-19 VACCINES

*Data as of 12/1/2025

FDA, Comirnaty, 2025; FDA, Spikevax, 2025; FDA, Nuvaxovid, 2025; FDA, Mnexspike, 2025; Common Health Coalition, 2025

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Slide 63

LD1 Updated per Kylie's suggestion: made "in kids who had COVID vs those diagnosed with ORIs" more visible.
Dybsand, Lauren, 2025-12-11T16:38:49.015

Comparing COVID-19 Vaccine Recommendations

Group	AAP/ACOG/AAFP Guidance	FDA Label	CDC Current Guidance*	Insurance Coverage (likely)**
Kids	AAP (American Academy of Pediatrics) recommends vaccination for **all children under 2**, plus high-risk kids and those living with high-risk individuals; also "permissive" for others if parents desire protection.	6 months -17 years old with 1+ high-risk condition (Approval ages vary by product)	CDC has **removed routine recommendations for healthy children,** including under 2; now uses shared clinical decision-making — i.e., offer based on physician-parent discussion, not formal endorsement.	6 months -17 years old and healthy: Off Label 6 months -17 years old with conditions that put them at high risk for severe illness: Covered
Pregnant Women	ACOG (American College of Obstetricians and Gynecologists) recommends vaccination **at any point during pregnancy**, planning to conceive, postpartum, or while lactating.	18-64 years old with 1+ high-risk condition; pregnancy is noted on CDC's "at risk" list	CDC **no longer recommends vaccination for pregnant women**. Recommendation has been withdrawn; pregnant people no longer on routine schedule.	Covered
Adults	AAFP (American Academy of Family Physicians) recommends all adults 18 years and older receive a vaccine, especially if you are 65+, at increased risk for severe infection, or have never received a COVID-19 vaccine.	Adults 65+ years old 18-64 years old with 1+ high-risk condition	CDC has moved to **individual-based decision making** (aka shared clinical decision-making) for adults 18+ years old.	65+ years old: Covered 18-64 years old healthy: Off Label 18-64 years old with conditions that put them at high risk for severe illness: Covered

*Data as of 12/1/2025.
**The state of interpretive most U.S. health plans and insurers will continue covering all ACIP-recommended vaccines as preventive services through December 31, 2025—including updated COVID-19 and flu shots—without patient cost-sharing through 2029.
Your Local Epidemiologist, 2025; AAP, 2025; AAFP, 2025; ACOG, 2025; CDC, 2025.

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What about physician liability?

- Clinicians have two protections: malpractice coverage + PREP Act immunity (though not absolute).
- Malpractice liability requires proof of deviation from standard of care; following AAP guidance is strong defense.
- Off-label prescribing is common (~1 in 5 of prescriptions).

NOTE:
Pharmacists have narrower protections, varying by state, which may affect vaccine access.

AAP, 2025

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Pediatric COVID-19 Vaccine Effectiveness

CHILDREN 5-17 YEARS

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Estimated BNT162b2 XBB vaccine effectiveness was:

65%

against COVID-19-associated hospitalization or ED/urgent care visits.

Scott et al, NEJM, 2025; Marwah H, Vaccine Integrity Project, Presented 8/19/2025.

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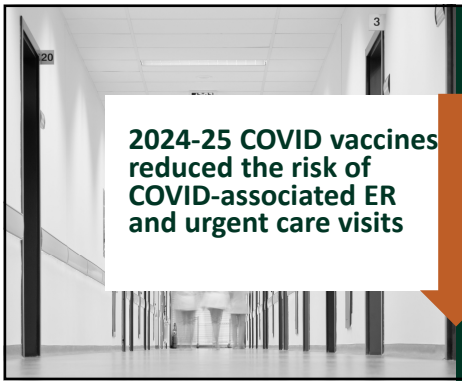

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2024-25 COVID vaccines reduced the risk of COVID-associated ER and urgent care visits

76% in children ages 6 months to 4 years

56% in children ages 5-17 years

Irving et al, MMWR, 2025

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COVID Vaccination and Long COVID

An observational cohort study found that the risk of long COVID was

36%

lower among adolescents vaccinated within 6 months prior to their first infection than among their unvaccinated peers.

Thuwaethai et al, Vaccine, 2025

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Pediatric COVID-19 Vaccine Safety

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- **Extensive safety monitoring:** Millions of doses administered to children worldwide with strong safety record
- **Most side effects are mild and short-lived** (sore arm, fever, fatigue)
- **No unexpected safety concerns identified in post-authorization monitoring**
- **Serious adverse events are rare** (e.g., anaphylaxis ~5 per million doses; Guillain-Barré syndrome not increased in children)
- **Benefits outweigh risks**: vaccines prevent hospitalization, MIS-C, and long-term complications from infection
- **Ongoing surveillance continues to reaffirm a favorable safety profile**

Marwah H, Vaccine Integrity Project, Presented 8/19/2025; AAP, Pediatrics, 2025

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Pediatric COVID-19 Vaccine Safety

MYOCARDITIS

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- Myocarditis following COVID-19 vaccination in children is very rare.
- Higher risk groups include male adolescents (especially ages 12–17) and particularly following the second dose of an mRNA vaccine.
- Booster doses appear to have a further lower incidence.
- Despite the uptick in risk among certain subgroups, these events remain uncommon, and most cases are mild and self-limiting.

Epidemiologic data show that myocarditis in pediatric patients is considerably **more common** and **more severe following COVID-19 infection** than after vaccination.

Marwah H, Vaccine Integrity Project, Presented 8/19/2025; Buoninfante et al, nature, 2024

73

Review of Recent Data on Co-Administration of COVID and Flu Vaccination

Source	Study Design	Vaccines co-administered	Outcome studied	Findings + interpretation
Walter, 2024	Randomized controlled trial	COVID mRNA vaccines + inactivated influenza vaccine (IIV4)	Reactogenicity, serious adverse events	30 children ages 5-17 years old enrolled; no serious adverse events reported in this age group in either arm
Xu, 2025	Self-controlled case series	COVID mRNA XBB1.5 vaccine + seasonal influenza vaccine	Tinnitus	No increased risk of tinnitus with influenza vaccine coadministration in any age group (includes 12-39 year olds)

EXTENSIVE DATA SHOWS THAT CO-ADMINISTERING A COVID-19 VACCINE WITH OTHER VACCINES, PARTICULARLY THE SEASONAL FLU SHOT, IS SAFE.

Marwah H, Vaccine Integrity Project, Presented 8/19/2025.

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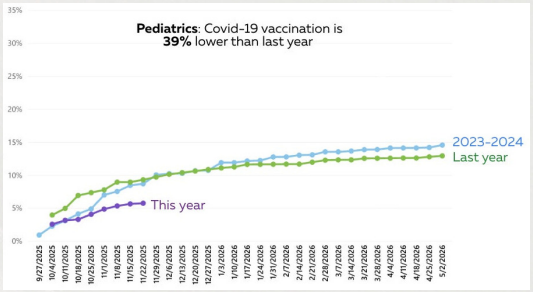
U.S. Pediatric COVID-19 Vaccination: Comparing Seasonal Rates



YLE, 2025

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COVID-19 vaccine confidence among HCPs

Providers who believed that COVID-19 vaccines were safe and efficacious were:

3X more likely to be vaccinated against COVID-19.

2X as likely to recommend them to all their patients.

Provider who felt they received adequate information about COVID-19 vaccination were:

10 more likely to be vaccinated against COVID-19.

4X as likely to recommend them to all their patients.

Miles et al, BMC Health Serv Res, 2024

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Fall and Winter Immunization Guide: 2025-26

	Influenza (Flu) Vaccine	RSV Immunization	COVID-19 Vaccine
Kids	**All children 6 months and older** Some children 6 months to 8 years may need multiple doses AAP, CDC	**All infants <8 months old and children 8-19 months with risk factors** AAP, CDC **OR**	**All children 6-23 months** **Children 2-17 years old with risk factors or if parents desire vaccination** AAP
Pregnant Women	**All** At any point in pregnancy ACOG, CDC	**32-36 weeks gestation** ACOG, CDC	**All** At any point in pregnancy ACOG, CDC
Adults	**All** High-dose recombinant or adjuvated flu vaccine preferred for 65+, if available CDC	**All 75+ and adults 50-74 with risk factors** As of now, one lifetime dose CDC	**All** AAFP, CDC

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Figure adapted from Your Local Epidemiologist, 2025.

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Fall and Winter Immunization Guide: 2025-26

	Influenza (Flu) Vaccine	RSV Immunization	COVID-19 Vaccine
How well do they work?	**Reduces the risk of going to the doctor by 30-60%**	**Reduces risk of severe disease by 80-96%**	**30-60% additional protection against illness and severe disease**
What is available?	**A vaccine that targets 3 strains of seasonal flu; both a nasal spray and injectable shot are available this year.**	**Children:** Monoclonal antibodies nirsevimab or clesrovimab **Pregnancy:** Pfizer (protein) vaccine **Older Adults:** GSK and Pfizer (protein) or Moderna (mRNA) vaccine	**Overall access may be limited. Vaccines are updated with Omicron sub-variants JN.1 or LP.8.1. Options: Pfizer (mRNA; 5 year olds+) Moderna (mRNA for 6 months+), Novavax (protein; 12 years+)**
When should patients get it?	**October is ideal, as vaccine protection wanes over a season**	**Infants:** Oct-March **Pregnancy:** Sept-Jan **Older Adults:** Now as protection is durable	**For protection against severe disease, get it now.** **Recently infected? Wait at least 6 months**

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Figure adapted from Your Local Epidemiologist, 2025.

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Questions?

THANK YOU FOR LISTENING

SPECIAL THANKS TO:

- MAEVE WILLIAMS
- LAUREN DYBSAND, MPH

E-MAIL:
ndsu.cire@ndsu.edu

WEB:
www.ndsu.edu/centers/immunize

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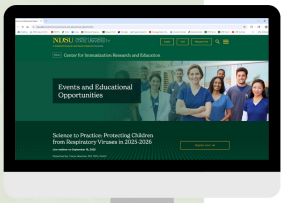

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  - Elicit-Provide-Elicit (EPE)
  - Change Talk & Scaling Questions
  - Best First Responses

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