

2018-19 Influenza Season Review and 2019-20 ACIP Influenza Vaccination Update,

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Current Issues in Immunization Net Conference

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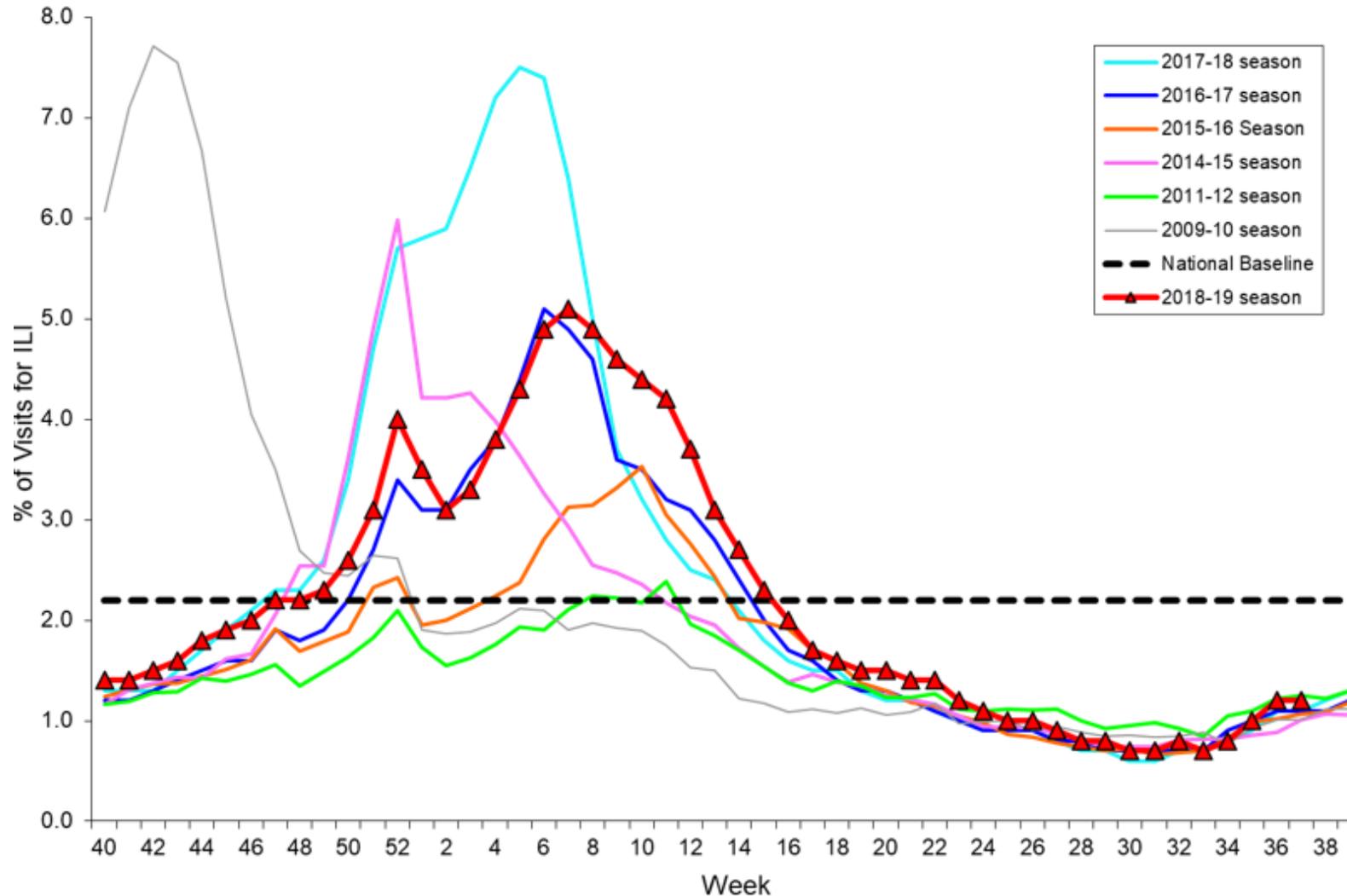
2018-19 Influenza Season Review

A Review of Last Season (2018-19)

- Moderate severity season
 - Compared to the relatively severe 2017-18 season, influenza-related hospitalization rates lower for adults; similar for children
- Activity began increasing in November, peaked in mid-February
 - ILI above baseline for 21 weeks--longest season in 10 years
- Two waves of influenza A activity of similar magnitude (very little influenza B)
 - A(H1N1)pdm09: October 2018 to mid-February 2019
 - A(H3N2): since mid-February 2019
- Genetic diversity among H3N2 viruses; most were antigenically different from the H3N2 vaccine component

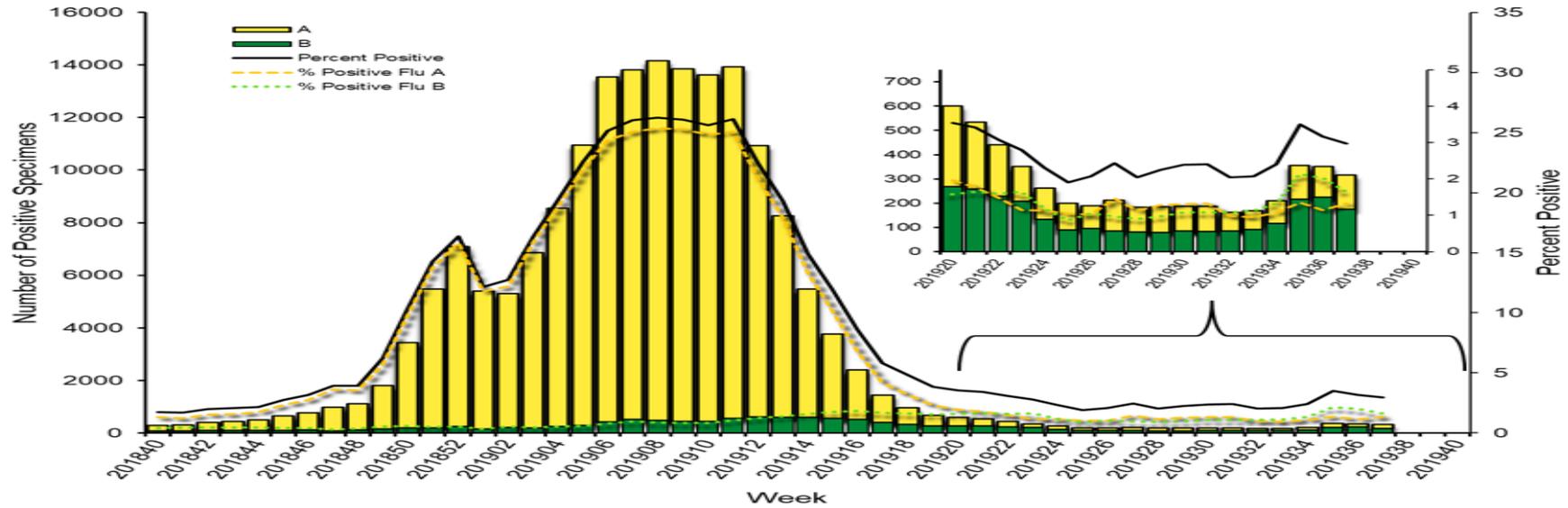
Percentage of Visits for Influenza-like Illness

Weekly National Summary, 2018-19 & Selected Previous Seasons

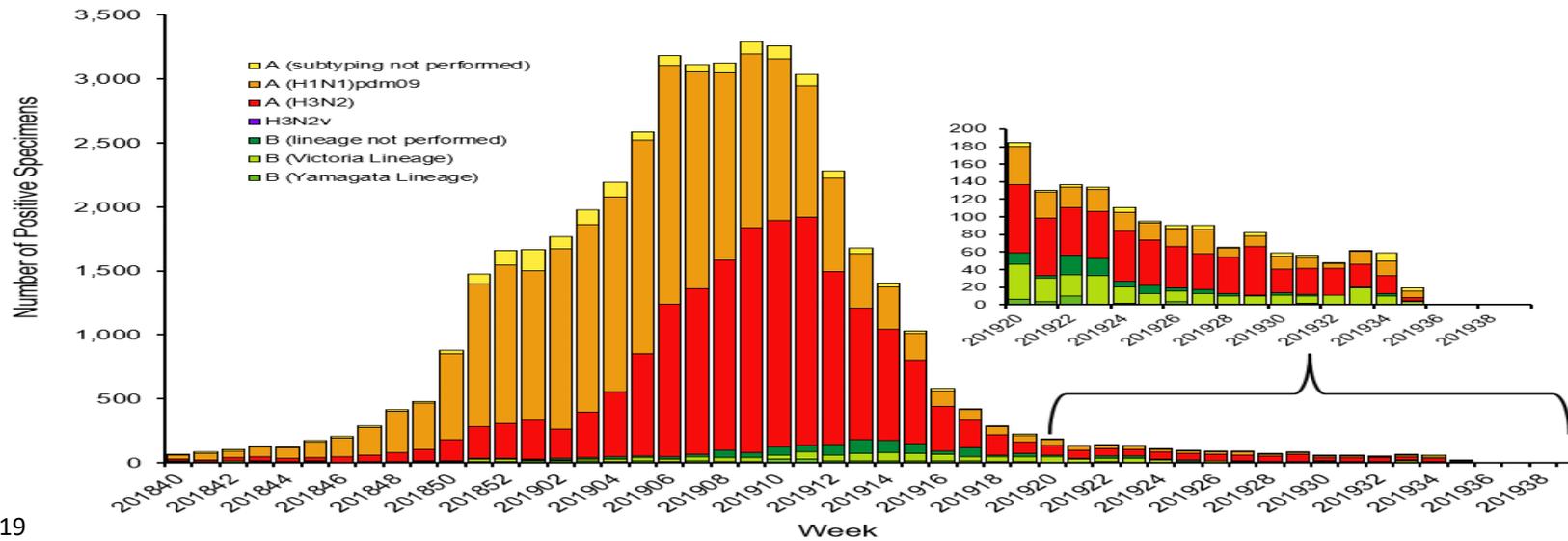


Influenza Positive Tests Reported to CDC by U.S. Clinical and Public Health Laboratories, 2018-19 Season

Clinical Laboratories

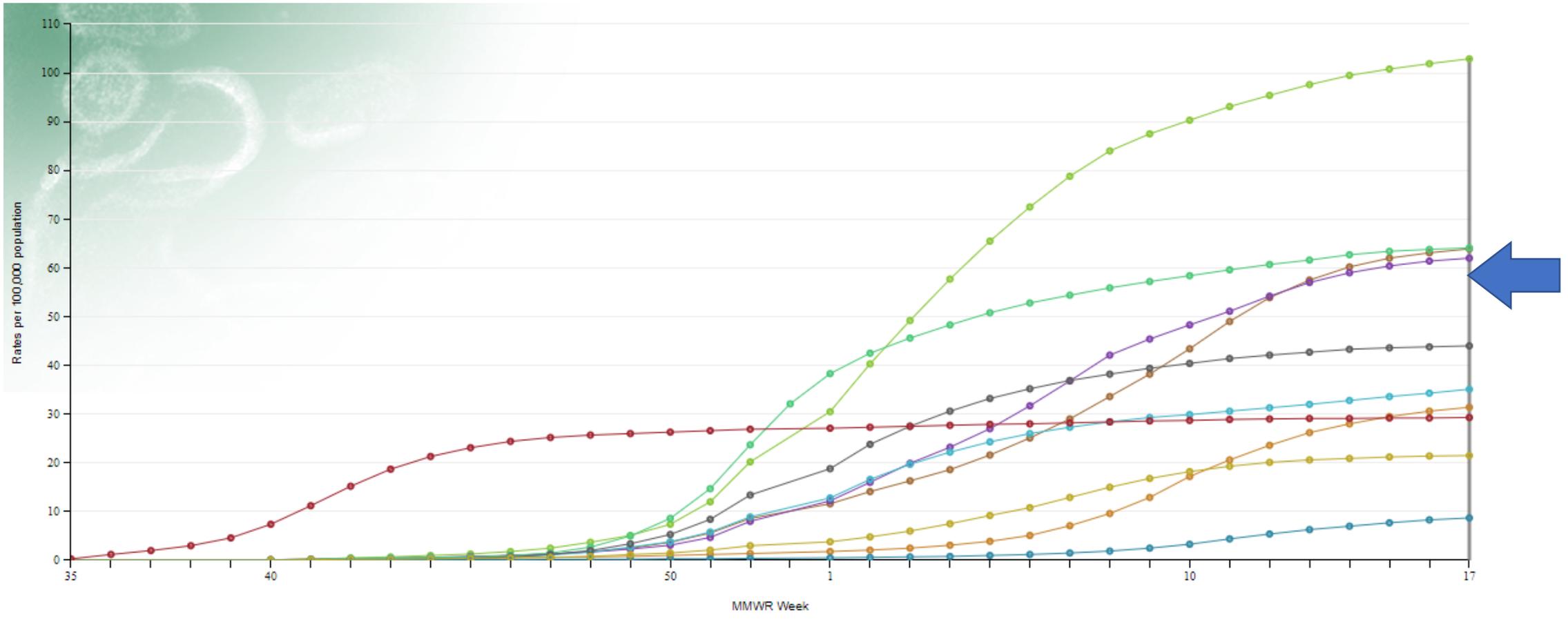


Public Health Laboratories



Data as of week 37, ending September 14, 2019

Laboratory-Confirmed Influenza-Associated Hospitalizations, Cumulative Rate, 2009-10 through 2018-19



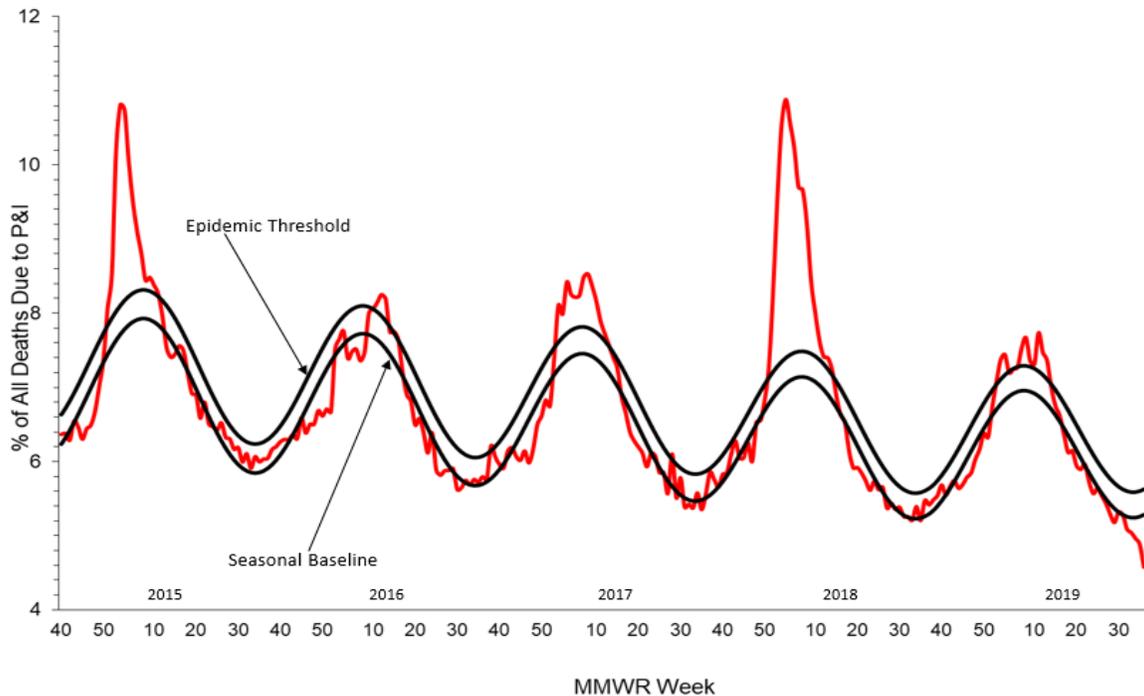
Age group: Overall, Week: 17

Rates per 100,000 by Age Group

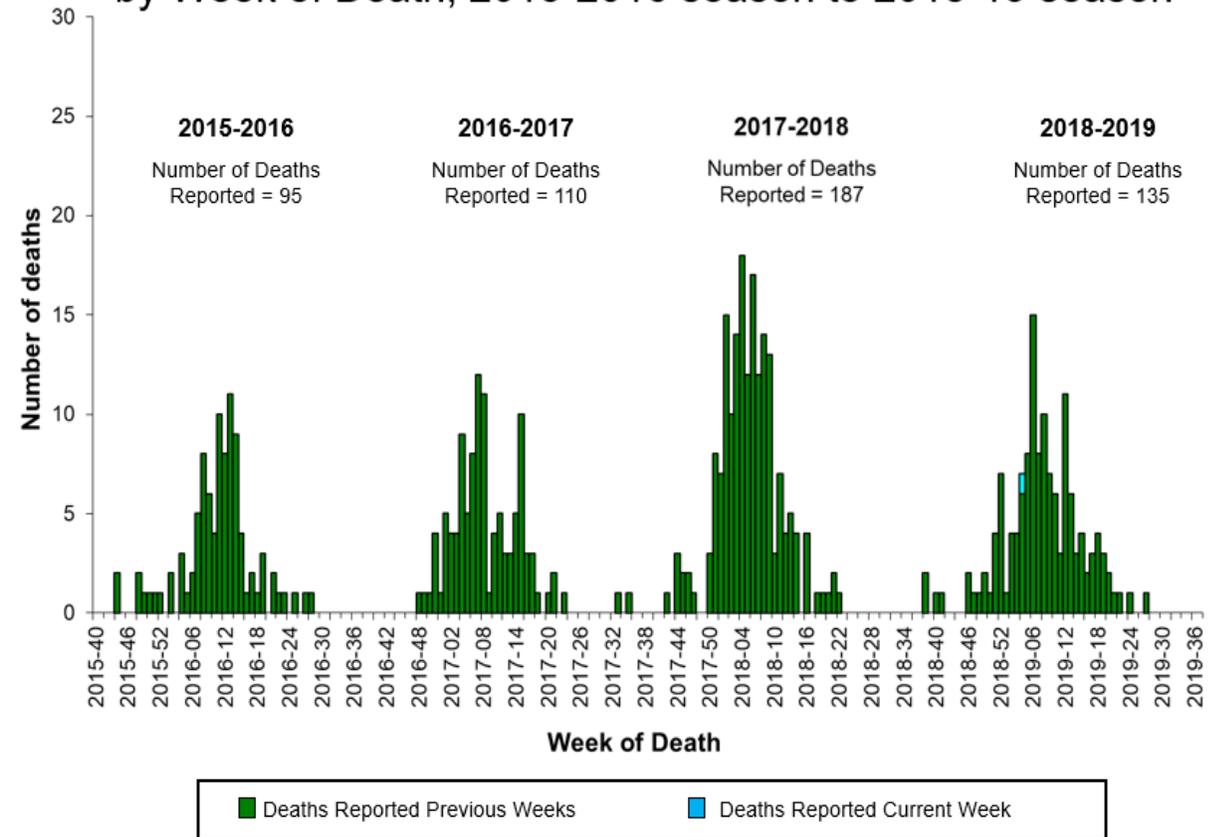
— 2018-19 **63.9**
 — 2017-18 **102.9**
 — 2016-17 **62**
 — 2015-16 **31.4**
 — 2014-15 **64.1**
 — 2013-14 **35.1**
 — 2012-13 **44**
 — 2011-12 **8.7**
 — 2010-11 **21.5**
— 2009-10 **29.3**

Influenza-associated Mortality Surveillance

Pneumonia and Influenza Mortality from the National Center for Health Statistics Mortality Surveillance System
Data through the week ending September 7, 2019, as of September 19, 2019



Influenza-Associated Pediatric Deaths by Week of Death, 2015-2016 season to 2018-19 season



Season Severity Assessment – by Age Group and Season, 2003-04 through 2018-19

Season	Child	Adults	Older Adults	All Ages
2018–19	Moderate	Moderate	Moderate	Moderate
2017–18	High	High	High	High
2016-17	Moderate	Moderate	Moderate	Moderate
2015–16	Low	Moderate	Low	Moderate
2014–15	Moderate	Moderate	High	High
2013–14	Moderate	Moderate	Moderate	Moderate
2012–13	Moderate	Moderate	High	Moderate
2011–12	Low	Low	Low	Low
2010–11	Moderate	Moderate	Moderate	Moderate
2009–10	Very High	Moderate	Low	Moderate
2008–09	Low	Low	Low	Low
2007–08	Moderate	Moderate	Moderate	Moderate
2006–07	Low	Low	Low	Low
2005–06	Low	Low	Low	Low
2004–05	Low	Moderate	Moderate	Moderate
2003–04	Very High	Moderate	High	High

Sources of 2018–19 Influenza Season Data

- Updated surveillance information is available each Friday
 - FluView, static report: <https://www.cdc.gov/flu/weekly/>
 - FluView Interactive, online application: <https://www.cdc.gov/flu/weekly/fluviewinteractive.htm>
- Vaccine effectiveness estimates
 - Morbidity and Mortality Week Report (MMWR) updates: <https://www.cdc.gov/mmwr/index.html>
 - Advisory Committee on Immunization Practices (ACIP) meetings: <https://www.cdc.gov/vaccines/acip/meetings/index.html>

2019-20 ACIP Update

Abbreviations

IIV	Inactivated Influenza Vaccine
cIIV	Cell culture based Inactivated Influenza Vaccine
aIIV	Adjuvanted Inactivated Influenza Vaccine
HD-IIV	High-Dose Inactivated Influenza Vaccine
RIV	Recombinant Influenza Vaccine
LAIV	Live Attenuated Influenza Vaccine

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)

Groups Recommended for Vaccination

- Routine annual influenza vaccination is recommended for all persons **≥6 months of age** who do not have contraindications
- While vaccination is recommended for everyone in this age group, there are some for whom it is particularly important—
 - People aged ≥6 months who are at increased risk of complications and severe illness due to influenza
 - Contacts and caregivers of persons
 - <5 years of age
 - ≥50 years of age
 - with medical conditions that put them at higher risk for severe complications from influenza

Populations at Higher Risk for Severe Influenza Illness

- Children <5 years of age (especially children < 2 years of age)
 - Adults aged >65 years of age
 - People who have some chronic medical conditions 
 - People younger than 19 years of age who are receiving long-term aspirin therapy
 - People who are extremely obese (BMI≥40)
 - Residents of long-term care facilities
 - Indigenous populations
 - Pregnant women
- Chronic lung diseases (e.g. asthma, COPD, cystic fibrosis)
 - Neurological and neurodevelopmental conditions
 - Heart disease (e.g., CHF, coronary artery disease)
 - Blood disorders (e.g., sickle cell disease)
 - Endocrine disorders (e.g., diabetes mellitus)
 - Kidney disorders
 - Liver disorders
 - Metabolic disorders
 - Immunocompromising condition

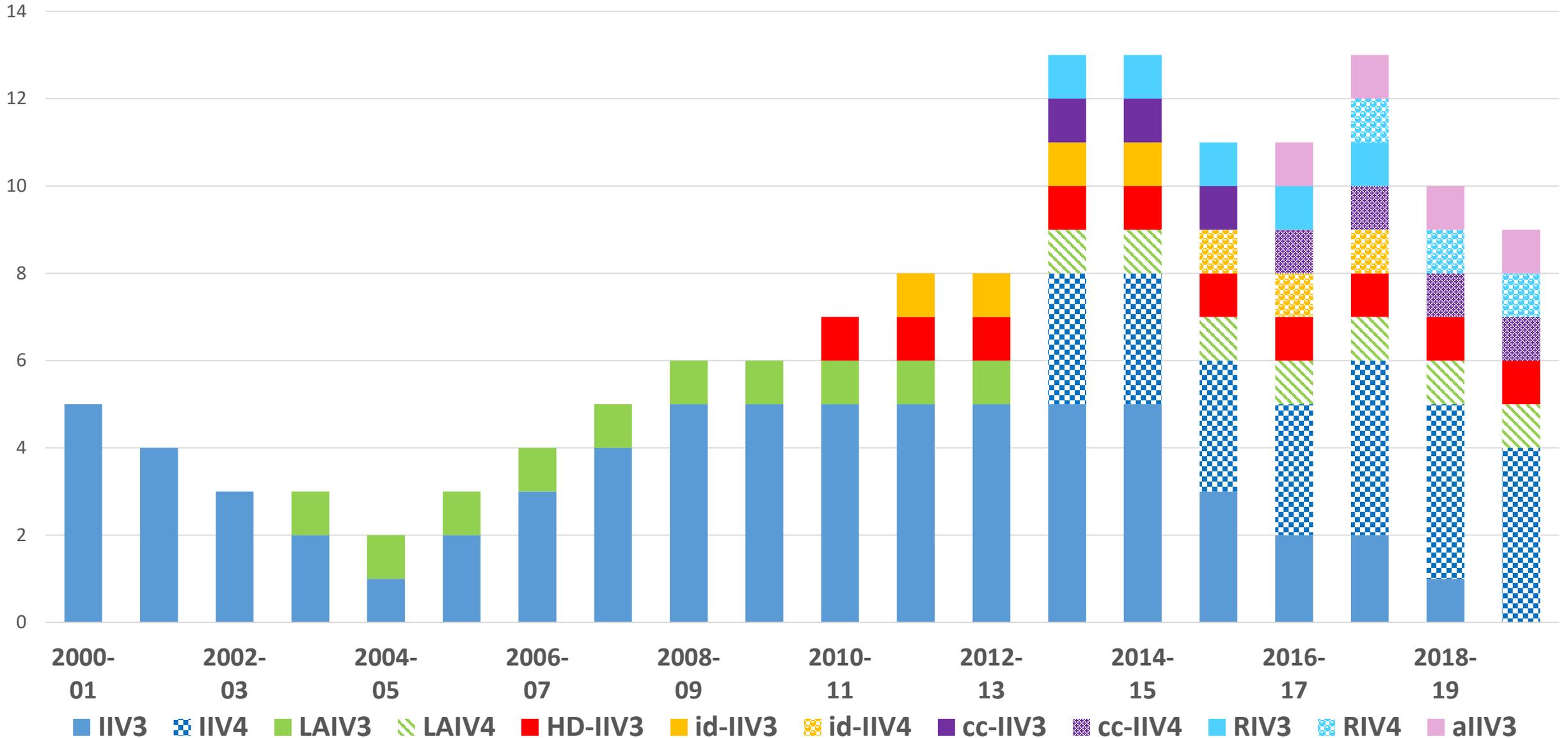
Contraindications and Precautions to Influenza Vaccination

Vaccine Type	Contraindications/Populations and Situations in which Use Is Not recommended	Precautions
IIVs	<ul style="list-style-type: none"> History of severe allergic reaction to any component of the vaccine* or to a previous dose of any influenza vaccine 	<ul style="list-style-type: none"> Moderate or severe acute illness +/- fever History of Guillain-Barré syndrome within 6 weeks after receipt of influenza vaccine
RiV4	<ul style="list-style-type: none"> History of severe allergic reaction to any component of the vaccine 	<ul style="list-style-type: none"> Moderate or severe acute illness +/- fever History of Guillain-Barré syndrome within 6 weeks after receipt of influenza vaccine
LAIV	<ul style="list-style-type: none"> History of severe allergic reaction to any component of the vaccine* or to a previous dose of any influenza vaccine Aspirin or salicylate medications in children/adolescents Children aged 2 through 4 years with asthma or who have had wheezing in last 12 months (see MMWR for details) Immunocompromised persons Close contacts and caregivers of severely immunosuppressed persons who require a protected environment Pregnancy Receipt of influenza antivirals within the past 48 hours 	<ul style="list-style-type: none"> Moderate or severe acute illness +/- fever History of Guillain-Barré syndrome within 6 weeks after receipt of influenza vaccine Asthma in persons aged ≥ 5 years Other underlying medical conditions that might predispose to complications after wild-type influenza infection (e.g., chronic pulmonary, cardiovascular [excluding isolated hypertension], renal, hepatic, neurologic, hematologic, or metabolic disorders [including diabetes mellitus])

* Severe allergic reaction to egg is a labeled contraindication to most IIVs and LAIV. However, ACIP recommends that persons with egg allergy of any severity receive influenza vaccine. Persons who have had allergic reactions to egg involving anything other than hives should receive the vaccine in a medical setting, supervised by a provider who is able to recognize and manage severe allergic conditions

U.S. Seasonal Influenza Vaccines Since 2000-01

Number of unique products available by season



U.S.-Licensed Influenza Vaccines, 2019-20

Vaccine type	6 through 23 mos	2 through 3 yrs	4 through 17 yrs	18 through 49 yrs	50 through 64 yrs	≥65 yrs
IIV4s (egg)	Afluria Quadrivalent* Fluarix Quadrivalent* FluLaval Quadrivalent* Fluzone Quadrivalent*					
IIV4 (cell)			Flucelvax Quadrivalent			
RIV4 (recombinant)				Flublok Quadrivalent		
Adjuvant IIV3 (egg)						Fluad
High-dose IIV3 (egg)						Fluzone High-dose
LAIV4 (egg)		FluMist Quadrivalent				

- * For children 6 through 35 months of age, some vaccines are dosed differently—more on this later.
- No influenza vaccines are licensed for children under 6 months of age.
- For many people in other age groups, there is more than one appropriate product.
- ACIP expresses no preference for any one influenza vaccine over another where there is more than one that is appropriate.

HD-IIV3, aIIV3 and RIV4 for Older Adults

Summary of studies examining laboratory-confirmed influenza outcomes:

Study Year published Ages	Season(s)	Comparison	Design	N	Relative Efficacy/effectiveness
DiazGranados 2013 ≥65 years	1 2009-10	HD-IIV3 vs SD-IIV3	RCT	~9,100	Not evaluable because of pandemic
DiazGranados 2014 ≥65 years	2 2011-12, 2012-13	HD-IIV3 vs SD-IIV3	RCT	~32,000	24.2% (95% CI = 9.7–36.5)
Dunkle 2017 ≥50 years	1 2014-15	RIV4 vs SD-IIV4	RCT	~8,600	30% (95% CI = 10–47)
Van Buynder 2013 ≥65 years	1 2011-12	aIIV3 vs SD-IIV3	observational	227	63% (95% CI = 4–86)

2019-20 ACIP Influenza Statement—Updates

Principal changes and updates for 2019-20:

- Influenza vaccine composition for 2019-20
- Labelling changes for two existing vaccines

2019-20 Influenza Vaccine Composition

Trivalent vaccines:

- A/Brisbane/02/2018 (H1N1)pdm09–like virus--*updated*;
- A/Kansas/14/2017 (H3N2)–like virus--*updated*;
- a B/Colorado/06/2017-like virus (Victoria lineage).

Quadrivalent vaccines:

- The above three viruses, and
- a B/Phuket/3073/2013-like virus (Yamagata lineage).

Labeling Changes for Influenza Vaccines for Children 6-35 Months of Age

Afluria Quadrivalent age indication expanded from ≥ 5 years to ≥ 6 months

- Dose volume 0.25mL for children 6-35 months
- Dose volume 0.5mL for children and adults ≥ 3 years

Fluzone Quadrivalent dose volume for children aged 6 through 35 months

- Dose volume is now ***either*** 0.25mL or 0.5mL for children 6-35 months (was previously 0.25mL)
- Dose volume 0.5mL for children and adults ≥ 3 years

Background: Influenza Vaccines for Young Children (6 through 35 months)

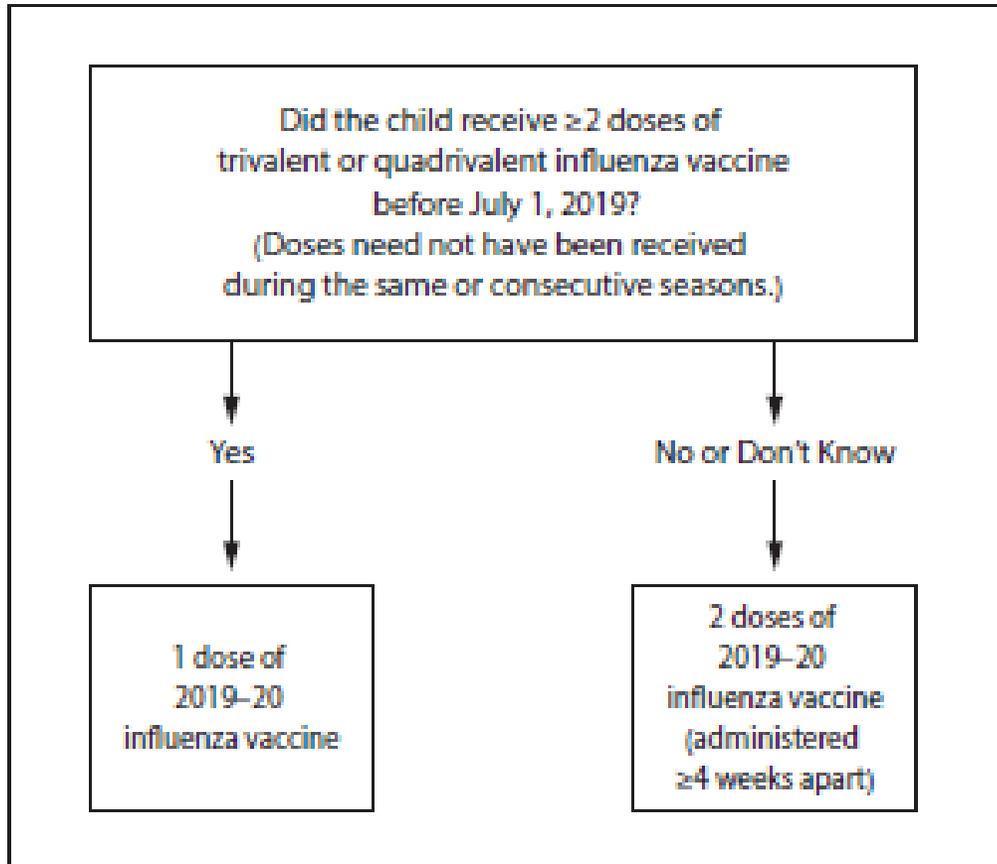
- Historically, 6- through 35-month-olds received 0.25mL per dose of IIVs
 - Half the 0.5mL recommended for older children and adults
 - Based on early studies with whole virus vaccines showing increased fever risk
- Whole-virus IIVs are no longer used in the US since ~2000-2001
 - Replaced by split-virus and subunit IIVs
- However, the half-dose recommendation remained
- For many seasons prior to 2016-17, only IIVs licensed for this group were Fluzone/Fluzone Quadrivalent, at the 0.25mL dose

Influenza Vaccines for Children 6 through 35 months

- Four IIVs licensed for this age group for 2019-20
- Licensed dose volumes for this age group differ
 - *FluLaval Quadrivalent* (IIV4, GSK) 0.5 mL
 - *Fluarix Quadrivalent* (IIV4, GSK) 0.5mL
 - *Afluria Quadrivalent* (IIV4, Seqirus) 0.25 mL
 - *Fluzone Quadrivalent* (IIV4, Sanofi Pasteur) 0.25 mL **or** 0.5 mL
- Some potential for confusion regarding dose volumes
- For children who need two separate doses this season, a 0.5mL dose does not count as two doses

Number of Doses Needed Ages 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, 2019–20 influenza season



* 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 68(RR-3), August 23, 2019

- Children in this age group who have not had ≥ 2 doses of trivalent or quadrivalent vaccine before July 1, 2019 or whose vaccination history is not known need 2 doses at least 4 weeks apart for 2019-20.
- Previous doses can be from different/non-consecutive seasons.
- 8-year-olds who need 2 doses should receive second even if they turn 9 years old between dose 1 and dose 2.

Timing of Vaccination

- Vaccination should be offered by the end of October
- For children 6 months through 8 years of age who need two doses, it is recommended that the first dose be given soon after vaccine is available, to allow enough time for the second dose to be received by the end of October
- For those needing only one dose, early vaccination (e.g., July or August) likely to be associated with reduced immunity later in the season, particularly for older adults
- Vaccination should continue through the season, as long as influenza is circulating and unexpired vaccine is available

Thanks!

Questions?