2022-2023 Influenza Vaccination Recommendations and Guidance on Coadministration with COVID-19 Vaccines

Clinician Outreach and Communication Activity (COCA) Call

Thursday, September 8, 2022

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- Content will not include any discussion of the unlabeled use of a product or a product under investigational use, with the exception of Dr. Lisa Grohskopf's discussion of how a history of severe allergic reaction to egg is a labeled contraindication for receipt of most influenza vaccines; however, ACIP recommends that persons with egg allergy of any severity should receive any licensed influenza vaccine appropriate for their age and health status. In addition, Dr. Evelyn Twentyman will discuss vaccine use under Emergency Use Authorization or Emergency Use Instruction.

- CDC did not accept financial or in-kind support from ineligible companies for this continuing education activity.

Objectives

At the conclusion of today's session, the participant will be able to accomplish the following:

1. Outline updates on the Advisory Committee on Immunization Practices (ACIP) recommendations for the 2022-2023 influenza vaccination season.

2. Discuss details of the three influenza vaccines that are now preferentially recommended for adults ages 65 and older.

3. Describe clinical considerations and best practices for the coadministration of influenza vaccines and COVID-19 vaccines.

To Ask a Question

- Using the Zoom Webinar System
  - Click on the “Q&A” button
  - Type your question in the “Q&A” box
  - Submit your question

- If you are a patient, please refer your question to your healthcare provider.

- If you are a member of the media, please direct your questions to CDC Media Relations at 404-639-3286 or email media@cdc.gov

Today's Presenters

Lisa Grohskopf, MD, MPH
CAPT, U.S. Public Health Service
Medical Officer
Influenza Division
National Center for Immunization and Respiratory Diseases
Centers for Disease Control and Prevention

Evelyn Twentyman, MD, MPH
Lead, Vaccine Policy Unit
COVID-19 Response
National Center for Immunization and Respiratory Diseases
Centers for Disease Control and Prevention

2022-2023 Influenza Vaccination Recommendations Update

Lisa Grohskopf, MD, MPH

Influenza Division, NCIRD, CDC

Clinician Outreach and Communication Activity (COCA) Call

8 September 2022

Disclosures/Unlabeled Use

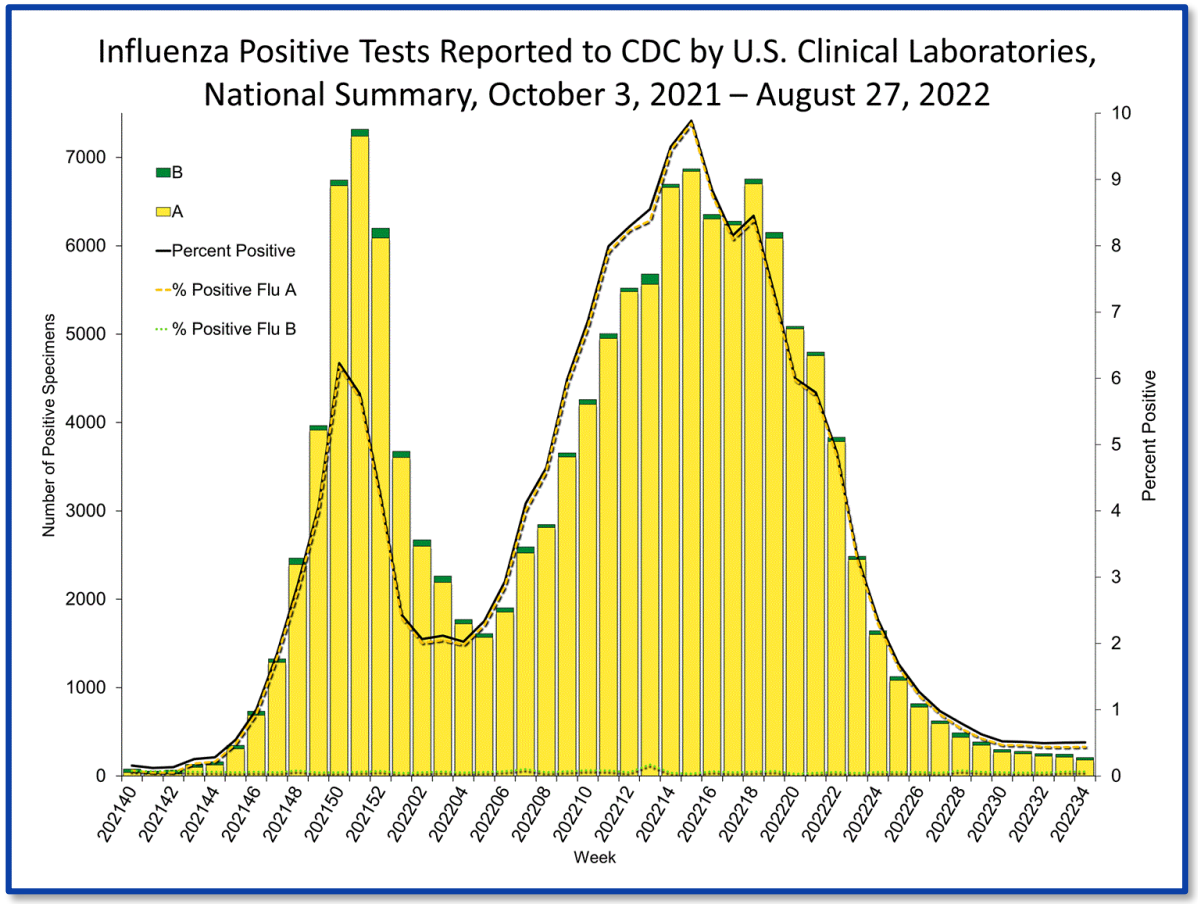
- Nothing to disclose.
- Though not covered specifically in this presentation, ACIP makes recommendations for vaccination of persons with a history of egg allergy.
  - A history of severe allergic reaction (e.g., anaphylaxis) to the vaccine or any of its components (which include egg for some vaccines) is a labeled contraindication for ebb-based inactivated influenza vaccines (IIV4s) and the live attenuated influenza vaccine (LAIV4).
  - However, ACIP recommends that persons with egg allergy of any severity should receive any licensed, recommended influenza vaccine that is appropriate for their age and health status.
  - Persons with a history of severe allergic reaction to egg who receive egg-based vaccines—i.e., vaccines other than cell culture–based inactivated influenza vaccine (ccIIV4) or recombinant influenza vaccine (RIV4) should be vaccinated in an inpatient or outpatient medical setting, supervised by a health care provider who is able to recognize and manage severe allergic reactions.

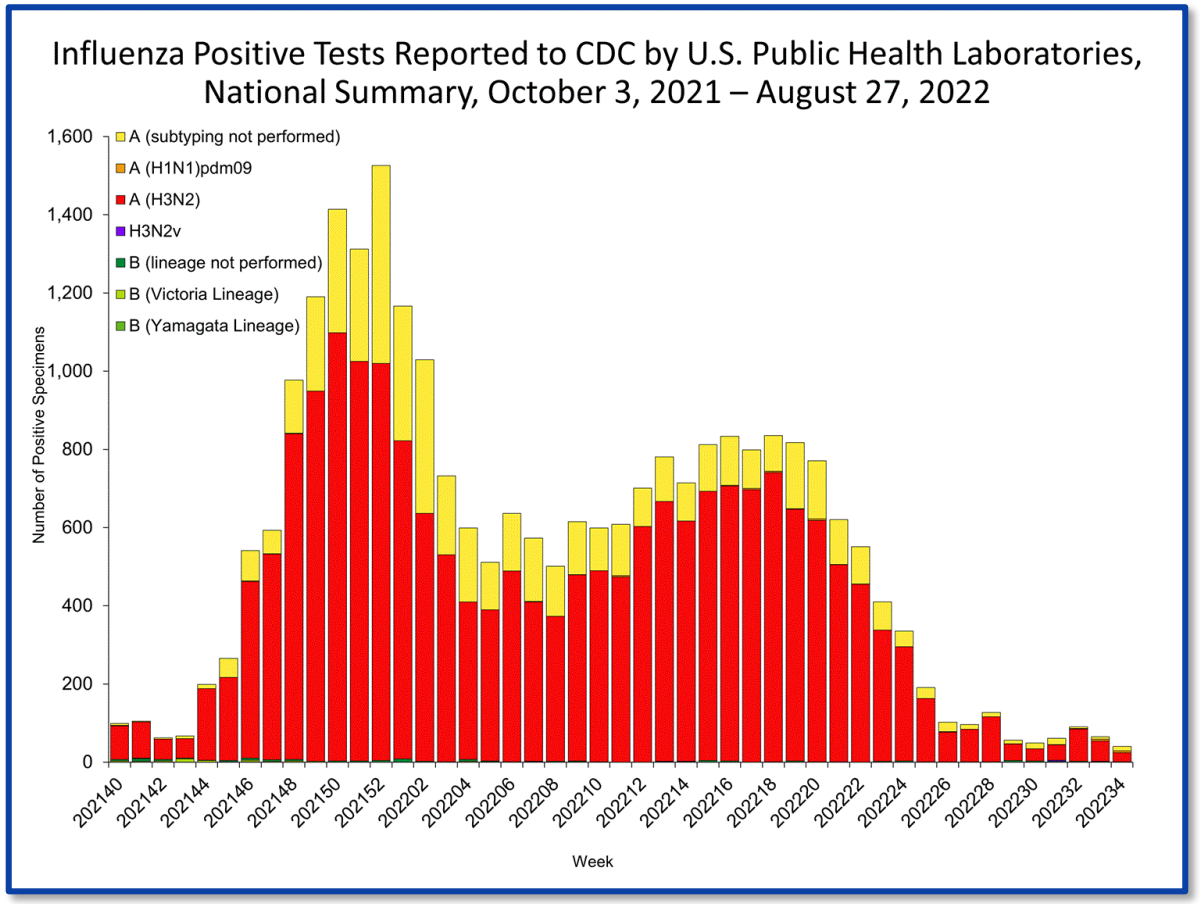
Overview

- 2021-22 influenza activity
- 2022-23 ACIP influenza vaccination updates

U.S. Influenza Activity Update

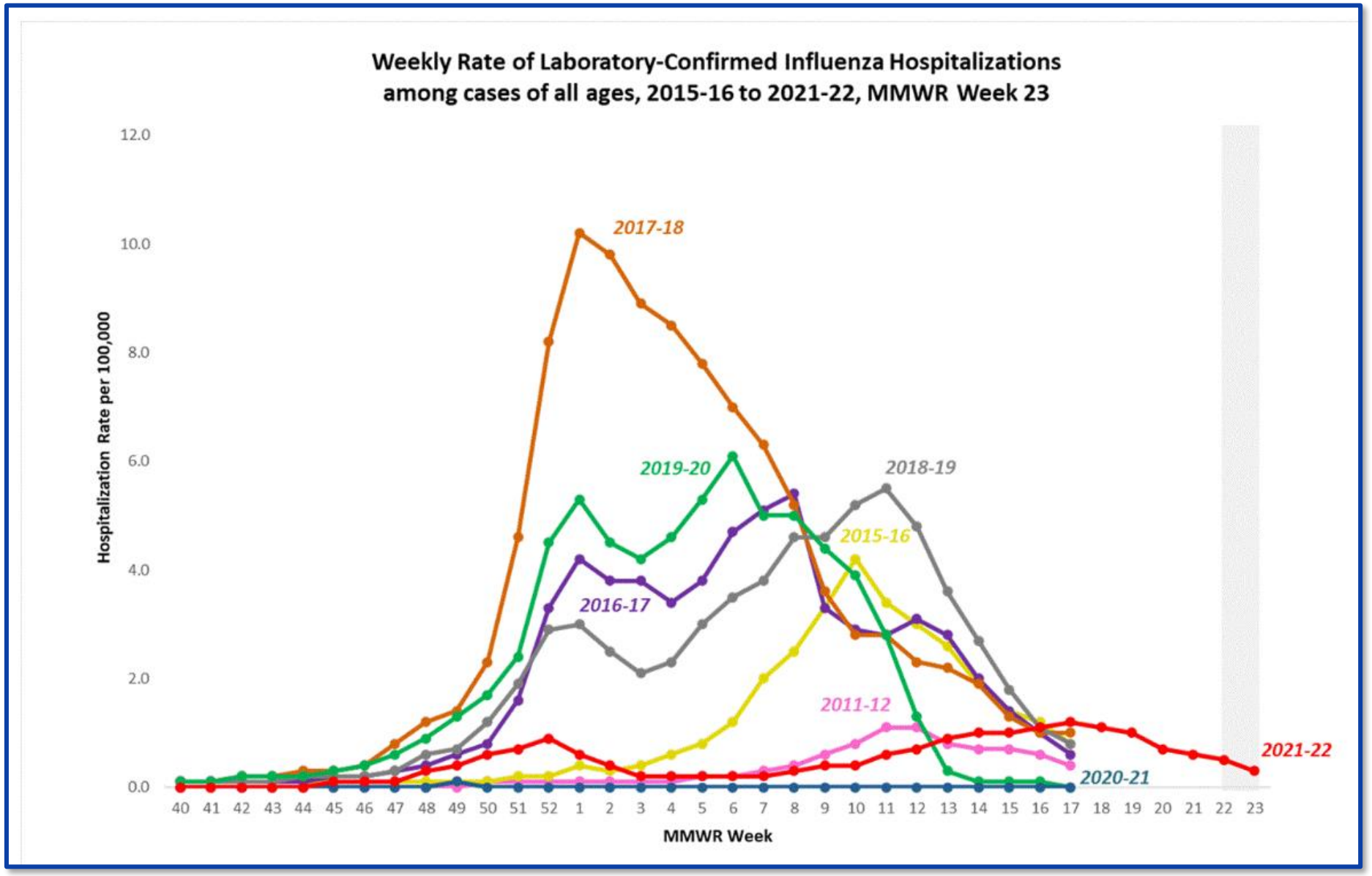
U.S. Influenza Virologic Surveillance





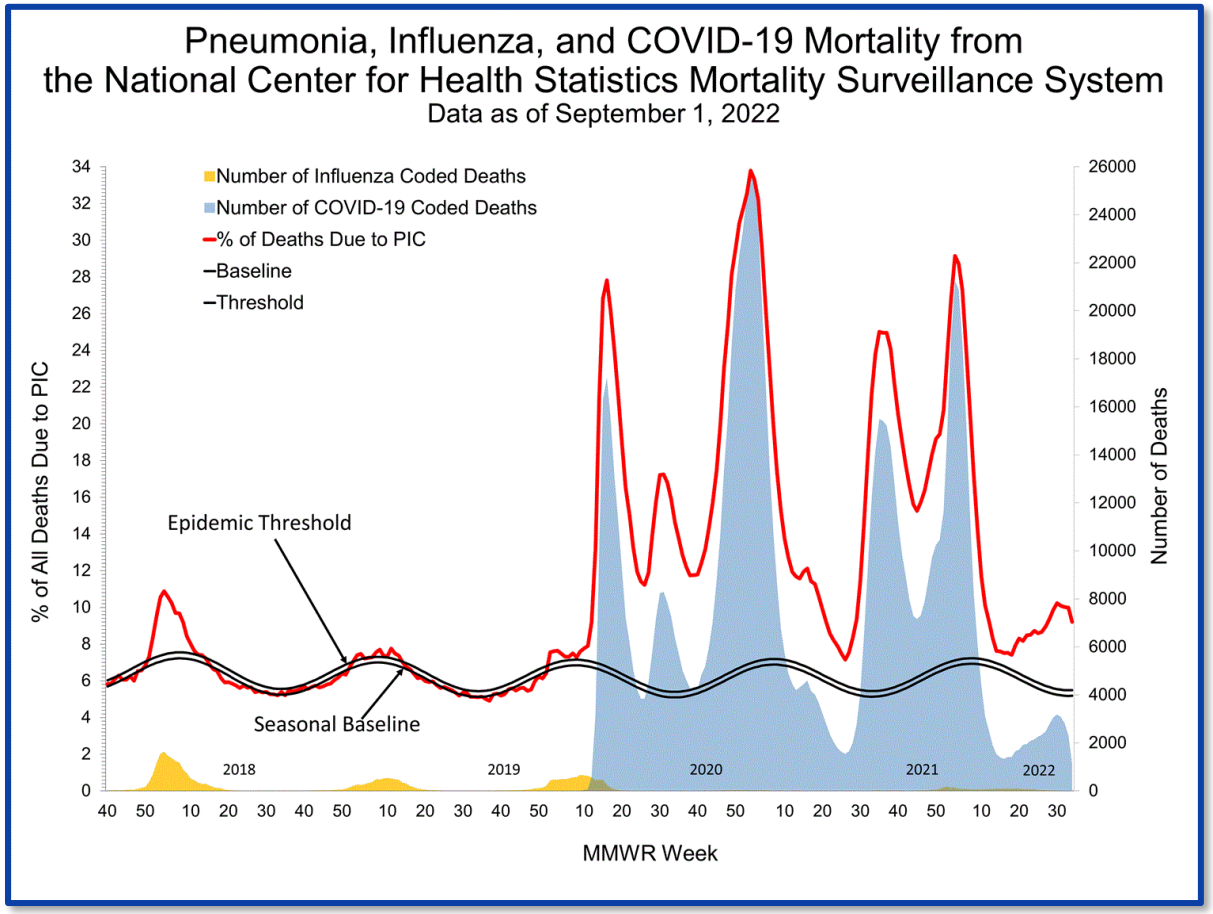
CDC FluView (Weekly U.S. Influenza Surveillance Report | CDC)

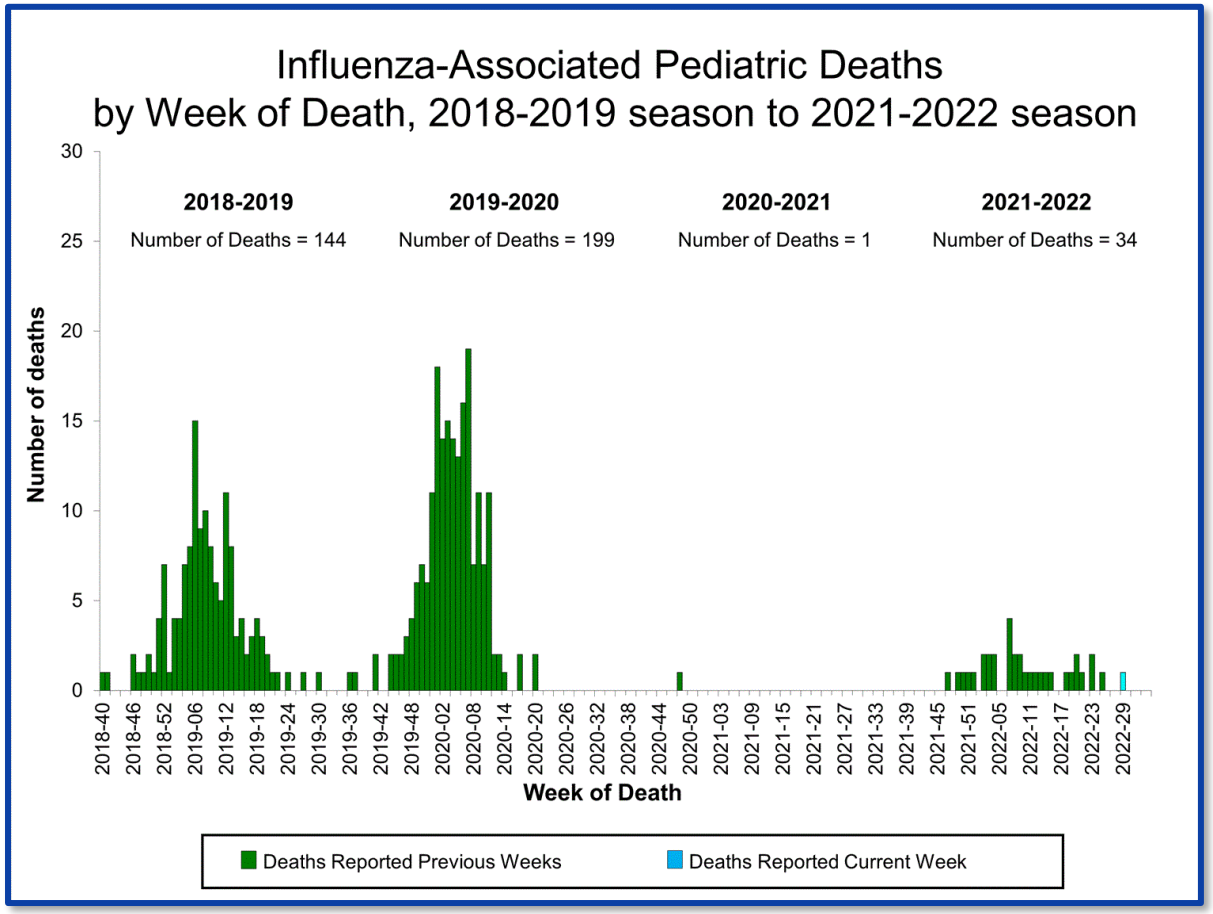
Laboratory-confirmed Influenza Hospitalizations (FluSurv-NET)



CDC FluView ([Weekly U.S. Influenza Surveillance Report | CDC](#))

U.S. Influenza Mortality Surveillance





CDC FluView (Weekly U.S. Influenza Surveillance Report | CDC)

ACIP Influenza Vaccination Update

General Vaccines Types and Abbreviations

IIVs		Inactivated Influenza Vaccine—contain inactivated viruses, and their HAs
	ccIIV	Cell culture based Inactivated Influenza Vaccine
	aIIV	Adjuvanted Inactivated Influenza Vaccine
	HD-IIV	High-Dose Inactivated Influenza Vaccine
RIV		Recombinant Influenza Vaccine—contains recombinant HA
LAIV		Live Attenuated Influenza Vaccine—contains live viruses

Numbers indicate the number of influenza virus antigens:

3 for trivalent: an A(H1N1), an A(H3N2), and one B (from one lineage)

4 for quadrivalent: an A(H1N1), an A(H3N2), and two Bs (one from each lineage)

Note: all currently available vaccines are quadrivalent, but the trivalent abbreviations are used when describing information specific to trivalent vaccines

2022–23 ACIP Influenza Statement

Core recommendation (unchanged):

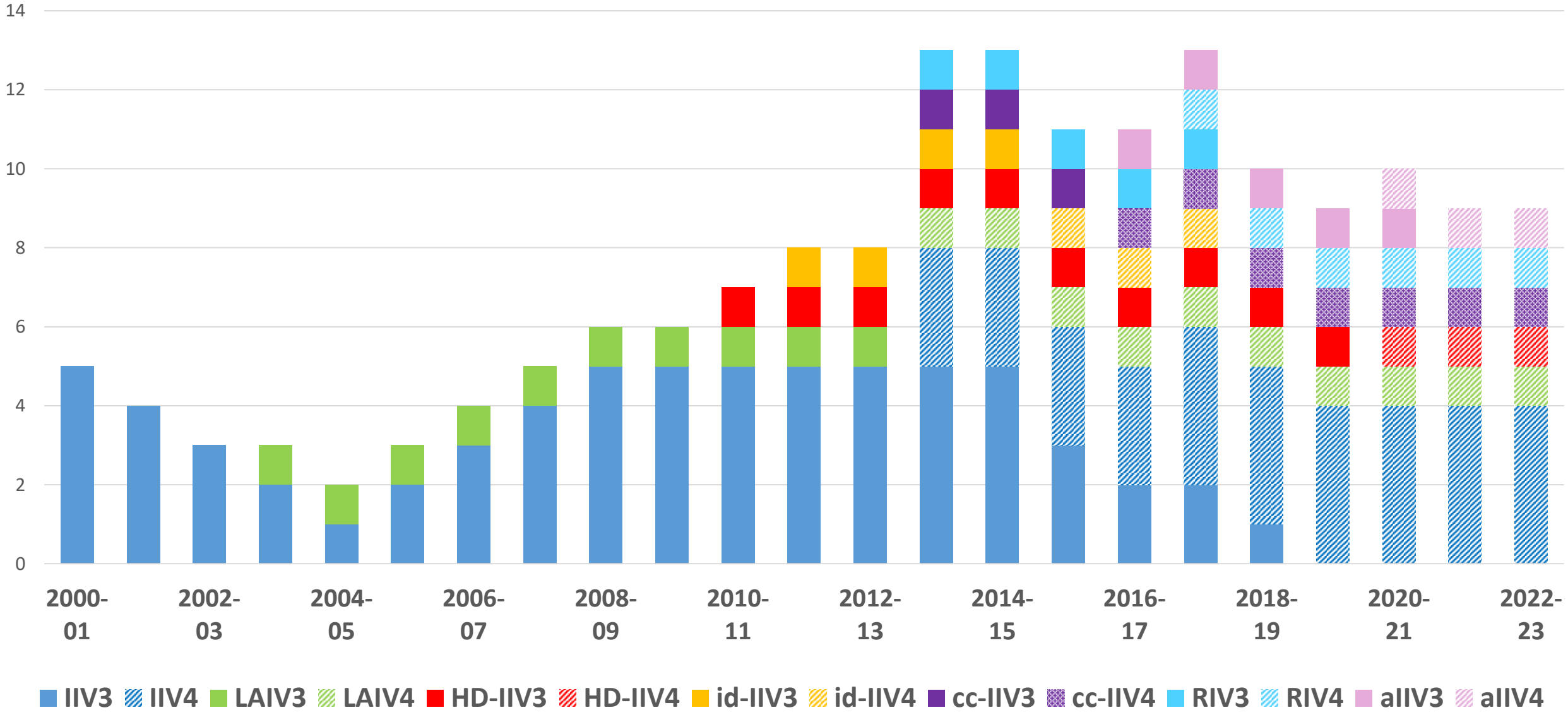
- Annual influenza vaccination is recommended for all persons aged 6 months and older who do not have contraindications.

2022–23 ACIP Influenza Statement

- Updates on the following topics:
  - Influenza vaccines expected to be available for the 2022-23 season.
  - U.S. influenza vaccine viral composition for the 2022-23 season.
  - Change in FDA-approved age indication for Flucelvax Quadrivalent from ≥2 years to ≥6 months.
  - Updated recommendations for vaccination of persons aged ≥65 years.

U.S. Seasonal Influenza Vaccines Since 2000-2001

Number of unique products available by season



Influenza Vaccines by Age Indication, United States, 2022–23 Influenza Season

Vaccine type		0 through 6 months	6 through 23 months	2 through 17 years	18 through 49 years	50 through 64 years	≥65 years
IIV4s	Standard-dose, unadjuvanted inactivated (IIV4)		Afluria Quadrivalent Fluarix Quadrivalent FluLaval Quadrivalent Fluzone Quadrivalent				
	Cell culture-based inactivated (ccIIV4)		Flucelvax Quadrivalent				
	Adjuvanted inactivated (aIIV4)						Fluad Quadrivalent
	High-dose inactivated (HD-IIV4)						Fluzone High-Dose Quadrivalent
RIV4	Recombinant (RIV4)				Flublok Quadrivalent		
LAIV4	Live attenuated (LAIV4)			FluMist Quadrivalent			

Not approved for age group *Egg-based* *Not egg-based*

All vaccines expected for 2022-23 are quadrivalent (i.e., contain hemagglutinin derived from four viruses: one influenza A(H1N1), one influenza A(H3N2), one influenza B/Victoria and one influenza B/Yamagata.

Influenza Vaccine Types—2022-23 U.S. Season

Intramuscular Vaccines

Inactivated Influenza Vaccines (IIV4s)

- Contain inactivated virus (split or subunit)
- Most are egg-based (one is cell culture-based—ccIIV4)
- Most contain 15 mcg of hemagglutinin per virus (one contains 60 mcg per virus—HD-IIV4)
- Most are unadjuvanted (one contains the adjuvant MF59—aIIV4)

Recombinant influenza vaccine (RIV4)

- No viruses used in production
- 45 mcg HA per virus
- Contains HA made through recombinant methods

Intranasal Vaccine

Live attenuated influenza vaccine (LAIV4)

- Egg-based
- Contains live, attenuated influenza viruses which must replicate in the nasopharynx in order to promote an immune response
  - Attenuated—to not cause clinical illness
  - Cold-adapted
  - Temperature-sensitive
- For ages 2 through 49 years
- Not recommended in pregnancy and for those with some medical conditions

Self-knowledge Check

The following is **true** regarding live attenuated influenza vaccine (LAIV4):

A. For ages 2 through 49 years
B. Not recommended in pregnancy and for those with some medical conditions
C. Contain inactivated virus (split or subunit)
D. A and B only
E. All of the Above

Self-knowledge Check

The correct answer is D

Live attenuated influenza vaccine (LAIV4) contains live, attenuated influenza viruses which must replicate in the nasopharynx in order to promote an immune response.

U.S. Influenza Vaccine Composition, 2022-23

- Egg-based IIV4s and LAIV4 will contain HA derived from:
  - an influenza A/Victoria/2570/2019 (H1N1)pdm09-like virus;
  - an influenza A/Darwin/9/2021 (H3N2)-like virus;
  - an influenza B/Austria/1359417/2021 (Victoria lineage)-like virus; and
  - an influenza B/Phuket/3073/2013 (Yamagata lineage)-like virus.

- ccIIV4 and RIV4 will contain HA derived from:
  - an influenza A/Wisconsin/588/2019 (H1N1)pdm09-like virus;
  - an influenza A/Darwin/6/2021 (H3N2)-like virus;
  - an influenza B/Austria/1359417/2021 (Victoria lineage)-like virus; and
  - an influenza B/Phuket/3073/2013 (Yamagata lineage)-like virus.

Updated Age Indication for Flucelvax Quadrivalent (ccIIV4)

- Cell culture-based quadrivalent in activated influenza vaccine, ccIIV4
  - May 2016—approved for ages 4 years and older
    - Ages ≥18 yrs based on efficacy/safety
    - Ages 4 through 17 years based on immunogenicity/safety
  - March 2021—approved for ages 2-17 yrs based on efficacy/safety
  - October 2021—approved for ages 6 through 23 months based on immunogenicity/safety

- Now approved for ages 6 months and older

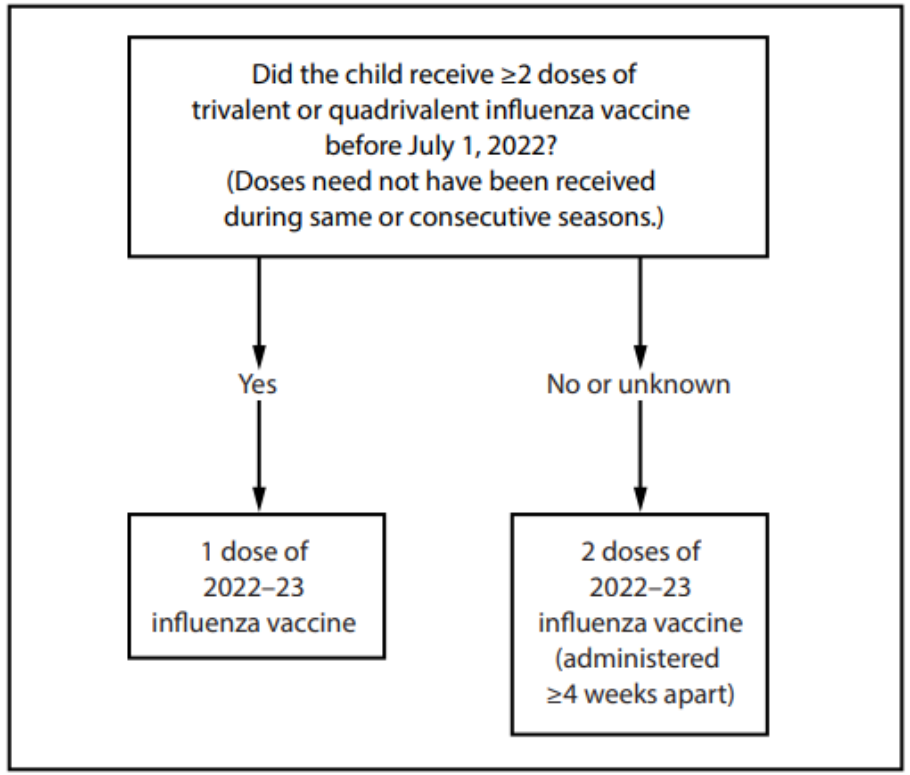
- Dose volume is 0.5mL for all age groups

Brief Aside: IIV4s for 6- through 35-Month-Olds

- **All unadjuvanted, standard-dose IIV4s are now approved for ages ≥6 months.**
- **Still some differences in the dose volumes:**
  - Fluarix Quadrivalent: 0.5 mL
  - Flucelvax Quadrivalent: 0.5 mL
  - FluLaval Quadrivalent: 0.5 mL
  - Fluzone Quadrivalent: 0.25 mL ***or*** 0.5 mL
    - 0.25 mL prefilled syringes no longer available.
  - Afluria Quadrivalent: 0.25 mL
    - 0.25 mL prefilled syringes no longer available.
- **Dose volume is distinct from number of doses needed:**
    - As previously, some children aged 6 months through 8 years need two doses.
    - For example, a first-time influenza vaccinee who is 1 year old,
    - And who gets 0.5mL FluLaval Quadrivalent for a first dose—
    - Still needs a second dose of influenza vaccine, ≥4 weeks later.

Children Aged 6 Months through 8 Years

FIGURE. Influenza vaccine dosing algorithm for children aged 6 months through 8 years* — Advisory Committee on Immunization Practices, United States, 2022–23 influenza season



* Children aged 6 months through 8 years who require 2 doses of influenza vaccine should receive their first dose as soon as possible (including during July and August, if vaccine is available) to allow the second dose (which must be administered ≥4 weeks later) to be received, ideally, by the end of October. For children aged 8 years who require 2 doses of vaccine, both doses should be administered even if the child turns age 9 years between receipt of dose 1 and dose 2.

From MMWR 71(RR-1), August 26, 2022.

- Children in this age group who have never received influenza vaccine, who have not had ≥2 doses of trivalent or quadrivalent vaccine before July 1, 2022, or whose vaccination history is not known need 2 doses ≥4 weeks apart for 2022-23.
- Previous doses can be from different/non-consecutive seasons.
- 8-year-olds determined to need 2 doses should receive second even if they turn age 9 years between dose 1 and dose 2.

Influenza and Older Adults (Aged ≥65 Years)

Season	Overall VE, % (all ages, viruses, and vaccine types)	≥65 yrs (all viruses and vaccine types)
2019-20	39 (32, 44)	39 (9, 59)
2018-19	29 (21, 35)	12 (-31, 40)
2017-18	38 (31, 43)	17 (-14, 39)
2016-17	40 (32, 46)	20 (-11, 43)
2015-16	48 (41, 55)	42 (6, 64)
2014-15	19 (10, 27)	32 (3, 52)
2013-14	52 (44, 59)	50 (16, 71)
2012-13	49 (43, 55)	26 (-10, 50)
2011-12	47 (36, 56)	43 (-18, 72)

CDC, U.S. Flu VE Network,
https://www.cdc.gov/flu/vaccines-work/past-seasons-estimates.html

- Persons aged ≥65 years are at increased risk of severe illness, hospitalization, and death due to influenza.
- Target population for annual influenza vaccination since the early 1960s.
- Influenza vaccines are often less effective compared with younger populations.

Influenza Vaccines for Persons Aged ≥65 Years

- All influenza vaccines currently available in the US, with the exception of the live attenuated influenza vaccine, are approved for ages ≥65 years.
  - Five standard-dose, unadjuvanted inactivated influenza vaccines (SD-IIVs).
  - One high-dose inactivated influenza vaccine (HD-IIV).
  - One adjuvanted inactivated influenza vaccine (aIIV).
  - One recombinant influenza vaccine (RIV).
- ACIP had previously expressed no preferential recommendation for any specific vaccine(s) for this age group.

Summary—Review of Influenza Vaccines for ≥65 Years

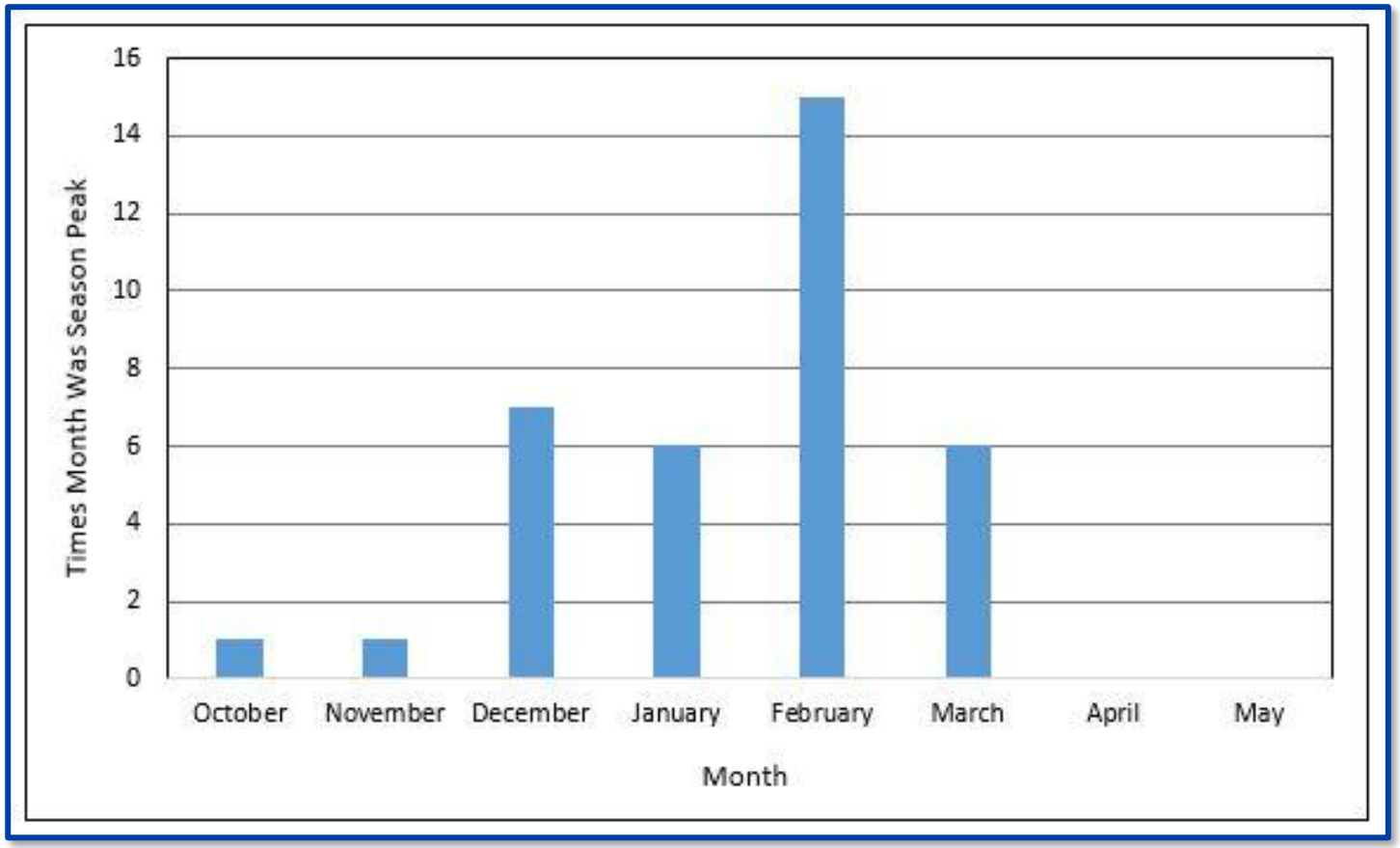
- Review of randomized and observational studies of HD-IIV, aIIV, and RIV compared with unadjuvanted SD-IIVs and with one another, focusing on persons aged ≥65 years.
- Overall, there is evidence of greater potential benefit HD-IIV, RIV, and aIIV over SD-IIVs.
  - Most evidence for HD-IIV3.
  - Less evidence for RIV and aIIV; no RCT including lab-confirmed outcomes for aIIV3.
  - Estimates of relative benefit of one vaccine over another vary with study/season.
- Few studies compare HD-IIV, RIV and aIIV with one another—insufficient to conclude that any one will be superior to the others across seasons.
- Limitations include:
  - Few randomized studies, covering few influenza seasons.
  - More data from observational studies, but most are retrospective cohort designs using diagnostic-code defined outcomes.
  - No data reflecting currently available formulations of HD-IIV and aIIV, which are now quadrivalents (HD-IIV4 and aIIV4).

Influenza Vaccination of Persons Aged ≥65 Years

"ACIP recommends that adults aged ≥65 years preferentially receive any one of the following higher dose or adjuvanted influenza vaccines: quadrivalent high-dose inactivated influenza vaccine (HD-IIV4), quadrivalent recombinant influenza vaccine (RIV4), or quadrivalent adjuvanted inactivated influenza vaccine (aIIV4). If none of these three vaccines is available at an opportunity for vaccine administration, then any other age-appropriate influenza vaccine should be used."

Timing of Influenza Seasons

- Timing of the onset and peak of influenza activity varies from season to season.
- Timing of activity onset can also vary geographically.
- In the United States, localized areas of increased activity occur as early as October.
- Over the 38 seasons between 1982-83 and 2019-20, peak activity occurred in:



- December 7 (18%) seasons
- January 6 (16%) seasons
- February 17 (45%) seasons
- March 6 (16%) seasons

https://www.cdc.gov/flu/about/season/flu-season.htm

Factors Relevant for Timing of Vaccination

- Declines in influenza vaccine effectiveness over the course of the season have been observed in many observational studies.
- Has been noted in some studies for all age groups.
  - Appears to be more pronounced among older adults.
  - Less evidence for waning among children.
- Might be more of an issue for H3N2 viruses.
- Other considerations related to timing:
  - Unpredictability of timing of onset and peak of the influenza season.
  - Avoiding missed opportunities to vaccinate.
  - Programmatic constraints.

Guidance for Timing of Vaccination

- For most people who need only 1 dose of influenza vaccine for the season, September and October are good times to get vaccinated.
- For most adults (especially aged 65 years) and pregnant persons in the first or second trimester, July and August should be avoided—unless there is concern later vaccination might not be possible
- Children who need 2 doses (those 6 months through 8 years who have never been vaccinated, who have not received ≥2 total doses, or whose vaccination history is unknown)—should receive first dose as soon as possible after vaccine is available.
- July and August vaccination can be considered for children who need only one dose and pregnant persons in third trimester during those months.
- Ideally, vaccination should be offered by the end of October, but—
- Vaccination of those not yet vaccinated for the season should continue after October, throughout the season, as long as influenza viruses are circulating and unexpired vaccine is available.

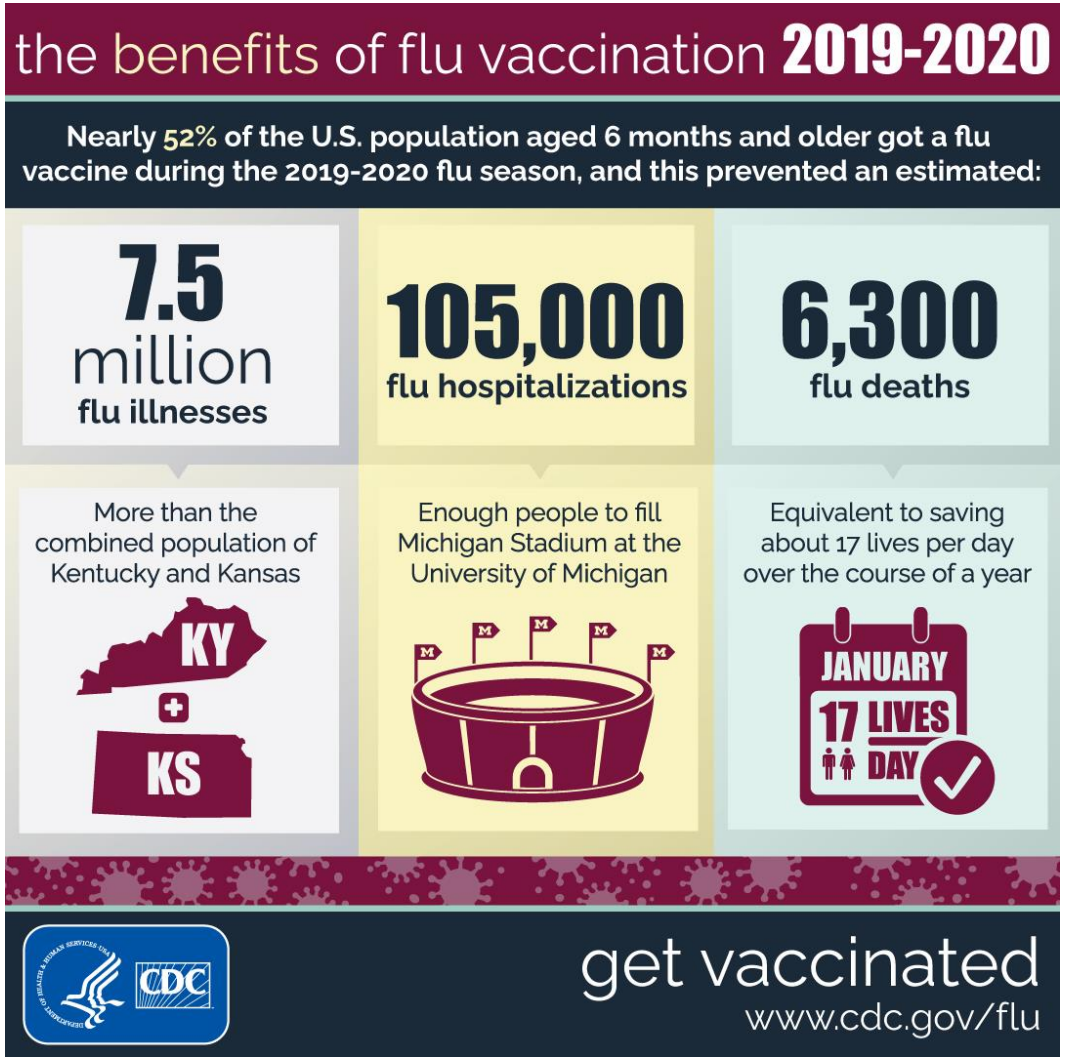
Estimated Benefits of Influenza Vaccination

- Vaccine effectiveness varies, affected by:
  - Season/predominant viruses.
  - Degree of match between circulating and vaccine viruses.
  - Age and immunity of the recipient.
- In a season during which most circulating viruses are similar to those represented in the vaccine, can expect 40%-60% effectiveness overall.
  - Generally better for older children and younger adults vs older adults.
  - Generally better for influenza A(H1N1) and influenza B viruses than for influenza A(H3N2) viruses.
  - But, vaccination still provides important benefits even in a season of low overall effectiveness.

https://www.cdc.gov/flu/resource-center/freeresources/graphics/flu-vaccine-protected-infographic.htm

Estimated Benefits of Influenza Vaccination—2019-20 Season

- CDC provides estimates of overall influenza burden and vaccine effectiveness after each season.
- Estimated vaccine effectiveness for 2019-20:
  - 39% overall
- Estimated burden averted through vaccination
  - 7.5 million illnesses
  - 105,000 hospitalizations
  - 6,300 deaths



https://www.cdc.gov/flu/resource-center/freeresources/graphics/flu-vaccine-protected-infographic.htm

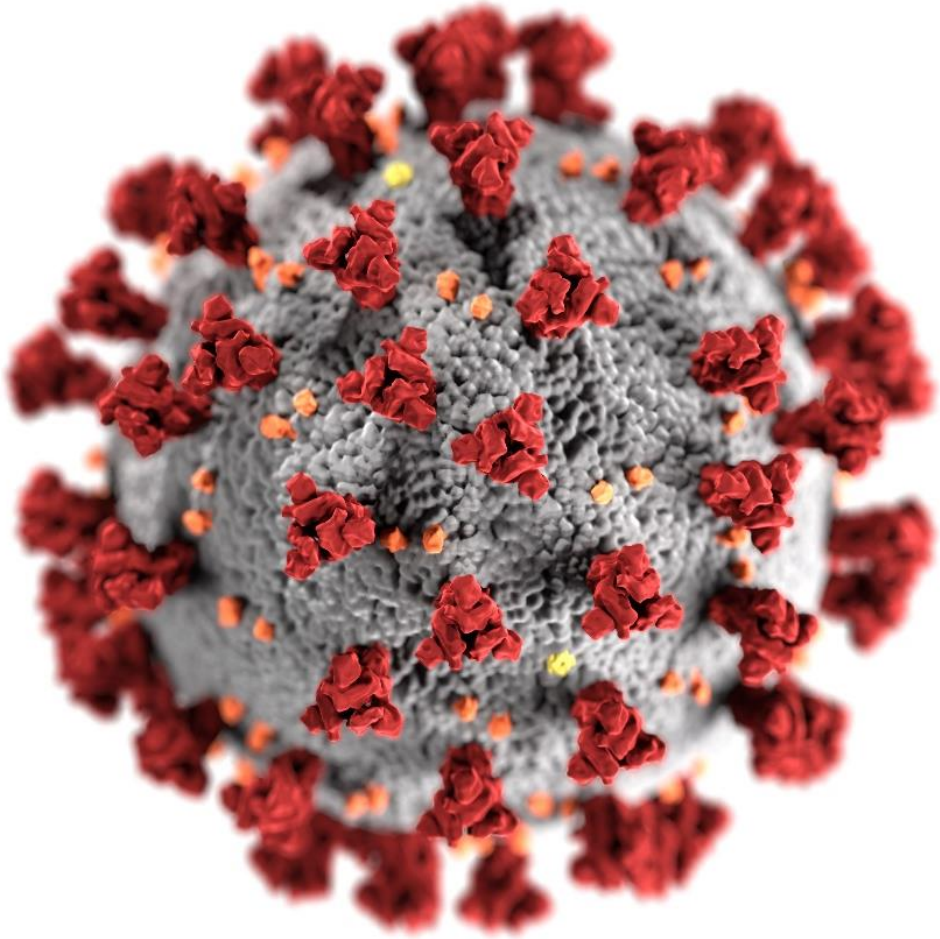
Lisa Grohskopf
Influenza Division, NCIRD, CDC
Lgrohskopf@cdc.gov

Thank you!

Coadministration of COVID-19 Vaccines and Seasonal Influenza Vaccine

Evelyn Twentyman, MD, MPH

COVID-19 Vaccine Policy Unit Lead



cdc.gov/coronavirus

Coadministration of COVID-19 Vaccines with Other Vaccines

- Routine administration of all age-appropriate doses of vaccines simultaneously is recommended as best practice for people for whom no specific contraindications exist at the time of the healthcare visit.

- Extensive experience with non-COVID 19 vaccines has demonstrated that immunogenicity and adverse event profiles are generally similar when vaccines are administered simultaneously as when they are administered alone.

- **Providers should offer all vaccines for which a person is eligible at the same visit.**

Coadministration of Influenza with COVID-19 Vaccines

- Providers should offer influenza and COVID-19 vaccines at the same visit, if eligible.
  - This includes adjuvanted or high-dose influenza vaccines; administer in separate limbs.

- With both influenza and SARS-CoV-2 circulating, getting **both vaccines** is important for prevention of severe disease, hospitalization, and death.

- Getting both vaccines at the same visit increases the chance that a person will be up to date with their vaccinations.

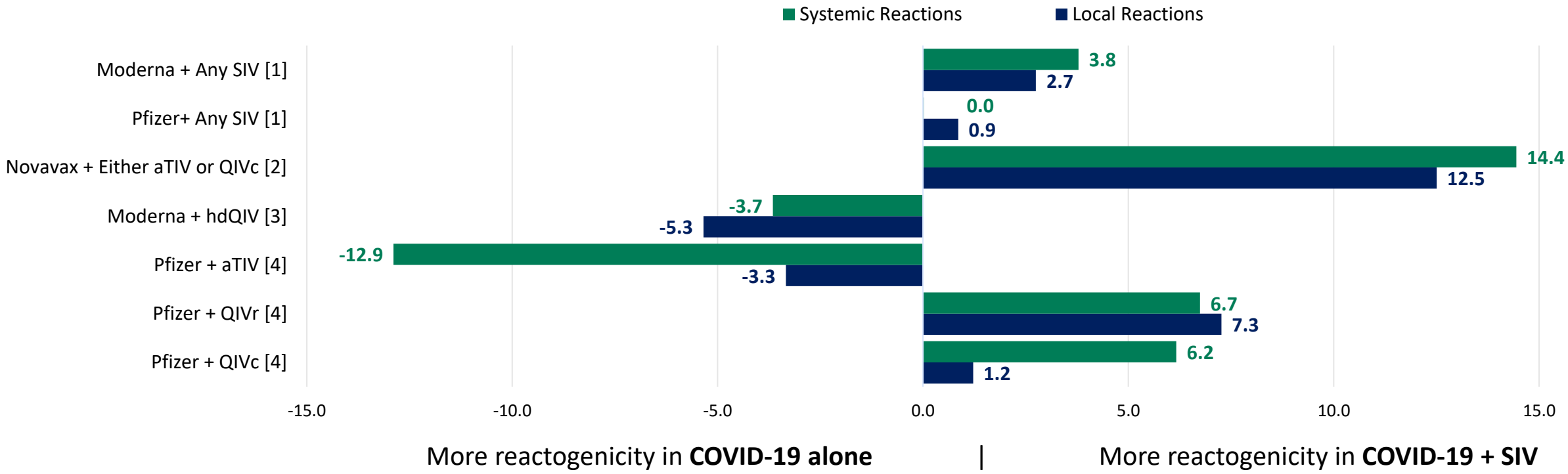
Coadministration of Influenza and COVID-19 Vaccines

- Studies looking at coadministration have shown that **immunogenicity is similar** between those who received coadministered COVID-19 vaccine and seasonal influenza vaccine (SIV) and those who received these vaccines seperately[2-4]
- 9.4% (~92,000) v-safe participants reported simultaneous vaccination with an mRNA COVID-19 vaccine and SIV[5]
- 8.7% (~454,000) of persons enrolled in the Vaccine Safety Datalink (VSD) received simultaneous vaccination with a COVID-19 booster and SIV during the 2021-2022 influenza season

1. https://www.cdc.gov/vaccines/covid-19/downloads/summary-interim-clinical-considerations.pdf
2. Lazarus R, Baos S, Cappel-Porter H, et al. Safety and immunogenicity of concomitant administration of COVID-19 vaccines (ChAdOx1 or BNT162b2) with seasonal influenza vaccines in adults in the UK (ComFluCOV): A multicentre, randomised, controlled, phase 4 trial. Lancet 2021, 398, 2277–2287.
3. Izikson R, Brune D, Bolduc JS, et al. Safety and immunogenicity of a high-dose quadrivalent influenza vaccine administered concomitantly with a third dose of the mRNA-1273 SARS-CoV-2 vaccine in adults aged ≥65 years: A phase 2, randomised, open-label study. Lancet Respir. Med. 2022.
4. Toback S, Galiza E, Cosgrove C, et al. Safety, immunogenicity, and efficacy of a COVID-19 vaccine (NVX-CoV2373) co-administered with seasonal influenza vaccines: An exploratory substudy of a randomised, observer-blinded, placebo-controlled, phase 3 trial. Lancet Respir. Med. 2021,10, 167–179.
5. Hause AM, Zhang B, Yue X, et al. Reactogenicity of Simultaneous COVID-19 mRNA Booster and Influenza Vaccination in the US. JAMA Netw Open. 2022;5(7):e2222241. Domnich A, Grassi R, Fallani E, Ciccone R, Bruzzone B, Panatto D, Ferrari A, Salvatore M, Cambiaggi M, Vasco A, Orsi A, Icardi G. Acceptance of COVID-19 and Influenza Vaccine Co-Administration: Insights from a Representative Italian Survey. Journal of Personalized Medicine. 2022; 12(2):139.

Reactogenicity of Coadministered COVID-19 Vaccine and SIV

Percent difference in participants reporting reactogenicity between COVID-19 + SIV vs COVID-19 alone



SIV: seasonal influenza vaccine; aTIV: adjuvanted trivalent influenza vaccine; QIVc: quadrivalent influenza cell-based vaccine; hdQIVc: high-dose quadrivalent influenza vaccine; QIVr recombinant quadrivalent vaccine

1. Hause AM, Zhang B, Yue X, et al. Reactogenicity of Simultaneous COVID-19 mRNA Booster and Influenza Vaccination in the US. JAMA Netw Open. 2022;5(7):e2222241.
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Reactogenicity of Coadministered COVID-19 Vaccine and SIV

- Generally, COVID-19 vaccines administered with seasonal influenza vaccine (SIV) **showed similar or slightly higher reactogenicity**, however **no specific safety concerns were identified.**

1. Hause AM, Zhang B, Yue X, et al. Reactogenicity of Simultaneous COVID-19 mRNA Booster and Influenza Vaccination in the US. JAMA Netw Open. 2022;5(7):e2222241.
2. Toback S, Galiza E, Cosgrove C, et al. Safety, immunogenicity, and efficacy of a COVID-19 vaccine (NVX-CoV2373) co-administered with seasonal influenza vaccines: An exploratory substudy of a randomised, observer-blinded, placebo-controlled, phase 3 trial. Lancet Respir. Med. 2021,10, 167–179.
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Self-knowledge Check

The following is **true** regarding coadministration of influenza and COVID-19 vaccines:

A. Providers should offer influenza and COVID-19 vaccines at the same visit, if eligible
B. When administering COVID-19 and influenza vaccines, adjuvanted or high-dose influenza vaccines should be administered in separate limbs
C. Getting both vaccines at the same visit increases the chance that a person will be up to date with their vaccinations
D. A and B only
E. A, B, and C

Self-knowledge Check

The correct answer is E

With both influenza and SARS-CoV-2 circulating, getting **both vaccines** is important for prevention of severe disease, hospitalization, and death. Routine administration of all age-appropriate doses of vaccines simultaneously is recommended as best practice for people for whom no specific contraindications exist at the time of the healthcare visit.

To Ask a Question

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- If you are a member of the media, please direct your questions to CDC Media Relations at 404-639-3286 or email media@cdc.gov

Continuing Education

- All continuing education for COCA Calls is issued online through the CDC Training & Continuing Education Online system at https://tceols.cdc.gov/.

- Those who participate in today's COCA Call and wish to receive continuing education please complete the online evaluation by **October 10, 2022,** with the course code **WC4520-090822**. The access code is **COCA090822.**

- Those who will participate in the on-demand activity and wish to receive continuing education should complete the online evaluation between **October 11, 2022,** and **October 11, 2024,** and use course code **WD4520-090822.** The access code is **COCA090822.**

- Continuing education certificates can be printed immediately upon completion of your online evaluation. A cumulative transcript of all CDC/ATSDR CEs obtained through the CDC Training & Continuing Education Online System will be maintained for each user.

Today's COCA Call Will Be Available to View On-Demand

- **When:** A few hours after the live call ends*
- **What:** Video recording
- **Where:** On the COCA Call webpage https://emergency.cdc.gov/coca/calls/2022/callinfo_090822.asp
- **Sign up to receive future COCA Call Announcements and other timely information:** https://emergency.cdc.gov/coca/subscribe.asp

**A transcript and closed-captioned video will be available shortly after the original video recording posts at the above link.*

Upcoming COCA Call & Additional Resources

- Next COCA Call
  - Day/Date: Tuesday, September 13, 2022
  - Time: 2:00 – 3:00 PM ET
  - Topic: Recommendations for Bivalent COVID-19 Booster Doses in People Ages 12 Years and Older

- Continue to visit https://emergency.cdc.gov/coca/ to get more details about upcoming COCA Calls.

- Subscribe to receive notifications about upcoming COCA calls and other COCA products and services at emergency.cdc.gov/coca/subscribe.asp.

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