



Influenza and other Respiratory Viruses Update-- 2018

Pete Shult, PhD

CDD Director & Emergency Laboratory Response

and

Erik Reisdorf, MPH, M(ASCP)^{CM}

Surveillance and Virology Lab-Team Lead



Learning Objectives

- Review of influenza basics.
- Review of the 2017-2018 influenza season.
- Influenza vaccine updates.
- Emerging viral diseases.
- Seasonal respiratory virus activity review.
- Discuss surveillance strategy for 2018-2019.



Influenza

The latest information

www.cdc.gov/flu/

CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives. Protecting People™

SEARCH

CDC A-Z INDEX ▾

Influenza (Flu)

f t +

Language: English (US) ▾

FLUVIEW

Influenza Surveillance Data the Way You Want It

FluView Interactive: Surveillance Data the Way You Want It!

Influenza Updates:

- 2017-2018 was a high severity, H3N2-predominant season.
- Flu activity in the U.S. is low now, but expected to pick up in the Fall.

CDC on Flu Vaccine:

- CDC's vaccine recommendations for the 2018-2019 flu season are now available.
- CDC recommends yearly flu vaccination for people 6 months and older.
- Get vaccinated by the end of October.

[Flu Report >](#)

<p>PREVENT FLU</p> <p>Everyone 6 months & older should receive a yearly flu vaccine.</p> <p>More ></p>	<p>SYMPTOMS & DIAGNOSIS</p> <p>Flu can cause mild to severe illness. Learn the symptoms of flu.</p> <p>More ></p>	<p>TREATMENT</p> <p>Prescription medications called antiviral drugs can be used to treat flu.</p> <p>More ></p>	<p>FLU ACTIVITY & SURVEILLANCE</p> <p>During weeks 20 (May 13-19, 2018), flu activity continued to decrease in the U.S.</p> <p>More ></p>
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<p>ABOUT FLU</p> <p>Learn about flu season and get answers to questions.</p>	<p>COMMUNICATION RESOURCE CENTER</p> <p>Find resources to promote flu prevention.</p>	<p>Flu Vaccine Finder</p> <p>Everyone six months of age or older needs a flu vaccine.</p> <p>Find the flu shot near you.</p> <p>Enter Your Zip Code <input type="text"/> GO</p>
<p>FLU SEASON</p> <p>Find information about current and past flu seasons.</p>	<p>HEALTH PROFESSIONALS</p> <p>Learn what CDC recommends this season.</p>	
<p>PEOPLE AT HIGH RISK</p> <p>Understand who is at high risk from flu.</p>	<p>FLU NEWS & SPOTLIGHTS</p> <p>Read about CDC's work with flu.</p>	

Other Types of Influenza

Pandemic	Bat Flu
Avian	Canine Flu
Swine/Variant	Animal to Human

Stay Connected with Flu

[f](#) [t](#) [+](#) [v](#) [p](#)

What's New

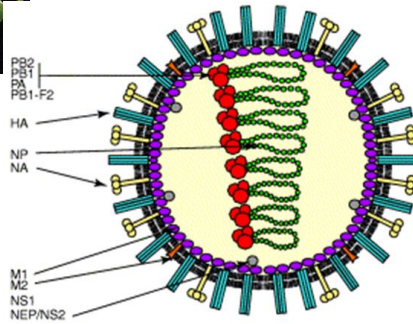
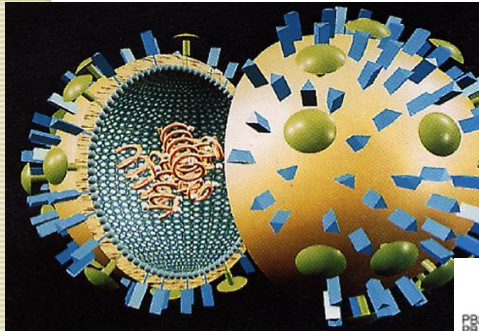
- National Press Conference Kicks Off 2018-2019 Flu Vaccination Campaign
THURSDAY, SEPTEMBER 27, 2018
- Misconceptions about Seasonal Flu and Flu Vaccines
TUESDAY, SEPTEMBER 25, 2018
- How Influenza (Flu) Vaccines Are Made
MONDAY, SEPTEMBER 24, 2018
- Children with Neurologic Conditions & Influenza (Flu)
WEDNESDAY, SEPTEMBER 19, 2018
- HIV/AIDS and the Flu
TUESDAY, SEPTEMBER 18, 2018

[More >](#)



The Changeability of Influenza

Antigenic Drift → *Seasonal Influenza*



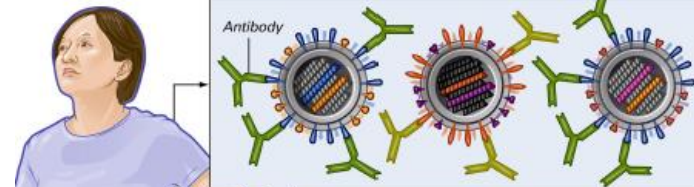
TRENDS in Molecular Medicine

Antigenic Drift

Manifests in HA and NA as a result of continuous and gradual accumulation of point mutations in the HA and NA genes

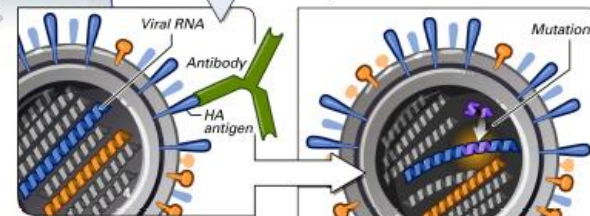
1 Each year's flu vaccine contains three flu strains – two A strains and one B strain – that can change from year to year.

2 After vaccination, your body produces infection-fighting antibodies against the three flu strains in the vaccine.



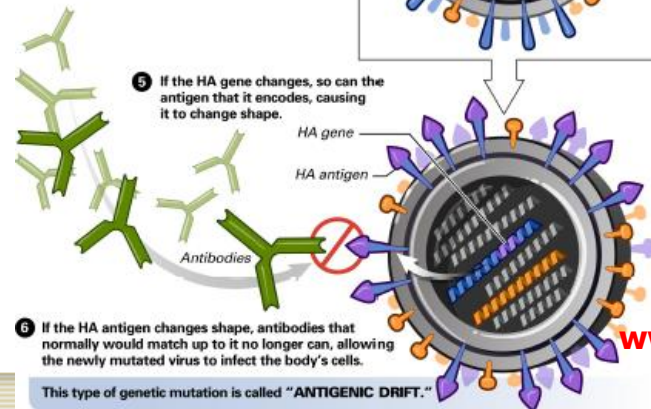
3 If you are exposed to any of the three flu strains during the flu season, the antibodies will latch onto the virus's HA antigens, preventing the flu virus from attaching to healthy cells and infecting them.

4 Influenza virus genes, made of RNA, are more prone to mutations than genes made of DNA.



Link Studio for NIAID

5 If the HA gene changes, so can the antigen that it encodes, causing it to change shape.



6 If the HA antigen changes shape, antibodies that normally would match up to it no longer can, allowing the newly mutated virus to infect the body's cells.

This type of genetic mutation is called "ANTIGENIC DRIFT."

www.cdc.gov/flu



United States

12,000 – 56,000

140,000 – 710,000

9.2M – 35.6M

**In a given season,
5-20% of community
may experience illness**

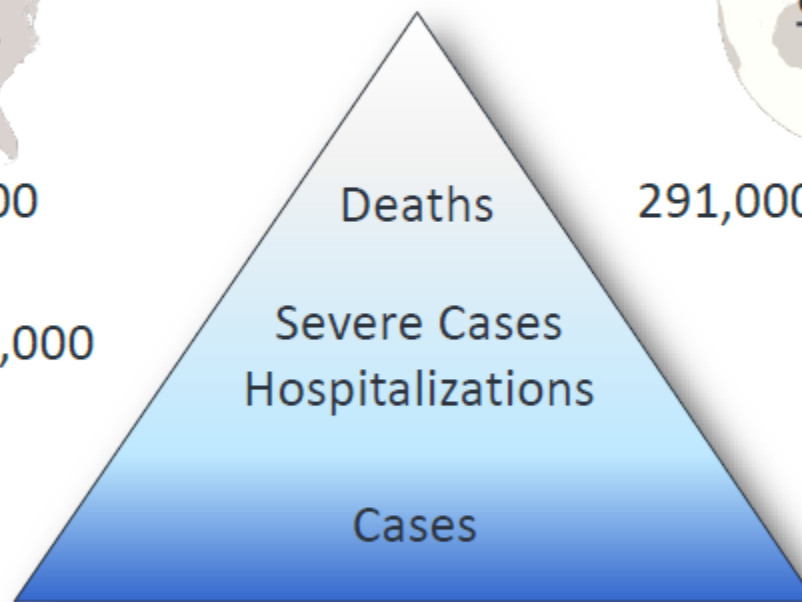


Global

291,000 – 646,000

3M to 5M

1.0 B



<https://www.cdc.gov/flu/about/disease/2015-16.htm>; <http://www.who.int/immunization/topics/influenza/en/>; Iuliano et al Lancet 2017



Influenza 2017-18

An historically severe year

Flu outbreak in Wisconsin severe and expected to be widespread at least another month

“Some hospitals have had to temporarily divert patients from emergency departments because they ran out of hospital beds... Meriter and UW hospitals in Madison were at or approaching capacity at one point last week.”

---M J-S, Jan 19, 2018---

Alabama declares state of emergency due to widespread flu cases

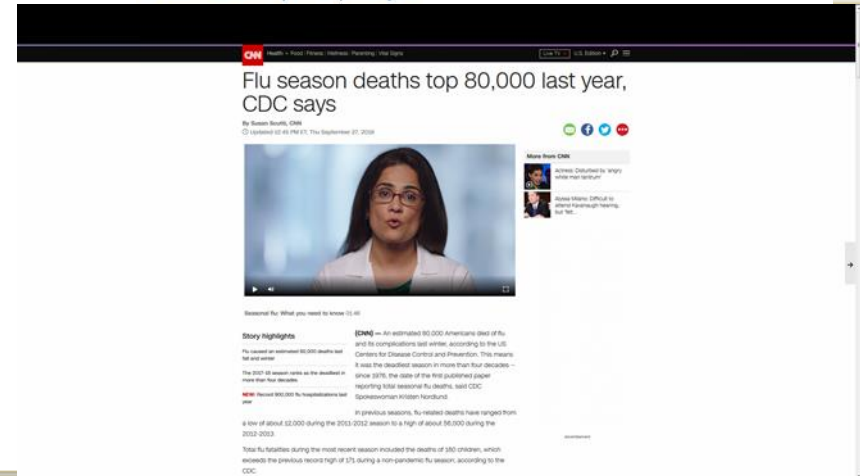
Posted: Jan 11, 2018 6:41 PM EST
Updated: Jan 11, 2018 7:01 PM EST
By WALA Webstaff



Severe flu in California brings medicine shortages, kills 27



Flu season started early and is spreading fast

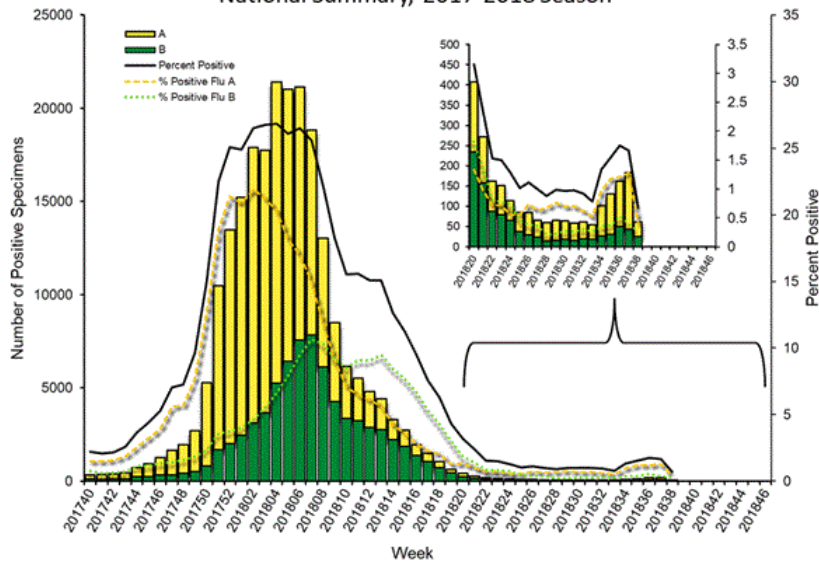




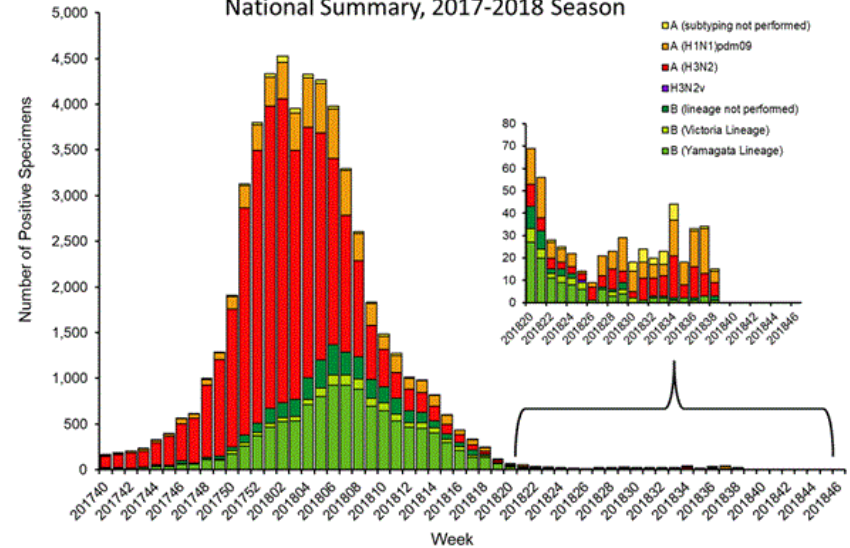
Influenza in the US: 2017-18



Influenza Positive Tests Reported to CDC by U.S. Clinical Laboratories, National Summary, 2017-2018 Season



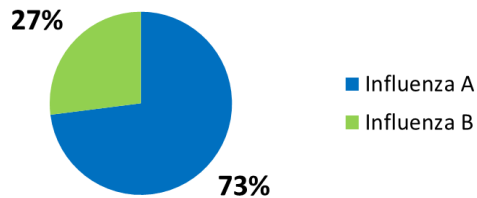
Influenza Positive Tests Reported to CDC by U.S. Public Health Laboratories, National Summary, 2017-2018 Season



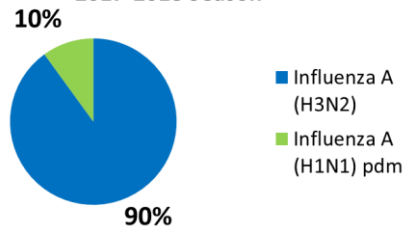


Influenza in WI, 2017-2018

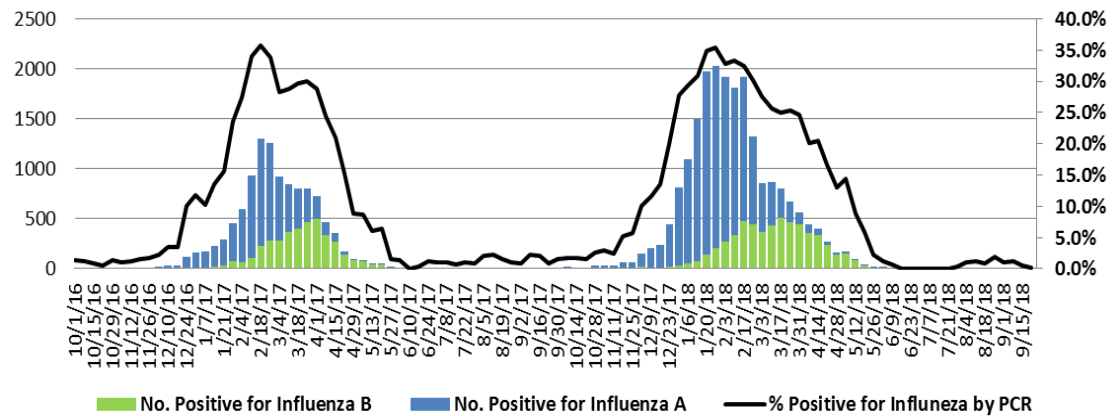
Influenza Type (%) in Wisconsin,
2017-2018 Season



Influenza Subtype (%) in Wisconsin,
2017-2018 Season



% Positive for Influenza by PCR (Wisconsin),
2016-2017 & 2017-2018 Seasons

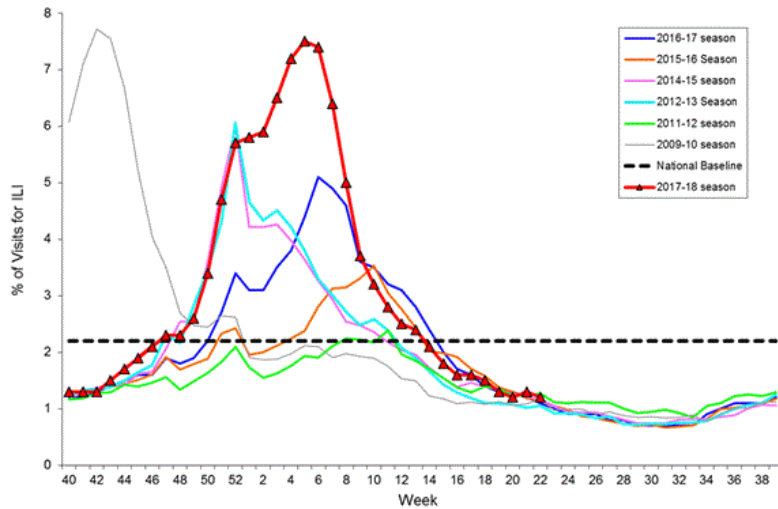




Influenza in the U.S. :2017-18

ILI Activity

Percentage of Visits for Influenza-like Illness (ILI) Reported by the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Weekly National Summary, 2017-2018 and Selected Previous Seasons



Week Ending Jan 06, 2018 - Week 1

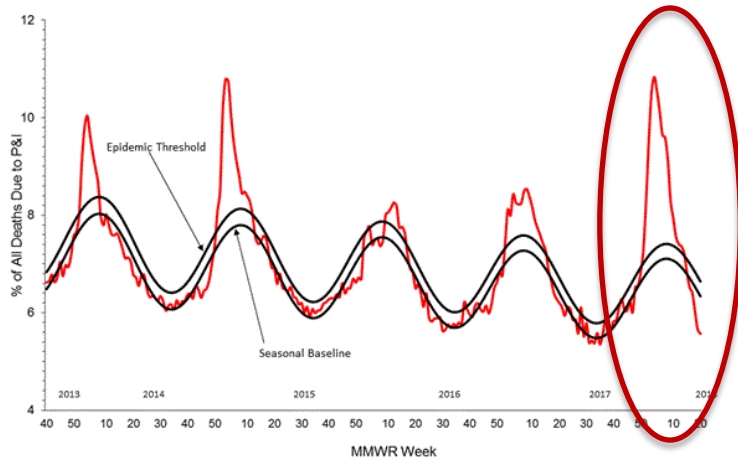




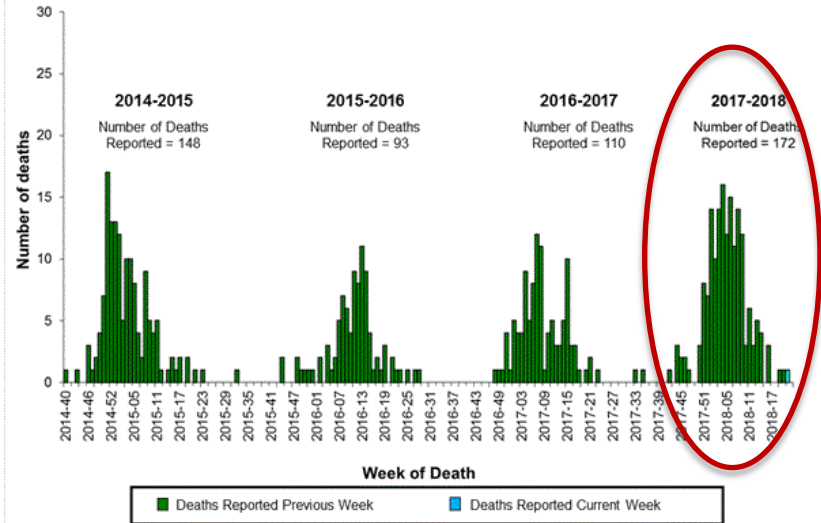
Influenza in the U.S. :2017-18

Flu Mortality

Pneumonia and Influenza Mortality from the National Center for Health Statistics Mortality Surveillance System
Data through the week ending May 19, 2018, as of June 7, 2018



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





Influenza in the U.S. :2017-18 *Flu Hospitalization*

FLUVIEW

Laboratory-Confirmed Influenza Hospitalizations

Preliminary cumulative rates as of Sep 22, 2018



Display By Select a Surveillance Area

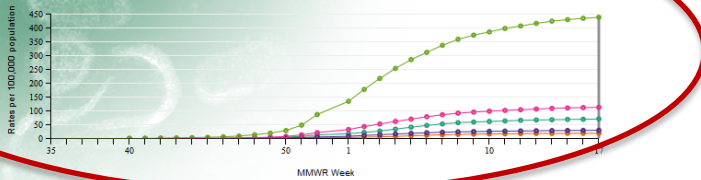
Group By: Flu Season Age Group

Download Image Download Data Help

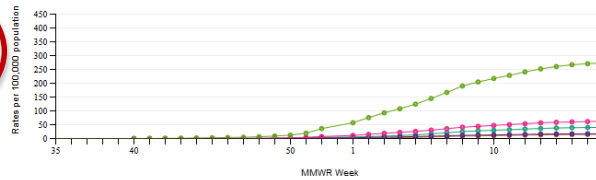
Select up to 6 Seasons



FluSurv-NET :: Entire Network :: 2017-18 Season :: Cumulative Rate



FluSurv-NET :: Entire Network :: 2016-17 Season :: Cumulative Rate



Age Selection

- Overall
- All Age Groups
- 0-4 yr
- 5-17 yr
- 18-49 yr
- 50-64 yr
- 65+ yr

Season: 2017-18, Week: 17

Week ending: Apr 28, 2018

Rates per 100,000 by season

0-4 yr 71.2 5-17 yr 19.6 18-49 yr 30.1 50-64 yr 113.3 65+ yr 439.3

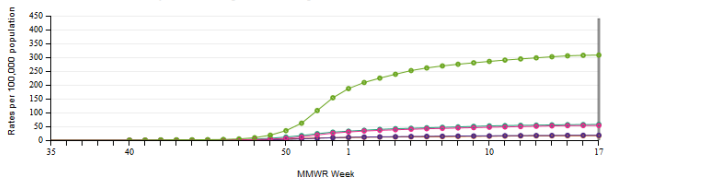
Season: 2016-17, Week: 17

Week ending: Apr 29, 2017

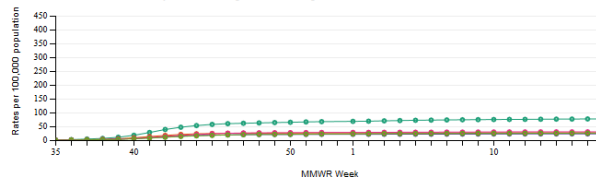
Rates per 100,000 by season

0-4 yr 40.8 5-17 yr 15.4 18-49 yr 17.8 50-64 yr 62.6 65+ yr 273.8

FluSurv-NET :: Entire Network :: 2014-15 Season :: Cumulative Rate



FluSurv-NET :: Entire Network :: 2009-10 Season :: Cumulative Rate



Season: 2014-15, Week: 17

Week ending: May 02, 2015

Rates per 100,000 by season

0-4 yr 57.3 5-17 yr 16.6 18-49 yr 18.1 50-64 yr 63.4 65+ yr 308.3

Season: 2009-10, Week: 17

Week ending: May 01, 2010

Rates per 100,000 by season

0-4 yr 77.4 5-17 yr 27.2 18-49 yr 23.4 50-64 yr 30.6 65+ yr 25.7

Show Data Window

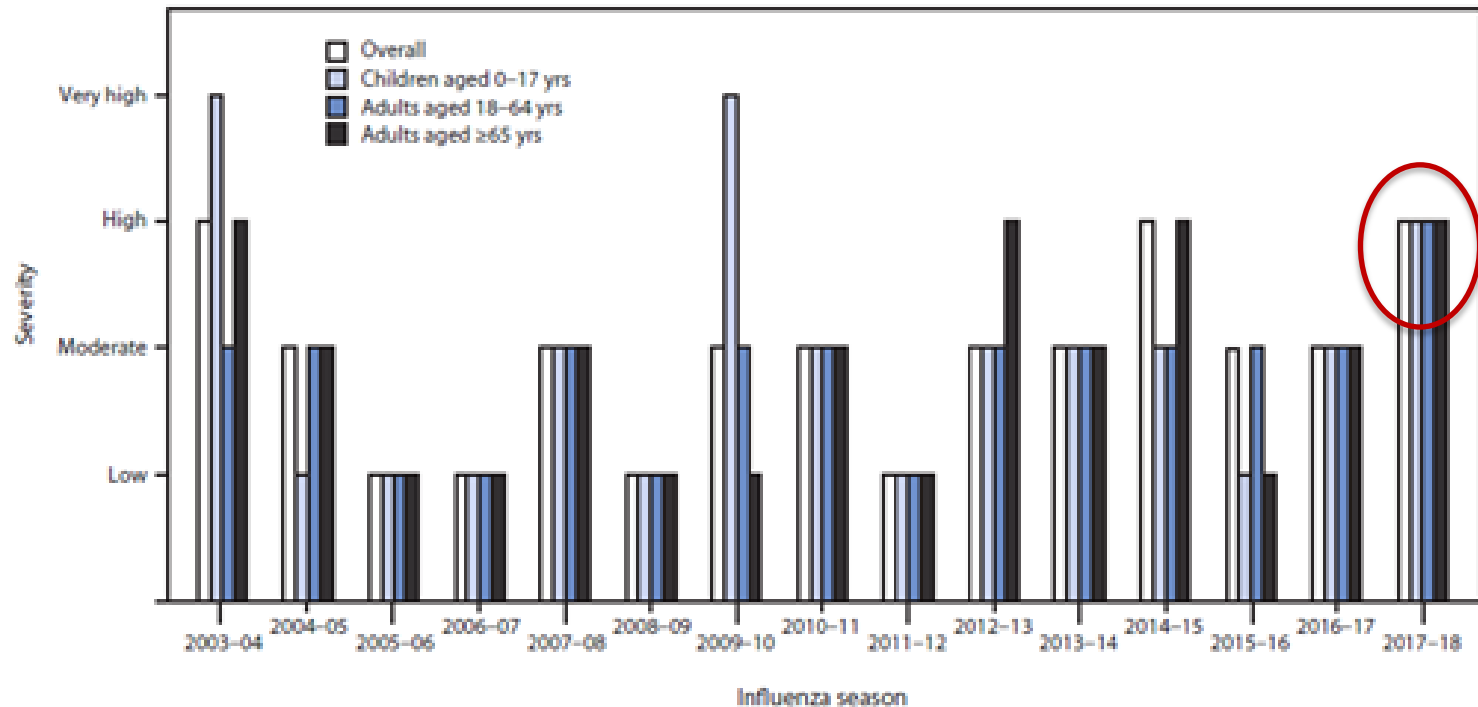
The Influenza Hospitalization Surveillance Network (FluSurv-NET) data are preliminary and subject to change as more data become available. All incidence rates are unadjusted. FluSurv-NET conducts population-based surveillance for laboratory-confirmed influenza associated hospitalizations in children <18 years of age (since 2003-2004 influenza season) and adults (since 2005-2006 influenza season). The FluSurv-NET covers over 70 counties in the 10 Emerging Infections Program (EIP) states (CA, CO, CT, GA, MD, MN, NM, NY, OR, TX) and additional Influenza Hospitalization...



Influenza in the U.S. :2017-18

Overall Influenza Season Severity

FIGURE 3. Influenza season severity classification,* by age group and season — United States, 2003–04 through 2017–18 seasons†



* CDC began using a new method in 2017 to classify influenza season severity using three indicators: the percentage of visits to outpatient clinics for influenza-like illness (ILI) from ILINet, the rates of influenza-associated hospitalizations from FluSurv-Net, and the percentage of deaths resulting from pneumonia or influenza from the National Center for Health Statistics. This method was applied retrospectively, going back to the 2003–04 influenza season. <https://www.cdc.gov/flu/professionals/classifies-flu-severity.htm>.

† As of June 1, 2018.

**MMWR June 8,
2018, Vol. 67/No.22**



Influenza in the U.S. :2017-18

**Why was the past
season so severe?**

Influenza – Prevention and Treatment

<http://www.cdc.gov/flu/professionals/index.htm>



CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives. Protecting People™

SEARCH

CDC A-Z INDEX ▾

Influenza (Flu)

Seasonal Influenza (Flu)

- About Flu +
- Flu Season +
- Prevent Flu +
- Symptoms & Diagnosis +
- Treatment +
- Schools, Businesses & Travelers +
- Flu Activity & Surveillance +
- FluVaxView
- Health Professionals** -
- Health Care Workers Need A Flu Vaccine
- CDC Updates for Health Care Providers
- ACIP Recommendations +
- Vaccination +
- Vaccine Effectiveness Studies +
- Information for Clinicians on Influenza Virus Testing +
- Information for Laboratories +
- Antiviral Drugs +
- Infection Control +
- Toolkit for Long-Term Care Employers
- Trainings
- Health Professional References & Resources
- International Work +
- Flu News & Spotlights +

Seasonal Influenza (Flu)

Information for Health Professionals



Language: English (US) ▾

Note: "Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices – United States, 2018–19 Influenza Season" has been published. CDC recommends annual influenza vaccination for everyone 6 months and older with any licensed, age-appropriate flu vaccine (IIV, RIV4, or LAIV4) with no preference expressed for any one vaccine over another. Content on this website is being updated to reflect this most recent guidance. More information about the [upcoming 2018-2019 flu season](#) is available.

The pages listed below offer public health and health care professionals key information about vaccination, infection control, prevention, treatment, and diagnosis of seasonal influenza.



Recommendations

[Vaccine Recommendations \(ACIP\)](#)

[Clinical Evaluation & Diagnosis](#)

[Antiviral Drugs](#)

[Information for Laboratories](#)

[Institutional Outbreaks and Infection Control](#)

[Long-Term Care Facilities](#)

Resources

[Vaccination](#)

[Health Care Workers Need a Flu Vaccine](#)

[CDC Updates for Health Care Providers](#)

[Patient Education Resources](#)

[Training](#)

[How CDC Classifies Flu Severity](#)

Get Email Updates

To receive weekly email updates about Seasonal Flu, enter your email address:



Seasonal Influenza

Antivirals

- **Adamantanes (Amantadine & Rimantadine)**
 - No longer effective against influenza type A,

- **Neuraminidase inhibitors**
[Tamiflu & Zanamivir; Peramivir(i.v.)]
 - Effective against influenza subtypes A and B
 - Both oral, inhalant and i.v. preparations available
 - Differ in age ranges, routes of administration, costs, and adverse events
 - Development of complete resistance by former seasonal H1N1; pdmH1N1 and H3N2 remains susceptible



Seasonal Influenza

Vaccine

- **Primary strategy to reduce influenza infections and their complications**
 - Safe and **effective(?)**
- 2 options:
 - **Inactivated influenza vaccine**
 - Trivalent and quadrivalent
 - Egg or cell culture grown
 - For all age groups \geq 6 months (Universal)
 - Options now include high potency and adjuvanted
 - **Live attenuated influenza vaccine**
 - Licensed for non-pregnant persons aged 2-49 years
- Vaccine is matched to circulating strains of seasonal types A (*2 subtypes*) and B (*2 lineages*) influenza



Influenza 2017-18

What was expected...

- A/Hong Kong/4801/2014(H3N2)
- A/Michigan/45/2015 (H1N1pdm09)
- B/Phuket/3073/2013 (B/Yamagata-lineage)
- B/Brisbane/60/2008 (B/Victoria-lineage)

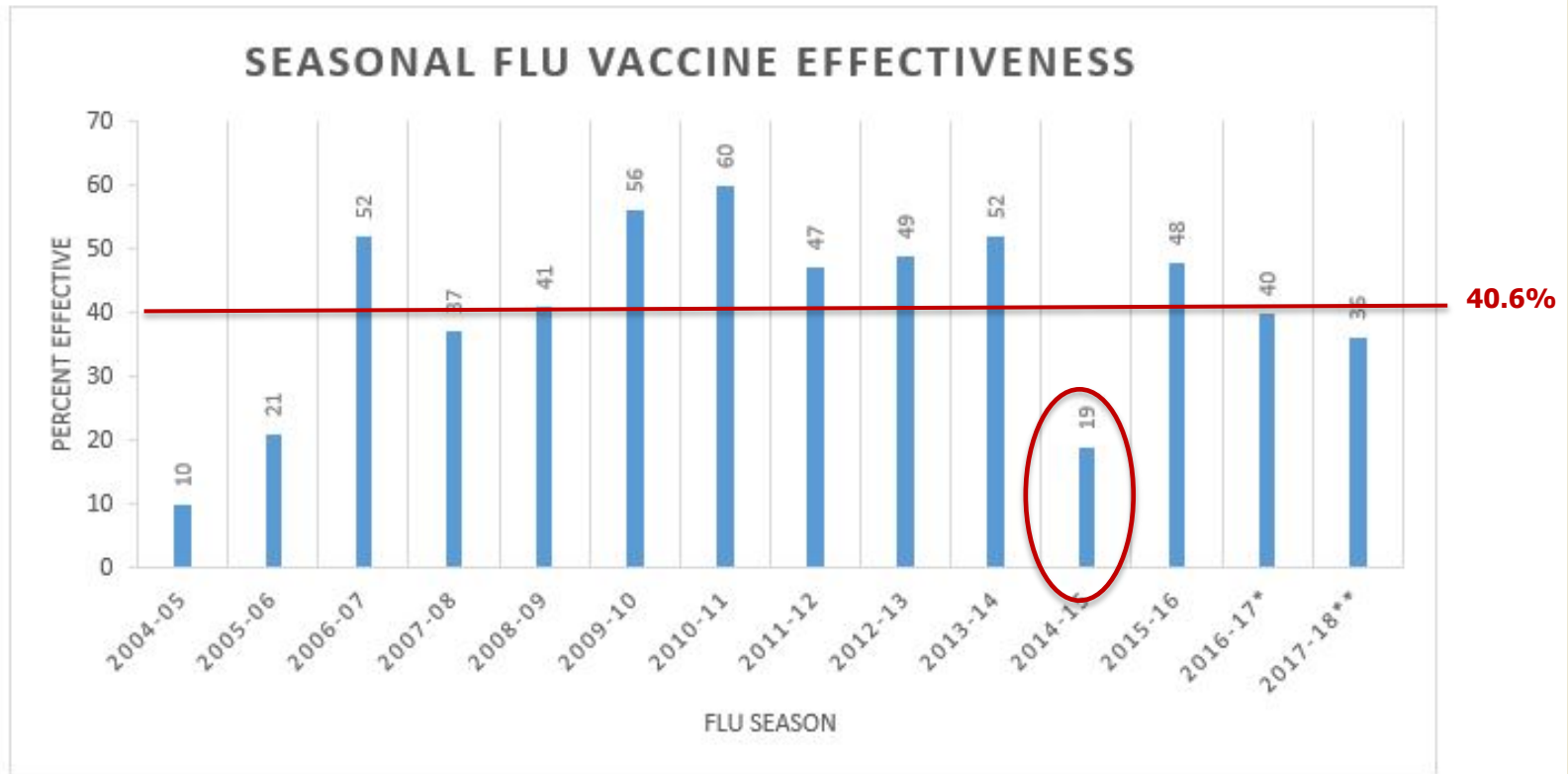
... and that's **largely** what we got,
however ...



Seasonal Influenza Vaccines

How effective ?

<http://www.cdc.gov/flu/professionals/vaccination/effectiveness-studies.htm>



VE= percent reduction of frequency of flu among vaccinated people compared to unvaccinated people

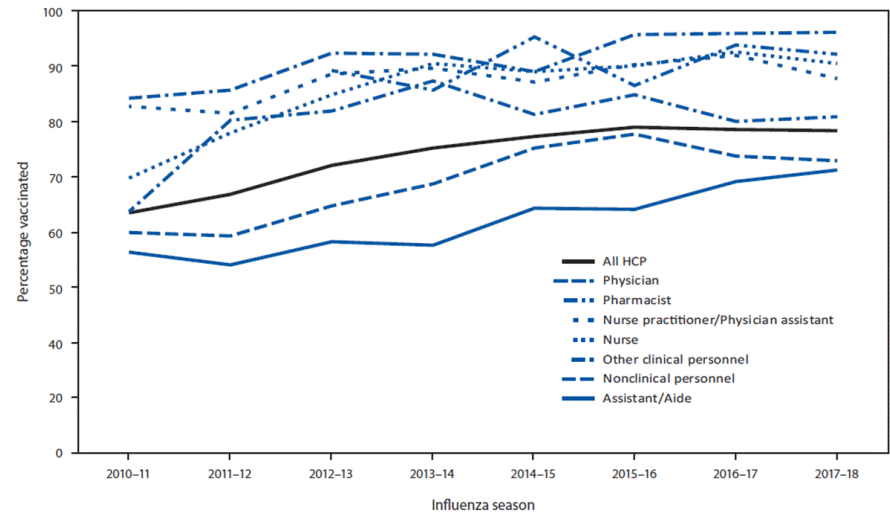
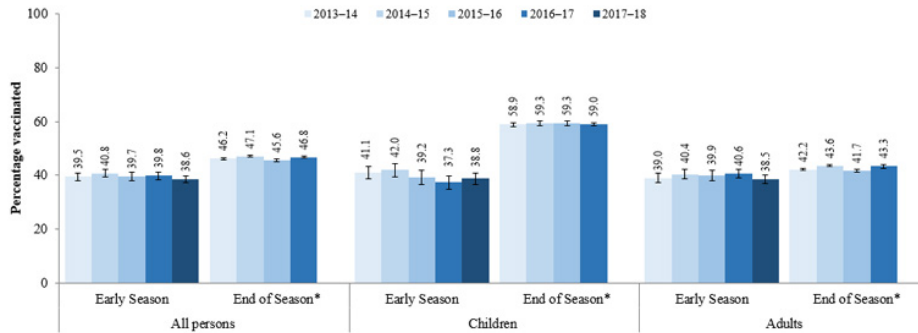


Vaccination Rates---2013-2018

General Population and Healthcare Personnel

<http://www.cdc.gov/flu/professionals/vaccination/>

Early-season and end-of-season flu vaccination coverage estimates, National Immunization Survey-Flu and National Internet Flu Survey, United States, 2013-14 flu season to November, 2017





Seasonal Influenza Vaccines

Why isn't everyone getting vaccinated?

"Influenza is a trivial disease...why bother?"

"Influenza is not safe during pregnancy"

"Flu vaccine gives me the flu"

"Not another vaccine for my children!"

"I got the flu shot and still got the flu"

"Bad things, e.g. GBS, happen after vaccination"

"The flu vaccine still has thimerosal in it"

"It costs too much"

"It's not as effective as the Govt. says"



Seasonal Influenza Vaccines

**Could there be other problems
with the vaccines?**



Vaccine Effectiveness : 2014-15

<http://www.cdc.gov/flu/professionals/vaccination/effectivenessqa.htm>

“It may not be perfect, but it protects a substantial number of people and it’s the best we have”

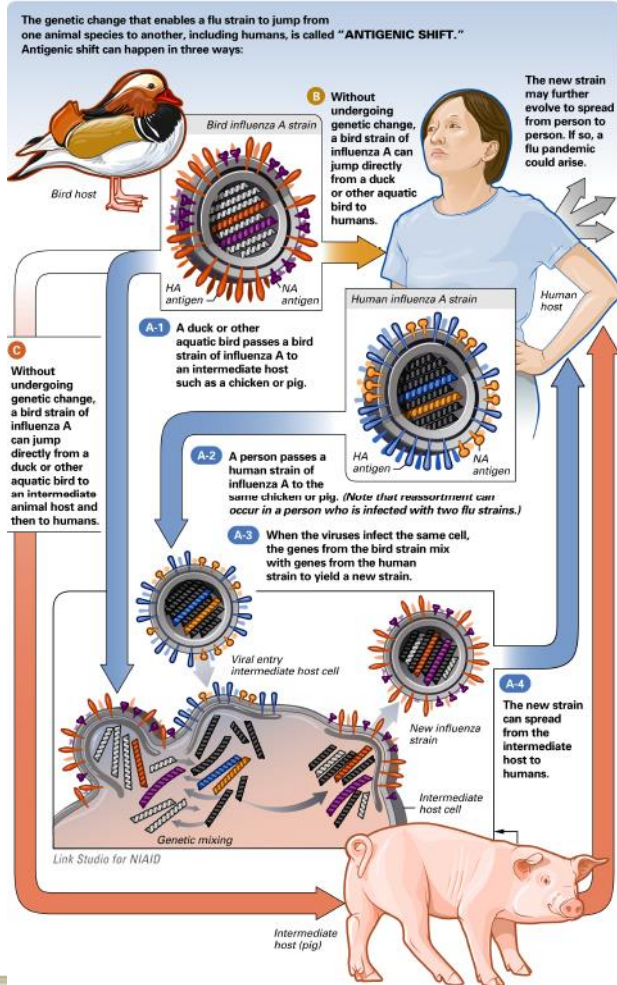
-CDC Source-



The Changeability of Influenza

Antigenic Shift

www.flu.gov



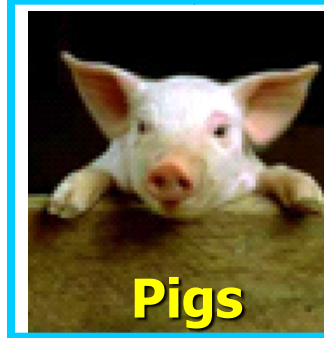
Antigenic Shift
When a new subtype (a novel HA and/or NA) of influenza A emerges in the host (humans)



Influenza at the Human-Animal Interface

Influenza A

- H1 - H16*
- N1 - N9*



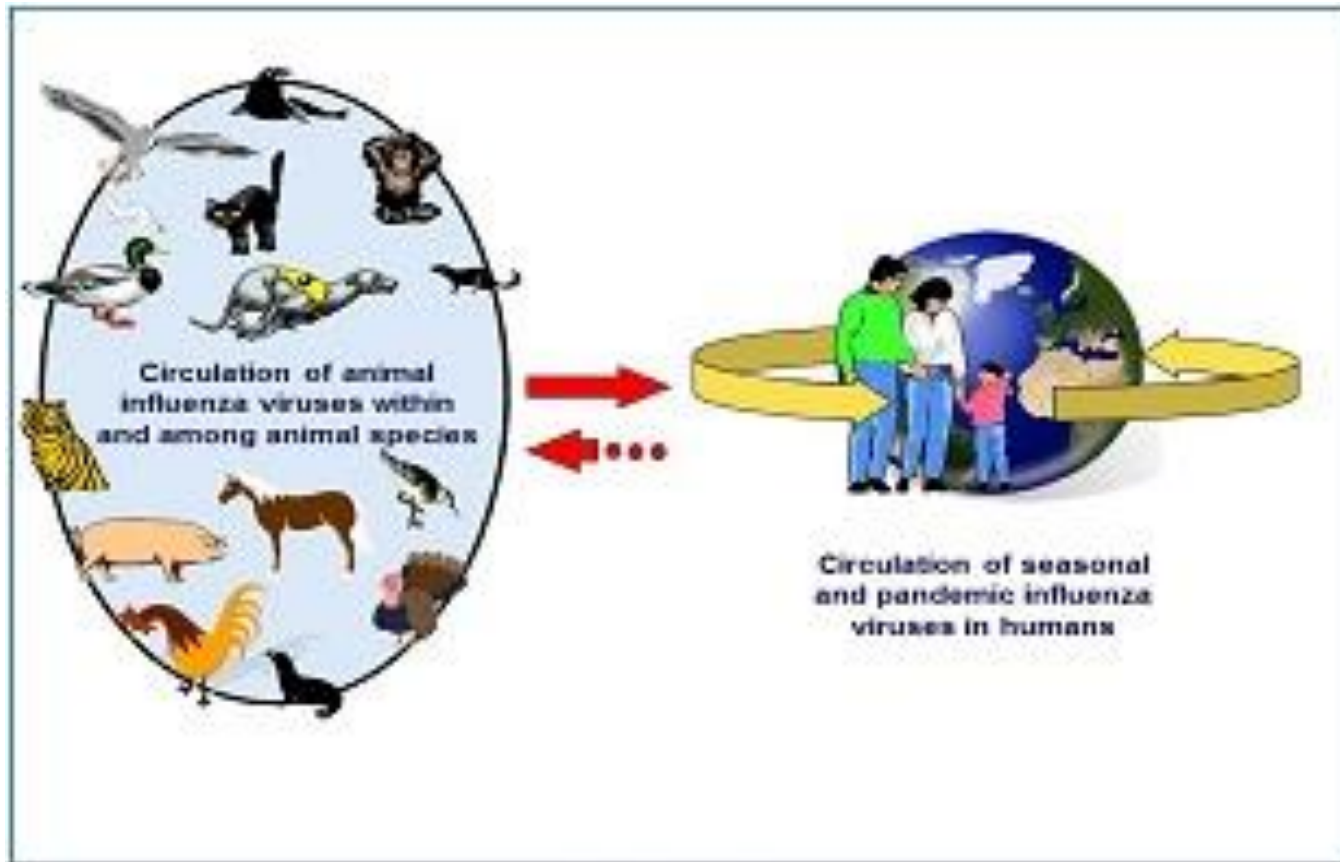
*Bats – H17/18, N10/11





Infectious Diseases at the Human-Animal Interface

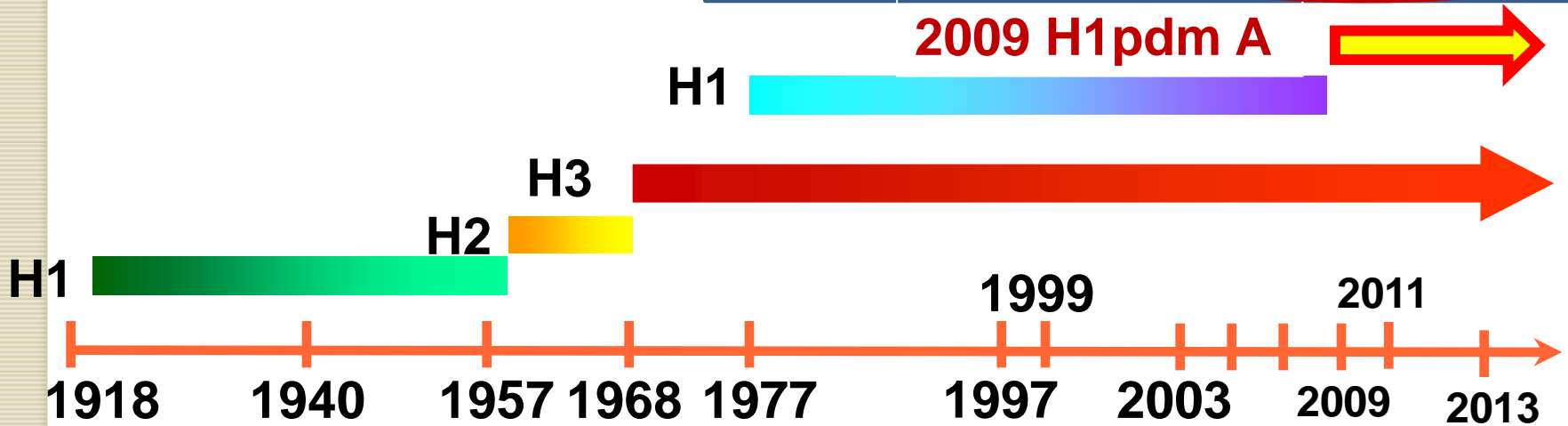
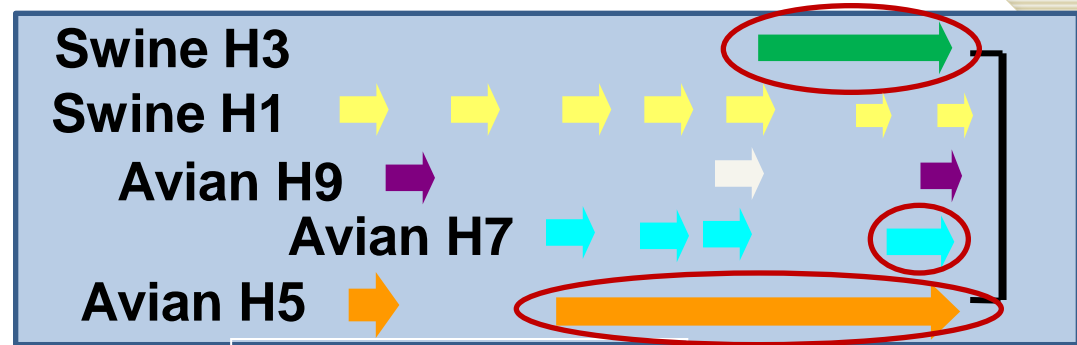
Influenza as an Example

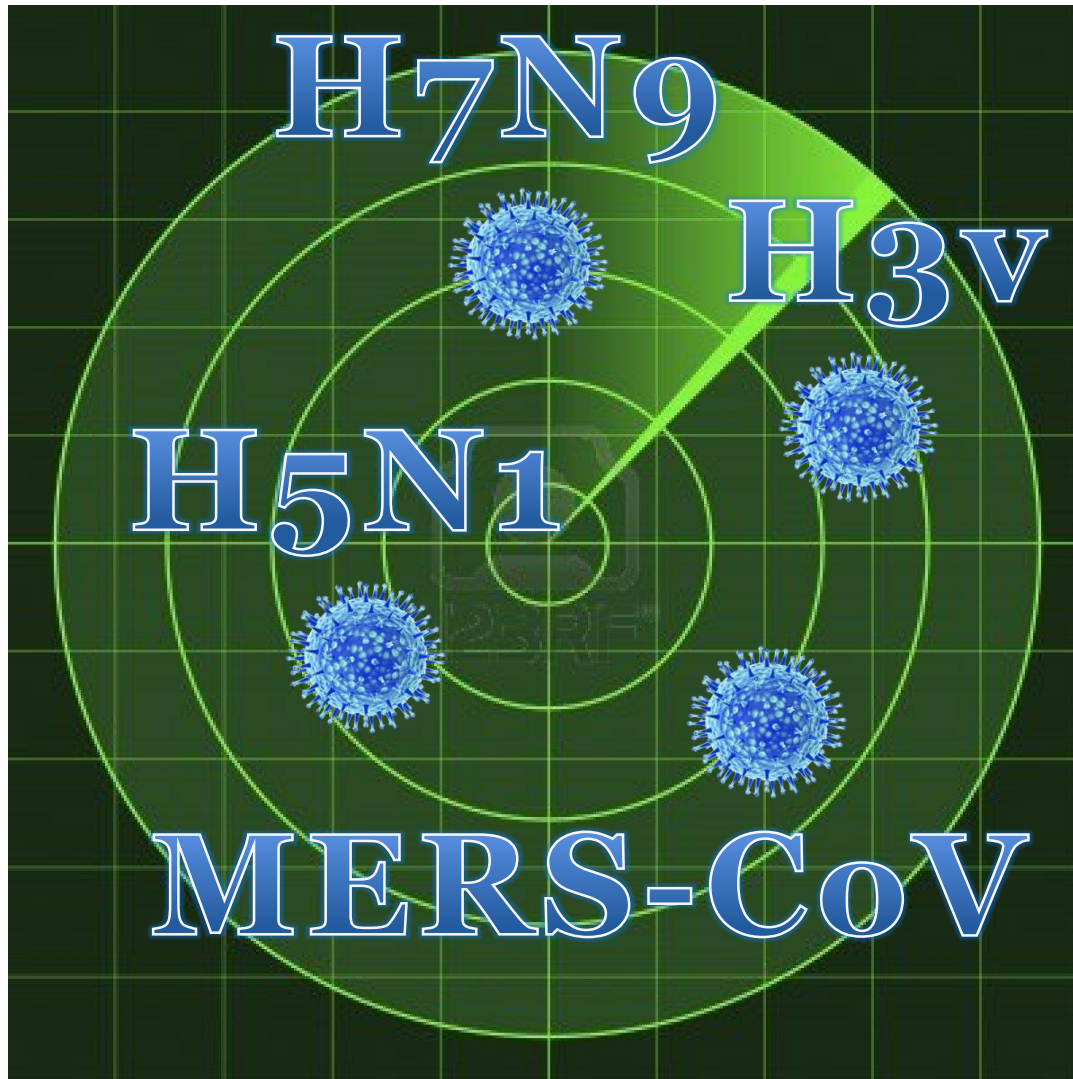




Timeline of Other Emergent Influenza A Viruses in Humans

Type A

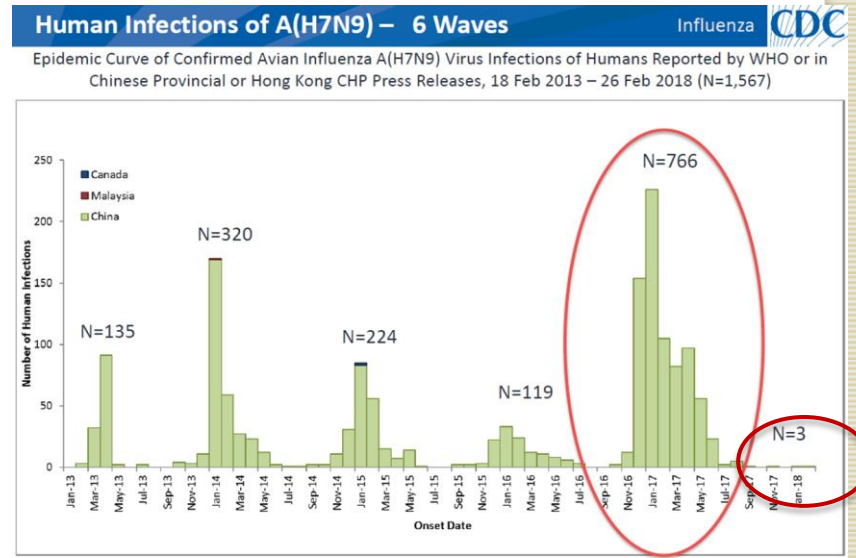
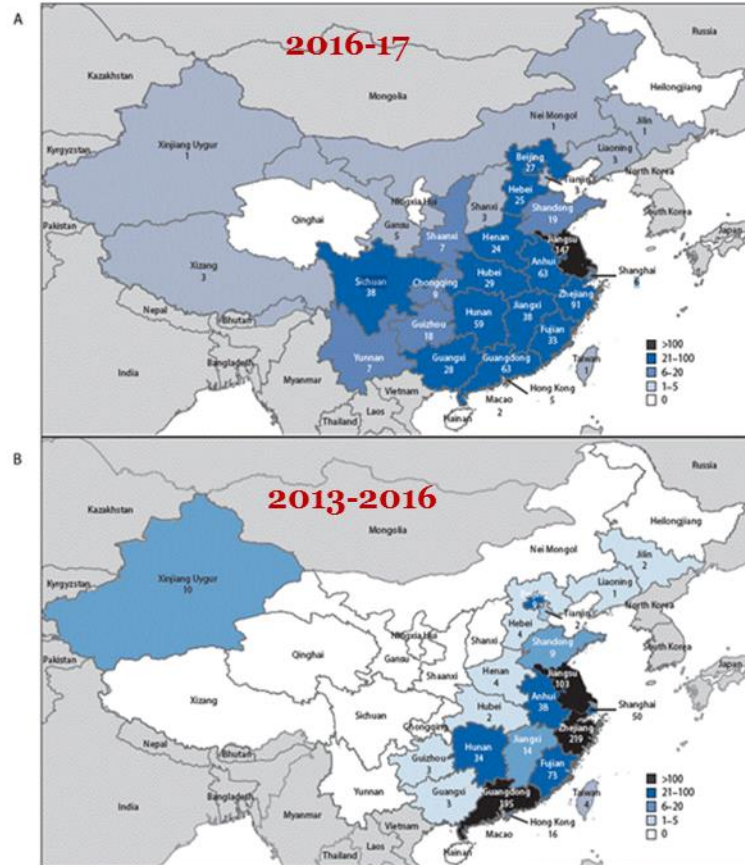






Influenza A (H7N9)

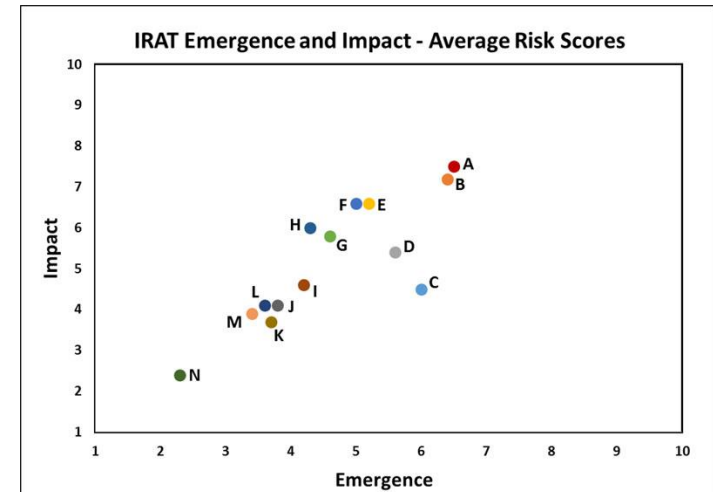
The latest global concern





Why Avian Influenza A (H7N9)?

- 5th epidemic mutations detected
 - Highly Pathogenic Avian Influenza (HPAI); Refers to avian species pathogenicity.
 - Reduced susceptibility to antivirals
- Antigenic drift ---new CVV required
- CDC IRAT Evaluation Tool
 - Highest pandemic risk amongst novel influenza viruses detected.





Avian Influenza A (H5N1)

Cumulative number of confirmed human cases for avian influenza A(H5N1) reported to WHO, 2003-2018

Country	2003-2009*		2010-2014**		2015		2016		2017		2018		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths
Azerbaijan	8	5	0	0	0	0	0	0	0	0	0	0	8	5
Bangladesh	1	0	6	1	1	0	0	0	0	0	0	0	8	1
Cambodia	9	7	47	30	0	0	0	0	0	0	0	0	56	37
Canada	0	0	1	1	0	0	0	0	0	0	0	0	1	1
China	38	25	9	5	6	1	0	0	0	0	0	0	53	31
Djibouti	1	0	0	0	0	0	0	0	0	0	0	0	1	0
Egypt	90	27	120	50	136	39	10	3	3	1	0	0	359	120
Indonesia	162	134	35	31	2	2	0	0	1	1	0	0	200	168
Iraq	3	2	0	0	0	0	0	0	0	0	0	0	3	2
Lao People's Democratic Republic	2	2	0	0	0	0	0	0	0	0	0	0	2	2
Myanmar	1	0	0	0	0	0	0	0	0	0	0	0	1	0
Nigeria	1	1	0	0	0	0	0	0	0	0	0	0	1	1
Pakistan	3	1	0	0	0	0	0	0	0	0	0	0	3	1
Thailand	25	17	0	0	0	0	0	0	0	0	0	0	25	17
Turkey	12	4	0	0	0	0	0	0	0	0	0	0	12	4
Viet Nam	112	57	15	7	0	0	0	0	0	0	0	0	127	64
Total	468	282	233	125	145	42	10	3	4	2	0	0	860	454

* 2003-2009 total figures. Breakdowns by year available on subsequent tables.

** 2010-2014 total figures. Breakdowns by year available on subsequent tables.

Total number of cases includes number of deaths.

WHO reports only laboratory cases.

All dates refer to onset of illness.

Source: WHO/GIP, data in HQ as of 20 July 2018





MERS-CoV What we know!

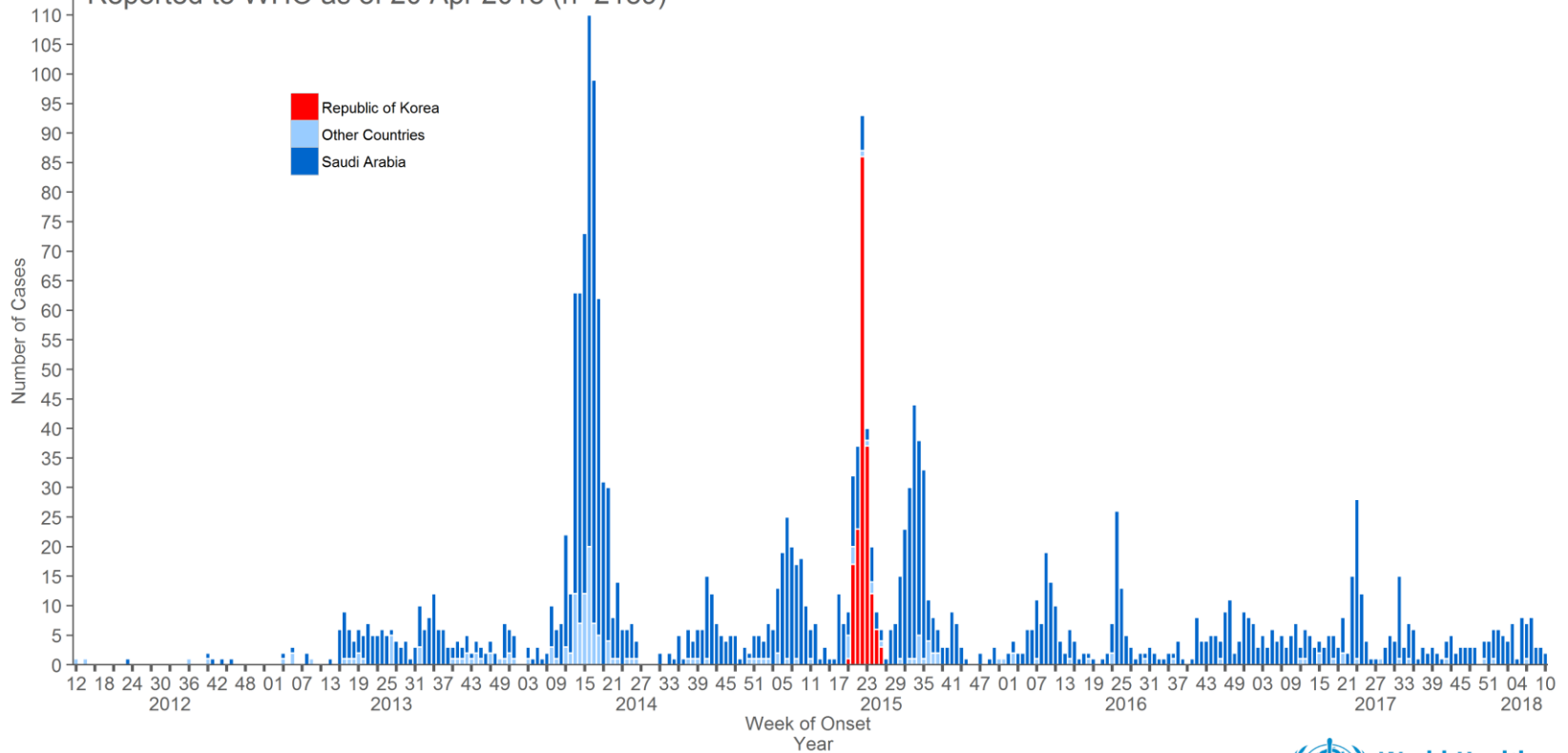
- Virus is *different* than SARS-Coronavirus and seasonal coronaviruses.
- First cases in 2012.
- All cases linked to the Arabian Peninsula (80% Saudi Arabia).
- Virus does *not easily* transmit from person-to-person.
- Requires close personal contact.
- Genetically stable.
- Bats and camels play a role in host transmission; dynamics not well understood.
- WSLH performs RT-PCR on PUI's.



MERS - Coronavirus

Confirmed global cases of MERS-CoV

Reported to WHO as of 20 Apr 2018 (n=2189)



Other countries: Algeria, Austria, Bahrain, China, Egypt, France, Germany, Greece, Iran, Italy, Jordan, Kuwait, Lebanon, Malaysia, Netherlands, Oman, Philippines, Qatar, Thailand, Tunisia, Turkey, United Arab Emirates, United Kingdom, United States of America, Yemen
Please note that the underlying data is subject to change as the investigations around cases are ongoing. Onset date estimated if not available.





Global Flight Map



(Image courtesy of The Guardian's interactive flight map)



Domestic *Novel* Influenza A

Table. Case Count: Detected U.S. Infections with Variant Influenza Viruses by State since December 2005-2018

Reporting State	H3N2v	H1N1v	H1N2v	Total Detected Influenza Variant Virus infections
Arkansas		2		
Colorado			1	
Delaware	1			
Hawaii	1			
Illinois	5	1		
Indiana	154			
Iowa	7	5	1	
Kansas	1			
Maine	2			
Maryland	51			
Michigan	23		1	
Minnesota	9	4	6	
Missouri		2		
Nebraska	1			
New Jersey	1			
North Dakota	1			
Ohio	131	3	3	
Pennsylvania	17			
South Dakota		1		
Texas	1	1		
Utah	1			
West Virginia	5			
Wisconsin	22	2	1	
Total	434	21	13	468

For more detailed information about previously detected human cases of variant influenza infection, see [Reports of Human Infections with Variant Viruses](https://www.cdc.gov/flu/swineflu/variant-cases-us.htm)
Source: <https://www.cdc.gov/flu/swineflu/variant-cases-us.htm>

Source: <https://www.cdc.gov/flu/swineflu/h3n2v-case-count.htm>

WISCONSIN STATE LABORATORY OF HYGIENE - UNIVERSITY OF WISCONSIN



The Recipe for a Human Pandemic

- ✓ Emergence of a novel virus
- ✓ An immunologically naïve population
- ✓ Replication in humans → disease



Efficient human-to-human
transmission





Virus Activity Resources

Wisconsin

- Bi-weekly Laboratory Surveillance Report

Subscribe at: wcln@slh.wisc.edu

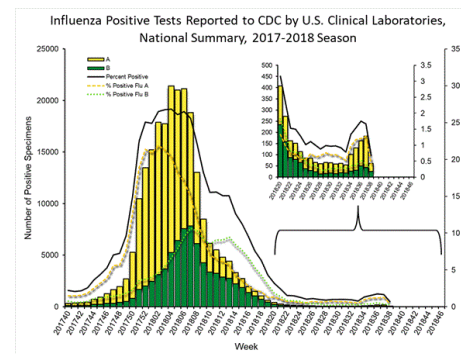
- Virus Activity Graphs

<http://www.slh.wisc.edu/wcln-surveillance/surveillance/virology-surveillance/>



National

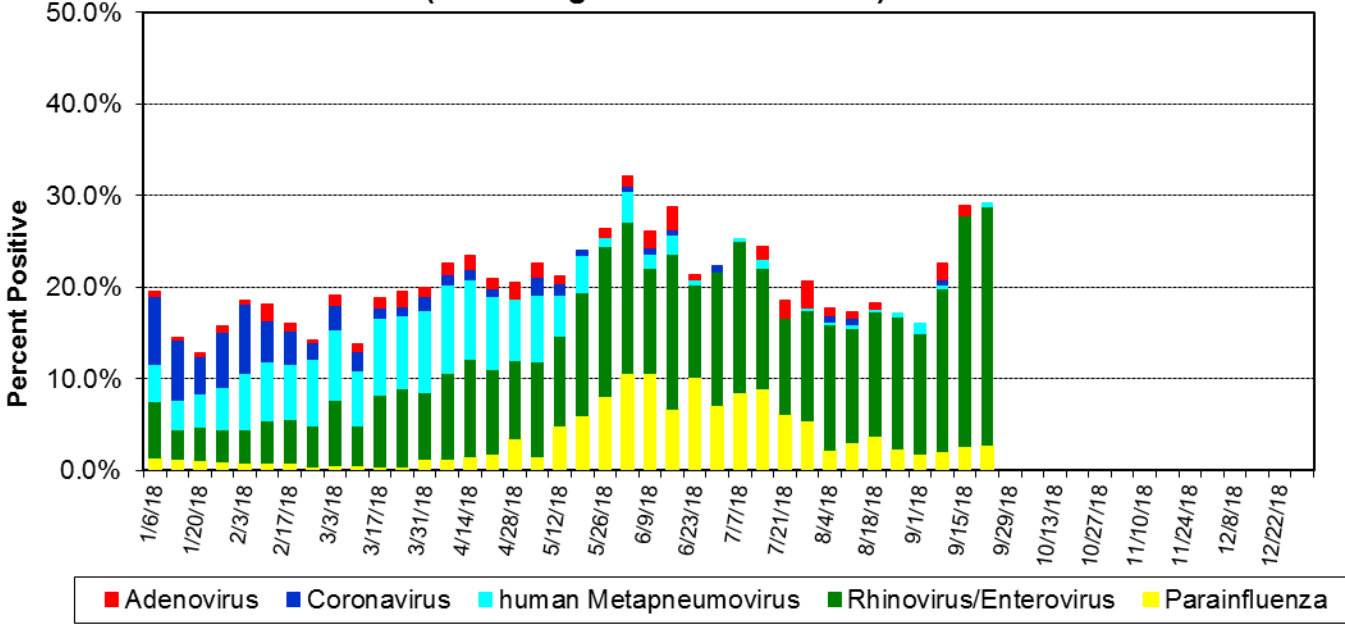
- FluView (CDC)
- NREVSS (CDC)





Current Seasonal Respiratory Virus Activity

Positivity of Respiratory Specimens by PCR at Wisconsin Laboratories (Excluding Influenza and RSV)





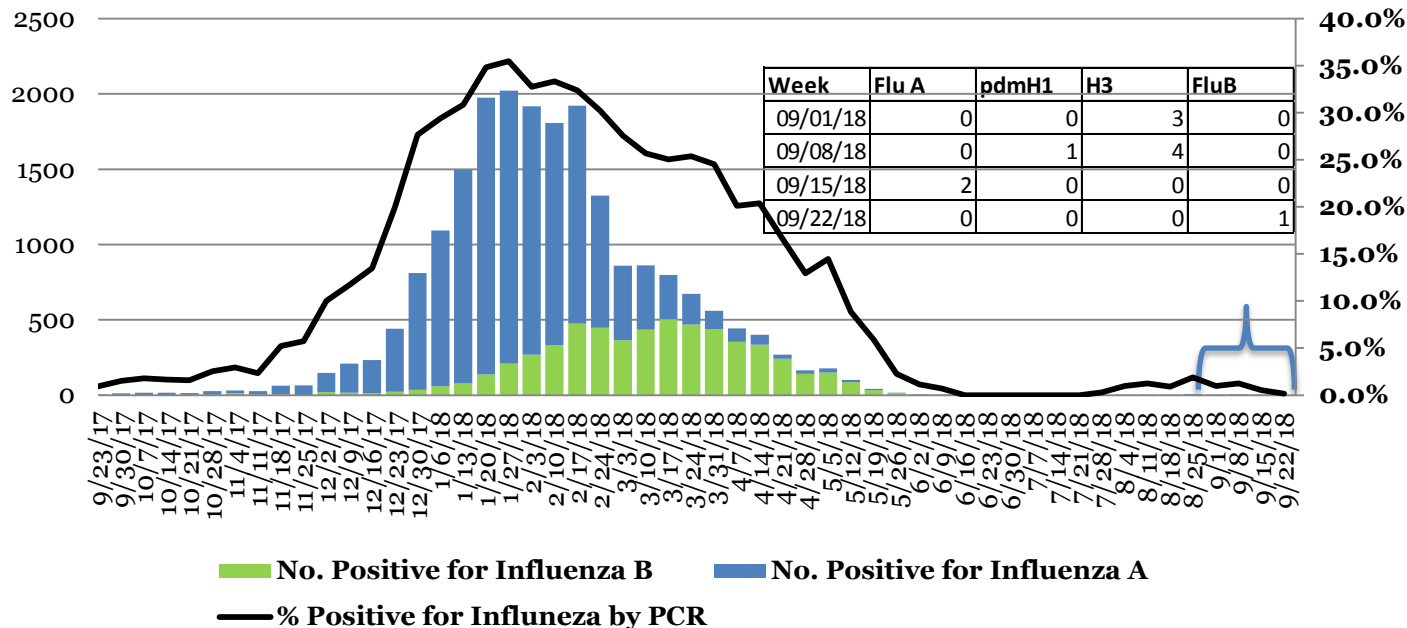
Influenza and non-influenza virus respiratory surveillance





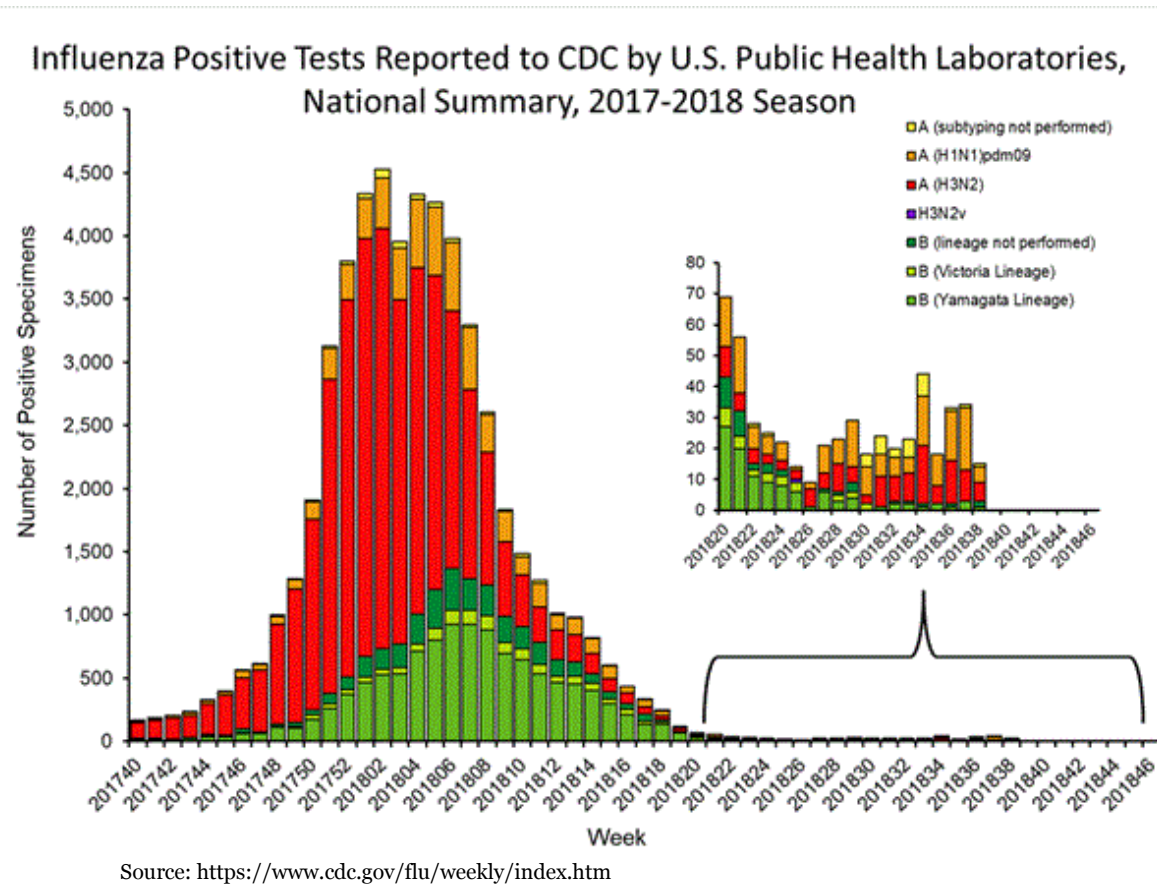
Early..... Influenza season, 2018-2019

**% Positive for Influenza by PCR (Wisconsin),
Week Ending September 22, 2018**





Early..... Influenza season, 2018-2019

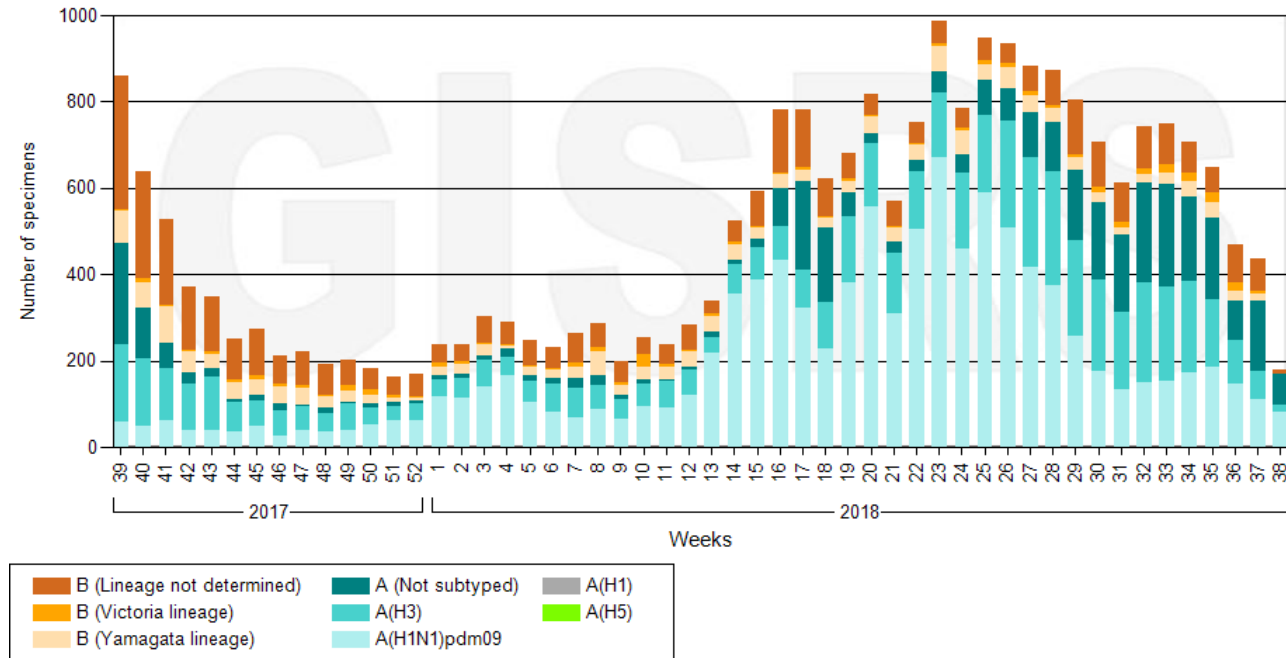




Influenza Laboratory Surveillance Information generated on 28/09/2018 20:37:07 UTC by the Global Influenza Surveillance and Response System (GISRS)—

Southern hemisphere

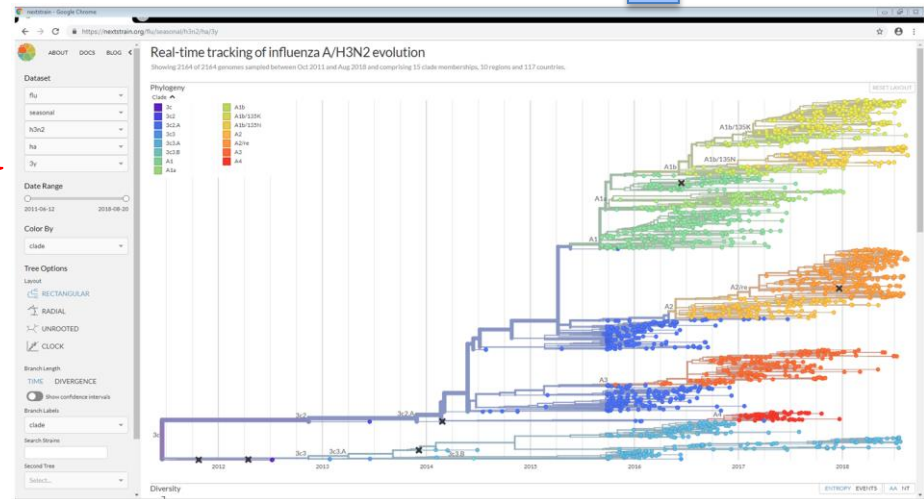
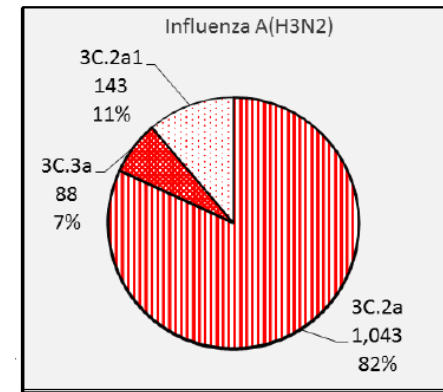
Number of specimens positive for influenza by subtype





What do we do with the specimens submitted?

- Subtype characterization
- Antiviral resistance monitoring
- Whole genome sequencing
 - 3c.2a, 3c.2a1, 3c.3a
- Provide specimen/isolates to CDC
- Provide weekly summaries





Antiviral Resistance Monitoring- Wisconsin, 2018

WI neuraminidase inhibition testing			
YR	Month	# Reduced inhibition	# Tested
2018	January	0	18
	February	0	16
	March	0	12
	April	0	10
	May	0	6
	June	0	5
	July	0	3
	August	0	7
	September	0	11
	Total	0	88



- Oseltamivir
- Zanamivir
- Peramivir
- Laninamivir



Respiratory Pathogen Surveillance

2018-2019 Season





Influenza Surveillance in Wisconsin

Multi-element approach

1. Rapid Influenza Diagnostic Testing (RIDT) Sites
 - Now ~50% of influenza testing in WI
 - Confirmatory testing during periods of low prevalence (June to October).
 - Please notify WSLH of suspected performance issues (e.g. False positives/negatives)

WSLH can provide confirmatory testing for the first positive influenza specimen of the season.

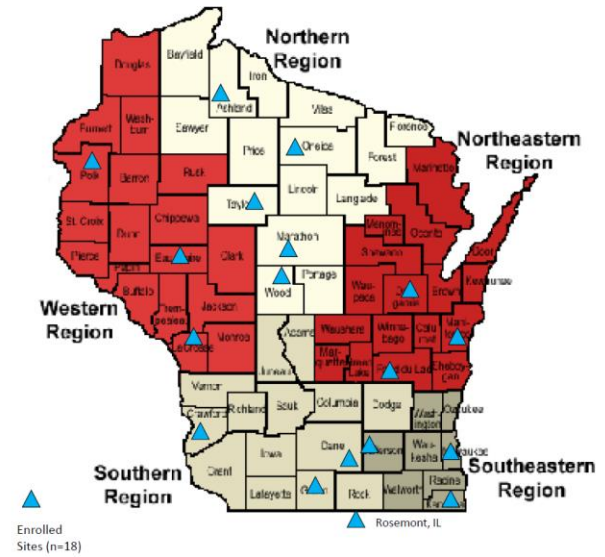


Influenza Surveillance in Wisconsin

Multi-element approach

2. Enrolled Surveillance Sites

- 17 labs in 5 public health regions.
- Provide randomized specimens weekly.



Request to continue to submit the first 1-2 specimens per week with influenza test requests to WSLH.

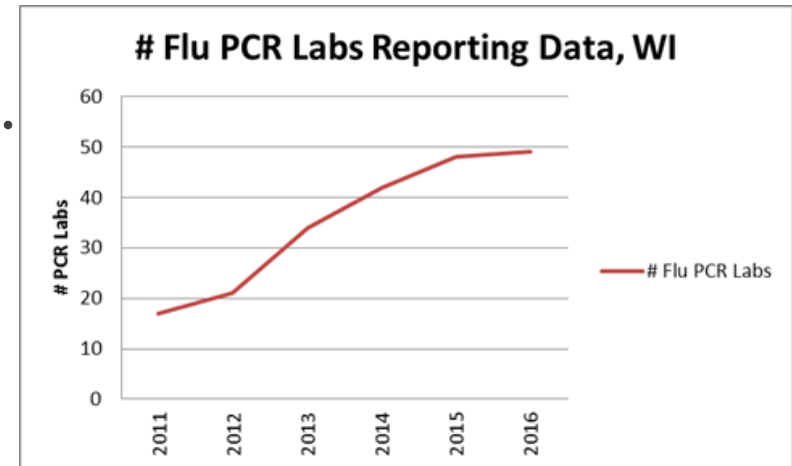


Influenza Surveillance in Wisconsin

Multi-element approach

3. PCR Labs

- “Gold Standard” testing.
- Provide weekly testing data summary reports.
- Do NOT need to send positive specimens.



Request to report both the number positive and the number tested weekly.

**Send Flu A unsubtypable specimens when subtyping for both 2009 H1N1 and seasonal H3 were attempted (Ct<35).



Laboratory-based Surveillance

All Clinical Laboratories performing influenza diagnostic testing

All Labs:

- Send those with international travel histories
- Up to one influenza-related hospitalization per week
- Unusual presentations/results
- Contact with swine/ sick or dead poultry
- Antiviral treatment failure



NRVESS Reporting

NREVSS was created in the 1980s to monitor seasonal trends in influenza and respiratory syncytial virus (RSV). In 2007, data collection for rhinovirus, enterovirus, and human metapneumovirus began.

<https://www.cdc.gov/surveillance/nrevss/index.html>

- It is no longer necessary for labs to report testing data to the National Respiratory and Enteric Virus Surveillance System (NRVESS).
- The WSLH is now reporting this data electronically to NREVSS for all labs in Wisconsin that report to WSLH.

Summary of Surveillance Activities



RIDT Sites

- Confirm the first influenza positive specimen if needed.

Hospitalized Patients

- Limit to one specimen per week

Enrolled Regional Surveillance Sites

- Send the first 1 to 2 specimens/week

Student Health

- Limit to one specimen/week

All labs: Please continue to send all out-of-season positive influenza A specimens (e.g. June-September).



Your participation in the Wisconsin surveillance system is **vital** to monitor for emerging novel strains with pandemic potential and other pathogens that impact community health.



WSLH Surveillance Coordinators

Erik Reisdorf

Virology Lab-Team Lead

erik.reisdorf@slh.wisc.edu

Mary Wedig

Electronic Reporting Coordinator

mary.wedig@slh.wisc.edu

P: 1-800-862-1013