



September 17th, 2019

Announcements

- Cases and questions

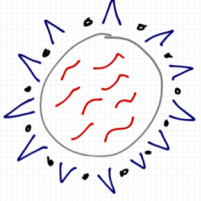
September 17th, 2019

Didactic

- What's New in Influenza



Influenza



Orthomyxoviridae

- Richard Shope
1931

- RNA viruses

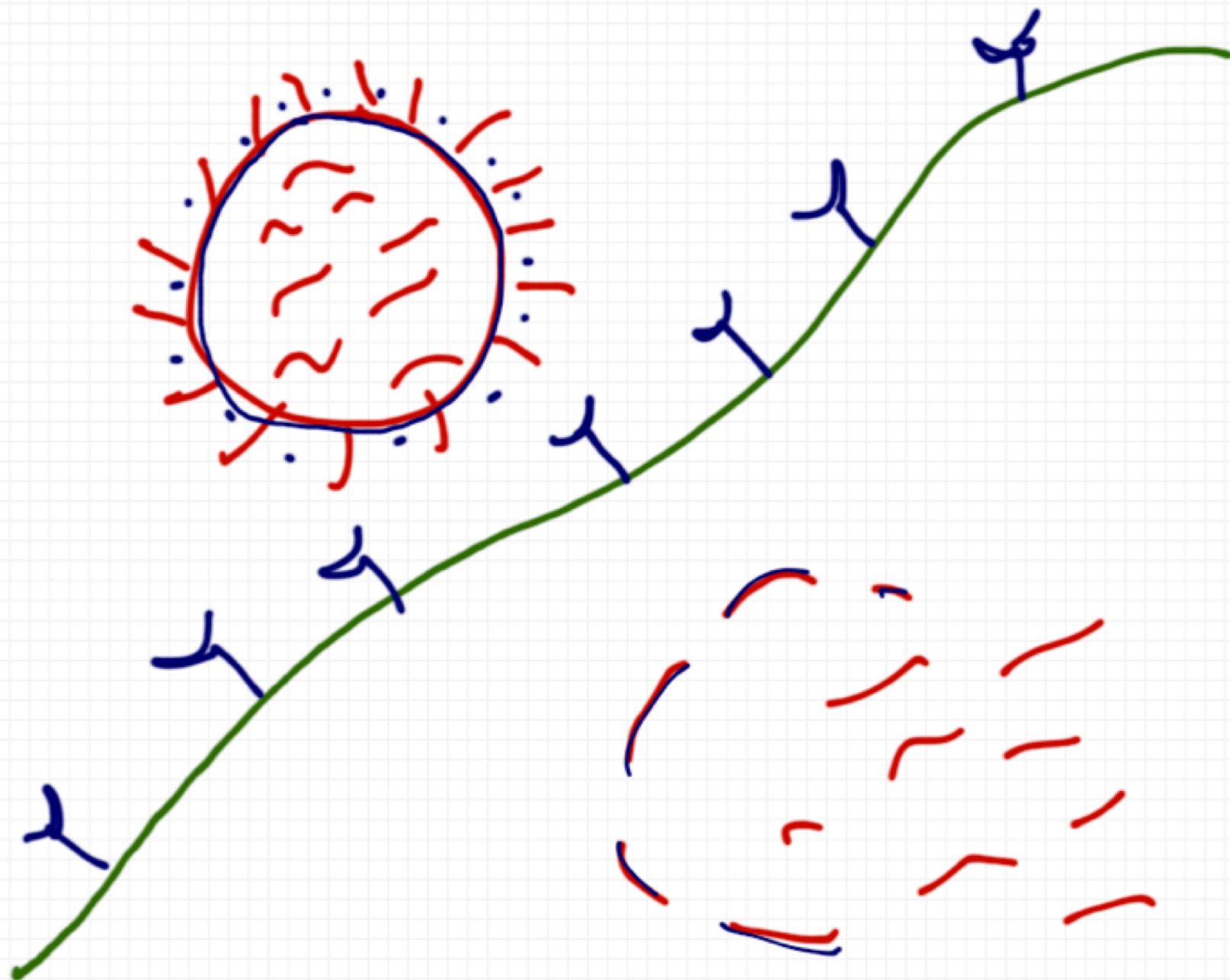
- Birds + mammals

- 1st vaccine

1944

- Amantadine 1966



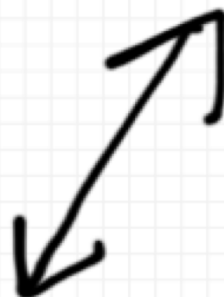
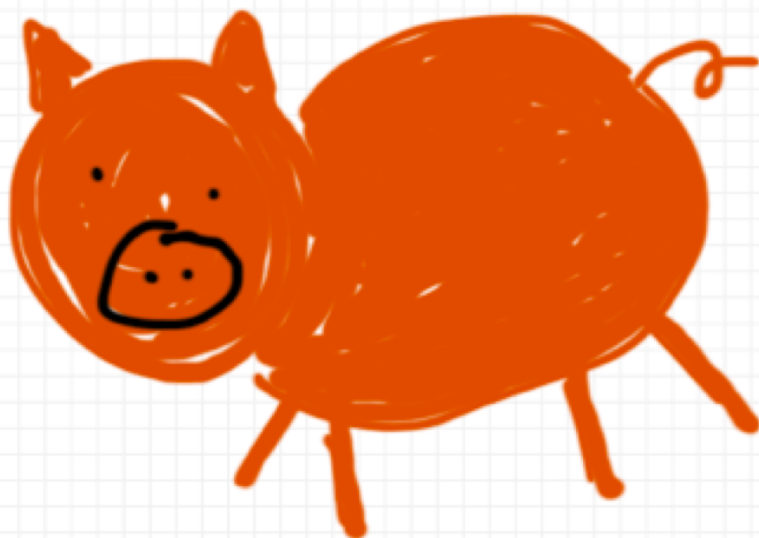


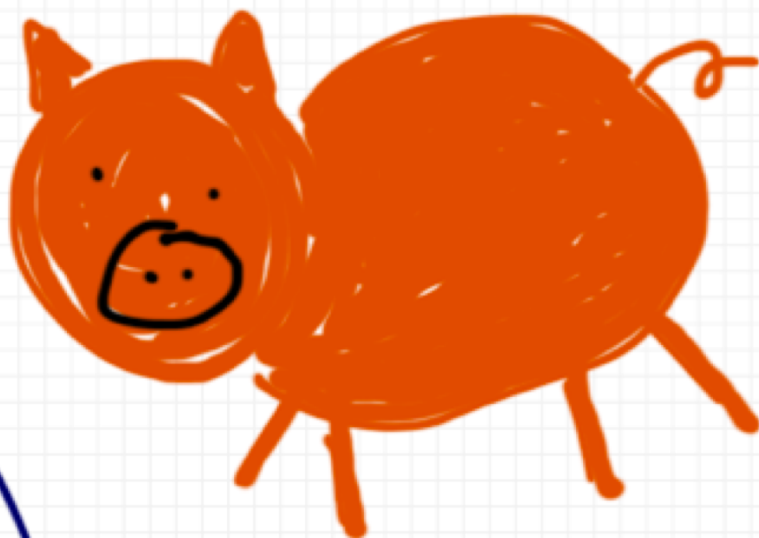
Influenza A

drifting + Shifting

Influenza B

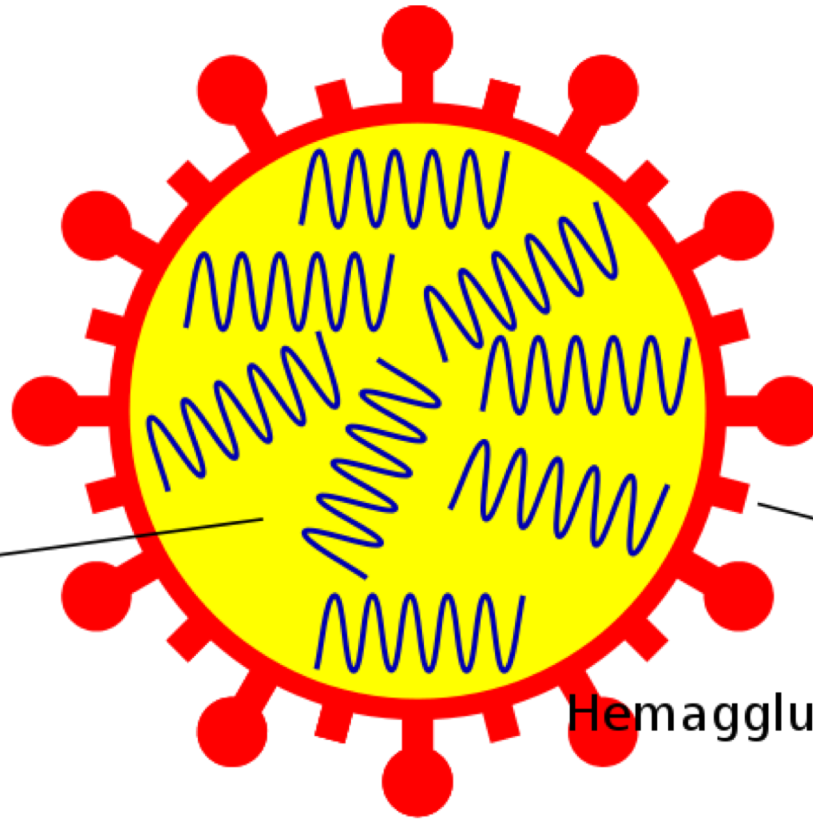
only drifting





Flu A





Type of
nuclear
material

Hemagglutinin

Neuraminidase

A/Fujian/411/2002 (H3N2)

Virus
type

Geographic
origin

Strain
number

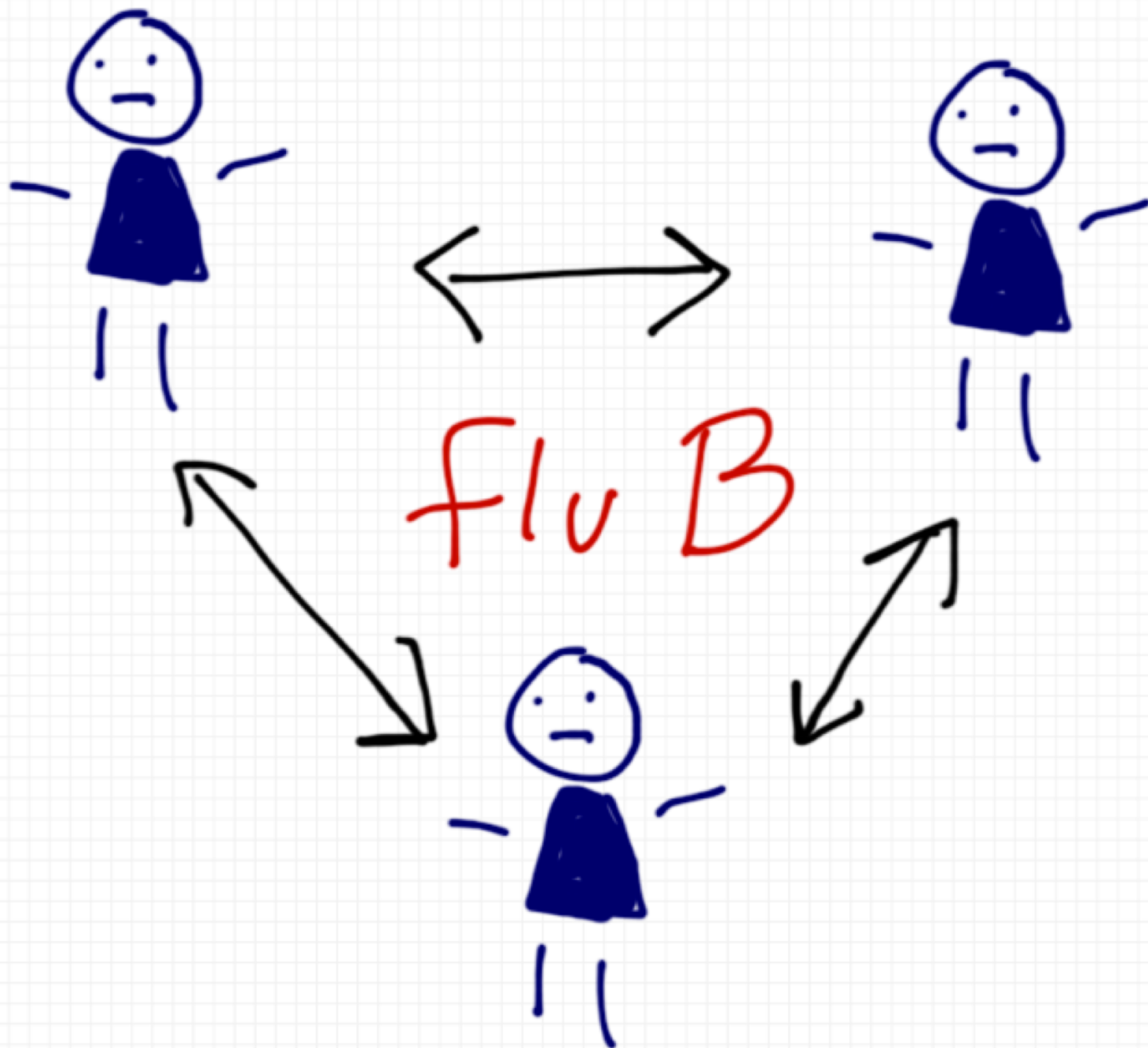
Year of
isolation

Virus
subtype



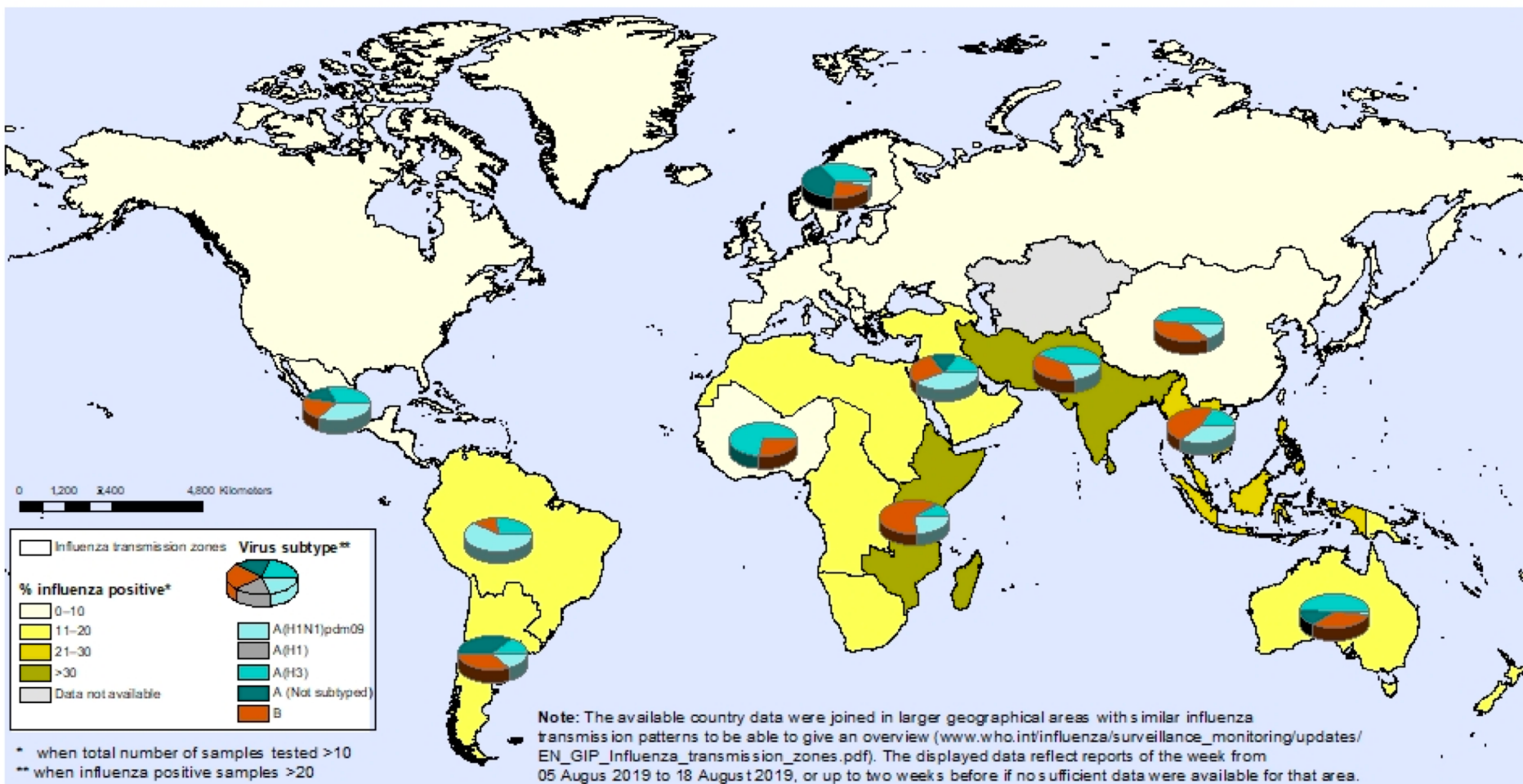
PANDEMICS

1889 · Asiatic · 10^6
1918 · Spanish* · $\sim 100 \cdot 10^6$
1957 · Asian · 10^6
1968 · HongKong · 10^6
2009 · 18,000*
* H1N1



Percentage of respiratory specimens that tested positive for influenza By influenza transmission zone

Status as of 30 August 2019



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source:
Global Influenza Surveillance and Response System (GISRS),
FluNet (www.who.int/flu-net)

 **World Health Organization**
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CDC estimates that, from **October 1, 2018**, through **May 4, 2019**, there have been:

37.4 million – 42.9 million
flu **illnesses**



17.3 million – 20.1 million
flu **medical visits**



531,000 – 647,000
flu **hospitalizations**



36,400 – 61,200
flu **deaths**



Washington State Influenza Update

Week 31

July 28 – Aug 03, 2019

Flu activity in Washington is
currently

Low

Number of reported lab-
confirmed deaths
2018-2019 season to date

240

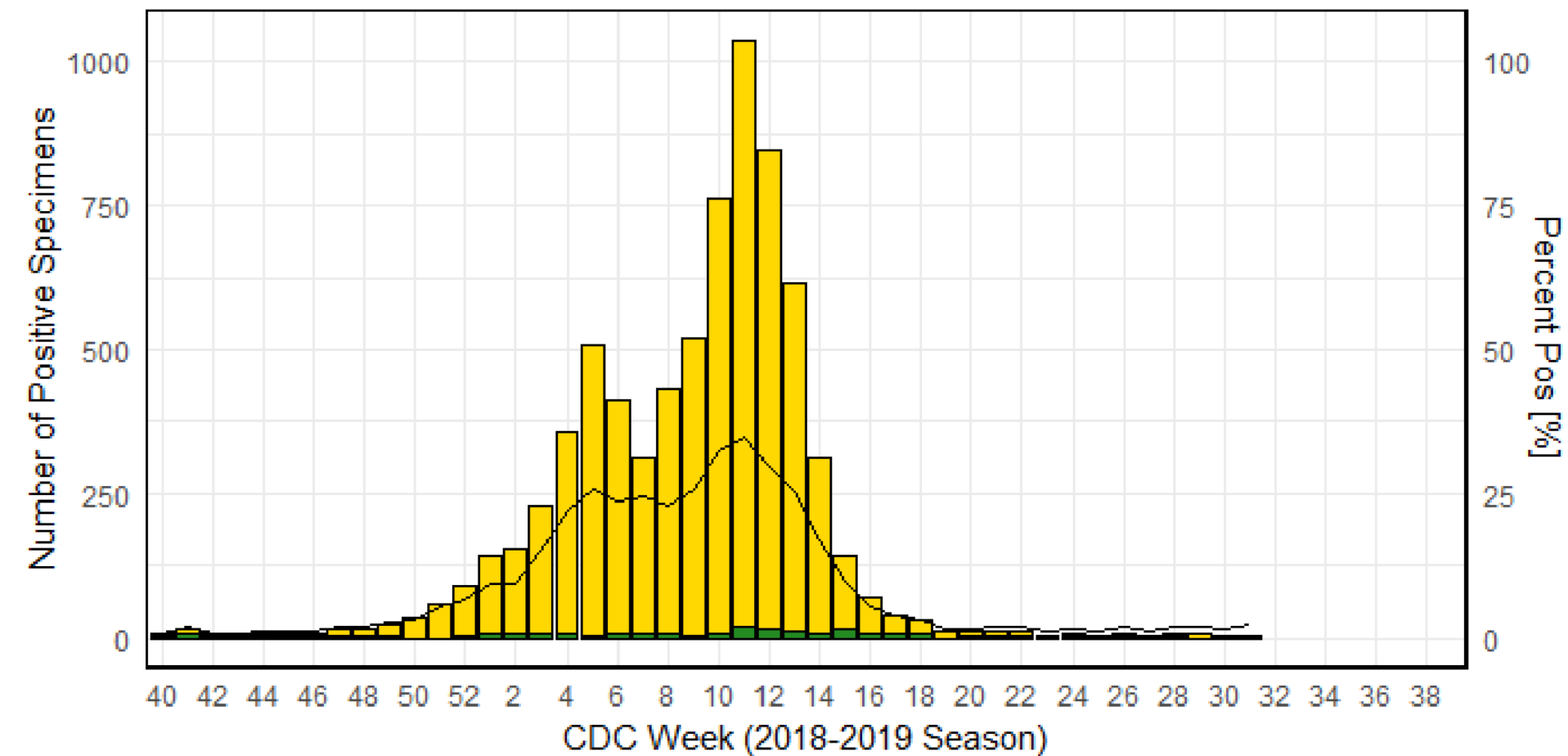
2 children
238 adults

Most common type this week

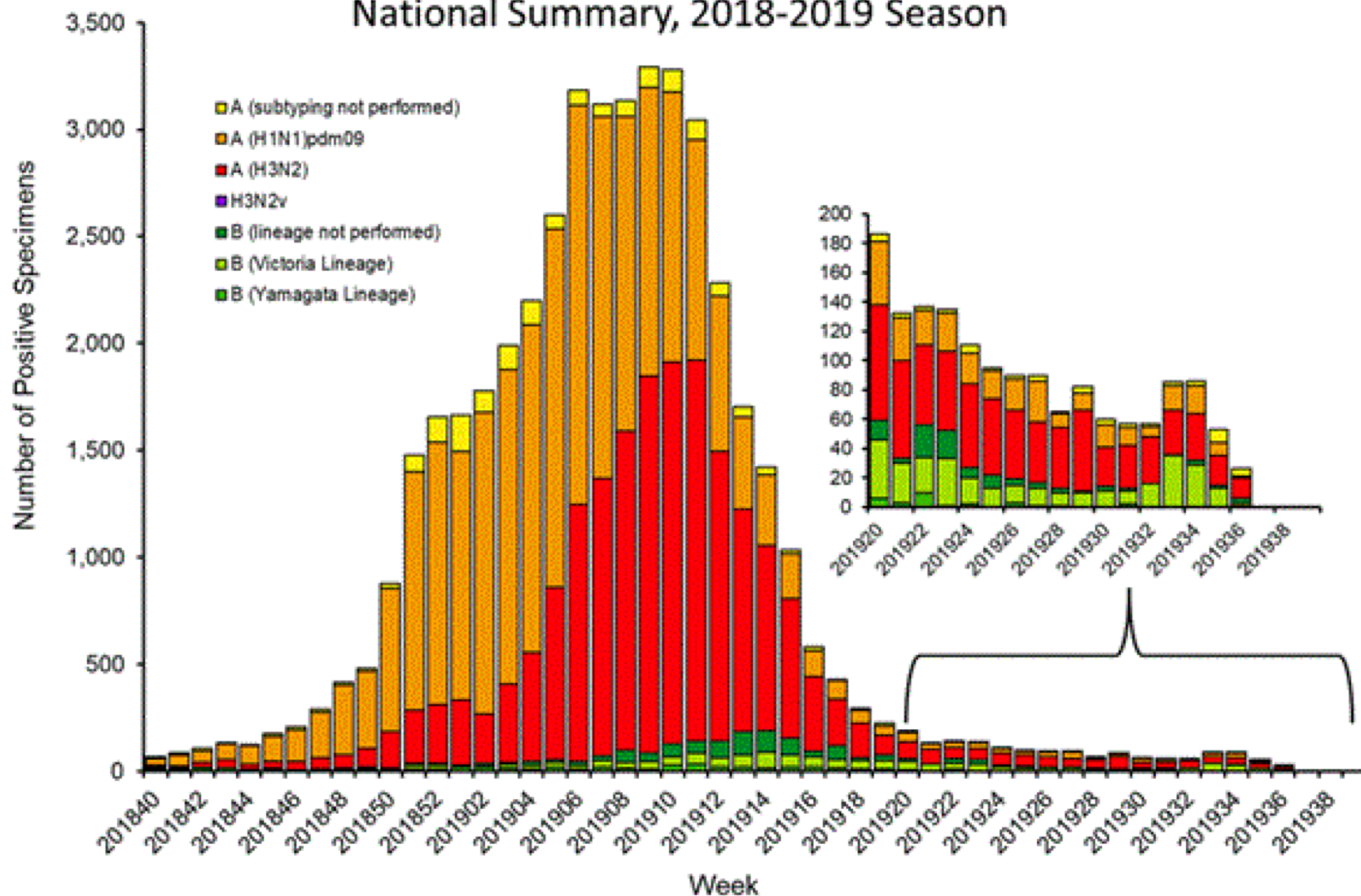
A & B



Figure 2: Influenza Positive Tests Reported to CDC, WA Commercial Laboratories



Influenza Positive Tests Reported to CDC by U.S. Public Health Laboratories, National Summary, 2018-2019 Season



Percentage of Visits for Influenza-like Illness (ILI) Reported by
the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet),
Weekly National Summary, 2018-2019 and Selected Previous Seasons

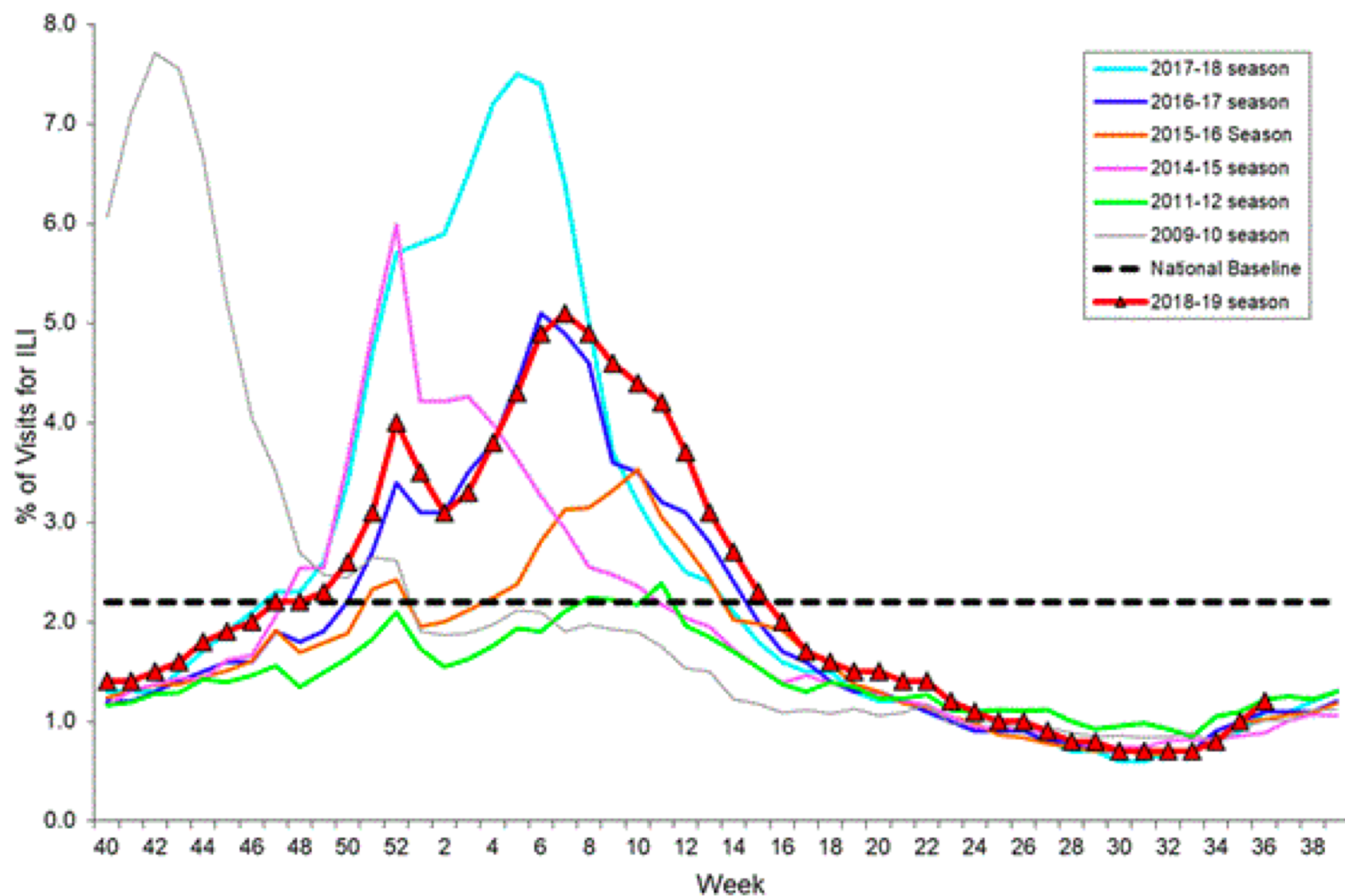
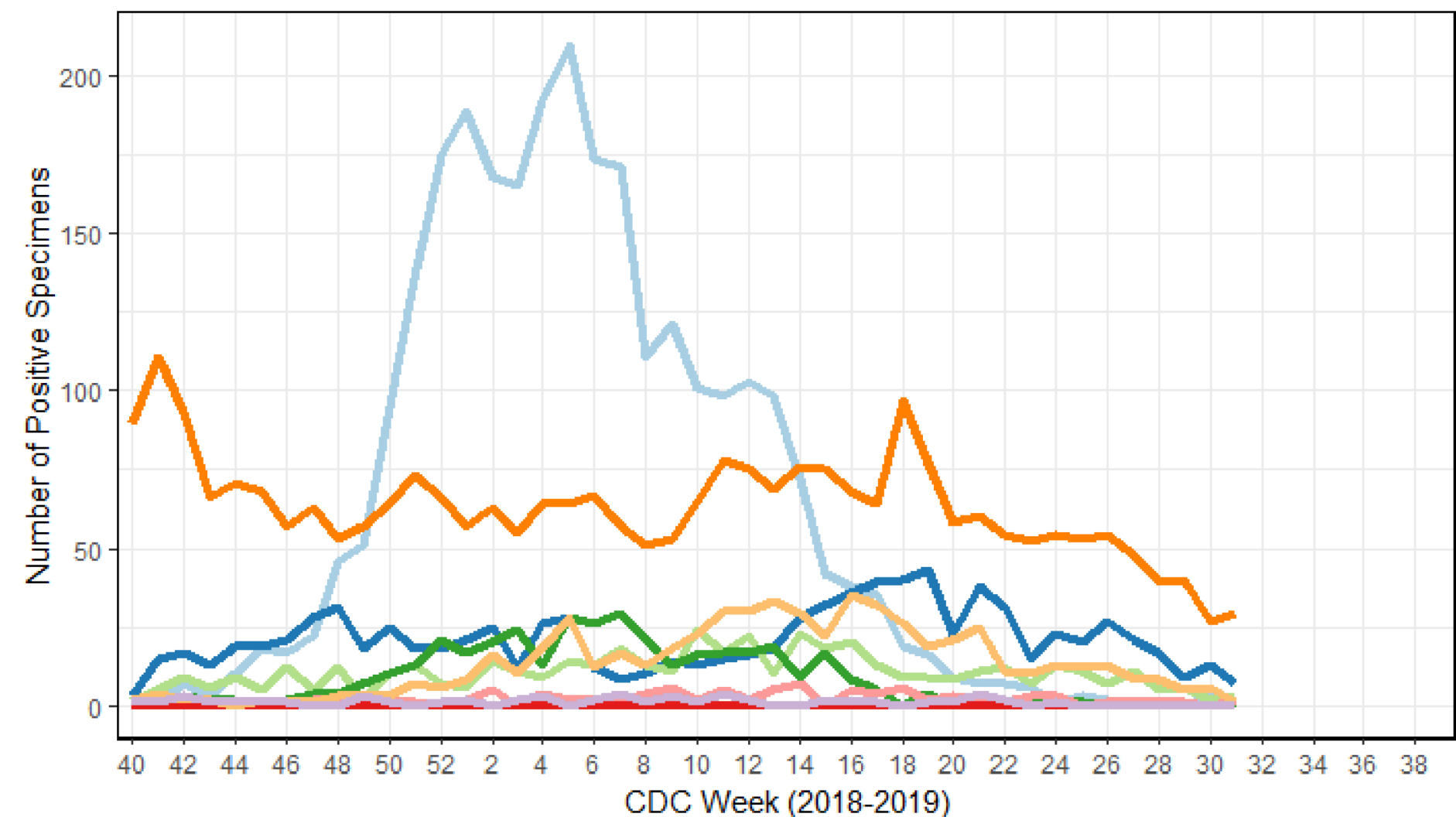


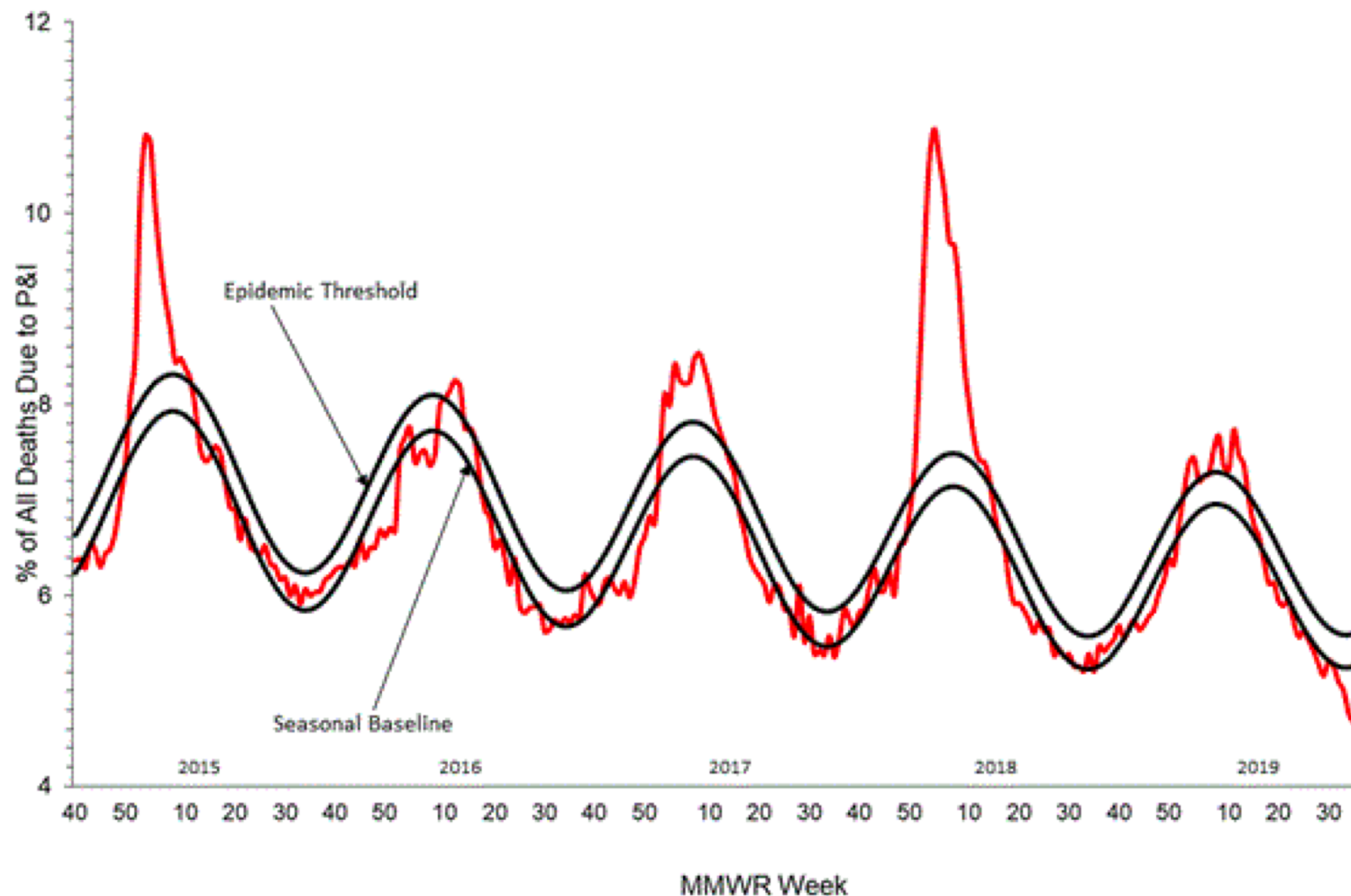
Figure 10: Respiratory and Enteric Viruses, Washington, 2018-2019 Season to Date



Respiratory Syncytial Virus Adenovirus Rotavirus Human Metapneumovirus Enterovirus
Human Parainfluenza Virus Coronavirus Enteric Adenovirus Rhinovirus

Pneumonia and Influenza Mortality from the National Center for Health Statistics Mortality Surveillance System

Data through the week ending August 31, 2019, as of September 12, 2019



**Count of Deaths Reported to WA DOH
from week 40 of 2018 to present**

Benton	6		
Chelan	5		
Clallam	6		
Clark	4		
Columbia	1		
Cowlitz	7		
Douglas	3		
Grant	3		
Grays Harbor	1		
Island	2		
Jefferson	3		
King	51		
Kitsap	11		
Kittitas	2		
Lewis	3		
Mason	3		
Okanogan	1		
Pend Oreille	3	Skagit	6
Pierce	42	Snohomish	26
		Spokane	25
		Stevens	3
		Thurston	13
		Walla Walla	2
		Whatcom	8

Testing and Treatment

- **Testing linked to intent to treat**
- Influenza PCR Panel
 - NP swab for influenza PCR testing
 - Reflexive subtyping and potential oseltamivir resistance
- **Hospitalized** with suspected or confirmed influenza
- Suspected or confirmed severe influenza illness, including signs of **lower tract infection** (pneumonia)
- Patients at high risk for influenza complications
 - **ALL pregnant women** (through 2 weeks postpartum)
- DO NOT test or treat patients with mild illness without risk factors for influenza complications



Medications for Flu 1

Adamantanes

- Amantadine
- Rimantadine



Medications for Flu 1

Adamantanes

- Amantadine
- Ramantadine



Medications for Flu 1

Adamantanes

- Amantadine
- Ramantadine



• Neuraminidase inhibitors

- Oseltamavir
- Zanamavir
- Peramavir



Medications for Flu 1

Adamantanes

- Amantadine
- Rimantadine



• Neuraminidase inhibitors

- Oseltamavir
- Zanamavir
- Peramavir



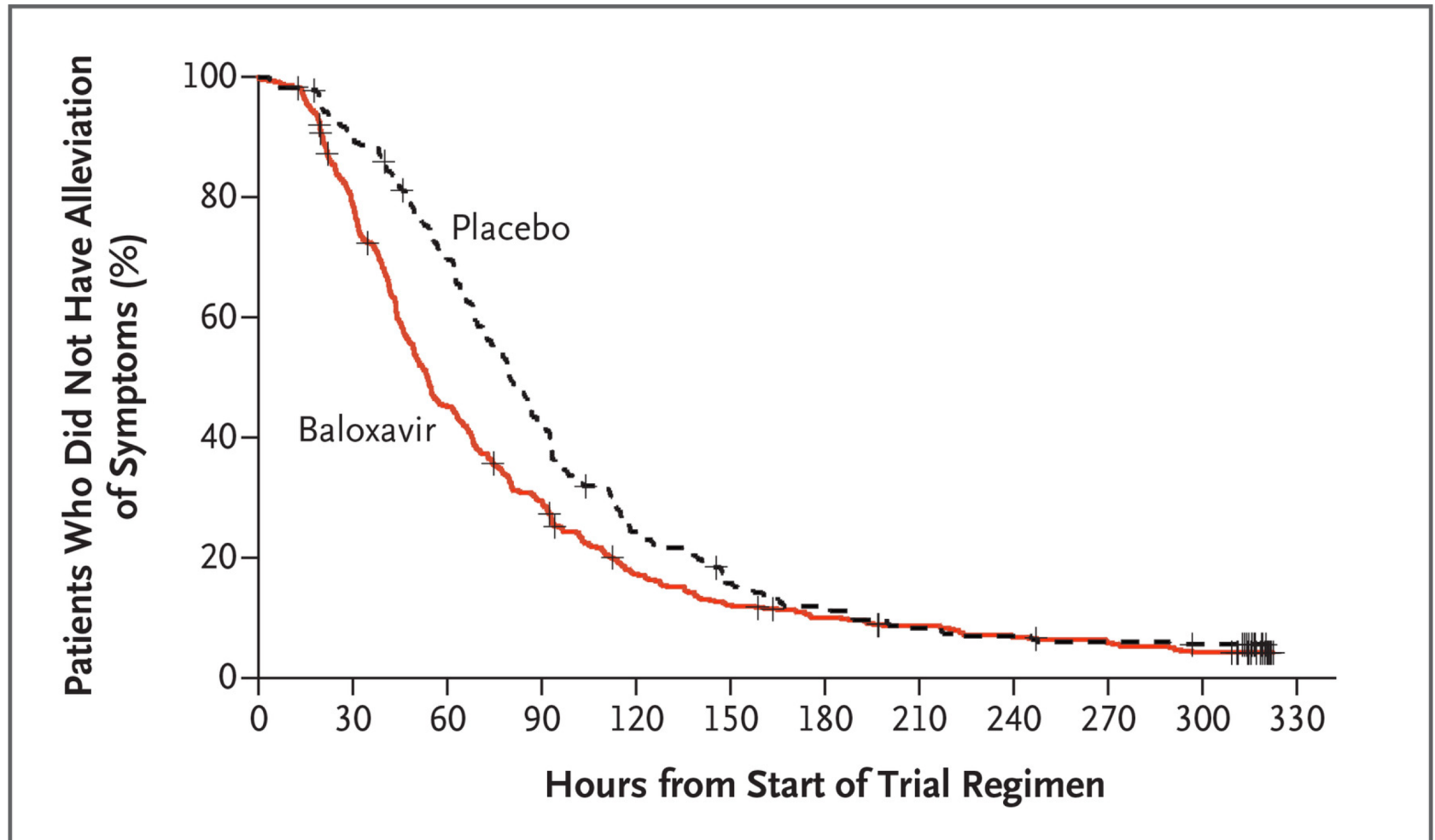
Medications for Flu 2

Baloxivir

- Newer oral selective inhibitor of mRNA synthesis in influenza infected cells
- 40 mg (<80 kg) x 1 dose



Baloxivir

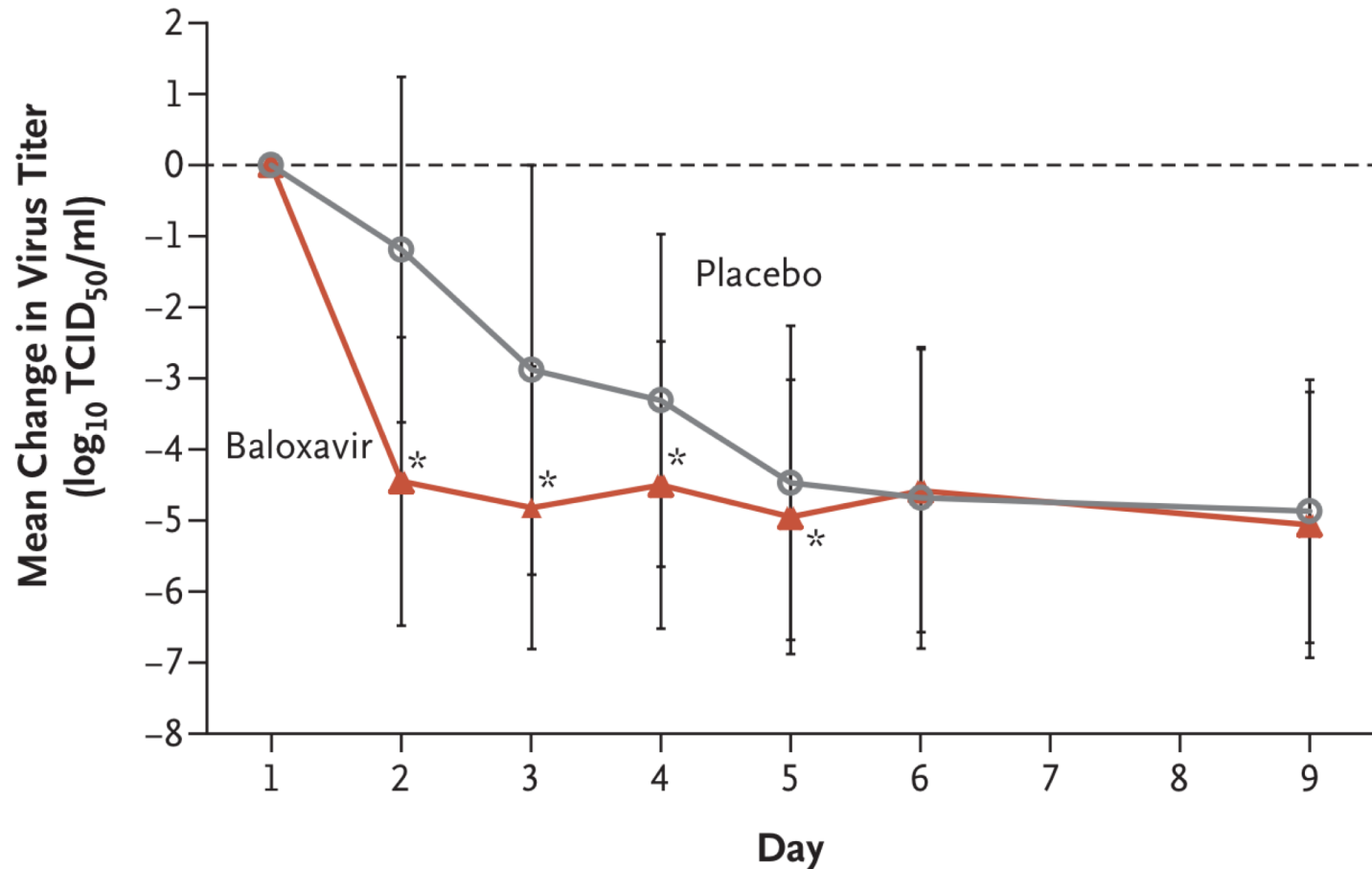


Hayden, *N. Engl. J. Med.* **379**, 913–923 (2018).



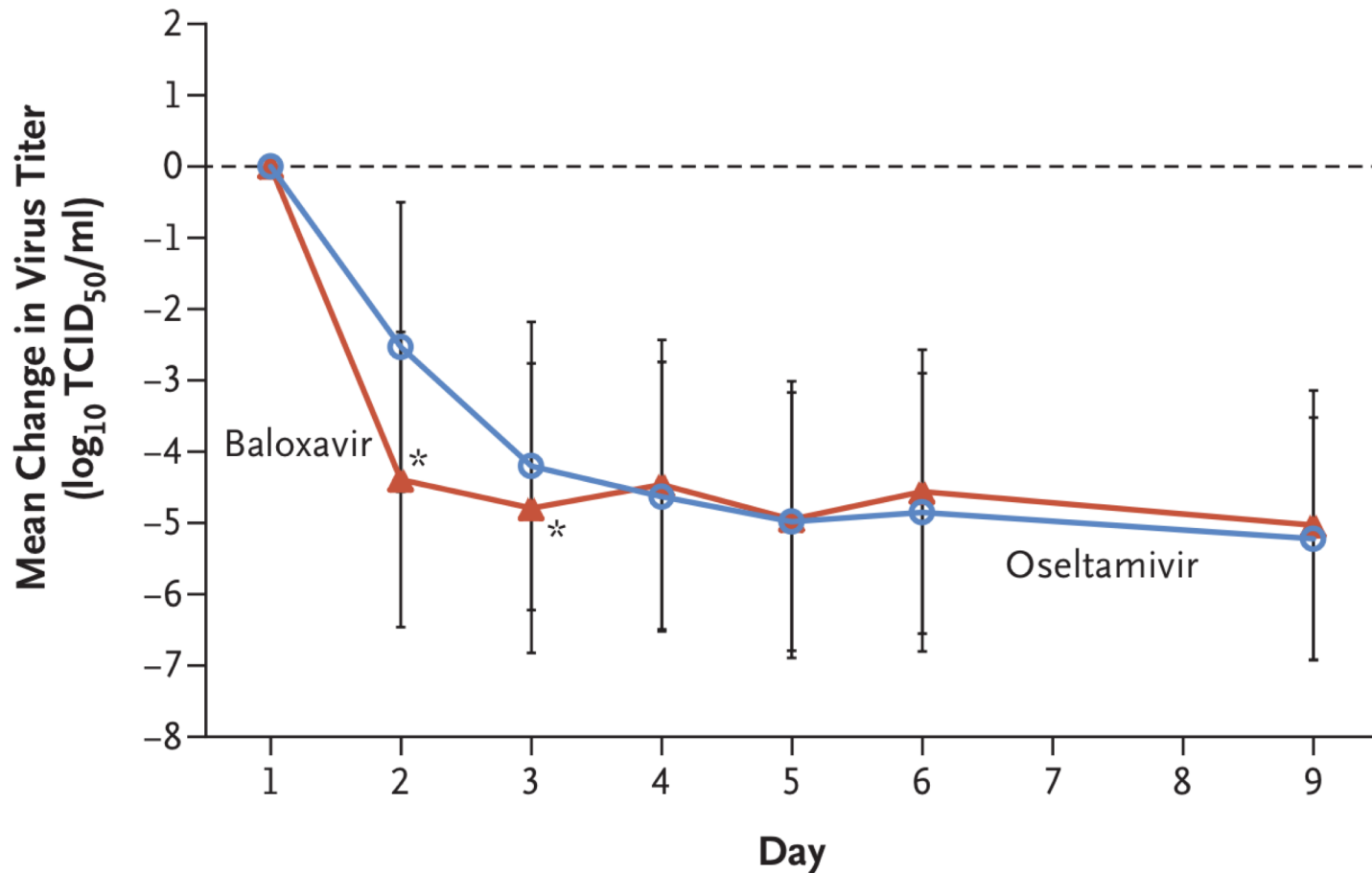
Baloxivir

A Baloxavir vs. Placebo



Baloxivir

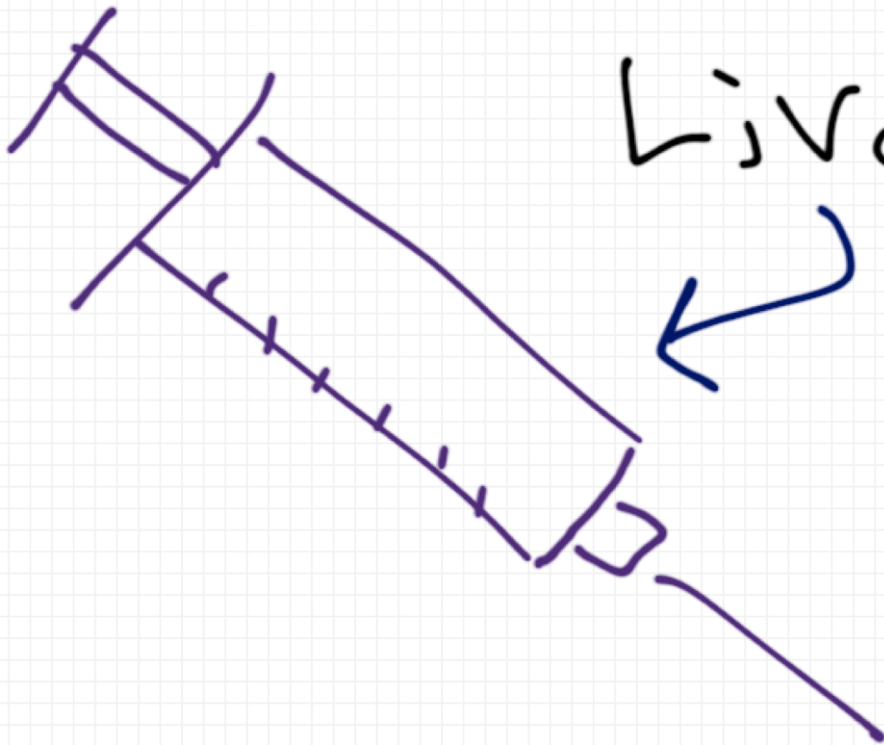
B Baloxavir vs. Oseltamivir



Hayden, *N. Engl. J. Med.* **379**, 913–923 (2018).



Saves
Lives



the **benefits** of flu vaccination 2017-2018

The estimated number of flu **illnesses prevented by vaccination** during the 2017-2018 season:

7million

About the population of
New York City



The estimated number of flu **hospitalizations prevented by vaccination** during the 2017-2018 season:

109,000

About the number of vehicles
crossing the Golden Gate Bridge
each day



The estimated number of flu **deaths prevented by vaccination** during the 2017-2018 season:

8,000

Twice the number of hospitals in
the United States



DATA: Journal Clinical Infectious Disease, Effects of Influenza Vaccination in the United States during the 2017–2018 Influenza Season, <https://doi.org/10.1093/cid/ciz075>



get vaccinated
www.cdc.gov/flu

Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices — United States, 2019–20 Influenza Season

Recommendations and Reports / August 23, 2019 / 68(3);1–21

Lisa A. Grohskopf, MD¹; Elif Alyanak, MPH^{1,2}; Karen R. Broder, MD³; Emmanuel B. Walter, MD⁴; Alicia M. Fry, MD¹; Daniel B. Jernigan, MD¹



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- an A/Brisbane/02/2018 (H1N1)pdm09–like virus,
- an A/Kansas/14/2017 (H3N2)–like virus, and
- a B/Colorado/06/2017–like virus (Victoria lineage)

For quadrivalent vaccines +

- the three recommended viruses above, plus B/Phuket/3073/2013-like (Yamagata lineage) virus.



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Trade name <i>Manufacturer</i>	Presentation	Age indication	HA, µg/dose (each virus)	Egg-grown virus, Cell culture-grown virus, or Recombinant HA	Adjuvanted Yes/No	Thimerosal Yes/No (If yes, Mercury, µg/0.5mL)
Quadrivalent IIVs (IIV4s)						
Afluria Quadrivalent <i>Seqirus</i>	0.25 mL prefilled syringe* 0.5 mL prefilled syringe* 5.0 mL multidose vial*	6 through 35 mos* ≥3 years* ≥6 mos* (needle/syringe) 18 through 64 yrs (jet injector)	7.5/0.25 mL 15/0.5 mL See note for dosing*	Egg	No	No No Yes (24.5)
Fluarix Quadrivalent <i>GlaxoSmithKline</i>	0.5 mL prefilled syringe	≥6 mos	15/0.5mL	Egg	No	No
FluLaval Quadrivalent <i>GlaxoSmithKline</i>	0.5 mL prefilled syringe 5.0 mL multidose vial	≥6 mos ≥6 mos	15/0.5mL	Egg	No	No Yes (<25)
Flucelvax Quadrivalent <i>Seqirus</i> (ccIIV4)	0.5 mL prefilled syringe 5.0 mL multidose vial	≥4 yrs ≥4 yrs	15/0.5mL	Cell	No	No Yes (25)
Fluzone Quadrivalent <i>Sanofi Pasteur</i>	0.25 mL prefilled syringe† 0.5 mL prefilled syringe† 0.5 mL single-dose vial† 5.0 mL multidose vial†	6 through 35 mos† ≥6 mos† ≥6 mos† ≥6 mos†	7.5/0.25 mL 15/0.5 mL See note for dosing†	Egg	No	No No No Yes (25)
Trivalent IIVs (IIV3s)						
Fluad <i>Seqirus</i> (aIIV3)	0.5 mL prefilled syringe	≥65 yrs	15/0.5mL	Egg	Yes	No
Fluzone High-Dose <i>Sanofi Pasteur</i> (HD-IIV3)	0.5 mL prefilled syringe	≥65 yrs	60/0.5mL	Egg	No	No
Quadrivalent RIV (RIV4)						
Flublok Quadrivalent <i>Sanofi Pasteur</i>	0.5 mL prefilled syringe	≥18 yrs	45/0.5mL	Recombinant	No	No



Egg Allergy



Discussion, questions, comments?

