



Preliminary end-of-season estimates of 2016–17 seasonal influenza vaccine effectiveness against medically attended influenza from the US Flu VE Network

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US Flu VE Network sites and principal investigators

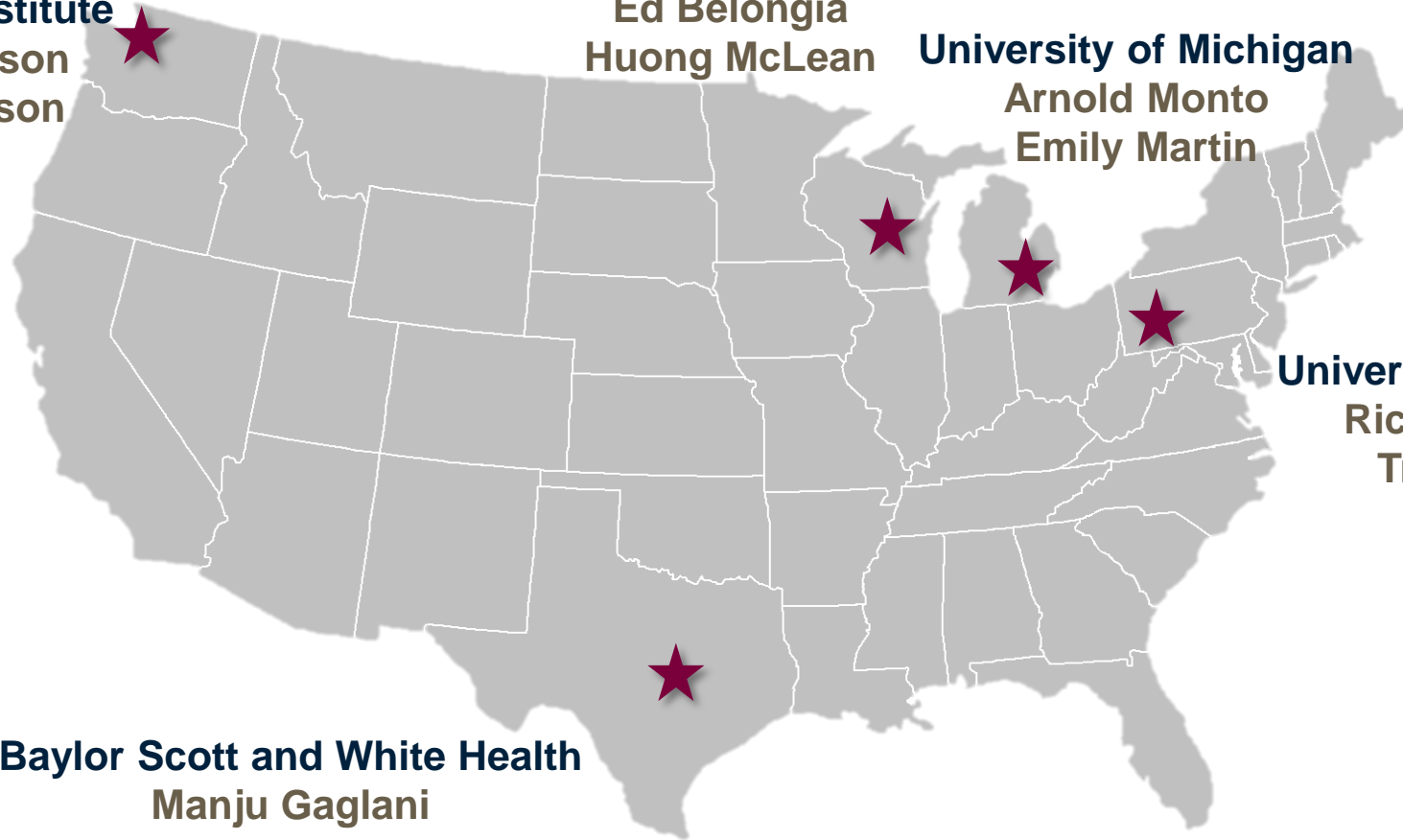
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US Flu VE Network Methods

Enrollees: Outpatients aged ≥ 6 months with acute respiratory illness with cough ≤ 7 days duration

Dates of enrollment: November 28, 2016–April 14, 2017

Design: Test-negative design

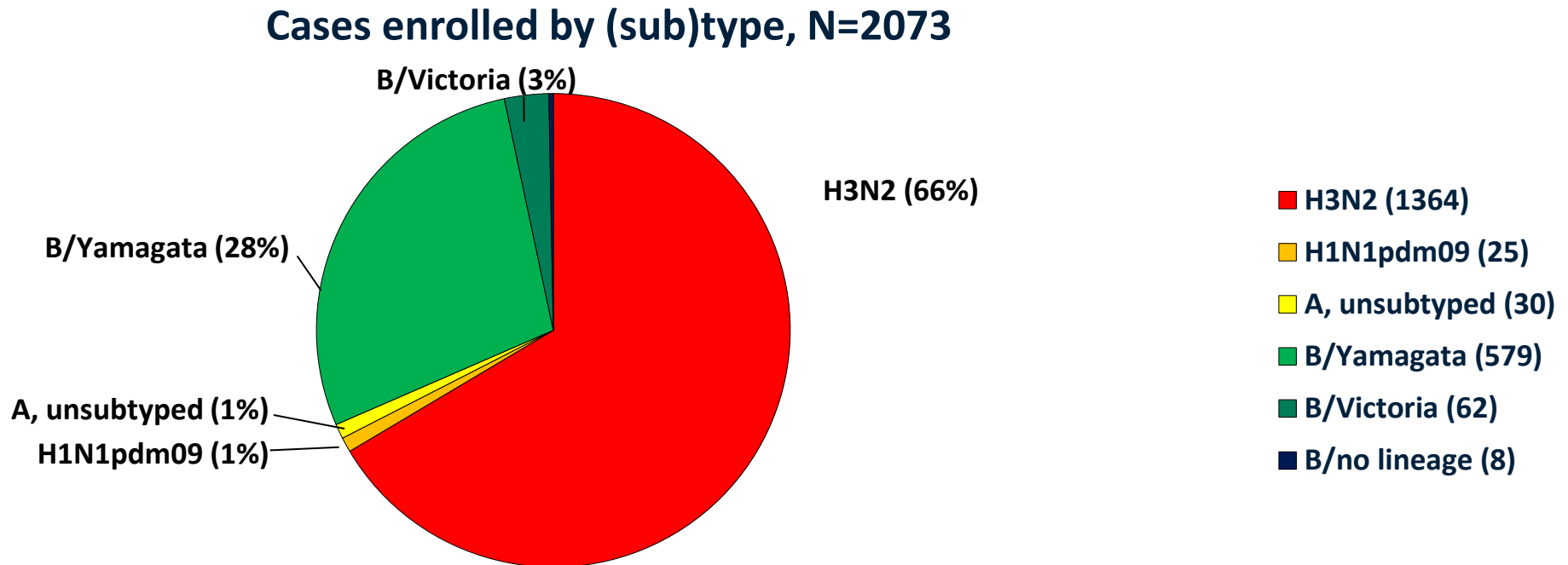
- Comparing vaccination odds among influenza RT-PCR positive cases and RT-PCR negative controls
- Vaccination status: receipt of at least one dose of any 2016–17 seasonal flu vaccine according to medical records, immunization registries, and/or self-report

Analysis: $VE = (1 - \text{adjusted OR}) \times 100\%$

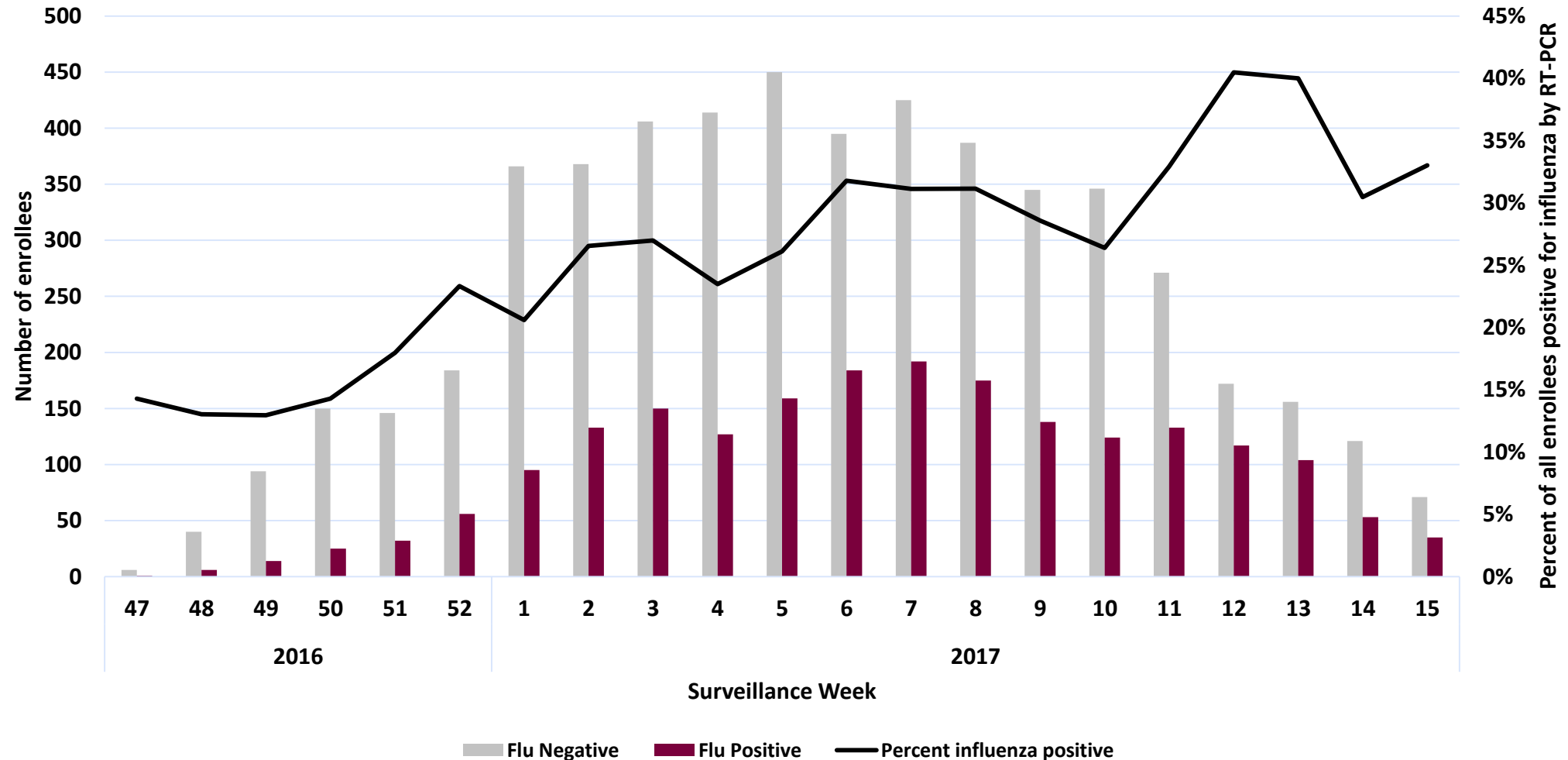
- Adjustment for study site, age, sex, self-rated general health status, race/Hispanic ethnicity, interval (days) from onset to enrollment, and calendar time

Preliminary 2016-17 Results

- 7410 enrolled from Nov 28, 2016–Apr 14, 2017 at 5 sites
- 2073 (28%) influenza RT-PCR positive
- 5323 (72%) influenza RT-PCR negative



Number of enrolled participants by influenza RT-PCR result and percent positivity by week of onset



Interim (February) vaccine effectiveness against medically attended influenza, 2016–17

Any influenza A or B virus	Influenza positive		Influenza negative		Vaccine Effectiveness			
	N vaccinated /Total	(%)	N vaccinated /Total	(%)	Unadjusted		Adjusted*	
					VE %	95% CI	VE %	95% CI
Overall	333/744	(45)	1317/2400	(55)	33	(21 to 44)	48	(37 to 57)
Age group (yrs)								
6 mos–8	32/97	(33)	330/614	(54)	58	(33 to 73)	53	(22 to 72)
9–17	36/122	(30)	92/247	(37)	29	(-12 to 56)	32	(-20 to 61)
18–49	89/208	(43)	363/783	(46)	13	(-18 to 36)	19	(-17 to 43)
50–64	76/189	(40)	261/425	(61)	58	(40 to 70)	58	(38 to 72)
≥65	100/128	(78)	271/331	(82)	21%	(-31 to 52)	46	(4 to 70)

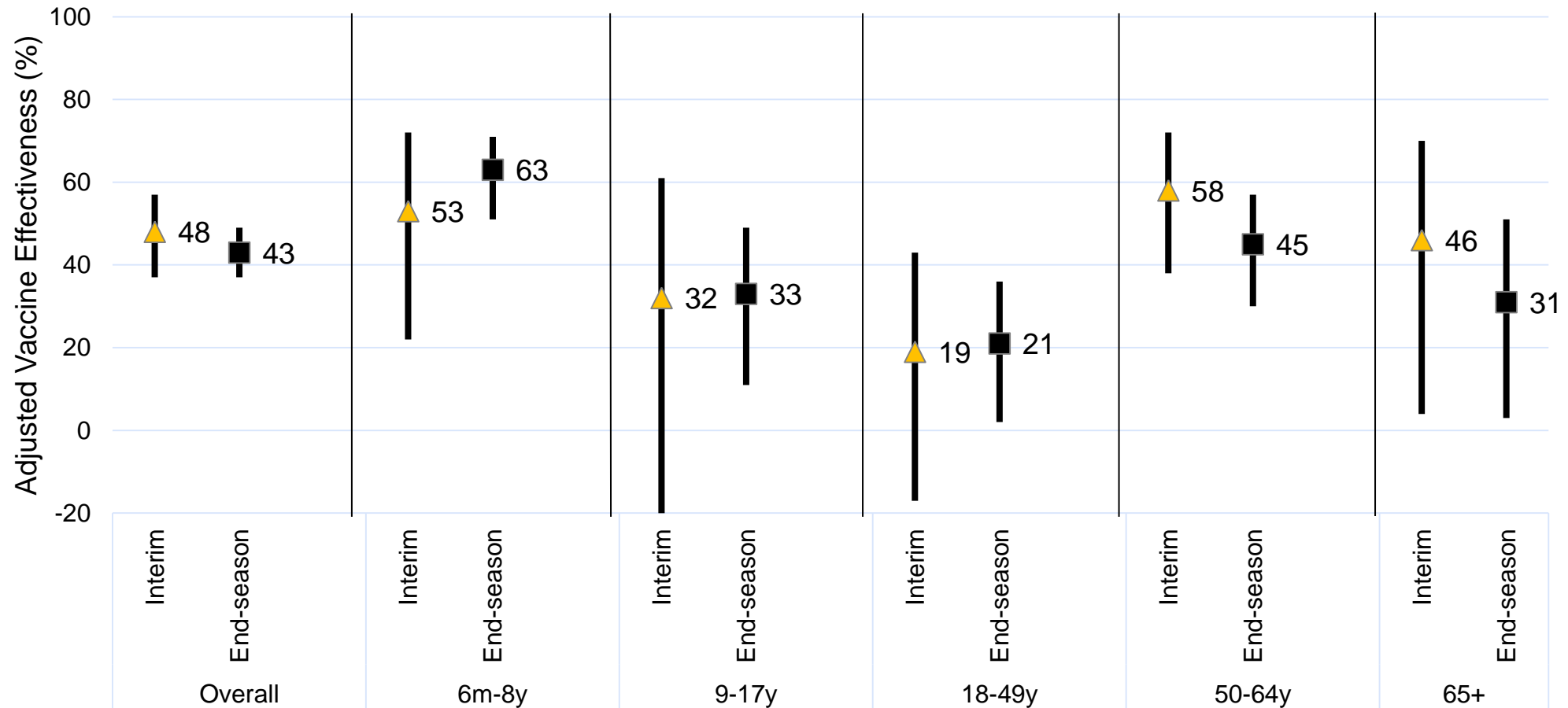
* Multivariate logistic regression models adjusted for site, age, sex, race/ethnicity, self-rated general health status, interval from onset to enrollment, and calendar time.

Interim (February) vaccine effectiveness against medically attended influenza by virus type, 2016–17

	Influenza positive		Influenza negative		Vaccine Effectiveness			
	N vaccinated /Total	(%)	N vaccinated /Total	(%)	Unadjusted		Adjusted*	
					VE %	95% CI	VE %	95% CI
<u>Influenza A/H3N2</u>								
Overall	282/595	(47)	1317/2400	(55)	26	(11 to 38)	43	(29 to 54)
Age group (yrs)								
6 mos–8	24/68	(35)	330/614	(54)	53	(21 to 72)	53	(16 to 74)
9–17	28/94	(30)	92/247	(37)	29	(-19 to 57)	23	(-43 to 59)
18–49	73/168	(43)	363/783	(46)	11	(-24 to 36)	13	(-30 to 41)
50–64	70/154	(45)	261/425	(61)	48	(24 to 64)	50	(23 to 67)
≥65	87/111	(78)	271/331	(82)	20	(-37 to 53)	44	(-3 to 69)
<u>Influenza B</u>								
Overall	23/90	(26)	1317/2400	(55)	72	(54 to 83)	73	(54 to 84)

* Multivariate logistic regression models adjusted for site, sex, race/ethnicity, self-rated general health status, interval from onset to enrollment, and calendar time.

Interim vs prelim. end-of-season vaccine effectiveness against medically attended influenza, 2016–17



Note: Multivariate logistic regression models adjusted for site, age, sex, race/ethnicity, self-rated general health status, interval from onset to enrollment, and calendar time.

Summary of 2016-17 flu vaccine effectiveness

- Preliminary end-of-season results for 2016–17 season indicate vaccine effectiveness of 43% against medically attended influenza
 - Interim and prelim. end-of-season estimates similar to previous seasons when vaccine was well matched to circulating influenza viruses
- Significant protection against circulating influenza A(H3N2) and B viruses (predominantly B/Yamagata)

VE against influenza A (H3N2) viruses

- Interim VE of 43% against A (H3N2) similar to antigenically matched H3N2 viruses
 - 2011-12 (39%) and 2012-13 (39%)
 - Meta-analysis¹ of test-negative VE studies: 33% (26% - 39%)
- VE against A (H1N1)pdm09 (61%) and B viruses (54%) tend to be higher¹
- A (H3N2) viruses have required more frequent vaccine updates
- Candidate A (H3N2) vaccine viruses more often have antigenic changes after adaptation to growth in eggs
- Efforts ongoing to improve VE against A (H3N2) viruses

¹ Belongia et al. Lancet Infect Dis, 2016

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Thank you

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.

