Welcome to Immunize Colorado's Webinar Series

Seasonal Influenza: Vaccination, Prevention, and Control in the COVID-19 Era

Presented By

Suchitra Rao, MD/DO, MBBS, MSCS

- All attendees are in listen only mode.
- If you experience any technical difficulties, please post your comments in the chat box.
- Submit questions through the Q & A box.
- Please do not forget to provide feedback in the post webinar survey!

IMMUNIZE COLORADO

Partnering to

KEEP COLORADO COMMUNITIES HEALTHY

OUR MISSION

Founded in 1991, Immunize Colorado (formerly the Colorado Children's Immunization Coalition) is a statewide 501(c)3 nonprofit that serves to protect Colorado families, schools and communities from vaccine-preventable diseases.

What We Do

Coalition Building: Strengthen and expand Colorado's immunization initiatives and data through partnerships and collaboration

Public Policy: Advocate for policies that aim to better protect Colorado children and communities

Free and Low-Cost Vaccines: Partner to provide free and low-cost vaccines to families in need

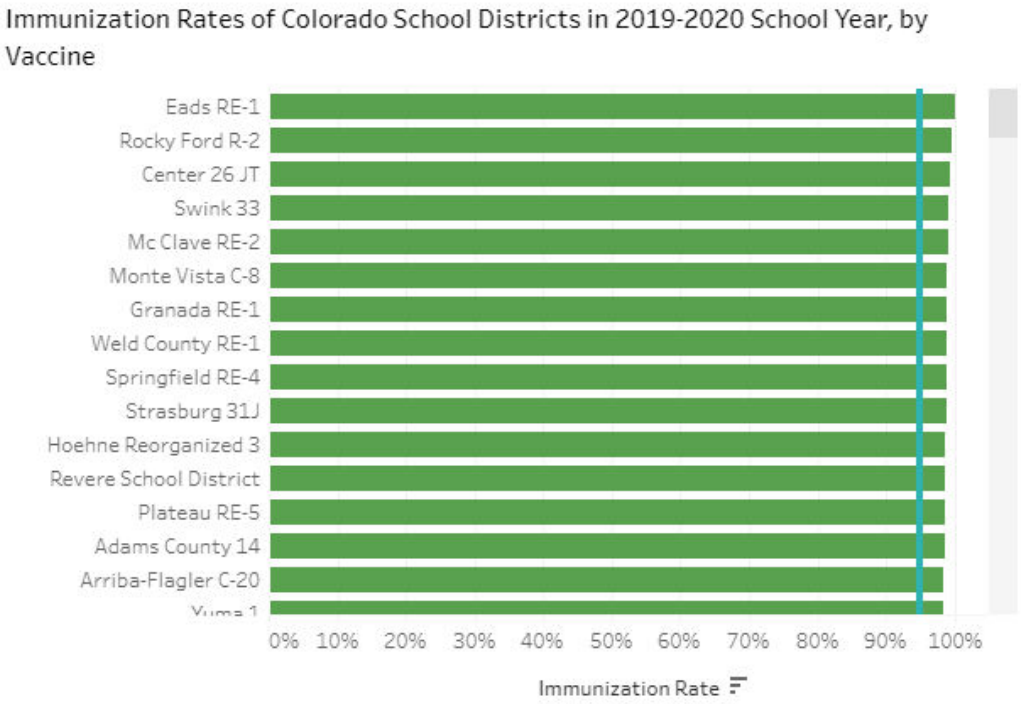
Community Outreach and Awareness: Communicate vaccine information with healthcare providers, parents, the media and organizations

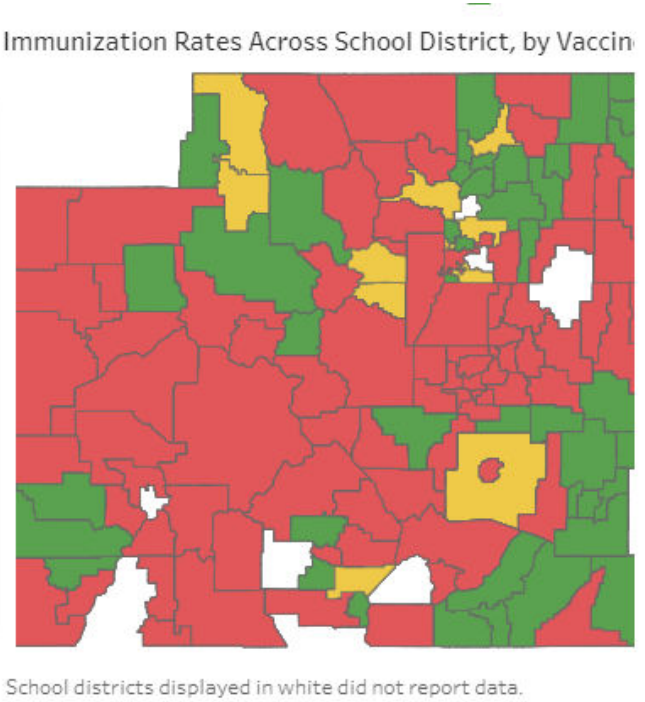
Provider Education: Educate health care professionals on crucial and timely vaccine-related topics

Data Translation and Action: Spearhead partnerships to advance the understanding and utilization of local, state and national immunization data

Updated Immunization Data Resources

- Immunize Colorado's School Immunization Dashboard and Legislative Dashboard are updated with 2020/21 school data
  - https://www.immunizecolorado.org/what-we-do/data/school-district-immunization-fact-sheets
  - School district specific factsheets will be updated shortly





SAVE THE DATE & JOIN US!

Big Shots Supporting Little Tots *Un*-Luncheon

Peer-to-Peer Fundraising Event

- Raise funds to support Immunize Colorado
- Partake in friendly fundraising competition
- Hear from Colorado leaders in vaccine equity
- Celebrate with us during a virtual cooking demonstration
- …and more!

AmeriCorps VISTA Program – Now Recruiting!

- Immunize Colorado's AmeriCorps VISTA Program, the Colorado Immunity Corps, places VISTAs at health departments all over Colorado to improve access to and education about immunizations.
  - Currently Recruiting for Gunnison County and Chaffee County – Start Date January, 2022.
  - Email sarah.waraniak@childrenscolorado.org for more information on how to apply or to host a VISTA!

Child Tax Credit Reminder

- Families are eligible to file for Child Tax Credits through November 15th.
  - Families who filed taxes in 2019-2020 should already be receiving these.
  - Immigrant and refugee communities, new parents, those with very low income, rural communities, and grandparent caregivers at risk of losing out on this benefit.
    - Can file as long as their child has a SSN
    - The IRS does NOT share citizenship information with any federal agency.

- GetCTC Demo - YouTube
- Get Your Child Tax Credit | GetCTC
- Free tax help from IRS-certified volunteers. | GetCTC

Immunize Colorado Awarded Grant from U.S. Department of Health and Human Services to Support Routine Immunization

- Immunize CO received a 3-year award of $125,000 each year from the United States Department of Health and Human Services (HHS)
- One of six awards to be made nationally
- Support activities aimed at building vaccine confidence for routine immunization in Colorado's diverse communities conducted by the Colorado Vaccine Equity Taskforce

Team Updates at Immunize Colorado!

Welcome to:

- Kailee Stiles, Communications Manager
- Ashley Bader, CDC Public Health Associate

Suchitra Rao, MD/DO, MBBS, MSCS

Associate Professor of Pediatrics, Sections of Infectious Diseases and Hospital Medicine at University of Colorado School of Medicine

Associate Medical Director of Infection Prevention and Control at Children's Hospital Colorado

OCTOBER 2021

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Associate Professor of Pediatrics
Infectious Diseases, Epidemiology and Hospital Medicine

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Conflicts of Interest

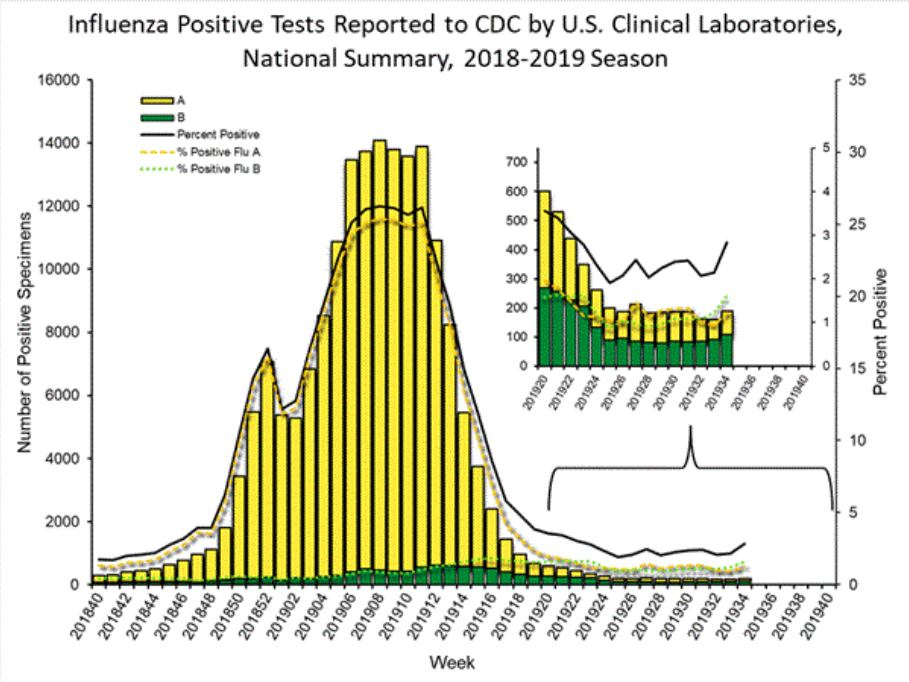
Prior funding from GSK, Biofire Diagnostics

Objectives

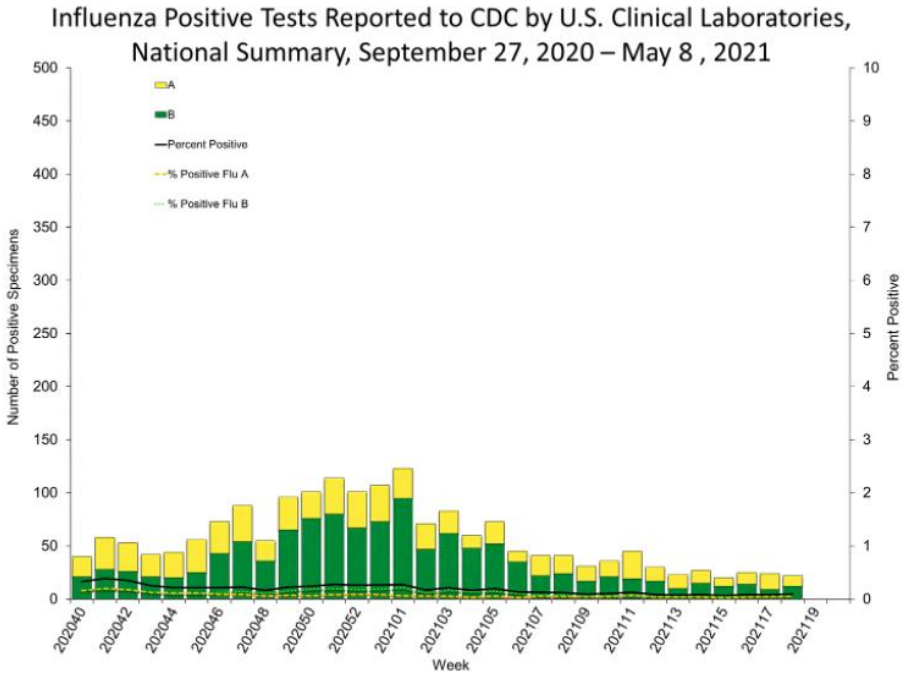
By the end of this presentation, audience members should be able to:

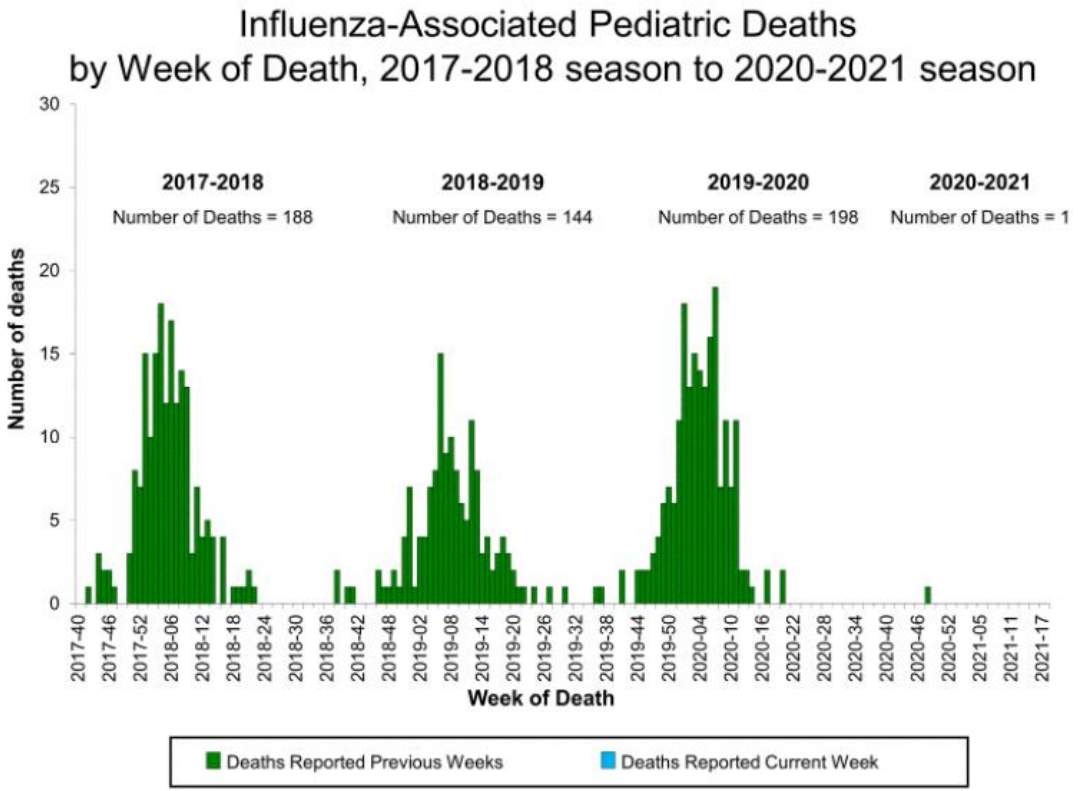
1. Discuss reasons for the unpredictable influenza season
2. Understand the rationale for current recommendations for influenza vaccination
3. Strategies to optimize influenza vaccination uptake

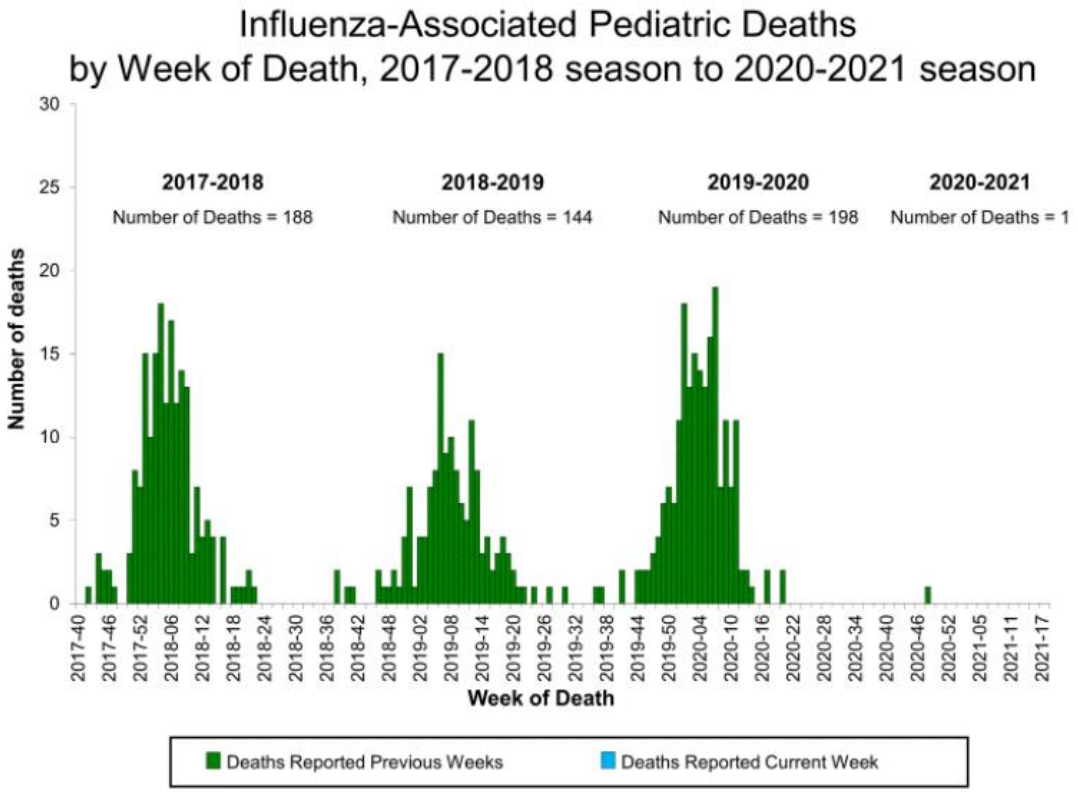
‘Typical influenza season’ epidemiology



2020-2021 influenza season




Influenza-Associated Pediatric Deaths
by Week of Death, 2017-2018 season to 2020-2021 season
2017-2018
Number of Deaths = 188
2018-2019
Number of Deaths = 144
2019-2020
Number of Deaths = 198
2020-2021
Number of Deaths = 1
Number of deaths
Week of Death
Deaths Reported Previous Weeks
Deaths Reported Current Week



Cause of death in children:
Respiratory Failure
Primary or secondary pneumonia, sepsis/SIRS
Severe dehydration
Myocarditis
Neurologic complications

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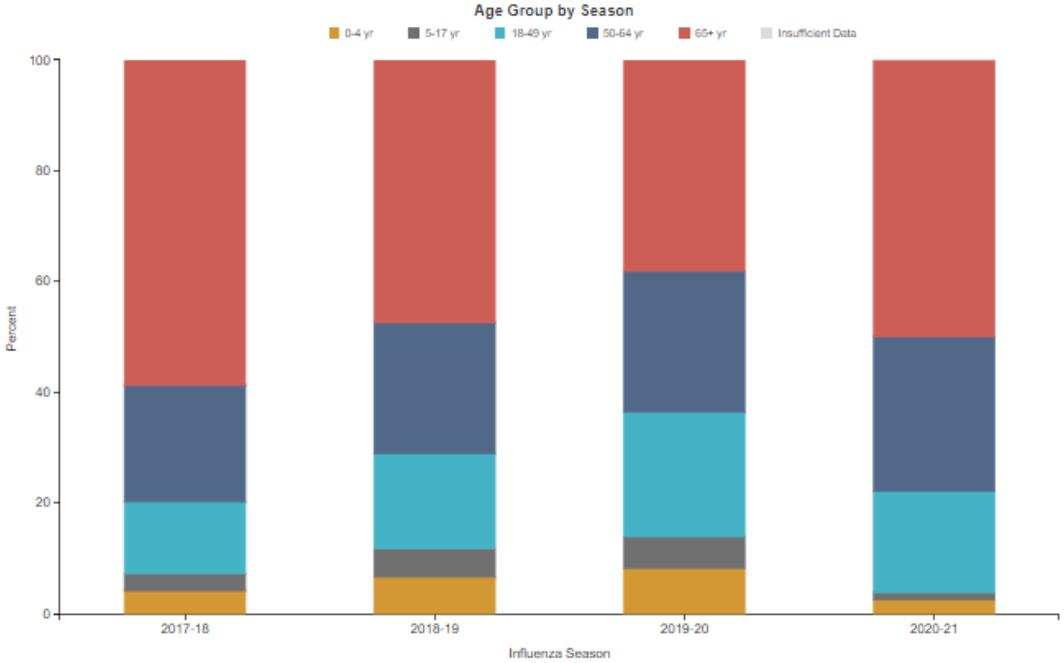
https://www.cdc.gov/flu/weekly/index.htm

Influenza hospitalizations

Among those hospitalized during 2019-2020

- 48.7% no known underlying condition
- 21.2% asthma/RAD
- 16.9% underlying neurologic condition



Predictions about upcoming influenza season?

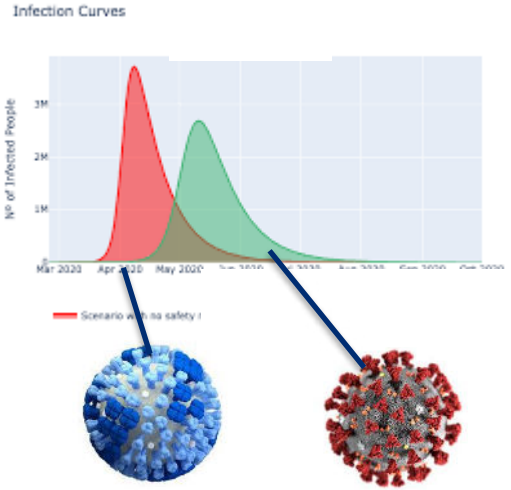


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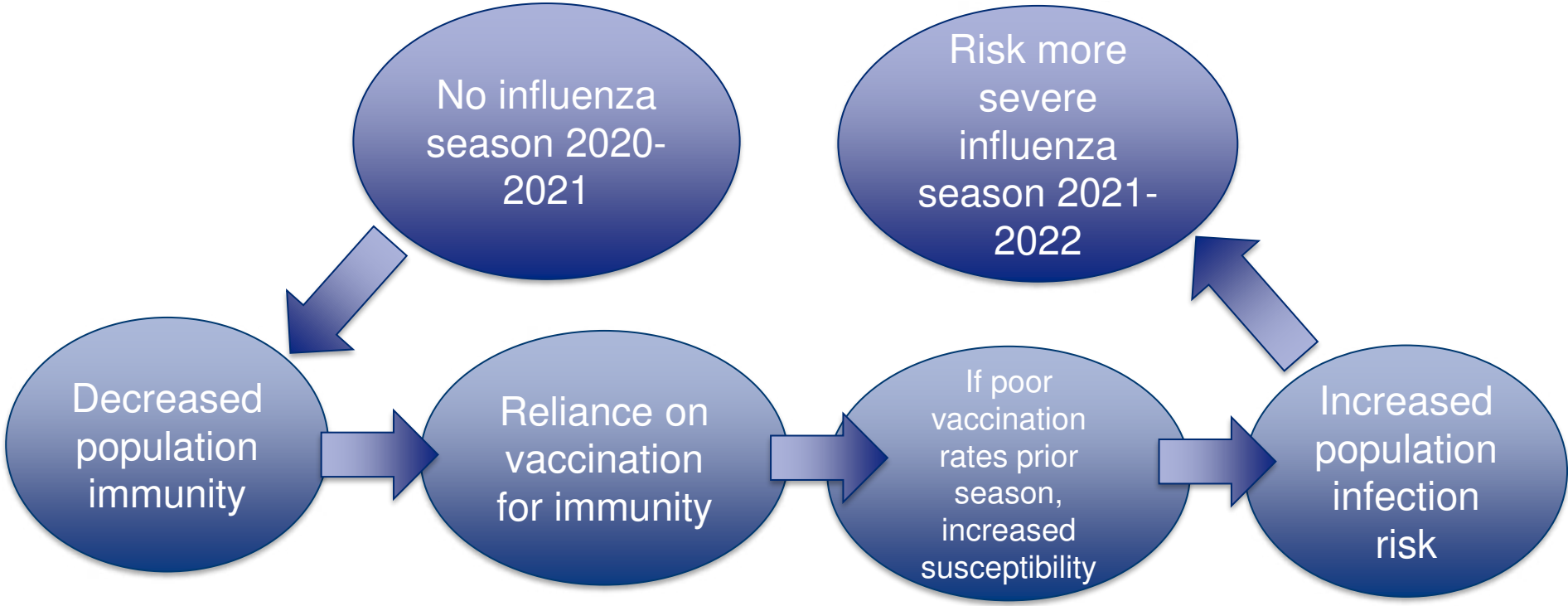
Image sources: Google images

Predictions about upcoming season



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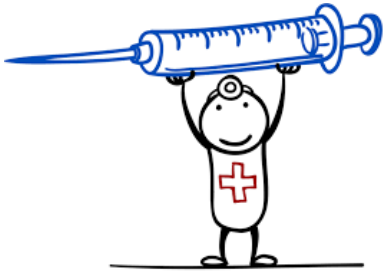
SARS-CoV-2 and influenza co-infection

- Rare event last season, sporadic reports in the literature
- 16 reports of 35 patients with co-infection with SARS CoV2 and influenza; 32 were hospitalized and 31% received mechanical ventilation
- Animal studies- more severe infection

Covin S, Rutherford CID June 2021
Maltezou et al. Vaccine Sep 2020 38(39):6078-6079
Belongia et al. Science June 2020 368(6496):1163



Influenza vaccination updates

2021-2022 season

Deciding on which influenza vaccine to use

You are seeing an 18-month-old patient with a history of egg allergy and a 6-month history of wheezing in clinic who has never been vaccinated for influenza in the past. On further questioning, he had hives with eggs 1 year ago, and mother is asking about the flu vaccine. What do you suggest?

1. Offer IIV4 – inactivated influenza vaccine
2. Offer LAIV4- live attenuated influenza vaccine
3. Offer ccIIV4 – cell culture based inactivated influenza vaccine
4. Offer RIV- recombinant influenza vaccine
5. Contraindicated from receiving flu vaccines

Vaccine updates for 2021-22 season

- Recommended for all persons 6 months of age and older who do not have any contraindications during all healthcare seeking opportunities
- No preference of IIV over LAIV

Vaccine composition

Contraindications vs precautions

Age indications

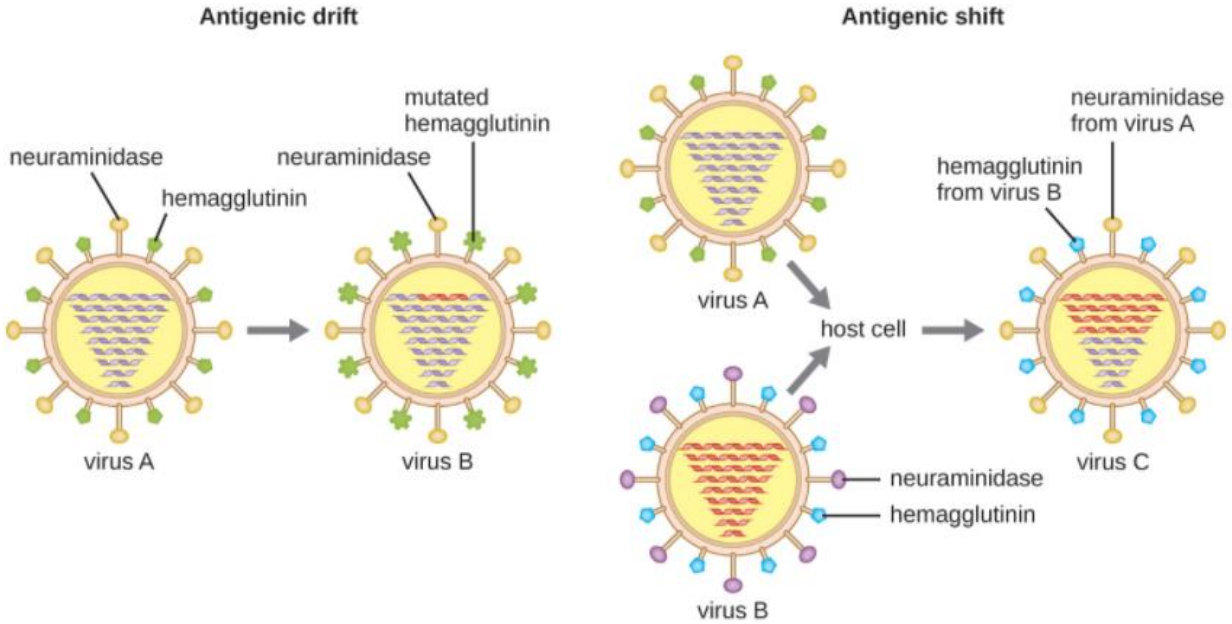
Quadrivalent vs Trivalent

Dosing considerations

Timing of vaccination

Co-administration with COVID-19 vaccines

Why do we have to change influenza vaccines every year?



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Source: https://chromoscience.com/2020/05/02/the-antigenic-variation-in-viruses/

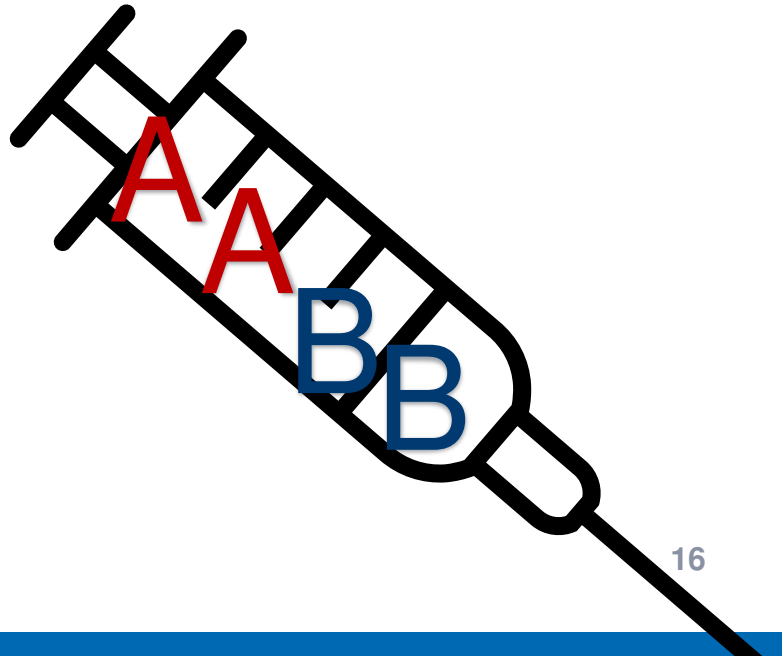
What is in this year's composition of the flu vaccine?

A H1N1

A H3N2

B Victoria lineage

B Yamagata lineage



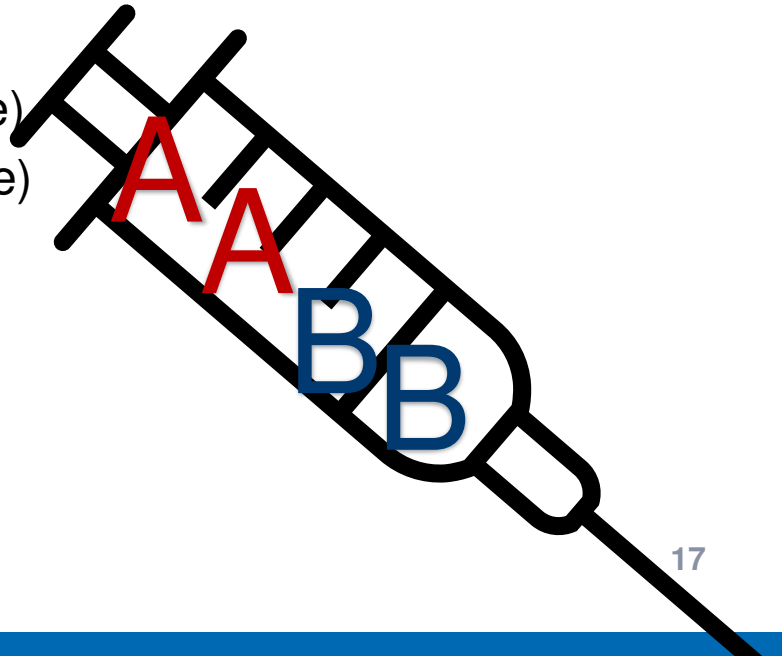
What is in this year's composition of the flu vaccine? Egg based IIV4 and LAIV

A/Victoria/2570/2019 (H1N1) pdm09–like virus

A/Cambodia/e0826360/2020 (H3N2)–like virus

B/Washington/02/2019–like virus (Victoria lineage)

B/Phuket/3073/2013–like virus (Yamagata lineage)



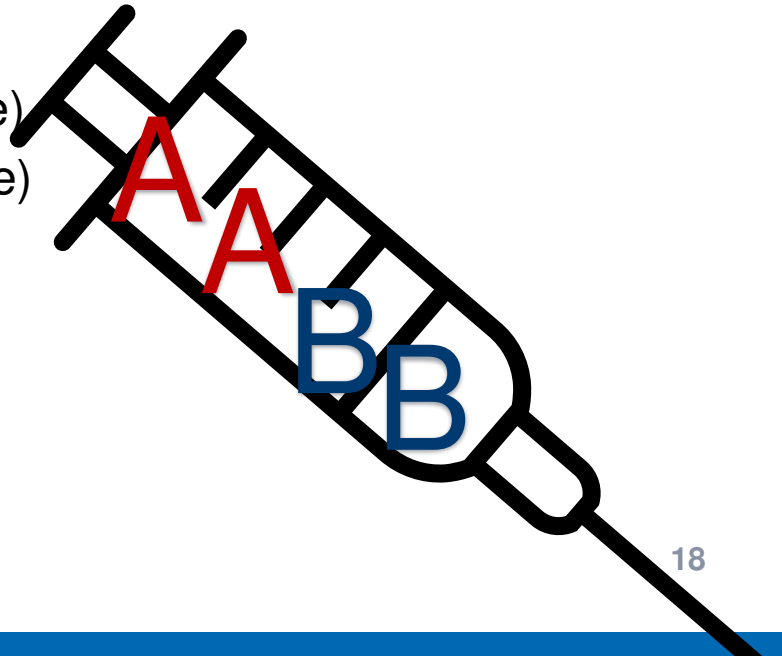
What is in this year's composition of the flu vaccine? Cell-culture IIV4 and RIV

A/Wisconsin/588/2019 (H1N1)pdm09–like virus

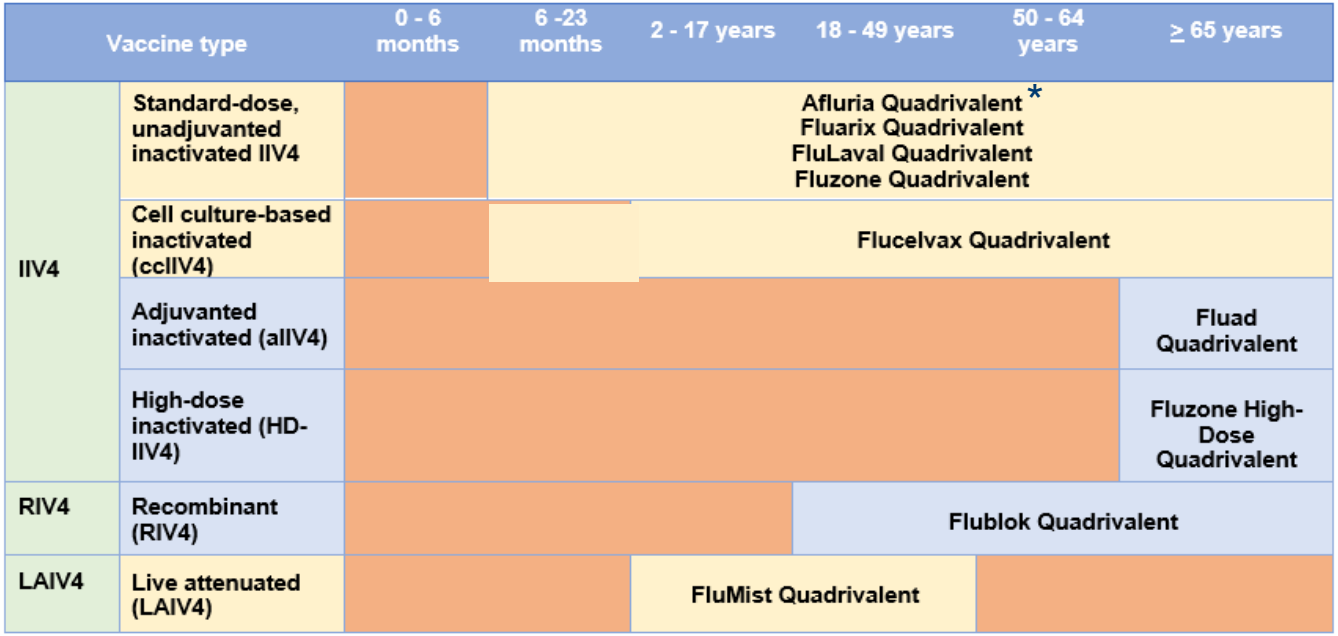
A/Cambodia/e0826360/2020 (H3N2)–like virus

B/Washington/02/2019–like virus (Victoria lineage)

B/Phuket/3073/2013–like virus (Yamagata lineage)

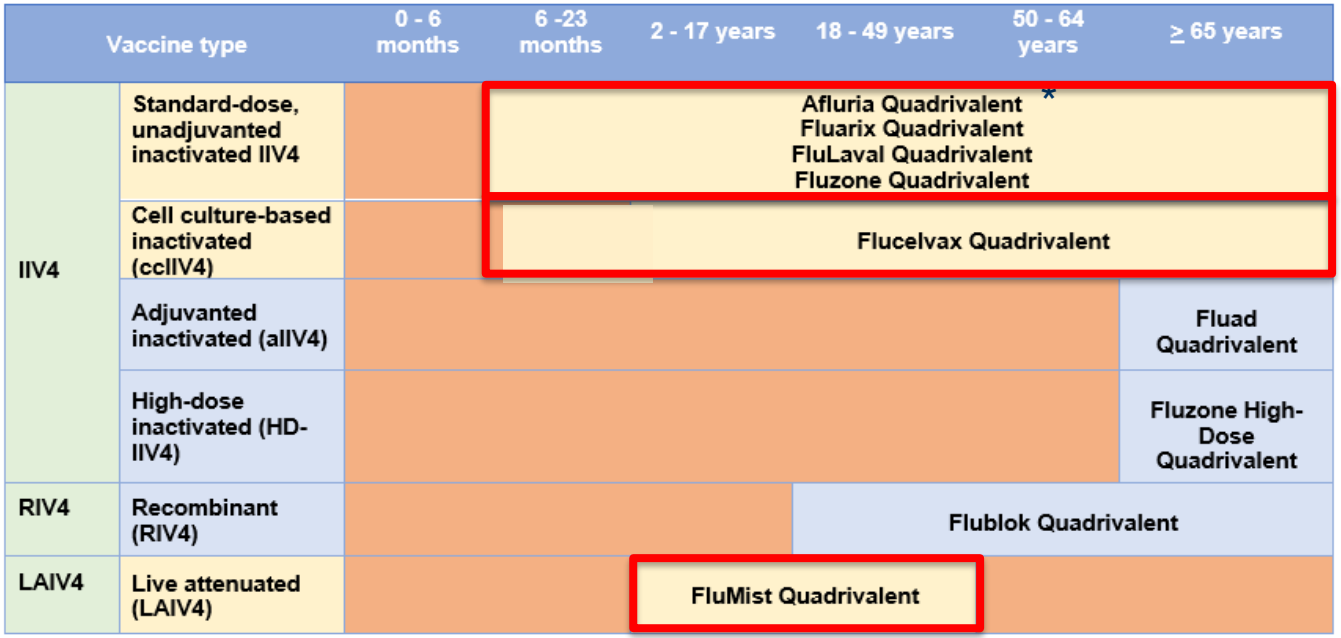


Influenza vaccines by age indication 2021-22 season



* Afluria 6-36 months 0.25 mL dosing, all others 0.5 mL

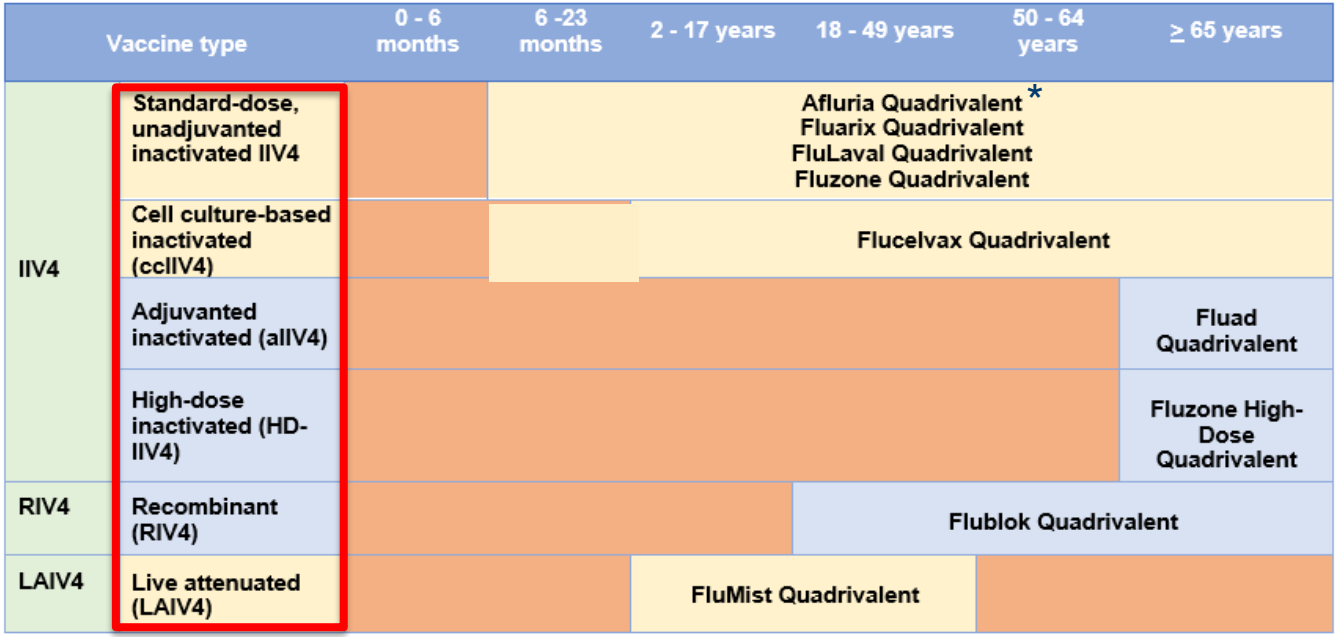
Pediatric vaccines – IIV4, ccIIV4, LAIV4



Indicated for pediatric population

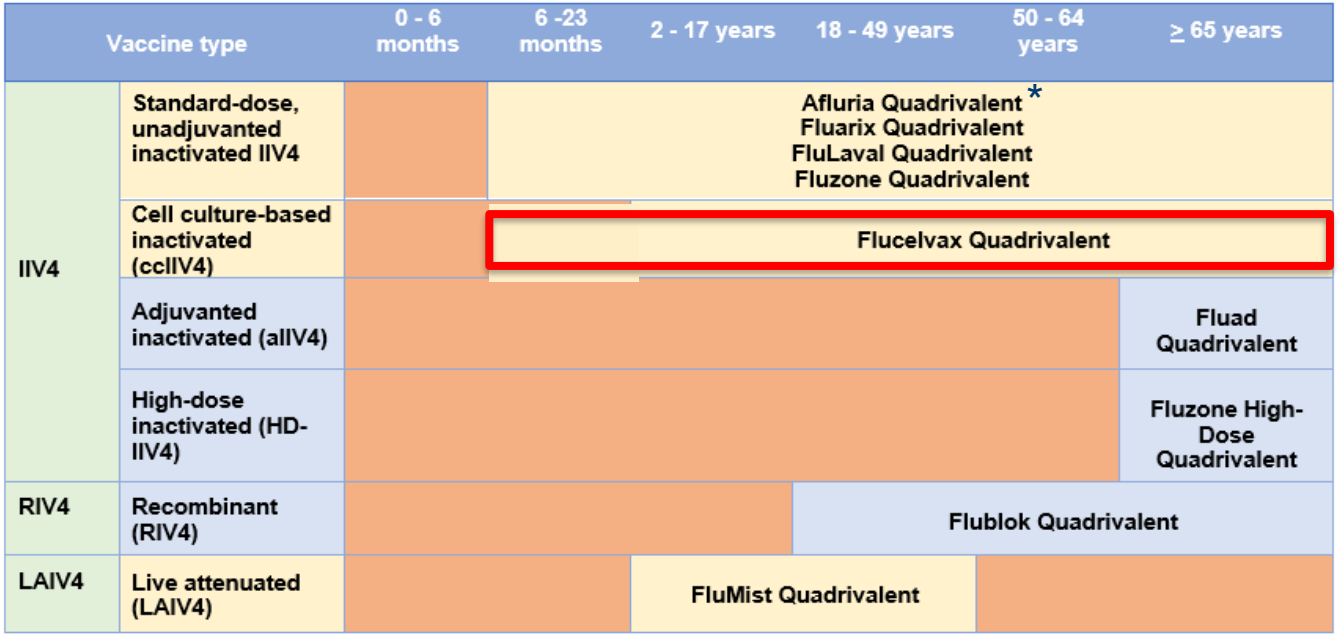
* Afluria 6-36 months 0.25 mL dosing, all others 0.5 mL

All vaccines are quadrivalent this season



* Afluria 6-36 months 0.25 mL dosing, all others 0.5 mL

Flucelvax now approved down to age 6 months



Indicated for pediatric population

* Afluria 6-36 months 0.25 mL dosing, all others 0.5 mL

All pediatric vaccines are 0.5mL except Afluria

Vaccine type		0 - 6 months	6 -23 months	2 - 17 years	18 - 49 years	50 - 64 years	≥ 65 years
IIV4	Standard-dose, unadjuvanted inactivated IIV4			Afluria Quadrivalent * Fluarix Quadrivalent FluLaval Quadrivalent Fluzone Quadrivalent			
	Cell culture-based inactivated (ccIIV4)			Flucelvax Quadrivalent			
	Adjuvanted inactivated (aIIV4)						Fluad Quadrivalent
	High-dose inactivated (HD-IIV4)						Fluzone High-Dose Quadrivalent
RIV4	Recombinant (RIV4)				Flublok Quadrivalent		
LAIV4	Live attenuated (LAIV4)			FluMist Quadrivalent			

Indicated for pediatric population

* Afluria 6-36 months 0.25 mL dosing, all others 0.5 mL

Inactivated Influenza Vaccine

Contraindications

- History of severe allergic reaction to any component of the vaccine, or to a previous dose of any influenza vaccine
- (for ccIIV4, history of severe allergic reaction to ccIIV4, cIIV3 or to any component of ccIIV4)

Precautions

•Moderate or severe acute illness with or without fever

•History of Guillain-Barré syndrome within 6 weeks of receipt of influenza vaccine

• (for ccIIV4 and RIV, history of severe allergic reaction to a previous dose of any other influenza vaccine

Live Attenuated Influenza Vaccine

Contraindications

- Severe allergic reaction to any component of the vaccine/previous dose
- Aspirin
- Children aged 2 through 4 years with asthma/ wheezing episode has occurred during the preceding 12 months
- Immunocompromised, close contacts and caregivers of severely immunosuppressed persons who require a protected environment
- Pregnancy

Live Attenuated Influenza Vaccine

Contraindications

- Communication b/w cerebrospinal fluid (CSF) and the oropharynx, nasopharynx, nose, or ear or any other cranial CSF leak
- Persons with cochlear implants
- Previous receipt antiviral:
  - 48 hours for oseltamivir and zanamivir
  - 5 days for peramivir
  - 17 days for baloxavir

Live Attenuated Influenza Vaccine

Precautions

- Moderate or severe acute illness with or without fever
- History of Guillain-Barré syndrome within 6 weeks of receipt of influenza vaccine
- Asthma in persons aged ≥5 years
- Other underlying medical conditions that might predispose to complications after wild-type influenza infection (e.g., chronic pulmonary, cardiovascular [except isolated hypertension], renal, hepatic, neurologic, hematologic, or metabolic disorders [including diabetes mellitus])

What are the recommendations for egg allergic patients?

You are seeing an 18 month old patient with a history of egg allergy and a 6-month history of wheezing in clinic who has never been vaccinated for influenza in the past. On further questioning, he had hives with eggs 1 year ago, and mother is asking about the flu vaccine. What do you suggest?

1. Offer IIV4
2. Offer LAIV4 – *no, given age, and history of wheezing*
3. Offer ccIIV4 – *no, age indication is ≥ 2 yrs*
4. Offer RIV – *no, age indication is ≥ 18 yrs*
5. Contraindicated from receiving flu vaccines – *egg allergy is not a contraindication to receiving the flu vaccine*

Vaccination of persons with COVID-19 infection

- No data to inform optimal timing of influenza vaccination for persons with COVID-19

- CDC guidance as of April, 2021:
- Visits should be deferred until the isolation period has ended
  - COVID + asymptomatic- can receive influenza vaccine
  - COVID + symptomatic- consider deferring
  - COVID + on IL-6 inhibitors, high-dose steroids- recommend waiting until course completed

CDC website https://www.cdc.gov/vaccines/pandemic-guidance/index.html

Co-administration of influenza vaccine with COVID-19 vaccines

Final recommendation - COVID-19 vaccines and other vaccines may now be administered without regard to timing.

Studies looking at safety, reactogenicity, efficacy ongoing

Potential for increased reactogenicity with coadministration

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

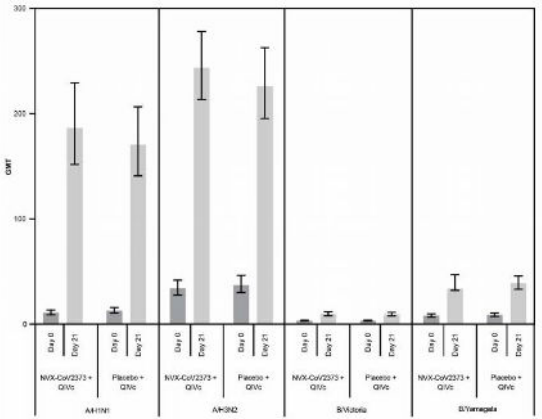
Comment on this paper

Safety, Immunogenicity, and Efficacy of a COVID-19 Vaccine (NVX-CoV2373) Co-administered With Seasonal Influenza Vaccines

Seth Toback, Eva Galiza, Catherine Cosgrove, James Galloway, Anna L. Goodman, Pauline A. Swift, Sankarasubramanian Rajaram, Alison Graves-Jones, Jonathan Edelman, Fiona Burns, Angela M. Minassian, Iksung Cho, Lakshmi Kumar, Joyce S. Plested, E. Joy Rivers, Andreana Robertson, Filip Dubovsky, Greg Glenn, Paul T. Heath

doi: https://doi.org/10.1101/2021.06.09.21258556

	COVID-19 + influenza vaccine	COVID-19 vaccine only
Vaccine efficacy COVID-19	87.8%	89.8%
Tenderness injection site	70.1%	57.6%
Pain at injection site	39.7%	29.3%
Fatigue	27.7%	19.4%
Muscle pain	28.3%	21.4%
Any systemic reaction	60.1%	45.7%
Influenza vaccine immune response	No significant difference in antibody titers between two groups	



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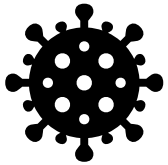
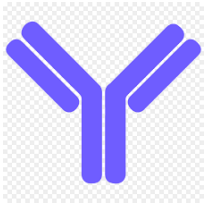
Timing of vaccination – factors influencing recommendations



Timing of season



Time taken to develop immune response

Time taken for successful vaccine campaign

Time between doses

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Timing of Vaccination - updated language

Children- ideally be vaccinated by the end of October; can be done as soon as possible (less evidence waning immunity)

Non-pregnant adults- July and August should be avoided unless later vaccination not possible

Waning immunity

- Waning effects have not been observed consistently
- More of an issue with influenza H3N2, which tends to occur earlier in the flu season
- Serologic studies show a modest rather than sharp decline
- Experts concerned about early influenza season this year
- Ideal vaccination Season Sept-October before onset of flu season
- Continue to vaccinate eligible populations before and while flu is circulating
- More of an issue in > 65yrs, can be overcome with high dose or adjuvanted formulations

How to promote vaccine uptake

What is the most effective strategy to increase influenza vaccination for your patients?

1. Vaccinate the parents during the visit
2. Provide a strong recommendation
3. Educate on disease mitigation rather than sterilizing immunity
4. Provide positive messages around influenza vaccination

The impact of a strong provider vaccine recommendation and influenza vaccination

US Survey August 2014, n = 2363

- factors associated with influenza vaccine uptake
- physician recommendation (AOR = 4.92, CI 3.2–7.6)
- strong physician recommendation (AOR = 21.85, CI 12.6–37.9)
- positive attitudes about influenza vaccine (AOR = 4.52, CI 3.7–5.6)
- visited HCP in the past year (AOR = 3.67, CI 1.8–7.7)

450,687 matched adult caregiver-child pairs

- 2.77 times (95% CI, 2.74 to 2.79) more likely to be vaccinated across all seasons if their parents were too

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Imburgia et al. Vaccine 2017 Apr 25; 35(18): 2338-2342
Robison et al. Pediatrics 2017 May; 139(5):e20162883

Making a strong vaccine recommendation

Normalize the process - *It looks like Johnny hasn't gotten a flu vaccine yet this year. We routinely offer flu vaccine for all of our patients here.*

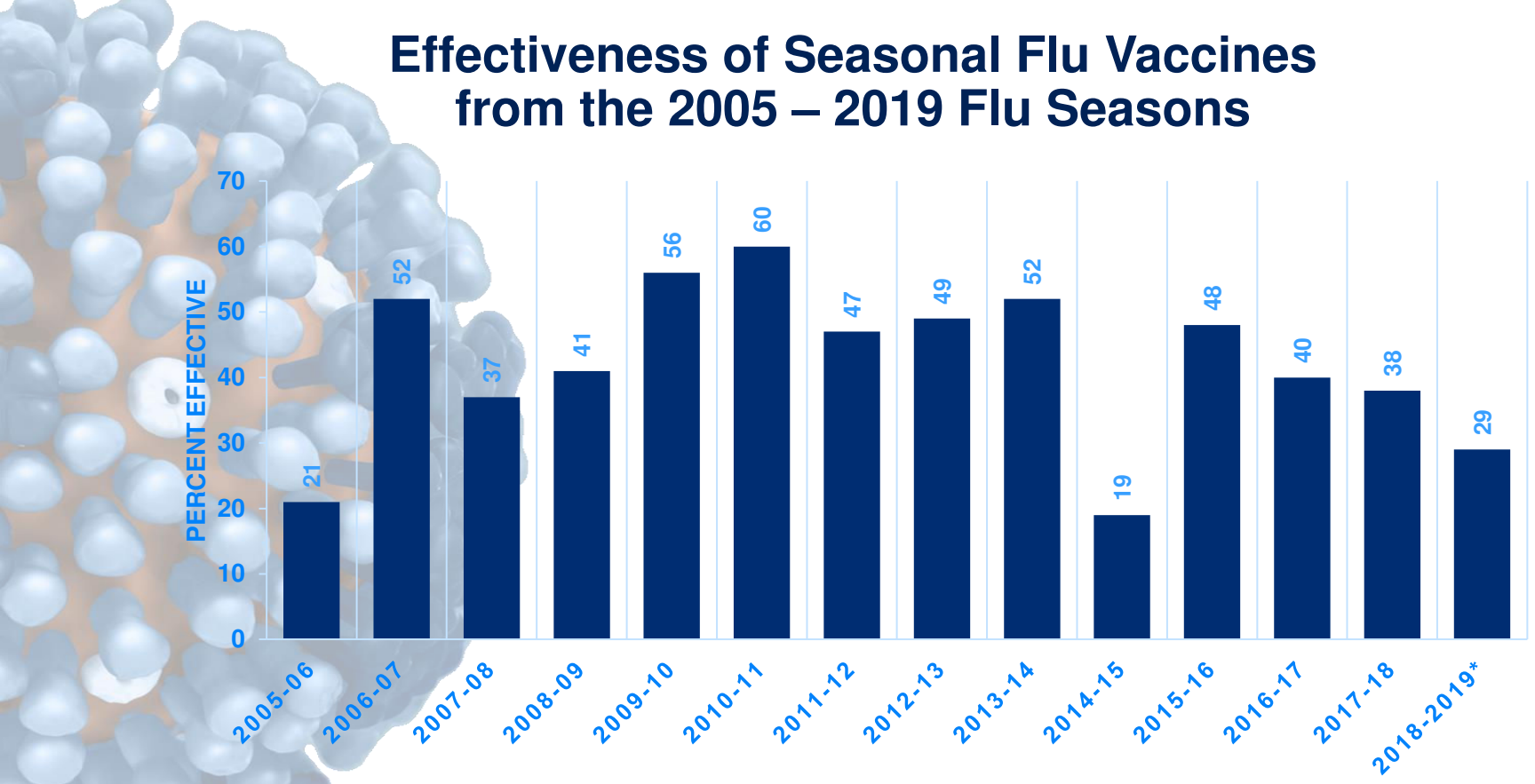
Use presumptive language – *We can take care of that while he's here, sound good?*

Be respectful of their concerns- *Do you mind if I ask why you are not wanting your child to receive the flu vaccine today?*

Tailor the discussion to address concerns - *Thanks for letting me know about your concerns. I've been thinking a lot about this and we get a lot of education about influenza vaccines- would it be alright if I shared some of this information with you?*

Find common ground - *I know you are a wonderful parent, and you want to do what's best for your child. We also want to do everything possible to keep your child as healthy as possible, and vaccination is one of those ways.*

Effectiveness of Seasonal Flu Vaccines from the 2005 – 2019 Flu Seasons



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*Vaccine effectiveness estimates for 2018-2019 were presented to ACIP on June 27, 2019.
Source: https://www.cdc.gov/flu/professionals/vaccination/effectiveness-studies.htm

Decreased hospitalization risk

- Meta-analysis of 28 studies
  - VE 57.5% (95% CI, 54.8% to 65.5%)

- Data from Israel
  - 53.9% (95% CI, 38.6% to 68.3%) (Israel)
  - If good match, then 60% to 80%
  - If partial vaccination 25.6% (95% CI, –3% to 47%)

- Pediatric data from NVSN 2015-2016-Flu VE against hospitalization
  - VE 56% (95% confidence interval [CI], 34% to 71%)

- Data from Australia (preschool and high-risk children)
  - 78.8% (95% CI, 66.9% to 86.4%)

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Feldstein JPIDS 2020; Segaloff CID 2019 69(12):2153-2161; Blyth et al. Vaccine 2020;**38**(13):2779–2787; Kaalligeros M et al. Vaccine 2020;**38**(14):2893–2903

Decreased risk of death and ICU admission

- Influenza vaccination can decrease your risk of being hospitalized by 58%

- Influenza vaccination can decrease the risk of a child being admitted to the ICU by 74%, and an adult by 82%

- Influenza vaccination can decrease your risk of dying from the flu by 65%

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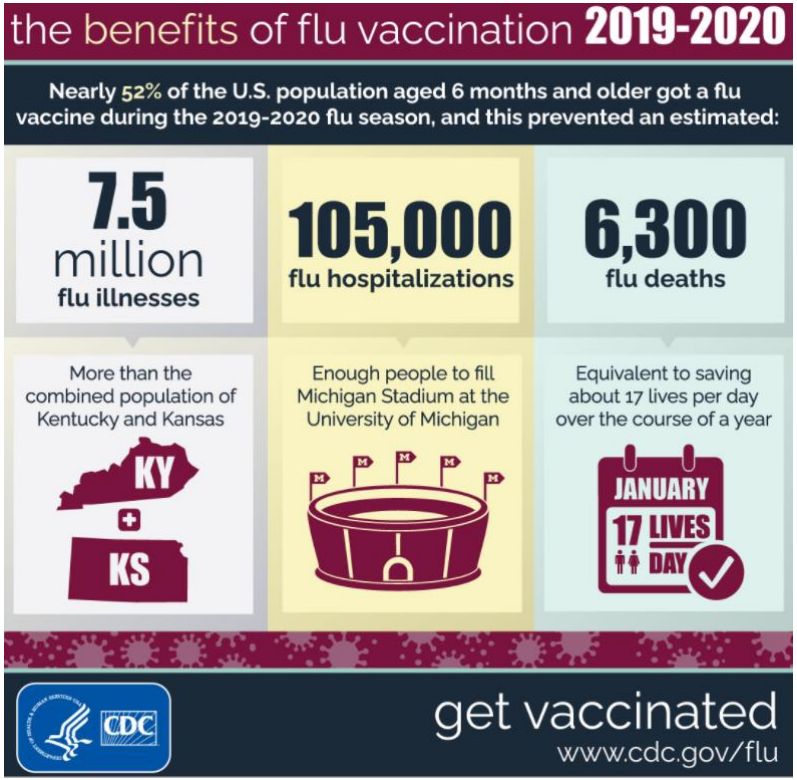
Flannery et al. Pediatrics May 2017, 139 (5) e20164244

Disease averted by influenza vaccination 2019-2020

Overall vaccine effectiveness of 39%



https://www.cdc.gov/flu/about/burden-averted/2019-2020.htm

Influenza vaccine safety

Rate of serious allergic reactions to influenza vaccines are rare

VSD study – estimated rates of post vaccination anaphylaxis after single vaccine:

-1.31 cases per million doses for all vaccines

-1.35 cases per million doses for IIV3

GBS- 1-2 additional GBS cases per million flu vaccine doses administered

- more likely that a person will get GBS after getting influenza than after vaccination

McNeil J Allerg Clin Immunol 2016; 137:868-878

Egg allergy

- Amount of egg protein in a flu vaccine - ≤1 mcg per 0.5 mL dose
- Independent investigators found it to be even lower than manufacturer's claims
- Safe administration of injectable influenza vaccine (containing up to 0.7 mcg ovalbumin per 0.5 mL dose) to over 4000 individuals with egg allergy has been reported, even in those who have history of anaphylaxis to eggs
- Also safe to give LAIV in patients with egg allergy

Egg-allergic patients

After eating eggs or egg-containing foods, does the patient experience ONLY hives?

Yes → Administer any influenza vaccine formulation appropriate for recipient's age and health status

No

After eating eggs or egg-containing foods, does the patient experience other symptoms such as:

- Cardiovascular changes
- Respiratory distress
- GI
- Reaction requiring epinephrine
- Reaction requiring emergency medical attention

Yes → Administer any influenza vaccine formulation appropriate for recipient's age and health status
If a vaccine other than RIV/ccIIV is used, it should be administered in a medical setting in which a physician with experience in the recognition and management of severe allergic conditions is immediately available

Testing and Treatment

Clinical vignette

You are seeing a 7-year old in the office during flu season with a history of wheezing every respiratory season with 3 days of fever to 103, cough, wheezing and rhinorrhea. He has normal hydration status, but is not responding to albuterol at home. He has received two doses of the flu vaccine this season. T 101, HR 160, RR 40s, pulse ox 94%, with diffuse wheezes bilaterally. He receives 2BTB nebs, with some improvement in respiratory status.

Which of the following management strategies would you most likely follow?

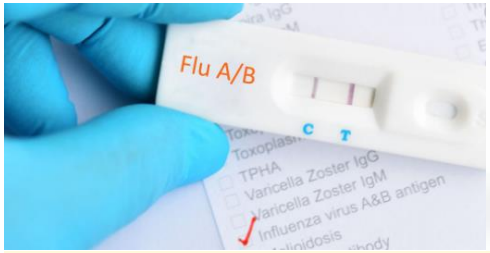
A. Treat him with oseltamivir for 5 days and not do any testing
B. Do a rapid antigen flu test and treat him only if positive
C. Since he is at > 48 hours and has been immunized, supportive care and good follow up instructions
D. Office influenza POC test and send sample for SARS CoV2 PCR

How will the results affect my clinical management?

- Patient's illness severity
- Duration of symptoms
- Co-morbidities, immunosuppressive state
- Type of testing available
- Availability of other ancillary test results
- Anticipated turnaround tests
- Disease prevalence

Hanson et al CID 2020

Testing



Point of care tests

Rapid antigen test | DIA | NAAT | PCR

Increasing sensitivity

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REVIEW

Annals of Internal Medicine

Diagnostic Accuracy of Novel and Traditional Rapid Tests for Influenza Infection Compared With Reverse Transcriptase Polymerase Chain Reaction

A Systematic Review and Meta-analysis

Joanna Merckx, MD, MSc; Rehab Wali, BSc, MBBS; Ian Schiller, MSc; Chelsea Caya, MScPH; Genevieve C. Gore, MLIS; Caroline Chartrand, MD, MSc; Nandini Dendukuri, PhD; and Jesse Papenburg, MD, MSc

Increasing sensitivity

	Influenza A	Influenza B
RIDT	54.4% (95% credible interval [CrI], 48.9% to 59.8%)	53.2% (CrI, 41.7% to 64.4%)
DIA	80.0% (CrI, 73.4% to 85.6%)	76.8% (CrI, 65.4% to 85.4%)
NAATs	91.6% (CrI, 84.9% to 95.9%)	95.4% (CrI, 87.3% to 98.7%)
PCR	Reference standard	Reference standard

Table 2. Overall and Subgroup Analyses of Pooled Rapid Test Accuracy Estimates for Influenza A and B, by Index Test Type*

Index Test Type	Influenza A		Influenza B	
	Pooled Sensitivity (95% CrI), %	Pooled Specificity (95% CrI), %	Pooled Sensitivity (95% CrI), %	Pooled Specificity (95% CrI), %
Subgroup analyses†				
Study population (age)‡				
Traditional RIDTs				
Children (31 influenza A studies; 9 influenza B studies)	61.2 (55.0 to 67.2)	99.2 (98.5 to 99.7)	65.7 (45.3 to 80.5)	99.6 (99.2 to 99.8)
Adults (23 influenza A studies; 5 influenza B studies)	42.6 (34.8 to 50.9)	99.5 (98.6 to 99.8)	33.2 (19.9 to 50.7)	99.9 (99.4 to 100)
Difference in RIDT sensitivity: children vs. adults	**18.5 (8.4 to 28.3)**	–	**31.8 (6.1 to 52.6)**	–
DIAs				
Children (11 influenza A studies; 11 influenza B studies)	87.6 (81.8 to 92.2)	98.1 (96.4 to 99.1)	82.5 (71.2 to 90.2)	98.8 (95.6 to 99.7)
Adults (8 influenza A studies; 7 influenza B studies)	75.4 (66.6 to 82.6)	96.7 (94.7 to 98.0)	57.0 (39.5 to 71.6)	98.8 (97.5 to 99.5)
Difference in DIA sensitivity: children vs. adults	**12.1 (3.1 to 22.1)**	–	**25.3 (6.9 to 44.7)**	–
Rapid NAATs				
Children (4 influenza A studies; 4 influenza B studies)	90.2 (79.2 to 95.8)	99.0 (96.8 to 99.8)	95.9 (82.9 to 99.2)	99.5 (98.2 to 99.9)
Adults (4 influenza A studies; 4 influenza B studies)	87.4 (71.1 to 95.6)	98.0 (93.2 to 99.5)	75.7 (51.8 to 90.7)	99.3 (97.8 to 99.8)
Difference in NAAT sensitivity: children vs. adults	2.7 (−10.7 to 19.7)	–	**19.5 (1.0 to 43.7)**	–

My Takehome points

- Traditional RIDTs being phased out -poor sensitivity
- RIDTs now need to demonstrate sensitivity and specificity of at least 80%
- DIAs are simple, fast and more reliable than RIDTs, but NAAT have highest sensitivity, specificity
- Can diagnose influenza on the basis of a positive RIDT, DIA, or rapid NAAT result during influenza season, less reliable outside season
- Newer testing options alongside SARS CoV-2

https://www.cdc.gov/flu/professionals/diagnosis/table-flu-covid19-detection.html

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

High risk groups

- Children <5 years
- 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

High risk groups

- Women who are pregnant or postpartum (within 2 weeks after delivery)
- <19 years receiving long-term aspirin therapy
- American Indians/Alaska Natives
- Morbid obesity

Treatment and Dosing

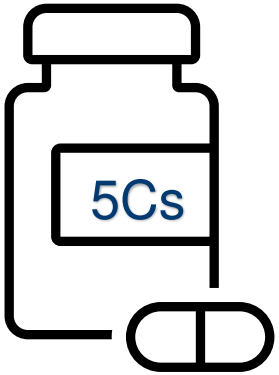
Data courtesy of Jason Child and Christine MacBrayne

	Dosing	Treatment duration	FDA approval age	Price	Monitoring	Side effects and Considerations
Oseltamivir (oral)	**14 days – 3 months:** 3 mg/kg/dose twice a day **3-12 months:** 3 mg/kg/dose twice a day **Children 1-12 years of age and weighing:** ≤ 15 kg: 30 mg/dose twice a day > 15-23 kg: 45 mg/dose twice a day >23-40 kg: 60 mg/dose twice a day >40 kg: 75 mg/dose twice a day **Children > 13 years of age and adults:** 75 mg/dose twice a day Prophylaxis dosing – same dose as treatment except given once daily	5 days	**Treatment:** 14 days and older **Prophylaxis:** 1 year and older	Caspule $154 Susp. $326	Renal function (Scr, BUN, urine output) Glucose in those with DM Behavioral changes	GI upset Insomnia Behavioral changes Requires renal dose adjustment
Zanamavir (inhaled)	Two inhalations (10 mg) twice daily	5 days	**Treatment:** 7 years and older **Prophylaxis:** 5 years and older	$71	Behavioral changes	Headache, Sore throat Behavioral changes Not recommended in patients with underlying airway disease due to risk of bronchospasm. Contraindicated in those with milk-protein allergy
Peramavir (IV)	**Children 2-12 years:** 12 mg/kg once daily **13 years and older:** 600 mg once daily	5-10 days (hospitalized patients)	**Treatment:** 2 years and older	$5500	Renal function (Scr, BUN, urine output) Behavioral changes Hypersensitivity reactions	Diarrhea Skin hypersensitivity reactions Behavioral changes Available as an intravenous infusion only Requires renal dose adjustment
Baloxavir (oral)	**Children 12 years of age and older weighing** 40 to < 80 kg: 40 mg single dose >80 kg: 80 mg single dose	1 day	**Treatment:** 12 years and older	$90	Hypersensitivity reactions	Diarrhea Avoid administration with dairy, calcium fortified drinks or polyvalent cations

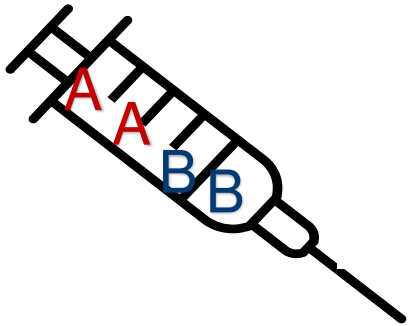
Antiviral Treatment Considerations for Hospitalized patients and when Influenza Viruses and SARS-CoV-2 Are Co-circulating

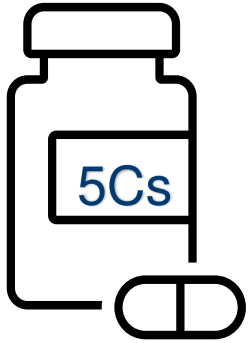
- Co-infection
- Corticosteroids
- Combination treatment
- Complicated infection
- Coincidental benefit

https://www.covid19treatmentguidelines.nih.gov/special-populations/influenza/



Take-home points





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Thank you