

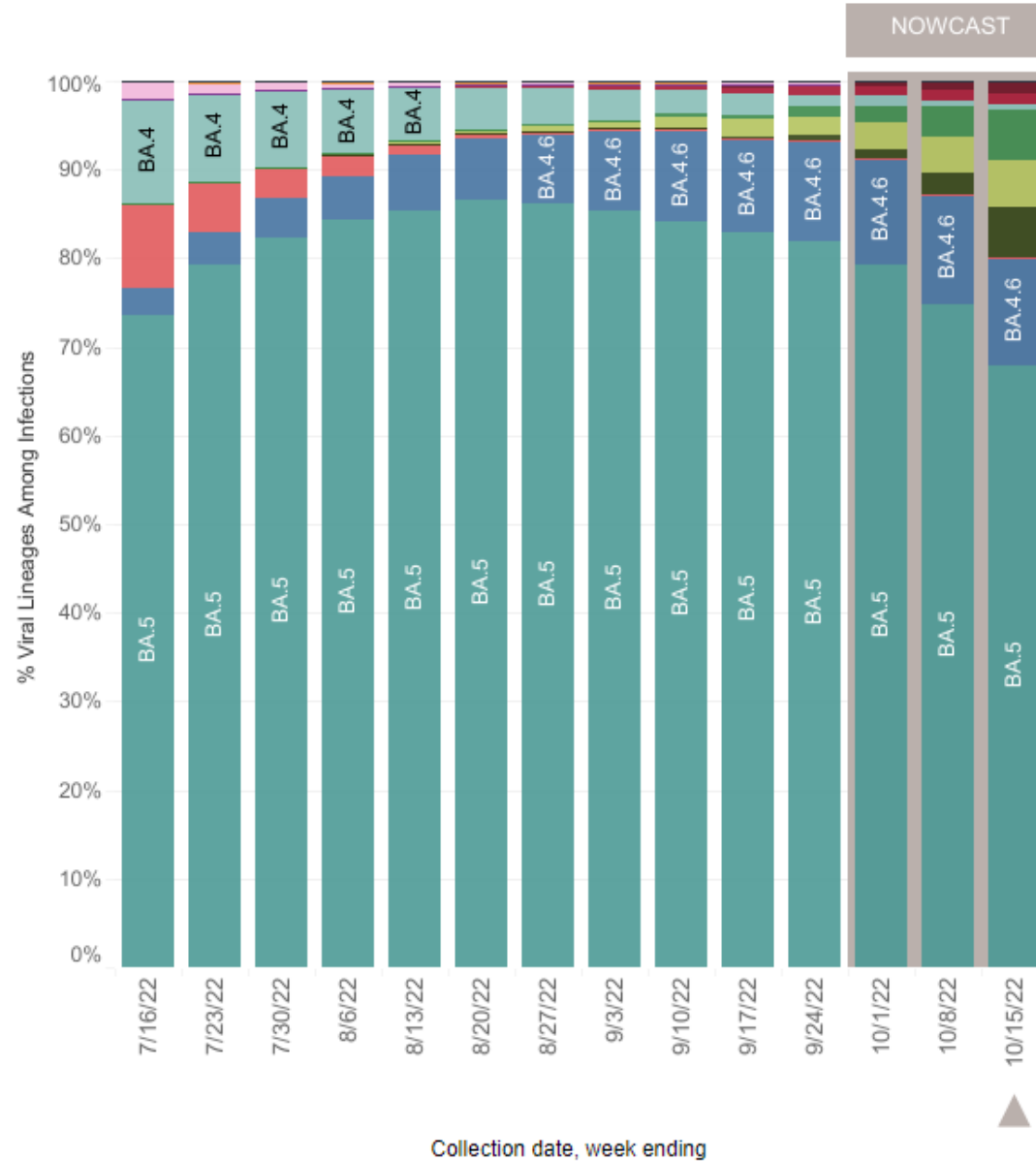
COVID-19 & Monkeypox Update

Jorge Mera, MD



United States: 7/10/2022 – 10/15/2022

United States: 10/9/2022 – 10/15/2022 NOWCAST



USA

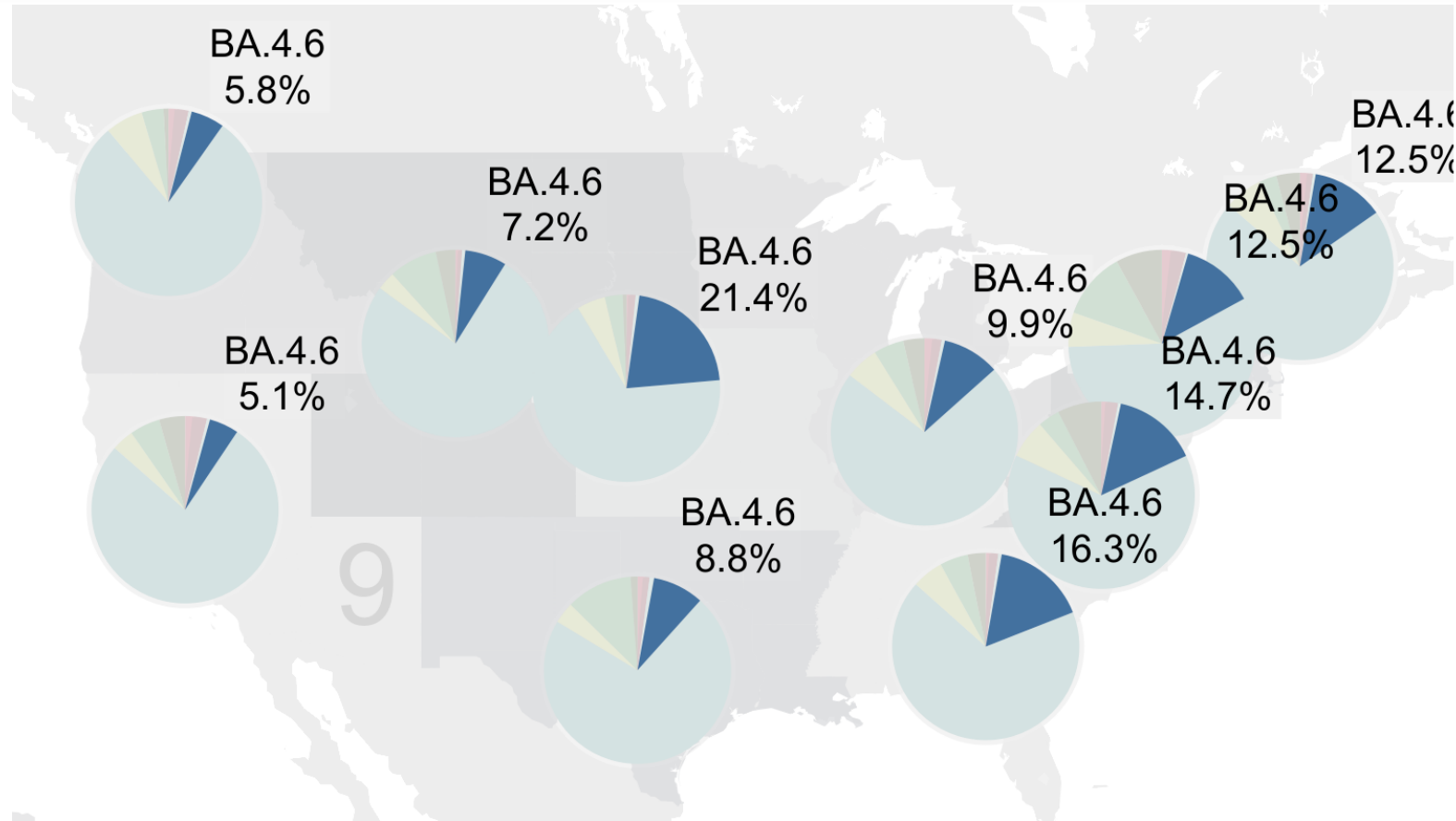
WHO label	Lineage #	US Class	%Total	95%PI	
Omicron	BA.5	VOC	67.9%	64.1-71.4%	
	BA.4.6	VOC	12.2%	11.1-13.4%	
	BQ.1.1	VOC	5.7%	3.5-9.1%	
	BQ.1	VOC	5.7%	3.5-8.9%	
	BF.7	VOC	5.3%	4.6-6.1%	
	BA.2.75.2	VOC	1.4%	0.9-2.2%	
	BA.2.75	VOC	1.3%	1.0-1.6%	
	BA.4	VOC	0.6%	0.5-0.6%	
	BA.2.12.1	VOC	0.0%	0.0-0.0%	
	BA.2	VOC	0.0%	0.0-0.0%	
	BA.1.1	VOC	0.0%	0.0-0.0%	
	B.1.1.529	VOC	0.0%	0.0-0.0%	
	Delta	B.1.617.2	VBM	0.0%	0.0-0.0%
Other	Other*		0.0%	0.0-0.0%	

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

** These data include Nowcast estimates, which are modeled projections that may differ from weighted estimates generated at later dates

AY.1-AY.133 and their sublineages are aggregated with B.1.617.2. BA.1, BA.3 and their sublineages (except BA.1.1 and its sublineages) are aggregated with B.1.1.529. Except BA.2.12.1, BA.2.75, BA.2.75.2 and their sublineages, BA.2 sublineages are aggregated with BA.2. Except BA.4.6, sublineages of BA.4 are aggregated to BA.4. Except BF.7, BQ.1 and BQ.1.1, sublineages of BA.5 are aggregated to BA.5. Sublineages of BA.1.1 and BA.2.75 (except BA.2.75.2 and its sublineages) are aggregated to the parental BA.1.1 and BA.2.75 respectively. Previously, BA.2.75.2 was aggregated with BA.2.75, and BQ.1 and BQ.1.1 were aggregated with BA.5. Lineages BA.4.6, BF.7, BA.2.75.2, and BQ.1.1 contain the spike substitution R346T.

BA.4.6 Percentage by US Regions 10/09/22 - 10/15/22



<https://covid.cdc.gov/covid-data-tracker/#variant-proportions>

Evusheld FDA Update

The FDA issued a warning to patients and healthcare providers

- There may be an increased risk of developing COVID-19 in areas where the Omicron subvariant BA.4.6 is circulating even after receiving Evusheld.

The warning was issued in response to

- Studies demonstrating that the two monoclonal antibodies in AstraZeneca's Evusheld do not neutralize BA.4.6.

As of October 1, 2022

- The U.S. CDC reports that approximately 12.8% sequenced COVID-19 infections are BA.4.6 in the U.S.

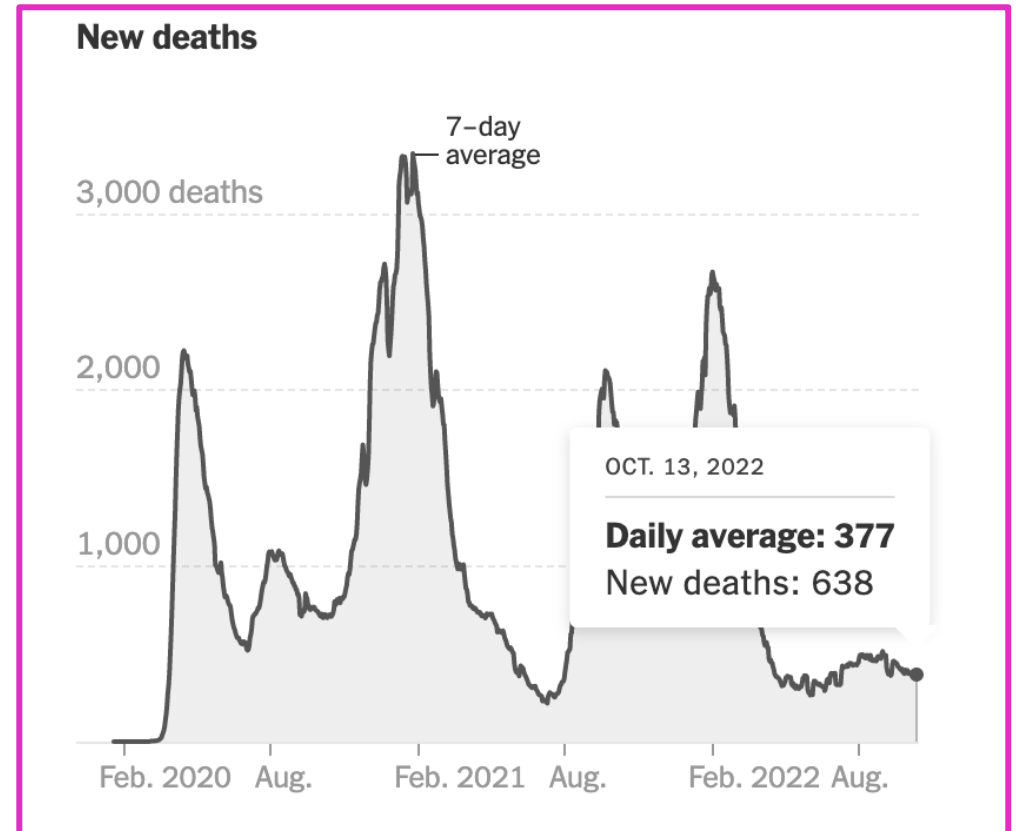
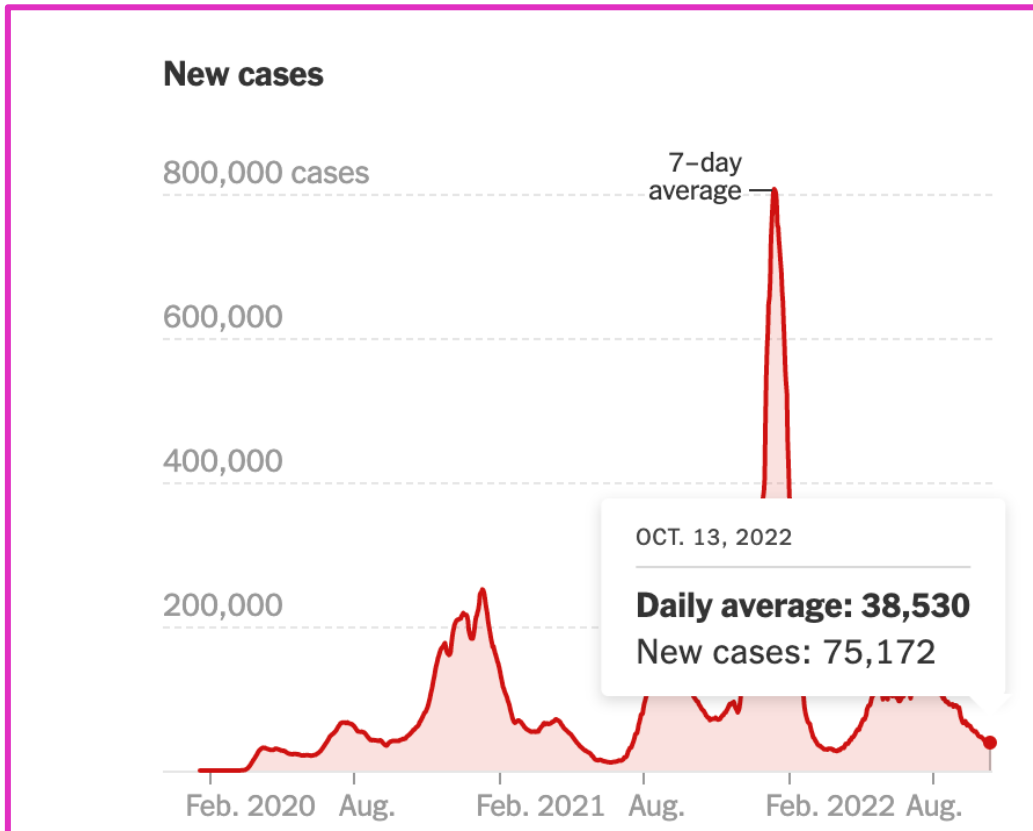
Region 7 which covers Iowa, Kansas, Missouri, and Nebraska

- Currently has the highest proportion of BA.4.6. infections in the U.S. at 21.9%.

FDA posted the following updated documents addressing BA.4.6:

- Evusheld [Fact Sheet for Healthcare Providers](#) (updated 10/3/2022)
- [Frequently Asked Questions on the EUA for Evusheld](#) (updated 10/3/2022)

7-day Average of New COVID-19 Cases and Deaths in the United States



**Association of
Primary and
Booster
Vaccination and
Prior Infection
With SARS-CoV-2
Infection and
Severe COVID-19
Outcomes**

CONCLUSIONS AND RELEVANCE

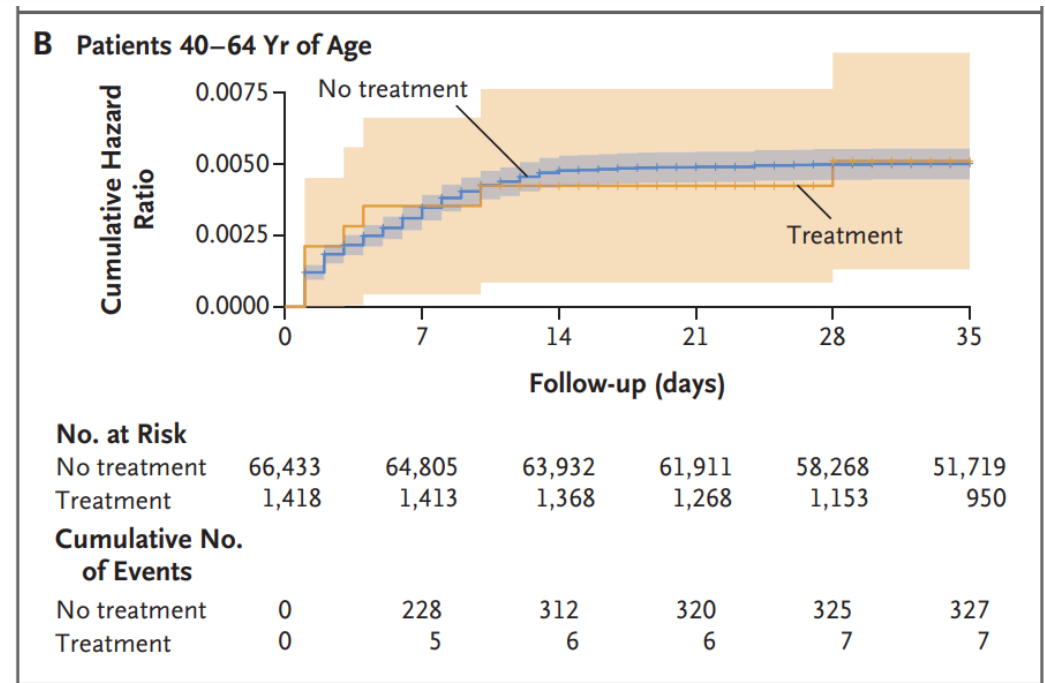
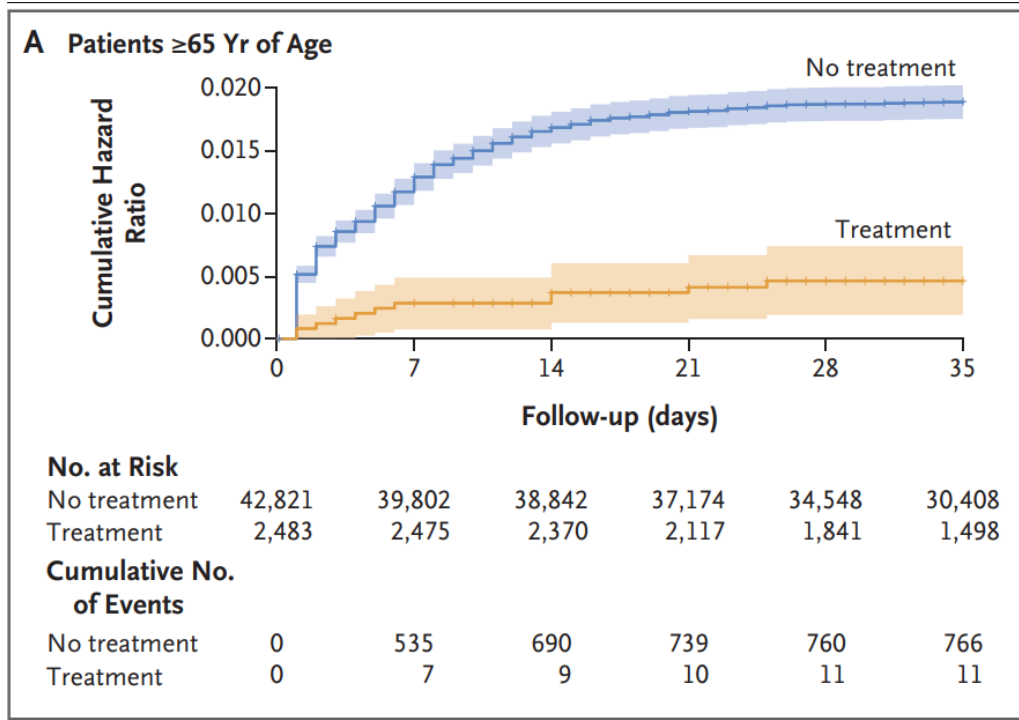
- Receipt of primary COVID-19 vaccine series compared with being unvaccinated
- Receipt of boosters compared with primary vaccination
- Prior infection compared with no prior infection

Were all significantly associated with

- Lower risk of SARS-CoV-2 infection (including Omicron)
- Lower hospitalization
- Lower death.

The associated protection waned over time, especially against infection.

Nirmatrelvir Use and Severe Covid-19 Outcomes During the Omicron Surge



Cumulative Hazard Ratio for Hospitalization Due to Covid-19, According to Age Group and Treatment Status. For patients who did not receive treatment with nirmatrelvir, time zero corresponds to the time at which each patient received the diagnosis of coronavirus disease 2019 (Covid-19). For patients who received treatment with nirmatrelvir, time zero corresponds to the time at which a patient began the treatment. The shaded areas indicate the 95% confidence intervals.

Use and Severe Covid-19 Outcomes During the Omicron Surge

Table 3. Hazard Ratios for Hospitalization Due to Covid-19, According to Immunity Status and Age Group.

Variable	All Patients		Patients without Previous Immunity		Patients with Previous Immunity	
	40–64 yr (N = 66,433)	≥65 yr (N = 42,821)	40–64 yr (N = 20,555)	≥65 yr (N = 3318)	40–64 yr (N = 45,878)	≥65 yr (N = 39,503)
Hazard ratio for hospitalization (95% CI)	0.74 (0.35 to 1.58)	0.27 (0.15 to 0.49)	0.23 (0.03 to 1.67)	0.15 (0.04 to 0.60)	1.13 (0.50 to 2.58)	0.32 (0.17 to 0.63)

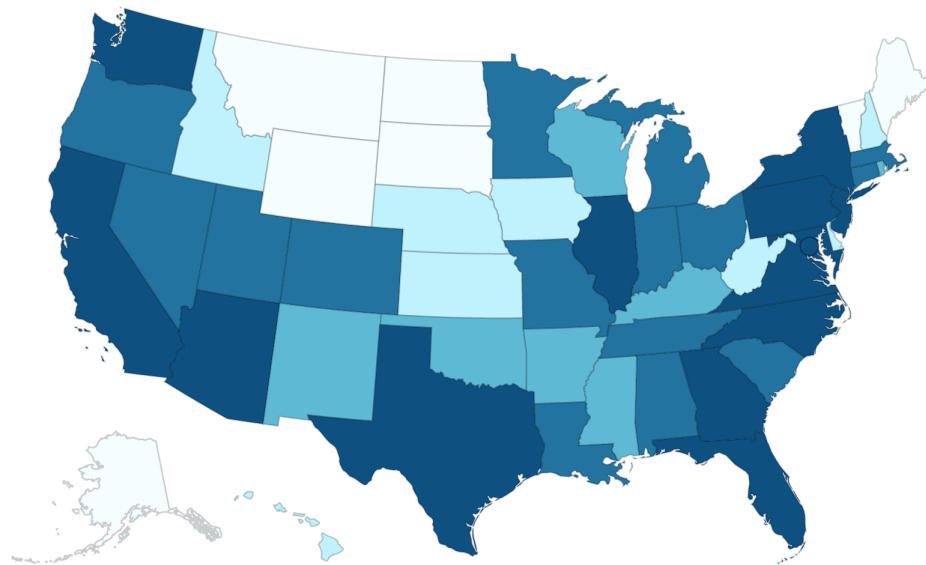
n engl j med 387;9 nejm.org September 1, 2022

Monkeypox: US Statistics

2022 U.S. Map & Case Count
Data as of October 18 2022

U.S. Monkeypox Case Trends Reported
to CDC Data October 12 2022

27,558 Total confirmed monkeypox/orthopoxvirus cases



Legend

○ 1 to 10

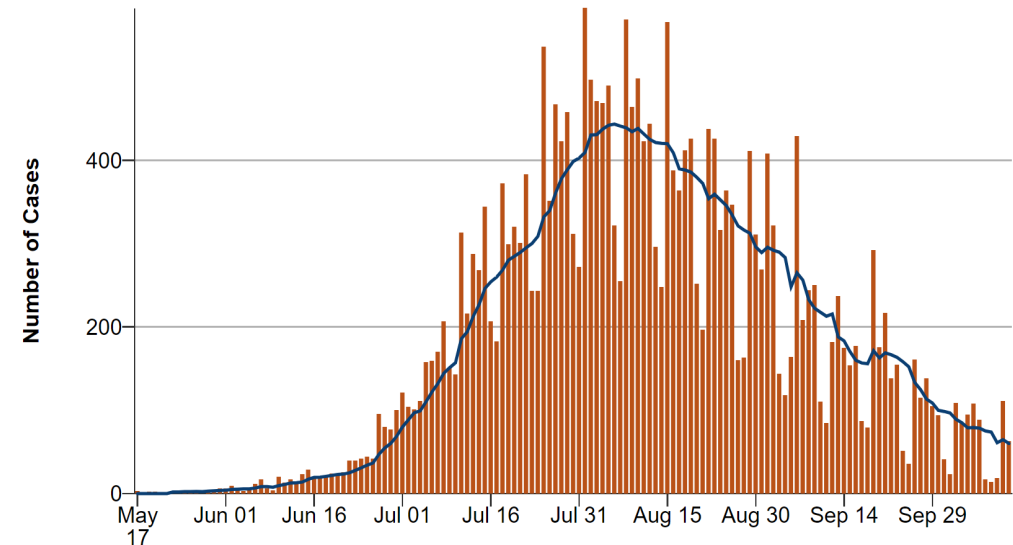
● 51 to 100

● >500

● 11 to 50

● 101 to 500

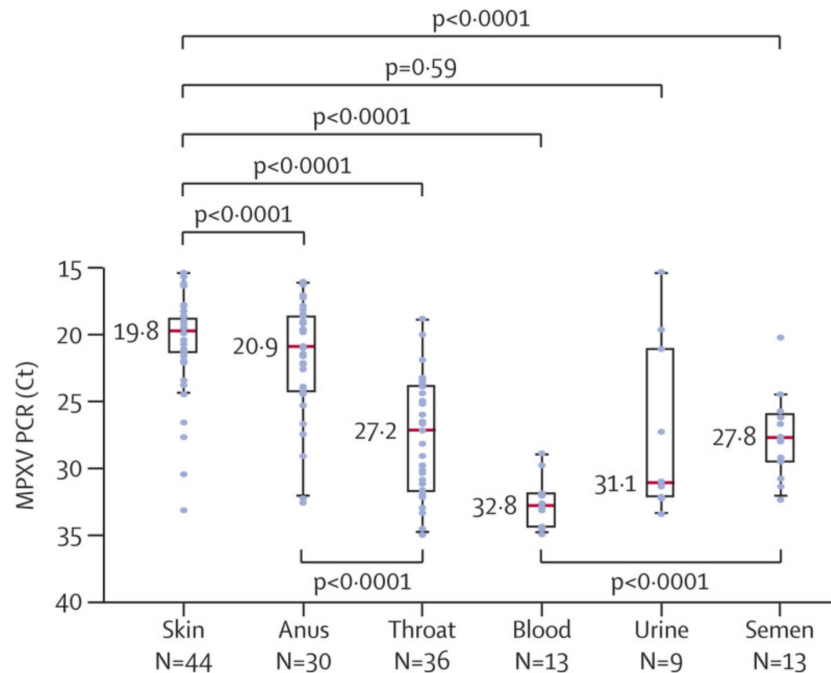
Daily Monkeypox Cases Reported* and 7 Day Daily Average



3 Deaths
Confirmed

<https://www.cdc.gov/poxvirus/monkeypox/index.html>

Monkeypox virus Concentrations According to Sampled Exposure Source (From Palich et al.)



Monkeypox virus in Human Samples and Implications for Transmission

Exposure source	Monkeypox virus DNA detected by PCR	Replication-competent virus detected/isolated	Epidemiologically supported source of infection
Skin	Yes	Yes	Yes
Oropharynx and saliva	Yes*	Yes	Yes
Anorectum	Yes	Yes	Yes†
Semen	Yes*	Yes	Insufficient data
Urine/urethra	Yes	Yes	Insufficient data
Conjunctiva or ocular fluid	Yes	Yes	Insufficient data
Blood/plasma/serum	Yes	Insufficient data	Insufficient data
Feces	Yes	Insufficient data	Insufficient data
Vaginal fluid	Insufficient data	Insufficient data	Insufficient data
Breastmilk	Insufficient data	Insufficient data	Insufficient data
Contaminated sharp‡	Insufficient data	Insufficient data	Yes

**Science Brief:
Detection and
Transmission of
Monkeypox
Virus
Updated October
18, 2022**

During the current outbreak the principal mode by which people have been infected is through:

- Close contact during sexual activity with one or more monkeypox lesions on the skin or mucosal surfaces (e.g., oropharynx, anorectum) of a person with monkeypox.

A small number of infections have also resulted from:

- Injury with a sharp instrument used to sample skin lesions (a practice not recommended by CDC)
- Skin piercing and tattooing, (the precise means of transmission during piercing and tattooing remain unknown)