Updated Influenza Vaccines 2024-25

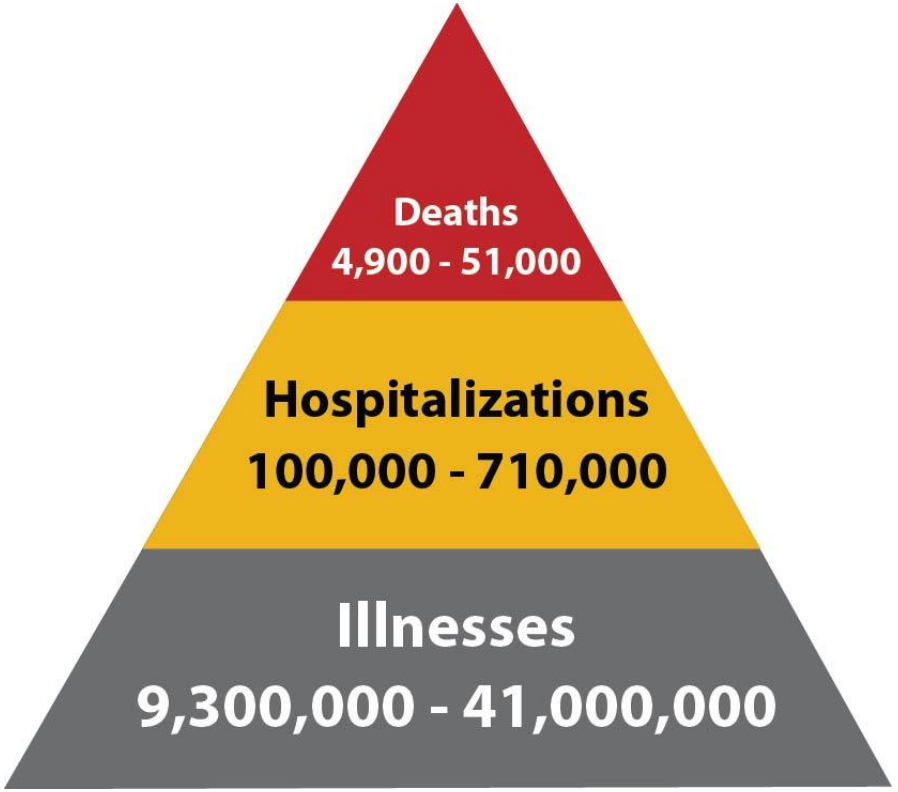
- Review influenza vaccine efficacy and safety in adults
- Review updates for 24-25 season
  - Trivalent vs quadrivalent
  - Solid organ transplant recommendation

https://www.cdc.gov/media/releases/2024/s-t0627-vaccine-recommendations.html

Estimated Range of Annual Burden of Flu
United States, 2010-11 through 2022-23 Influenza Seasons

The burden of influenza disease in the United States can vary widely and is determined by a number of factors including the characteristics of circulating viruses, the timing of the season, how well the vaccine is working to protect against illness, and how many people got vaccinated. While the impact of flu varies, it places a substantial burden on the health of people in the United States each year.

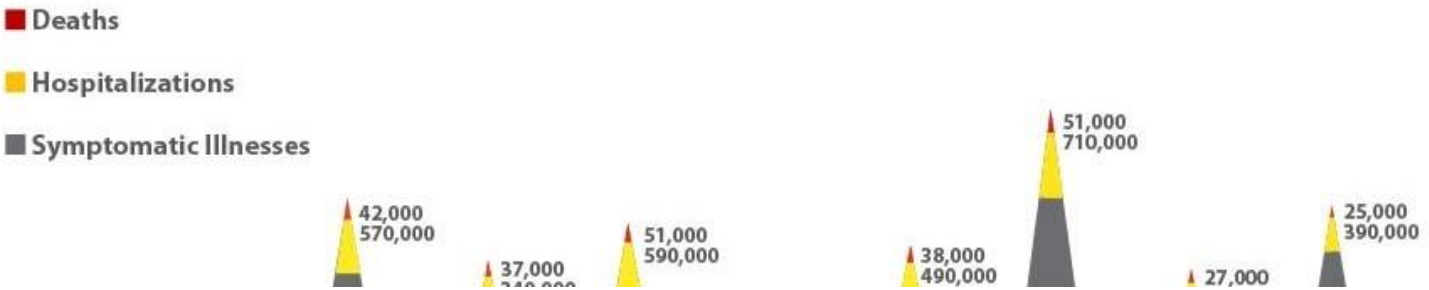
CDC estimates that from 2010- 2023, influenza has resulted in between 9.3 million – 41 million illnesses, between 100,000 – 710,000 hospitalizations and between 4,900 – 51,000 deaths annually.

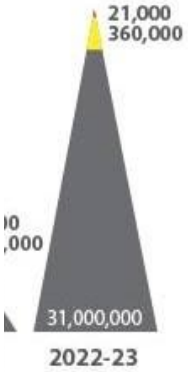


https://www.cdc.gov/flu/about/burden/index.html

https://www.cdc.gov/flu-burden/php/about/index.html

Estimated Influenza Disease Burden, by Season
United States, 2010-11 through 2022-23 Influenza Seasons





Preliminary 2023–2024 U.S. Flu In-Season Disease Burden Estimates

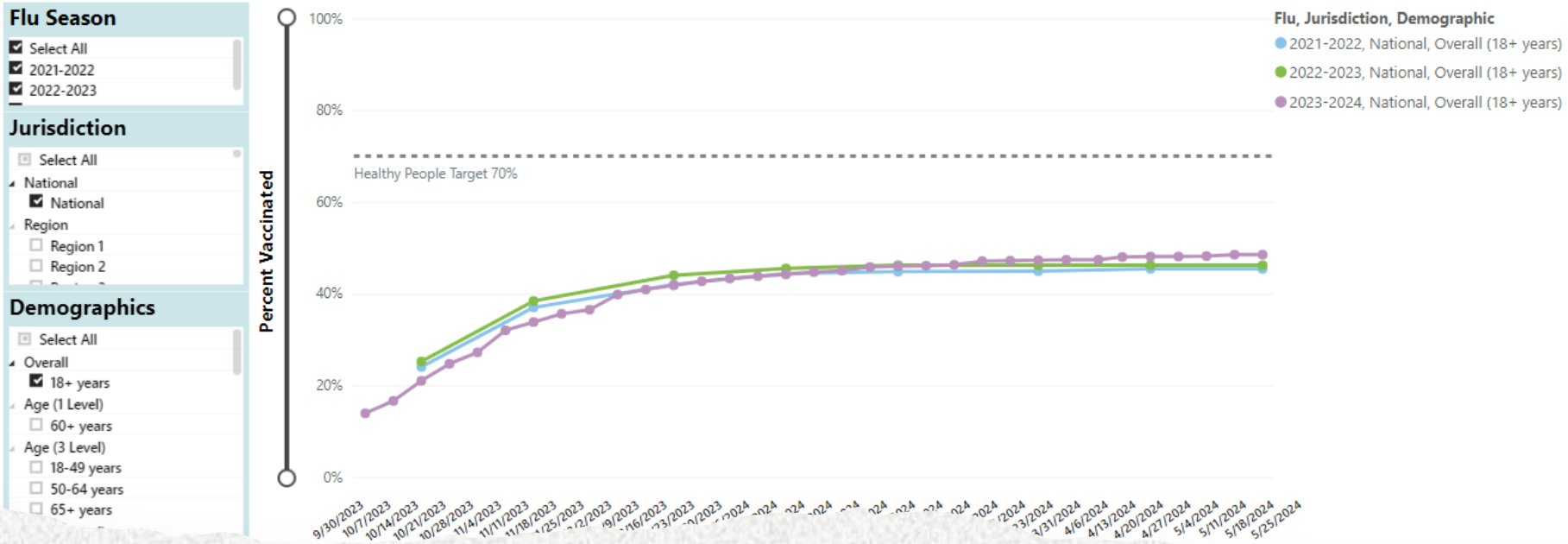
CDC estimates* that, from October 1, 2023, through June 15, 2024, there have been:

35 - 65 Million	16 - 30 Million	390,000 - 830,000	25,000 - 72,000
Flu Illnesses	Flu Medical Visits	Flu Hospitalizations	Flu Deaths

*Based on data from October 1, 2023, through June 15, 2024.

https://www.cdc.gov/flu-burden/php/about/index.html

Figure 4A. Influenza Vaccination Coverage, by Selected Demographics, 2023-24 and Jurisdiction
Adults 18 years and Older, United States,*ǂ†±
Data Source: National Immunization Survey-Adult COVID Module

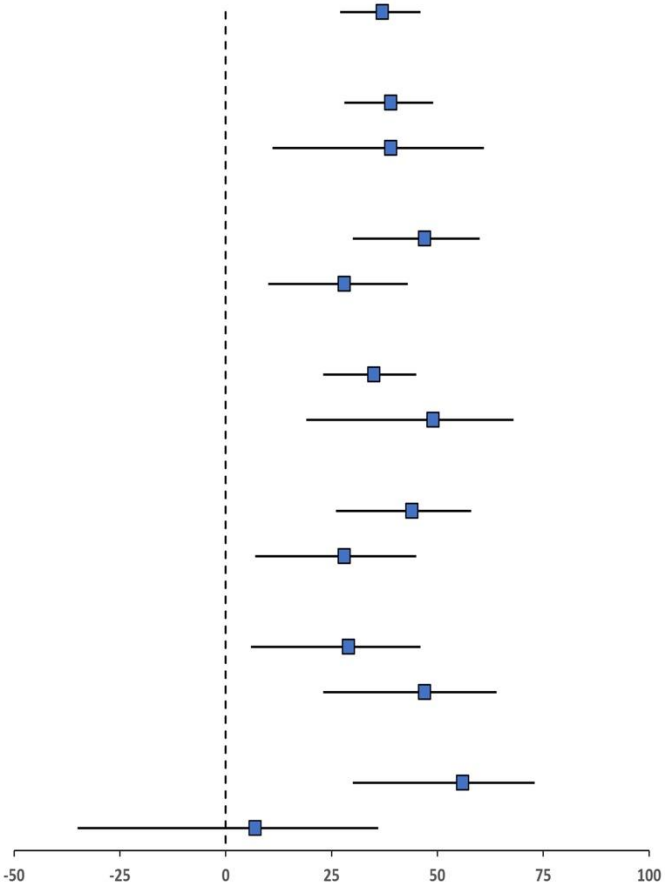


Vaccination rates are low

https://www.cdc.gov/flu/fluvaxview/dashboard/vaccination-adult-coverage.html

Vaccine effectiveness (VE) against influenza-associated hospitalization for the 2022–2023 seasonal influenza

Group	Vaccinated case patients/total case patients (%)	Vaccinated control patients/total control patients (%)	Unadjusted vaccine effectiveness (95% CI)	Adjusted vaccine effectiveness (95% CI)
Overall	235/714 (33)	1462/2993 (49)	49 (39 to 57)	37 (27 to 46)
By time since vaccination				
14–90 days	158/637 (25)	803/2334 (34)	37 (23 to 48)	39 (29 to 48)
>90 days	31/510 (6)	453/1984 (23)	78 (68 to 85)	39 (33 to 61)
By age				
18–64 years	90/383 (23)	579/1415 (41)	56 (43 to 66)	47 (30 to 60)
≥65 years	145/331 (44)	883/1578 (56)	39 (22 to 52)	28 (10 to 43)
By immunocompetency				
Immunocompetent	186/586 (32)	1087/2317 (47)	47 (36 to 56)	35 (26 to 45)
Mod/severe immunocomp.	41/103 (40)	281/500 (56)	48 (21 to 67)	49 (19 to 68)
Immunocompetent by age				
18–64 years	67/304 (22)	392/1048 (37)	52 (36 to 65)	44 (26 to 58)
≥65 years	119/282 (42)	695/1269 (55)	40 (22 to 54)	28 (7 to 45)
By virus subtype				
Influenza A(H3N2)	96/286 (34)	1462/2993 (49)	47 (32 to 59)	29 (6 to 46)
Influenza A(H1N1)	44/145 (30)	1462/2993 (49)	56 (37 to 69)	47 (23 to 64)
Influenza A(H3N2) by age				
18–64 years	26/140 (19)	579/1415 (41)	67 (49 to 79)	56 (30 to 72)
≥65 years	70/146 (48)	883/1578 (56)	27 (-2 to 48)	7 (-35 to 36)



Clin Infect Dis, Volume 78, Issue 4, 15 April 2024, Pages 1056–1064, https://doi.org/10.1093/cid/ciad677

Vaccine Effectiveness: Severe flu related outcomes

People who were vaccinated were:

- ✓41% less likely to experience hypoxemia treated with supplemental oxygen.
- ✓65% less likely to have respiratory, cardiovascular, or renal failure treated with acute organ support.
- ✓66% less likely to have respiratory failure treated with invasive mechanical ventilation
- ✓69% less likely to be admitted to the ICU.

https://www.cdc.gov/flu/spotlights/2023-2024/new-study-vaccine.htm

Clinical Infectious Diseases, Volume 78, Issue 4, 15 April 2024, Pages 1056–1064, https://doi.org/10.1093/cid/ciad677

U.S. Influenza Vaccine Composition for the 2024-25 Influenza Season

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

Vaccines and Related Biological Products Advisory Committee March 5, 2024 Meeting Announcement - 03/05/2024 | FDA

TRIVALENT vs QUADRIVALENT

What is the difference between quadrivalent and trivalent flu vaccines?

Quadrivalent flu vaccines include vaccine viruses or viral proteins from four viruses: one influenza A(H1N1) virus, one influenza A(H3N2) virus, one influenza B/Victoria lineage virus and one B/Yamagata lineage virus. Trivalent flu vaccines include three vaccine viruses. They will not include an influenza B/Yamagata lineage vaccine virus or viral protein component.

Why is the United States transitioning from quadrivalent to trivalent flu vaccines?

The influenza B/Yamagata vaccine component in flu vaccines is being removed because influenza B/Yamagata viruses have not been detected after March 2020, using global surveillance for actively circulating influenza viruses.

What is the timeline of the transition from quadrivalent to trivalent flu vaccines?

All U.S. flu vaccines will be trivalent for the 2024-2025 season.

Vaccine Safety Update: 2023-2024 Influenza Season

- **~158 million doses of influenza vaccine distributed in United States***
- **Vaccine Adverse Event Reporting System (VAERS)** (co-managed by CDC and FDA)
  - No new safety concerns identified for influenza vaccines
- **Vaccine Safety Datalink (VSD)** (collaboration between CDC and 13 integrated healthcare organizations)
  - VSD monitors pre-specified outcomes using rapid cycle analysis (RCA)**
  - ~4.8 million doses of influenza vaccine administered in VSD through 5/31/2024
  - No new safety concerns identified in influenza vaccine monitoring

*As of March 9, 2024, Weekly Flu Vaccination Dashboard | FluVaxView | Seasonal Influenza (Flu) |

** Outcomes monitored in VSD for influenza vaccines: acute disseminated encephalomyelitis (ADEM), anaphylaxis (case counts), Bell's palsy, encephalitis, Guillain-Barré syndrome, seizures, and transverse myelitis; Li et al. Post licensure surveillance of influenza vaccines in the Vaccine Safety Datalink in the 2013–2014 and 2014–2015 seasons (wiley.com) Pharmacoepidemiol Drug Saf. 2016 Aug;25(8):928-34.

https://www.cdc.gov/flu/fluvaxview/dashboard/vaccination-dashboard.html

Egg Allergy

The Joint Task Force on Practice Parameters of the American Academy of Allergy Asthma and Immunology and the American College of Allergy Asthma and Immunology - now state that it is not necessary to ask about egg allergy prior to the administration of any influenza vaccine, including on screening forms.

Questions & Answers:

Should people with an egg allergy (of any severity) g

Everyone 6 months and older with egg allergy should receive an annual flu vaccine. Any flu vaccine (egg based or non-egg based) that is otherwise appropriate for the recipient's age and health status can be used.

Egg allergy does not indicate additional safety measures for flu vaccination beyond those recommended for any recipient of any vaccine, regardless of severity of previous reaction to egg. Severe and life-threatening reactions to vaccines are rare, but can occur with any vaccine and in any vaccine recipient, regardless of allergy history. All vaccines should be administered in settings in which personnel and equipment needed for rapid recognition and treatment of acute hypersensitivity reactions are available.

Why do flu vaccines contain egg protein?

Most flu vaccines today are produced using an egg-based manufacturing process and thus contain a small amount of egg protein called ovalbumin.

How common are severe allergic reactions to vaccines?

Severe allergic reactions (such as anaphylaxis) to vaccines are rare. In a Vaccine Safety Datalink study of more than 25.1 million doses of various vaccines given to children and adults, the rate of anaphylaxis was 1.31 per 1 million doses for all vaccines, and 1.35 per million doses for seasonal flu vaccines.

Although severe allergic reactions to vaccines are rare, they sometimes occur in people who don't have any known allergies. For this reason, it is recommended that all vaccines are given in settings where allergic reactions can be recognized and managed quickly.

CDC egg allergy https://www.annallergy.org/article/S1081-1206(17)31187-0/fulltext

Recommendation for 24-25

CDC recommends **everyone 6 months of age** and older, with rare exceptions, receive an updated 2024-2025 flu vaccine to reduce the risk of influenza and its potentially serious complications this fall and winter.

For people younger than 65 years, CDC does not preferentially recommend any licensed, age-appropriate influenza (flu) vaccine over another.

Options for this age group include inactivated influenza vaccine [IIV], recombinant influenza vaccine [RIV], or live attenuated influenza vaccine (LAIV), with no preference for any flu vaccine over another.

≥ 65 years old Recommendation

ACIP recommends that adults aged ≥65 years preferentially receive any one of the following higher dose or adjuvanted influenza vaccines:

- Trivalent high-dose inactivated influenza vaccine (Fluzone High-Dose Trivalent)
- Trivalent adjuvanted inactivated influenza vaccine (Fluad)

If none of these vaccines is available at an opportunity for vaccine administration, then any other age-appropriate influenza vaccine should be used.

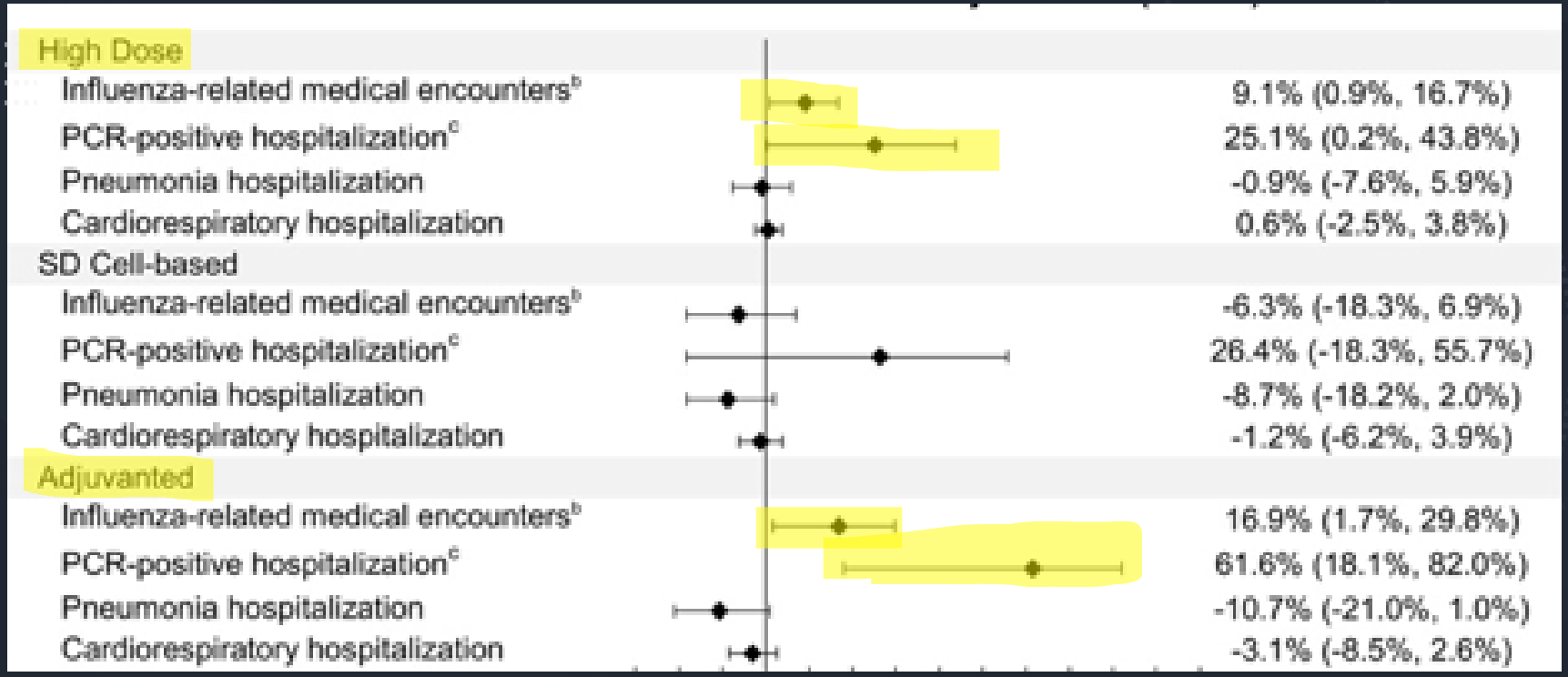
ACIP website with presentations

https://www.cdc.gov/flu/professionals/acip/2022-2023/acip-table.htm

https://www.cdc.gov/vaccines/acip/recs/grade/influenza-older-adults.html

CSIM

Comparative Effectiveness of Licensed Influenza Vaccines in Preventing Influenza-related Medical Encounters and Hospitalizations in the 2022–2023 Influenza Season Among Adults ≥65 Years of Age



Clinical Infectious Diseases, ciae375, https://doi.org/10.1093/cid/ciae375
Published: 21 August 2024

NEW! High dose for SOT pts

ACIP:

High-dose inactivated and adjuvanted inactivated influenza vaccines are recomm

Solid Organ Transplant recipients aged 18

Remember no LIVE vaccines for this pt population

BUT....
without a preference over other age-appropriate influenza vaccines.

https://www.cdc.gov/vaccines/acip/recommendations.html

CSiM

Timing for vaccination

September and October are the best times for most people to get vaccinated.

Exceptions:

- Pregnant people who are in their third trimester can get a flu vaccine in July or August

The BEST time is when the patient is available!!!

CSIM

Table 1. Product listing, by age category, of influenza vaccines that are anticipated to be available during the 2024-2025 season

Pediatric (<18 y; inactivated, non-adjuvanted, injectable vaccines)	Pediatric and adult (live, non-adjuvanted, intranasal vaccine)	Adult (≥ 18 y; inactivated, non-adjuvanted, injectable vaccines)	Adult (≥ 65 y; inactivated injectable vaccines)
Afluria (Seqirus) • 0.25 mL (6-35 mo)[a] • 0.5 mL (≥ 36 mo) Fluarix (GlaxoSmithKline) • 0.5 mL (≥ 6 mo) Flucelvax (Seqirus) • 0.5 mL (≥ 6 mo) Flulaval (GlaxoSmithKline) • 0.5 mL (≥ 6 mo) Fluzone (Sanofi Pasteur) • 0.5 mL (≥ 6 mo)	FluMist (Astra Zeneca/ Medimmune): 0.2 mL (2-49 y)	• Afluria (Seqirus): 0.5 mL • Fluarix (GlaxoSmithKline): 0.5 mL • Flublok (Sanofi Pasteur): 0.5 mL • Flucelvax (Seqirus): 0.5 mL • Flulaval (GlaxoSmithKline): 0.5 mL • Fluzone (Sanofi Pasteur): 0.5 mL	• Fluad (Seqirus): 0.5 mL with adjuvant • Fluzone HD (Sanofi Pasteur): 0.7 mL

Abbreviations: FDA = Food and Drug Administration; HD = high-dose

[a] The 0.25 mL prefilled syringes for Afluria are not expected to be available for the 2024-25 influenza season; for children aged 6 to 35 mo, the 0.25 mL dose must be obtained from the multidose vial.

Table 2. Anticipated seasonal influenza vaccines available for the 2024-2025 season: product comparison guide[a]

	Afluria	Fluad	Flucelvax	Fluarix	Flulaval	Fluzone (including HD)	Flublok	FluMist
Manufacturer/ supplier	Seqirus	Seqirus	Seqirus	GlaxoSmithKline	GlaxoSmithKline	Sanofi Pasteur	Sanofi Pasteur	AstraZeneca/ MedImmune
Vaccine type	Inactivated	Inactivated (adjuvant)	Inactivated (cell culture-based)	Inactivated	Inactivated	Inactivated	Inactivated (recombinant)	Live attenuated, intranasal
Abbreviation	SD-IIV	aIIV	ccIIV	SD-IIV	SD-IIV	SD-IIV (Fluzone) HD-IIV (Fluzone HD)	RIV	LAIV
Enhanced influenza vaccine[b]	No	Yes	No	No	No	Yes	Yes	No
Manufacturing process	Egg-based	Egg-based	Cell culture: MDCK cells (egg free)	Egg-based	Egg-based	Egg-based	Cell culture: insect cells (egg free)	Egg-based
Product description	Clear, colorless to slightly opalescent suspension, with some sediment that resuspends upon shaking	Milky white suspension	Slightly opalescent suspension	Colorless, slightly opalescent suspension	Opalescent, translucent to off-white suspension; may sediment slightly (resuspends upon shaking)	Clear, slightly opalescent suspension (Fluzone and Fluzone HD)	Clear, colorless solution	Colorless to pale yellow suspension; clear to slightly cloudy
How supplied								
Prefilled syringe	0.5 mL	0.5 mL	0.5 mL	0.5 mL	0.5 mL	0.5 mL (Fluzone) 0.7 mL (Fluzone HD)	0.5 mL	0.2-mL intranasal sprayer
Multidose vial	5 mL	–	5 mL	–	–	5 mL (Fluzone)	–	–
Latex	Latex-free	Latex-free	Latex-free	Latex-free	Latex-free	Latex-free	Latex-free	Latex-free
Mercury content (mcg) per 0.5-mL dose	PFS: None Multidose: 24.5	None	PFS: None Multidose: 25	None	None	PFS: None Multidose: 25	None	None
Ovalbumin content (mcg) per 0.5-mL dose	< 1	≤ 1	None	≤ 0.05	≤ 0.3	≤ 1 per dose (Fluzone) < 1 per 0.7 mL dose (Fluzone HD)	None	< 0.024 mcg per 0.2-mL dose

	Afluria	Fluad	Flucelvax	Fluarix	Flulaval	Fluzone (including HD)	Flublok	FluMist
Formaldehyde content (mcg) per 0.5-mL dose	None	≤ 10	None	≤ 5	≤ 25	Fluzone: ≤ 100 Fluzone HD: ≤140	None	None
Antibiotics per 0.5-mL dose	Neomycin ≤ 81.8 ng, polymyxin B ≤ 14 ng	Neomycin (≤ 0.02 mcg by calculation), kanamycin (≤0.03 mcg by calculation)	None	May contain residual amounts of gentamicin (≤ 0.15 mcg)	None	None	None	Gentamicin (< 0.015 mcg/mL) per 0.2-mL dose
A (H1N1) strain per 0.5-mL dose	15 mcg HA	15 mcg HA (MF59 adjuvant)	15 mcg HA	15 mcg HA	15 mcg HA	Fluzone: 15 mcg HA Fluzone HD: 60 mcg HA	45 mcg HA	Each 0.2-mL dose contains $10^{6.5-7.5}$ fluorescent focus units of live attenuated influenza strain for each of the 4 strains: A (H1N1), A (H3N2), B (Yamagata), and B (Victoria).
A (H3N2) strain per 0.5-mL dose	15 mcg HA	15 mcg HA (MF59 adjuvant)	15 mcg HA	15 mcg HA	15 mcg HA	Fluzone: 15 mcg HA Fluzone HD: 60 mcg HA	45 mcg HA	
B strain 1 per 0.5-mL dose	15 mcg HA	15 mcg HA (MF59 adjuvant)	15 mcg HA	15 mcg HA	15 mcg HA	Fluzone: 15 mcg HA Fluzone HD: 60 mcg HA	45 mcg HA	
B strain 2 per 0.5-mL dose	15 mcg HA	15 mcg HA (MF59 adjuvant)	15 mcg HA	15 mcg HA	15 mcg HA	Fluzone: 15 mcg HA Fluzone HD: 60 mcg HA	45 mcg HA	
Approved population	≥ 6 mo	≥ 65 y	≥ 6 mo	≥ 6 mo	≥ 6 mo	Fluzone: ≥ 6 mo Fluzone HD: ≥ 65 y	≥ 18 y	2-49 y
Pregnancy considerations and recommendations[c]	Pregnant women are at increased risk of severe illness due to influenza; those who contract influenza may be at increased risk for adverse pregnancy outcomes, including preterm labor and delivery. ACIP and the American College of Obstetricians and Gynecologists recommend that all women who are pregnant or who might be pregnant or postpartum during the influenza season receive an influenza vaccine. Pregnant women who receive an influenza vaccine should be enrolled in that vaccine product's pregnancy exposure registry (specified in package inserts). Reminder: neither Fluad nor Fluzone HD are approved for use in persons < 65 y.							Avoid during pregnancy

U.S. Surveillar

CDC Weekly Influenza Report

MMWR Pneumonia and Influenza Mo

Alaska Influenza Page

California Influenza Page

Oregon Influenza Surveillance

Global Surveil

WHO FluNet

British Columbia Influenza Surveillan

More Resources

- Influenza Notifiable Conditions In
- ILINet Provider Recruitment
- Additional Resources for Health P
- Electronic Health Records
- List of Notifiable Conditions

Washington State Influenza Update

Week 32: August 4 – August 10, 2024

Quick facts are below. See full report on pages 1-9 for details.

Influenza-like illness activity in Washington is currently

Minimal

Number of reported lab-confirmed deaths

130
2 children
128 adults

Take Me to:

How do you stop the flu?

Get vaccinated! After getting vaccinated, also:

Wash your hands often

Cover your cough

Stay home when you're sick

https://doh.wa.gov/data-and-statistical-reports/diseases-and-chronic-conditions/communicable-disease-surveillance-data/influenza-surveillance-data

Respiratory virus data dashboards: COVID-19, Influenza, and RSV

This page shows respiratory virus data for King County, WA. For additional data on COVID-19, visit COVID-19 data.

We want your opinion on how we can improve this page – please fill out this 5-question survey to share your thoughts.

CONTACT

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Seattle, WA 98104

Phone: 206-296-4774
TTY Relay: 711

Fax: 206-296-4803

https://kingcounty.gov/en/dept/dph/health-safety/disease-illness/facts-and-data/respiratory-virus-data

Summary

- Influenza vaccination season is here!
- Influenza vaccination protects against severe flu outcomes
- Many formulations available

Helpful websites

ACIP

- https://www.cdc.gov/vaccines/acip/meetings/slides-2024-06-26-28.html
- https://www.cdc.gov/ncird/whats-new/cdc-updates-vaccine-recommendations-july-2024.html#:~:text=ACIP%20reaffirmed%20its%20recommendation%20for,a%20B%2FVictoria%20lineage%20virus.

CDC

https://www.cdc.gov/flu/professionals/vaccination/index.htm

WHO

https://youtu.be/mn710cT4xxs

McCulloch DJ, Pottinger PS. Infectious Disease Updates for Primary Care. Med Clin North Am. 2024 Sep;108(5):965-979. doi: 10.1016/j.mcna.2024.02.003.

Epub 2024 Mar 28. PMID: 39084844.

Summary of Evidence: HD-IIV3 vs SD-IIV

Outcome	Importance	No. studies	Included in profile	Favored vaccine	Certainty
Benefits					
Medically-attended influenza	Critical	0	-		-
Influenza-associated hospitalization	Critical	1	Yes	Neither	Low
Laboratory-confirmed influenza	Important	2	Yes	Neither	Moderate
Immunogenicity (surrogate outcome)					
Seroconversion to A(H1N1)	Important	3	Yes	HD-IIV3	Moderate
Seroconversion to A(H3N2)	Important	3	Yes	HD-IIV3	Moderate
Seroconversion to B	Important	3	Yes	HD-IIV3	Moderate
Seroprotection to A(H1N1)	Important	3	Yes	Neither	Low
Seroprotection to A(H3N2)	Important	3	Yes	HD-IIV3	Moderate
Seroprotection to B	Important	3	Yes	HD-IIV3	Moderate
Harms					
Transplant rejection/graft failure	Critical	3	Yes	Neither	Moderate
Neuroinflammatory conditions	Critical	0	-		-
Other immune-mediated adverse events	Critical	0	-		-

https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2024-06-26-28/03-influenza-grohskopf-508.pdf

Reduces the risk of influenza and influenza-like illness

Benefits in NNT	
71	NNT of 71 for preventing influenza
29, 5	NNT of 29 for elderly and 5 for children
29	NNT of 29 for preventing influenza-like illness
42, 12	NNT of 42 for elderly and 12 for children

Harms in NNT	
125	1 in 125 experienced fever after vaccination

View As: NNT %

Source

Demicheli V, Jefferson T, Ferroni E, Rivetti A, Di Pietrantoni C. Vaccines for preventing influenza in healthy adults. Cochrane Database of Systematic Reviews 2018, Issue 2. Art. No.: CD001269

https://thennt.com/nnt/vaccines-preventing-influenza-healthy-individuals/

Egg Allergy

Questions & Answers:

Should people with an egg allergy (of any severity) get a flu vaccine?

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Why do flu vaccines contain egg protein?

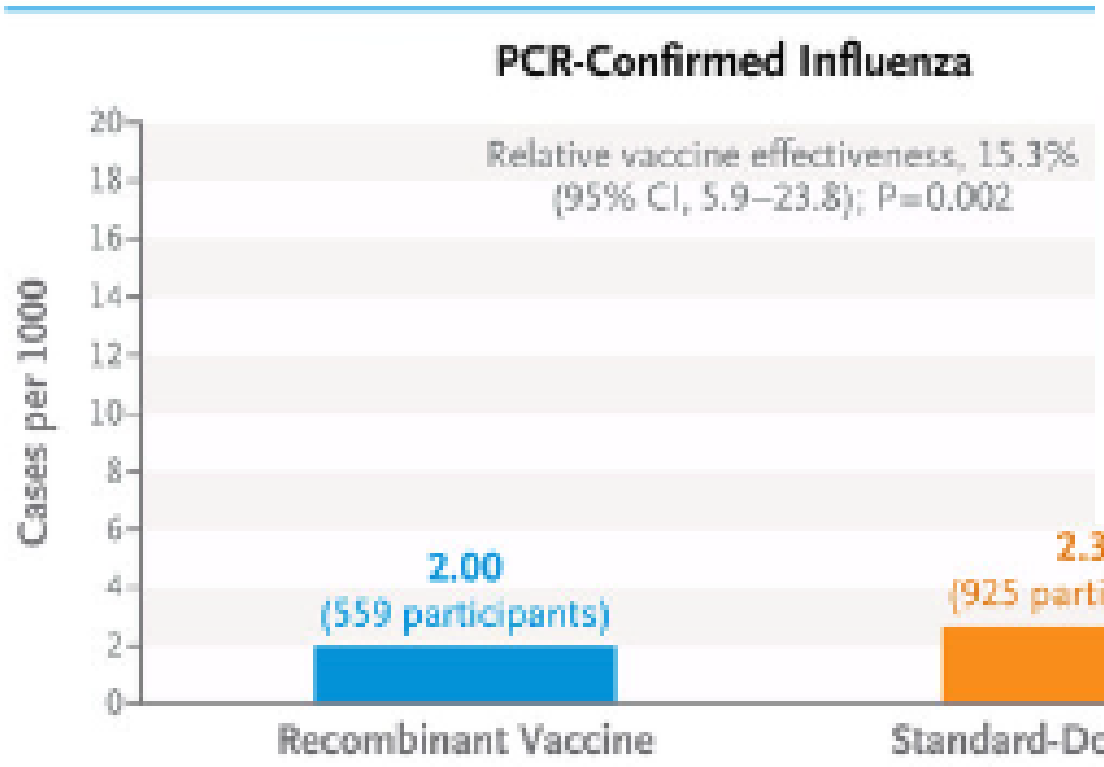
Most flu vaccines today are produced using an egg-based manufacturing process and thus contain a small amount of egg protein called ovalbumin.

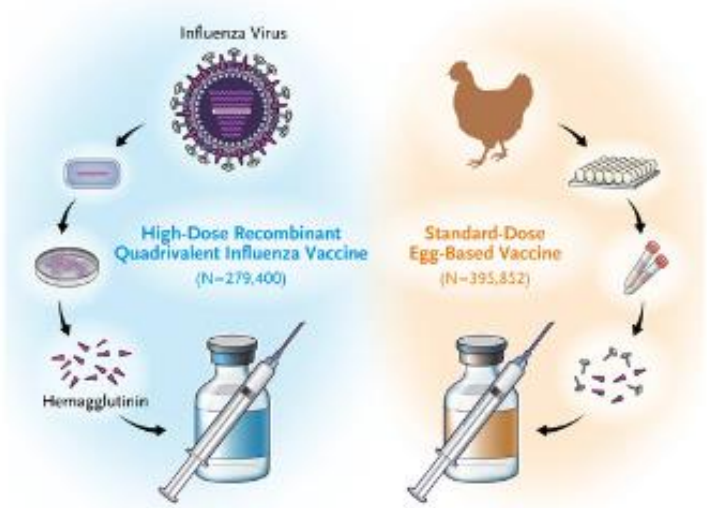
How common are severe allergic reactions to vaccines?

Severe allergic reactions (such as anaphylaxis) to vaccines are rare. In a Vaccine Safety Datalink study of more than 25.1 million doses of various vaccines given to children and adults, the rate of anaphylaxis was 1.31 per 1 million doses for all vaccines, and 1.35 per million doses for seasonal flu vaccines.

Although severe allergic reactions to vaccines are rare, they sometimes occur in people who don't have any known allergies. For this reason, it is recommended that all vaccines are given in settings where allergic reactions can be recognized and managed quickly.

New Data…Not for this year!
High dose for > 50





CONCLUSIONS

The high-dose quadrivalent recombinant influenza vaccine was more effective than an egg-based standard-dose vaccine in preventing PCR-confirmed influenza among adults between 50 and 64 years of age over two influenza seasons.

N Engl J Med 2023;389:2245-2255
DOI: 10.1056/NEJMoa2302099