



Sent on behalf of William Isenberg, M.D., Ph.D, Chief Medical & Quality Officer, Sutter Health, and Jeffrey Silvers, M.D., Medical Director of Pharmacy and Infection Control, Sutter Health

Emerging Infections Newsletter for Clinicians

Oct. 18, 2023

Written by Dr. Silvers with contributions from Dr. Joan Etzell (Lab), Lisa Rieg (Pharmacy), and Gordon Sproul (Pharmacy). Please use Google Chrome for the best experience.

Topics

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 - a. Intranasal COVID vaccine
 - b. Lessons learned from work on the live, attenuated influenza vaccine
2. COVID-19 – Encouraging Data Continues
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 - i. HV.1 rising and EG.5 falling
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 - i. Highest positivity rate in 2023
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6. Share the newsletter

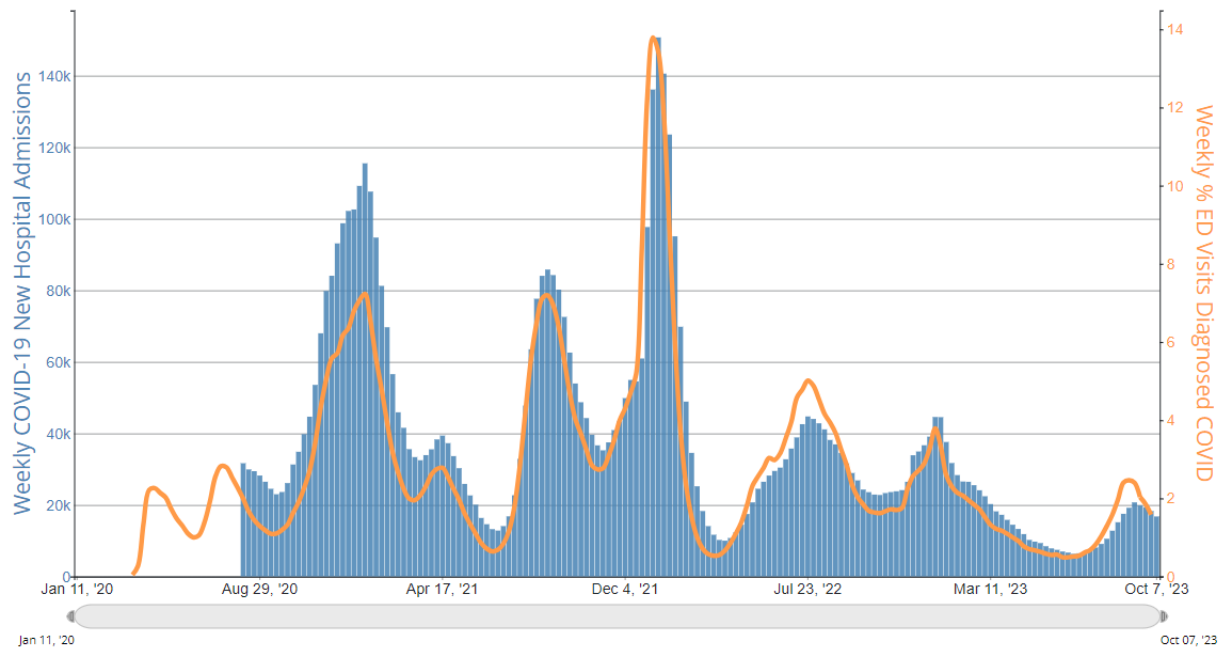
Future Vaccines

- A phase 1, double-blind, placebo-controlled, dose-escalated, live-attenuated, intranasal COVID-19 vaccine trial was just completed with encouraging response results reported by [Codagenix](#).
- Since this is a whole SARS-CoV-2 virus, compared to other vaccines targeting only the spike protein, this new vaccine induced immunity against multiple viral antigens beyond the spike protein. A robust T-cell response was also reported.
 - Participants were mRNA COVID vaccine naïve adults.
 - Each participant received two doses.
- A live-attenuated influenza vaccine (LAIV) has a storied history and can possibly give more insight into some of the obstacles to be expected during the development of a live-attenuated COVID vaccine (LACV).
 - The SARS-CoV-2 virus mutates frequently, much more than influenza. Without a universal COVID-19 vaccine, we should anticipate that the vaccine would need to be reformulated frequently to keep pace with antigenic changes in new strains.
 - Other animals carry SARS-CoV-2 and transmission to humans of a new strain with a limited match to the vaccine is an ongoing risk.
 - In 2009, when A H1N1 appeared, the LAIV vaccine strain chosen to protect against that new circulating strain was ineffective. For several years, LAIV was not recommended until further studies on a different vaccine H1N1 component was proven to be efficacious. Immune response to the LACV will need to be carefully followed with changes in vaccine composition.
 - In studies in adults, LAIV was shown to have a lower immune response in older and immunocompromised adults, similar to what is seen with the inactivated influenza vaccine (IIV). There is an enhanced flu vaccine for persons 65 years and older but no similar product with the LAIV. Age restrictions will likely be needed for the LACV.
 - The LAIV is cold adapted to enable growth in the nasal passage, but temperature sensitive to minimize the risk of multiplication inside the body and subsequent disease development. Similar changes are likely required for the LACV.
 - Specific changes to limit reproduction and transmission of the LAIV have been incorporated through time. This will be critical when developing the LACV since the SARS-CoV-2 so frequently mutates, and we want to ensure that a mutated LACV cannot transmit a possibly virulent strain.
 - LAIV immune response can be blunted by previous flu vaccinations. A similar issue can potentially occur with the LACV limiting effectiveness.

COVID-19

- Hospitalizations in the United States are a surrogate for the virulence of the circulating strain. The graph below and the subsequent table now show:
 - Continued decreasing hospitalizations (blue vertical bars).
 - Concomitant continued decrease in the percentage of patients being diagnosed with COVID in emergency departments (orange run line).

COVID-19 New Hospital Admissions and Percentage of Emergency Department (ED) Visits Diagnosed as COVID-19, by Week, in The United States, Reported to CDC

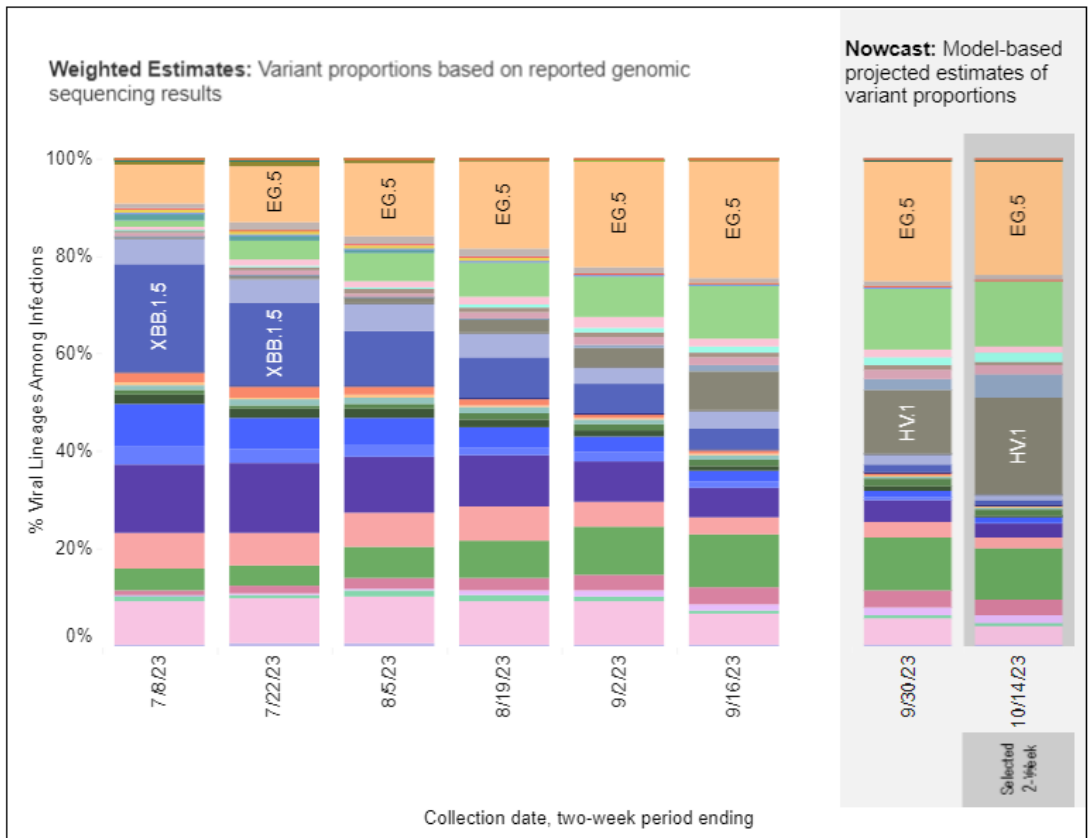


- The CDC tracks hospital admissions per 100,000 county population. Less than 10/100,000 is considered a low number of new hospital admissions. Hospitalization rates continue to decrease. The admissions percent change in the last week is -8.2%.

<p>COVID-19 HOSPITAL ADMISSIONS (PAST WEEK)</p> <p>16,766</p>	<p>% CHANGE IN COVID-19 HOSPITAL ADMISSIONS</p> <p>-8.2%</p>	<p>COVID-19 HOSPITAL ADMISSIONS PER 100,000 (PAST WEEK)</p> <p>5.05</p>
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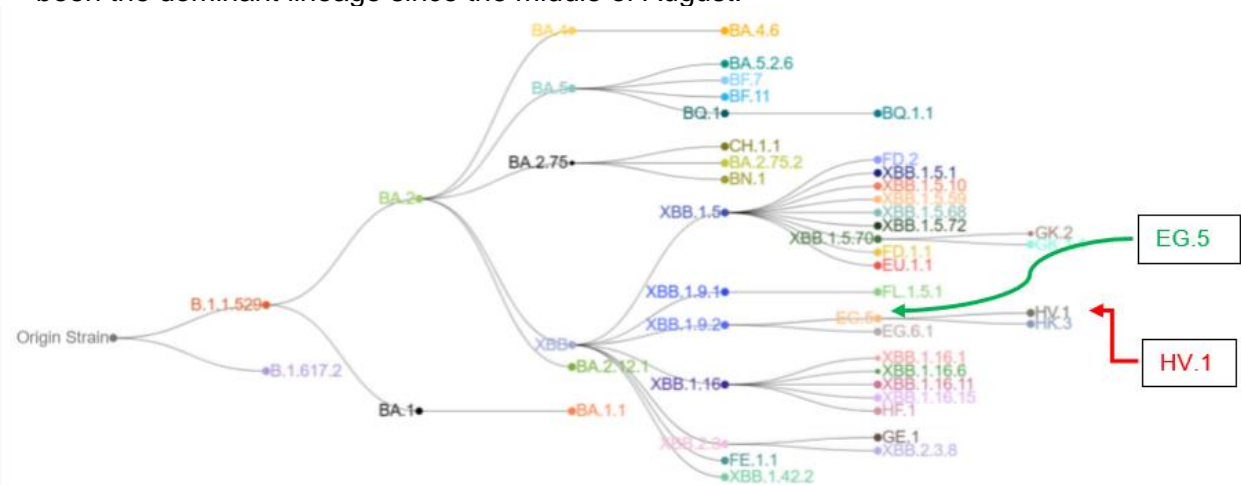
CDC | Data through: October 7, 2023. Posted: October 13, 2023

[National genomic sequencing](#) was updated on Oct.14 (graph below). EG.5 rates have dropped from 29.4% to 23.6%. HV.1 is rapidly increasing, now the second most common isolate sequenced and has increased from 12.9% to 19.5% in the last 2-week period. HV.1 is derived from XBB.1.9.2. Although it is gaining ground quickly suggesting that it will become the dominant variant, nothing at this time suggests decreased efficacy of the new vaccine, Paxlovid™ or increased virulence of this strain.

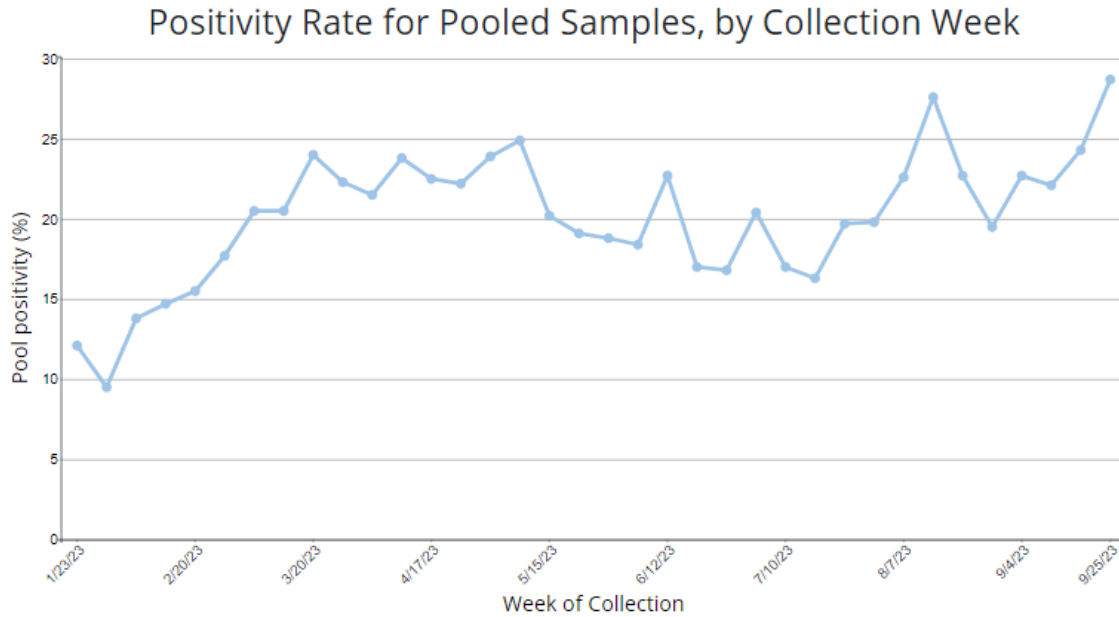


WHO label	Lineage #	%Total	95%PI
Omicron	EG.5	23.6%	21.2-26.3%
	HV.1	19.5%	16.8-22.6%
	FL.1.5.1	13.5%	10.8-16.7%
	XBB.1.16.6	10.3%	9.1-11.8%
	HK.3	4.9%	3.6-6.7%
	XBB.2.3	4.1%	3.4-4.9%
	XBB.1.16.11	3.1%	2.5-3.9%
	XBB.1.16	2.8%	2.4-3.3%
	XBB.1.16.1	2.2%	1.7-2.7%

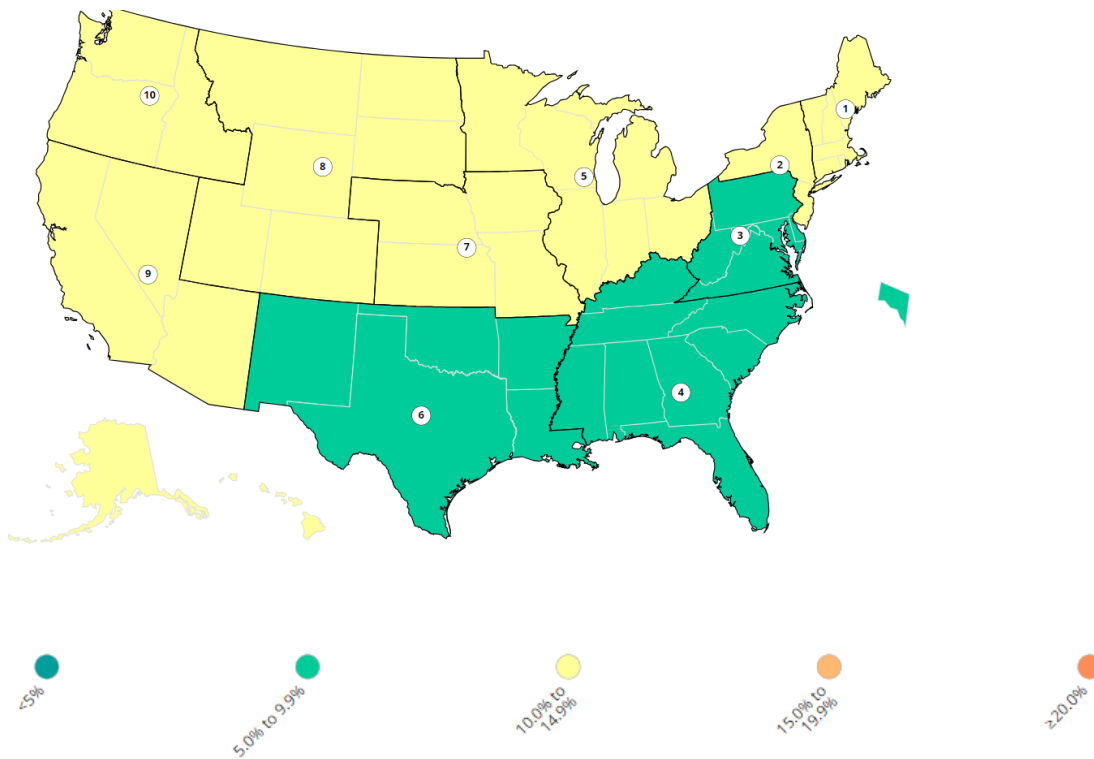
- The Pango lineages are below, demonstrating that HV.1 is derived from EG.5, which has been the dominant lineage since the middle of August.



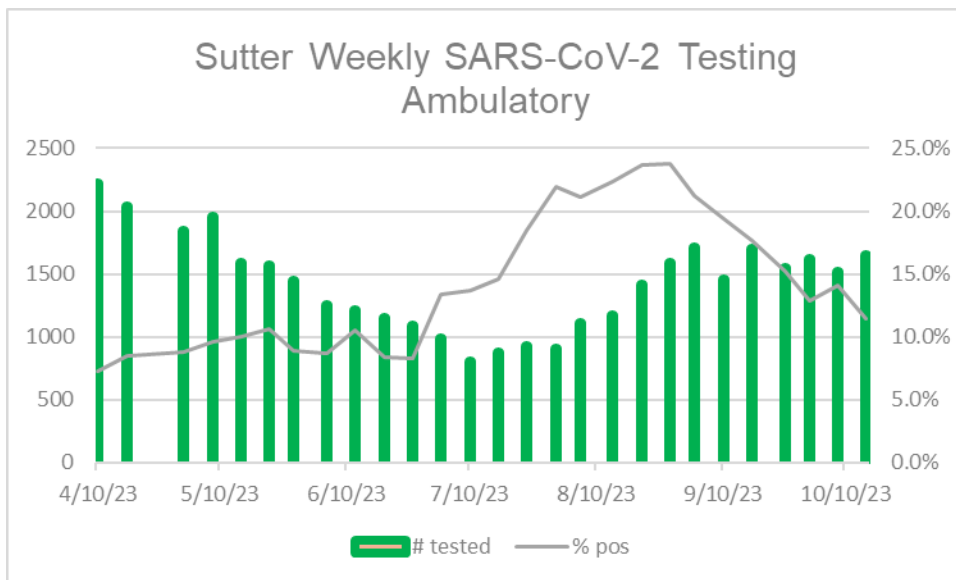
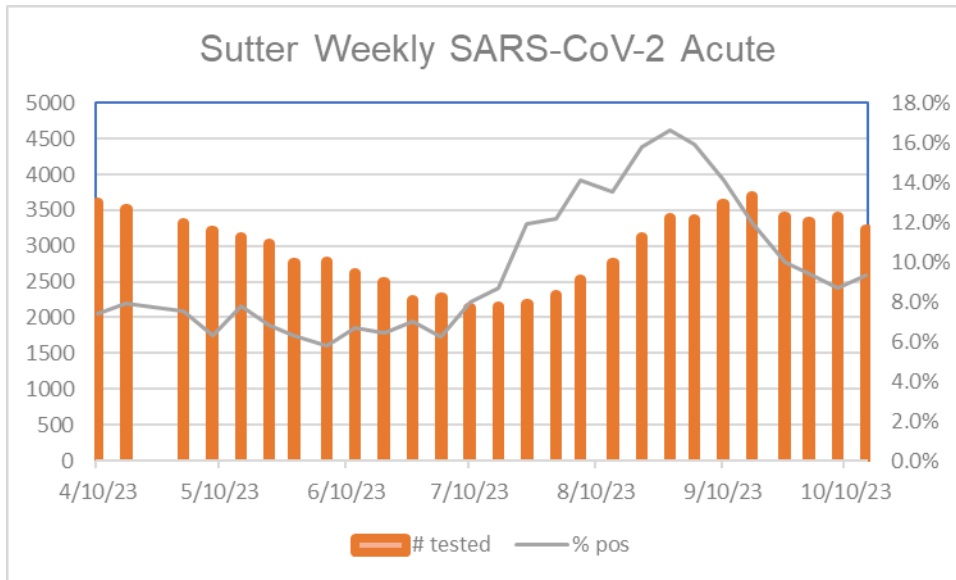
- Surveillance of international air travelers is conducted at several major U.S. airports as an early warning system and to fill gaps in worldwide genomic surveillance. The graph below shows a continued high positivity rate, at the highest level since the start of 2023. Notably, on the CDC [web site](#), no HV.1 is reported as having been identified this year. This data, however, only goes through Sept. 25.



- [National](#) molecular test positivity rates by region are demonstrated on the map below. No changes in the last week.



- Updated Sutter testing data below shows stable positivity rates with significant levels of testing both in emergency departments and ambulatory environments.



- **COVID-19 Take-Home:**

- Co-circulation of multiple strains of SARS-CoV-2 continues. HV.1 may displace EG.5 as the most frequently sequenced isolate in the United States.
- HV.1 is not being reported yet in international travelers tested at U.S. airports.
- Hospitalizations, emergency department visits and Sutter Health positivity rates are all trending down. COVID appears to have peaked for now.
- Although still not low, Sutter ambulatory and emergency department positivity rates are 11.4% and 9.3%, respectively.
- The XBB vaccine has significant potential to mitigate a winter outbreak. Don't miss an opportunity to provide this important protection.

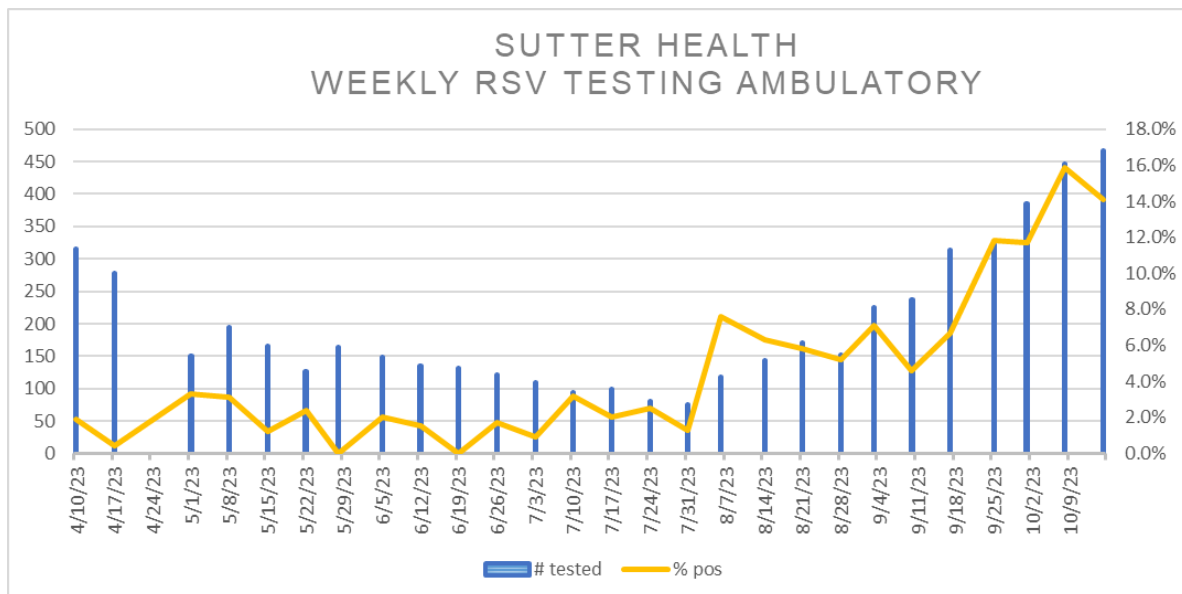
- **Related Links**

- [CDC Caring for Patients](#)
- [CDC Data Tracker](#)
- [CDC Latest Updates](#)

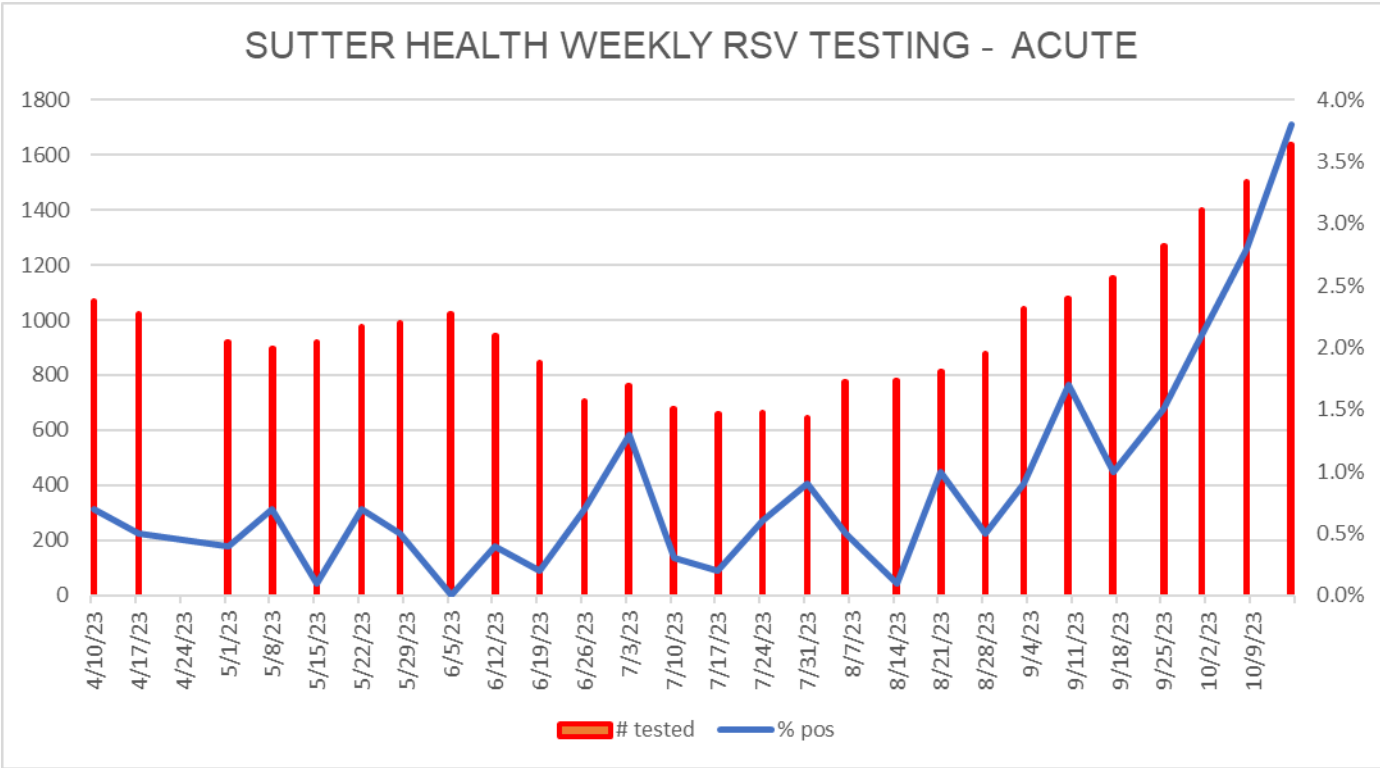
- [CDC Vaccine Information](#)
- [CDPH Tracking and Vaccination Updates](#)
- [Sutter Health for Clinicians](#)
- [Sutter Health for Patients](#)
- [WHO Table of Contents](#)

RSV

- Nirsevimab production issues have led to limited distributed supply.
 - Manufacturer (Sanofi) estimates low supply until December.
- Nirsevimab is a monoclonal antibody that provides passive immunization and is not a vaccine. As a result, the CDC did not develop a VIS (vaccine information statement) but released an [RSV IIS](#) (immunization information statement).
- Data on the efficacy of the Glaxo Smith Kline RSV vaccine (Arexvy) over two respiratory seasons in seniors was presented at [ID Week](#). Although efficacy declined during the second season, it was still maintained with a two-year efficacy against lower tract disease of 67% and a 79% efficacy against severe disease.
 - The trial was comprised of almost 25,000 participants with 60% described as fit and almost 80% were white.
 - At the end of year one, some participants were randomized to receive a second immunization dose.
 - No change in efficacy against RSV-related lower respiratory tract disease or severe disease over two seasons between persons receiving a single dose or two annual doses.
 - Based on this data, RSV vaccine is unlikely to be recommended as an annual vaccine.
- RSV is still being identified in the ambulatory setting. The amount of testing in ambulatory is gradually increasing and positivity rates are well above the 3% threshold for 11 weeks now. The week ending Oct. 15 had 468 tests ordered. See graph below.



- ED positivity rates are now over 3%, at 3.8%. The number of tests being performed continues to increase.



- RSV results by age are in the following table for the week ending Oct.15. Positivity rates in children less than 6 years old remain almost 27% in the ambulatory environment and are up to 10.6% in the emergency departments.
- Most of the increased RSV activity continues to be identified in children less than 6 years old, both in the ambulatory environment and the emergency departments. There are some children between 6 years up to 12 years old being identified but very little disease in children 12 years and older. Small numbers are being tested in the 12-year-old and older age groups.
- A small amount of disease is starting to be identified in persons 60 years and older.

Location	<6 years old		6 to < 12 years old		12 to < 16 years old	
	Number Tested	% Positive (number)	Number Tested	% Positive (number)	Number Tested	% Positive (number)
Ambulatory	201	26.9% (54)	45	8.9% (4)	9	0.0%
Acute (ED)	417	10.6% (44)	110	5.5% (6)	26	0.0%

Prevention	For Whom	Notes
Vaccines		

RSV Vaccines	Adults > 60 y/o:	CDC considers acceptable to co-administer with other vaccines. Some studies suggest immune response may not be as strong. More studies needed.
	While pregnant: Must be administered between 32-36 weeks' gestation and during the typical RSV season only	Only Abryso™ is FDA approved to administer in pregnancy.
Nirsevimab (Beyfortus™)	<ul style="list-style-type: none"> • Infants younger than 8 months born during or entering their first RSV season, and • Infants and children 8–19 months old who are at increased risk of severe RSV disease and entering their second RSV season, according to CDC ACIP and AAP guidance. • Excluded: Infants born at least 14 days after pregnant individual received Abryso, during current RSV season. 	<ul style="list-style-type: none"> • Usual annual administration will be September through March, although exact start and stop times vary year-to-year. • During RSV season: administer within first 7 days after birth. • If born outside RSV season, administer to infants as they enter their first RSV season. <p>Manufacturer (Sanofi) estimates low supply until December.</p>
Palivizumab (Synagis®)	<p>Indicated for prevention of serious RSV disease in children at high risk only.</p> <p>Can be administered to at-risk individuals if nirsevimab is not available.</p>	<p>Administered monthly during RSV season for 5 months</p> <p>AAP states that a single nirsevimab may be administered and remaining monthly palivizumab doses discontinued.</p>

- **RSV Take-Home:**

- Nirsevimab supplies in severe shortage due to manufacturer production issues.
- Nirsevimab is a monoclonal antibody and not a vaccine. An immunization information sheet is available and should be provided as part of the consent process.
- Data shows efficacy of the RSV vaccine for two seasons in the population 60 years and older. No benefit was seen with administration of a second dose after one year.
- RSV continues to be identified in Northern California in increasing numbers. More than one out of every four children ≤ 6 years old tested for RSV in the outpatient environment are positive and 10% are positive in the ED in that age group. Some disease is being seen in children up to age 12 years old but very little after that.
- In appropriate symptomatic patients, testing should still be performed.
- High-risk patients 60 years and older should be offered the RSV vaccine.

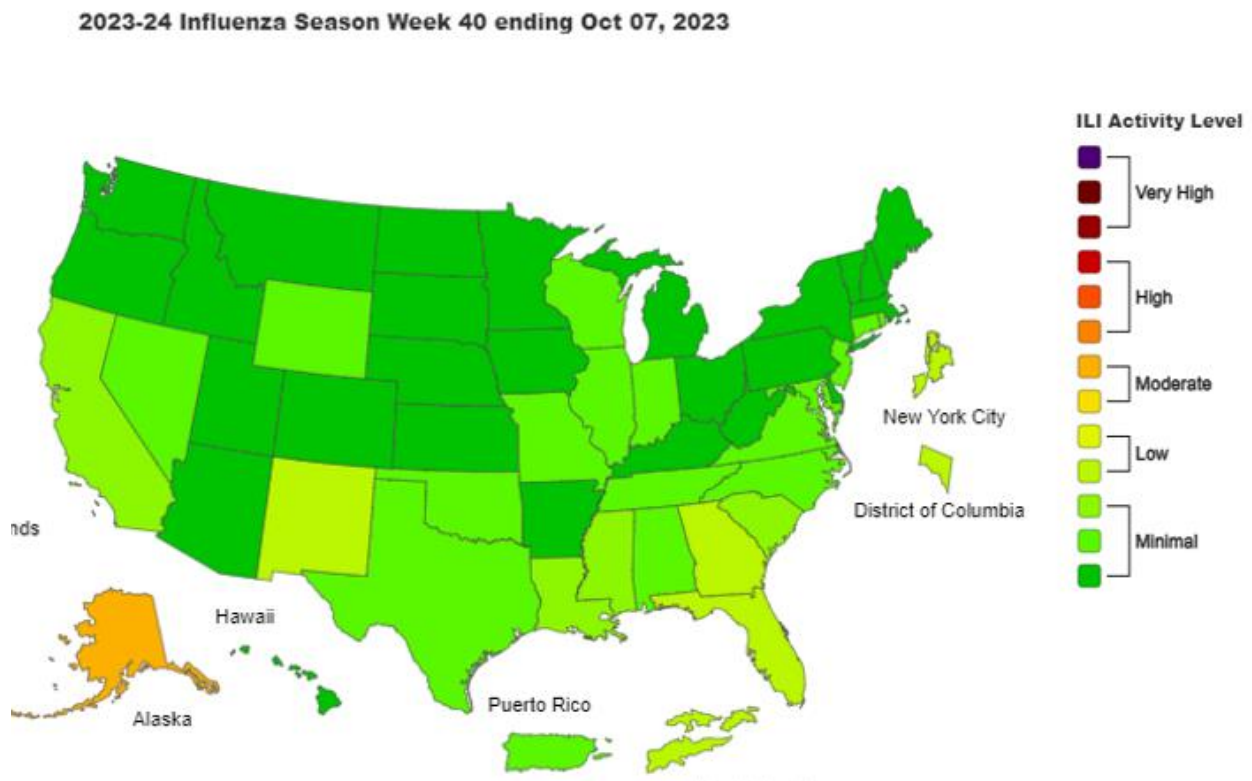
Influenza

- [ID Week](#) had a presentation from a 7-year, retrospective, cohort study showing that maternal influenza vaccination plus breastfeeding provides additional protection against influenza beyond maternal vaccination.
 - 44,132 mother-infant pairs. Primary outcome was lab-confirmed influenza during the infant's first 6 months of life.
 - 51% were immunized during pregnancy, evenly split all trimesters.

- Maternal vaccination alone was associated with 45% reduced odds of infant influenza infection.
- Any amount of breastfeeding from immunized persons lowers the risk of infant influenza (See table below).

Group	% Reduction compared to Unvaccinated	Adjusted OR and 95% Confidence Interval
Vaccinated; no BF	45%	
Vaccinated; Some BF	56%	0.44 (0.27-0.70)
Vaccinated; Exclusive BF	63%	0.37 (0.21-0.67)
Unvaccinated; Some BF	No change	0.74 (0.49-1.12)

- The map below shows influenza-like (ILI) activity in the United States. This uses ILI as a surrogate for influenza. [Actual influenza data](#) reveals that seasonal activity remains very low nationally. Out of 47,296 specimens tested by clinical labs during week 40 (Oct. 1-7), only 530 were positive (1.1%).

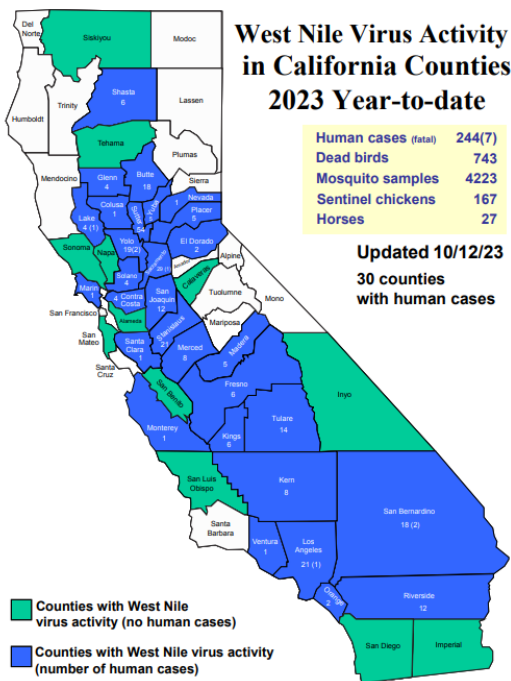


- **Influenza Take-Home:**

- Vaccinating a pregnant person anytime during pregnancy lowers the risk of both the mother and newborn baby developing influenza. Breastfeeding by an immunized person lowers the risk even more.
- Influenza activity remains very low in the United States. It is unlikely that we will have an early influenza season. We may be lucky and have a below-average influenza season or perhaps a late season.
- Vaccination can still decrease the morbidity and mortality of those who do get infected with Influenza.

West Nile Virus (WNV)

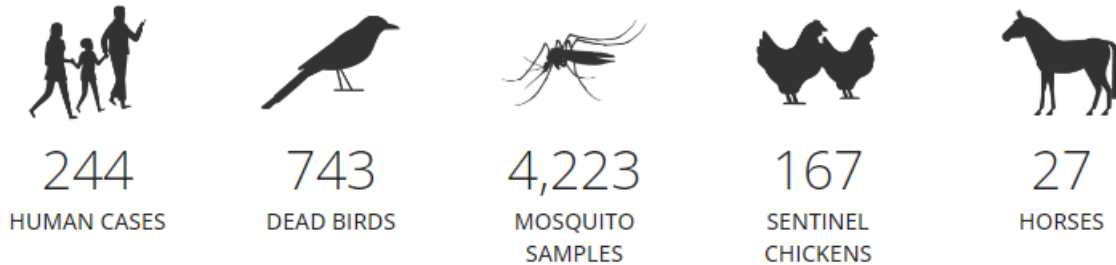
- Cases of WNV in California are continuing to be identified and are widespread throughout the state. The state map below shows counties with reported WNV cases in humans, colored blue.
- The counties reporting cases in the last week includes Butte, Contra Costa, Fresno, Kern, Los Angeles, Madera, Monterey, Riverside, Sacramento, San Bernardino, Shasta, Stanislaus, Ventura, and Yolo. This was the first WNV positive human case from Ventura County this year.



- Year-to-date total for reported cases in humans in [California](#) increased by 39 in the last week. (Pictograph below) with seven deaths in humans now reported.

2023 WEST NILE VIRUS ACTIVITY IN CALIFORNIA

LAST UPDATED: OCT 12, 2023 2:37PM PST



- **West Nile Virus in California Take-Home Message**
 - WNV transmission and reported cases in humans remain widespread throughout California.
 - Although cases typically decrease dramatically in October, climate change may affect what is seen.
 - Continue to keep WNV in the differential for meningitis, encephalitis or a poliomyelitis-like syndrome.

Share the Newsletter

Anyone who would like to be added to the Emerging Infections newsletter should send a request to bryan.gardner@sutterhealth.org

This communication is intended for clinicians caring for Sutter patients. If you have questions, please reach out to us at clinicians@sutterhealth.org.

