COLORADO CHILDREN'S IMMUNIZATION COALITION

What's New with the Flu?
Data, Updates, and FAQs
Meeting Agenda

October 24, 2018

12:30-12:40 pm	Welcome/Updates/Dr. Rao introduction	Liz/Kristin
12:40-1:40 pm	What's New with the Flu?, Q&A	Suchitra Rao, MD
1:40-1:55 pm	CDPHE Healthcare Worker Flu Rules Update	Erica/Rachel
1:55-2:00 pm	Q&A, Evaluations, Networking	All

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OCTOBER 2018

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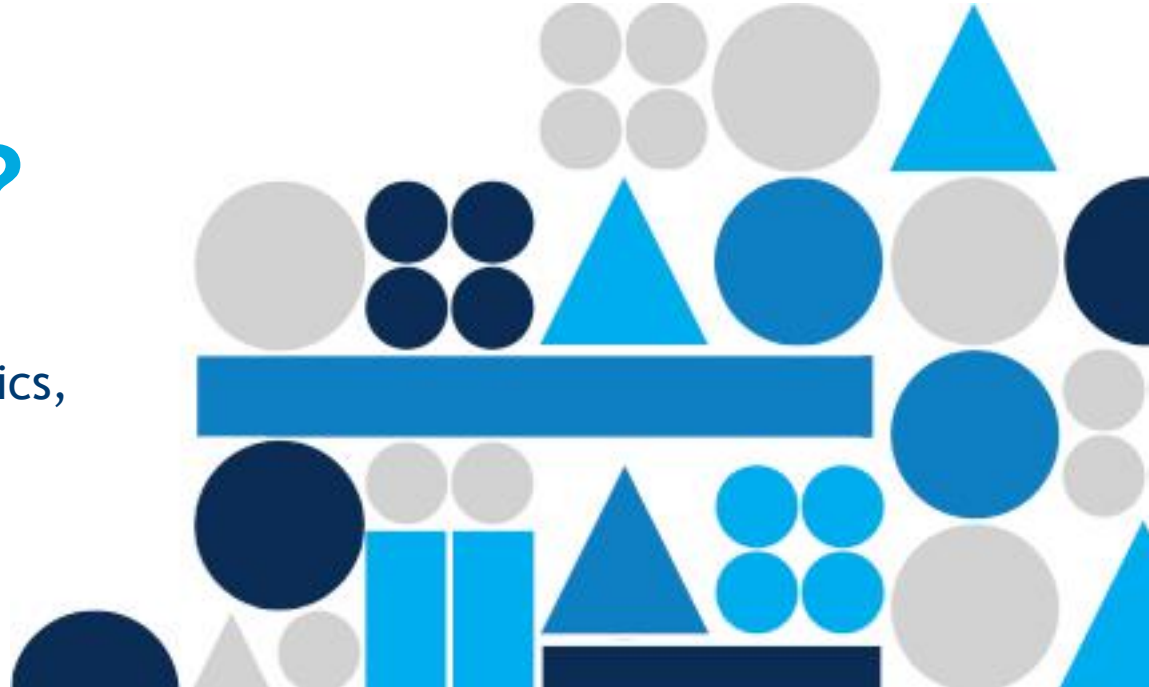
What's New with the Flu?

Suchitra Rao

Assistant Professor of Pediatrics, Sections of Infectious Diseases/Hospital Medicine/Epidemiology



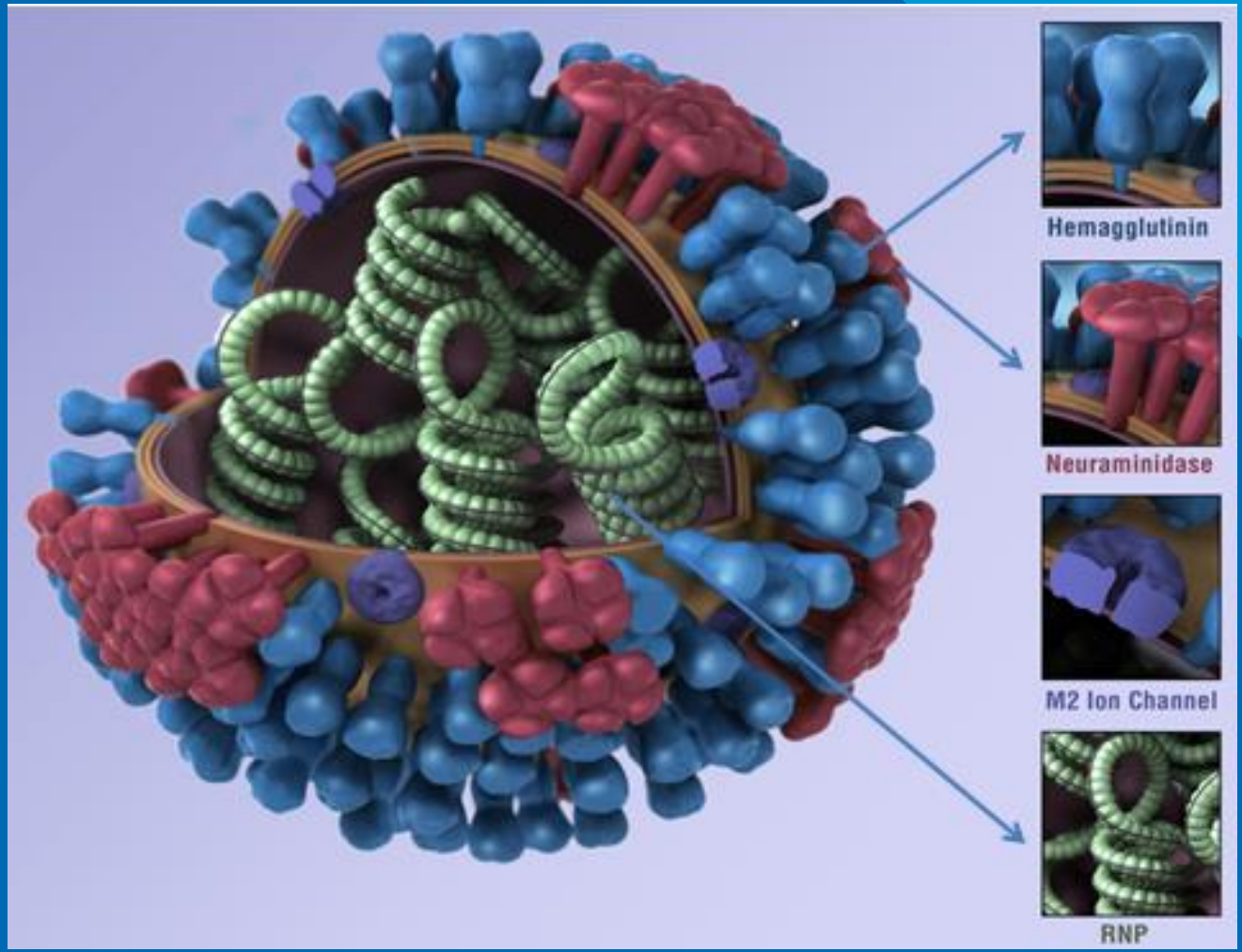
Disclosures

Research support from GSK, Biofire

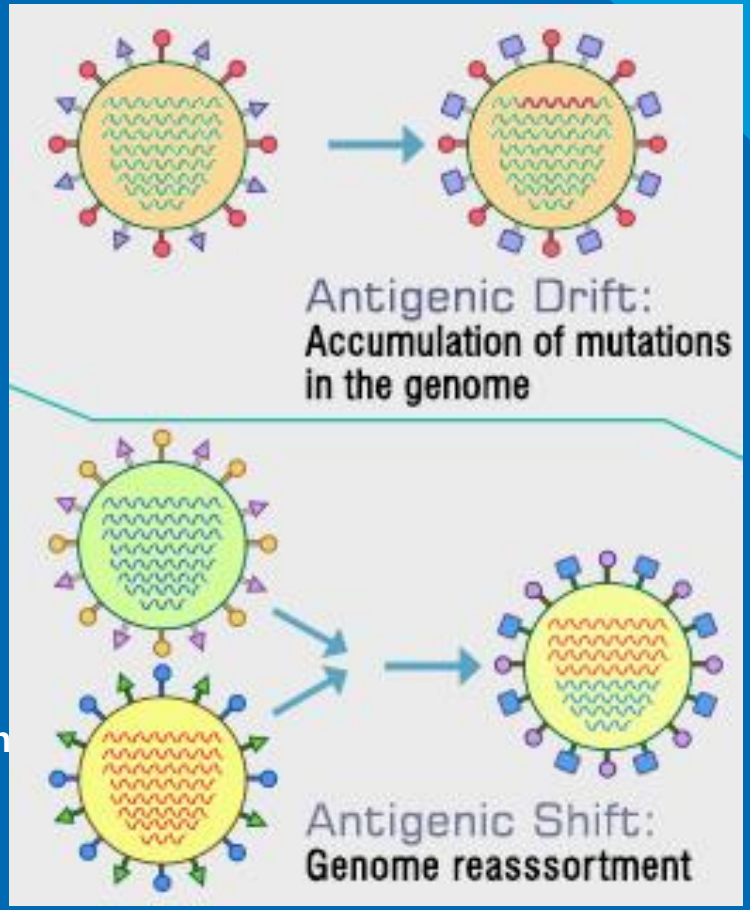
Objectives

- Describe the influenza virus types, subtypes and epidemiology
- Summarize vaccine effectiveness and burden of disease
- Identify the 2018-2019 ACIP recommendations for the influenza vaccine
- Discuss contraindications, allergies, and recommendations of vaccination
- Review influenza diagnosis and treatment

Flu Review

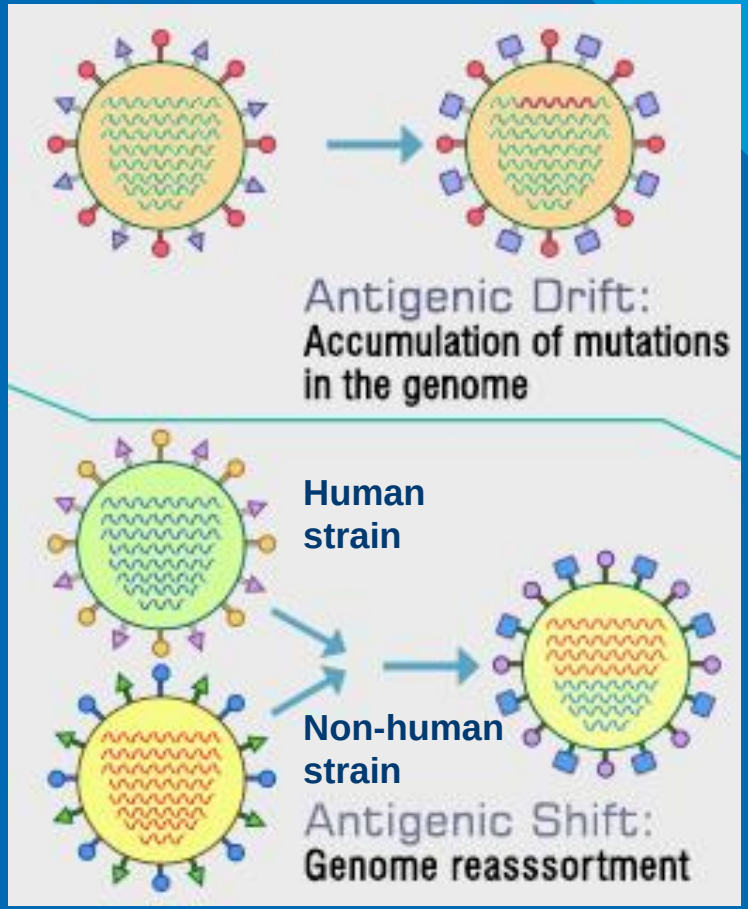


Antigenic Shift and Drift



Why is all this important to know?

- Antigenic drift- why we need to change flu vaccine each year and get annual vaccine
- Antigenic shift- responsible for pandemics
- Segmented RNA- enables gene reassortment
- HA- novel subtypes contribute to pandemics, antibodies confer protection
- NA- target for antiviral drugs



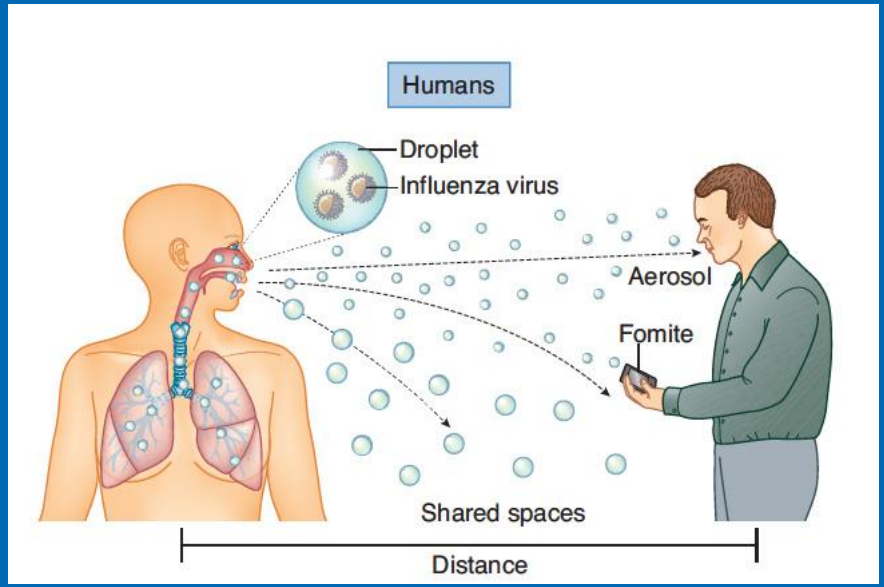
Epidemiology of influenza

Small particle droplets, aerosols, or fomites

Attacks epithelial cells of upper & lower respiratory tract

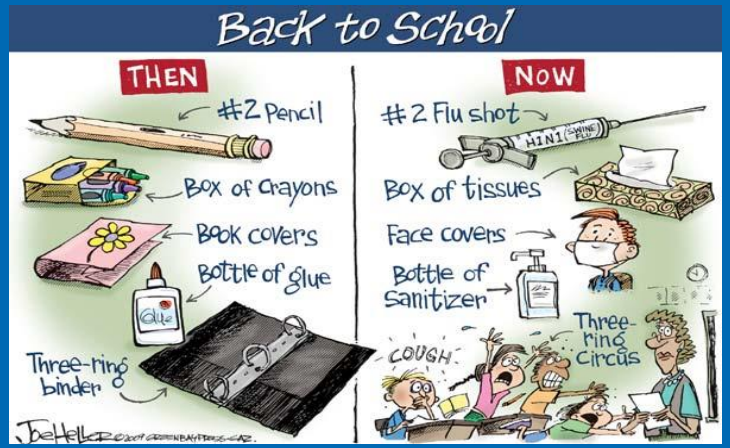
Incubation period 2-3 days

Shedding for 3-7 days

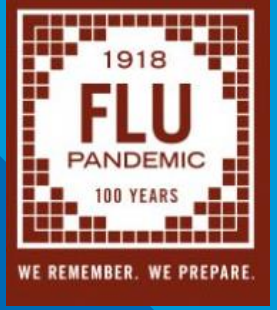


Children are the perfect vector for influenza

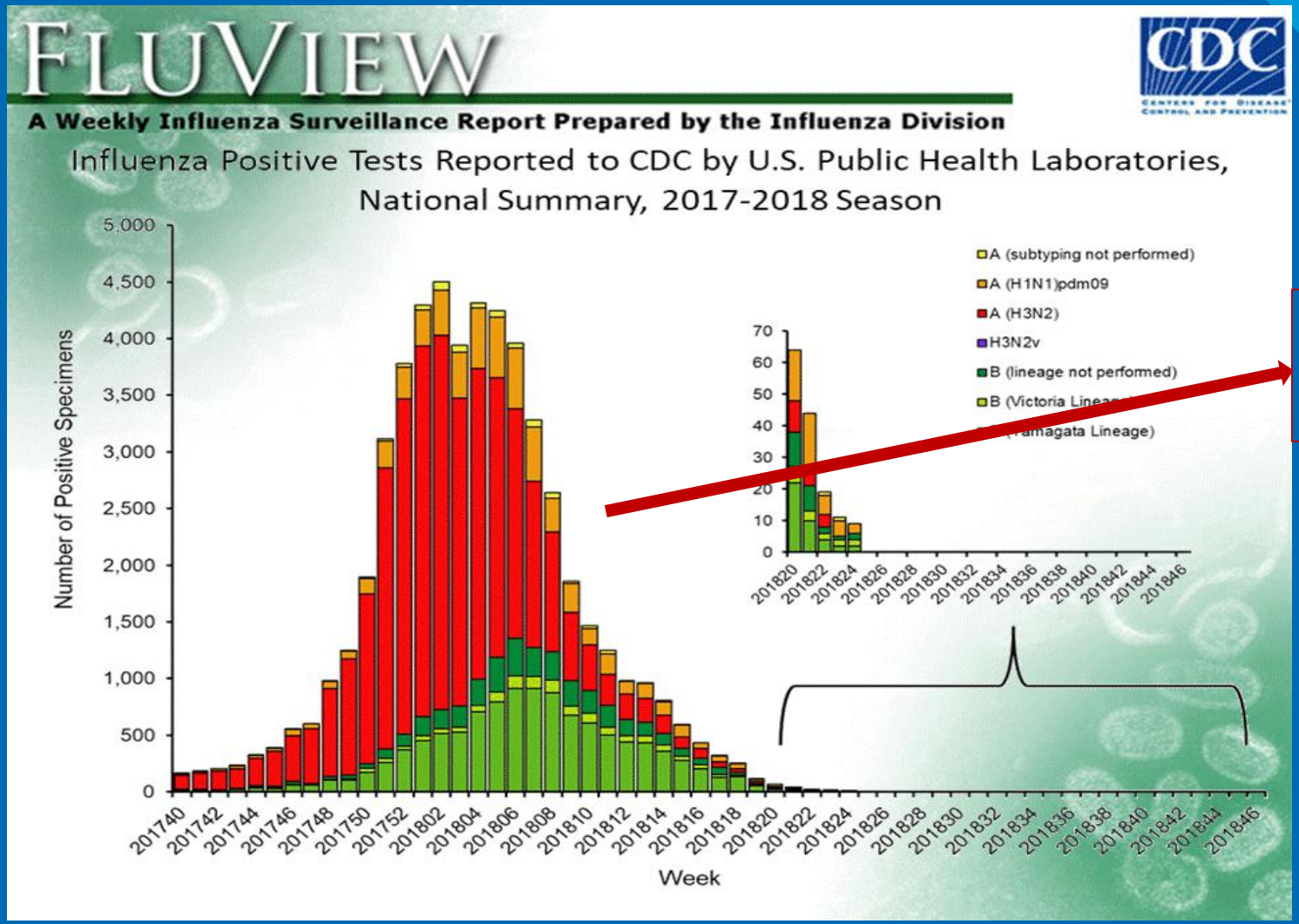
- Less sick than elderly, can spread virus effectively
- Have higher viral titers, longer viral excretion
- School-age children have highest attack rates
- Schools facilitate spread



1918-1919 pandemic- “the Spanish Flu”



- One of the most dramatic events in medical history
- Estimated to have affected 50% of world’s population
- 20-50 million deaths worldwide
- Infections developed into pneumonia
- US soldiers brought it to the world during WW1
- H1N1 strain



Predominant strain H3N2

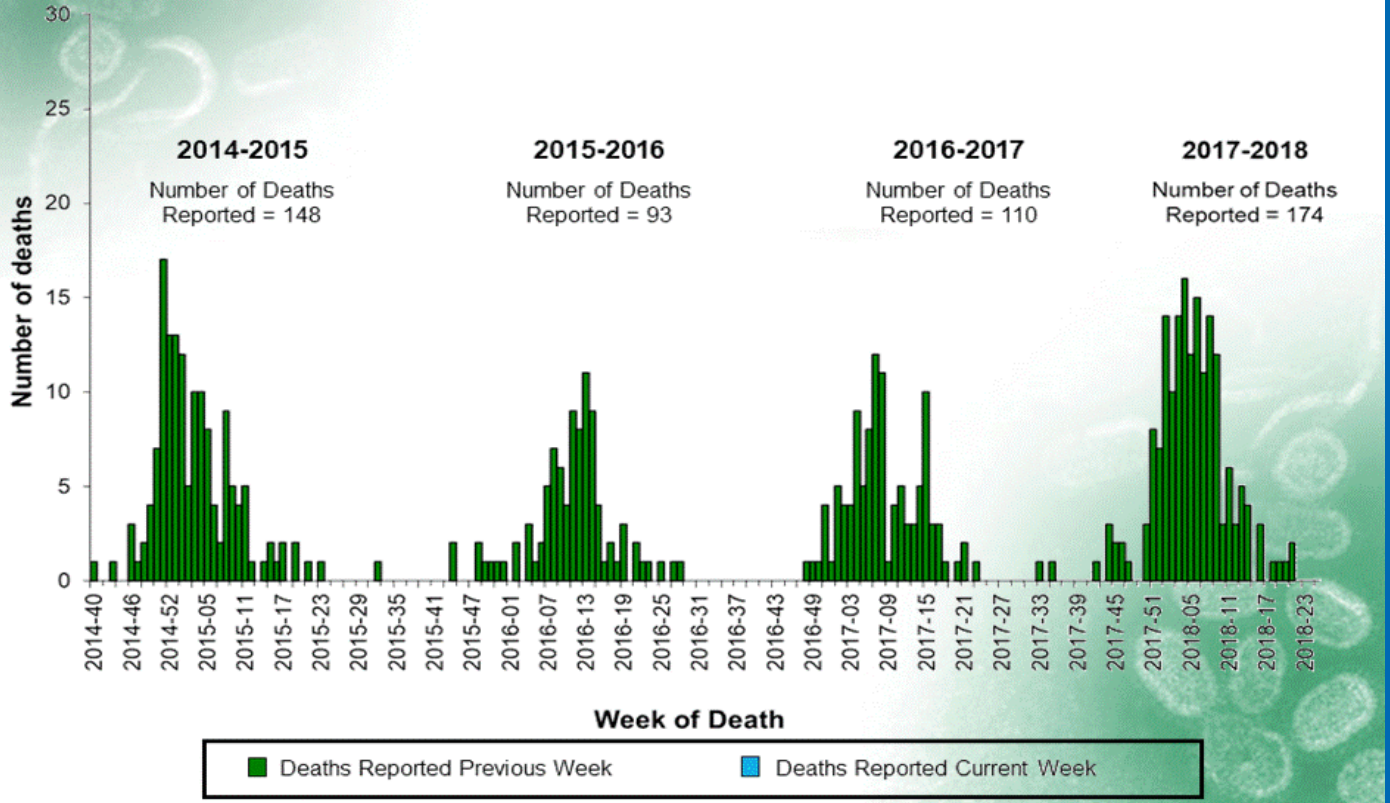
FLUVIEW

A Weekly Influenza Surveillance Report Prepared by the Influenza Division

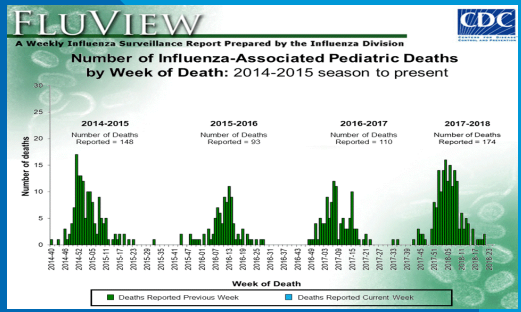
CDC

CENTERS FOR DISEASE CONTROL AND PREVENTION

Number of Influenza-Associated Pediatric Deaths by Week of Death: 2014-2015 season to present



Pediatric deaths from influenza



- Data from 2010-2016
- 675 deaths
- Highest among children < 6 months
- Only 31% aged > 6 months received vaccine
- 50% had high risk medical condition
- Cause of death: pneumonia, sepsis/shock, ARDS; bacterial coinfections 43%

Shang, Pediatrics Feb 2018

High-risk medical conditions

- Children <5 years
- Persons with **chronic pulmonary (including asthma)**, **cardiovascular**, renal, hepatic, hematological (and sickle cell disease), metabolic disorders (and diabetes mellitus), **neurologic and neurodevelopmental conditions**, developmental delay, muscular dystrophy, or spinal cord injury)
- Immunosuppression
- Women who are pregnant or postpartum (within 2 weeks after delivery)
- <19 years receiving long-term aspirin therapy
- American Indians/Alaska Natives
- Morbid obesity

Flu vaccine effectiveness 2017-2018

Clinical Scenario

It is September. You are discussing influenza vaccination with parents of a 6 year old child. They heard that last year's vaccine was not very effective, and want to know why so they can decide what to do for their child this season. How do you respond?

Vaccine effectiveness against medically attended illness, all strains 2017-2018 season

	Influenza positive		Influenza negative		Vaccine Effectiveness			
					Unadjusted		Adjusted*	
Any influenza A or B virus	N vaccinated /Total	(%)	N vaccinated /Total	(%)	VE %	95% CI	VE %	95% CI
Overall	741/1712	(43)	1518/2850	(53)	33%	(24 to 41)	**36%**	**(27 to 44)**
Age group (yrs)								
6 mos–8	127/359	(35)	408/739	(55)	56%	(42 to 66)	**59%**	**(44 to 69)**
9–17	100/288	(35)	104/300	(35)	0%	(-41 to 29)	**5%**	**(-38 to 34)**
18–49	198/561	(35)	444/989	(45)	33%	(17 to 46)	**33%**	**(16 to 47)**
50–64	159/288	(55)	277/454	(61)	21%	(-6 to 42)	**17%**	**(-15 to 40)**
≥65	157/216	(73)	285/368	(78)	23%	(-14 to 47)	**18%**	**(-25 to 47)**

*Adjusted for site, sex, age, race/ethnicity, health status, interval from onset to enrollment, calendar time

Data from US Flu VE network

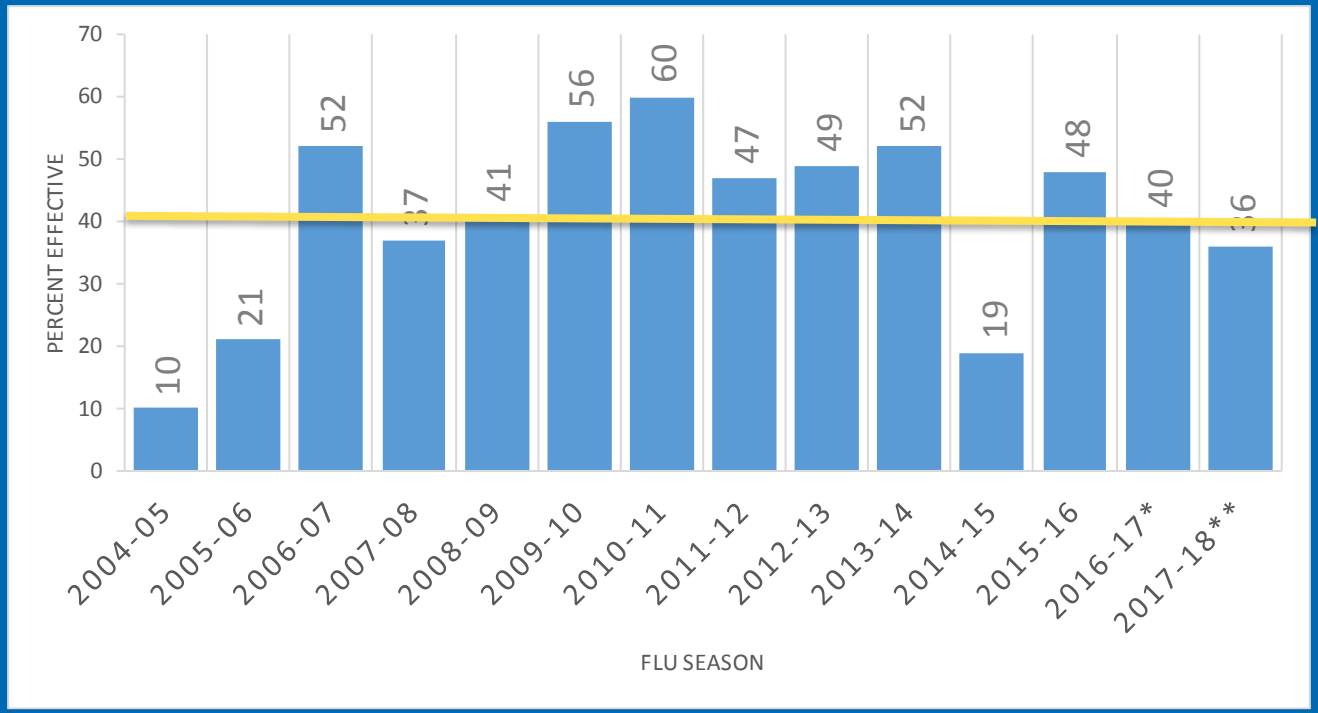
Vaccine effectiveness against medically attended illness, H3N2 strain, 2017-2018 seaon

	Influenza positive		Influenza negative		Vaccine Effectiveness			
					Unadjusted		Adjusted*	
	N vaccinated /Total	(%)	N vaccinated /Total	(%)	VE %	95% CI	VE %	95% CI
Influenza A/H3N2								
Overall	530/1143	(46)	1518/2850	(53)	24%	(13 to 34)	**25%**	**(13 to 36)**
Age group (yrs)								
6 mos–8	79/200	(40)	408/739	(55)	47%	(27 to 61)	**51%**	**(29 to 66)**
9–17	75/203	(37)	104/300	(35)	-10%	(-60 to 24)	**-8%**	**(-62 to 29)**
18–49	155/395	(39)	444/989	(45)	21%	(-1 to 37)	**20%**	**(-4 to 38)**
50–64	115/198	(58)	277/454	(61)	11%	(-24 to 37)	**12%**	**(-26 to 39)**
≥65	106/147	(72)	285/368	(78)	25%	(-16 to 51)	**17%**	**(-35 to 49)**

*Adjusted for site, sex, age, race/ethnicity, health status, interval from onset to enrollment, calendar time

Data from US Flu VE network

Influenza vaccine effectiveness* compared with prior seasons



*against medically-attended illness

Source: CDC

If flu vaccine effectiveness is 40%…

Receiving an influenza vaccine is associated with averting

- **5.6 million illnesses**
- **2.7 million medical visits**
- **61,500 hospitalizations**
- **1,800 deaths**

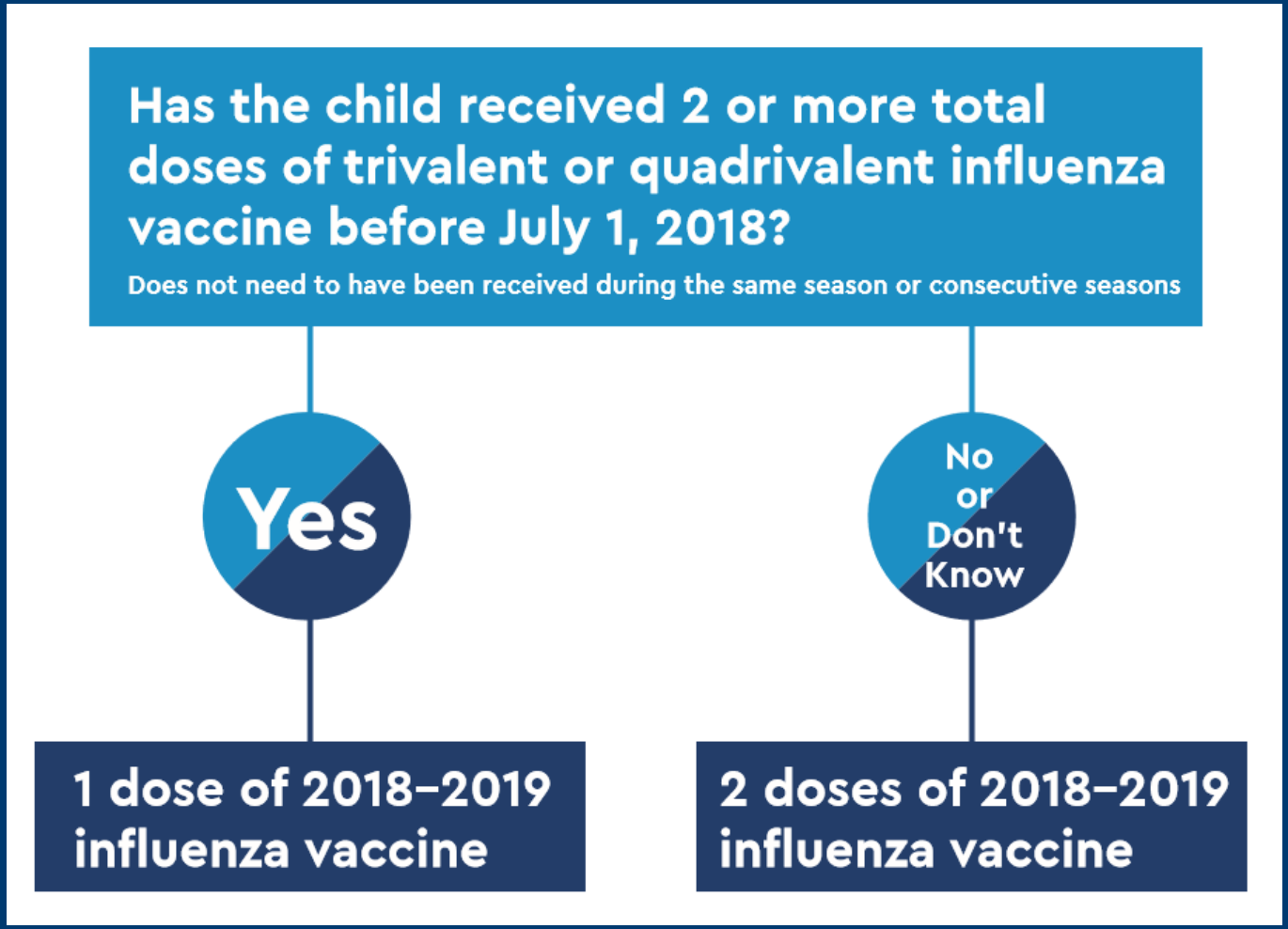
Why is flu vaccine less effective during years where H3N2 predominates?

- Antigenic drift -flu vaccine strains and circulating influenza viruses between time when vaccine is decided and distributed, more with H3N2
- Egg-adapted changes – when vaccine strains are replicating in eggs, undergo changes from the original strain, reducing potential effectiveness
- If there was a perfect match, the effectiveness would be closer to >80%
- Some cross-protection

Influenza vaccination updates 2018-2019

Composition of influenza vaccine 2018-2019

- **Trivalent IIV:**
- A/Michigan/45/2015 (H1N1)pdm09-like virus;
- A/Singapore/INFIMH-16-0019/2016 (H3N2)-like virus; and
- B/Colorado/06/2017-like virus (B/Victoria/2/87 lineage).
- **Quadrivalent IIV:**
- All strains in trivalent plus a B/Phuket/3073/2013-like virus (B/Yamagata/16/88 lineage), in addition to the viruses listed above.


Has the child received 2 or more total doses of trivalent or quadrivalent influenza vaccine before July 1, 2018?
Does not need to have been received during the same season or consecutive seasons
Yes
No or Don't Know
1 dose of 2018–2019 influenza vaccine
2 doses of 2018–2019 influenza vaccine

ACIP recommendations- 2018-2019

- All individuals 6 months of age and older
- LAIV4 be an option for influenza vaccination of persons for whom it is appropriate
- ACIP will continue to review data concerning the effectiveness of LAIV4

MMWR, June 8, 2018; 67(22);643–645

A brief history of LAIV

YEAR	LAIV
2003	LAIV3 Licensed 5-49 yrs
2005	LAIV3 Licensed 2-49 yrs
2012	LAIV4 replaced LAIV3
2014	Preferential recommendation for healthy 2- through 8-year olds
2015	Preferential recommendation removed after poor VE of LAIV4 (H1N1 in 2-17yo)
2016	LAIV4 not recommended in the United States for 2016-17 and 2017-18
2018	LAIV recommended in US for 2018-2019 season

Why the change in recommendations?

- ACIP reviewed meta-analysis of LAIV data and ne vaccine strain data from the manufacturer
- Prior VE studies of LAIV - 45% against influenza A and B
- No statistically significant difference in protection between the two vaccines for influenza A (H3N2) and influenza B viruses.
- 25% protection against influenza A (H1N1)pdm09 compared with unvaccinated children, so IIV conferred better protection, however changes to H1N1 strain for future

MMWR, June 8, 2018 / 67(22);643–645

What's new with LAIV?

- H1N1 LAIV strains used in 2013-2014 and 2015-2016 had reduced replicative fitness compared to older more effective vaccine strains
- Upcoming LAIV contains new A/Slovenia H1N1 strain
- New assays measuring how well strains replicate were incorporated into strain selection for 2017-2018 and a new H1N1 strain (A/Slovenia) was selected

Data supporting LAIV

- Randomized trial in 200 US children, the new A/Slovenia strain induced antibody responses that were significantly higher than those seen with the 2015-16 H1N1 strain
- Similar to those seen with a highly effective pre-pandemic LAIV H1N1 strain
- However, no vaccine efficacy data, and effectiveness unknown until the next H1N1-predominant season

AAP recommendations

Review of the same data evaluated by ACIP group

For the 2018-19 season, AAP recommends IIV3/IIV4 inactivated influenza vaccine (IIV3/4) as the primary choice

LAIV4 may be offered for children who would not otherwise receive an influenza vaccine

Effectiveness of LAIV4:

1. was inferior against A/H1N1 during past seasons; and
2. is unknown against A/H1N1 for this upcoming season.

Final policy statement published in September

Who should not receive IIV?

Contraindications:

- Infants younger than 6 months
- History of **severe** allergic reaction to any component of the vaccine, including egg protein, or after previous dose of any influenza vaccine.

Precautions:

- Moderate to severe illness with or without fever.
- History of Guillain-Barré syndrome within 6 weeks of receipt of influenza vaccine.

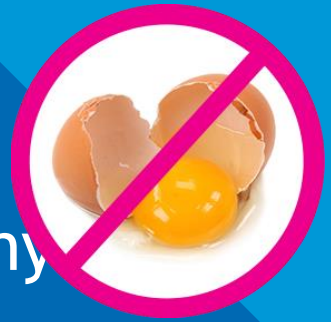
Who should not receive LAIV?

- < 2 yrs, ≥ 50 years
- Pregnant women
- **People with a history of severe allergic reaction to any component of the vaccine or to a previous dose of any influenza vaccine**
- High-risk individuals, immunosuppression, on aspirin

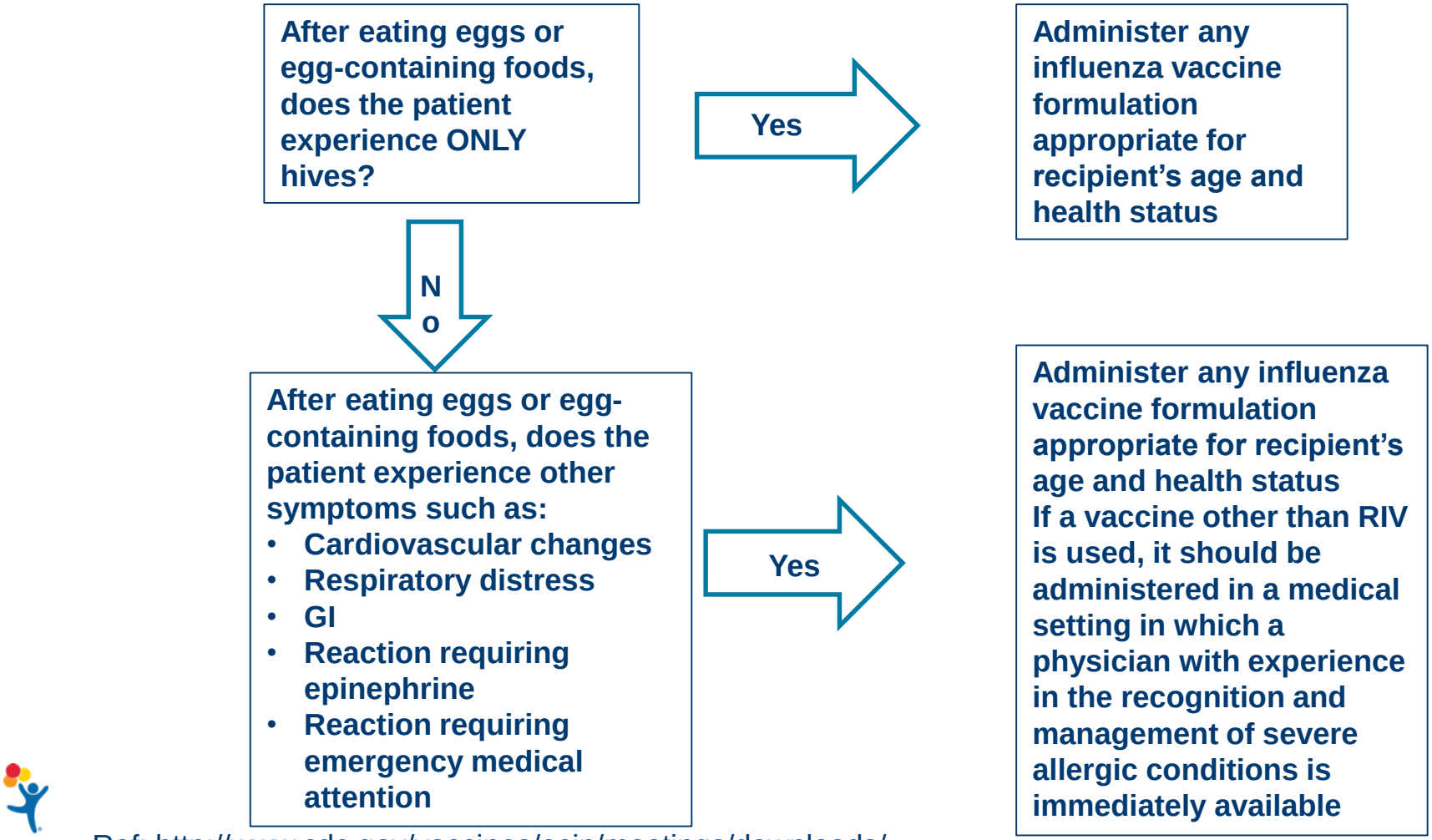
Who should not receive LAIV?

- Age 2-4 with asthma or wheezing in the past 12 months, (asthma if age > 5)
- Antivirals within prior 48 hours
- Moderate or severe acute illness
- Guillain-Barré Syndrome within 6 weeks of prior vaccine
- People who care for severely immunocompromised persons who require a protected environment

What about egg allergy?



- LAIV included as an option - egg allergy of any severity
- Eliminate algorithm regarding vaccinating such patients
- 15-minute post-vaccination observation period for patients with egg allergies, not 30 min
- If severe egg allergies -vaccinate in a setting with a physician trained to manage severe allergic conditions



Ref: http://www.cdc.gov/vaccines/acip/meetings/downloads/

Influenza vaccine formulations

- Traditional egg based
- Live attenuated
- Adjuvant
- High dose
- Recombinant
- Cell culture based
- Plant based
- Virus like particle
- Vectors
- DNA vaccines

Influenza vaccine formulations- children

- Traditional egg based
- Live attenuated
- Adjuvant
- High dose
- Recombinant

- Cell culture based
- Plant based
- Virus like particle
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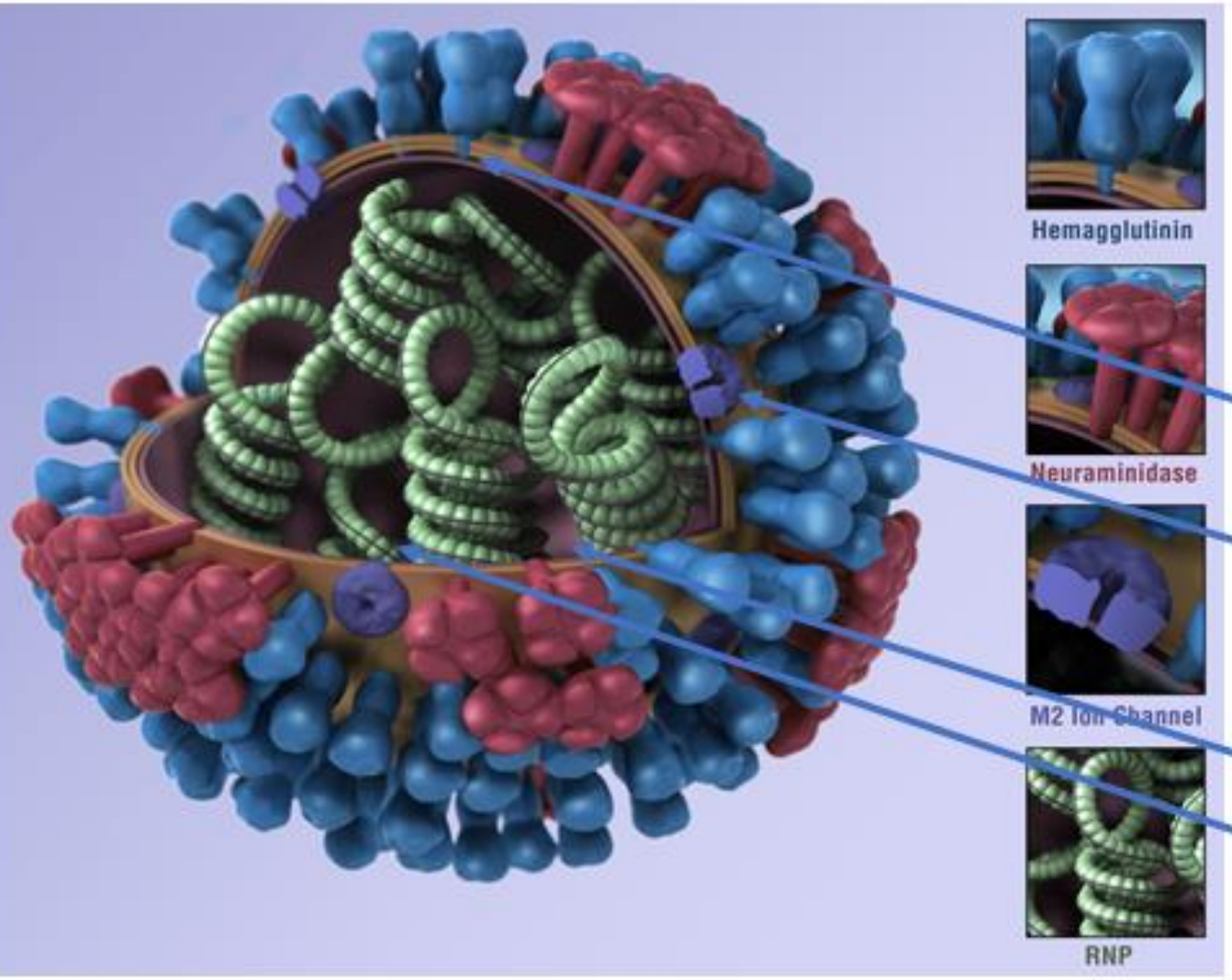
- DNA vaccines



Universal influenza vaccin

- conserved viral epitopes
- conserved portion of HA stalk
- extracellular portion of the M2 ion channel
- internal matrix
- nucleoproteins

Examples of universal vaccines in development

Strategy	Phase	Mechanism
HA Rosettes, HA nanoparticles, VLP	I/II	Particle format for potency, multiple strains mixed or sequential delivery
M2 ectodomain	I/II	Broad cross-reactive Ab; ADCC (no NT)
HA head chimera (COBRA)	Pre-clinical	Broad NAb (with HAI)
HA stem or head-stem chimera	Pre-clinical	Broad NAb (no HAI) and ADCC
Neuraminidase	Pre-clinical	Additional antigen for NT breadth
Live-attenuated and single-round whole virus	Pre-clinical	Additional antigens, T cell responses, and mucosal immunity
RNA, DNA, or vector subunit delivery	Pre-clinical	Gene delivery for CTL and Ab
Peptides	Pre-clinical	CTL response

http://www.who.int/immunization/research/meetings_workshops/23_Universal_flu.pdf

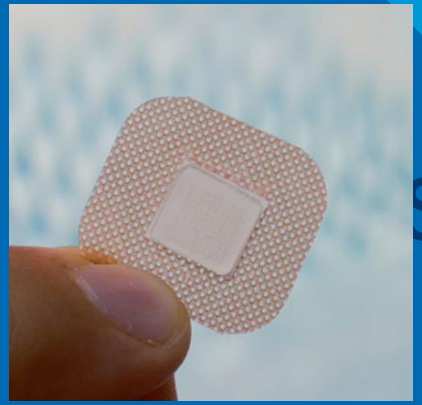
Examples of universal vaccines in development

Strategy	Phase	Mechanism
HA Rosettes, HA nanoparticles, VLP	I/II	Particle for… …cy, multiple strain… …l delivery
M2 ectodomain	I/II	…(no NT)
HA head chimera (COBRA)		
HA stem or head-ste…		…HAI) and ADCC
Neurami…		…dditional antigen for NT breadth
Live-atte… whole viru…	…re-clinical	Additional antigens, T cell responses, and mucosal immunity
RNA, DNA, o…	Pre-clinical	Gene delivery for CTL and Ab
Peptides	Pre-clinical	CTL response

Currently, no universal vaccine candidate sufficiently advanced to discuss licensure

http://www.who.int/immunization/research/meetings_workshops/23_Universal_flu.pdf

New vaccine delivery systems

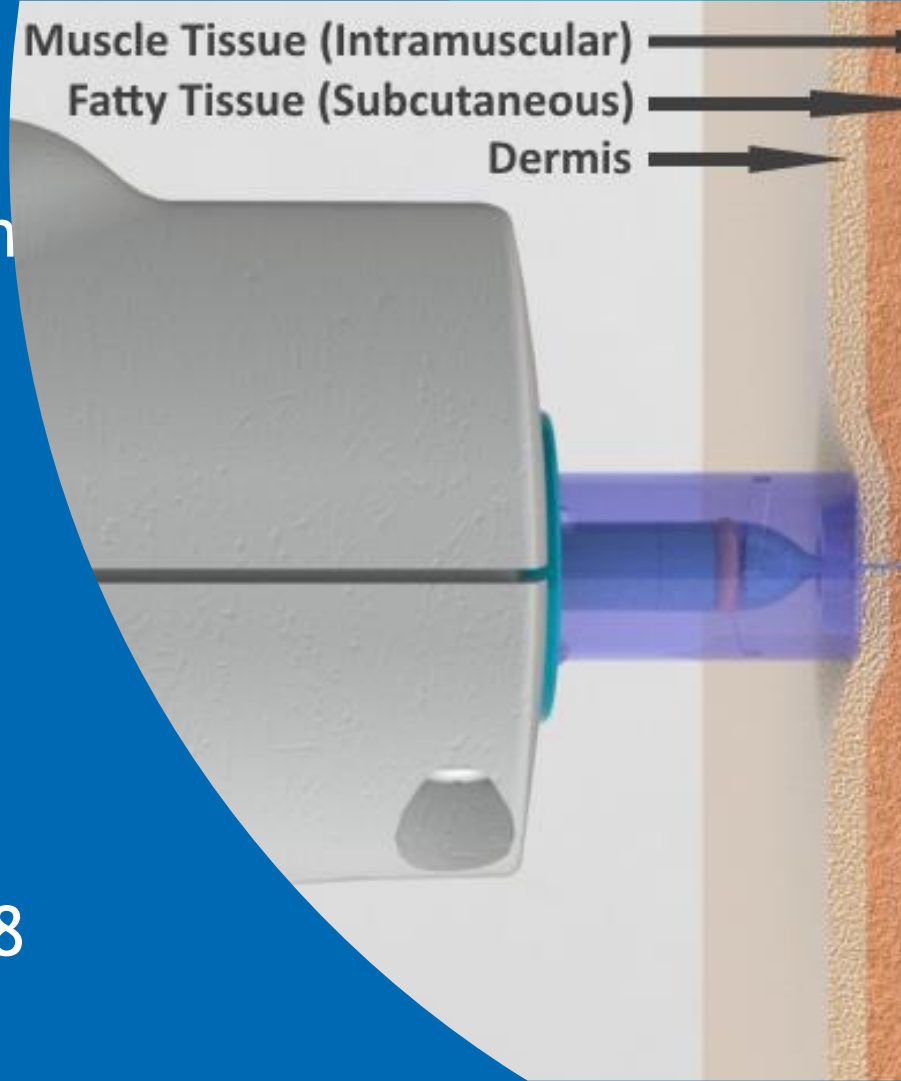


Jet injector

High-pressure, narrow stream to penetrate skin instead of needle

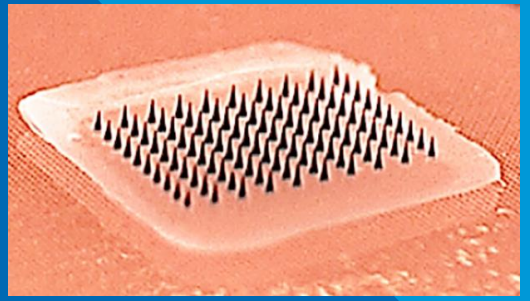
Two vaccine formulations (AFLURIA and AFLURIA quadrivalent) are approved for use with jet injector (multidose)

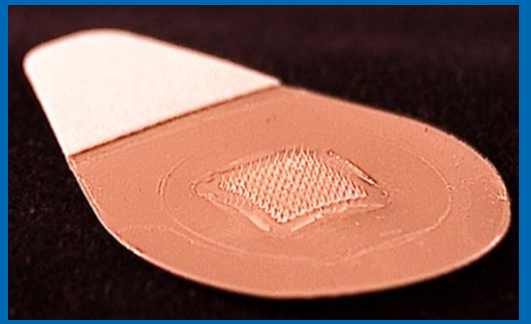
Approved for use in people 18 through 64 years of age



Microneedle Patch

- Randomized, partly blinded, placebo-controlled, phase 1 trial
- 100 adults aged 18-49 years of age
- 4 groups- IIV, microneedle patch with IIV by MCW, microneedle patch with IIV by self-administration, microneedle patch with placebo
- Among vaccinated groups, incidence of AE were similar, GMT (HAI) were similar at day 28
- Well tolerated, robust antibody responses





Lancet, Volume 390, No. 10095, p649–658, 12 August 2017

Influenza diagnostics and treatment update

Infectious Diseases Society of America updated guidelines

Clinical Practice Guidelines by the Infectious Diseases Society of America (IDSA): 2018 Update Diagnosis, Treatment, Chemoprophylaxis and Institutional Outbreak Management of Seasonal Influenza[1]

Timothy M. Uyeki[1], Henry H. Bernstein[2], John S. Bradley[3], Janet A. Englund[4], Thomas M. File[5], Alicia M. Fry[6], Stefan Gravenstein[7], Frederick G. Hayden[8], Scott A. Harper[9], Jon Mark Hirshon[10], Michael G. Ison[11], B. Lynn Johnston[12], Allison McGeer[13], Laura E. Riley[14], Cameron R. Wolfe[15], Andrew T. Pavia[16]

UPDATE IN PROGRESS*

Which patients should be tested for influenza? Outpatients

- **Immune-compromised** and **high-risk patients** with influenza-like illness, pneumonia, or nonspecific respiratory illness (e.g., cough without fever)
- Exacerbation of chronic conditions (e.g., asthma, COPD, heart failure)
- Consider in non-high risk if the results might **influence antiviral treatment decisions** or **reduce use of unnecessary** antibiotics, further diagnostic testing, and time in the Emergency Department

Which patients should be tested for influenza? Inpatients

- All patients requiring hospitalization with acute respiratory illness, including pneumonia, with or without fever
- Acute worsening of chronic cardiopulmonary disease (e.g., COPD, asthma, coronary artery disease or heart failure)
- Immune-compromised or at high-risk of complications and presenting with influenza-like-illness, pneumonia or nonspecific respiratory illness (e.g., cough without fever)
- Onset of fever or cough or develop a febrile respiratory illness or respiratory distress, without a clear alternative diagnosis

Algorithm for testing

	Outpatient	Inpatient
No risk factors < 48 hours of illness onset	Discretion of provider*	Yes
No risk factors > 48 hours of illness onset	No	Yes
Risk factors, < 48 hours of illness onset	Yes	Yes
Risk factors, > 48 hours of illness onset	Yes	Yes
Asymptomatic contact of positive case	No	No
No risk factors, within 5 days of illness onset, contact of positive case	Yes	Yes

Influenza testing

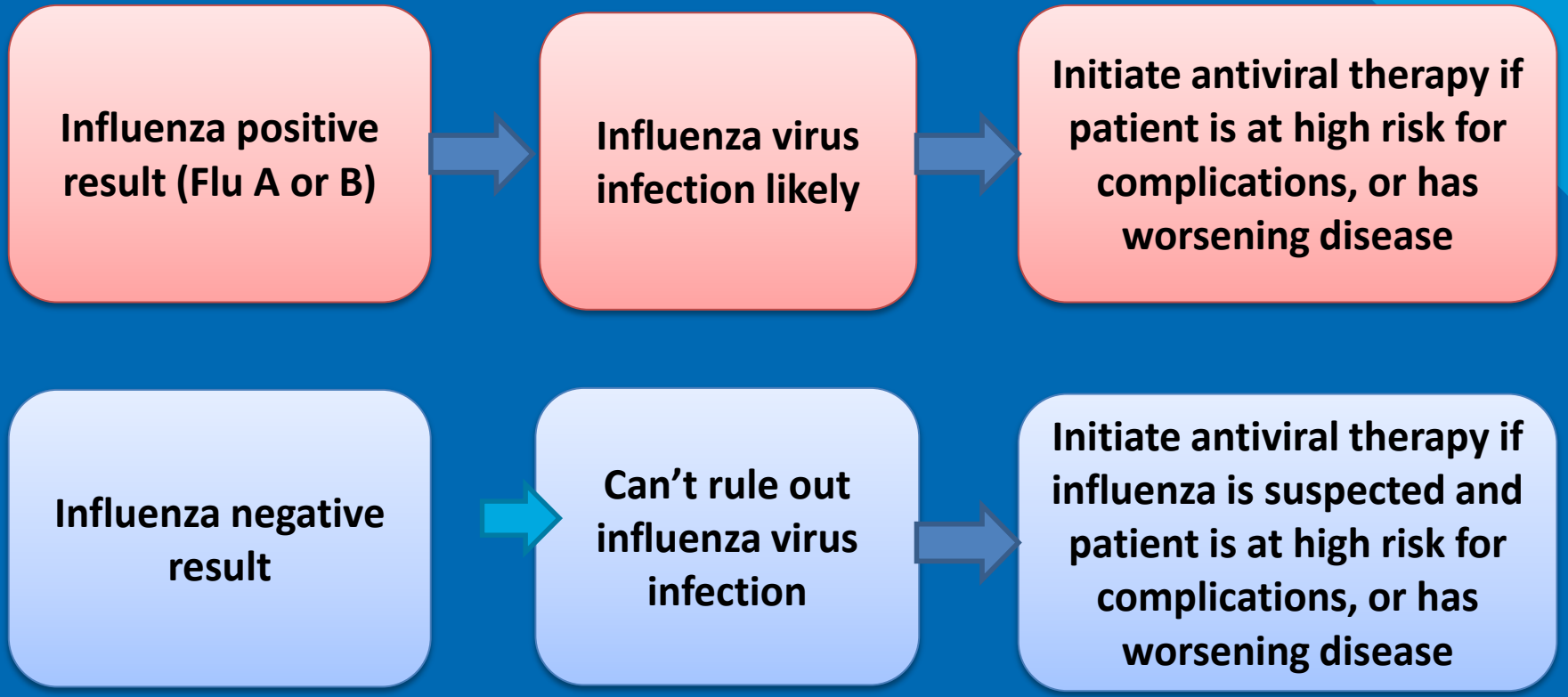
What type of specimen?

Nasopharyngeal swabs are preferred over nasal washes, nasal swabs, throat swabs

What type of test?

Rapid molecular tests, Flu PCR tests are more reliable than antigen based rapid flu tests

Multiplex RT-PCR assays- reserve for immunocompromised or if part of a fever workup



During periods of high prevalence

Why treat? RCT data

- Data from 10 clinical trials, 50% lower risk mortality among treated vs placebo, 34% lower among patients at risk for complications ($p < 0.05$)
- One RCT found a decreased incidence of otitis media among children treated with oseltamivir
- RCT in children with asthma- greater improvement in lung function & fewer asthma exacerbations among oseltamivir-treated children

Hsu et al 2012
Louie et al. CID 2012
Muthuri et al CID 2012

Which patients should be treated with antivirals?

- Hospitalized with influenza
- Outpatients with severe or progressive illness
- Outpatients who are high risk of complications
- Pregnant women and those within 2 weeks postpartum
- Consider: Outpatients within 2 days of illness onset
- Consider: Children with high-risk household contacts, esp. immunocompromised

Which antiviral should be prescribed?

- Oral oseltamivir, inhaled zanamivir, or intravenous peramivir
- Do not use combination therapy
- Should not use higher doses of neuraminidase inhibitor drugs other than those currently FDA-approved for the treatment of seasonal influenza

Antiviral dosing

- **Oseltamivir**- orally bid 5 days, IV preparation under study, no issues with resistance currently (generic formulation)
- **Zanamavir**- 2 breath-activated inhalations bid for 5 days
- **Peramavir**- 600mg (10mg/kg) IV one time administration for outpatients, daily for 5 days for inpatients

Oseltamivir dosing

AGE	TREATMENT DOSE	PROPHYLAXIS DOSE
2 weeks - 3 months	3 mg/kg/dose **twice** a day	Not recommended unless situation judged critical
Children 3-11 months	3 mg/kg/dose **twice** a day	3 mg/kg/dose once daily
Children 1-12 years old and weighing:		
≤ 15 kg	30 mg/dose **twice** a day	30 mg once daily
> 15-23 kg	45 mg/dose **twice** a day	45 mg once daily
>23-40 kg	60 mg/dose **twice** a day	60 mg once daily
>40 kg	75 mg/dose **twice** a day	75 mg once daily
Children ≥ 13 years of age and adults	75 mg/dose **twice** a day	75 mg once daily

Peramavir dosing

Age	Dose (mg/kg)
Birth through 30 days	6mg/kg
31 days through 90 days	8 mg/kg
91 days through 180 days	10 mg/kg
181 days through 5 years	12 mg/kg
6 years through 17 years	10 mg/kg

Maximum daily dose is 600mg IV

Note safety and effectiveness of Peramivir IV for treatment of influenza has not been assessed in pediatric patients

Chemoprophylaxis

- Not for widespread use due to the possibility of resistance
- Can consider for family members and close contacts considered high risk
- Chemoprophylaxis not recommended if > 48 hours since last exposure
- Can be used for prophylaxis of influenza among infants < 6 months, AAP approves use for neonates
- For prophylaxis, antiviral must be taken each day for duration of potential exposure, and continue for 7 days afterwards

New antiviral agents

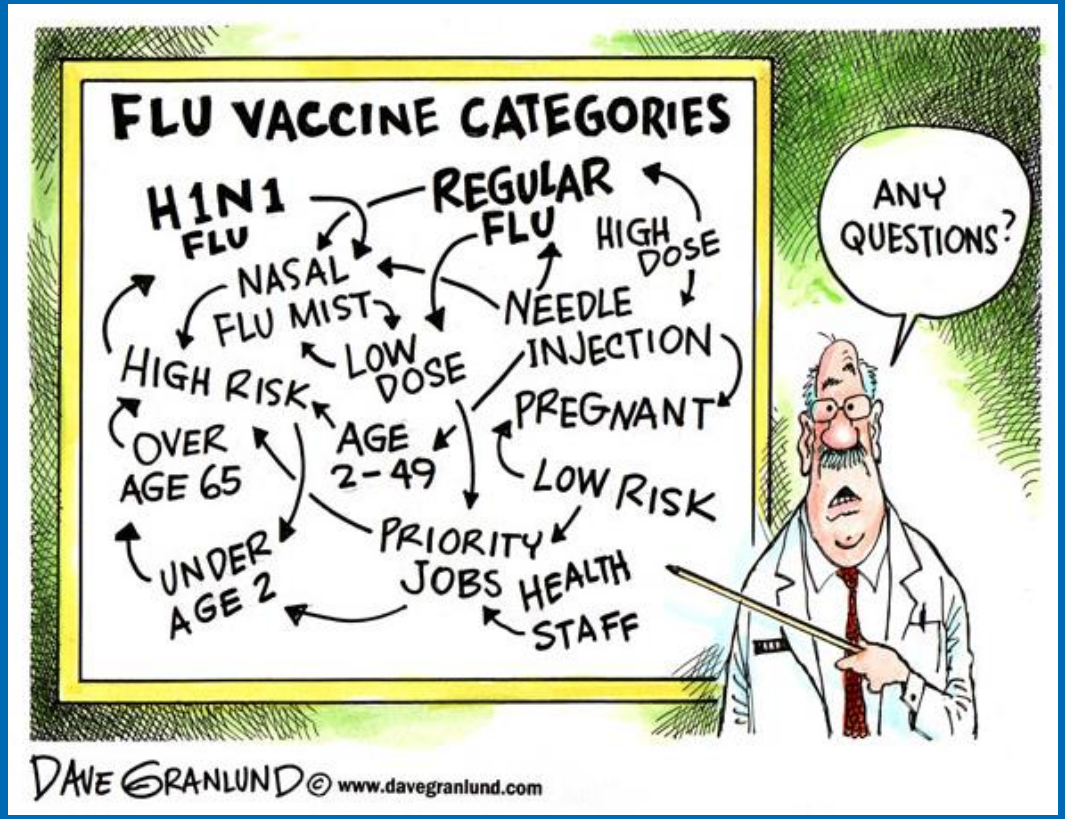
Agent	Target	Spectrum	Route	Phase
Zanamivir	NA	A+B	IV	3
Laninamivir	NA	A+B	Inhaled	3
Favipiravir	Polymerase	A, B, C	Oral	3
DAS 181	HA receptor	A+B, PIV	Inhaled	2
Nitazoxanide	HA maturation	A+B	Oral	2/3
VX-787	Polymerase PB2 Inhibitor	A	Oral	2
MHAA4549A	Monoclonal antibody against HA	A	IV	2
AVI-7100	M gene	A	IV	1
S-033188 (Baloxavir)	Endocuclase	A+B	Oral	3

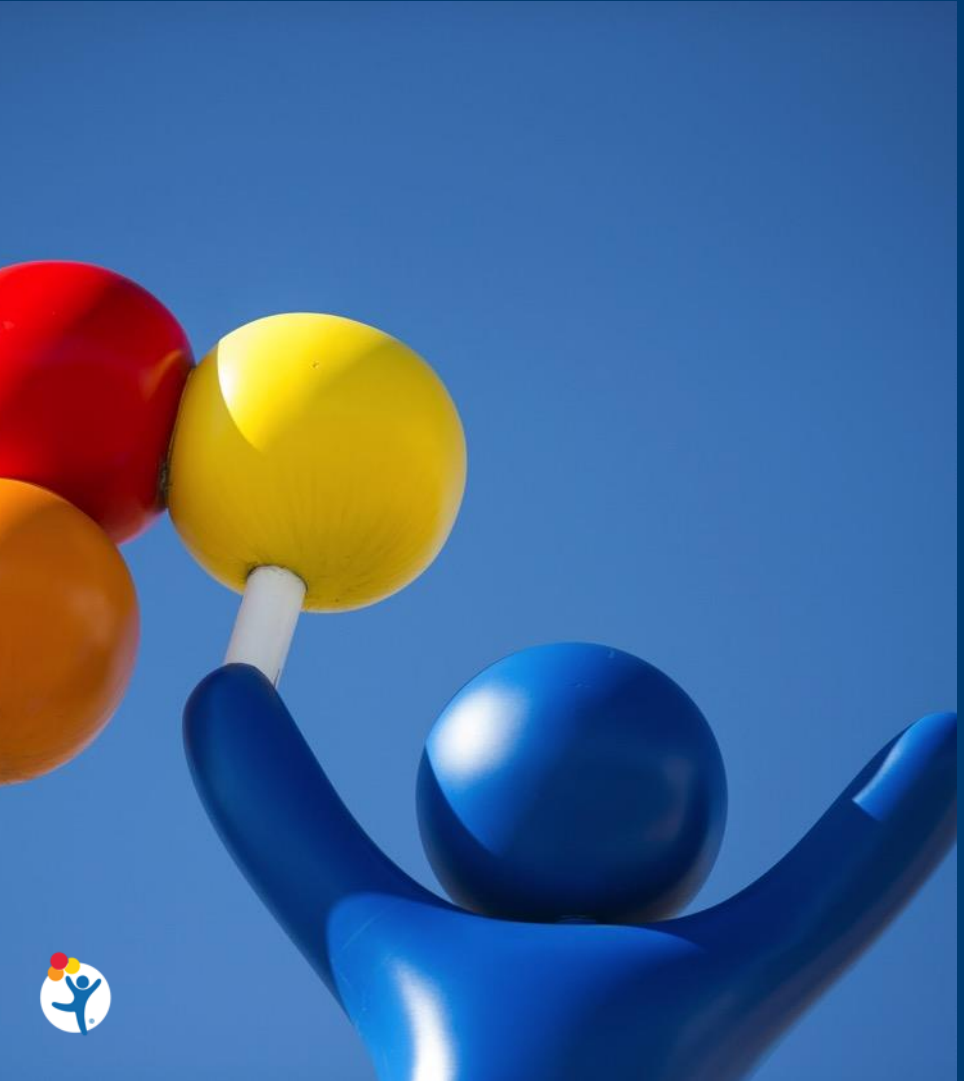
Influenza Other Respir Viruses. 2017 May; 11(3): 240–246.

Take Home Points

- Last season was one of the worst since 2009 pandemic, H3N2 predominant season
- Even in years with moderate VE, vaccination can minimize deaths, hospitalizations and illnesses
- ACIP recommends LAIV for upcoming season, different from AAP recommendations
- PCR/molecular based tests are more reliable than rapid antigen tests
- Current treatment options – oseltamivir, zanamivir, peramivir, no benefit with higher, longer dosing, or combination

QUESTIONS?


FLU VACCINE CATEGORIES
H1N1 FLU
REGULAR FLU
HIGH DOSE
NASAL FLU MIST
NEEDLE INJECTION
LOW DOSE
HIGH RISK
PREGNANT
OVER AGE 65
AGE 2-49
LOW RISK
PRIORITY JOBS
UNDER AGE 2
HEALTH STAFF
ANY QUESTIONS?
DAVE GRANLUND © www.davegranlund.com



Talking points

Flu vaccine hesitancy

- Utility
- Risk perception
- Social benefit
- Subjective norm
- Perceived behavioral control
- Attitude
- Past behavior
- Experience
- Knowledge

“…but I’m too busy with other responsibilities to vaccinate…”

- Provider and nursing recommendations are one of the most important factors for a child receiving a vaccination
- Healthcare staff have a higher likelihood of overcoming family fears to vaccinate
- Opportunity to target high-risk individuals
- Flu vaccines can decrease the rates of hospitalizations and deaths from influenza

“I got the flu vaccine last year but still got the flu”

While the ultimate goal is to not get the flu, if you do get sick, it will make your illness milder if you do get sick. (For example a 2017 study showed that flu vaccination reduced deaths, ICU admissions, ICU length of stay, and overall duration of hospitalization among hospitalized flu patients.)

“I just don’t believe in flu vaccines”

Immunization is not just a personal choice. Getting vaccinated yourself also protects people around you, including those who are more vulnerable to serious flu illness, like babies and young children, older people, and people with certain chronic health conditions.

“my patient is too sick to get the flu vaccine”

- Only contraindication to IIV is prior severe allergy to vaccine
- Can safely give to egg allergic patients
- Fever is not a contraindication, but can wait until afebrile to give
- Perfectly safe to give during sick visits/inpatient stays

BOARD OF HEALTH RULE FOR HEALTH CARE WORKER (HCW) INFLUENZA IMMUNIZATION

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BURDEN OF INFLUENZA

- CDC estimates that each year in the U.S.
  - 3,000 – 49,000 death to influenza
  - 200,000 hospitalizations
  - In Colorado an average of 1000 influenza-related hospitalizations annually
    - During 2017 -18 Season there were 4,650 hospitalizations

VACCINE RECOMMENDATIONS

- In 2010, Advisory Committee on Immunization Practices (ACIP) recommended vaccination for persons ≥ 6 months old.

HEALTH CARE-ASSOCIATED INFLUENZA

- Influenza vaccination recommended for HCWs since 1984
- Influenza viruses spread by droplets from coughing and sneezing- people can spread the flu virus to others from about 6 feet away
- Adults may be contagious a day before they have any symptoms and can spread the virus for 5-7 days

VACCINATION OF HEALTH CARE WORKERS PROTECTS EVERYONE

- Patients have the right to know that all steps have been taken to protect them from health care-associated influenza infections
- Influenza vaccination can benefit HCWs and employers by reducing illness among workers and their family members and absenteeism from work

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BOARD OF HEALTH RULE

- Approved February 15, 2012
- Developed with extensive stakeholder input
- Applies to all facilities licensed by CDPHE
- Hospitals, long term care facilities, ambulatory surgical centers
- Other facilities: assisted living, home health, dialysis, community clinic, community mental health center, etc.
- Does not apply to health care entities not licensed by CDPHE:
  - Outpatient physician clinics, doctor's offices, dental offices, and chiropractor's offices

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RULE INTENT

- Promote patient safety by protecting vulnerable patients from influenza
- Encourage health care entities to continue or adopt effective policies to prevent influenza

RULE REQUIREMENTS

- Reporting
- Policy implementation

REPORTING

- Reporting
  - All health care entities licensed by CDPHE must keep track of number of its employees that are vaccinated against influenza
  - Annually report this date to CDPHE (Through HF Portal or NHSN)
  - No exemption from reporting annually
  - Vaccination targets for 2014 and each year thereafter = 90%

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POLICY REQUIREMENTS

- Policy implementation
  - As a result of stakeholder input there are difference policy requirements depending on the facility type

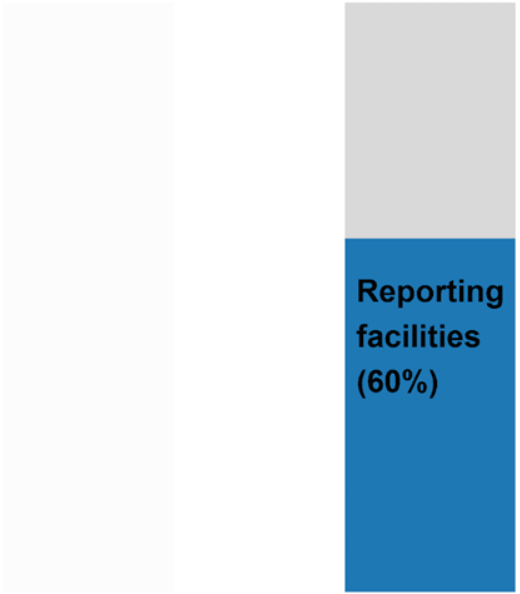
TWO WAYS TO REPORT DATA

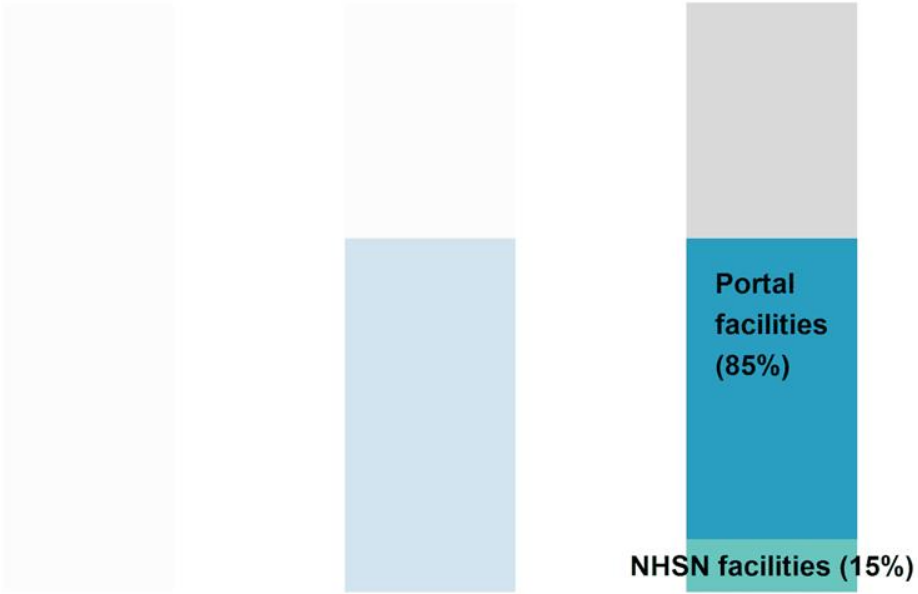
- Health Facilities Portal
  - Community clinic, rehabilitation center, community mental health center, facility for person with developmental disabilities hospice care, assisted living residence, dialysis treatment clinic, birthing center, home care agency, psychiatric hospital, convalescent center, or acute treatment unit

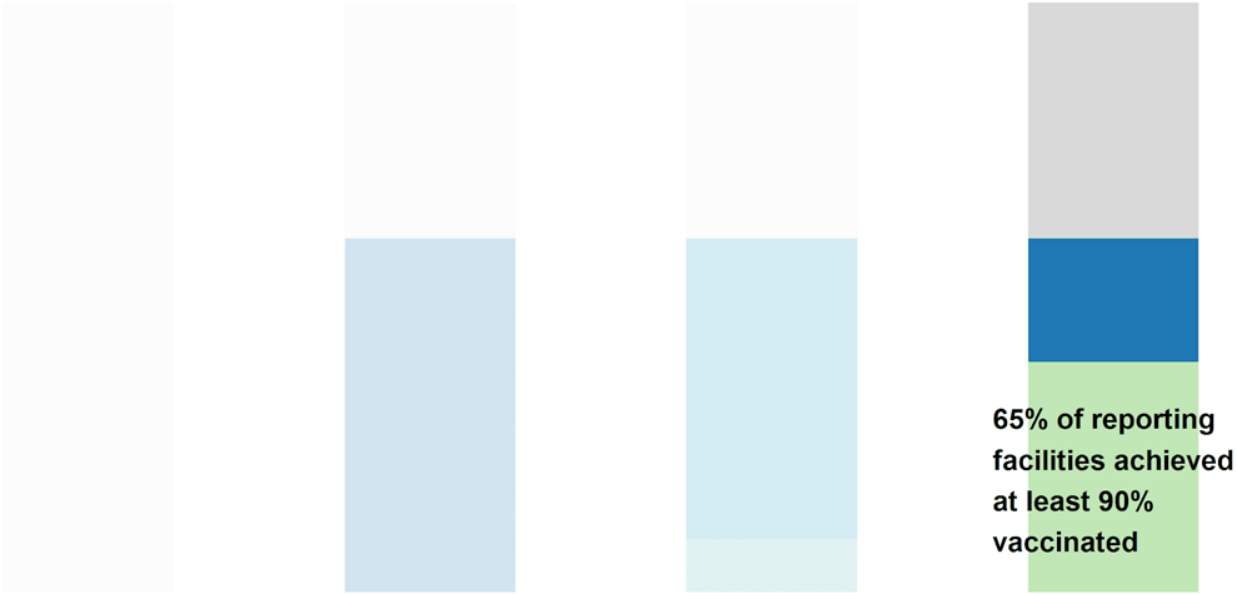
- National Health Care Safety Network (NHSN)
  - Hospitals, ambulatory surgical centers, dialysis facilities

SOME FINDINGS FROM THE REPORT

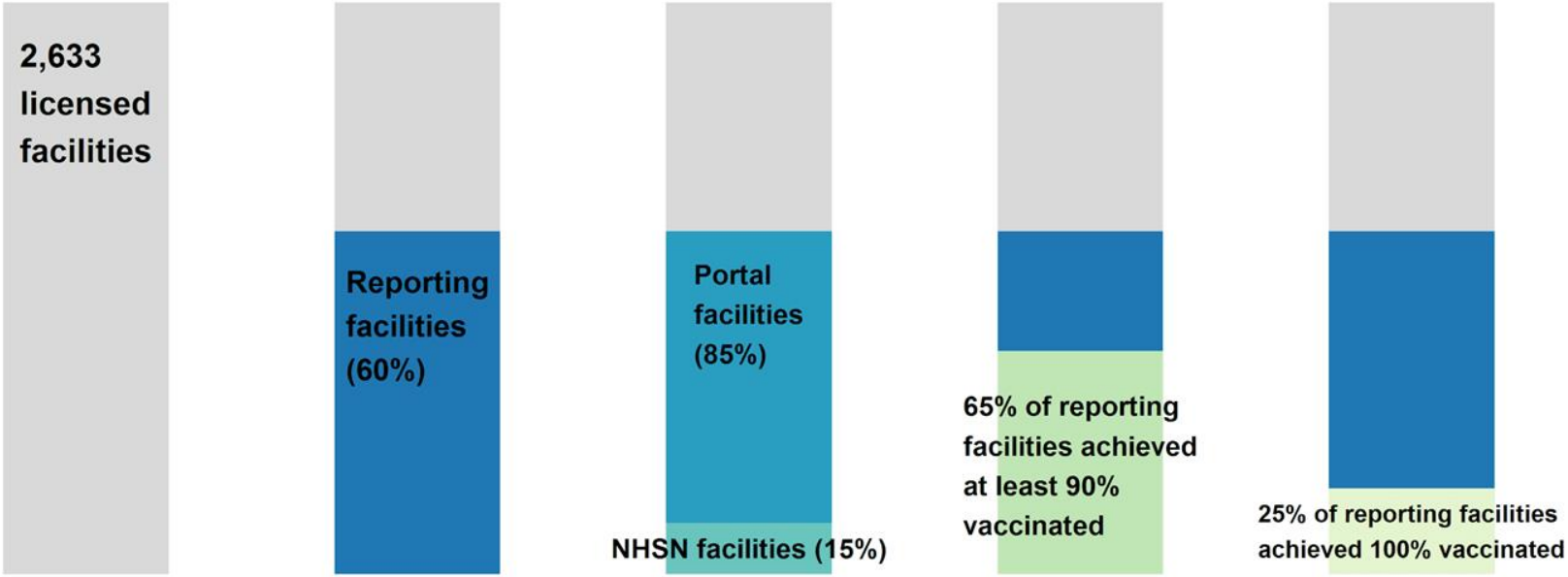
2,633 licensed facilities


Reporting facilities (60%)


Portal facilities (85%)
NHSN facilities (15%)


65% of reporting facilities achieved at least 90% vaccinated


25% of reporting facilities
achieved 100% vaccinated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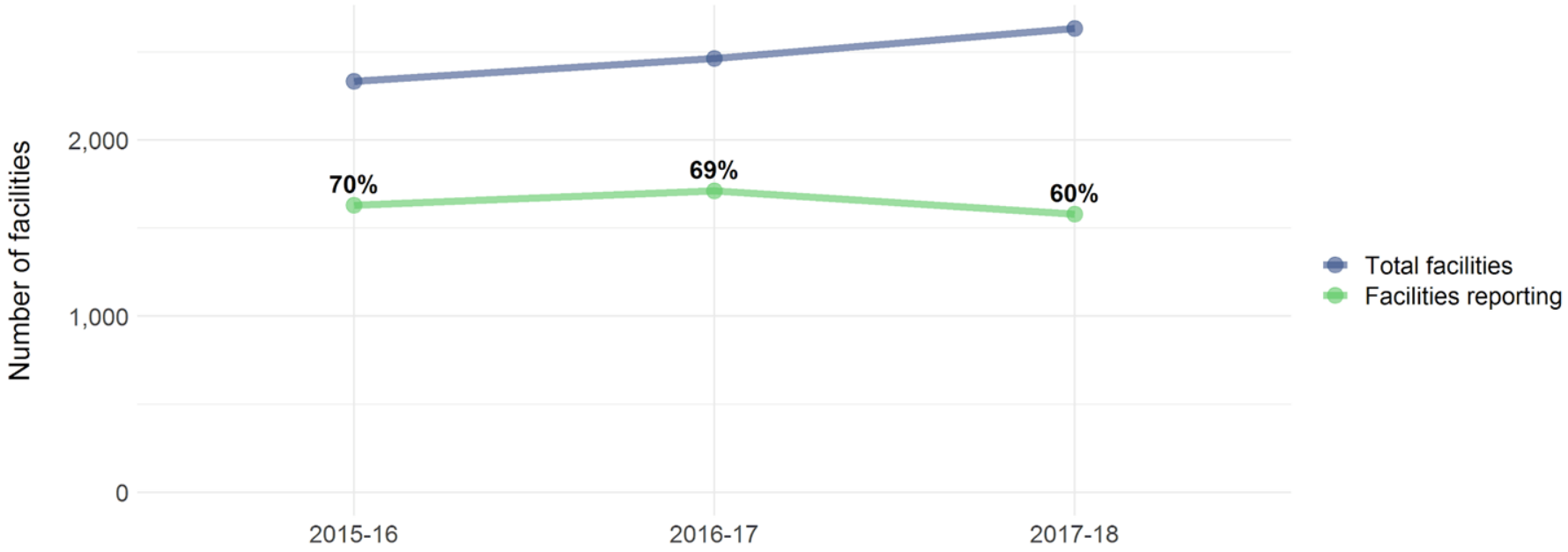
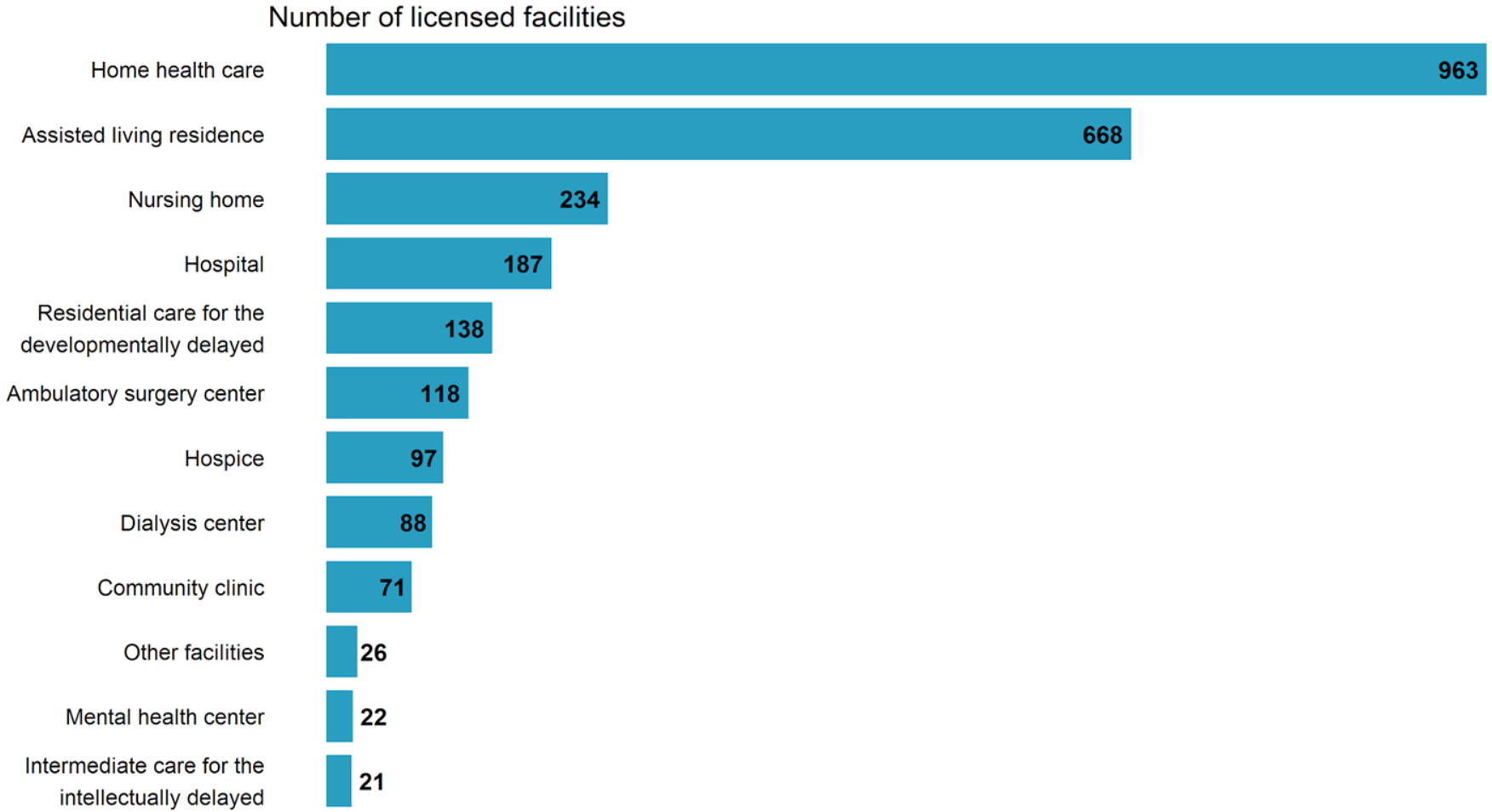
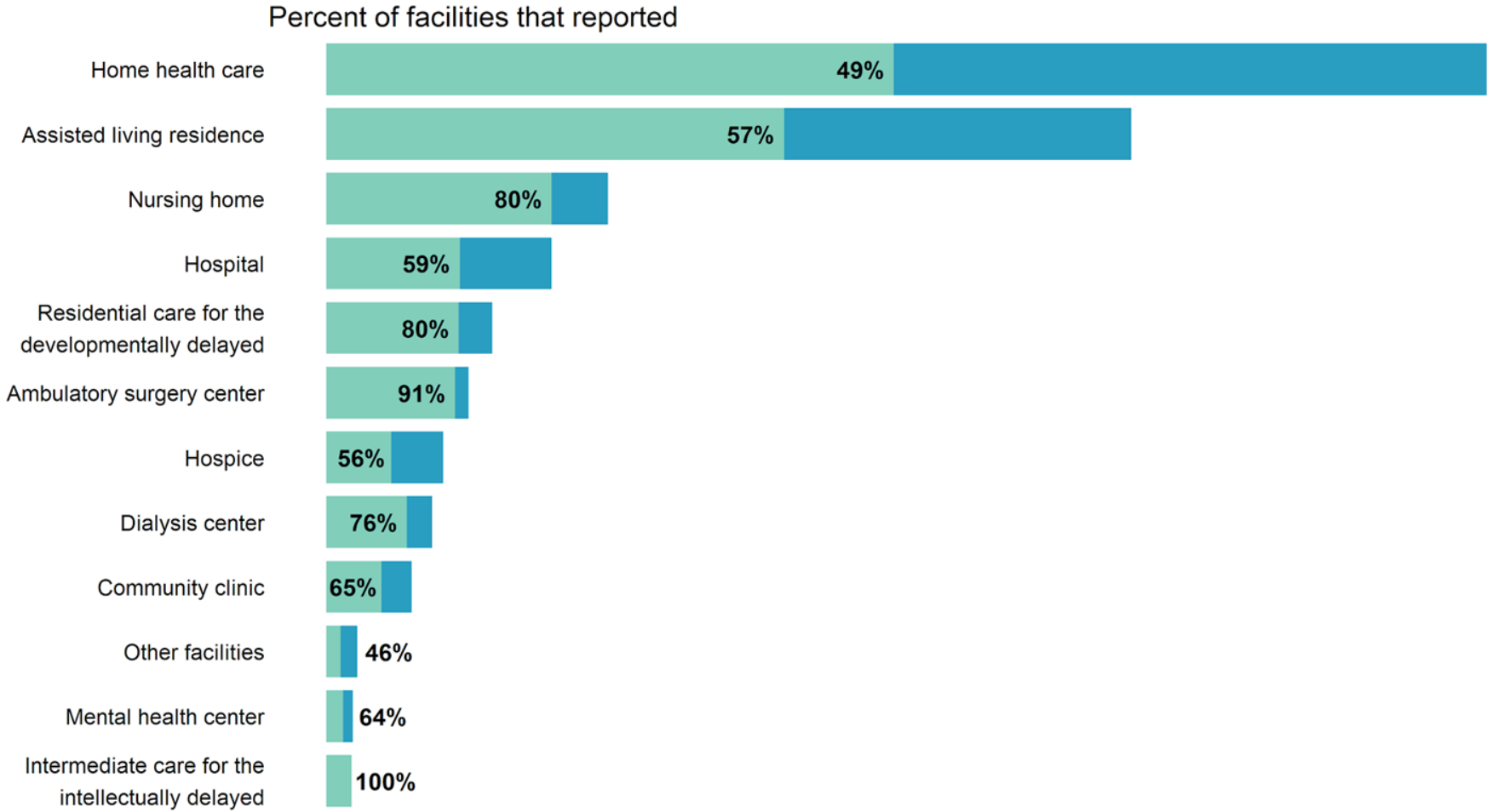
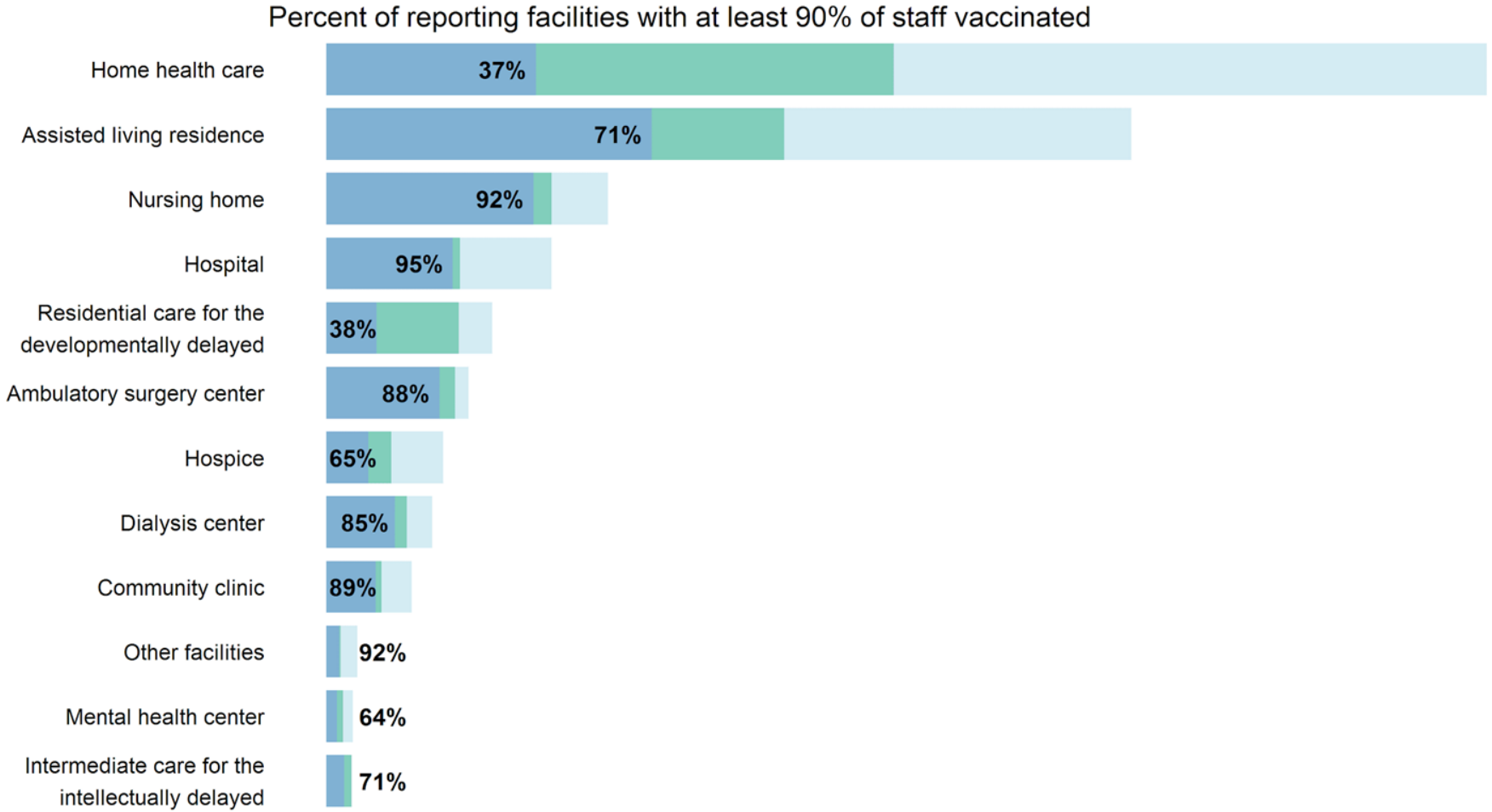
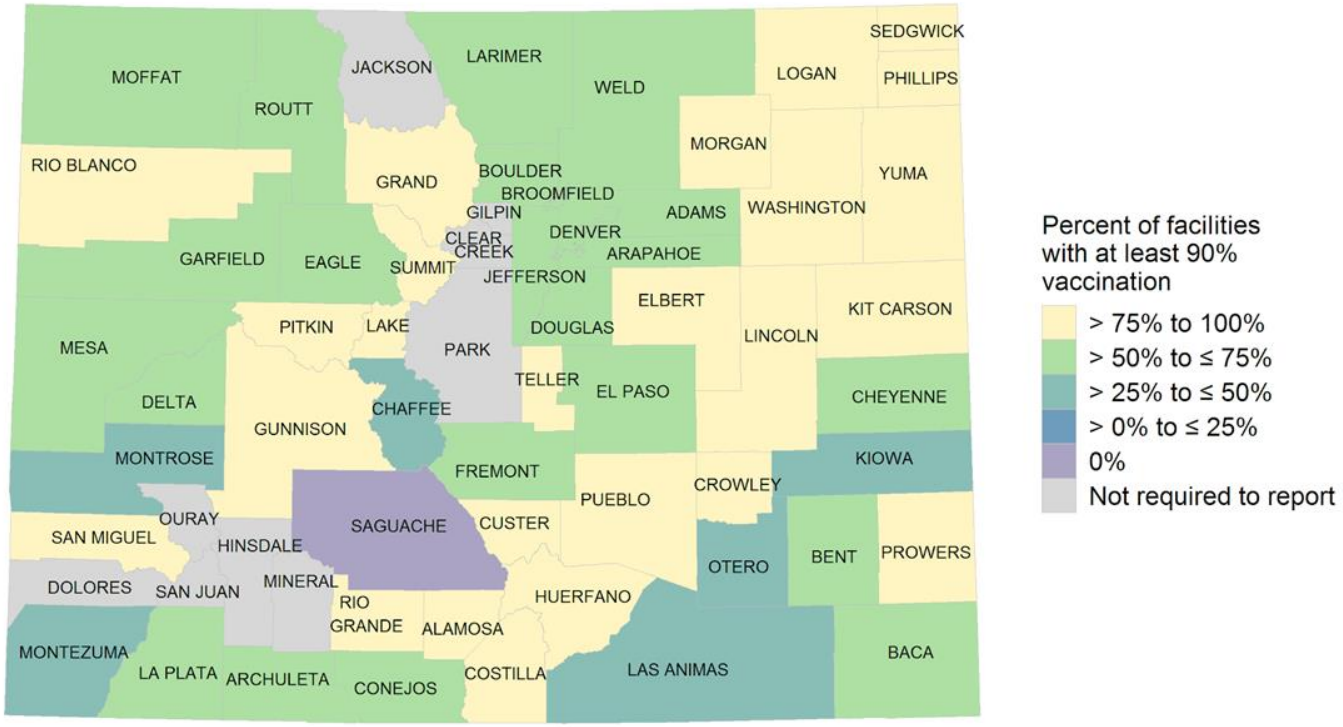

Number of facilities
2,000
1,000
0
70%
69%
60%
2015-16
2016-17
2017-18
Total facilities
Facilities reporting


Number of licensed facilities
Home health care
963
Assisted living residence
668
Nursing home
234
Hospital
187
Residential care for the developmentally delayed
138
Ambulatory surgery center
118
Hospice
97
Dialysis center
88
Community clinic
71
Other facilities
26
Mental health center
22
Intermediate care for the intellectually delayed
21


Percent of facilities that reported
Home health care
49%
Assisted living residence
57%
Nursing home
80%
Hospital
59%
Residential care for the developmentally delayed
80%
Ambulatory surgery center
91%
Hospice
56%
Dialysis center
76%
Community clinic
65%
Other facilities
46%
Mental health center
64%
Intermediate care for the intellectually delayed
100%


Percent of reporting facilities with at least 90% of staff vaccinated
Home health care
37%
Assisted living residence
71%
Nursing home
92%
Hospital
95%
Residential care for the developmentally delayed
38%
Ambulatory surgery center
88%
Hospice
65%
Dialysis center
85%
Community clinic
89%
Other facilities
92%
Mental health center
64%
Intermediate care for the intellectually delayed
71%


SEDGWICK
MOFFAT
JACKSON
LARIMER
WELD
LOGAN
PHILLIPS
ROUTT
MORGAN
RIO BLANCO
GRAND
BOULDER
YUMA
BROOMFIELD
GILPIN
ADAMS
WASHINGTON
CLEAR CREEK
DENVER
ARAPAHOE
GARFIELD
EAGLE
SUMMIT
JEFFERSON
ELBERT
KIT CARSON
PITKIN
LAKE
DOUGLAS
LINCOLN
MESA
PARK
TELLER
EL PASO
CHEYENNE
DELTA
CHAFFEE
GUNNISON
KIOWA
MONTROSE
FREMONT
CROWLEY
PUEBLO
OURAY
SAGUACHE
CUSTER
SAN MIGUEL
HINSDALE
OTERO
BENT
PROWERS
DOLORES
SAN JUAN
MINERAL
HUERFANO
RIO GRANDE
ALAMOSA
MONTEZUMA
BACA
LA PLATA
ARCHULETA
CONEJOS
COSTILLA
LAS ANIMAS
Percent of facilities with at least 90% vaccination
> 75% to 100%
> 50% to ≤ 75%
> 25% to ≤ 50%
> 0% to ≤ 25%
0%
Not required to report

1. The proportion of facilities that reported in the 2017-18 season decreased about 10% from the previous two seasons.

1. Hospitals had the highest proportion of facilities reaching the 90% vaccination threshold (95%). Home health care facilities and residential care facilities for the developmentally disabled had the lowest (37 and 38%, respectively).

1. Less-populated counties tended to have all facilities reach the 90% vaccination threshold. Most other counties fell in the 50 - 75% range.

QUESTIONS AND CONTACT INFO

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Resources

Colorado:
https://colorado.gov/pacific/cdphe/influenza

CDC National Flu Information for Health Professionals:
https://www.cdc.gov/flu/professionals/index.htm

CDC Resources for Businesses on Protecting the Workforce:
https://www.cdcfoundation.org/businesspulse/flu-prevention-infographic

Suchitra Rao, MD in JAMA: The Power of the Nudge to Decrease Decision Fatigue and Increase Influenza Vaccination Rates:
https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2702208?widget=personalizedcontent&previousarticle=2705303

Resources

ACOG Maternal Influenza Resources:

- http://immunizationforwomen.org/providers/diseases-vaccines/influenza/influenza.php

- https://www.acog.org/Clinical-Guidance-and-Publications/Committee-Opinions/Committee-on-Obstetric-Practice/Influenza-Vaccination-During-Pregnancy

Immunization Action Coalition Resources for Providers and Parents:

http://www.immunize.org/influenza/

National Foundation for Infectious Diseases:

http://www.preventchildhoodinfluenza.org/