Will Influenza be Back? A Global Update and Strategies for Avoiding the Twindemic

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Disclosures

- I have no conflicts of interest.
- I do NOT intend to discuss an unapproved or investigative use of a commercial product/device in my presentation

Disclaimer

- The opinions expressed in this presentation are solely those of the presenter and do not necessarily represent the official positions of the Immunization Action Coalition, or the National Adult and Influenza Immunization Summit

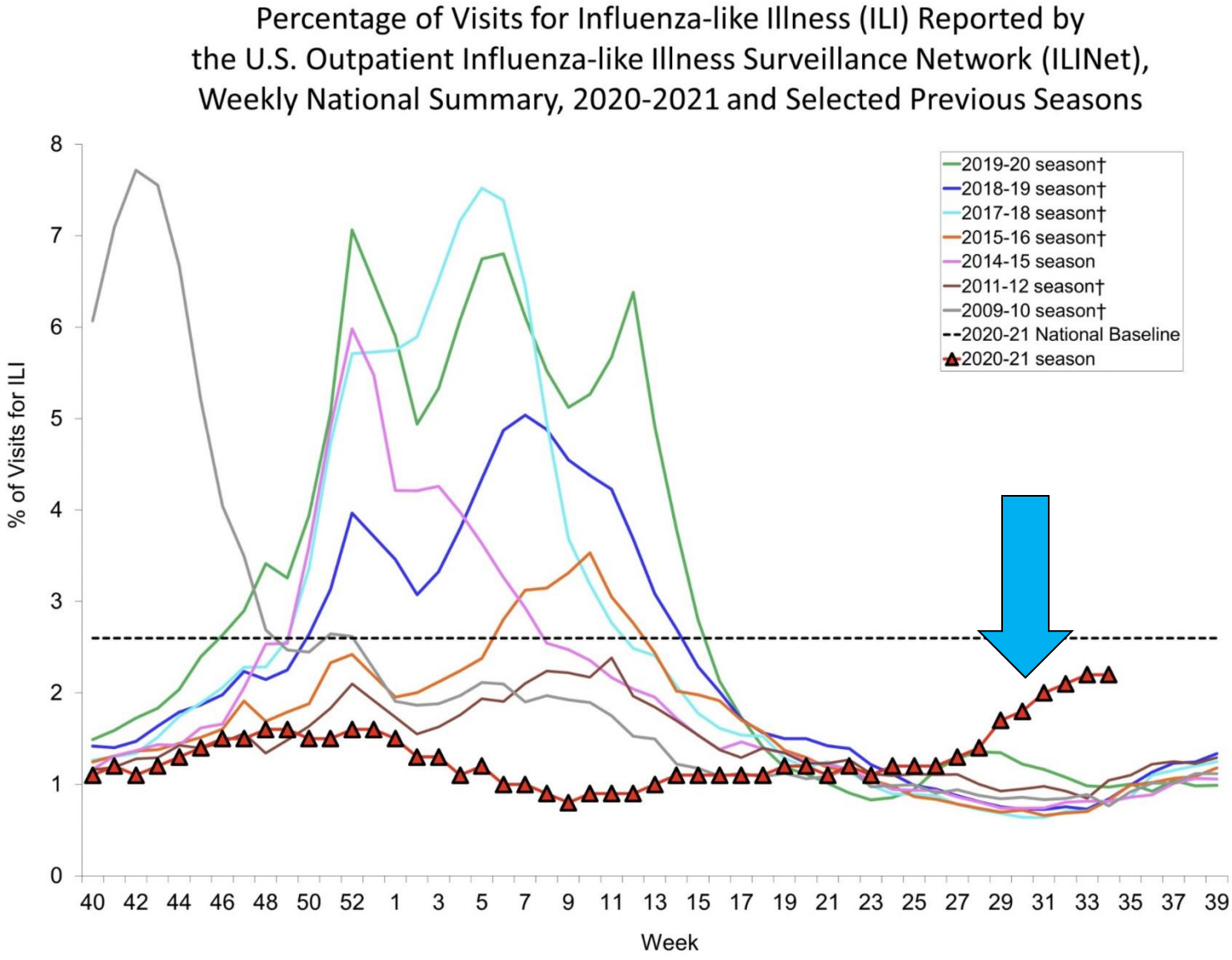
Outline

- Review 2020-2021 influenza season activity and vaccination coverage rates
- Discuss influenza vaccine effectiveness
- Describe ACIP and CDC influenza vaccination recommendations for 2021-2022 influenza season
- Discuss the impact of co-circulating influenza and COVID-19 disease during the upcoming influenza vaccination season
- Summarize CDC's 2021-2022 messaging for influenza

The 2020-2021 Influenza Season

"Season, what season?"

Percentage of Visits for Influenza-like Illness (ILI) Reported by the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Weekly National Summary, 2020-2021 and Selected Previous Seasons



†These seasons did not have a week 53, so the week 53 value is an average of week 52 and week 1.

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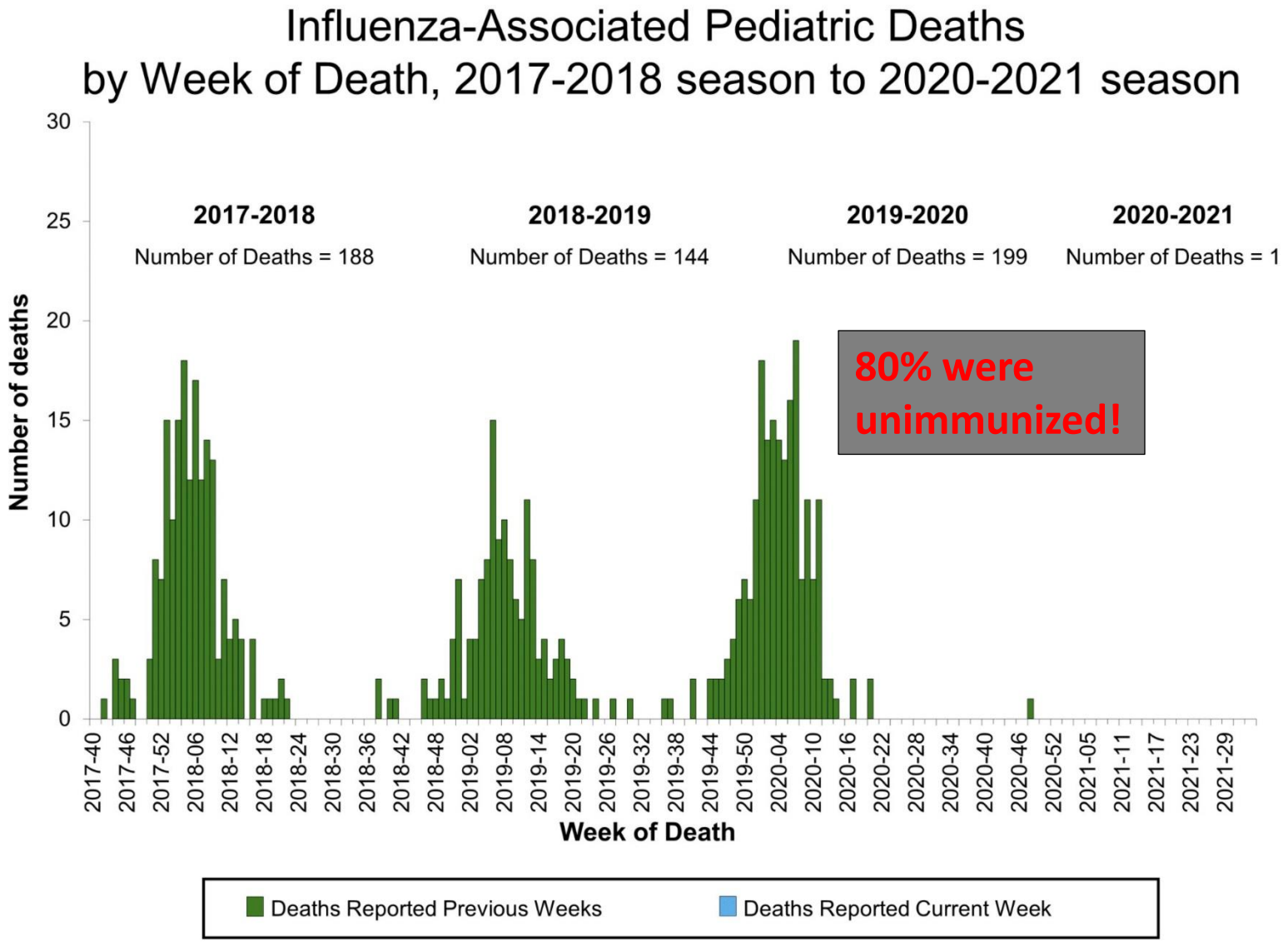
Number of Influenza-Associated Pediatric Deaths by Week of Death, 2017-2018 season to 2020-2021 season



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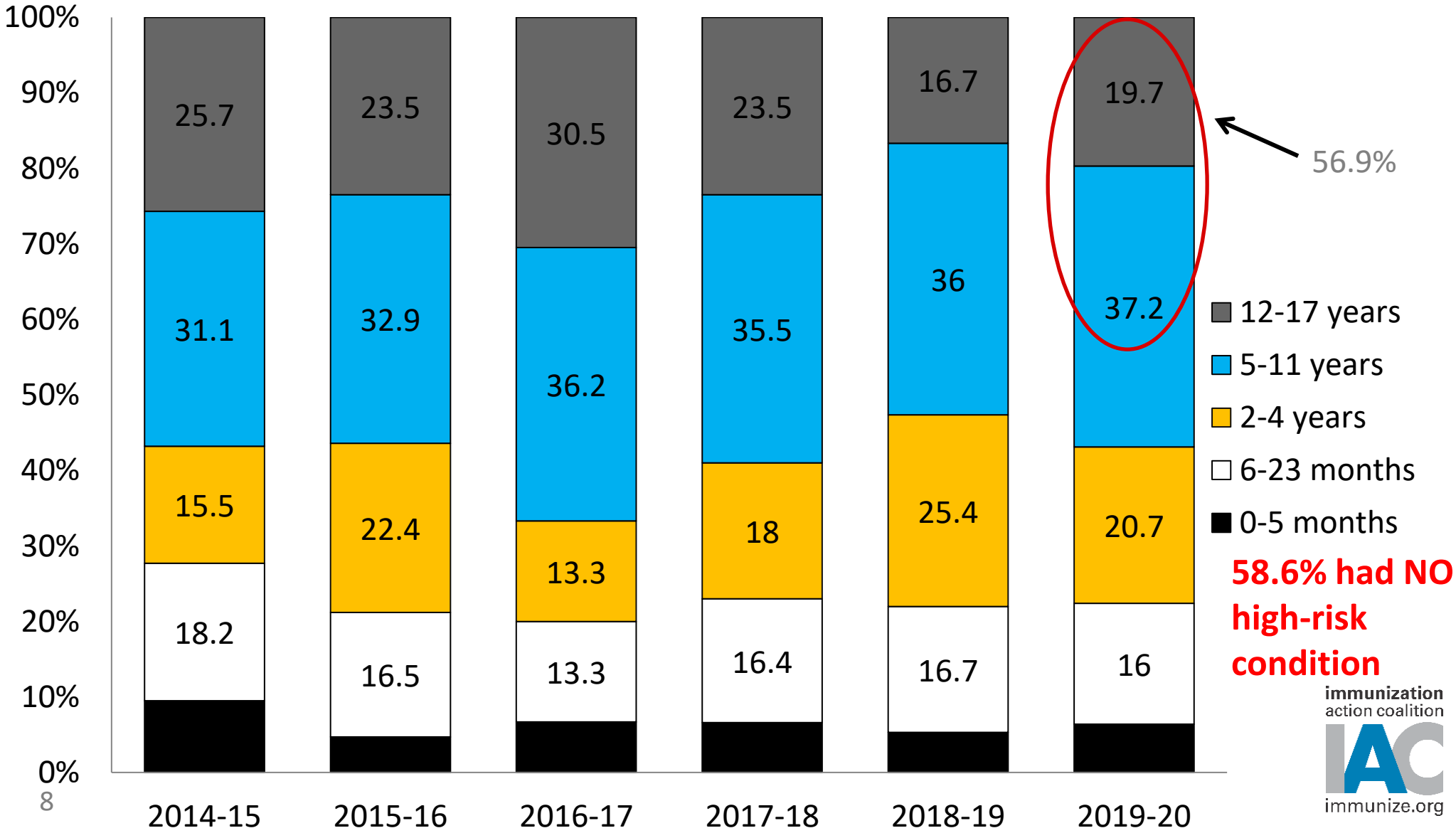
Influenza-Associated Pediatric Deaths by Age Group (percent of total deaths)



58.6% had NO high-risk condition

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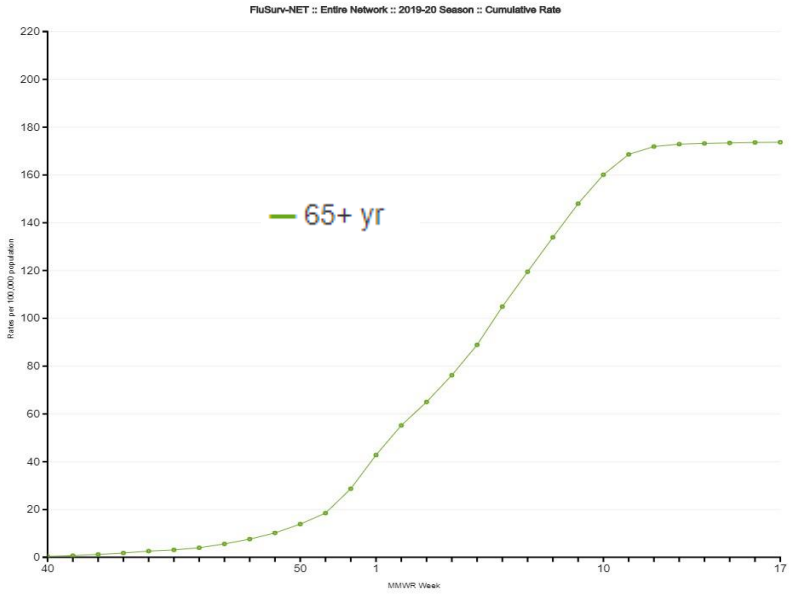
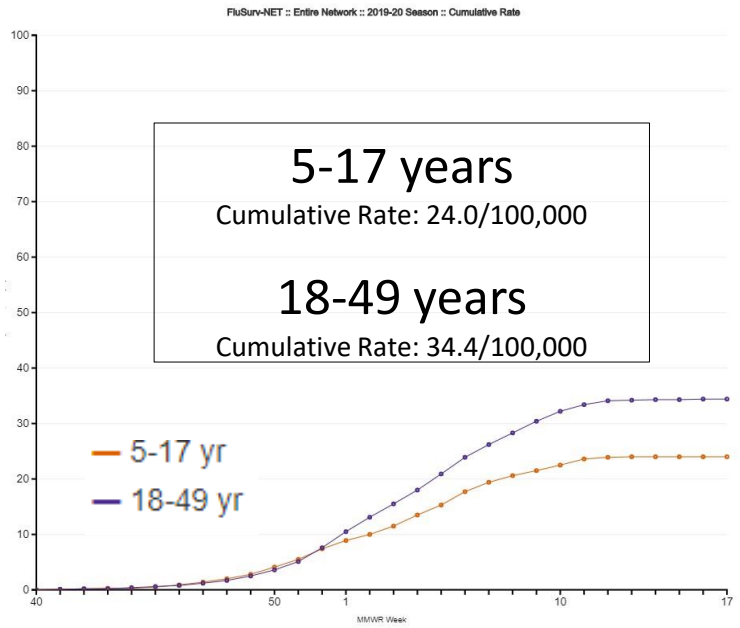
2019 – 2020 Hospitalization Rates…

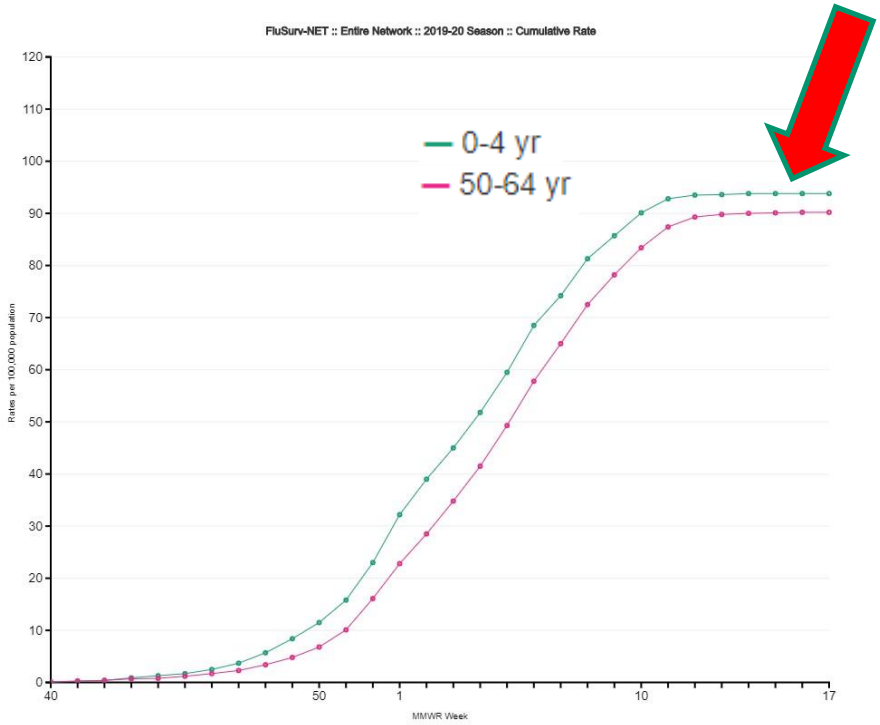


65 + years
Cumulative Rate: 173.7/100,000



5-17 years
Cumulative Rate: 24.0/100,000

18-49 years
Cumulative Rate: 34.4/100,000



0-4 years
Cumulative Rate: 93.8/100,000

50-64 years
Cumulative Rate: 90.2/100,000

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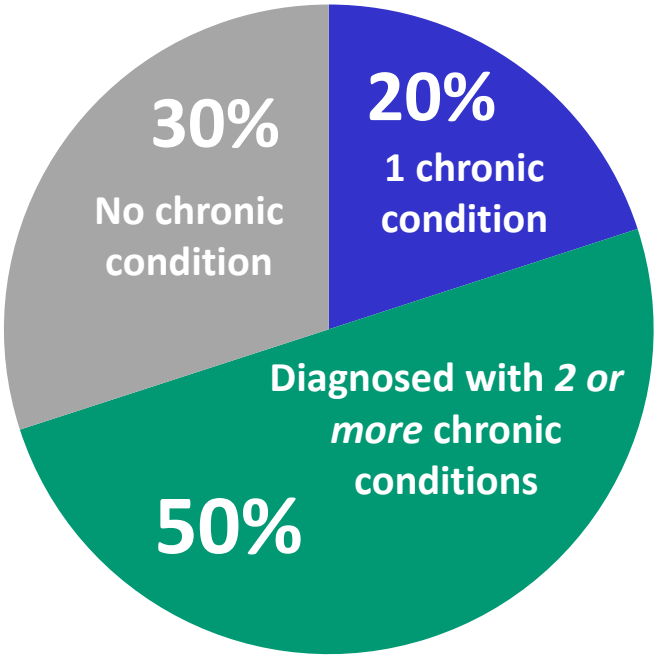
Prevalence of Chronic Conditions and Their Association With Influenza Hospitalizations in Adults 50 Years of Age and Older

Prevalence of Chronic Conditions

US Adults 50-64 Years of Age[1]



Americans 50 years of age and older are a priority group for influenza immunization.[2]

- In a study covering the 2005-2006, 2006-2007, and 2007-2008 influenza seasons, >80% of adults hospitalized with lab-confirmed influenza had 1 or more underlying medical condition; half had 2 or more conditions[3]
- In the 2016-2017 influenza season, 94.2% of hospitalized adult patients with influenza had at least 1 underlying medical condition[4]

References: 1. CDC, AARP, American Medical Association. https://www.cdc.gov/aging/pdf/promoting-preventive-services.pdf. **Accessed March 1, 2018. 2. CDC.** https://www.cdc.gov/flu/protect/ whoshouldvax.htm**. Accessed March 1, 2018. 3. Dao CN, et al; Emerging Infections Program Network. *J Infect Dis*. 2010;202(6):881-888. 4. CDC.** https://www.cdc.gov/flu/weekly/weeklyarchives2016-2017/Week20.htm**. Accessed March 1, 2018.**

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Influenza and Cardiovascular Disease

- Incidence of admissions for acute myocardial infarction was six times as high during the 7 days after laboratory confirmation of influenza infection[1]. 12% of >80,000 adults hospitalized with influenza, almost 12% of patients had an acute cardiovascular event[2]
- A study in VA patients showed that 24% of 600 VA patients who tested positive for influenza had acute cardiac injury and 80% occurred within 3 days of the influenza diagnosis[2]
- A systematic review showed consistent associations between influenza and acute myocardial infarction, with weaker evidence of an association with cardiovascular death[3]
- Acute infections, such as influenza, have been associated with cardiovascular events, and it is hypothesized to be due to triggering of inflammation that elicit cardiovascular events[4]

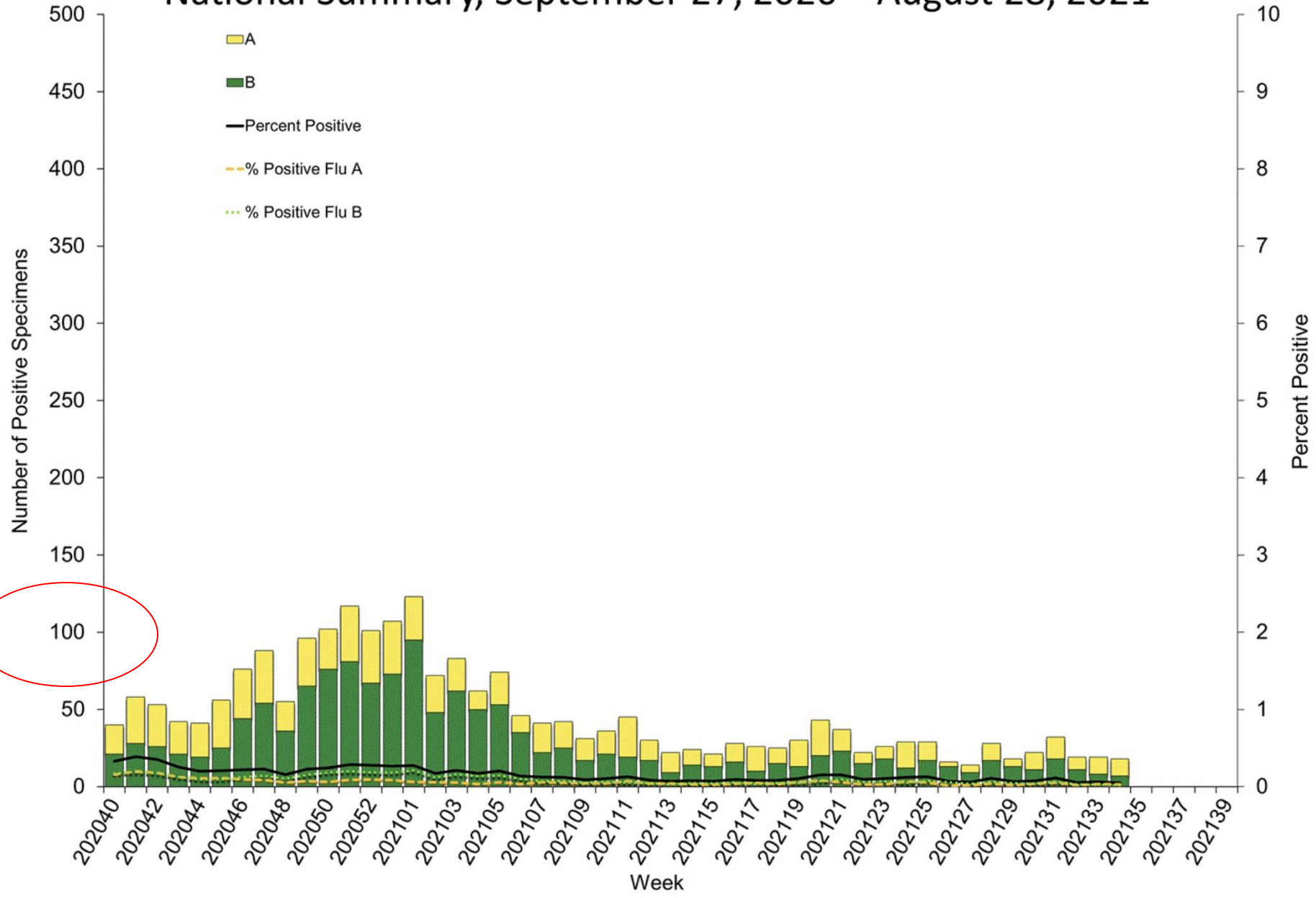
1. Kwong JC, et al. N Engl J Med 2018; 378:345-353.
2. Chow et al. Annals of Internal Medicine 2020;173;605-613.
3. Ludwig A, et al. BMC Cardiovasc Disord. 2015 Sep 30;15:109. doi: 10.1186/s12872-015-0095-0.
4. Warren-Gash C, et al. Lancet Infect Dis. 2009 Oct;9(10):601-10.
5. Santos-Gallego CG, et al. JAHA 2018; 7(22):e011175.

Influenza and Diabetes

- People with diabetes experienced more hyperglycemic events, and substantial increases in pneumonia, sepsis, and coronary heart disease up to 4 weeks after an influenza claim, as compared to a non-influenza period in the same year[1]
- People with diabetes are 3-6 times more likely to be hospitalized during influenza epidemics[2]
- People with diabetes have a much higher rate of death associated with an influenza infection[3]
- In recent influenza seasons, people with diabetes account for 30% of adult hospitalizations[4]
- Influenza vaccination recommended by the World Health Organization for high risk patients with diabetes

1. Samson SI, Lee W-N, Quisel T, et al. Diabetes. 2018;67(Supplement 1):1616.
2. Bouter KP, Diabetes Res Clin Pract 1991;12:61-8. Allard R, Diabetes Care 2010;33:1491-3.
3. https://www.gov.uk/government/publications/influenza-the-green-book-chapter-19 (p4).
4. https://www.cdc.gov/flu/highrisk/diabetes.htm.

Influenza Positive Tests Reported to CDC by U.S. Clinical Laboratories, National Summary, September 27, 2020 – August 28, 2021



Summary of Influenza Activity 2020-2021

- What influenza?
- Impact of social distancing measures, masking, potentially increased vaccination rates, improved hand hygiene and infection control

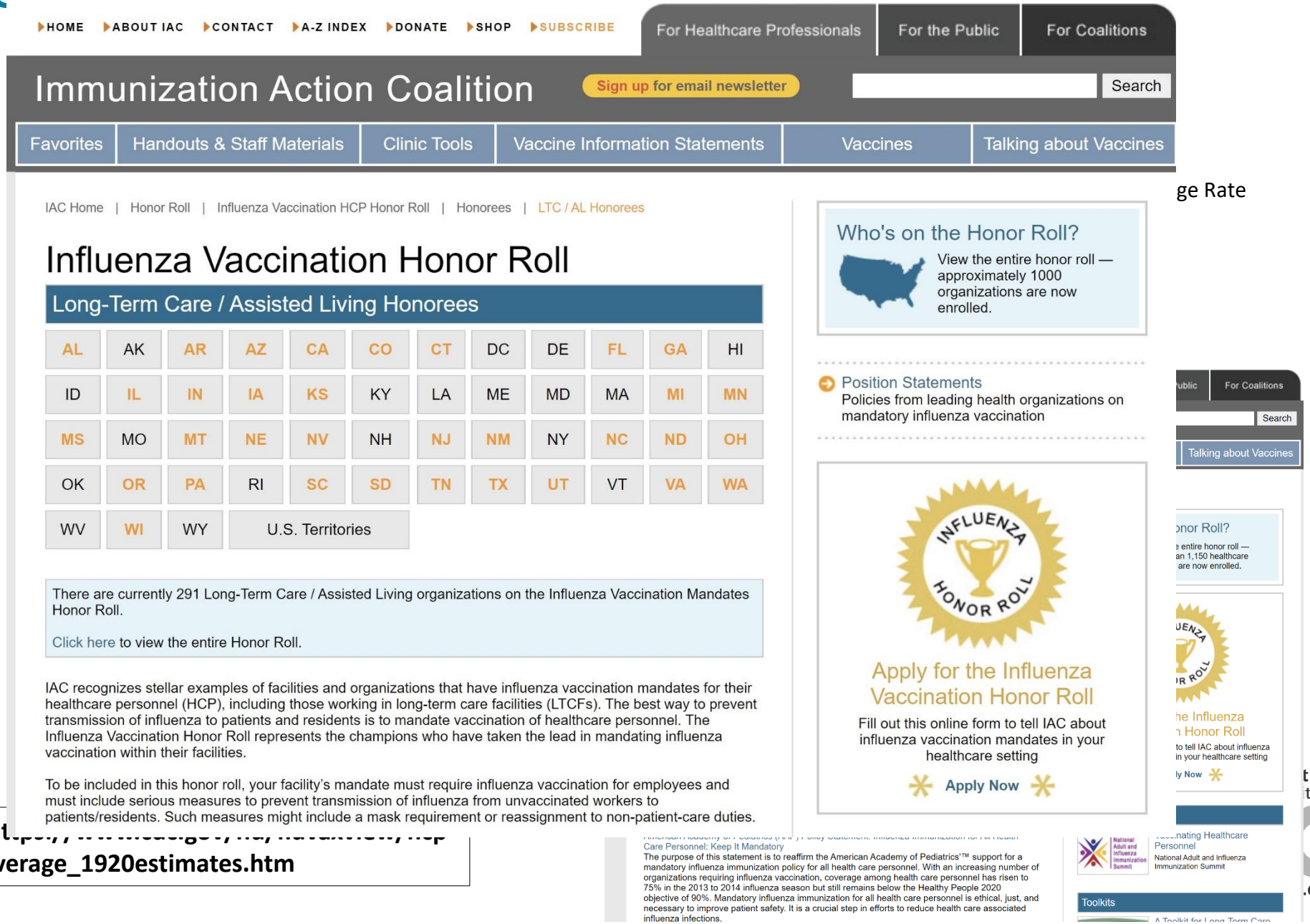
The 2020-2021 Influenza Season – Vaccination Coverage

CDC expects coverage data to become available in October!

Healthy People 2030 Objective for Influenza: Increase the proportion of persons who are vaccinated annually against seasonal influenza

Target: 70.0 percent

Impact of Employer Policy on Healthcare Personnel Vaccination, 2019 - 20*

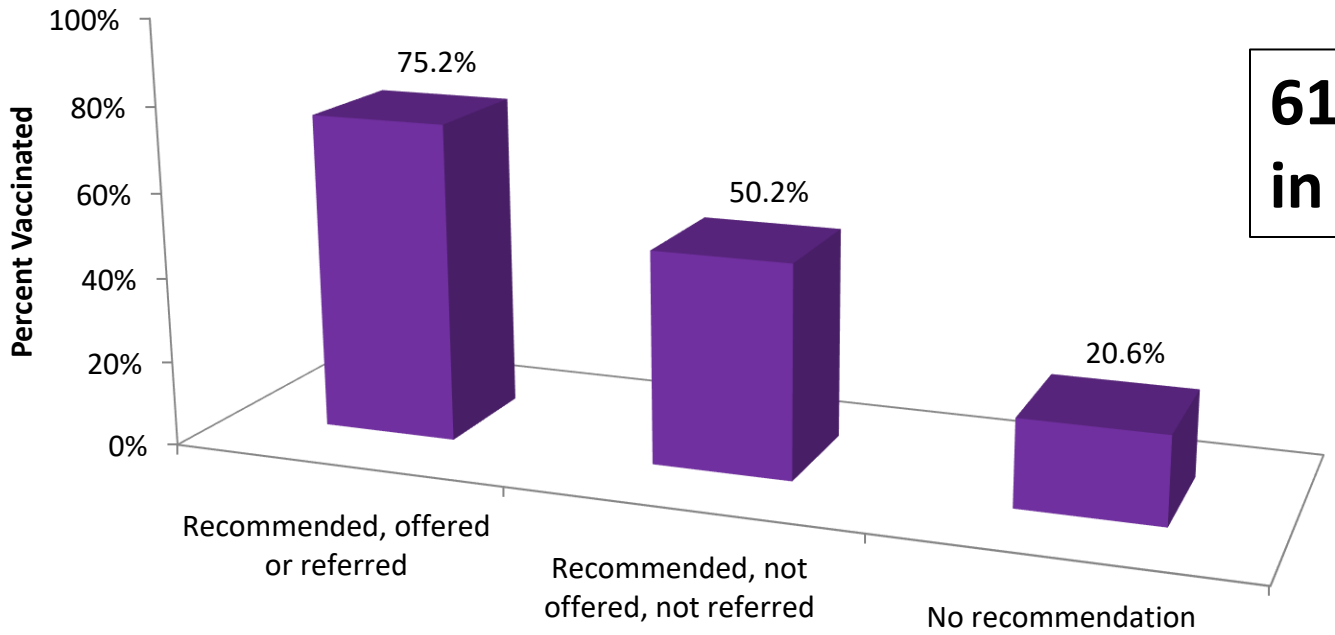


ge Rate

*** ht… coverage_1920estimates.htm**

Influenza Vaccination Among Pregnant Women by Provider Recommendation or Offer of Vaccination, 2019-20 Season*

Influenza vaccination coverage before and during pregnancy among women pregnant any time after August 1, 2019, by provider recommendation or offer



61.2% vaccinated in this season

*** Internet Panel Survey, United States, April 2–April 14, 2020, among women aged 18–49 years who reported being pregnant anytime since August 1, 2019, through the date of the survey**

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Impact of influenza on pregnant women[1]

- Up to 4X increased risk of hospitalization, especially in third trimester, and for those with co-morbid conditions*
- Up to 8X increased risk for influenza-associated complications, including death, particularly for those with co-morbid conditions**
- Increased risk for influenza-associated complications among postpartum women
  - Risk highest during the first postpartum week

*** Chronic cardiac disease, chronic pulmonary disease, diabetes mellitus, chronic renal disease, malignancies, and immunosuppressive disorders**

**** Preexisting diabetes mellitus, pulmonary disease that included asthma, heart disease, renal disease, and anemia**

1. Rasmussen, S.A., et al. 2012. American Journal of Obstetrics & Gynecology; 207(3): S3 - S8.

Some coverage thoughts

- Influenza vaccination coverage appears to still be well below HP2030 target
  - Adult coverage rates continue to lag ☹
  - Steady improvement in the pediatric population (impact of COVID-19 concerning) ☺
  - Coverage in the 65 years and older population remains poor...☹
  - Coverage in the 18-64 years of age high risk adults unacceptably low…☹
  - Coverage in pregnant women needs to sustained and improved; a strong provider recommendation makes a difference (??)
  - HCW coverage likely sustained, what about LTCF? (??)

A Diversion – Don’t Forget Adult Immunizations

Burden of Adult Vaccine-preventable Disease Among U.S. Adults

- Streptococcus pneumoniae[1]
  - Pneumococcal Pneumonia ~ 400,000 hospitalizations per year
  - Up to 36% of adult community-acquired pneumonias
  - Pneumococcal Bacteremia ~ 12,000 cases per year
  - Pneumococcal Meningitis ~ 3,000–6,000 cases per year

- Pertussis[2]
  - 19,000 total reported cases 2019
  - 4,400 among adults 20 years of age & older

1. **https://www.cdc.gov/vaccines/pubs/pinkbook/pneumo.html.**
2. https://www.cdc.gov/pertussis/downloads/pertuss-surv-report-2019.pdf .

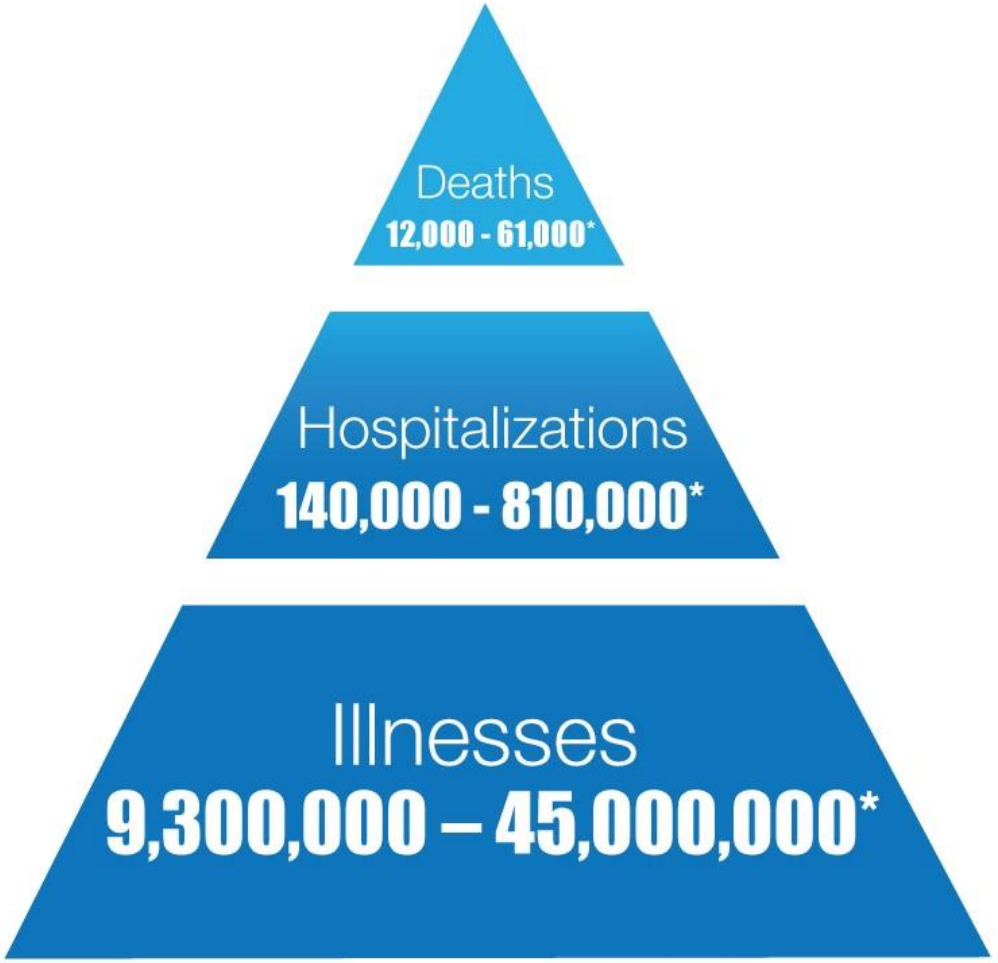
Burden of Adult Vaccine-preventable Disease Among U.S. Adults

- Hepatitis B[1]
  - 20,700 estimated new infections in 2019
  - 80% among adults 30-59 years of age
- Zoster[2]
  - 1 million cases per year - lifetime risk 32%
- Measles[3]
  - California/multi-state 2015 outbreak, 55% of infections were in adults 20 years of age and older

1. **CDC. Viral Hepatitis Surveillance United States.** www.cdc.gov/hepatitis/statistics/2016surveillance/pdfs/2016hepsurveillancerpt.pdf
2. https://www.cdc.gov/pertussis/downloads/pertuss-surv-report-2019.pdf.
3. **Morbidity and Mortality Weekly Report. April 17, 2015 / 64(14);373-376**

Burden of Influenza 2010-2020*

- From 2010-2020, adults 65 years and older accounted for:
  - 45-67% of influenza-related hospitalizations
  - 62-87% of influenza-related deaths



*The top range of these burden estimates are from the 2017-2018 flu season. These are preliminary and may change as data are finalized.

*Past Seasons Estimated Influenza Disease Burden: https://www.cdc.gov/flu/about/burden/past-seasons.html

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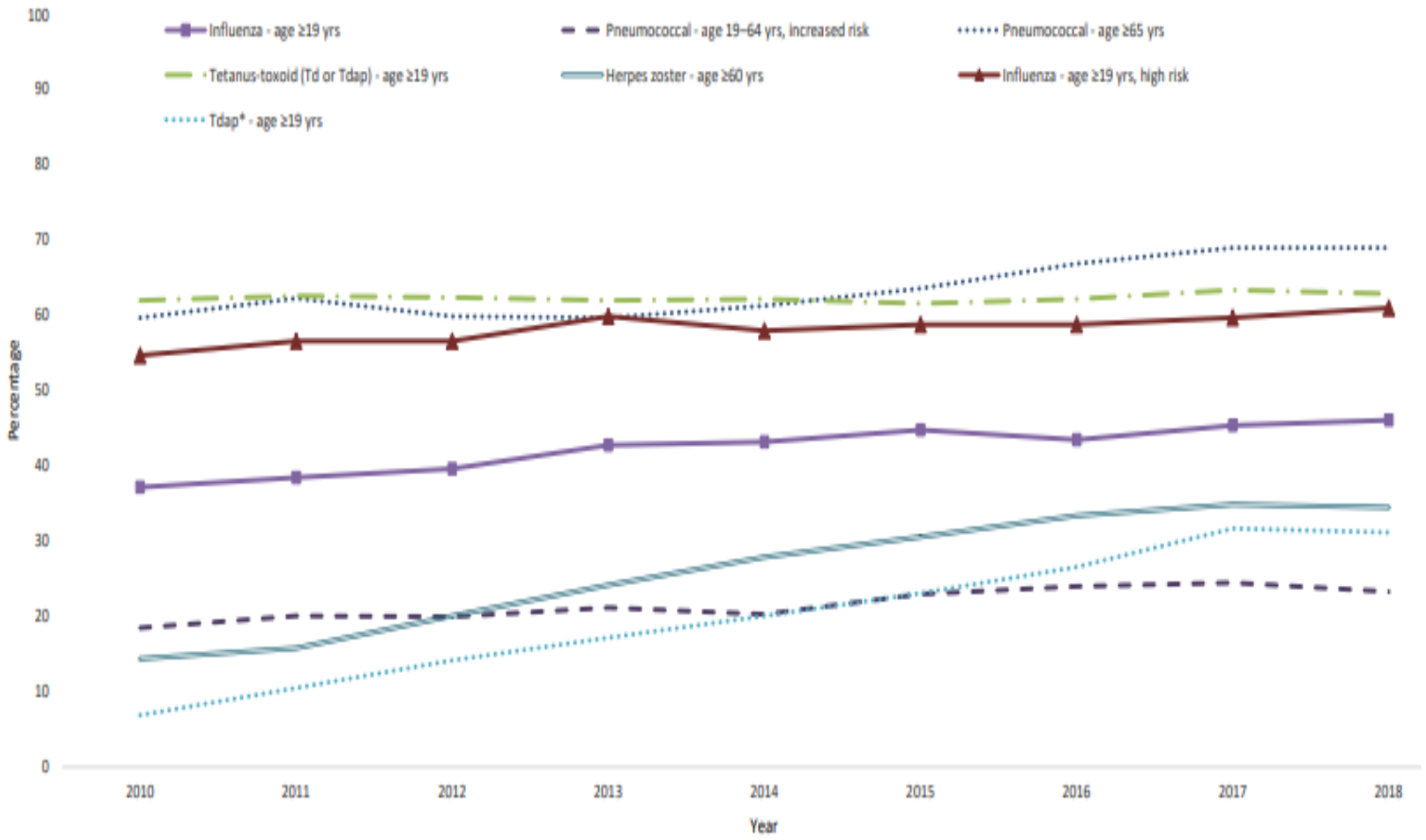
Routinely recommended vaccines for adults

Routinely recommended vaccines for adults have historically low uptake, leaving adults vulnerable to vaccine-preventable illness, disability and death.



2018 NHIS Estimates
Flu 65+ = 70%
Flu 18-64 = 42%
Pneumococcal 65+ = 69%
Pneumococcal high risk = 23%
Zoster 60+ = 34.5%
Td/Tdap past 10 yrs = 59%
HPV 19-26 yo = 53%
Hep A 19+ = 12%
Hep A liver dis. = 16%
Hep B 19+ = 30%
Hep B liver dis. = 33%

Surveillance of Vaccination Coverage Among Adult Populations — United States, 2018: https://www.cdc.gov/mmwr/volumes/70/ss/ss7003a1.htm?s_cid=ss7003a1_w

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Call To Action – Adult Immunization rates must be improved!

- Routinely recommended vaccinations have fallen during the COVID-19 pandemic, impacting already low adult vaccination rates.

Impact of the COVID-19 pandemic on immunization coverage rates

Impact of the COVID-19 Pandemic on Adult HPV, Pneumococcal, and Zoster Vaccinations – Mawuli Nyaku, DrPH, MBA, MPH, (Merck) https://www.izsummitpartners.org/2021-07-15/#toc3.

The COVID-19 Pandemic: Impact on US Adolescent and Adult Vaccine Utilization Across Markets – Loren Becker (Avalere Health) https://avalere.com/insights/updated-analysis-finds-sustained-drop-in-routine-vaccines-through-2020.

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National Adult and Influenza Immunization Summit (NAIIS) Call to Action*

National Adult and Influenza Immunization Summit

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A Call to Action to Protect All Adults from Vaccine-Preventable Disease and Disability

Majority of U.S. Adults Are Missing Routine Vaccinations

Call to Action to Protect All Adults from Vaccine-Preventable Disease and Disability

Click below to add your organization's support of the Call to Action

Support the Call to Action

Organizations Supporting Call to Action

- American Academy of PAs (AAPA)
- American College of Physicians (ACP)
- American Immunization Registry Association (AIRA)
- American Medical Association (AMA)
- American Medical Group Association

*https://www.izsummitpartners.org/call-to-action-adult-immunizations/.

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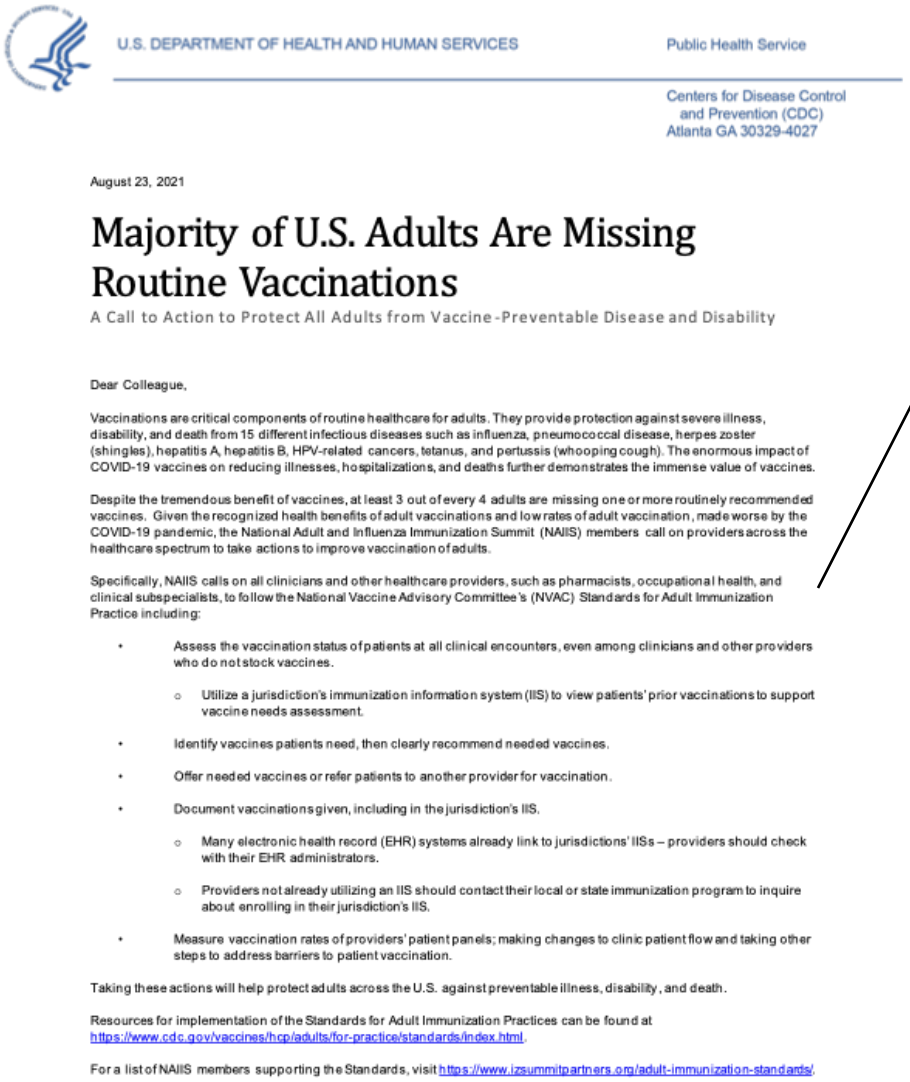
National Adult and Influenza Immunization Summit (NAIIS) Call to Action*



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Public Health Service

Centers for Disease Control and Prevention (CDC)
Atlanta GA 30329-4027

August 23, 2021

Majority of U.S. Adults Are Missing Routine Vaccinations

A Call to Action to Protect All Adults from Vaccine-Preventable Disease and Disability

Dear Colleague,

Vaccinations are critical components of routine healthcare for adults. They provide protection against severe illness, disability, and death from 15 different infectious diseases such as influenza, pneumococcal disease, herpes zoster (shingles), hepatitis A, hepatitis B, HPV-related cancers, tetanus, and pertussis (whooping cough). The enormous impact of COVID-19 vaccines on reducing illnesses, hospitalizations, and deaths further demonstrates the immense value of vaccines.

Despite the tremendous benefit of vaccines, at least 3 out of every 4 adults are missing one or more routinely recommended vaccines. Given the recognized health benefits of adult vaccinations and low rates of adult vaccination, made worse by the COVID-19 pandemic, the National Adult and Influenza Immunization Summit (NAIIS) members call on providers across the healthcare spectrum to take actions to improve vaccination of adults.

Specifically, NAIIS calls on all clinicians and other healthcare providers, such as pharmacists, occupational health, and clinical subspecialists, to follow the National Vaccine Advisory Committee's (NVAC) Standards for Adult Immunization Practice including:

- Assess the vaccination status of patients at all clinical encounters, even among clinicians and other providers who do not stock vaccines.
  - Utilize a jurisdiction's immunization information system (IIS) to view patients' prior vaccinations to support vaccine needs assessment.
- Identify vaccines patients need, then clearly recommend needed vaccines.
- Offer needed vaccines or refer patients to another provider for vaccination.
- Document vaccinations given, including in the jurisdiction's IIS.
  - Many electronic health record (EHR) systems already link to jurisdictions' IISs – providers should check with their EHR administrators.
  - Providers not already utilizing an IIS should contact their local or state immunization program to inquire about enrolling in their jurisdiction's IIS.
- Measure vaccination rates of providers' patient panels; making changes to clinic patient flow and taking other steps to address barriers to patient vaccination.

Taking these actions will help protect adults across the U.S. against preventable illness, disability, and death.

Resources for implementation of the Standards for Adult Immunization Practices can be found at https://www.cdc.gov/vaccines/hcp/adults/for-practice/standards/index.html.

For a list of NAIIS members supporting the Standards, visit https://www.izsummitpartners.org/adult-immunization-standards/.

Standards for Adult Immunization Practice

- **Assess** the vaccination status of patients at all clinical encounters
- **Identify** vaccines patients need, then clearly **recommend** needed vaccines.
- **Offer** needed vaccines or refer patients to another provider for vaccination.
- **Document** vaccinations given.
- **Measure** vaccination rates of providers' patient panels.

https://www.cdc.gov/vaccines/hcp/adults/for-practice/increasing-vacc-rates.html

*https://www.izsummitpartners.org/call-to-action-adult-immunizations/.

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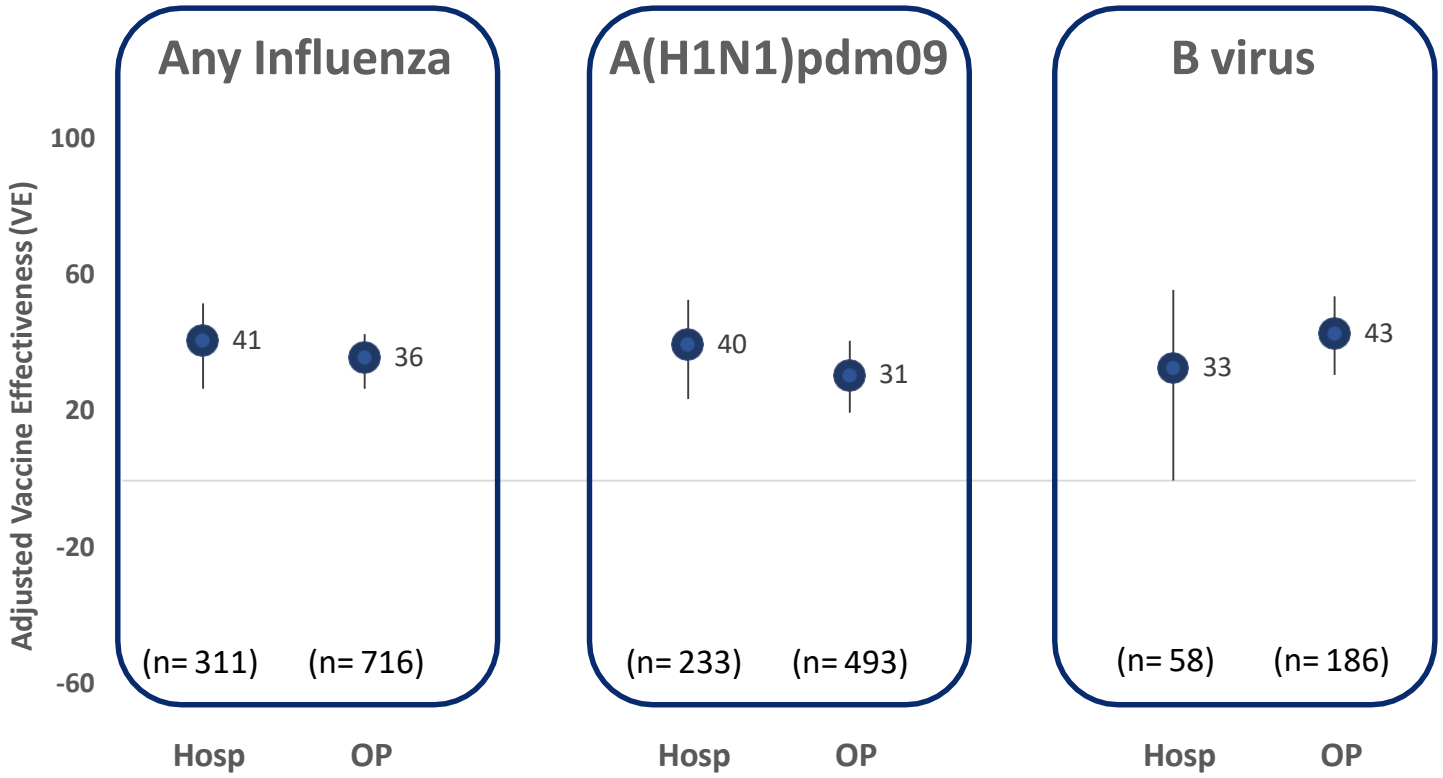
Influenza Vaccine Effectiveness

Insufficient data from the past flu season to make a vaccine effectiveness estimate!

Influenza Vaccine Effectiveness (2019 – 2020 season)

Age group (years)	Influenza positive Total	Vaccinated influenza positive (% vaccinated)	Influenza negative Total	Vaccinated influenza negative (% vaccinated)	Adjusted VE %	Adjusted 95% CI
All ages	2722	1140 (42)	6123	3388 (55)	39	(32, 44)
6 mos–8	646	269 (42)	1365	759 (56)	34	(19, 46)
9–17	471	155 (33)	722	324 (45)	40	(22, 53)
18–49	1056	388 (37)	2202	991 (45)	34	(23, 44)
50–64	350	180 (51)	998	619 (62)	40	(22, 54)
≥65	199	148 (74)	836	695 (83)	39	(9, 59)

Preliminary VE against influenza hospitalizations and outpatient visits among adults, by virus type, HAIVEN/Flu VE Network – 2019-20



* Final models adjusted for study site, age, sex, race/ethnicity, days from illness onset to specimen collection, timing of illness onset,
≥1 hospitalizations (versus none) in prior year (HAIVEN)

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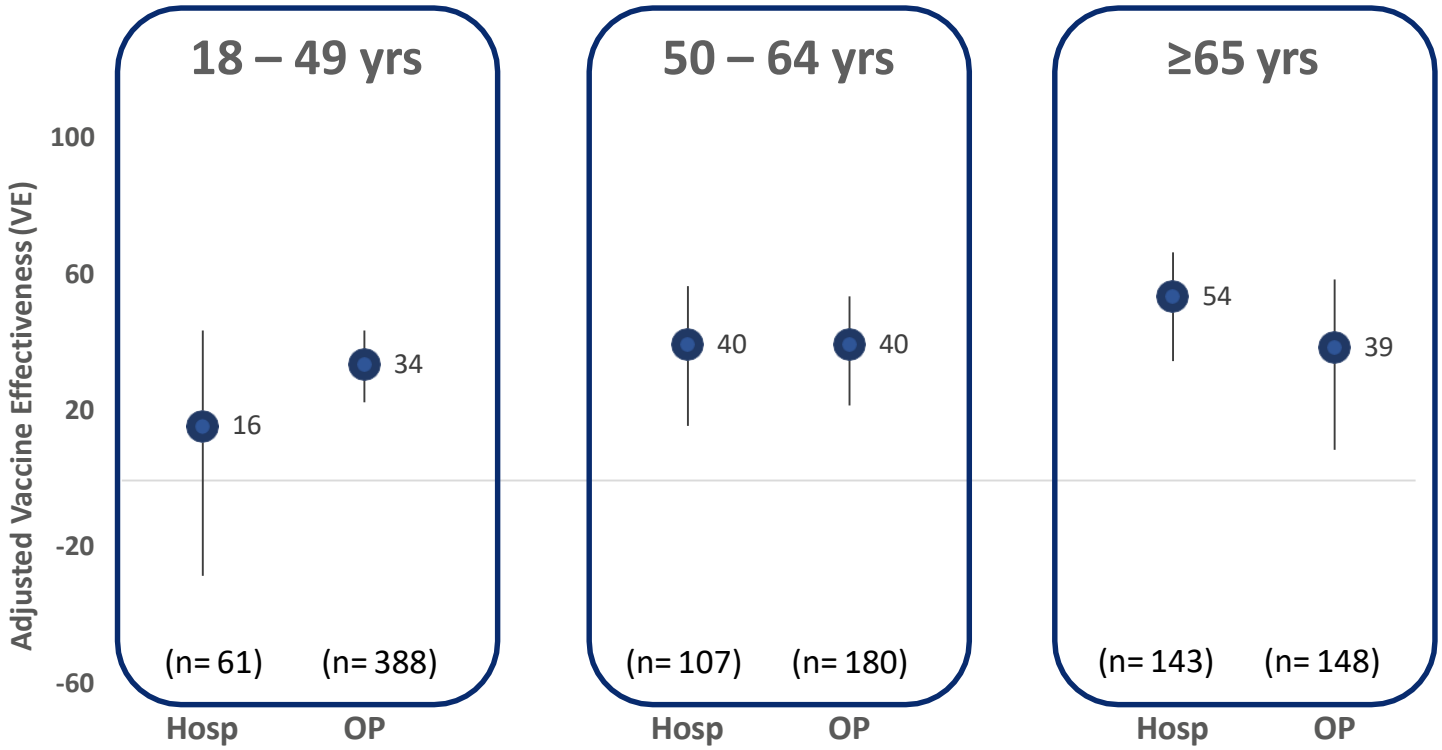
Preliminary VE against influenza hospitalizations and outpatient visits among adults, by age group, HAIVEN/Flu VE Network – 2019-20



* Final models adjusted for study site, age, sex, race/ethnicity, days from illness onset to specimen collection, timing of illness onset,
≥1 hospitalizations (versus none) in prior year (HAIVEN)

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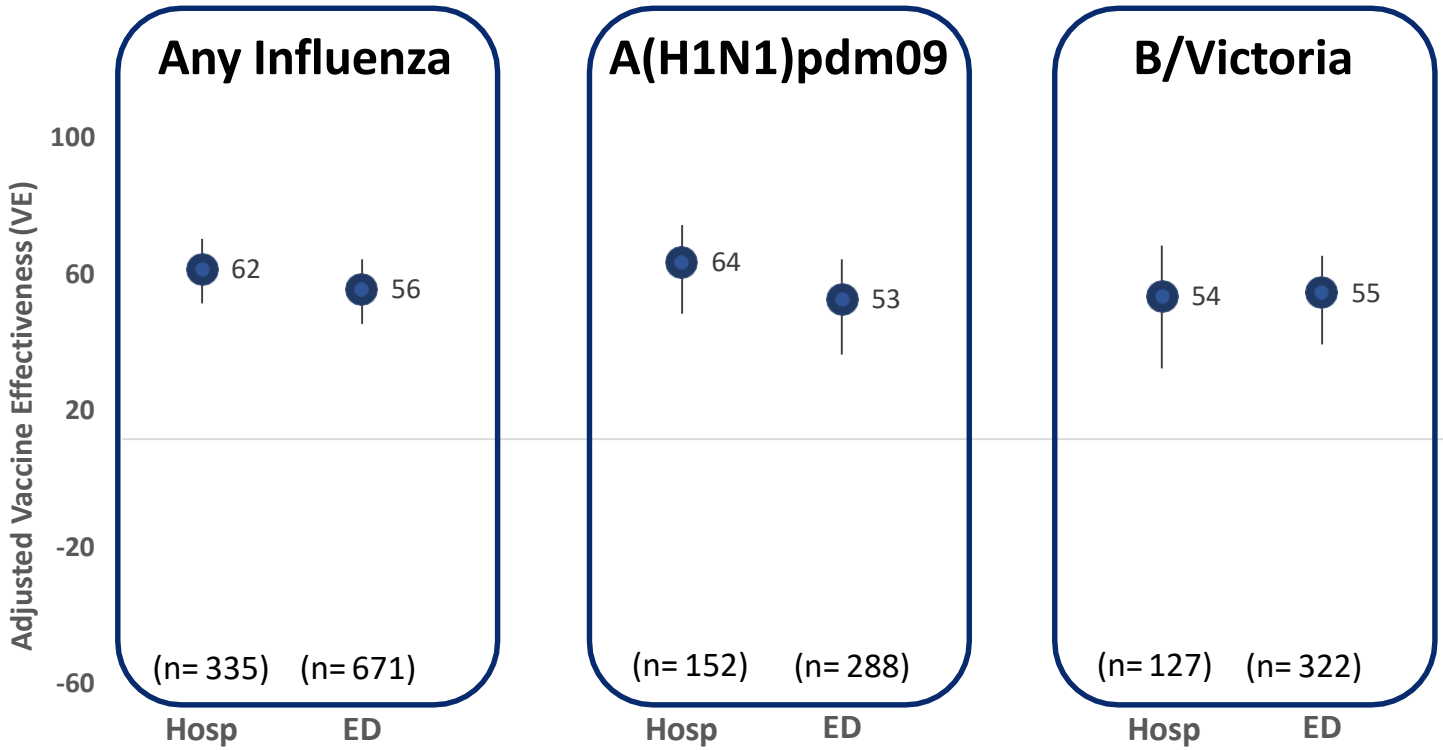
Preliminary VE against pediatric influenza hospitalizations, ED visits - NVSN, 2019-20



- Final models adjusted for study site, age as a continuous variable and calendar time (monthly intervals)
- n values show the total number of influenza positive subjects in each group

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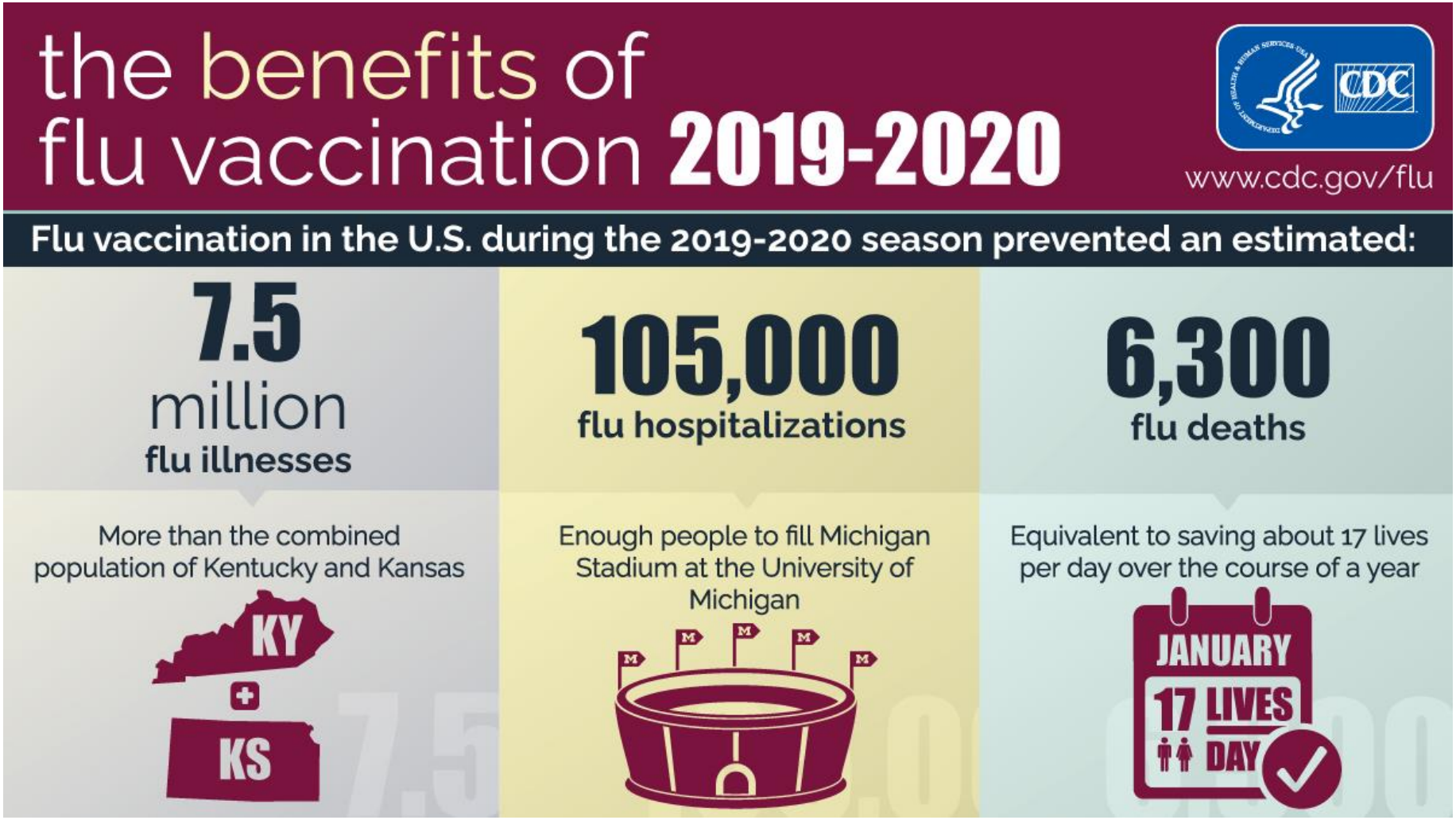
Summary of VE for the 2019-2020 influenza season

- Vaccination reduced medically attended illness due to any influenza virus type by 39% (95%CI: 32, 44)
  - 34% (CI: 19 to 46) VE against any influenza in children 6m–8 years
- Vaccination provided 45% (CI: 37 to 52) protection against predominant influenza B/Victoria virus (clade V1A.3)

- Remember that vaccine offers significant protection against influenza hospitalizations
  - Vaccine reduced influenza hospitalizations by 41% among all adults and by 54% among adults ≥65 years of age (influenza A and B viruses) in 2019-20 season

Another way to look at influenza vaccine effectiveness – negative outcomes averted



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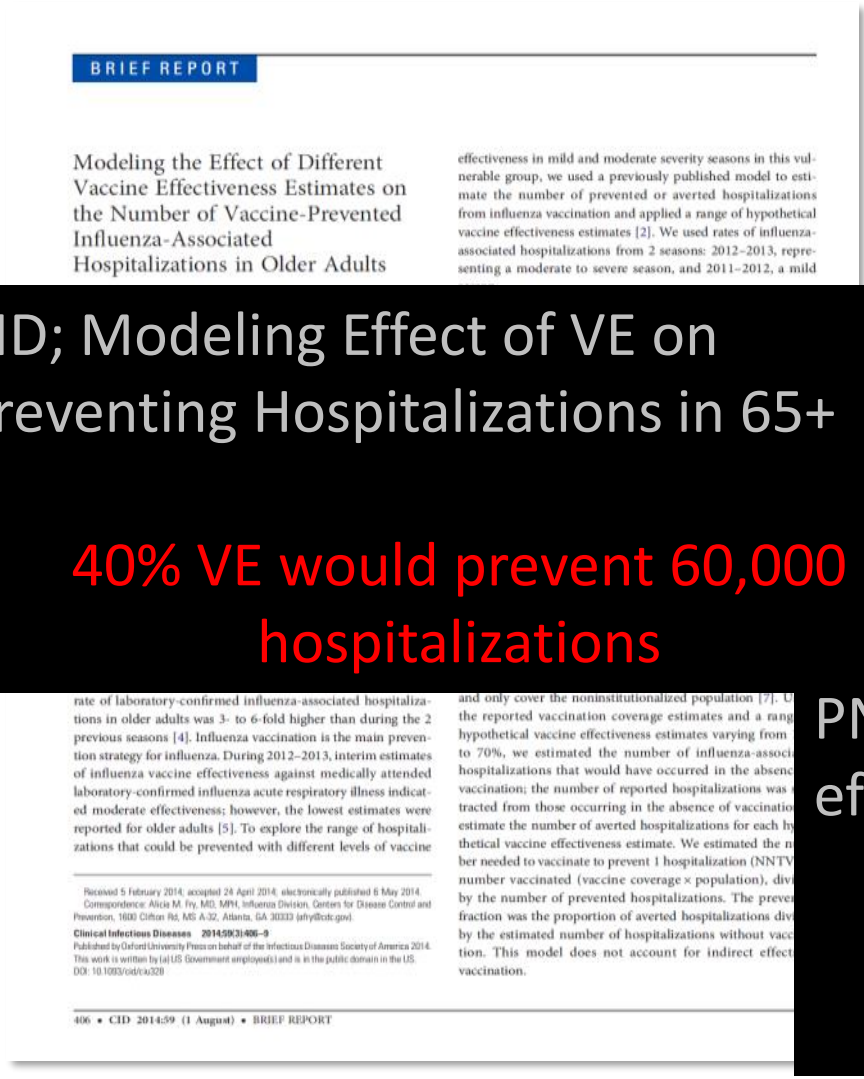
Even when VE is < 50%, current vaccines can have a major impact



BRIEF REPORT

Modeling the Effect of Different Vaccine Effectiveness Estimates on the Number of Vaccine-Prevented Influenza-Associated Hospitalizations in Older Adults

effectiveness in mild and moderate severity seasons in this vulnerable group, we used a previously published model to estimate the number of prevented or averted hospitalizations from influenza vaccination and applied a range of hypothetical vaccine effectiveness estimates [2]. We used rates of influenza-associated hospitalizations from 2 seasons: 2012–2013, representing a moderate to severe season, and 2011–2012, a mild

rate of laboratory-confirmed influenza-associated hospitalizations in older adults was 3- to 6-fold higher than during the 2 previous seasons [4]. Influenza vaccination is the main prevention strategy for influenza. During 2012–2013, interim estimates of influenza vaccine effectiveness against medically attended laboratory-confirmed influenza acute respiratory illness indicated moderate effectiveness; however, the lowest estimates were reported for older adults [5]. To explore the range of hospitalizations that could be prevented with different levels of vaccine

and only cover the noninstitutionalized population [7]. U
the reported vaccination coverage estimates and a rang
hypothetical vaccine effectiveness estimates varying from
to 70%, we estimated the number of influenza-associ
hospitalizations that would have occurred in the absenc
vaccination; the number of reported hospitalizations was
tracted from those occurring in the absence of vaccinatio
estimate the number of averted hospitalizations for each hy
thetical vaccine effectiveness estimate. We estimated the n
ber needed to vaccinate to prevent 1 hospitalization (NNTV
number vaccinated (vaccine coverage × population), div
by the number of prevented hospitalizations. The preve
fraction was the proportion of averted hospitalizations div
by the estimated number of hospitalizations without vacc
tion. This model does not account for indirect effect
vaccination.

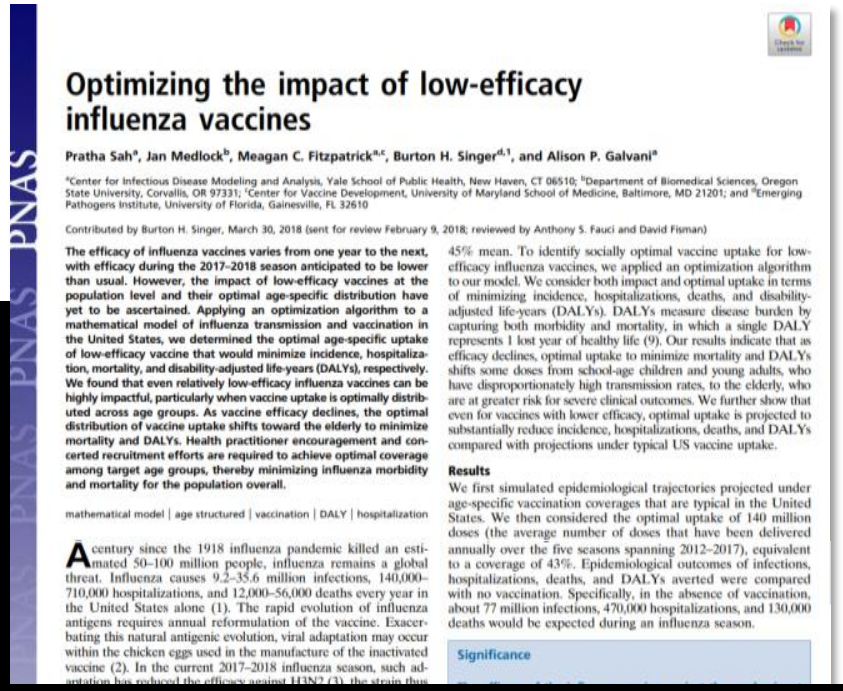
Received 5 February 2014; accepted 24 April 2014; electronically published 6 May 2014.
Correspondence: Alicia M. Fry, MD, MPH, Influenza Division, Centers for Disease Control and Prevention, 1600 Clifton Rd, MS A-32, Atlanta, GA 30333 (afry@cdc.gov).

Clinical Infectious Diseases 2014;59(3):406–9
Published by Oxford University Press on behalf of the Infectious Diseases Society of America 2014. This work is written by (a) US Government employee(s) and is in the public domain in the US.
DOI: 10.1093/cid/ciu328

406 • CID 2014:59 (1 August) • BRIEF REPORT

CID; Modeling Effect of VE on Preventing Hospitalizations in 65+

40% VE would prevent 60,000 hospitalizations



PNAS

Optimizing the impact of low-efficacy influenza vaccines

Pratha Sah[a], Jan Medlock[b], Meagan C. Fitzpatrick[a,c], Burton H. Singer[d,1], and Alison P. Galvani[a]

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Contributed by Burton H. Singer, March 30, 2018 (sent for review February 9, 2018; reviewed by Anthony S. Fauci and David Fisman)

The efficacy of influenza vaccines varies from one year to the next, with efficacy during the 2017–2018 season anticipated to be lower than usual. However, the impact of low-efficacy vaccines at the population level and their optimal age-specific distribution have yet to be ascertained. Applying an optimization algorithm to a mathematical model of influenza transmission and vaccination in the United States, we determined the optimal age-specific uptake of low-efficacy vaccine that would minimize incidence, hospitalization, mortality, and disability-adjusted life-years (DALYs), respectively. We found that even relatively low-efficacy influenza vaccines can be highly impactful, particularly when vaccine uptake is optimally distributed across age groups. As vaccine efficacy declines, the optimal distribution of vaccine uptake shifts toward the elderly to minimize mortality and DALYs. Health practitioner encouragement and concerted recruitment efforts are required to achieve optimal coverage among target age groups, thereby minimizing influenza morbidity and mortality for the population overall.

mathematical model | age structured | vaccination | DALY | hospitalization

A century since the 1918 influenza pandemic killed an estimated 50–100 million people, influenza remains a global threat. Influenza causes 9.2–35.6 million infections, 140,000–710,000 hospitalizations, and 12,000–56,000 deaths every year in the United States alone (1). The rapid evolution of influenza antigens requires annual reformulation of the vaccine. Exacerbating this natural antigenic evolution, viral adaptation may occur within the chicken eggs used in the manufacture of the inactivated vaccine (2). In the current 2017–2018 influenza season, such adaptation has reduced the efficacy against H3N2 (3), the strain thus

45% mean. To identify socially optimal vaccine uptake for low-efficacy influenza vaccines, we applied an optimization algorithm to our model. We consider both impact and optimal uptake in terms of minimizing incidence, hospitalizations, deaths, and disability-adjusted life-years (DALYs). DALYs measure disease burden by capturing both morbidity and mortality, in which a single DALY represents 1 lost year of healthy life (9). Our results indicate that as efficacy declines, optimal uptake to minimize mortality and DALYs shifts some doses from school-age children and young adults, who have disproportionately high transmission rates, to the elderly, who are at greater risk for severe clinical outcomes. We further show that even for vaccines with lower efficacy, optimal uptake is projected to substantially reduce incidence, hospitalizations, deaths, and DALYs compared with projections under typical US vaccine uptake.

Results

We first simulated epidemiological trajectories projected under age-specific vaccination coverages that are typical in the United States. We then considered the optimal uptake of 140 million doses (the average number of doses that have been delivered annually over the five seasons spanning 2012–2017), equivalent to a coverage of 43%. Epidemiological outcomes of infections, hospitalizations, deaths, and DALYs averted were compared with no vaccination. Specifically, in the absence of vaccination, about 77 million infections, 470,000 hospitalizations, and 130,000 deaths would be expected during an influenza season.

Significance

PNAS; Optimizing the Impact of Low-efficacy Influenza Vaccines

20% VE projected to avert 130,000 hospitalizations and 62,000 deaths

Vaccine Effectiveness – Influenza and CVD

- Acute respiratory illness or influenza-like illness increases acute MI risk 2x; 5x is those with history of MI
- Influenza vaccination effectiveness: Meta-analyses[1–2]
  - 29% (95%CI 9,44) against acute MI in persons with existing CVD
  - 36% (95%CI 14,53) against major cardiac events with existing CVD
- Vaccine effectiveness 29% in acute MI prevention
  - "On par or better than accepted preventive measures [as] statins (36%), anti-hypertensives (15–18%), and smoking cessation (26%)"
  - Influenza vaccination recommended as secondary prevention by American College of Cardiology and American Heart Association

1. Barnes M, et al. Acute myocardial infarction and influenza: a meta-analysis of case–control studies. Heart 2015;101:1738–1747

2. Udell JA, et al. Association between influenza vaccination and cardiovascular outcomes in high-risk patients: a meta-analysis. JAMA 2013;310:1711–20

Vaccine Effectiveness – Influenza and Diabetes

- Six cohort and five case-control studies were included in a recently-published systematic review and meta-analysis[1].
- In working age persons with diabetes mellitus,
  - There was pooled VE of 58% against all cause hospitalization
  - No significant effects on all-cause mortality and influenza-like illness
- In elderly patients with diabetes mellitus, adjusted VEs of 38% against all-cause mortality and 23% against all-cause hospitalization were seen.

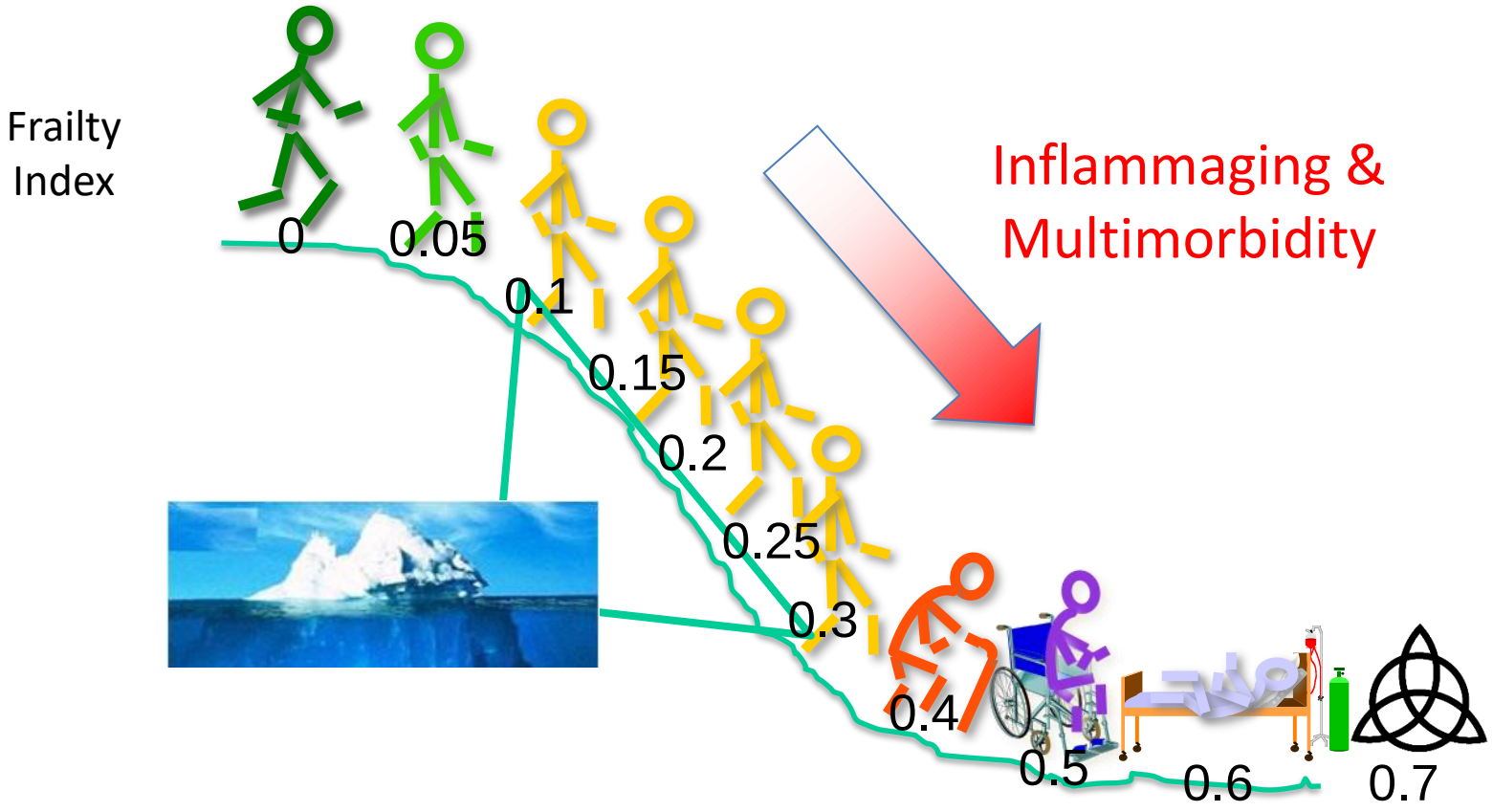
1. Remschmidt C, Wichmann O, Harder T. Vaccines for the prevention of seasonal influenza in patients with diabetes: systematic review and meta-analysis. BMC Med 2015;13:53.

Vaccine Effectiveness – Influenza and Diabetes

- A retrospective study demonstrated that influenza vaccination was associated with a significant decrease in risk for hospital admission due to stroke, heart failure, and influenza or pneumonia.[1]
- However, another recent systematic review that factored in confounders such as indirect health outcomes, selection and health seeking bias, and the frequent absence of adjustment for pneumococcal vaccination status, suggested that the overall evidence for influenza vaccine effectiveness could be low.[2]
- Yet another report states that the present evidence suggests that influenza vaccination among adults and elderly with diabetes mellitus is efficacious and safe.[3]

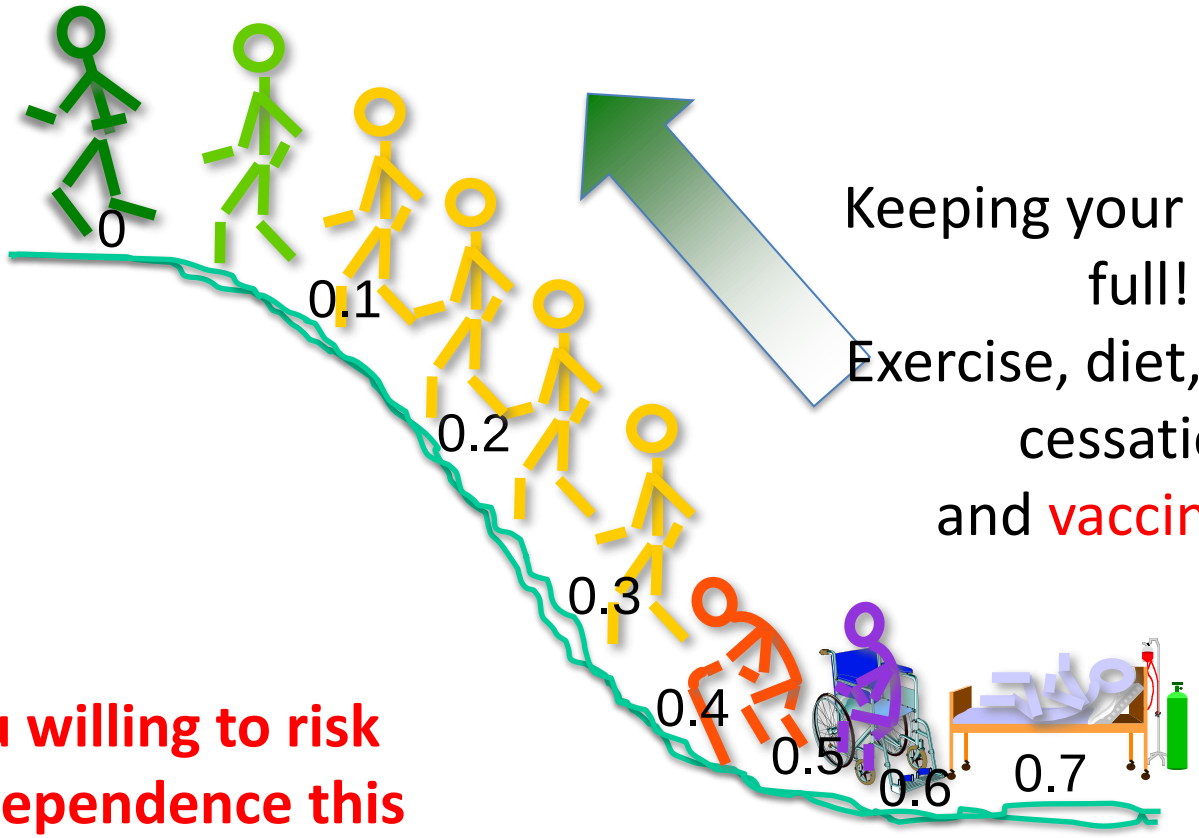
1. Eszter P. Vamos, Utz J. Pape, Vasa Curcin, Matthew J. Harris, Jonathan Valabhji, Azeem Majeed and Christopher Millett. CMAJ October 04, 2016 188 (14) E342-E351.
2. Casanova L, Gobin N, Villania P, Verger P. 2016. Primary Care Diabetes 10(6):398–406.
3. M. Goeijenbier, T.T. van Sloten, L. Slobbe, C. Mathieu, P. van Genderen, Walter E.P. Beyer, Albert D.M.E. Osterhaus. 2017. Vaccine 35(38):5095-5101

Resilience to Influenza with Aging



Graphic courtesy of Janet McIlhaney, MD

Resilience to Influenza with Aging



Keeping your glass half full!
Exercise, diet, smoking cessation
and vaccination

Are you willing to risk your independence this winter?

Graphic courtesy of Janet McIlhaney, MD

Influenza Vaccines

2021-2022 Influenza Vaccine Strains

- Egg-based influenza vaccines will contain hemagglutinin derived from:
  - A/Cambodia/e0826360/2020 (H3N2-like)
  - A/Victoria/2570/2019 (H1N1-like)
  - B/Washington/2/2019 (Victoria)
  - B/Phuket/3073/2013 (Yamagata)
- Non egg-based influenza vaccines will contain hemagglutinin derived from:
  - A/Cambodia/e0826360/2020 (H3N2-like)
  - A/Wisconsin/588/2019 (H1N1-like)
  - B/Washington/2/2019 (Victoria)
  - B/Phuket/3073/2013 (Yamagata)

Influenza Vaccines 2020-2021 (www.immunize.org/catg.d/p4072.pdf)

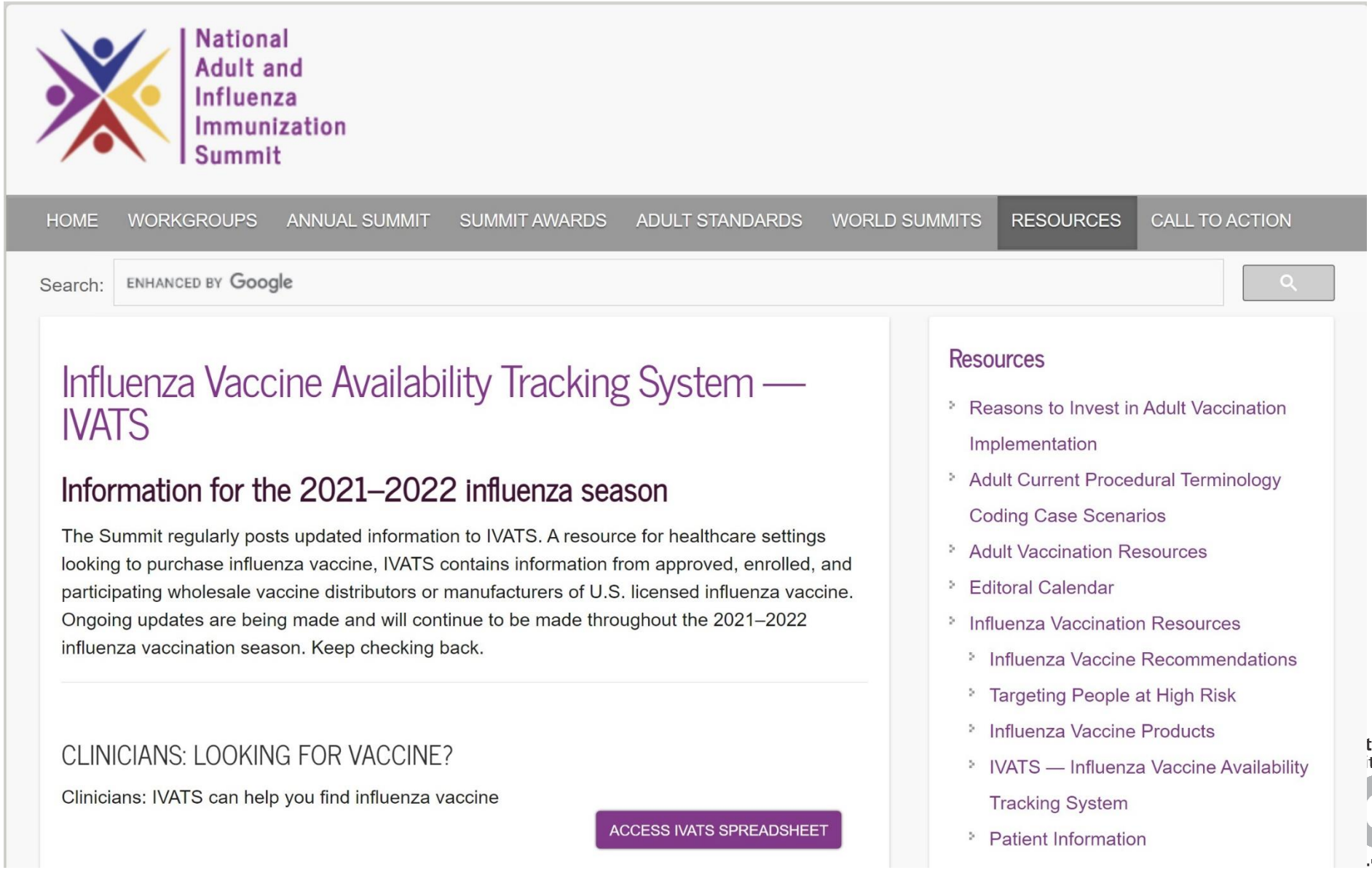
Influenza Vaccine Products for the 2021–2022 Influenza Season

Manufacturer	Trade Name (vaccine abbreviation)[1]	How Supplied	Mercury Content (mcg Hg/0.5mL)	Age Range	CVX Code	Vaccine Product Billing Code[2] CPT
AstraZeneca	FluMist (LAIV4)	0.2 mL (single-use nasal spray)	0	2 through 49 years	149	90672
GlaxoSmithKline	Fluarix (IIV4)	0.5 mL (single-dose syringe)	0	6 months & older[3]	150	90686
	FluLaval (IIV4)	0.5 mL (single-dose syringe)	0	6 months & older[3]	150	90686
Sanofi Pasteur	Flublok (RIV4)	0.5 mL (single-dose syringe)	0	18 years & older	185	90682
	Fluzone (IIV4))	0.5 mL (single-dose syringe)	0	6 months & older[3]	150	90686
		0.5 mL (single-dose vial)	0	6 months & older[3]	150	90686
		5.0 mL (multi-dose vial)	25	6 through 35 months[3]	158	90687
		5.0 mL (multi-dose vial)	25	3 years & older	158	90688
	Fluzone High-Dose (IIV4-HD)	0.7 mL (single-dose syringe)	0	65 years & older	197	90662
Seqirus	Afluria (IIV4)	0.25 mL (single-dose syringe)	0	6 through 35 months[3]	161	90685
		0.5 mL (single-dose syringe)	0	3 years & older[3]	150	90686
		5.0 mL (multi-dose vial)	24.5	6 through 35 months[3]	158	90687
		5.0 mL (multi-dose vial)	24.5	3 years & older[4]	158	90688
	Fluad (aIIV4)	0.5 mL (single-dose syringe)	0	65 years & older	205	90694
	Flucelvax (ccIIV4)	0.5 mL (single-dose syringe)		2 years & older[3]	171	90674
		5.0 mL (multi-dose vial)	25	2 years & older[3]	186	90756

NOTES

1. IIV4 = egg-based quadrivalent inactivated influenza vaccine (injectable); where necessary to refer to cell culture-based vaccine, the prefix "cc" is used (e.g., ccIIV4); RIV4 = quadrivalent recombinant hemagglutinin influenza vaccine (injectable); aIIV4 = adjuvanted quadrivalent inactivated influenza vaccine.
2. An administration code should always be reported in addition to the vaccine product code. Note: Third party payers may have specific policies and guidelines that might require providing additional information on their claim forms.
3. Dosing for infants and children age 6 through 35 months:
   - Afluria 0.25 mL
   - Fluarix 0.5 mL
   - Flucelvax 0.5 mL (24 through 35 months)
   - FluLaval 0.5 mL
   - Fluzone 0.25 mL or 0.5 mL
4. Afluria is approved by the Food and Drug Administration for intramuscular administration with the PharmaJet Stratis Needle-Free Injection System for persons age 18 through 64 years.

The Summit's Influenza Vaccine Availability Tracking System (IVATS)



ACIP Influenza Recommendations (2021-22)

- All persons 6 months of age or older should receive influenza immunization (unchanged)
  - Influenza vaccination should not be delayed to procure a specific vaccine preparation if an appropriate one is already available
- Influenza vaccine usually becomes available in July.
- Optimal vaccination – vaccinated by the end of October
- Certain persons should be vaccinated earlier rather than later.
  - Children 2 – 8 years of age who require 2 doses of influenza vaccine
  - Persons who are in the third trimester of pregnancy

ACIP Influenza Recommendations (2020-21) - continued

- Vaccination should be offered as long as influenza viruses are circulating, and unexpired vaccine is available
  - Vaccine administered in December or later, even if influenza activity has already begun, is likely to be beneficial in the majority of influenza seasons
- Final 2021 – 22 recommendations (released 8/27/2021): https://www.cdc.gov/mmwr/volumes/70/rr/rr7005a1.htm

Co-administration of Influenza Vaccines with COVID-19 Vaccines

- Current CDC guidance indicates that COVID-19 vaccines and other vaccines, including influenza, may be co-administered without regard to timing.
- Providers should check current CDC COVID-19 vaccination guidance for updated information concerning co-administration.

https://www.cdc.gov/vaccines/covid-19/info-by-product/clinical-considerations.html

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Timing and Spacing of Vaccine Doses

- General Best Practices: two different vaccines may be given simultaneously (same clinic day)
  - Some exceptions for certain vaccines and certain risk groups
    - PCV13 and Menactra (asplenia, HIV infection)
- General Best Practices: two different vaccines may be given at any interval
  - Some exceptions for certain vaccines and certain risk groups
    - Menactra and DTaP (asplenia, HIV infection, complement component deficiency)
    - Most injectable live vaccine pairs need to be separated by 28 days
    - LAIV and another live vaccine needs to be separated by 28 days
    - Yellow fever and another live vaccine (including LAIV) needs to be separated by 30 days

ACIP General Best Practice Guidelines for Immunization: https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html

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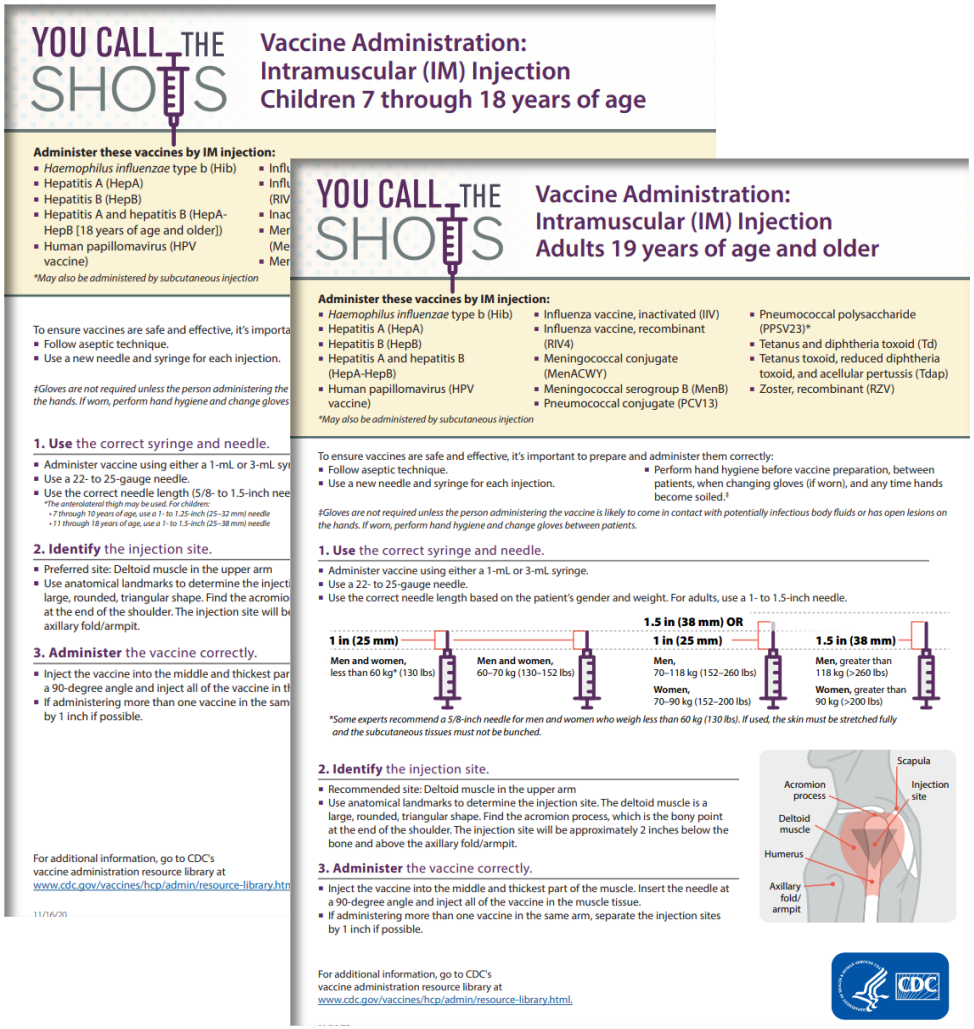
Best Practices for Multiple Injections

- Label each syringe.
- Separate injection sites by 1 inch or more, if possible.
- Administer the **COVID-19 vaccine** and vaccines that may be more likely to cause a local reaction in different limbs, if possible.

https://www.cdc.gov/vaccines/hcp/admin/resource-library.html



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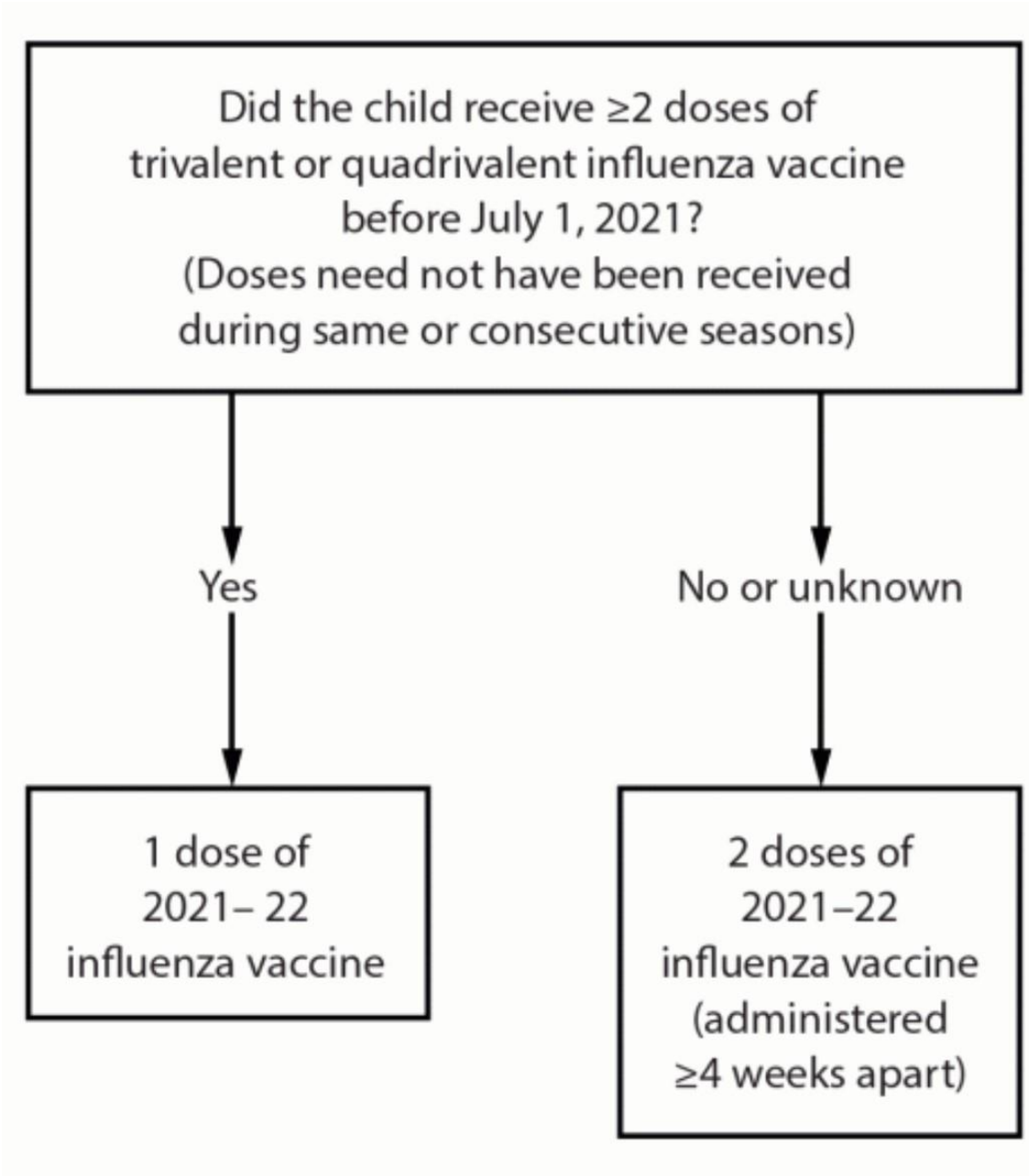
ACIP Pediatric Algorithm (2020-21)



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.

What to expect this upcoming flu season??

- Influenza will most likely be back
  - Other respiratory pathogens (e.g. RSV) that “disappeared” last season are already returning
  - No idea how severe this next flu season will be.
  - Influenza viruses and SARS CoV 2 will likely co circulate.
  - People may be co infected with influenza and SARS CoV 2.
- Presence of influenza on top of SARS CoV 2 delta variant at the same time will likely increase the burden on the health care system and result in many illnesses, hospitalizations, and deaths.

#Avoidthetwindemic #Takefluoffthetable .....AGAIN!!

- Overlapping high risk conditions between influenza and COVID-19 makes it critical that we protect against VPDs, such as influenza
- A “twindemic” of flu and COVID-19 will create surge capacity issues for our healthcare systems
- A strong, unified, national message to seek flu vaccination can result in increased vaccinations.
- Need to emphasize that after getting COVID-19 vaccine, “you’re not done yet…” and recommend flu vaccine
- Access points must be varied, innovative
- Vaccination season must be extended

IAC has developed Mass Immunization Clinic Resource Repository

https://www. https://www.mass-vaccination-resources.org/

Resource ing Mass Vaccination Clinics

Mass va administration of vaccine(s) to a large number o latively short period of time, allowing providers to rapidly and y immunize communities. Due to the unique nature of mass vaccination clinics, they frequently are held in non-traditional or temporary settings, such as in parking lots or large indoor spaces. Patient flow may be managed through a variety of venues, such as walk-through, drive-through, and curbside clinics, or by using mobile medical units.

This listing from the Immunization Action Coalition offers access to guidance documents, toolkits, and other helpful resources, produced over a span of many years, and to information that can be adapted to meet the needs of

Webinar

Related Resources

About

Home

During COVID-19…and beyond…

- All in this ship together!
  - Unified, coordinated messages, engaged multiple stakeholders, and focus to accomplish routine, catch-up adult, AND seasonal influenza, vaccination
- Provide strong recommendation to get vaccinated
  - Provider remains the trusted voice, and will be critical to overcome issues of awareness, hesitancy, COVID-19 concerns
- Innovative approaches to increase access to vaccines
  - Alternative delivery approaches from the past year must be continued to deliver routine vaccination.
  - Recently developed best practices must be shared and expanded to make vaccines broadly available and to combat healthcare inequalities.
  - Provider payment must be commensurate with efforts in COVID-19 mitigation and costs of innovation.
- EXPAND the flu vaccination season
  - #takefluoffthetable #avoidthetwindemic
  - Vaccination efforts need to remain in full swing until every dose is administered…extending the season into December and January

How do we discuss Vaccine Effectiveness?

- Emphasize that it is very likely that flu WILL be back!
- Address vaccine effectiveness directly, early, and as needed, during season
- Communicate the variability and unpredictability of flu
- Acknowledge that flu vaccination is not a perfect tool, but it is the best way to protect against flu infection
- Communicate the benefits of flu vaccination beyond prevention of disease – Quality of Life (vaccine preventable disability)
  - Flu vaccination can reduce doctors' visits, missed work and school due to flu, as well as prevent flu-related hospitalizations and deaths.

Dispelling Myths and Handling Objections About Flu Shots

OBJECTION:	The flu shot will give me the flu.
	It's impossible to get the flu from the flu vaccine. It is made with viruses that are not infectious or with no viruses at all. You can get the flu from someone else.
OBJECTION:	I'm healthy. I don't need a shot.
	Every year, healthy people get sick from the flu, and some even die. Many people have underlying conditions that they are not aware of. Even with a mild case, you can still pass the virus along to the people you love and care about.
OBJECTION:	I've never had the flu.
	Every year, up to 20% of Americans get the flu—that's up to 60 million people—many of whom have not had the flu before.
OBJECTION:	The flu shot doesn't work.
	Effectiveness varies from season to season and between flu strains. Vaccine effectiveness is not just measured by the percentage of disease prevented but more importantly, by the myriad of negative outcomes that vaccination prevents even if you catch the flu, such as hospitalization and quality of life (disability).

IAC Resource for clinicians (www.influenza-defense.org)

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CDC 2021-2022 Flu Vaccination Messaging*

- Influenza (flu) activity during the 2020-2021 season was unusually low both in the United States and globally, despite high levels of testing.
- Relaxed COVID-19 mitigation measures will likely result in the resumption of seasonal flu virus circulation.
- Some respiratory viruses, like RSV, are spreading at increased levels**, and there could be more widespread respiratory disease this fall and winter. Getting a flu vaccine will be important to prevent flu.
- CDC is preparing for flu and SARS-CoV-2 to co-circulate, along with other respiratory viruses this season.
  - This could place a renewed high burden on the health care system.
  - Reduced population immunity due to lack of flu virus activity since March 2020 could result in an early and possibly severe flu season.

*https://www.izsummitpartners.org/2021-08-12/
**https://www.cdc.gov/mmwr/volumes/70/wr/mm7029a1.htm

CDC 2021-2022 Flu Vaccination Messaging*

- CDC recommends a three-pronged approach to fighting flu.
  - Vaccinate to prevent flu illnesses, hospitalizations and deaths.
  - Treat with influenza antiviral drugs promptly to reduce flu illnesses, hospitalizations and deaths, especially among people at higher risk of serious flu complications.
- CDC recommends the use of certain everyday infection control interventions that may help reduce the spread of respiratory viruses like flu, including staying away from others if sick, covering the cough, and frequent handwashing.
- In the context of the COVID-19 pandemic, local governments or public health departments may recommend additional precautions be taken in your community.

*** https://www.izsummitpartners.org/2021-08-12/**

CDC 2021-2022 Flu Vaccination Messaging*

- Emphasize the many benefits to flu vaccination.
  - Flu vaccination reduces flu illnesses, hospitalizations and deaths.
  - Flu vaccination reduces the burden of flu on health care systems.
  - Flu vaccination protects pregnant women from flu and protect their babies from flu for several months after birth.
  - Flu vaccination reduces the rates of some cardiac events among people with heart disease.
  - Flu vaccination reduces the rate of hospitalizations related to diabetes and chronic lung disease.

*** https://www.izsummitpartners.org/2021-08-12/**

CDC 2021-2022 Flu Vaccination Messaging*

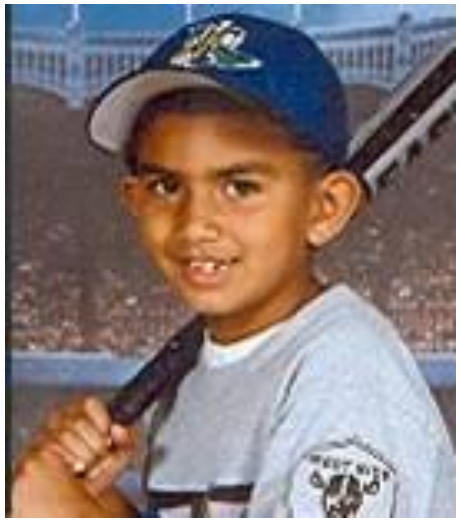
- Target people who are at higher risk for flu complications, for example people of any age with a chronic condition like a breathing or lung problem, heart disease or a weakened immune system, for flu vaccination
  - In the past, 9 out of 10 people hospitalized from flu have had at least one underlying health condition.
- CDC received reports of 199 children dying from flu during 2019-2020.
  - Record-breaking number of reported pediatric flu deaths.
  - 80% were not vaccinated.
  - Flu can be serious for kids and a flu vaccine is the best way to protect children from flu.

*** https://www.izsummitpartners.org/2021-08-12/**

Why do we immunize against influenza?

Amanda, died at age 4½ yrs from influenza

Breanne, died at age 15 mos from influenza complications



Lucio, died at age 8 yrs from influenza complications

Alana, died at age 5½ yrs from influenza

Barry, a veteran fire-fighter, died at age 44 yrs from influenza

Slide Courtesy of Families Fighting Flu

Visit IAC Resources!

- IAC's Influenza Educational Materials
  - https://immunize.org/influenza/
- Read our publications!
  - http://www.immunize.org/publications/
- Visit our websites!
  - www.immunize.org
  - www.vaccineinformation.org
  - www.immunizationcoalitions.org
  - www.izsummitpartners.org
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  - http://www.immunize.org/subscribe/

Thank You for your attention!