

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

May 18, 2023

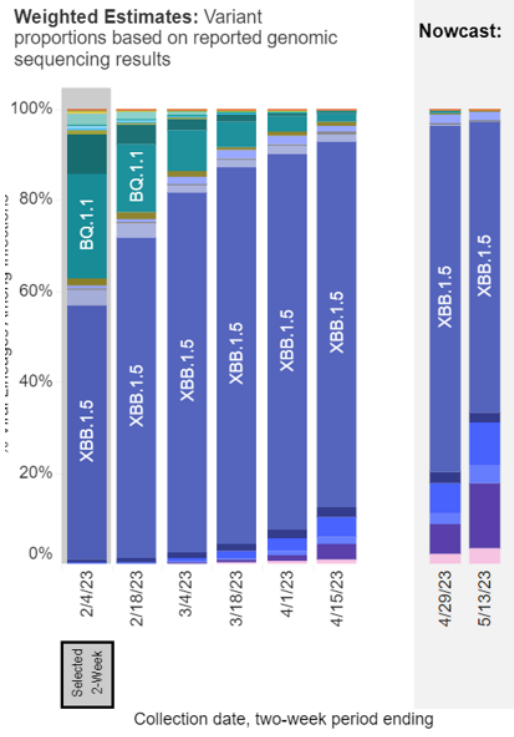
Written by Dr. Silvers with contributions from Dr. Joan Etzell (Lab), Lisa Rieg (Pharmacy), and Gordon Sproul (Pharmacy). Please use Google Chrome for the best experience.

Topics

1. COVID-19
 - a. U.S. sequence data
 - b. XBB.2.3
2. Influenza
 - a. Influenza is always circulating but at very low inter-seasonal levels.
 - b. Clinical trial of universal influenza vaccine starts
 - c. Vaccinating California Condors against H5N1
3. West Nile Virus
 - a. Arizona had the largest reported single county outbreak in nation
 - b. California
4. Mpox
 - a. Ocular Mpox
 - b. Continue to vaccinate
5. Dermatophytes are developing antimicrobial resistance
 - a. Doing your part to minimize this risk
6. Share the newsletter

COVID-19

- U.S. Sequence Data
 - XBB.2.3 is starting to appear. This was first described in India. At this time, we will just maintain vigilance. No suggestion that this sub-variant is seriously harming people.
 - Genomic sequencing data, below, shows the percentage of isolates due to a particular sequence but does not correspond with virulence or activity levels in any community.



Nowcast Estimates in United States for 4/30/2023 – 5/13/2023

USA

WHO label	Lineage #	US Class	%Total	95%PI
Omicron	XBB.1.5	VOC	64.0%	59.1-68.6%
	XBB.1.16	VOC	14.3%	11.1-18.1%
	XBB.1.9.1	VOC	9.2%	8.0-10.6%
	XBB.1.9.2	VOC	4.0%	3.2-5.1%
	XBB.2.3	VOC	3.5%	1.9-6.3%

- **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](#)
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Influenza

- Circulating levels of influenza
 - We remain at inter-seasonal influenza levels.
 - Influenza is anticipated to circulate all year, albeit at very low levels. Testing is not routinely recommended since so little virus is circulating.
 - From May 8 to May 14, 1,144 influenza tests were performed in Sutter hospital emergency rooms with only 10 being positive. That is a positivity rate of 0.9%.
- A mRNA universal influenza vaccine trial is starting
 - Research has been ongoing towards developing a universal influenza vaccine. Similar to our annual influenza vaccines, the hemagglutinin (HA) is the target. The difference is that the universal vaccine targets the conserved part of the HA stalk rather than the frequently mutating head of the HA.
 - [Nature](#) published a placebo-controlled phase 1 trial of a chimeric, HA stalk-based, universal vaccine. A broad and durable immune response was stimulated, supporting feasibility for efficacy.
 - The [NIH](#) is now starting a phase 1-2 trial for a universal influenza vaccine that utilizes an adjuvanted stalk HA produced with mRNA technology. This study is looking at antibody response to the conserved part of the HA and safety at varying doses in a total of 40

participants. This will not address duration of protection over several seasons and the control group consists of only 10 individuals who will receive the current quadrivalent influenza vaccine.

- Highly pathogenic A H5N1 influenza is continuing to infect and kill condors. As of May 12, a total of [21 birds](#) have succumbed to that virus. The USDA has granted emergency authorization of the [H5N1 vaccine](#) to immunize the condor population. The vaccine will be trialed on vultures first to validate safety.
- **Influenza Take-Home**
 - Low levels of influenza are anticipated to circulate between outbreaks.
 - The universal influenza vaccines are still in early study phases.
 - The U.S. Fish and Wildlife Service and FDA are making heroic efforts to save the California condors from H5N1.

West Nile Virus (WNV)

- WNV is an arbovirus infection that predominantly infects birds and is transmitted by the Culex mosquito. Humans and horses are incidental hosts.
- It is [estimated](#) that up to 80% of patients with WNV are asymptomatic. About 20% have a nonspecific viral syndrome with fevers, head and body aches, vomiting, diarrhea or rash. Less than 1% develop a neuroinvasive syndrome e.g., encephalitis or meningitis.
- Outbreaks can vary dramatically between various years. In 2021, Maricopa County, Arizona (includes Phoenix) had the [largest single county outbreak](#) ever recorded in the United States. Almost 1,500 cases were identified with almost 1,000 developing neuroinvasive disease and resulting in 100 deaths. Neuroinvasive disease is predominantly in older adults. The median age in Arizona was 66 years with an IQR (interquartile range) of 53-75 years.
 - To put this in perspective, a total of only 1,035 cases were reported in the United States in 2022 with Arizona reporting 62 cases and California 168 of the cases.
- Despite our heavy rains, [WNV activity in California](#) presently remains very low.
 - No human cases reported
 - Santa Clara County has reported three cases in birds.
 - Alameda County has identified one positive mosquito pool.
- An update on the WNV vaccine development was published in the [NEJM](#) May 4, 2023.
- **WNV Take-Home:**
 - WNV activity varies year to year. Although Arizona had an exceptionally large number of cases in 2021, the following year a very small number of cases were identified.
 - We had heavy rains and there is an increased likelihood that we will see an increased number of cases of neuroinvasive disease this year.
 - Neuroinvasive disease typically affects adults 50 years and older.

MPOX

- Eye involvement from Mpox is important to recognize.
 - The [NEJM](#) published an excellent case presentation on May 11. This provides some excellent clinical insight into how cases can evolve. This patient had significant conjunctivitis.
 - [Emerging Infectious Diseases](#) June 2023 reports a case in San Francisco of fulminant vision-threatening involvement without skin lesions.
 - The [CDC](#) provides clinical considerations for management of ocular Mpox.
 - A discussion of the [ophthalmic manifestations](#) of Mpox was published in Nature July 2022.
 - Prior evidence from cowpox virus infection of the eye suggests that topical steroids should be avoided to prevent viral persistence and corneal damage.

- [Caution](#) is suggested when interpreting the latest CDC Mpox data. Sixty cases have been reported to the CDC in the last 3 weeks, which sounds like a dramatic increase. Thirteen are from the recent Chicago outbreak. A number of the other cases are from data reconciliation. Seventeen cases are actually from 2022, three are from January and February of this year and several may be duplicates.
- The CDC published a [Health Alert](#) on the outbreak in Chicago on May 15.
- In unvaccinated or incompletely vaccinated persons, Mpox PEP should ideally be administered within 4 days after an exposure but may still provide some protection if given up to 14 days post-exposure.
- **Mpox Take Home**
 - Mpox virus can affect vulnerable anatomic sites, including the eyes. This may be a vision-threatening condition and should be referred for urgent evaluation and treatment. Although still uncommon, Mpox should remain in the differential diagnosis, especially in the [high-risk population](#).
 - Be alert to a possible uptick in cases of MPOX in early June, especially in PLWH (persons living with HIV).
 - Concomitant STI are common.
 - The incubation period of MPOX is 5 to 21 days.
 - Tecovirimat (TPOXX) is available under EUA for treatment.
 - Continue to vaccinate with Jynneos for persons in the high-risk groups.
 - Vaccine boosters are not recommended at this time.
 - [CDC link](#) for more information about MPOX.

Antifungal-Resistant Dermatophyte Infections

- The May 12 CDC published [MMWR](#) reported two patients identified in New York with refractory Tinea infections due to an unusual species of Trichophyton (*T. indotineae*).
 - This was the first known time that this species was identified in the United States.
 - Notably the infections were widespread over their bodies and refractory to topical agents and terbinafine (the most commonly prescribed oral treatment for Tinea infections).
 - One of the patients had no international travel history suggesting possible local transmission within the United States.
 - Both patients were otherwise healthy.
- Tinea is a group of common, contagious, superficial infections of the skin, nails or hair caused by dermatophyte molds. They can cause significant pruritis interfering with sleep, some activities, and can cause depression in severe cases. Trichophyton is the most common genus causing these infections.
- Dermatophyte oral anti-fungal resistance is increasing in the world.
- In a multi-center, national study of over 400 specimens from [India](#) published in 2020, terbinafine resistance ranged between 16% and 76%, depending on the part of the country where specimens were collected.
- Resistance to topical agents is also becoming more common. This is believed to be secondary to [biofilm](#) formation by the dermatophytes. Additional [factors](#) listed by the CDC include overuse of OTC topical antifungal creams and prescription antifungal drugs, unnecessary use of topical steroid creams in combination with antifungal creams, and global travel and migration.
- **Dermatophyte Infections Take-Home**
 - Tinea infections are showing increasing resistance to topical anti-fungal therapies and oral terbinafine.
 - Consider antimicrobial-resistant *T. indotineae* infection in patients with widespread tinea disease when the patient doesn't improve with topical antifungal agents or oral terbinafine

- Diagnosis of *T. indotineae* can be difficult and may require genomic sequencing through the public health department.
- Healthcare providers need to be stewards of topical antifungal and steroid medications as well as terbinafine.
 - Certain common conditions e.g., psoriasis can resemble a superficial fungal infection but should not be treated with antifungal medications.
 - ✓ Using a corticosteroid with the antifungal medication can be falsely interpreted as a responsive tinea infection when actually it is psoriasis responding to the corticosteroid.

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.

