



SARS-CoV-2, Influenza, and other Respiratory Viruses Update - 2023

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21 September 2023



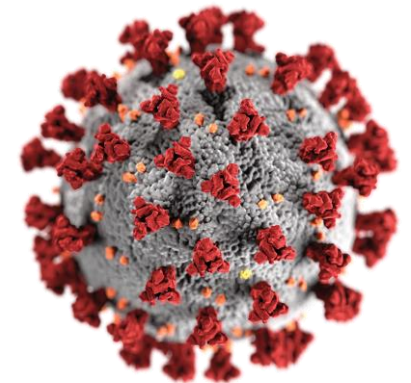
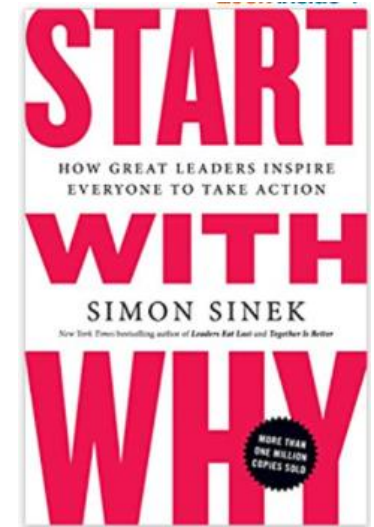
Outline

- Purposes of respiratory virus surveillance
- RSV
- Influenza
- SARS-CoV-2
- Enterovirus/rhinovirus
- Respiratory virus surveillance strategy for 2023-2024
 - Data submission guidelines
 - Specimen submission guidelines



Purposes of Respiratory Virus Surveillance

- Depends on the pathogen
- All respiratory viruses
 - Situational awareness of what is circulating, to inform clinical decision-making and public health response
- Influenza, RSV, and SARS-CoV-2
 - Track circulating strains to inform vaccine strain selection
 - Detect antiviral resistance
 - Isolate viruses for inclusion into future vaccines (flu)
 - Detect novel influenza viruses with pandemic potential (flu) or novel variants (SARS-CoV-2)





Respiratory Viruses

Pre-COVID-19 pandemic

- Influenza
- RSV
- The others
 - hMPV
 - PIV1/2/3/4
 - Seasonal coronaviruses
 - Rhino/enteroviruses

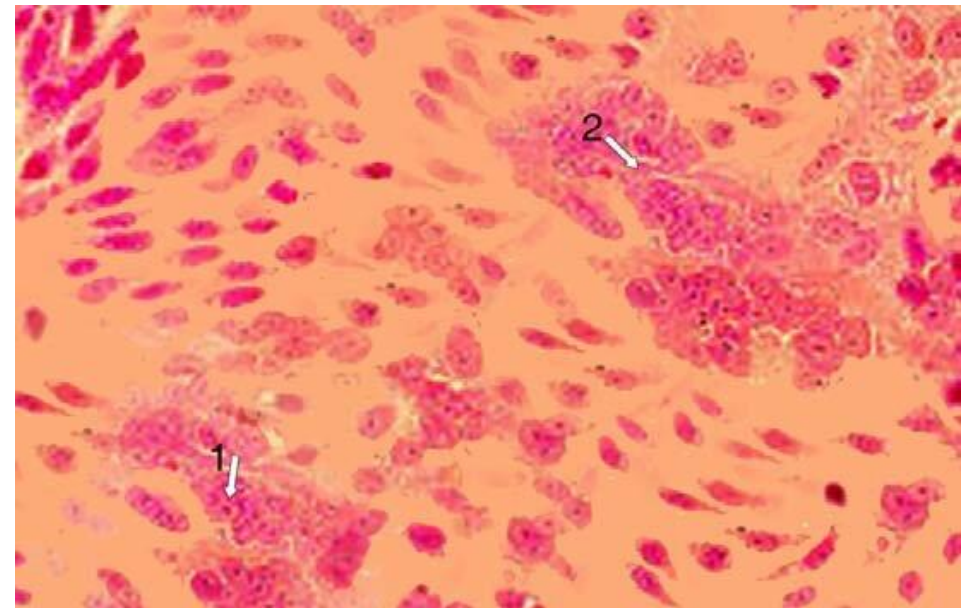
Now

- SARS-CoV-2
- Influenza
- RSV
- The others
 - hMPV
 - PIV1/2/3/4
 - Seasonal coronaviruses
 - Rhino/enteroviruses



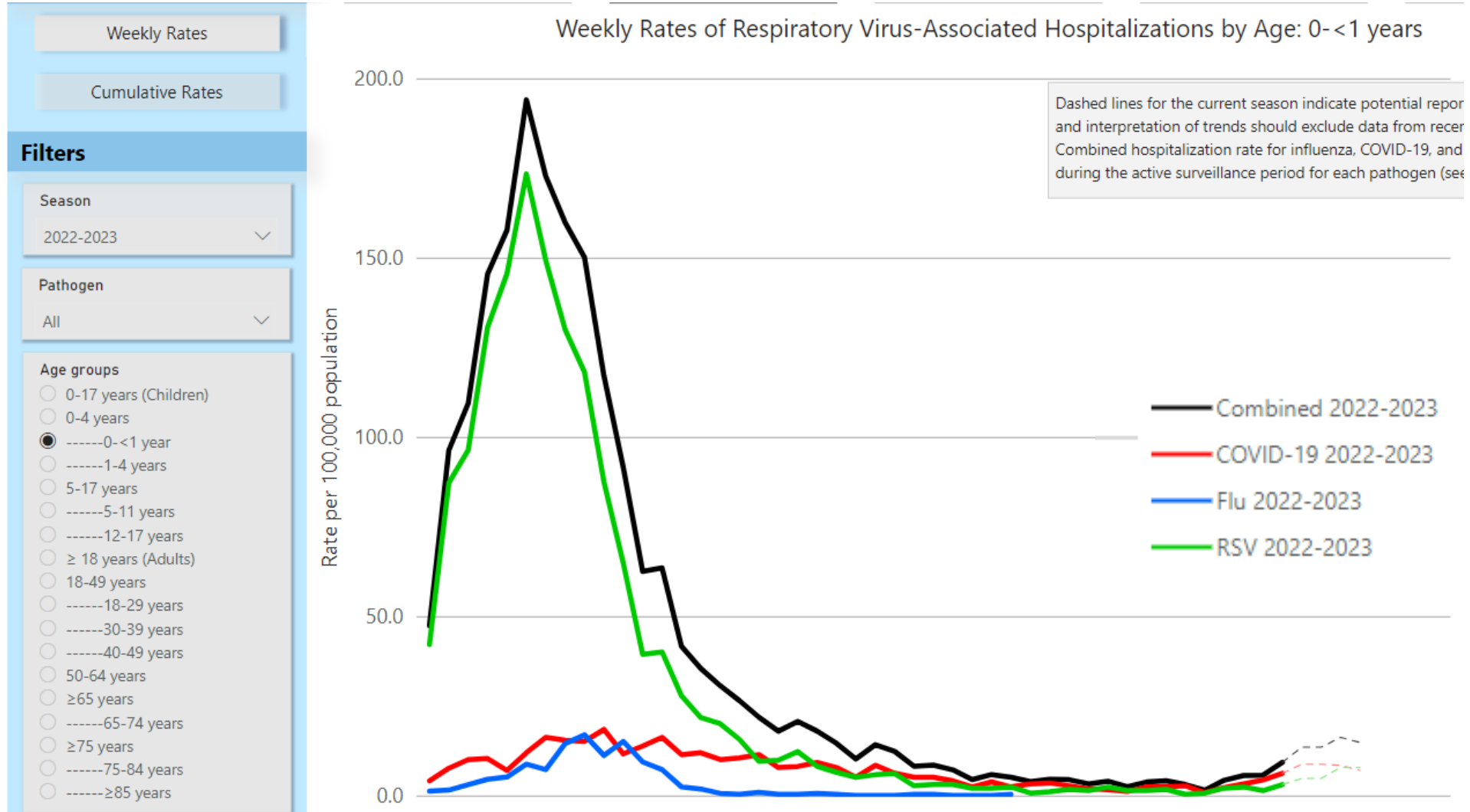
RSV

- Respiratory syncytial virus
- Disease burden:
 - More than two-thirds of babies are infected by age 1
 - Virtually all children are infected by age 2
 - RSV is the leading cause of infant hospitalization in the U.S.
 - 60-80,000 hospitalizations per year
 - Second leading cause of death in children under 1 globally (malaria is 1st)





Hospitalizations <1 y.o.

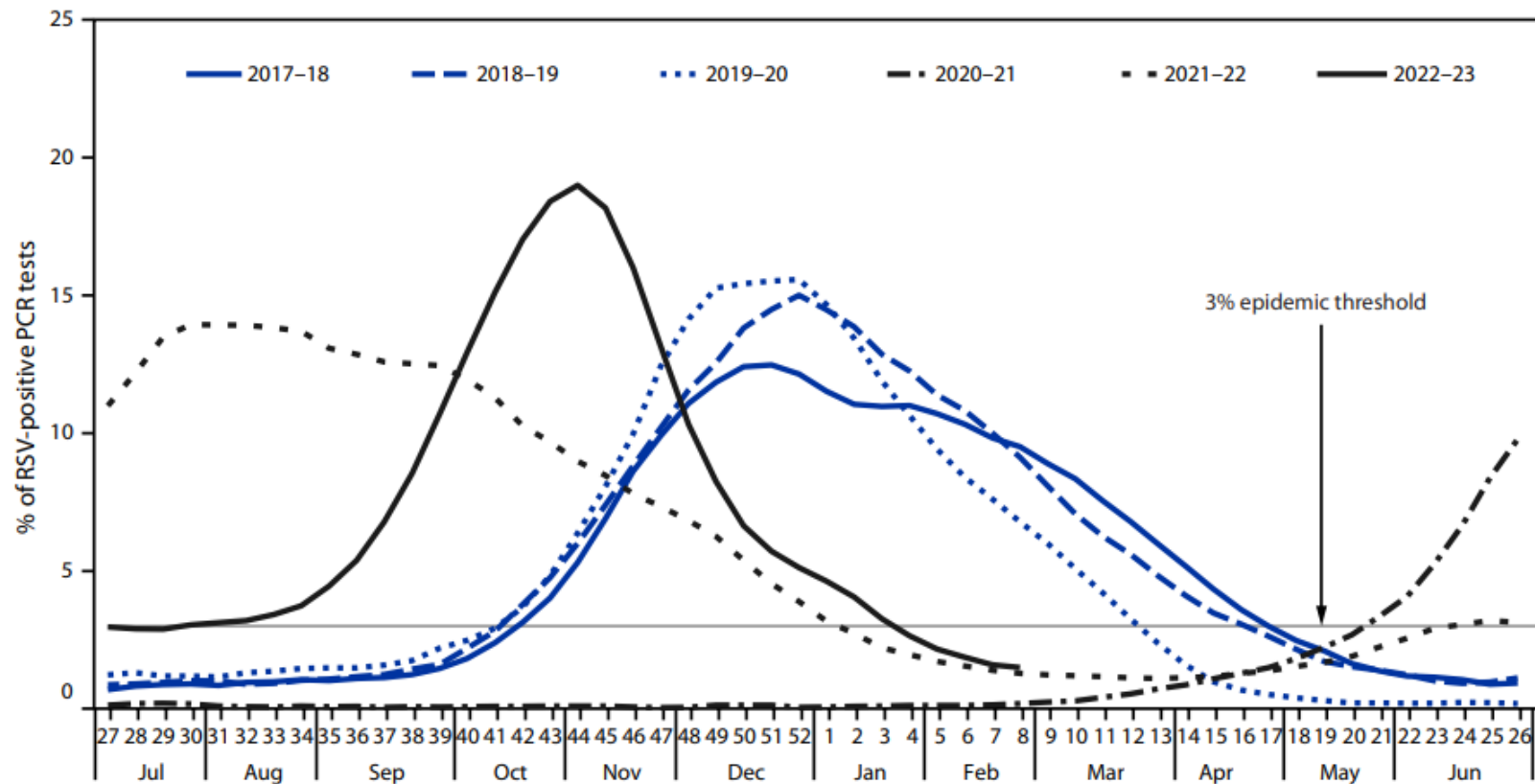




Seasonality of Respiratory Syncytial Virus — United States, 2017–2023

Sarah Hamid, PhD^{1,2}; Amber Winn, MPH²; Rishika Parikh, MPH^{2,3}; Jefferson M. Jones, MD²; Meredith McMorro, MD²; Mila M. Prill, MSPH²; Benjamin J. Silk, PhD²; Heather M. Scobie, PhD²; Aron J. Hall, DVM²

FIGURE 1. Percentage* of polymerase chain reaction test results positive for respiratory syncytial virus, by epidemiologic week — National Respiratory and Enteric Virus Surveillance System, United States, July 2017–February 2023





RSV Surveillance in WI

- Data: number tested and number positive, per week
- Specimens: no specific request for RSV positive samples



RSV: Good Updates in 2023!

- New vaccines (two!)
- New treatment
- Increasing realization that RSV causes substantial burden in elderly (not just infants)
 - 60,000-160,000 hospitalizations and 6,000-10,000 deaths in adults
 - Increased profile of RSV



RSV Developments: First Vaccine!

STAT Reporting from the frontiers
of health and medicine

HEALTH

FDA approves first RSV vaccine, a long-sought scientific achievement



By [Helen Branswell](#) May 3, 2023

- GSK's Arexvy
- Approved for adults ages 60 and older
- F (fusion) glycoprotein vaccine
 - In the pre-fusion state
 - Plus adjuvant to stimulate the immune response
- Only targets RSV A, but also has effects against RSV B (similar fusion proteins)
- Efficacy of 82.6% in preventing confirmed lower respiratory tract disease caused by RSV




RSV Developments: Second Vaccine!

HEALTH

FDA approves Pfizer's RSV vaccine for older adults



By [Helen Branswell](#)  May 31, 2023

- Pfizer's Abrysvo
- Approved for adults over 60
- Also protein subunit vaccine
 - Two pre-fusion F proteins
 - RSV A and RSV B
 - No adjuvant
- 66.7% in preventing lower respiratory tract illness that involved two or more symptoms
- 85.7% effective in preventing illness involving three or more symptoms

<https://www.statnews.com/2023/05/31/fda-approves-pfizers-rsv-vaccine-for-older-adults/>

<https://www.precisionvaccinations.com/vaccines/abrysvo-rsvpref-rsv-vaccine>



Morbidity and Mortality Weekly Report

Use of Respiratory Syncytial Virus Vaccines in Older Adults: Recommendations of the Advisory Committee on Immunization Practices — United States, 2023

- CDC recommends that adults aged ≥ 60 years may receive a single dose of an RSV vaccine



RSV Developments: Vaccine to protect newborns

- Abrysvo
 - Same as Pfizer's vaccine for 60+
- FDA approved, not CDC recommended (yet)
- Protect newborns against RSV by vaccinating pregnant people in the latter part of pregnancy (24-36 weeks of gestation)
- Pregnant individuals generate antibodies against RSV and pass antibodies to their fetuses in the uterus
- Reduces the risk of severe lower respiratory tract disease caused by RSV by 82% at three months after birth and 69% at six months

STAT Reporting from the frontiers
of health and medicine

HEALTH

FDA approves Pfizer's RSV vaccine designed to protect newborns by immunizing parent



By [Helen Branswell](#) Aug. 21, 2023



RSV Developments: monoclonal antibody prevention

HEALTH

FDA approves RSV monoclonal antibody for infants, young children at high risk



By [Helen Branswell](#) July 17, 2023

[Reprints](#)



HEALTH

CDC recommends RSV monoclonal antibody for infants, high-risk young children



By [Jason Mast](#) Aug. 3, 2023

- Monoclonal antibodies against the virus, rather than vaccine that induces recipients' immune systems to make their own
- Nersevimab (Beyfortus) causes:
 - 70% decrease in risk of RSV infection that required medical care
 - 78.4% decrease in risk of an RSV-related hospitalization
- Two CDC recommendations
 - Give to all infants born during the RSV season or to those who are less than eight months of age as they enter their first RSV season
 - High-risk children ages 8 to 19 months should receive a second dose before their second RSV season



This is an official
CDC HEALTH ADVISORY

Distributed via the CDC Health Alert Network
September 5, 2023, 2:00 PM ET
CDCHAN-00498

**Increased Respiratory Syncytial Virus (RSV) Activity in Parts
of the Southeastern United States: New Prevention Tools
Available to Protect Patients**

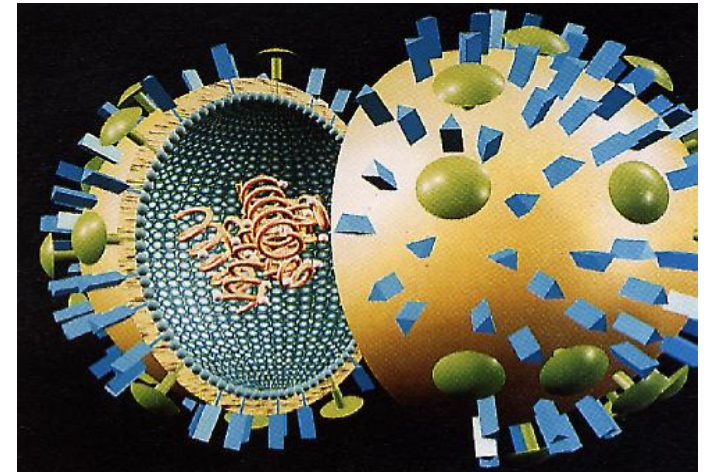
Summary

The Centers for Disease Control and Prevention (CDC) is issuing this Health Alert Network (HAN) Health Advisory to notify clinicians and caregivers about increases in respiratory syncytial virus (RSV) activity across some parts of the Southeastern United States in recent weeks, suggesting a continued shift toward seasonal RSV trends observed prior to the COVID-19 pandemic. Historically, such regional increases have predicted the beginning of RSV season nationally, with increased RSV activity spreading north and west over the following 2–3 months. RSV can cause severe disease in infants, young children, and older adults.



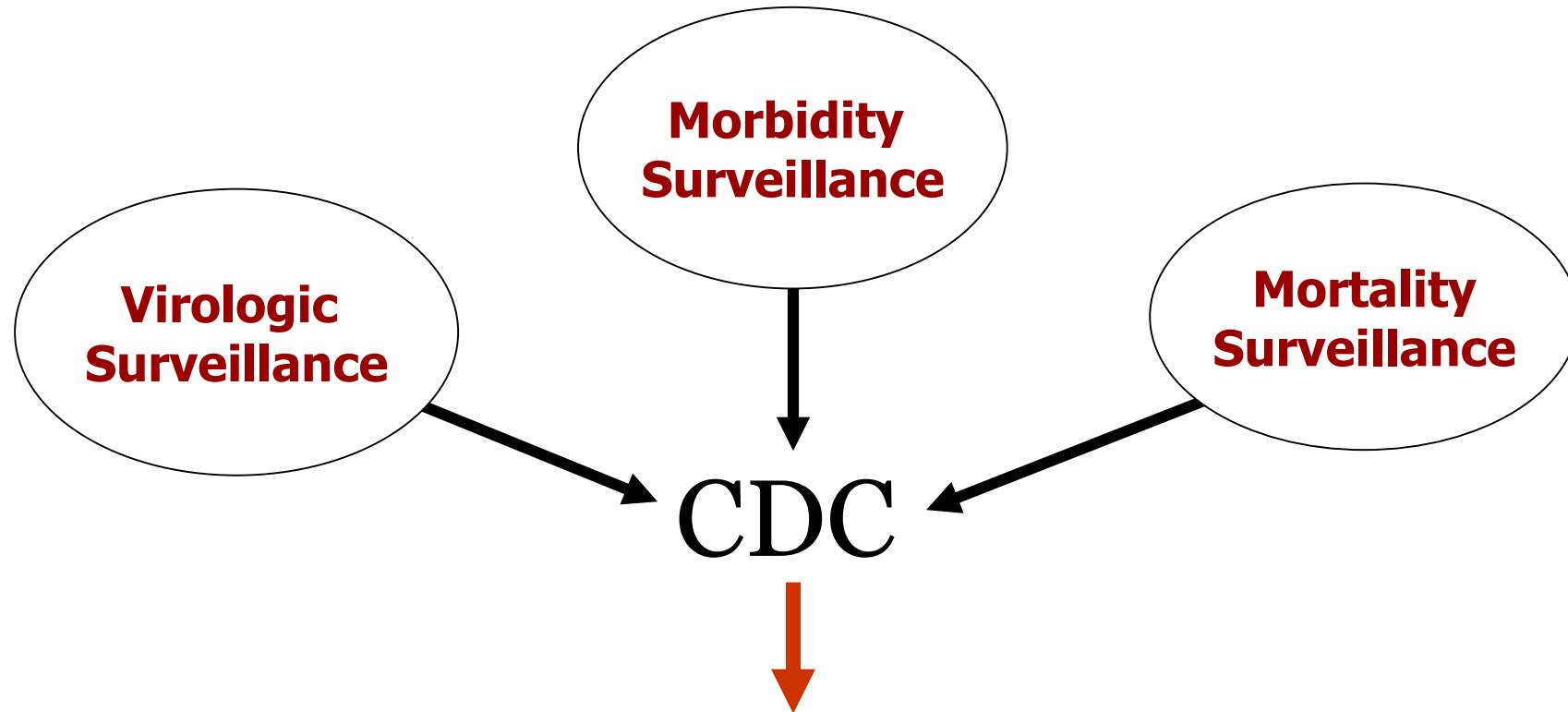
Influenza virus: Changeability is its hallmark

- Influenza types A, B, C and D
 - A and B are major human pathogens
- Negative-sense segmented RNA genome
 - 8 separate RNA segments
- Two major surface proteins of A and B viruses:
Hemagglutinin (HA) and **Neuraminidase (NA)**
 - Role in pathogenesis
 - Defines subtypes
- Annual epidemics
 - Antigenic drift – small changes in HA and NA
- Periodic pandemic
 - Antigenic shift – HA that is new to the human population





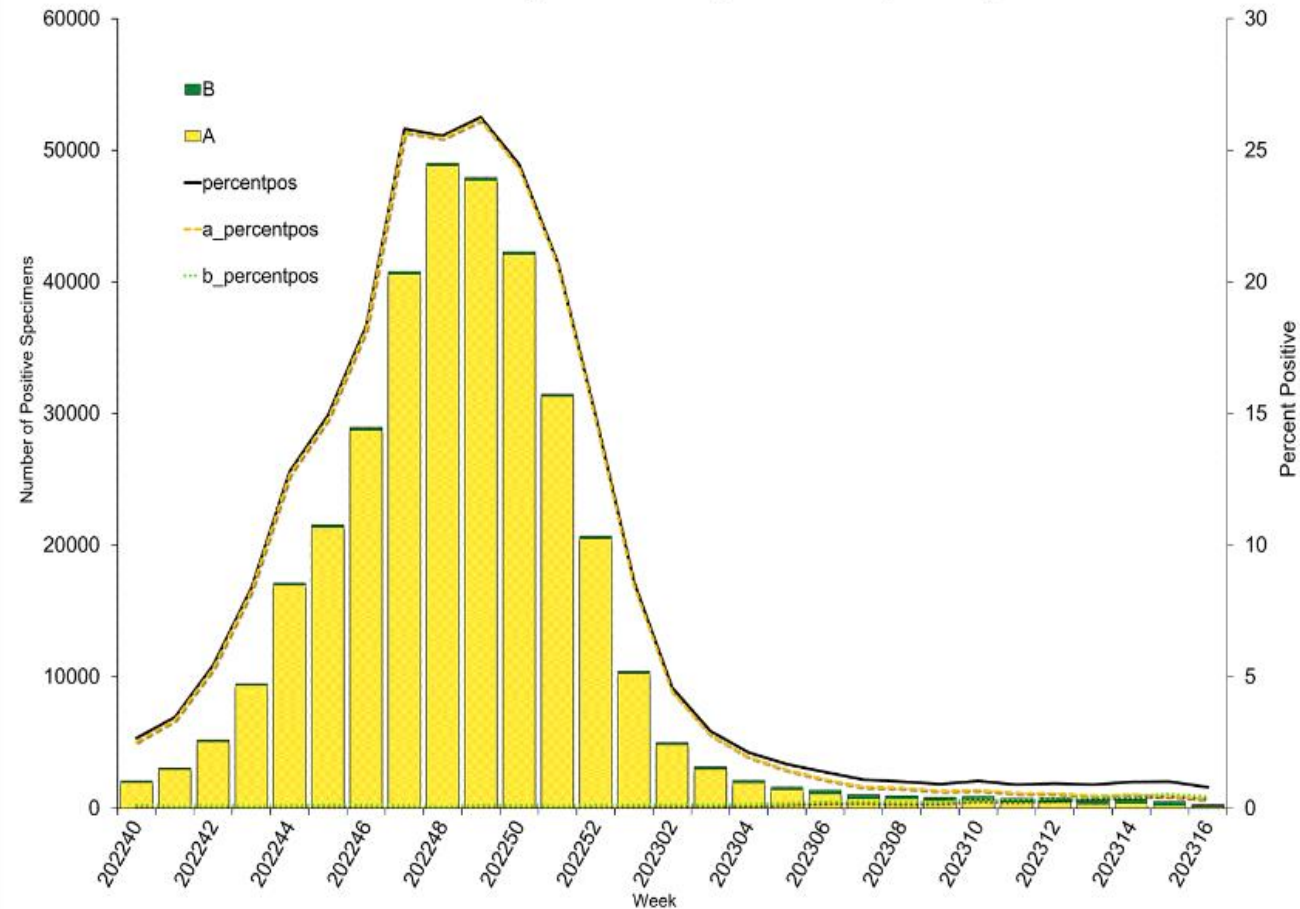
U.S. Influenza Surveillance





The 2022-23 Influenza Season

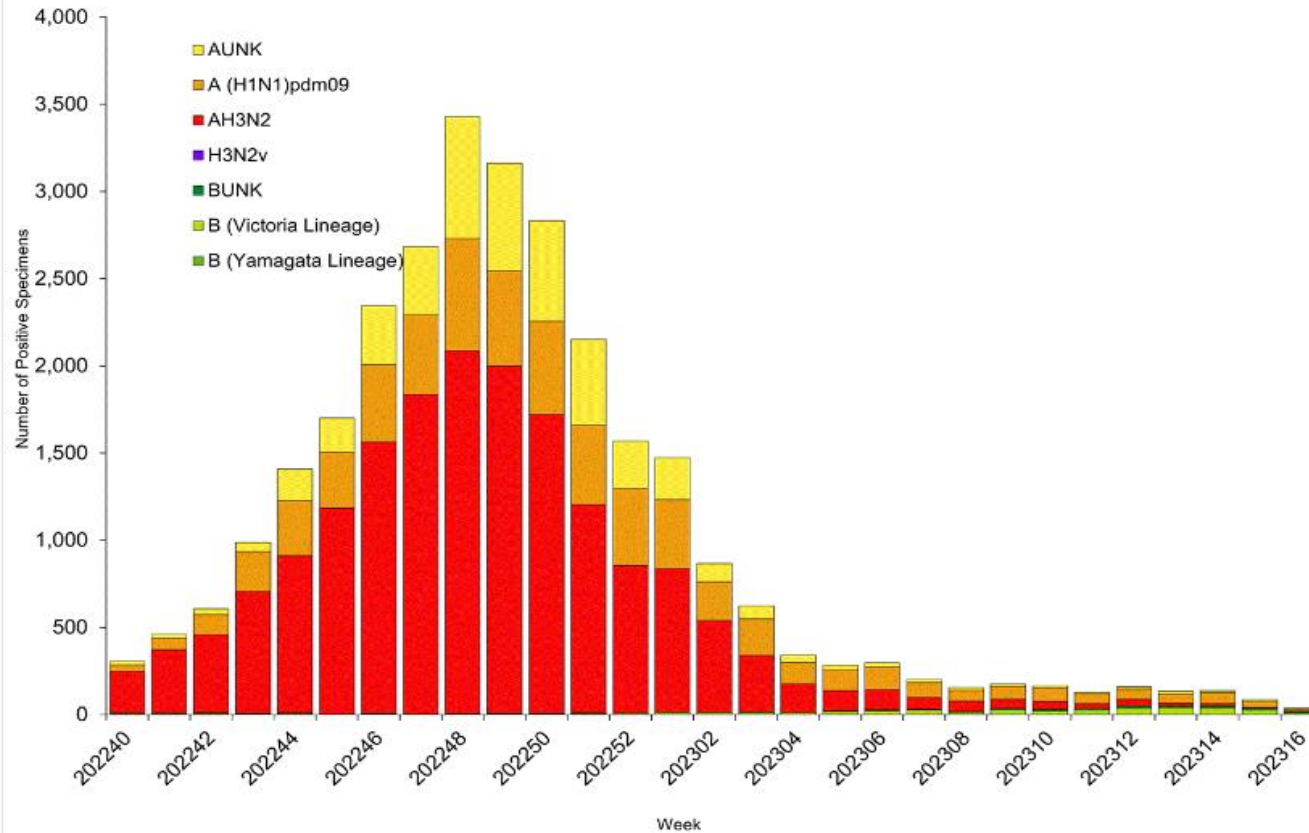
Influenza Positive Tests Reported to CDC by U.S. Clinical Laboratories, National Summary, October 2, 2022 – April 22, 2023





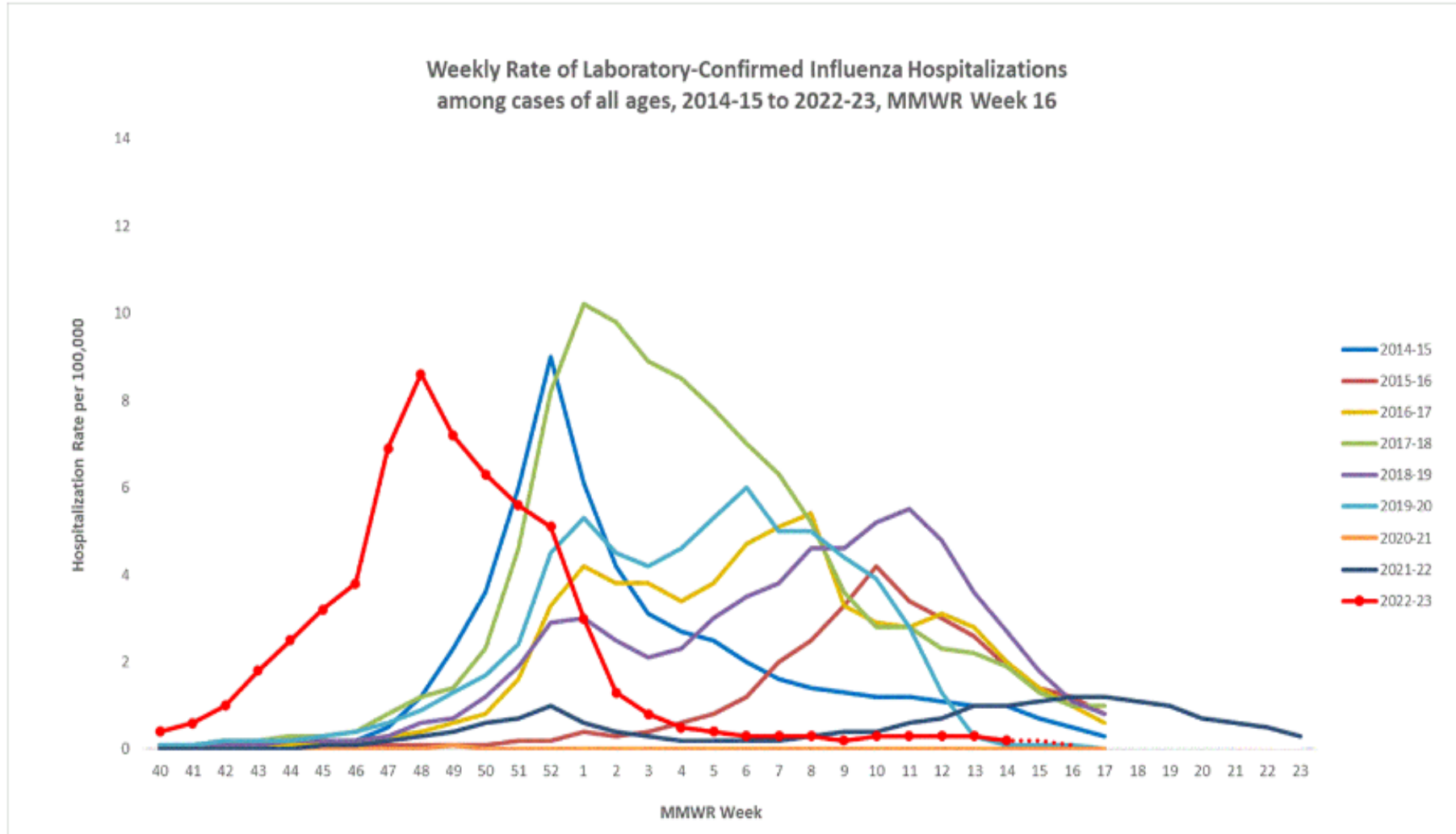
The 2022-23 Influenza Season

Influenza Positive Tests Reported to CDC by U.S. Public Health Laboratories, National Summary, October 2, 2022 – April 22, 2023





The Severe, Short, and Shifted 2022-23 Influenza Season





Influenza antiviral resistance: thankfully low

Antiviral Medication			Total Viruses	A/H1	A/H3	B/Victoria	B/Yamagata
Neuraminidase Inhibitors	Oseltamivir	Viruses Tested	2,774	1,017	1,622	135	0
		Reduced Inhibition	1 (<0.1%)	1 (0.1%)	0 (0%)	0 (0%)	0 (0%)
		Highly Reduced Inhibition	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
	Peramivir	Viruses Tested	2,774	1,017	1,622	135	0
		Reduced Inhibition	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
		Highly Reduced Inhibition	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
	Zanamivir	Viruses Tested	2,774	1,017	1,622	135	0
		Reduced Inhibition	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
		Highly Reduced Inhibition	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
PA Cap-Dependent Endonuclease Inhibitor	Baloxavir	Viruses Tested	2,690	974	1,583	133	0
		Reduced Susceptibility	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)



Influenza Vaccines

Morbidity and Mortality Weekly Report

Interim Effectiveness Estimates of 2023 Southern Hemisphere Influenza Vaccines in Preventing Influenza-Associated Hospitalizations — REVELAC-i Network, March–July 2023

Ashley L. Fowlkes, ScD^{1,*}; Francisco Nogareda, MPH^{2,*}; Annette Regan, PhD^{2,3}; Sergio Loayza, MD²; Jose Mendez Mancio²; Lindsey M. Duca, PhD¹; Paula Couto, MD²; Juliana Leite, PhD²; Angel Rodriguez, MD²; Daniel Salas, MD²; Eduardo Azziz-Baumgartner, MD¹; REVELAC-i Network

- Vaccine effectiveness against hospitalization associated with any influenza virus during the 2023 Southern Hemisphere season was 51.9% (95% Confidence Interval [CI] 39.2%– 62.0%), including 55.2% (95% CI: 41.8%– 65.5%) against the predominating A(H1N1)pdm09.



Influenza Vaccine Recommendations

Centers for Disease Control and Prevention

MMWR

Morbidity and Mortality Weekly Report

Recommendations and Reports / Vol. 72 / No. 2

August 25, 2023

**Prevention and Control of Seasonal Influenza with
Vaccines: Recommendations of the Advisory
Committee on Immunization Practices —
United States, 2023–24 Influenza Season**

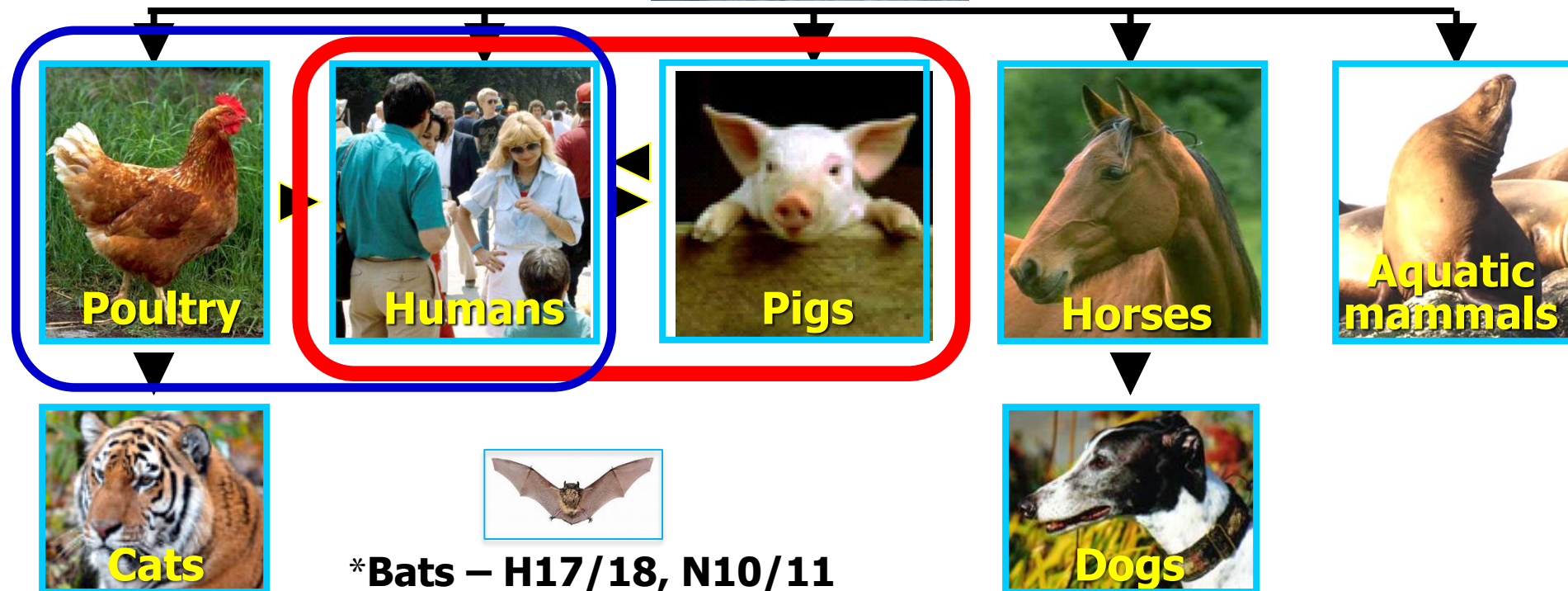
- Routine annual influenza vaccination is recommended for all persons aged ≥ 6 months who do not have contraindications
- All seasonal influenza vaccines expected to be available in the United States for the 2023–24 season are quadrivalent
 - A(H1N1)pdm09
 - A(H3N2)
 - B/Victoria
 - B/Yamagata
- 3 types
 - Inactivated influenza vaccines (IIV_{4s})
 - Recombinant influenza vaccine (RIV₄)
 - Live attenuated influenza vaccine (LAIV₄)



Pandemic Influenza Generation: Viruses at the Human-Animal Interface

Influenza A

- H1 - H16*
- N1 - N9*





Laboratory-Based Surveillance Plan, 2023-24



Influenza A Unsubtypable (by PCR)

Influenza A Swine Variant Virus Testing



Avian Influenza Suspects





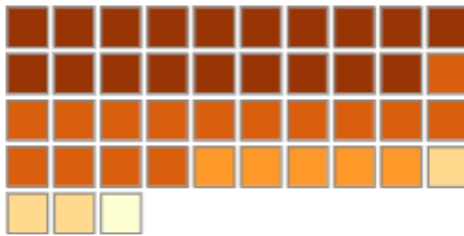
SARS-CoV-2 Surveillance

COVID-19 Wastewater Surveillance in Wisconsin

Date Updated: 9/19/2023

Total population served: 2,838,588

Statewide presence of SARS-CoV-2 in wastewater



SARS-CoV-2 concentration categories

Very high
High
Moderate
Low
Very low



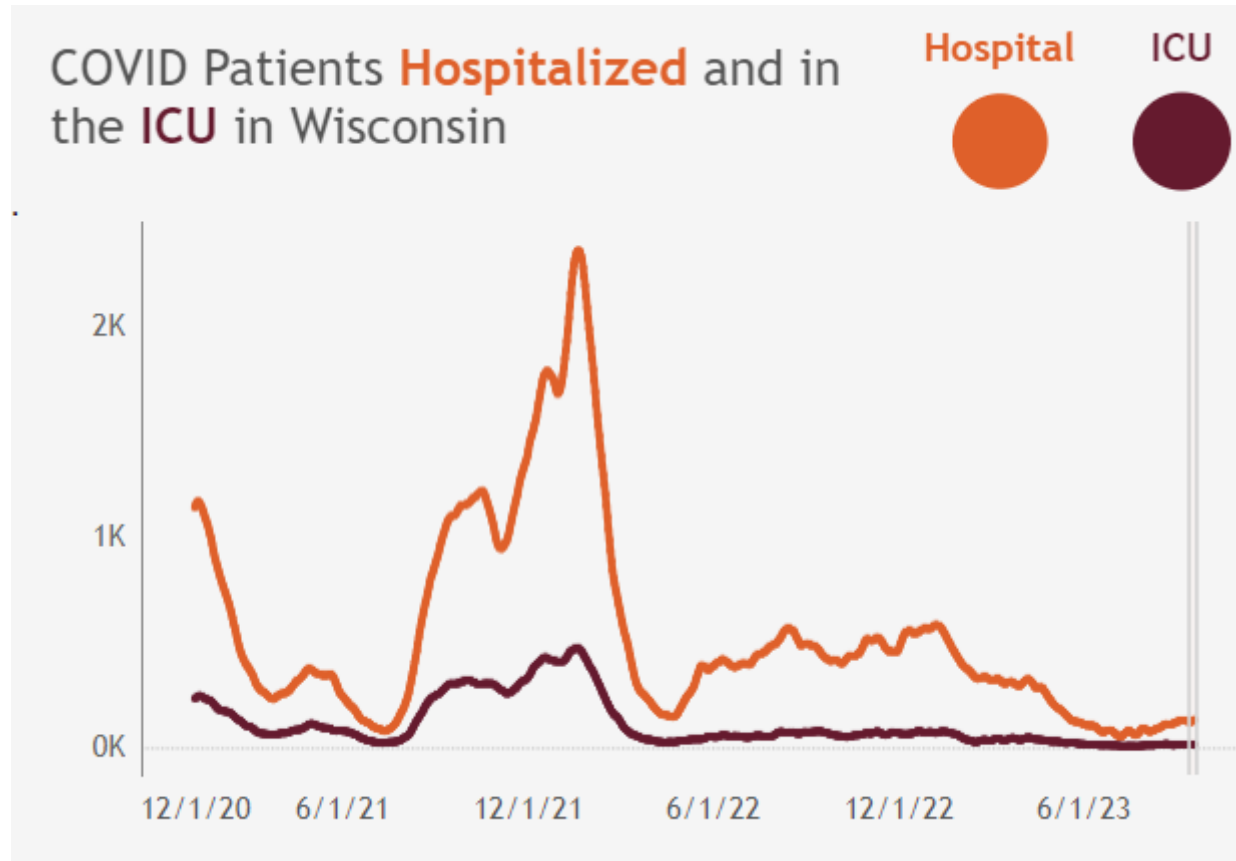
Sites with a significant increase (+):
9

Statewide average SARS-CoV-2 levels in wastewater over time





SARS-CoV-2 Surveillance





SARS-CoV-2 Genomic Surveillance

- Thank you for sending up to 5 SARS-CoV-2 positives per week for sequencing!
- 4 other labs in Wisconsin also sequencing
 - City of Milwaukee Health Department Laboratory
 - Marshfield Clinic Research Institute
 - UW-Madison AIDS Vaccine Research Laboratory
 - Medical College of Wisconsin





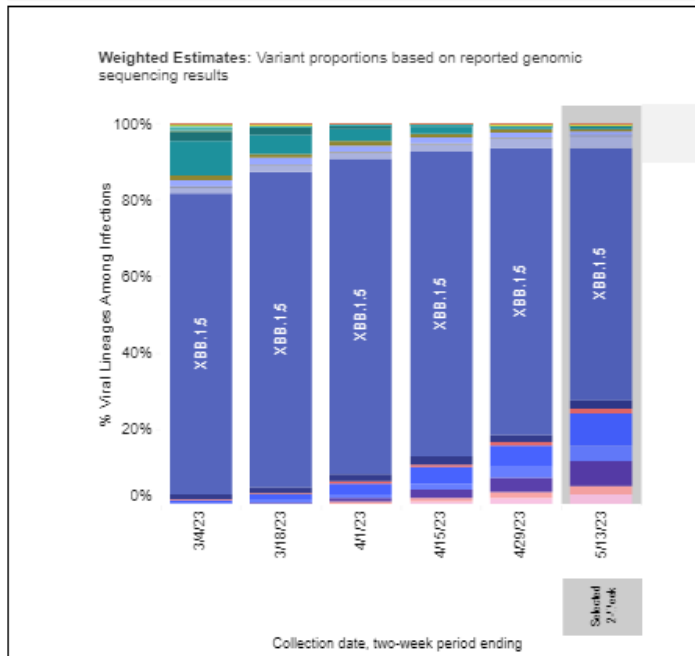
SARS-CoV-2 Genomic Surveillance

HHS Region: Data for the 2-Week Period Ending on: View: Nowcast and Weighted Estimates Weighted Estimates Only

This shows weighted and Nowcast estimates for the United States. The table and map show estimates for the 2-week period ending on 5/13/2023 (Weighted).

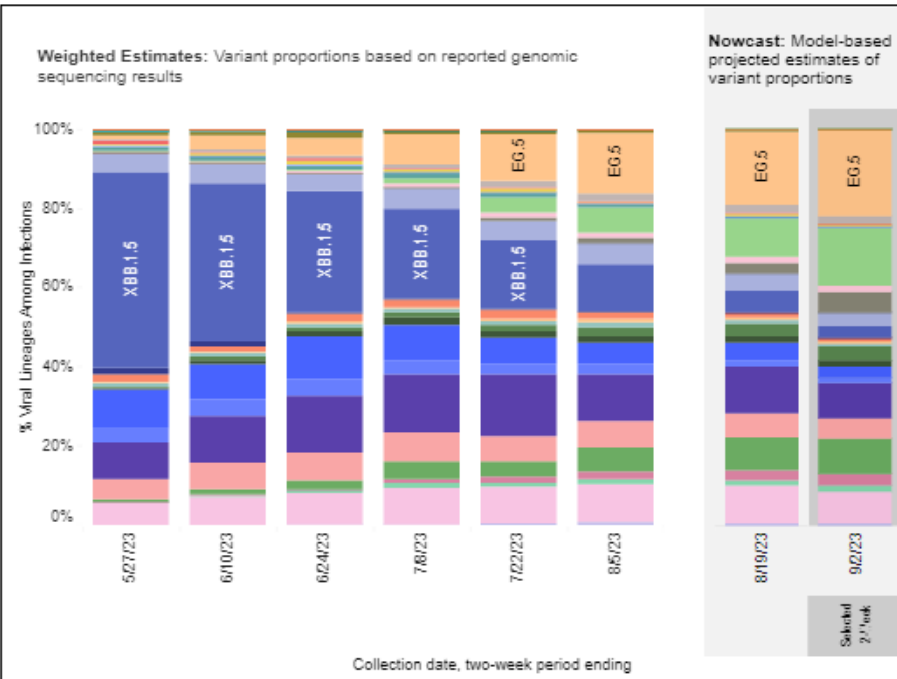
Weighted and Nowcast Estimates in United States for 2-Week Periods in 2/19/2023 – 5/13/2023

Hover over (or tap in mobile) any lineage of interest to see the amount of uncertainty in that lineage estimate.



Weighted and Nowcast Estimates in United States for 2-Week Periods in 5/14/2023 – 9/2/2023

Hover over (or tap in mobile) any lineage of interest to see the amount of uncertainty in that lineage's estimate.



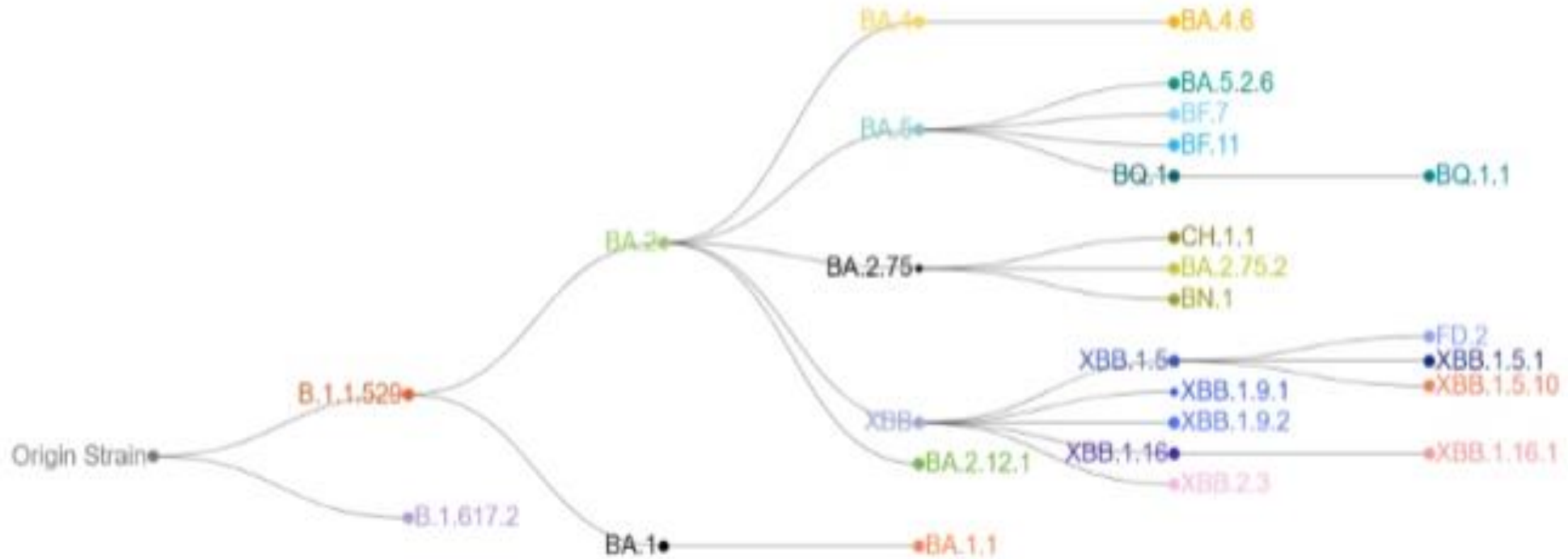
Nowcast Estimates in United States for 8/20/2023 – 9/2/2023

USA		%Total	95%PI
Omicron	EG.5	21.5%	19.0-24.3%
	FL.1.5.1	14.5%	10.5-19.6%
	XBB.1.16.6	9.2%	7.6-11.0%
	XBB.1.16	8.9%	7.8-10.3%
	XBB.2.3	8.1%	7.0-9.2%
	HV.1	5.1%	3.3-7.9%
	XBB.1.16.1	5.0%	4.2-6.0%
	XBB.1.5.70	3.5%	2.8-4.7%
	XBB	3.3%	2.7-4.1%
	XBB.1.5	3.1%	2.6-3.7%
	XBB.1.9.1	3.0%	2.5-3.5%
	XBB.1.16.11	2.8%	1.8-4.5%
	EG.6.1	1.8%	1.2-2.7%
	GE.1	1.6%	1.1-2.4%
	XBB.1.5.72	1.6%	1.2-2.1%
	XBB.1.42.2	1.3%	0.7-2.3%
	XBB.1.9.2	1.1%	0.9-1.3%
	XBB.1.5.10	0.9%	0.7-1.2%
	XBB.1.5.68	0.8%	0.5-1.1%
	XBB.2.3.8	0.7%	0.4-1.2%
	FD.1.1	0.6%	0.4-0.8%
	FE.1.1	0.5%	0.3-0.8%
	XBB.1.5.59	0.4%	0.3-0.6%
	CH.1.1	0.4%	0.3-0.6%
	EU.1.1	0.1%	0.1-0.2%
	XBB.1.5.1	0.0%	0.0-0.1%
	BA.2.12.1	0.0%	0.0-0.1%
	BA.5	0.0%	0.0-0.0%
	BQ.1	0.0%	0.0-0.0%
	FD.2	0.0%	0.0-0.0%
	B.1.1.529	0.0%	0.0-0.1%
Other	Other*	0.0%	0.0-0.1%

* Enumerated lineages are US VOC and lineages circulating above 1% nationally in at least one 2-week period. "Other" represents the aggregation of lineages which are circulating <1% nationally during all 2-week periods displayed.



SARS-CoV-2 Genomic Surveillance





SARS-CoV-2 Vaccine update

FDA okays new coronavirus vaccine as respiratory illness season nears

The updated shot targets omicron subvariants circulating throughout the United States

By [Laurie McGinley](#) and [Lena H. Sun](#)

Updated September 11, 2023 at 5:00 p.m. EDT | Published September 11, 2023 at 1:50 p.m. EDT

HEALTH

CDC recommends updated Covid vaccines for everyone 6 months and older

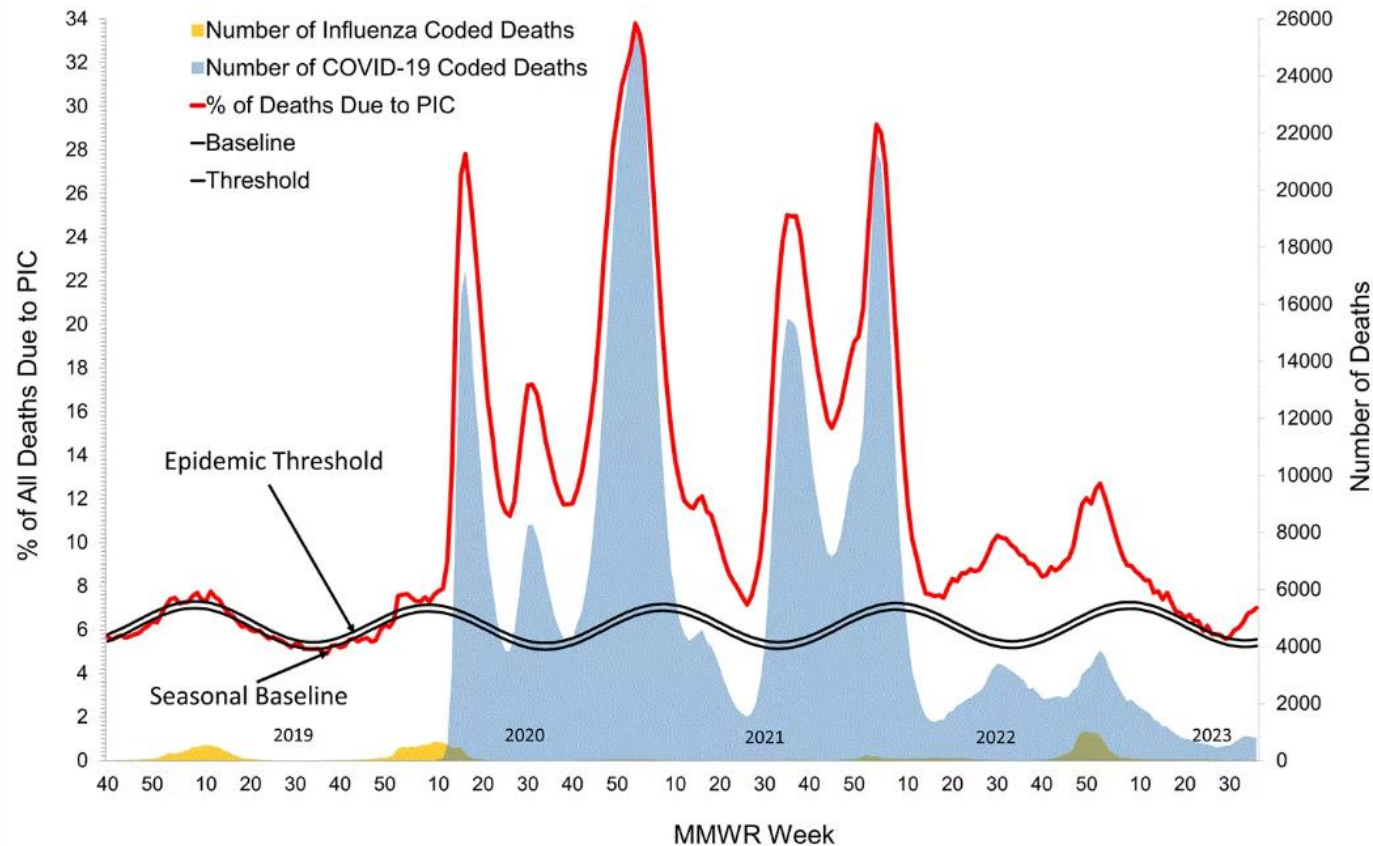
https://www.washingtonpost.com/health/2023/09/11/covid-vaccine-new-booster/?utm_campaign=wp_post_most&utm_medium=email&utm_source=newsletter&wpisrc=nl_most

https://www.statnews.com/2023/09/12/covid-vaccine-new-pfizer-moderna-recommendation/?utm_medium=email&utm_source=rasa_io&utm_campaign=newsletter



Deaths from PIC

Pneumonia, Influenza, and COVID-19 Mortality from
the National Center for Health Statistics Mortality Surveillance System
Data as of September 14, 2023





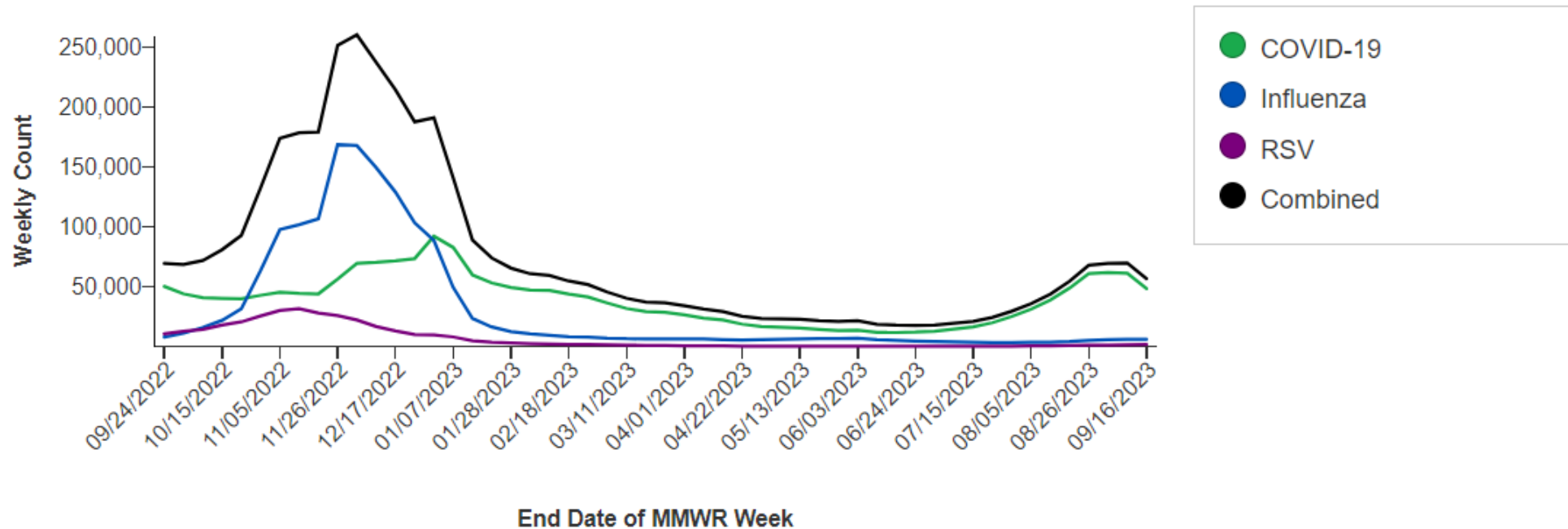
New-ish data visualizations from CDC

Weekly Emergency Department Visits by Age Group

Make a selection from the filters to change the visualization information.

Age Group

All Ages





New-ish data visualizations from CDC

Respiratory Virus Laboratory Emergency Department Network Surveillance (RESP-LENS)



Download Data

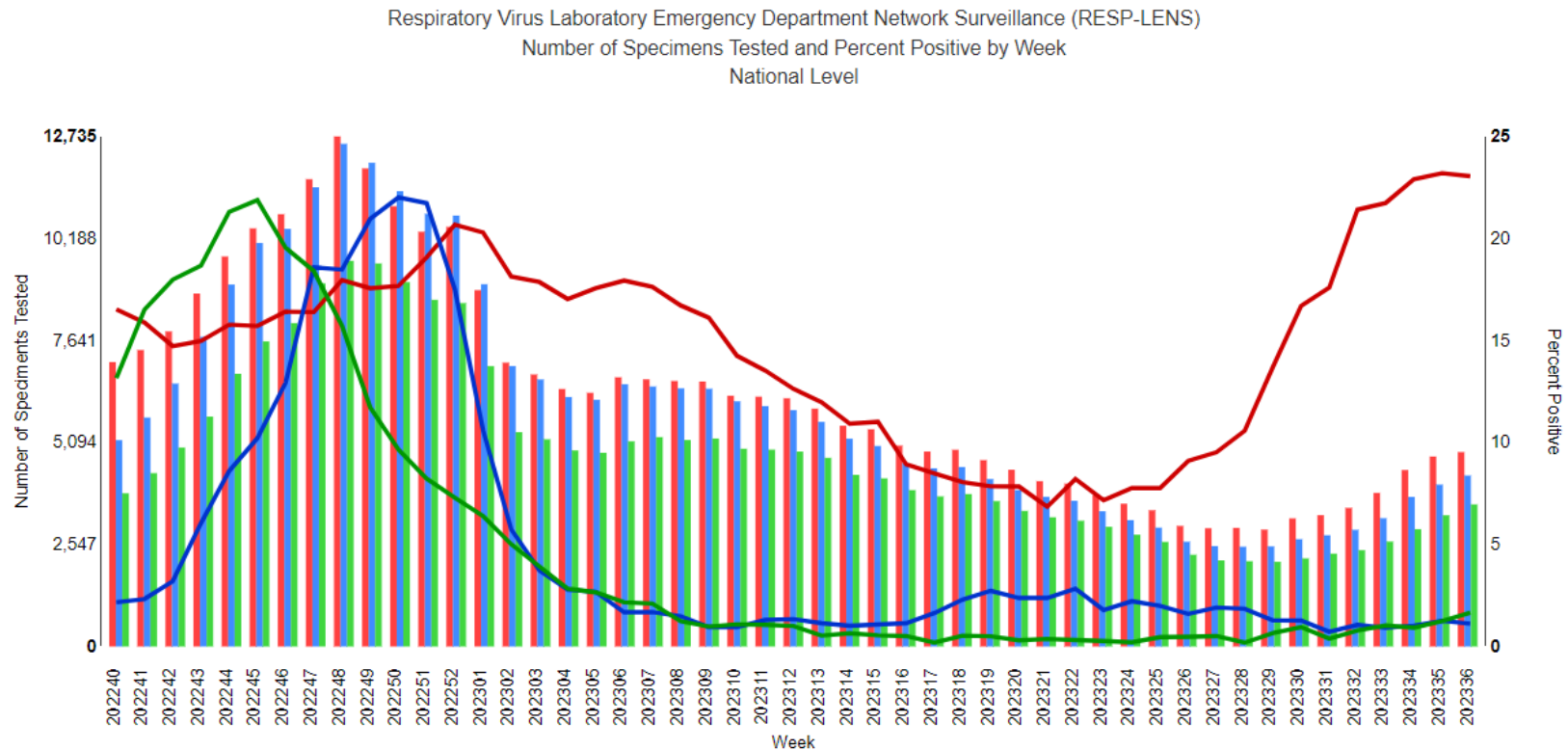


View by

National

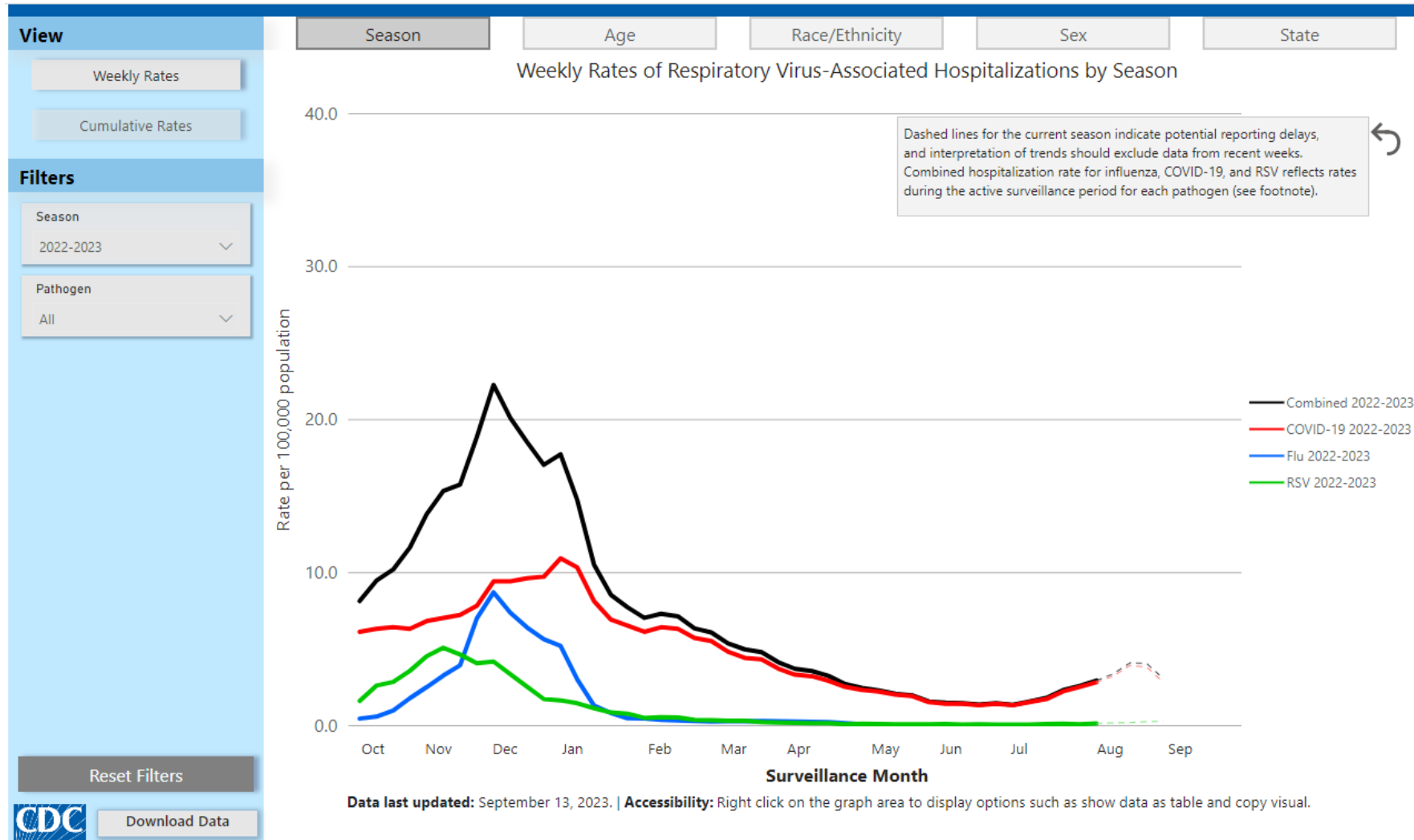
Virus:

- All Viruses
- SARS-CoV-2
- Influenza
- RSV



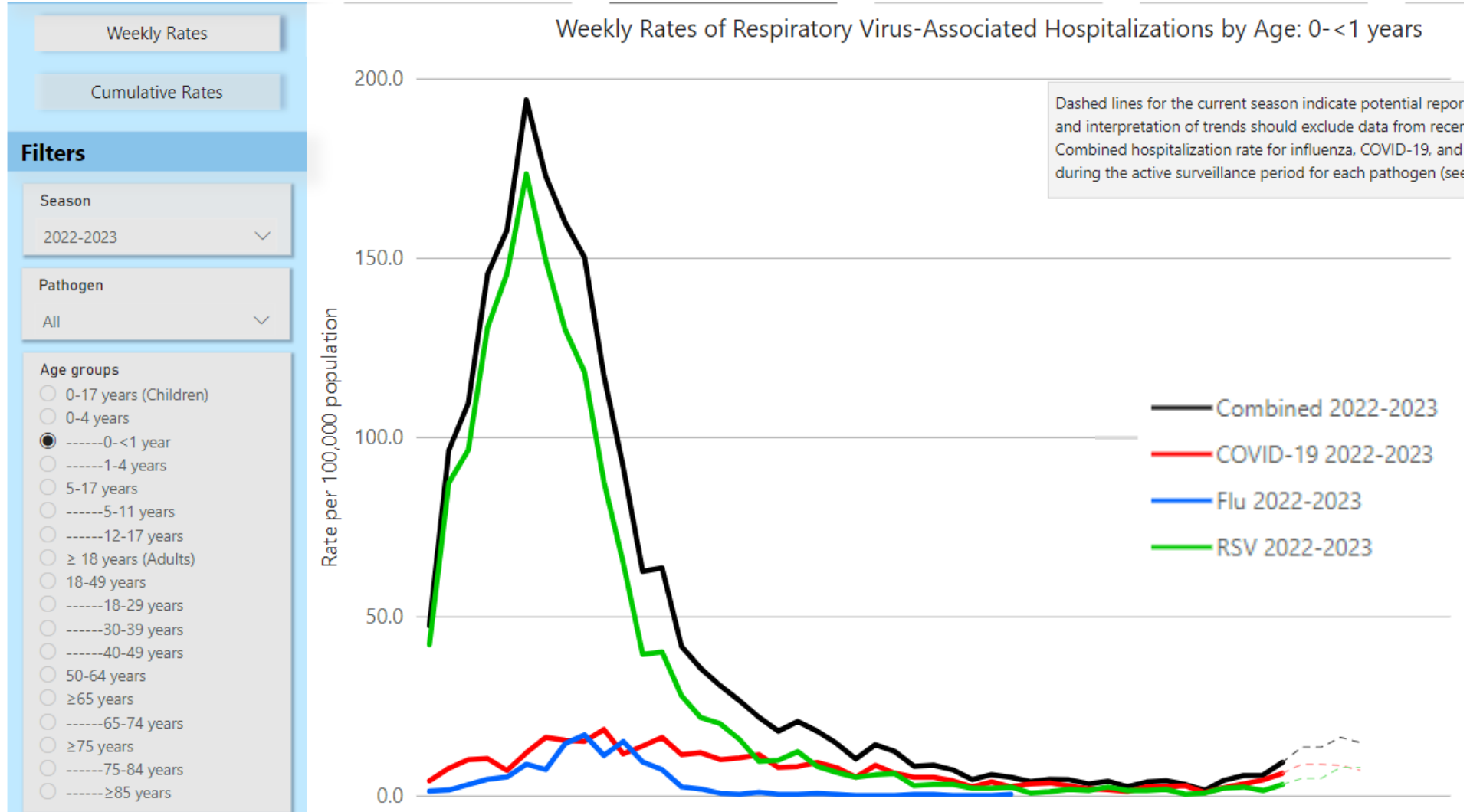


New-ish data visualizations from CDC





Hospitalizations <1 y.o.





Wastewater as additional surveillance data

Morbidity and Mortality Weekly Report

Wastewater Surveillance Data as a Complement to Emergency Department Visit Data for Tracking Incidence of Influenza A and Respiratory Syncytial Virus — Wisconsin, August 2022–March 2023

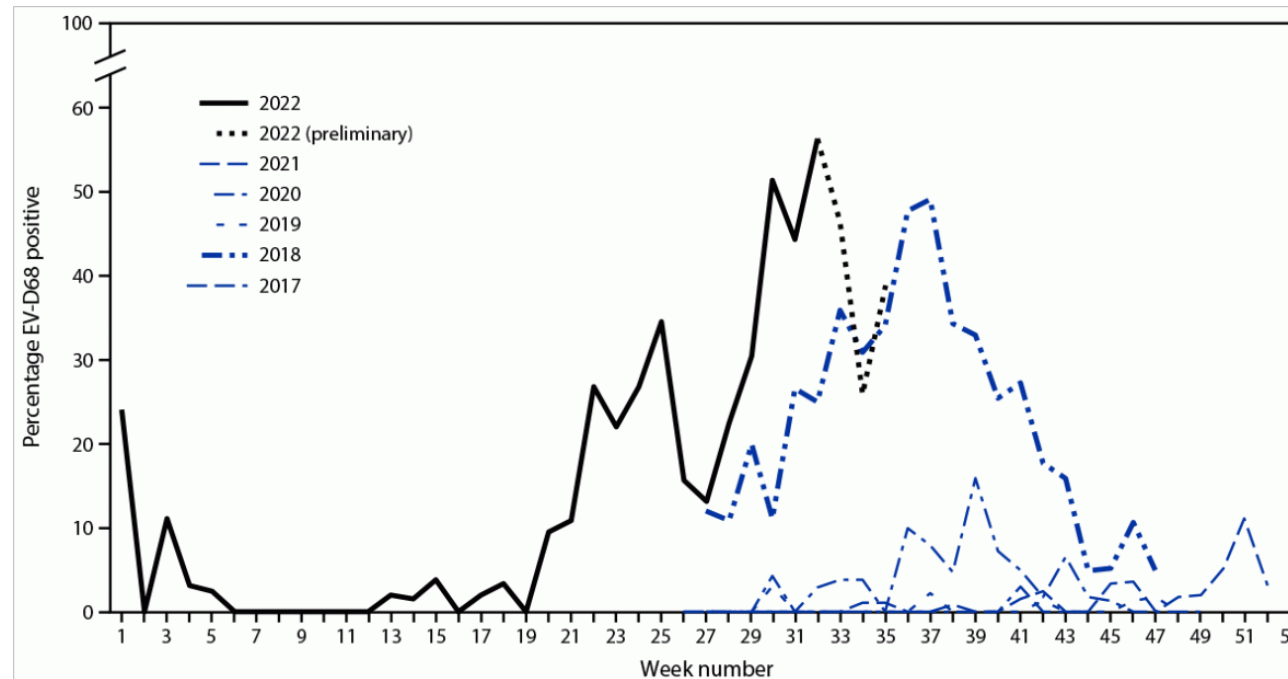
Peter M. DeJonge, PhD^{1,2}; Carly Adams, PhD^{1,3}; Ian Pray, PhD^{2,4}; Melissa K. Schussman, MS⁵; Rebecca B. Fahney⁶; Martin Shafer, PhD⁶; Dagmara S. Antkiewicz, PhD⁶; Adélaïde Roguet, PhD⁶

- Higher concentrations of influenza A virus and RSV in wastewater associated with higher numbers of associated ED visits
- Wastewater surveillance can complement conventional methods of influenza and RSV surveillance
- We're currently comparing weekly clinical lab data to wastewater data



Enterovirus D68/AFM

- Randomized study of 5,633 children with ARI seeking emergency care
 - RV/EV detected in 26.4% of these patients, 17.4% of whom had a positive EV-D68 result
 - EV-D68 positivity peaked at 56% in August **2022**

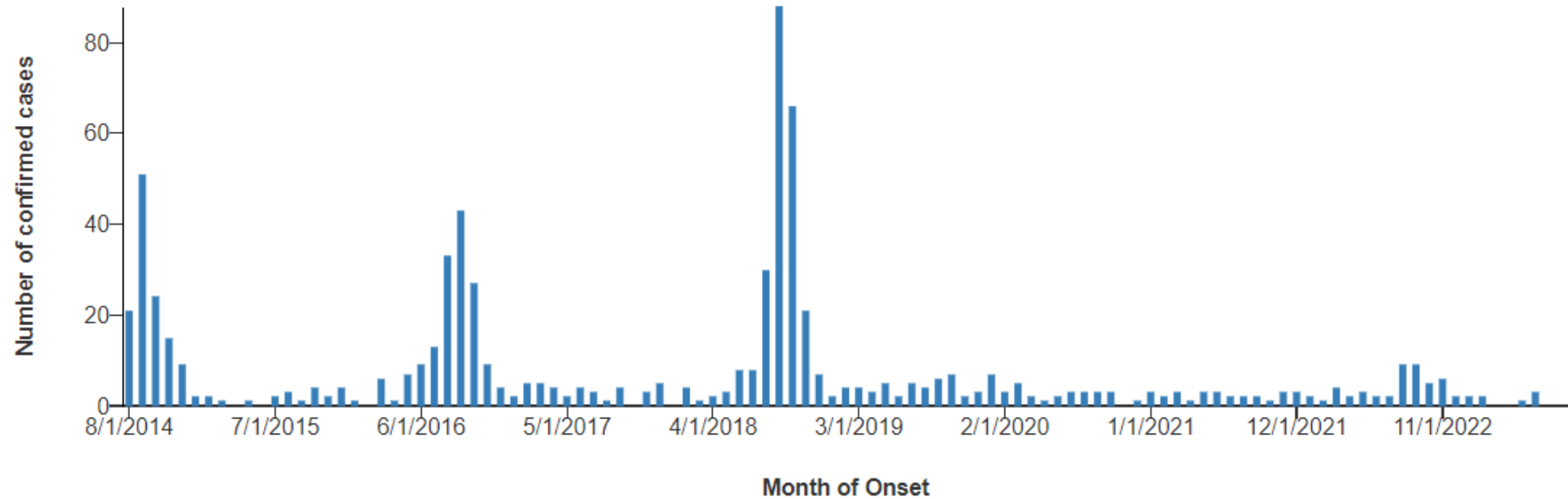


Abbreviation: EV-D68 = enterovirus D68.



Acute Flaccid Myelitis (AFM)

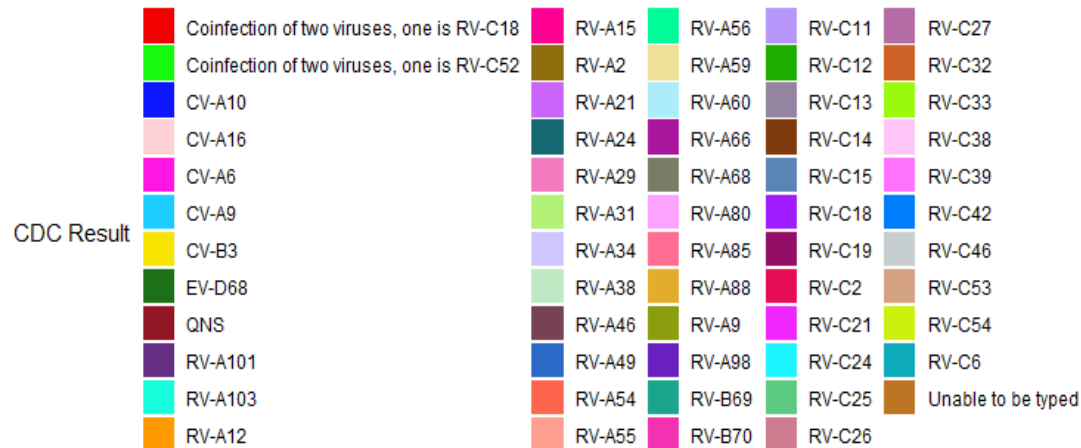
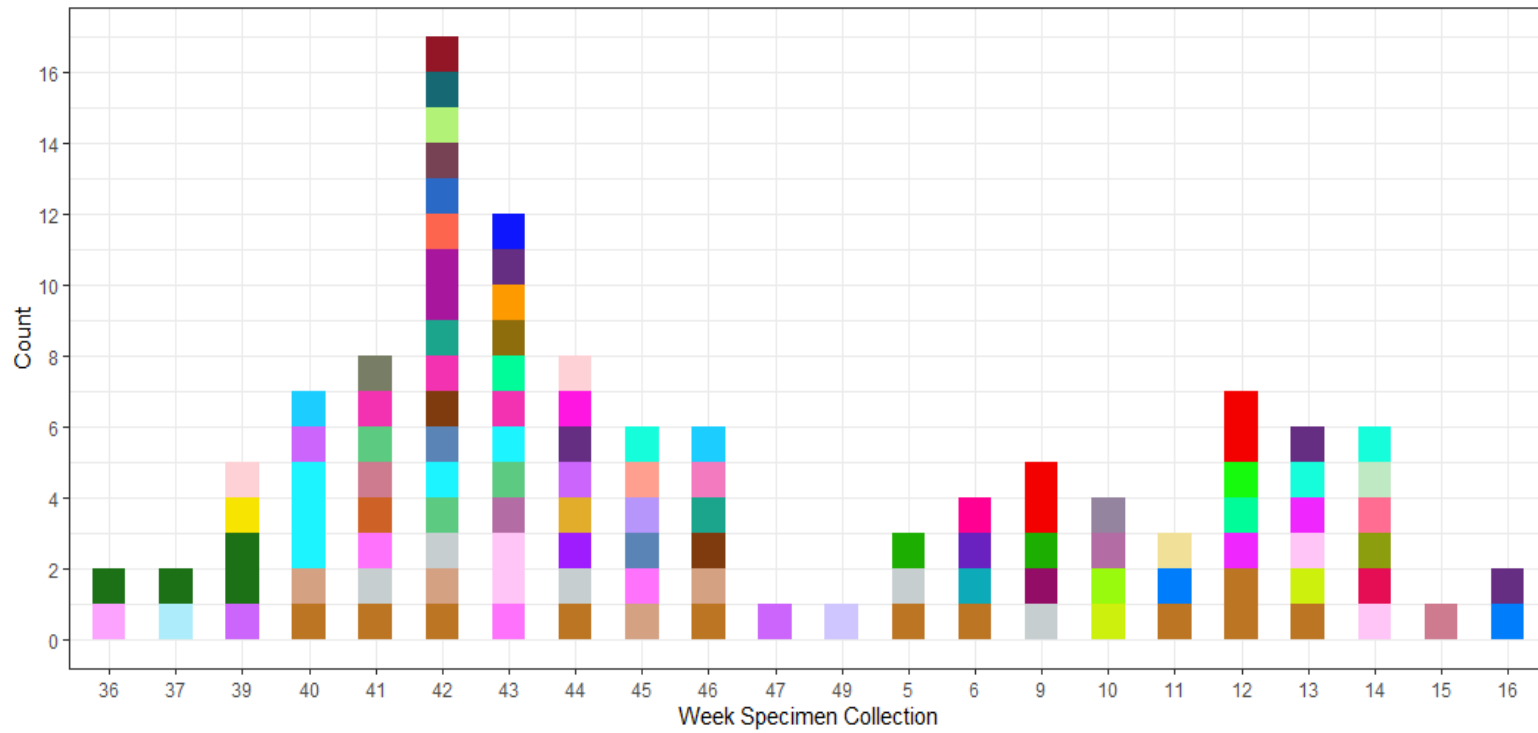
Confirmed AFM cases by CDC





Rhinovirus/Enterovirus in Wisconsin in 2022-23

Virus	Number	Proportion
Coxsackievirus	7	6%
EV-D68	4	3%
Rhinovirus A	35	30%
Rhinovirus B	5	4%
Rhinovirus C	48	41%
co-infection RV	6	5%
Unable to be typed	12	10%



105 samples typed:
57 different serotypes!



Not a virus, but worth mentioning!

FIGURE 1

Percentage of Encounters for Strep Throat

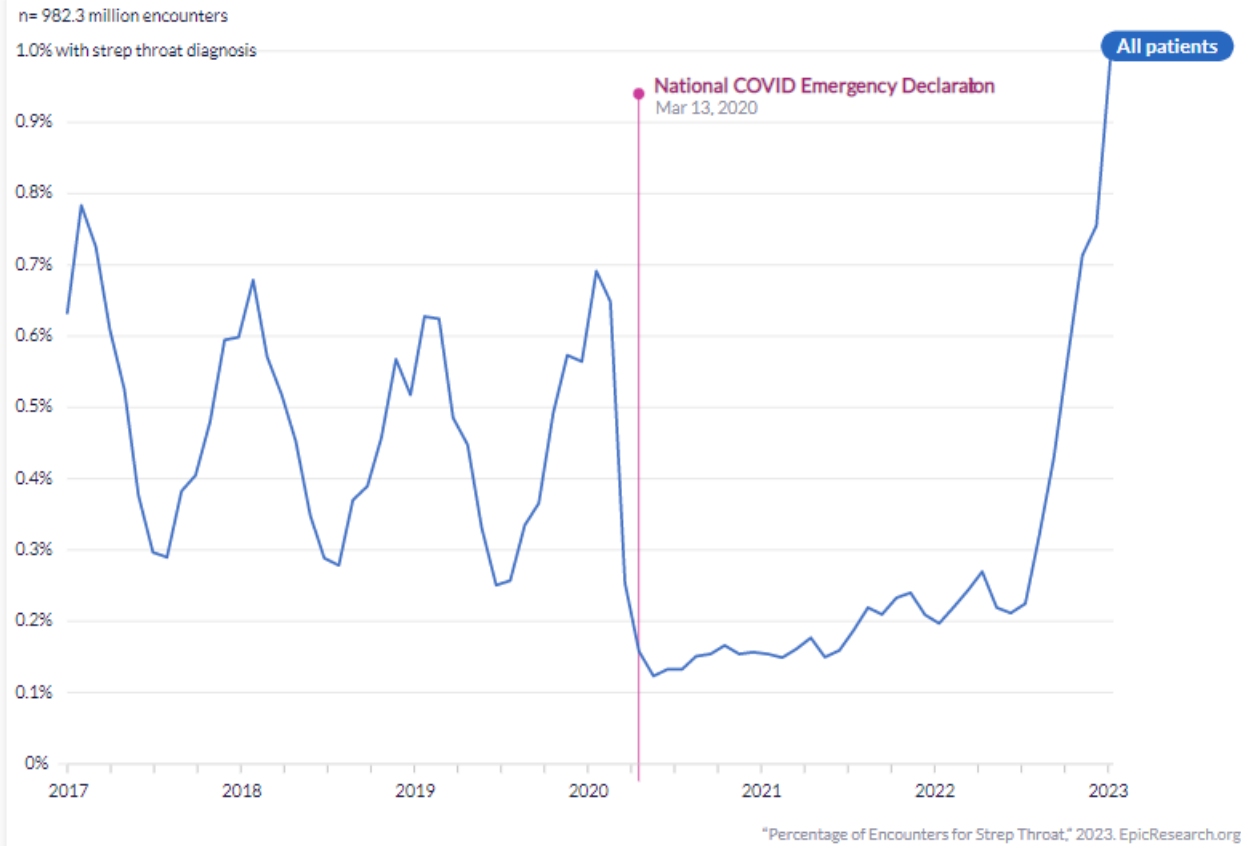


Figure 1. Percentage of office visit and emergency encounters with a strep pharyngitis or strep tonsillitis diagnosis by month from January 2017 to February 2023.



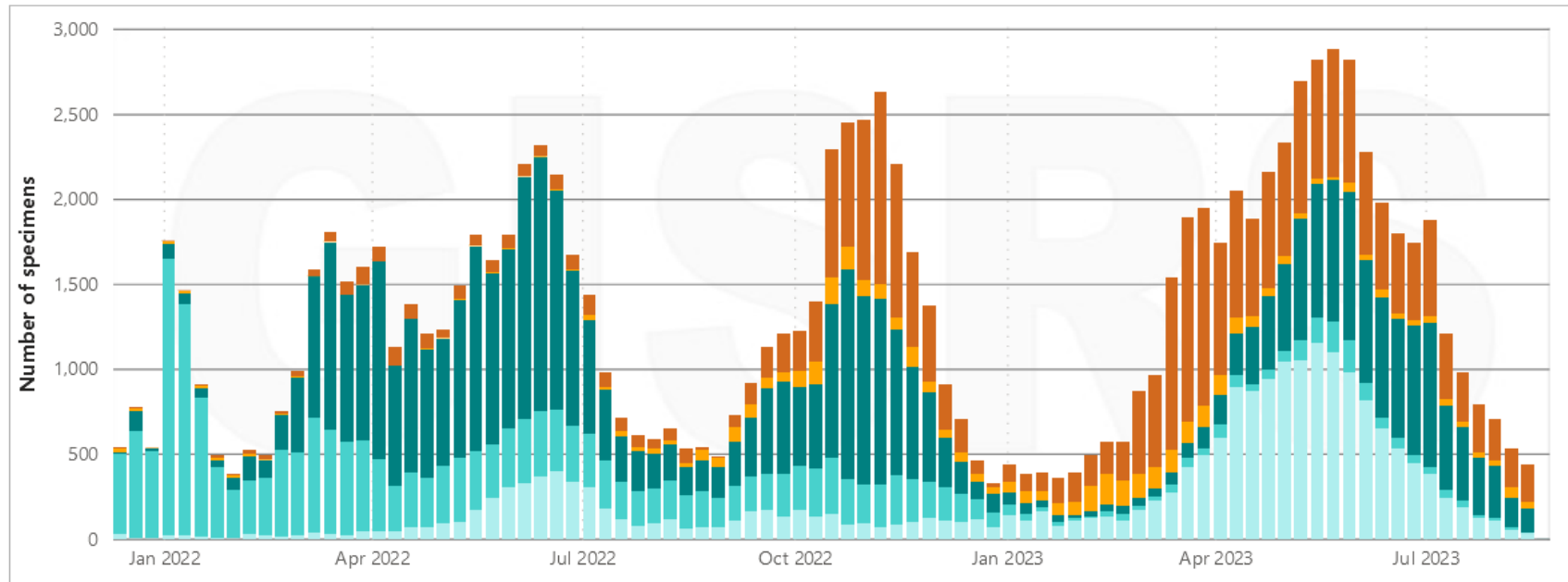
Wisconsin Respiratory Surveillance 2023-2024



WHO Global Influenza Surveillance and Response System (GISRS)

Southern hemisphere, 2022-23

Number of specimens positive for influenza by subtype



Influenza subtype

- Select all
- Influenza B (lineage not determined)
- Influenza B (Victoria)
- Influenza B (Yamagata)
- Influenza A not subtyped
- Influenza A(H3)
- Influenza A(H1N1)pdm09
- Influenza A(H1)
- Influenza A(H5)

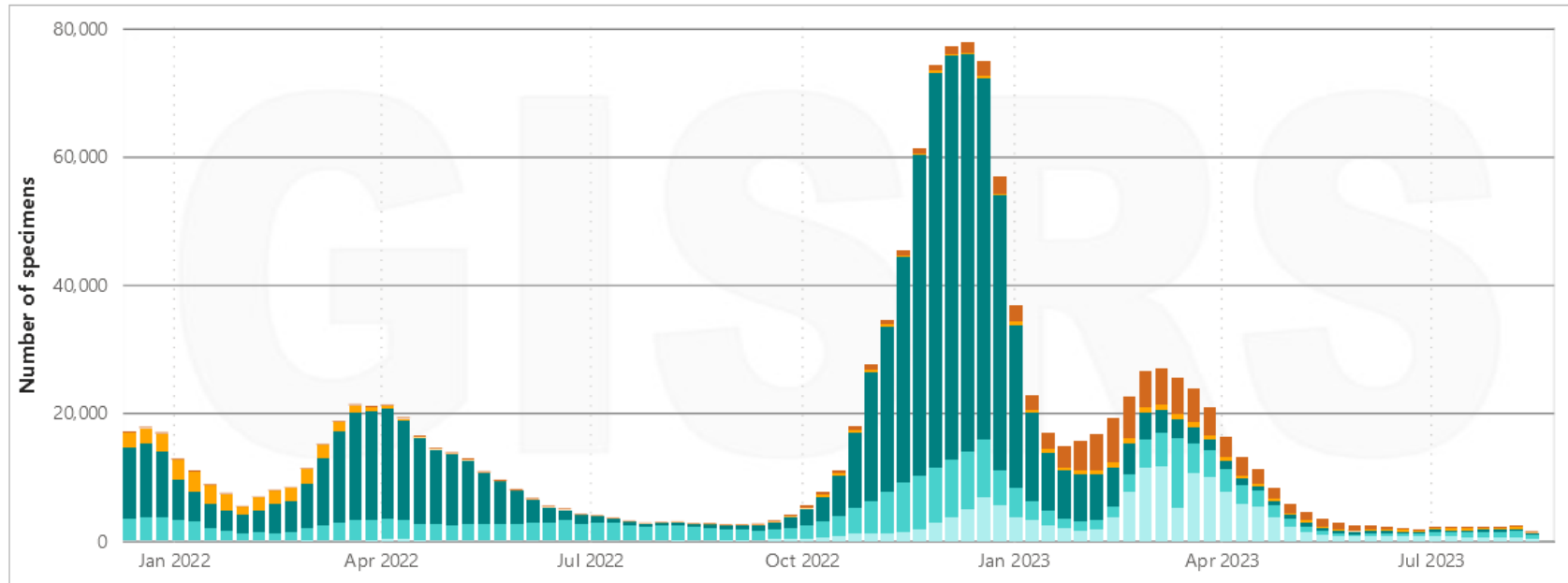




WHO Global Influenza Surveillance and Response System (GISRS)

Northern hemisphere, 2022-23

Number of specimens positive for influenza by subtype



Influenza subtype

- Select all
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- Influenza A not subtyped
- Influenza A(H3)
- Influenza A(H1N1)pdm09
- Influenza A(H1)
- Influenza A(H5)

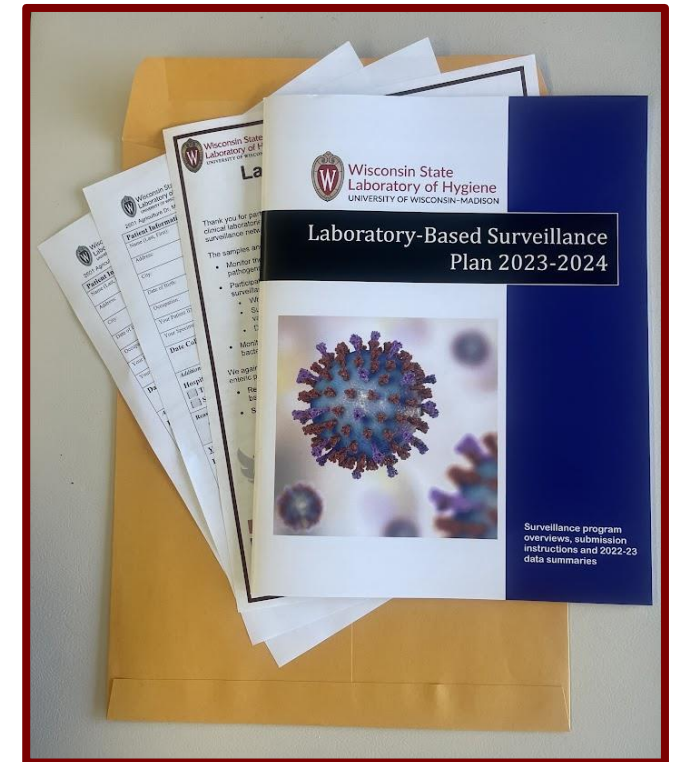


Wisconsin Respiratory Surveillance Plan 2023-2024



Welcome to the 2023-24 Flu Season!

- WSLH mails out a Surveillance packet to all clinical labs in WI performing testing
 - Updated “Laboratory-Based Surveillance plan” booklet
 - Customized surveillance requisition forms
 - Introductory letter
- Email wcln@slh.wisc.edu for more information!



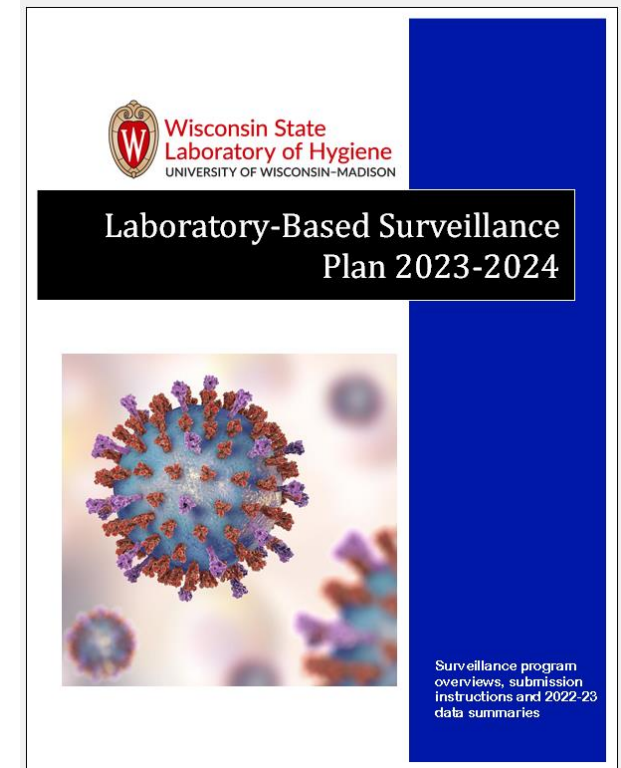


Respiratory Surveillance in Wisconsin

- Overall picture: A more unified approach to respiratory surveillance
 - Plans are outlined in the “Laboratory-Based Surveillance Plan 2023-24” booklet
 - .PDF version available online at:
www.slh.wisc.edu/wcln-surveillance/

Two Branches of Surveillance:

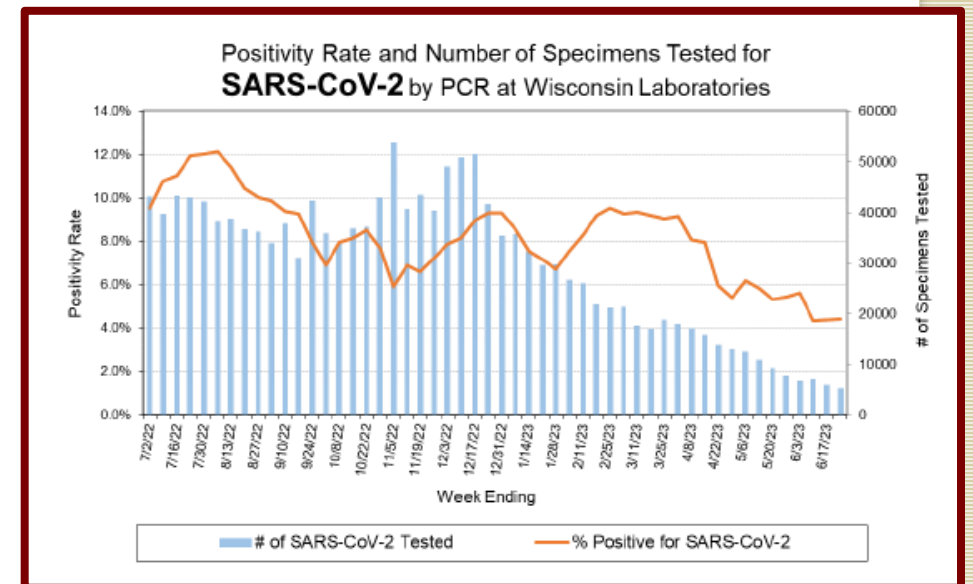
- Reporting of clinical testing data
- Submission of surveillance specimens





Reporting of Clinical Testing Data

- Report data **weekly all year!**
 - All Clinical labs
 - Report # tested and # positive for PCR/molecular and/or rapid antigen testing performed **on site**
 - Complete list of pathogens found in the Laboratory-based surveillance plan 2023-24
- Testing data reporting helps track positivity rates of pathogens in WI!





Reporting of Clinical Testing Data

Table 1: Laboratory Testing Data Requests

Antigen Detection		
Influenza A/B	SARS-CoV-2	RSV
Rotavirus	Rapid Strep (Group A <i>Streptococcus</i>)	
Respiratory Pathogens - PCR/Molecular Detection		
Influenza A/B	SARS-CoV-2	RSV
Seasonal Coronaviruses	Human Metapneumovirus	Human Parainfluenza virus
Rhinovirus/Enterovirus	Adenovirus	<i>B. pertussis</i> and <i>parapertussis</i>
Group A <i>Streptococcus</i>		

Pathogens removed:

Antigen Detection:

Varicella Zoster

PCR/Molecular Detection:

C. pneumoniae

M. pneumoniae

Adenovirus (non-respiratory)

Enterovirus (non-respiratory)

Measles

Mumps

Parechovirus

Rubella

VZV

EPEC

EAEC

ETEC

Clostridium difficile

Herpes



Reporting of Clinical Testing Data

- Updated list of “test methods/test kits”

Please mark the test kit used:

Abbott BinaxNOW

Abbott ID NOW

Abbott RealTime

BD Max

BD Veritor

BioFire FilmArray

Cepheid Xpert/Xpress

Diasorin Simplexa

GenMark Dx ePlex

Hologic Panther/Panther Fusion

Hologic ProFAST/ProFlu

Luminex Verigene

McKesson Consult

Mesa Accula

OSOM

Qiagen QIAstat

Quidel QuickVue

Quidel Sofia

Quidel Solana

Roche Cobas

Roche Cobas Liat

ThermoFisher TaqPath

ThermoFisher Xpect

Other (specify):




Reporting of Clinical Testing Data

- Step-by-Step instructions can be found in the Laboratory Surveillance Report 2023-24
 - Go to the WSLH website: <http://www.slh.wisc.edu/wcln-surveillance/surveillance/>
 - Click on “Click here to report Wisconsin Test Data” in the center of the page.



- Institution ID for reporting testing data can be found on your customized requisition form
- Contact WCLN@slh.wisc.edu with questions



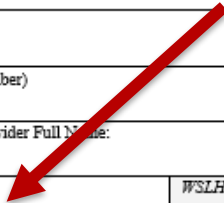
**Wisconsin State
Laboratory of Hygiene**
UNIVERSITY OF WISCONSIN-MADISON

2801 Agriculture Dr, Madison, WI 53718

CDD Customer Service
Phone: 800-862-1013
Kits and Supplies: 800-862-1088
Purple Mountain Solutions (Courier):
Phone: 800-990-9888

**REGIONAL RESPIRATORY
SURVEILLANCE**
Requisition Form rev.6/2023

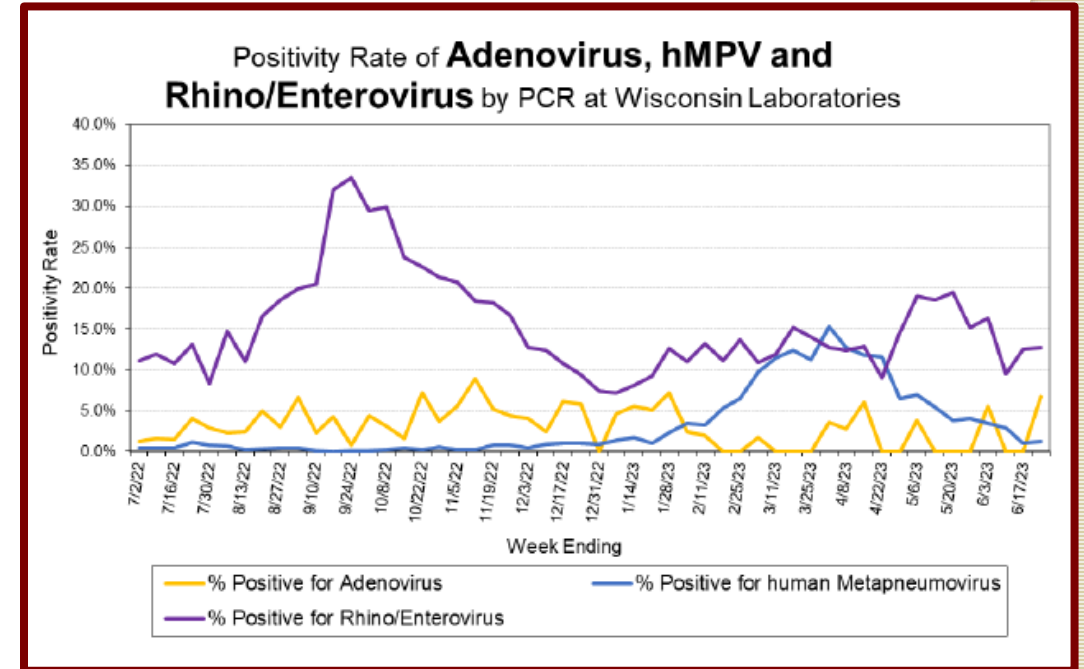
Patient Information		Submitter Information	
Name (Last, First):		(Your Institution's Agency Number If Known)	
Address:		(Your Institution's Name)	
City:	State:	Zip:	(Your Institution's Address)
Date of Birth:	Gender:	M	F
Occupation:		(Telephone Number)	
Your Patient ID Number (optional):		Health Care Provider Full Name:	
Your Specimen ID Number (optional):		Institution ID:	<i>WSLH Use Only</i> Study: VI Reg SURV





Why Submit Data?


- To provide situational awareness
 - What is circulating
 - When season begins, peaks and ends
 - Identify outbreaks
- To determine geographic spread
- To observe season-to-season trends
- To participate in national surveillance programs





Why Submit Data??

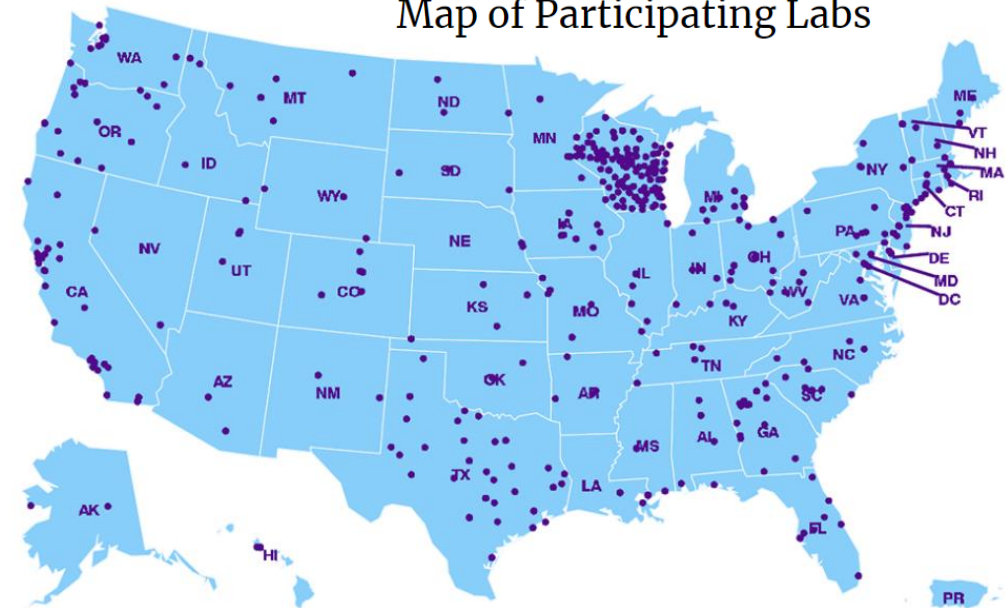
National Surveillance Programs

- The National Respiratory and Enteric Virus Surveillance System (NREVSS, CDC)
- COVID Data Tracker (CDC)
-  (CDC)

A Weekly Influenza Surveillance Report Prepared

The National Respiratory and Enteric Virus Surveillance System (NREVSS)

Map of Participating Labs



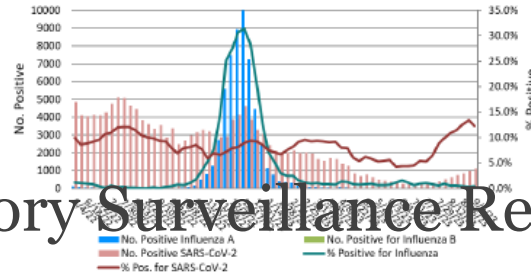


September 18, 2023

Wisconsin State Laboratory of Hygiene
UNIVERSITY OF WISCONSIN-MADISON
2601 Agriculture Dr.
Madison, WI 53718
608.224.4261

Laboratory Surveillance Report

% Positive for Influenza and SARS-CoV-2 by PCR (Wisconsin), June 2022 to Week Ending September 9, 2023



Influenza

- Influenza activity is low in Wisconsin (0.5%) and nationally (0.7%).

SARS-CoV-2

- SARS-CoV-2 activity is **HIGH** in Wisconsin (12.3%).
- Omicron subvariant EG.5 is emerging as the dominant lineage circulating (~20-25%)

To enhance surveillance activities during the off-season, **each week please send:**

- ◊ **All influenza positive specimens**
- ◊ **Up to 5 SARS-CoV-2 positive specimens**

Links:

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

- A current summary of COVID-19 data for Wisconsin can be found here: <https://www.dhs.wisconsin.gov/covid-19/data.htm>
- The influenza, RSV and respiratory virus activity graphs can be viewed here: <http://www.slh.wisc.edu/wcsln-surveillance/surveillance/virology-surveillance/>
- The bacterial, viral and parasitic activity graphs can be viewed here: <http://www.slh.wisc.edu/wcsln-surveillance/surveillance/gastropathogen-surveillance/>

Wisconsin

Bi-weekly Laboratory Surveillance Report

Subscribe at: wcln@slh.wisc.edu

Virus Activity Graphs:

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

DHS Weekly Respiratory Report

<https://www.dhs.wisconsin.gov/disease/respiratory.htm>

Week Ending Sept 5, 2023*

Resp. Pathogen PCR	# Tested	% Positive
SARS-CoV-2	9244	12.3
Rhinovirus/Enterovirus	562	16.2
Parainfluenza	565	3.4
RSV	3559	0.6
Influenza	5219	0.5
Human metapneumovirus	548	0.2
<i>B. pertussis</i>	197	0.0
Adenovirus	2	0.0
Seasonal coronaviruses	2	0.0

Data-Wisconsin:

Respiratory pathogens

• Rhinovirus/Enterovirus and SARS-CoV-2 activities are high.

Gastropathogens

• Other pathogens detected include: *Plesiomonas shigelloides* (0.8%), Adenovirus 40/41 (0.3%), and *Yersinia enterocolitica* (0.2%).

Week Ending Sept 9, 2023*

GI Pathogen PCR	# Tested	% Positive
Norovirus	430	6.3
<i>Campylobacter</i>	529	4.2
<i>Salmonella</i>	537	2.2
<i>Giardia</i>	416	2.4
STEC	476	2.0
<i>E. coli</i> O157	121	0.8
Rotavirus	433	0.7
Sapovirus	374	0.5
<i>Cryptosporidium</i>	416	0.5
<i>Shigella</i> /EIEC	506	0.4
<i>Cyclospora</i>	374	0.3

* On a weekly basis, participating Wisconsin clinical laboratories voluntarily report to WSLH the total number of tests performed, the method used for detection, and the number of those tests with positive results.

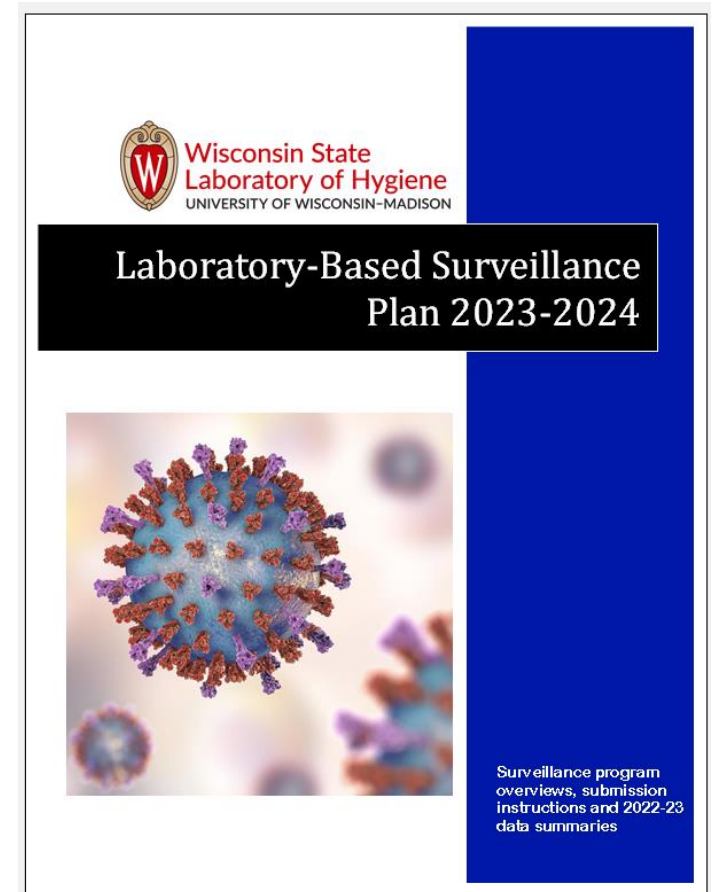


Respiratory Surveillance in Wisconsin

- Overall picture: A more unified approach to respiratory surveillance
 - Plans are outlined in the “Laboratory-Based Surveillance Plan 2023-24” booklet
 - .PDF version available online at:
www.slh.wisc.edu/wcln-surveillance/

Two Branches of Surveillance:

- Reporting of clinical testing data
- Submission of surveillance specimens





Respiratory Surveillance Network

- Surveillance sites types:
 1. Enrolled Sentinel Surveillance Sites
 2. University Health Clinics
 3. Rapid Influenza Testing Sites
 4. PCR/Molecular Testing Site



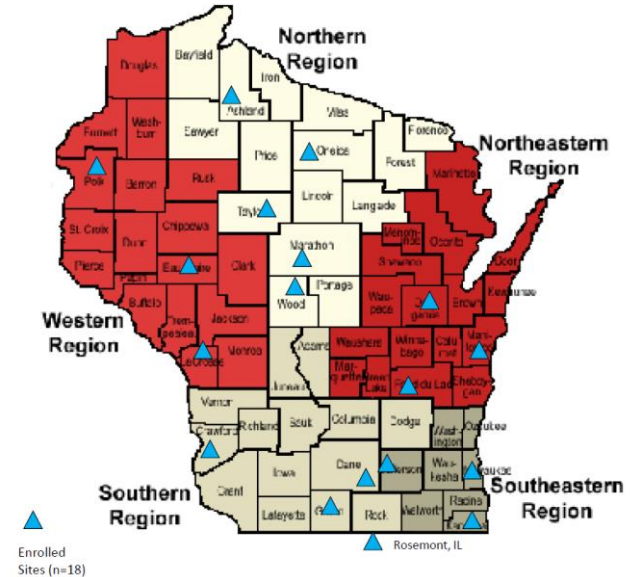
Respiratory Surveillance: Specimen Submission

1. Enrolled Surveillance Sites

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

Submit the first 3 specimens per week from patients presenting with respiratory symptoms to WSLH.

- Tested for influenza and SARS-CoV-2.
- Subset tested with a 20-target respiratory pathogen panel





Respiratory Surveillance: Specimen Submission

2. University Health Clinics

- Monitor influenza, SCV2 and other respiratory pathogens impacting student health.
- Monitor for severe adenovirus infections.



Submit up to 3 specimens per week from symptomatic patients to WSLH

- ❑ Tested for influenza and SARS-CoV-2.
- ❑ Subset tested with a 20-target respiratory pathogen panel



Respiratory Surveillance Network

- Surveillance sites types:
 1. Enrolled Sentinel Surveillance Sites
 2. University Health Clinics
 3. Rapid Influenza Testing Sites
 4. PCR/Molecular Testing Sites



Influenza Surveillance: Specimen Submission

3. Rapid Influenza Diagnostic Testing (RIDT) Sites

- Monitors performance of antigen/rapid

Submit **ALL** out of season influenza positive specimens to WSLH

- During Flu season, please submit:
 - The **FIRST** Influenza A or B of the season
 - Also:

SWINE/PIG CONTACT



AVIAN/POULTRY
CONTACT



INTERNATIONAL
TRAVEL





Influenza Surveillance: Specimen Submission

4. PCR/Molecular Laboratories

- Perform PCR and/or Molecular testing for influenza

Submit **ALL** out of season **AND ALL** early season influenza positive specimens to WSLH

- During Flu season, please submit:
 - ❑ **ONE influenza-related hospitalization per week**
 - ❑ **Also:**

SWINE/PIG CONTACT



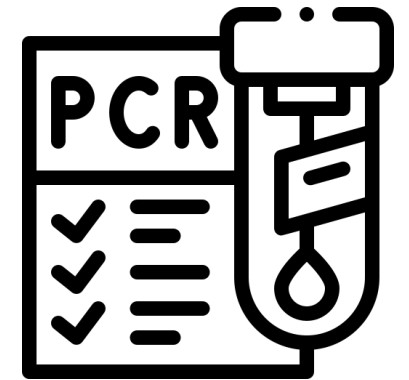
AVIAN/POULTRY CONTACT



INTERNATIONAL TRAVEL



INFLUENZA A UNSUBTYPABLE (Ct < 35)





What Does WSLH with Influenza Positive Specimens?

1. Provide confirmatory testing

- Look for repeated issues with commercial tests

2. Perform in-house testing

- Important for pandemic influenza

3. “National”

- CDC
- WSLH
- Original

The WHO recommends that trivalent vaccines for use in the 2023-2024 northern hemisphere influenza season contain the following:

Egg-based vaccines

- an A/Victoria/4897/2022 (H1N1)pdm09-like virus;
- an A/Darwin/9/2021 (H3N2)-like virus; and
- a B/Austria/1359417/2021 (B/Victoria lineage)-like virus.

Cell culture- or recombinant-based vaccines

- an A/Wisconsin/67/2022 (H1N1)pdm09-like virus;
- an A/Darwin/6/2021 (H3N2)-like virus; and
- a B/Austria/1359417/2021 (B/Victoria lineage)-like virus



Influenza Surveillance in Wisconsin

- Early season positives are critical:
 - ❑ Inform vaccine strain selection.
 - ❑ Provide samples to make candidate vaccine viruses



All Clinical Laboratories Performing Influenza Testing:
Please send early season positive influenza specimens to WSLH

- We will notify labs when influenza activity increases:
 - ❑ WCLN Messaging
 - ❑ Bi-Weekly Surveillance Report



SARS-CoV-2 Surveillance: Specimen Submission

- ALL Surveillance sites:
 1. Enrolled Sentinel Surveillance Sites
 2. University Health Clinics
 3. Rapid Influenza Testing Sites
 4. PCR/Molecular Testing Sites

Submit up to 5 SARS-CoV-2 positive specimens per week
to WSLH



Testing Site:	Season		
	Off Season (June-September)	Early Season (Fall*)	Respiratory Season (Winter/Spring*)
Influenza and Other Respiratory Viruses			
Rapid Testing	<u>ALL</u> influenza positives	The first influenza A or B of the season	Influenza A positive specimens with: <ul style="list-style-type: none"> • International travel history • Swine exposure
PCR/Molecular	<u>ALL</u> influenza positives	<u>ALL</u> influenza positives	One influenza-related hospitalization per week AND Unsubtypable influenza A positives (Ct < 35) AND Influenza A positive specimens with: <ul style="list-style-type: none"> • International travel history • Swine exposure
Sentinel Surveillance	The first 3 respiratory specimens per week from symptomatic patients (regardless of initial test results)		
University Health	Up to 3 respiratory specimens per week from symptomatic patients (regardless of initial test results)		
SARS-CoV-2			
All Sites	Five positive SARS-CoV-2 samples per week for genomic surveillance		



Updates to Surveillance Requisition forms

- “Reason for submission” field

Reason for submission: **Respiratory Surveillance** *(First 3 specimens each week from patients with respiratory symptoms)*
 * **REQUIRED** * **SARS-CoV-2 Genomic Surveillance** *(up to 5 SARS-CoV-2 positive specimens per week)*

- Clearer options for selecting what testing was performed

Your Test Results

Influenza A	Influenza B	SARS-CoV-2	RSV
<input type="checkbox"/> <u>Positive</u>	<input type="checkbox"/> <u>Positive</u>	<input type="checkbox"/> <u>Positive</u>	<input type="checkbox"/> <u>Positive</u>
<input type="checkbox"/> <u>Negative</u>	<input type="checkbox"/> <u>Negative</u>	<input type="checkbox"/> <u>Negative</u>	<input type="checkbox"/> <u>Negative</u>
<input type="checkbox"/> <u>Not Tested</u>	<input type="checkbox"/> <u>Not Tested</u>	<input type="checkbox"/> <u>Not Tested</u>	<input type="checkbox"/> <u>Not Tested</u>

Other Respiratory Results: _____

- “Test Methodology” field

Please mark the test methodology used: **PCR/NAAT** **Antigen Detection**



WSLH has Respiratory Surveillance Supplies!!

- Order Supplies

- Specimen collection kits
- Insulated shippers and cold packs
- Customized requisition forms
- Contact our Clinical Orders Department at: **800-862-1088**



- Transport of surveillance specimens is available at NO COST when you send specimens using Purple Mountain Solutions

- <https://purplemountainsolutions.com/>





Your participation in the Wisconsin surveillance system is **vital** to monitor respiratory pathogens and emergent strains with pandemic potential!



Contacts



- Virology lab
Virus@slh.wisc.edu
- Customer Service
1-800-862-1013
- Clinical Orders:
1-800-862-1088