



INFLUENZA VACCINE 2021-2022

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DISCLOSURES



LIVE WELL
SAN DIEGO

- I have no financial disclosures to make related to this presentation
- My family and I are fully immunized
- I get my flu shot on October 31

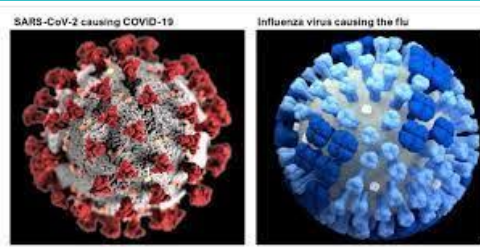
OBJECTIVES



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- Explain why influenza vaccine is especially important this year so that you promote it aggressively
- List the new things in this year's CDC Influenza recommendations so that you can use the vaccines correctly
- Explain who is NOT getting an influenza vaccine so that you are on the lookout for them

SIBLINGS



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Influenza	Sars-CoV-2/COVID
Respiratory virus spread by droplets	Respiratory virus spread by droplets and aerosols
Most infected people don't get severely ill	Most infected people don't get severely ill and many don't have any symptoms at all
Occurs primarily in the winter	Occurs year-round
Causes 12-60,000 deaths in the US every year	So far has caused >650,000 deaths in the U.S.
Can be treated with antiviral medications	Can be treated with monoclonal antibodies
We have several vaccines with 40-60% effectiveness	We have several vaccines with 60-85% effectiveness
We vaccinate everyone 6 months and older	We vaccinate everyone 12 years and older
About 30% of people don't get vaccinated	About 40% of people haven't gotten vaccinated

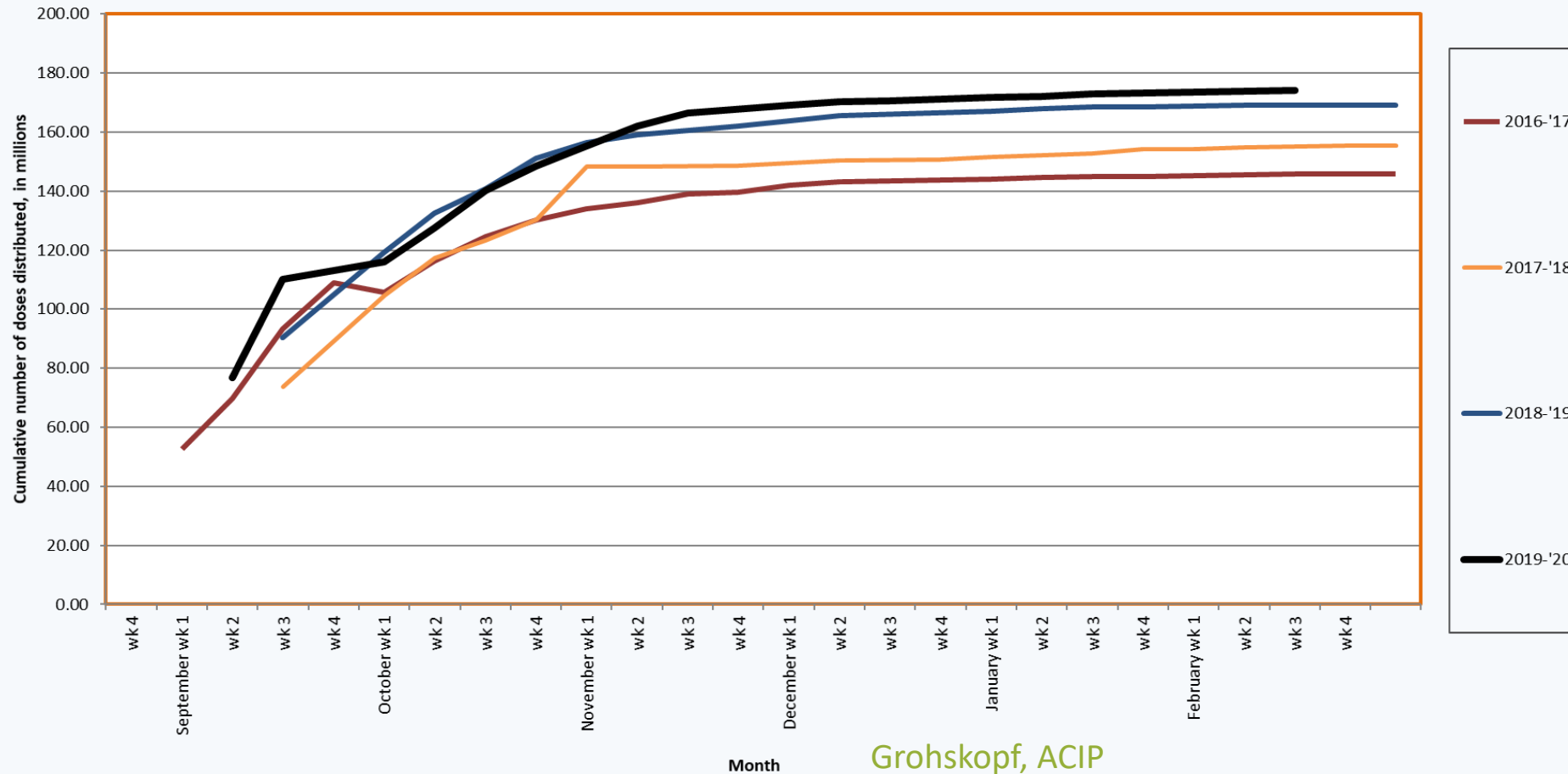


- All Influenza vaccines are now quadrivalent containing 2 influenza A strains and 2 influenza B strains
- This year's vaccine is different than last years with changes to the influenza A (H1N1) and A (H3N2) components
- cclIV4 (cell culture based vaccine) can now be used down to the age of 2 years
- Coadministration of influenza vaccine with other vaccines allowed but there are some guidelines
- Don't immunize in July or August except for pregnant women in their 3rd trimester of pregnancy and children under 9 getting their first of two doses

NOW IS THE TIME-IT'S INFLUENZA VACCINE SEASON

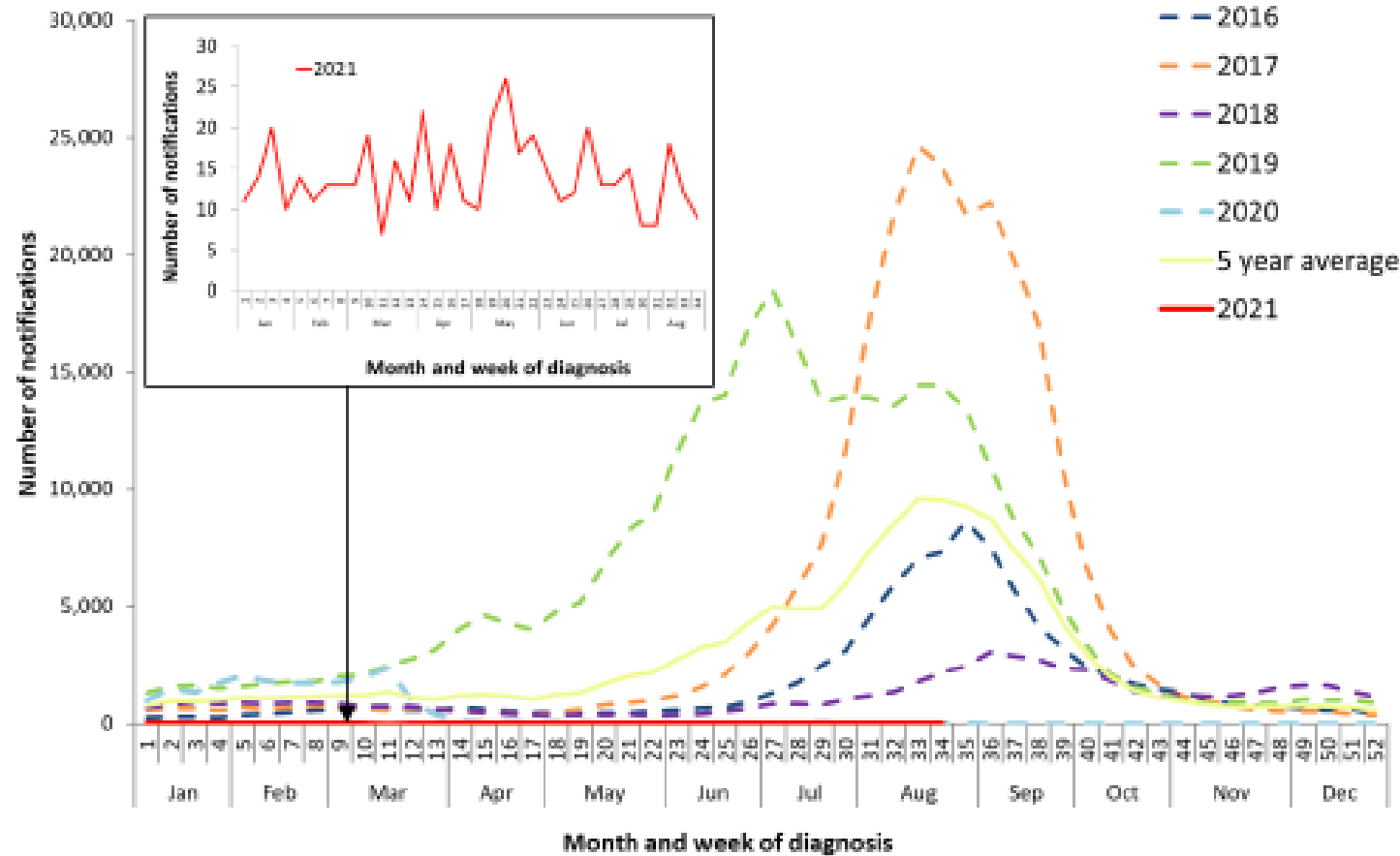


Cumulative doses of influenza vaccines distributed by month, by season:
2016-'17 - 2019-'20



Grohskopf, ACIP
presentation 2020

WILL INFLUENZA HAPPEN THIS WINTER?



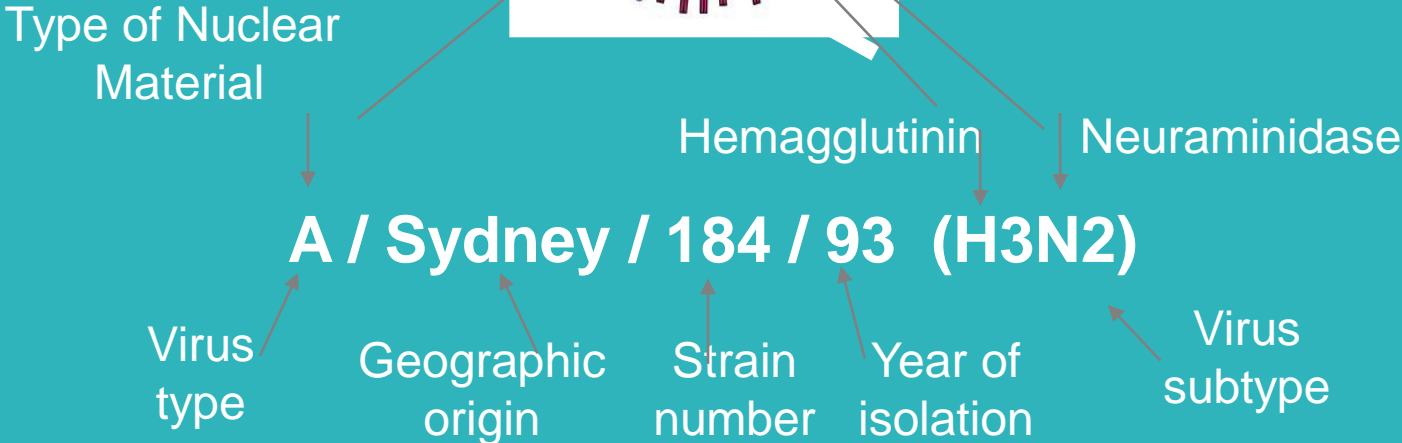
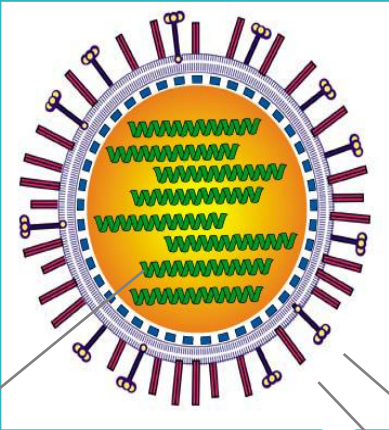
Australia in 2021

https://www.who.int/docs/default-source/wpro---documents/emergency/surveillance/seasonal-influenza/influenza-20210728.pdf?sfvrsn=39dcc97a_74



- **More important than ever**
 - So we don't overburden the healthcare resources
 - Because symptoms of influenza are identical with those of COVID so you will run the risk of quarantine if you get influenza
 - Because co-infection with influenza and Sars-CoV-2 is possible and may be very severe
- **May be challenging to give along with COVID vaccine**
 - Multiple mass vaccination events
 - Tracking which vaccines have been given
- **Difficult to judge demand**
 - Hopefully demand will be high for the reasons above
 - Some people may decide their risk of getting influenza is lower than usual because "everyone" is wearing a mask

INFLUENZA VIRUS NOMENCLATURE



1. CDC. Atkinson W, et al. Chapter 13: Influenza. In: Epidemiology and Prevention of Vaccine-Preventable Diseases, 4th ed. Department of Health and Human Services, Public Health Service, 1998, 220

UPDATE

2021-2022 INFLUENZA VACCINE STRAINS



Slightly different composition between the egg-based vaccines and the cell- or recombinant-based vaccines

For the egg based vaccines:

- A/Victoria/2570/2019 (H1N1)pdm09
- A/Cambodia/e0826360/2020 (H3N2)
- B/Washington/2019/(B/Victoria lineage)
- B/Phuket/2013 (Yamagata lineage)



2 of the 4
strains are
new this
year!

VARIATION IN INFLUENZA VACCINE EFFECTIVENESS



Table. Adjusted vaccine effectiveness estimates for influenza seasons from 2005-2016

Influenza Season ¹	Reference	Study Site(s)	No. of Patients ^a	Adjusted Overall VE (%)	95% CI
2004-05	Belongia 2009	WI	762	10	-36, 40
2005-06	Belongia 2009	WI	346	21	-52, 59
2006-07	Belongia 2009	WI	871	52	22, 70
2007-08	Belongia 2011	WI	1914	37	22, 49
2009-10	Griffin 2011	WI, MI, NY, TN	6757	56	23, 75
2010-11	Treanor 2011	WI, MI, NY, TN	4757	60	53, 66
2011-12	Ohmit 2014	WI, MI, PA, TX, WA	4771	47	36, 56
2012-13	McLean 2014	WI, MI, PA, TX, WA	6452	49	43, 55
2013-14	Unpublished	WI, MI, PA, TX, WA	5990	51	43, 58
2014-15	ACIP presentation, Flannery	WI, MI, PA, TX, WA	9329	23	14, 31
2015-16 [*]	ACIP presentation, Flannery	WI, MI, PA, TX, WA	7563	47 [*]	39, 53 [*]

<https://www.cdc.gov/flu/professionals/vaccination/effectiveness-studies.htm>

^{*}Estimate from Nov 2, 2015 - April 15, 2016

UPDATE EFFECTIVENESS FOR WHAT?



- 45% effective for prevention of an illness that brings you to the clinic and you need an influenza test
- More effective for preventing hospitalization
- Even more effective for preventing death





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Can you give the influenza
vaccine too early?



Table 4. Summary of Findings

Outcome	Participants, No. (Studies)	Studies, No.	Evidence Certainty ^a	Δ VE (95% CI)	VE (95% CI), by Time After Vaccination	
					15–90 d	91–180 d
Influenza A(H3)	10 736 cases, 27 689 controls	11	Moderate	-33 (-57 to -12)	45 (34 to 54)	13 (-10 to 31)
Influenza B	6424 cases, 17 877 controls	6	Low	-19 (-33 to -6)	62 (52 to 70)	43 (33 to 52)
Influenza A(H1)	5148 cases, 17 044 controls	5	Low	-8 (-27 to 21)	62 (35 to 78)	54 (43 to 63)

Aggregate odds ratios from the meta-analysis in [Figure 2](#) were converted to VE values, stratified by influenza virus type/subtype and time since vaccination, with bootstrapped estimates used for Δ VE.

Abbreviations: CI, confidence interval; VE, vaccine effectiveness.

^aBased on the Grading of Recommendations Assessment, Development and Evaluation.

WHEN TO GIVE INFLUENZA VACCINE



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- The goal is to immunize everyone by November 1
- Immunize children who need 2 doses of vaccine as soon as you can
- Immunize anyone who may not be back/come back by November 1
- Otherwise wait until September
- No recommendation for a second dose half-way through the season

INFLUENZA-WHO DO WE WORRY ABOUT THE MOST?



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■ HIGH RISK CONDITIONS

- Children under 5 years
- Pregnant women
- Adults over 50 years
- Everyone with chronic lung, heart, kidney, liver, neurologic diseases
- Residents of long-term care facilities
- Immunocompromised people
- American Indian/Alaskan Natives
- Persons with extreme obesity
- Children on chronic aspirin

WHO ELSE IS VERY IMPORTANT TO IMMUNIZE?



- People who care for the high-risk groups
 - Household contacts
 - Other caregivers
- Health care personnel



2020-2021 INFLUENZA VACCINE PRODUCTS



TABLE 1. Influenza vaccines — United States, 2021–22 influenza season*

Trade name (manufacturer)	Presentations	Age indication	µg HA (IIV4s and RIV4) or virus count (LAIV4) for each vaccine virus (per dose)	Route	Mercury (from thimerosal, if present), µg/0.5 mL
IIV4 (standard-dose, egg-based vaccines†)					
Afluria Quadrivalent (Seqirus)	0.25-mL PFS [§]	6 through 35 mos [§]	7.5 µg/0.25 mL	IM [¶]	—
	0.5-mL PFS [§]	≥3 yrs [§]	15 µg/0.5 mL	IM [¶]	—
	5.0-mL MDV [§]	≥6 mos [§] (needle/syringe) 18 through 64 yrs (jet injector)	15 µg/0.5 mL	IM [¶]	24.5
Fluarix Quadrivalent (GlaxoSmithKline)	0.5-mL PFS	≥6 mos	15 µg/0.5 mL	IM [¶]	—
FluLaval Quadrivalent (GlaxoSmithKline)	0.5-mL PFS	≥6 mos	15 µg/0.5 mL	IM [¶]	—
Fluzone Quadrivalent (Sanofi Pasteur)	0.5-mL PFS ^{**}	≥6 mos ^{**}	15 µg/0.5 mL	IM [¶]	—
	0.5-mL SDV ^{**}	>6 mos ^{**}	15 µg/0.5 mL	IM [¶]	—
	5.0-mL MDV ^{**}	≥6 mos ^{**}	15 µg/0.5 mL 7.5 µg/0.25 mL	IM [¶]	25

2021-2022 INFLUENZA VACCINE PRODUCTS



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cclIV4 (standard-dose, cell culture–based vaccine)					
Flucelvax Quadrivalent (Seqirus)	0.5-mL PFS	>2 yrs	15 µg/0.5 mL	IM [¶]	—
	5.0-mL MDV	≥2 yrs	15 µg/0.5 mL	IM [¶]	25
HD-IIV4 (high-dose, egg-based vaccine[†])					
Fluzone High-Dose Quadrivalent (Sanofi Pasteur)	0.7-mL PFS	≥65 yrs	60 µg/0.7 mL	IM [¶]	—
aIIV4 (standard-dose, egg-based[†] vaccine with MF59 adjuvant)					
Fluad Quadrivalent (Seqirus)	0.5-mL PFS	≥65 yrs	15 µg/0.5 mL	IM [¶]	—
RIV4 (recombinant HA vaccine)					
Flublok Quadrivalent (Sanofi Pasteur)	0.5-mL PFS	≥18 yrs	45 µg/0.5 mL	IM [¶]	—
LAIV4 (egg-based vaccine[†])					
FluMist Quadrivalent (AstraZeneca)	0.2-mL prefilled single-use intranasal sprayer	2 through 49 yrs	10 ^{6.5–7.5} fluorescent focus units/0.2 mL	NAS	—



TABLE 4. Dose volumes for inactivated influenza vaccines approved for children aged 6 through 35 months* — United States, 2021–22 influenza season

Trade name (Manufacturer)	Dose volume for children aged 6 through 35 mos (μg HA per vaccine virus)
Afluria Quadrivalent (Seqirus)	0.25 mL (7.5 μg)
Fluarix Quadrivalent (GlaxoSmithKline)	0.5 mL (15 μg)
FluLaval Quadrivalent (GlaxoSmithKline)	0.5 mL (15 μg)
Fluzone Quadrivalent (Sanofi Pasteur)	0.25 mL (7.5 μg) or 0.5 mL (15 μg) [†]
Flucelvax Quadrivalent (Seqirus) (ages ≥ 2 yrs only; not approved for ages 6 through 23 mos) [§]	0.5 mL (15 μg) [§]



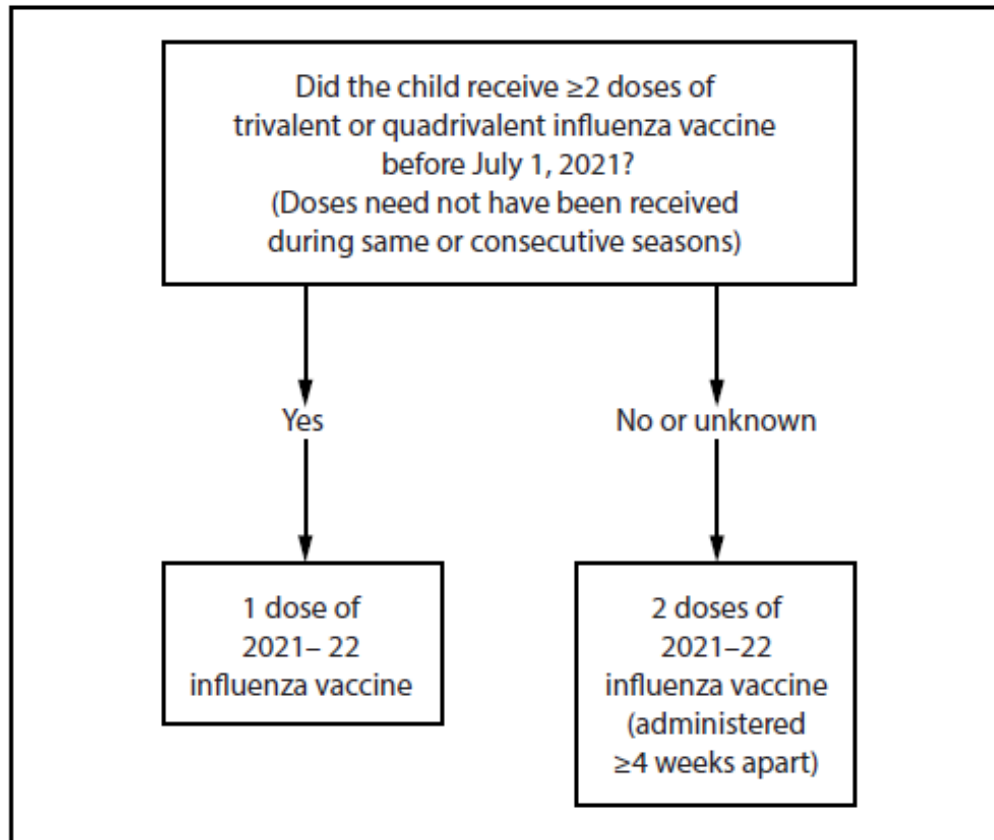
TABLE 3. Influenza vaccine contraindications and precautions for persons with a history of severe allergic reaction to a previous dose of an influenza vaccine* — United States, 2021–22 influenza season

Vaccine (of any valency) associated with previous severe allergic reaction (e.g., anaphylaxis)	Available 2021–22 influenza vaccines		
	Egg-based IIV4s and LAIV4	cIIV4	RIV4
Any egg-based IIV or LAIV	Contraindication [†]	Precaution [§]	Precaution [§]
Any cIIV	Contraindication [†]	Contraindication [†]	Precaution [§]
Any RIV	Contraindication [†]	Precaution [§]	Contraindication [†]
Unknown influenza vaccine	Allergist consultation recommended		

TWO DOSES OF INFLUENZA VACCINE FOR YOUNG CHILDREN-UPDATE



FIGURE. Influenza vaccine dosing algorithm for children aged 6 months through 8 years* — Advisory Committee on Immunization Practices, United States, 2021–22 influenza season



One dose of vaccine in this population provides very little protection!

MMWR Recomm Rep 2021;70(No. RR-5):1–28

* 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.

UPDATE VACCINES FOR OLDER (≥ 65 YEARS) ADULTS



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- High dose IIV4 (HD-IIV4)
- Recombinant IIV4 (RIV)
- Adjuvanted IIV4 (aIIV4)
- Probably all work better than other IIV vaccines
 - HD-IIV3 24% more effective
 - RIV 17-30% more effective
 - aIIV3 ??63% more effective

No preference for these vaccines stated by CDC

CDC, MMWR 2020;69(8)

WHO SHOULD GET A FLU VACCINE?

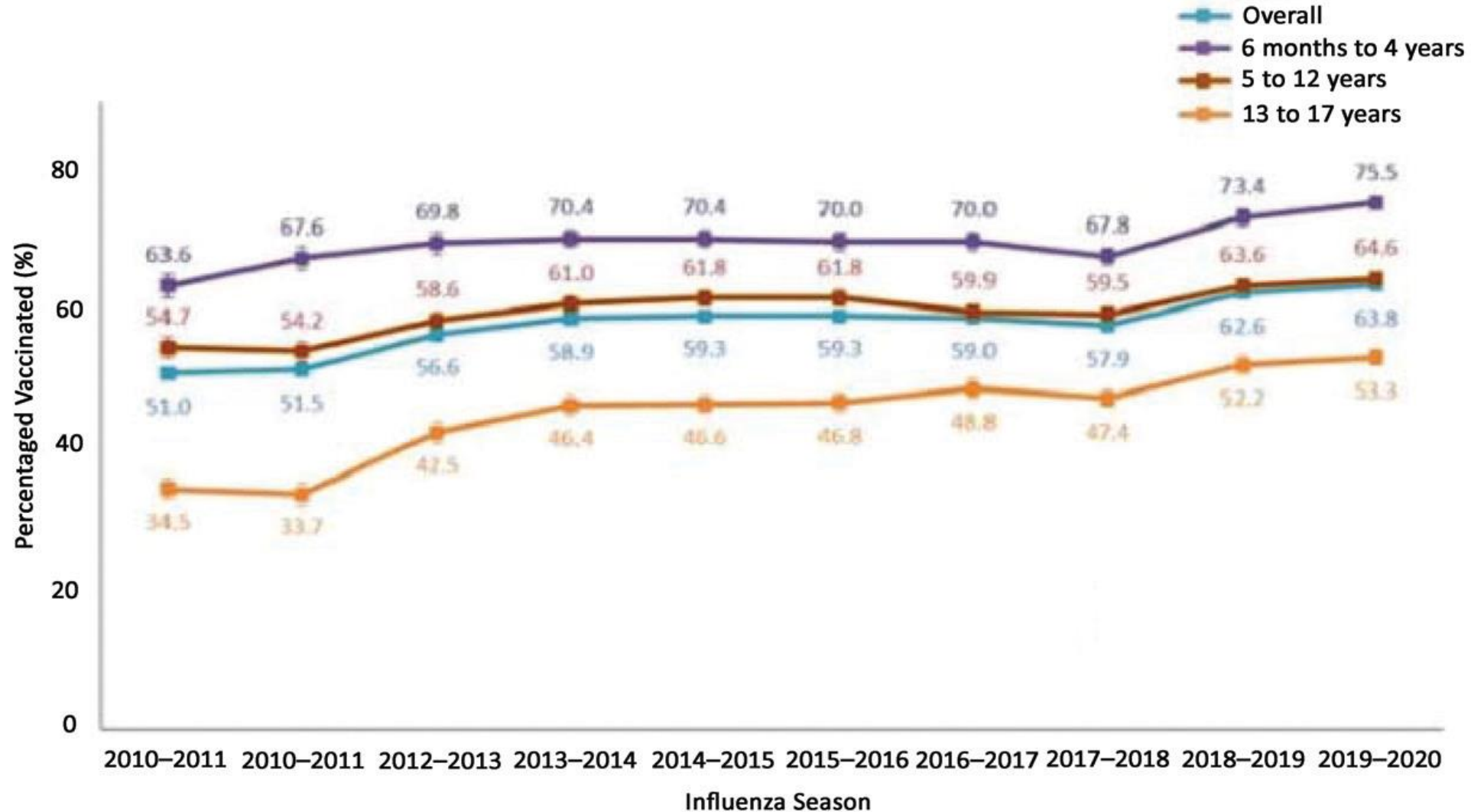


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- Everyone 6 months of age and older!



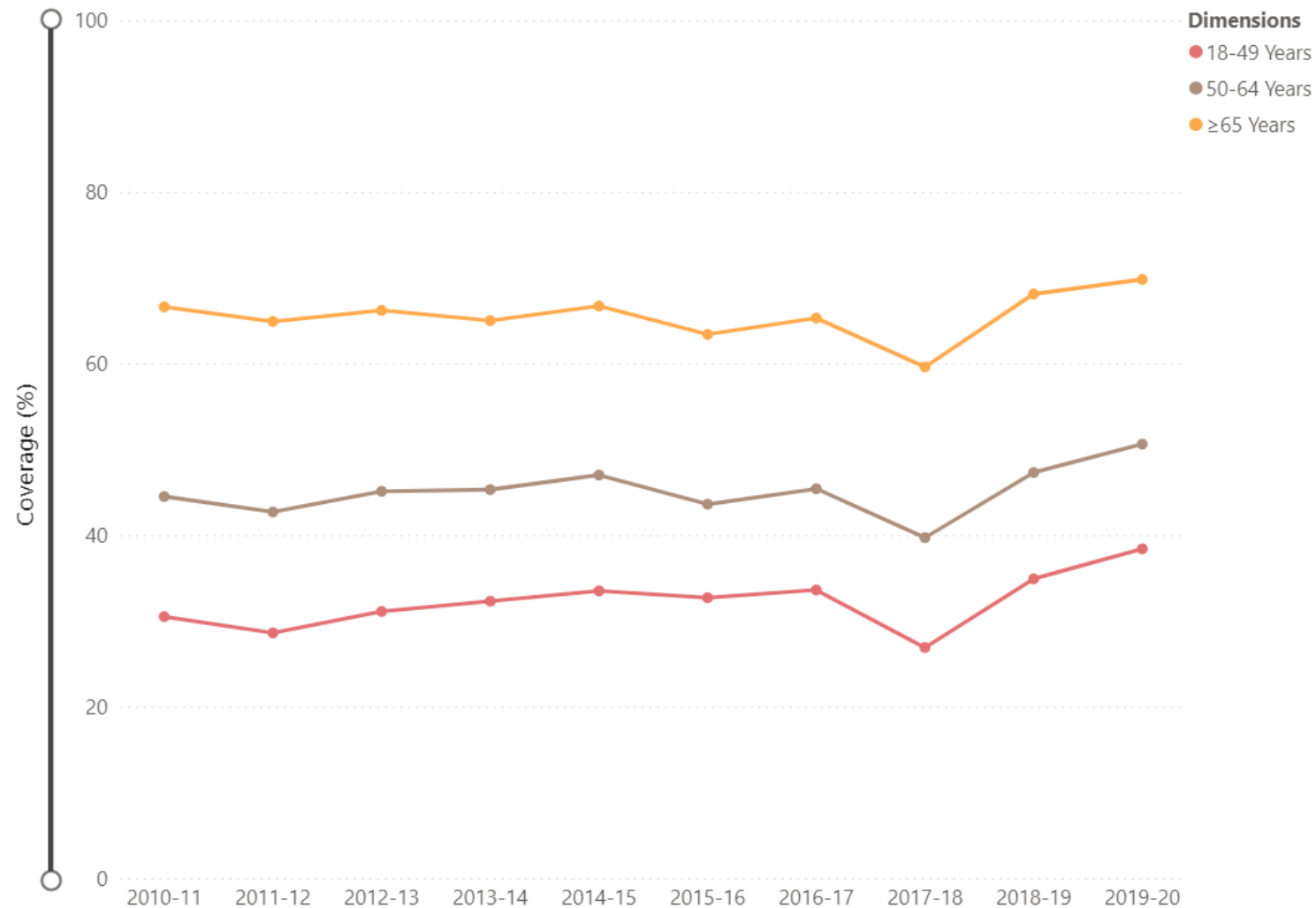
INFLUENZA VACCINE COVERAGE-CHILDREN



UPDATE INFLUENZA VACCINE COVERAGE -ADULTS



End-of-Season Influenza Vaccination Coverage by Season, United States



<https://www.cdc.gov/flu/fluview/interactive-general-population.htm>

WHERE TO GO FOR MORE INFORMATION



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- San Diego HHSA Immunization Branch (SDIZ.org)
- California Department of Public Health (www.cdph.ca.gov)
- CDC (cdc.gov/vaccines)