Influenza Activity and VE Update

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FDA VRBPAC Meeting
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CDC Influenza Division Surveillance

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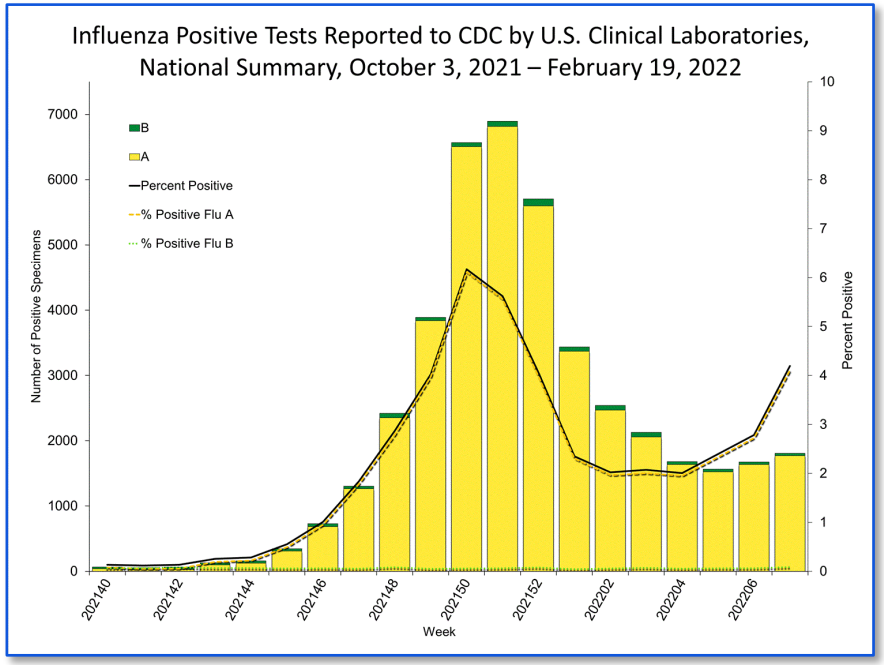
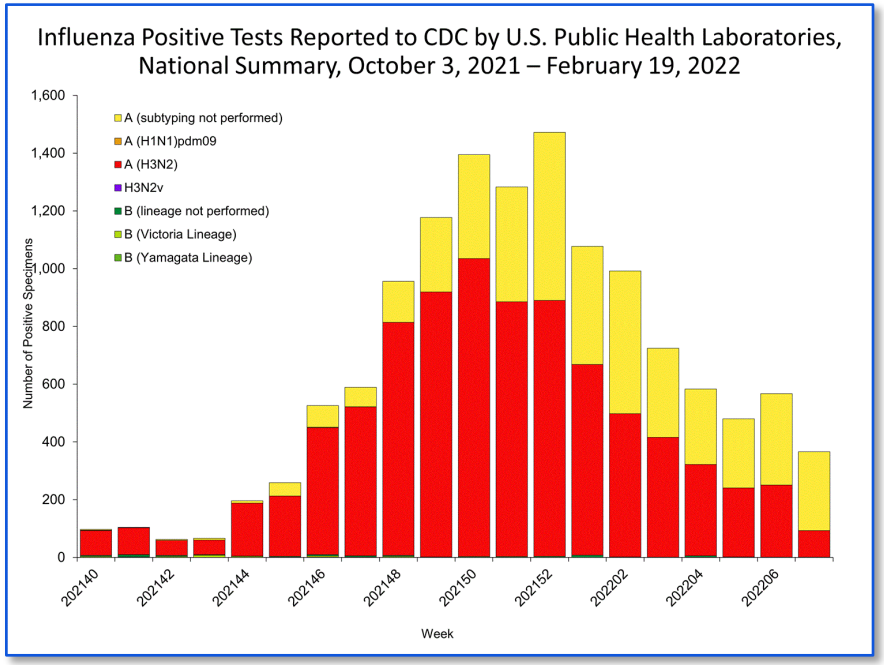
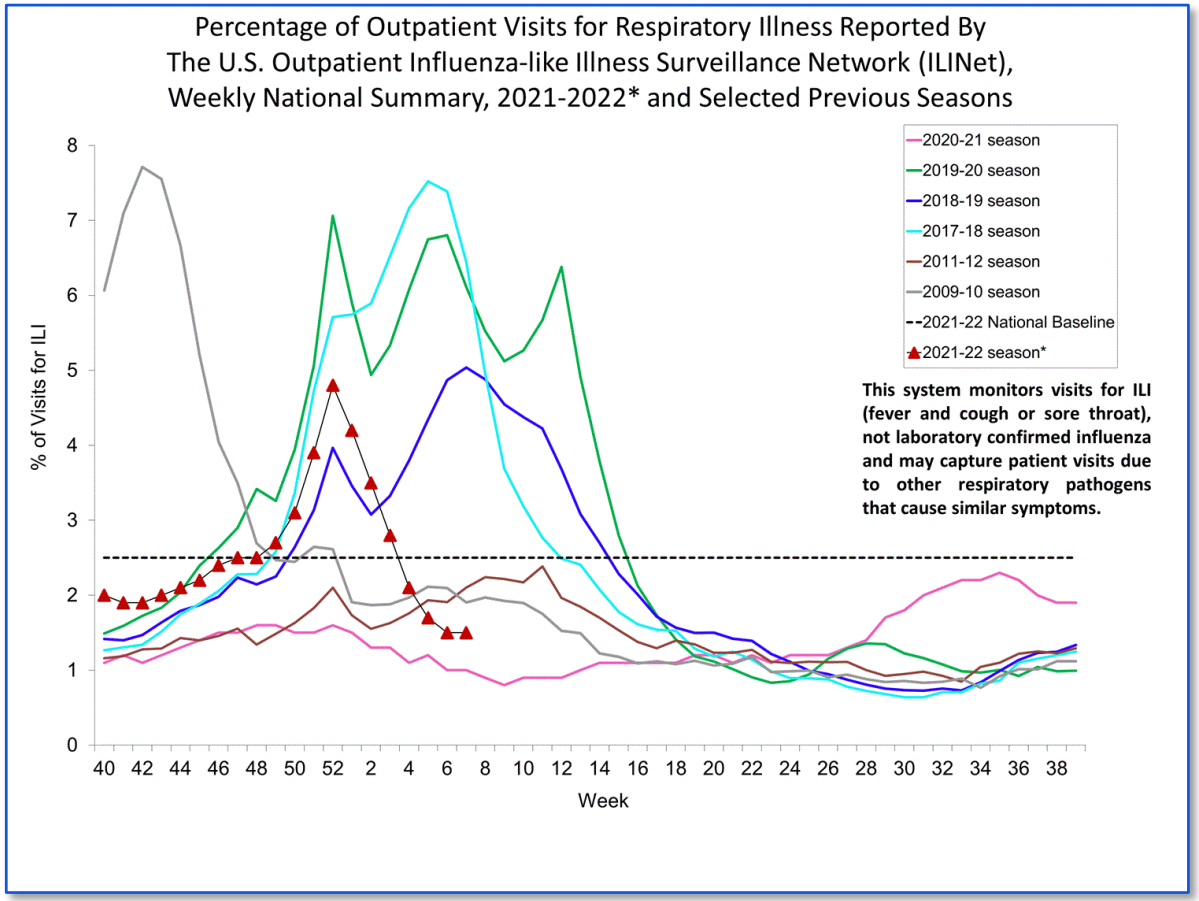
- Stacey Huang
- Krista Kniss
- Angiezel Merced-Morales
- Shunte Moon
- Benjamin Natkin
- Yau Chin Pun
- Katie Tastad
- Danielle Toth

Virologic Surveillance

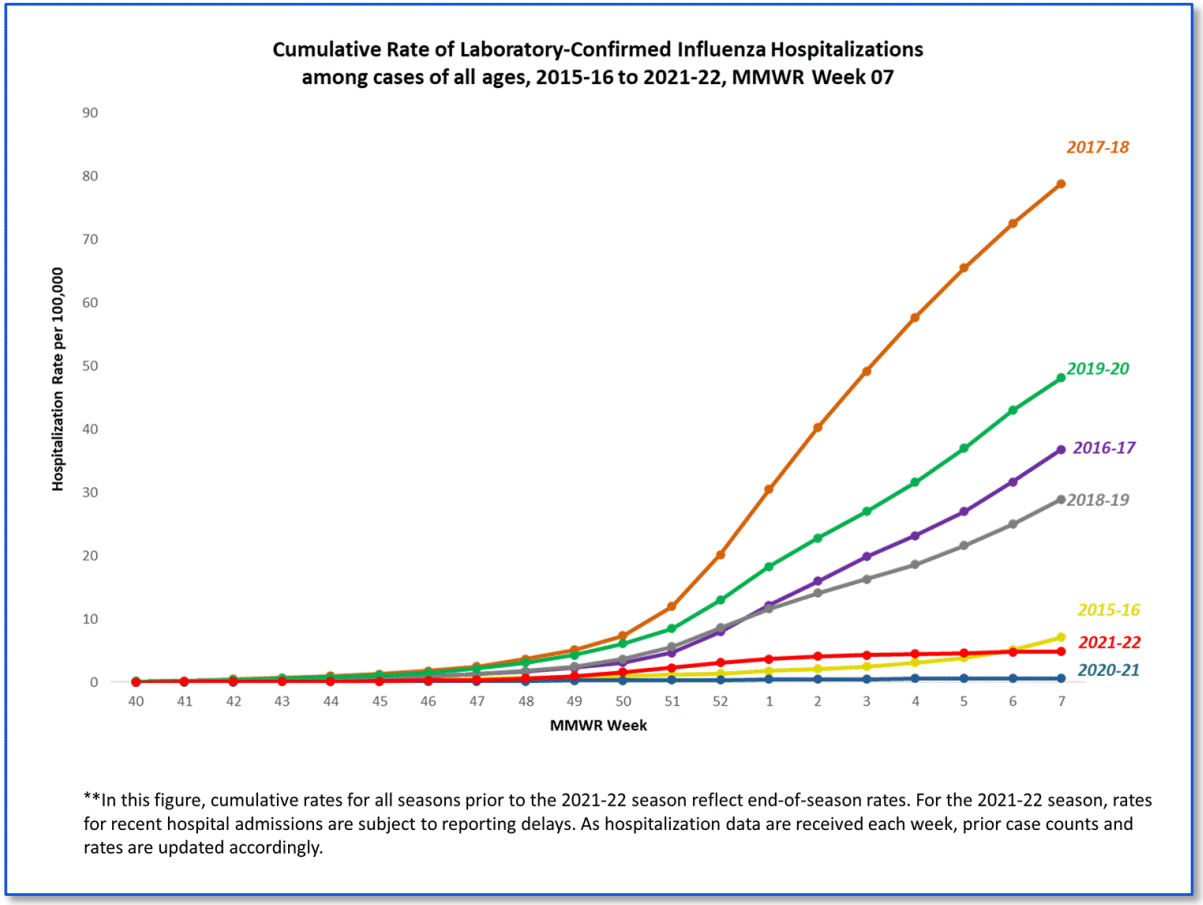




Influenza -like Illness Activity (ILINet)

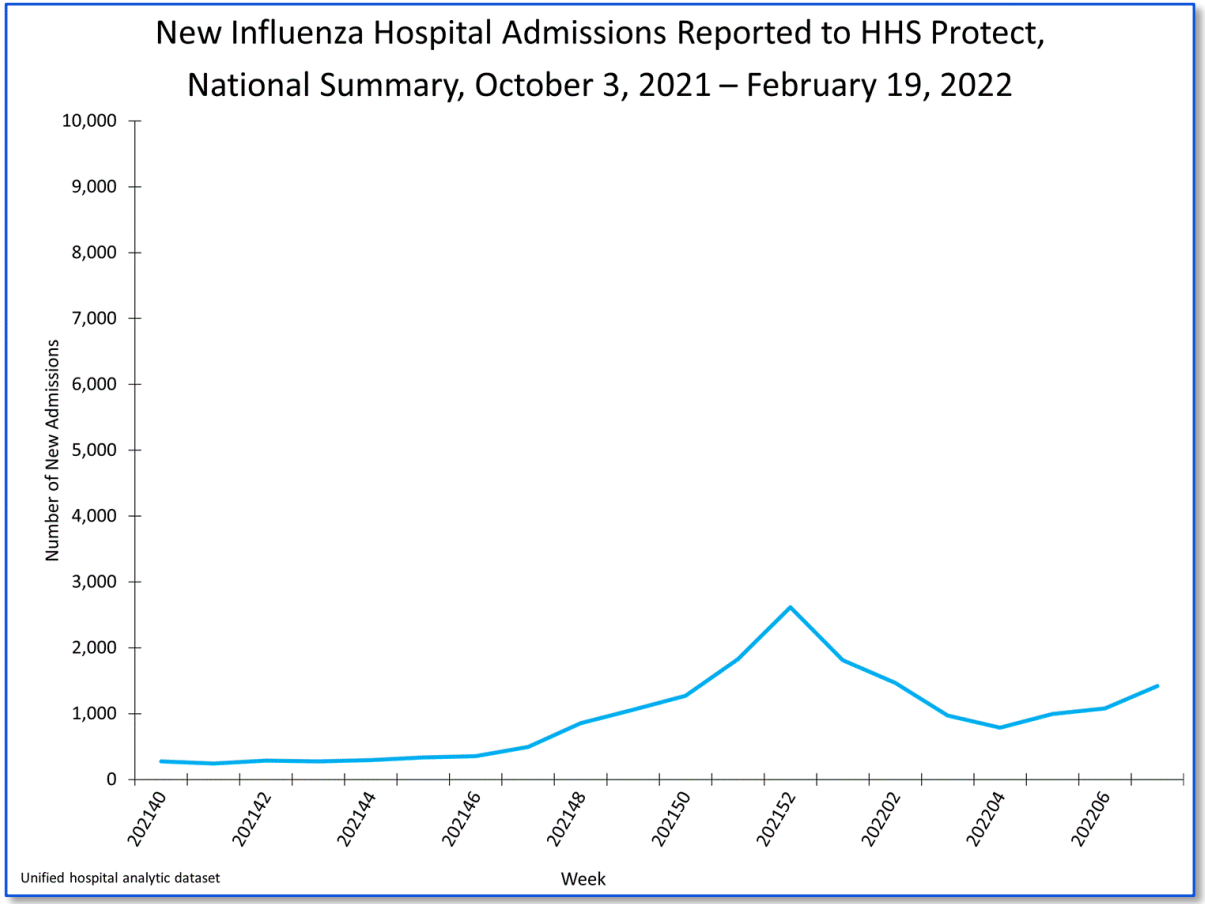


Influenza Hospitalizations (FluSurv-NET)

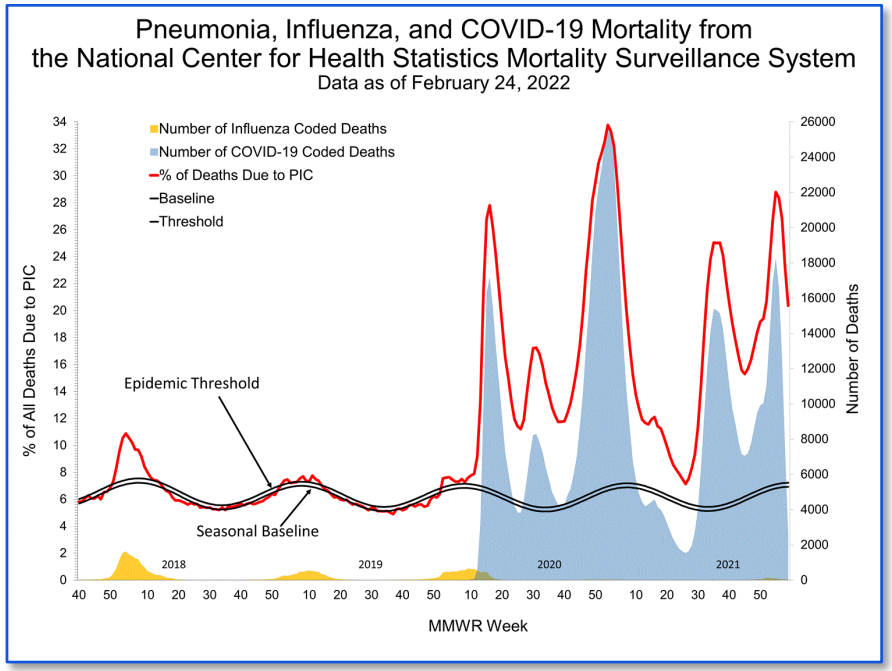


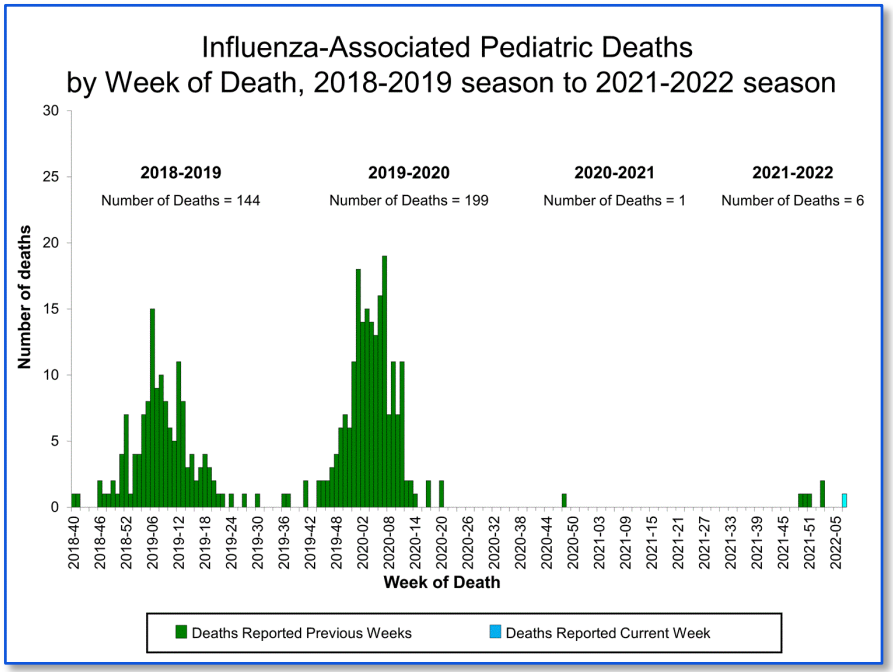
**In this figure, cumulative rates for all seasons prior to the 2021-22 season reflect end-of-season rates. For the 2021-22 season, rates for recent hospital admissions are subject to reporting delays. As hospitalization data are received each week, prior case counts and rates are updated accordingly.

Influenza Hospitalizations (HHS Protect)



Influenza Mortality



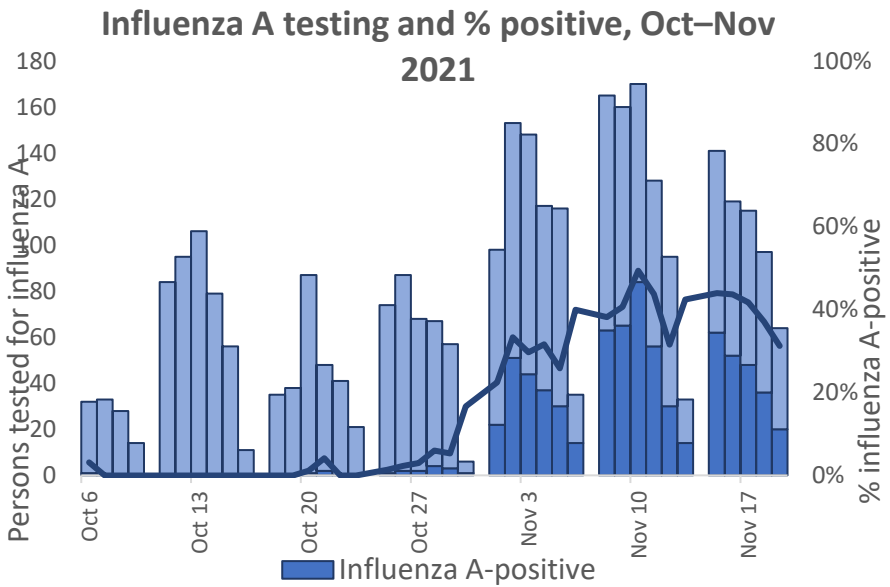


Recent U.S. Influenza Activity--Summary

As of Week 7 (the week ending February 19, 2022:

- 4.2% of specimens submitted to clinical laboratories are positive (increased from 3.0% for Week 6).
  - Most specimens that are subtyped are H3N2 viruses.
  - These viruses are thus far genetically closely related to the vaccine virus, but there are some antigenic differences that have developed as H3N2 viruses continue to evolve.
- Sporadic influenza activity continues throughout the country.
  - Influenza is increasing in some parts of the country.
- The cumulative hospitalization rate (FluSurv-NET) is higher than that for the entire 2020-21 season, but lower than that observed at this time during the four seasons preceding the COVID-19 pandemic.

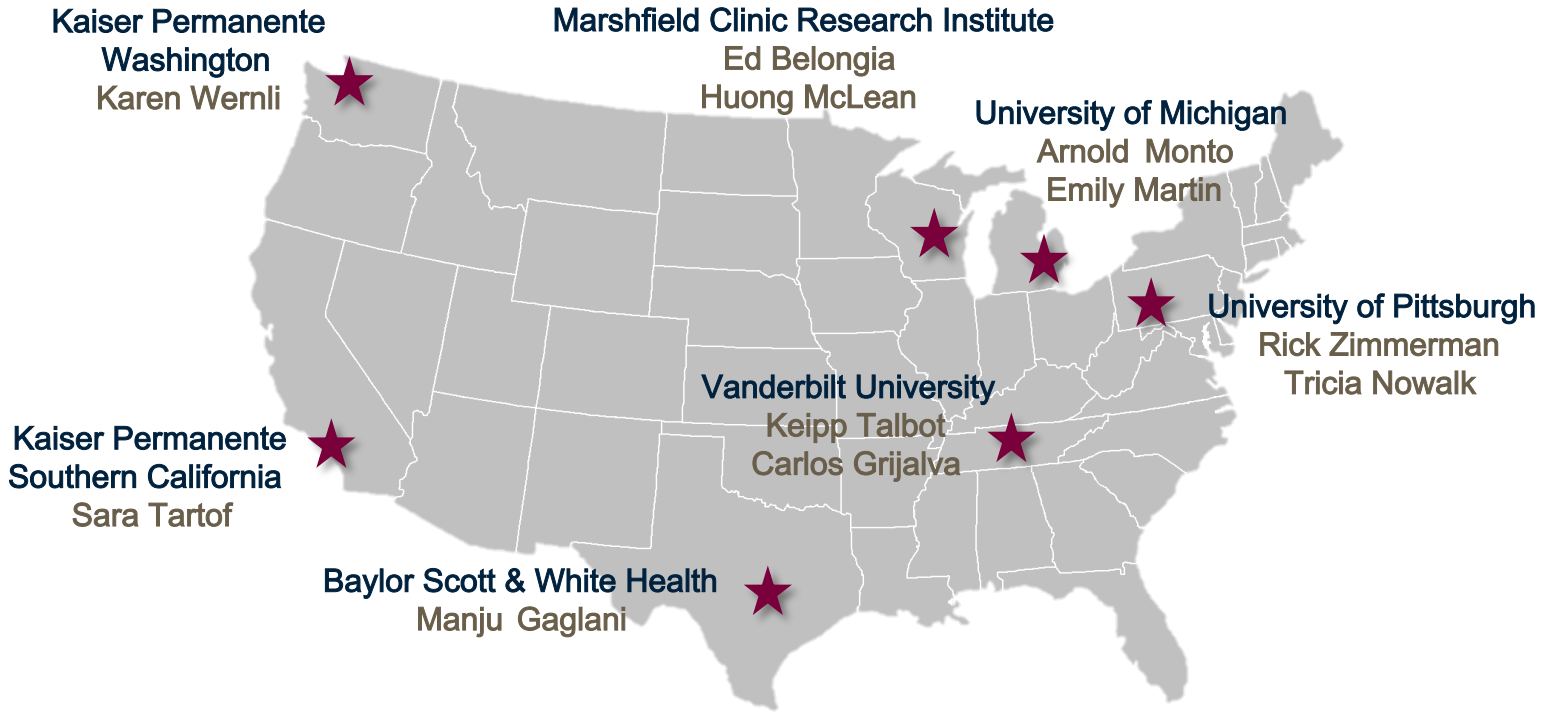
Early season evidence of low VE against H3N2 clade 3C.2a1b group 2a.2 in influenza outbreak on large university campus, October-November 2021



OBS: University Health Services does not conduct influenza A testing

- Influenza outbreaks at several universities reported when activity in U.S. was still low
- Large number of influenza positives detected by Flu A, B, RSV and SC2 multiplex assay
  - 519 [20%] flu A positive out of 2582 ill students tested at university health service
- Direct sequencing from clinical specimens at U Michigan lab (A. Lauring)
  - 386 high quality WGS—all HA subclade 3C.2a1b.2a.2
- Preliminary VE: 0% (CI: -25% to 20%)

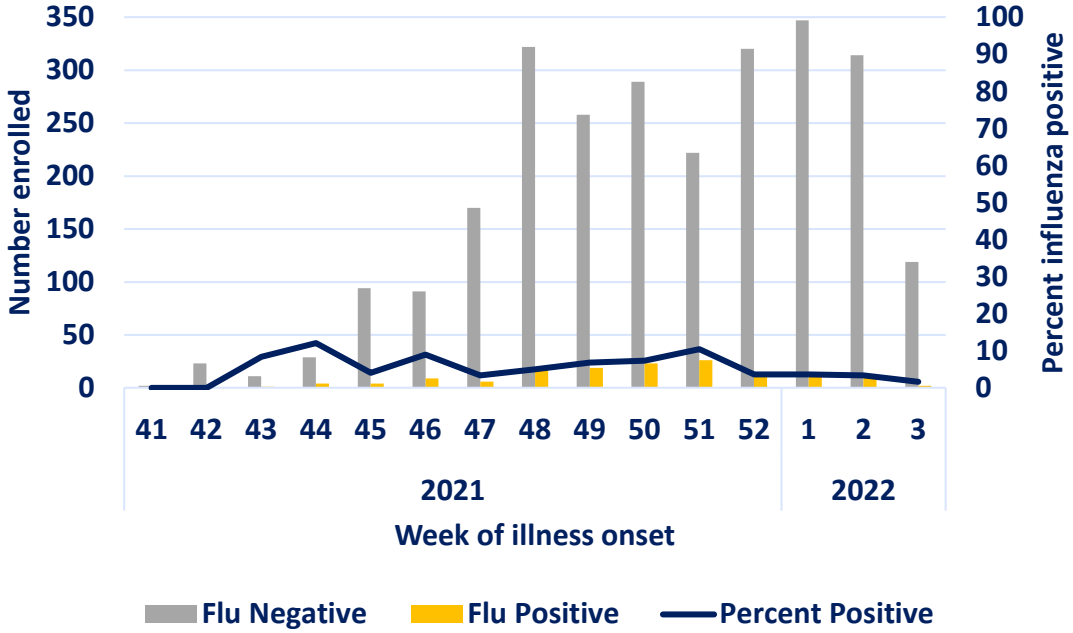
US Flu VE Network for annual estimates of influenza vaccine effectiveness against outpatient illness, 7 sites



Interim Results: Enrollment Oct 4, 2021–Jan 22, 2022

- 2,758 enrolled at 7 sites
- 2611 (95%) flu negative
- 147 (5%) flu positive
  - Influenza A--all subtyped viruses A(H3N2)
  - All sequenced viruses A(H3N2) belong to single genetic group (3C.2a1b subclade 2a.2)

Number enrolled by RT-PCR result and % flu positive by week of illness onset



Note: Week 3 only includes patients with completed laboratory tests and thus does not reflect all enrolled patients during that week across study sites.

Interim vaccine effectiveness against influenza A and A/H3N2 among patients aged 6 months and older, US Flu VE, 2021–22

	Influenza positive		Influenza negative		Vaccine Effectiveness			
					Unadjusted		Adjusted[1]	
Influenza A	N vaccinated /Total	(%)	N vaccinated /Total	(%)	VE %	95% CI	VE %	95% CI
Ages ≥6 mos	60/147	41	1253/2611	48	25	(-5 to 47)	8	(-31 to 36)
A/H3N2[2]								
Ages ≥6 mos	44/119	37	1110/2373	47	33	(2 to 54)	14	(-28 to 43)

[1] Multivariable logistic regression models adjusted for site, age, and month of onset.

[2] Excludes influenza test-negatives enrolled at one site from which subtype results were not available.

Limitations

- Lowest influenza positivity (5%) observed over past 10 seasons among US Flu VE Network participants with respiratory illness
- Numbers of influenza-positive participants were insufficient to estimate age group-specific VE or compare effectiveness of different influenza vaccine products against predominant A(H3N2) virus
- Health care seeking behavior has changed during COVID-19 pandemic in ways that may affect influenza vaccine effectiveness estimates
- These VE estimates are limited to mild illness; evaluation of VE against influenza hospitalizations is ongoing

Acknowledgments: US Flu VE Network collaborating institutions

- Kaiser Permanente Southern California, Los Angeles, CA
- University of Michigan School of Public Health, Ann Arbor, and Henry Ford Health System, Detroit, MI
- University of Pittsburgh Schools of the Health Sciences and UPMC, Pittsburgh, PA
- Vanderbilt University Medical Center, Nashville, TN
- Baylor Scott and White Health, Texas A&M University College of Medicine, Temple, TX
- Marshfield Clinic Research Institute, Marshfield, WI
- Kaiser Permanente Washington Health Research Institute, Seattle, WA

For more information, contact CDC
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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.