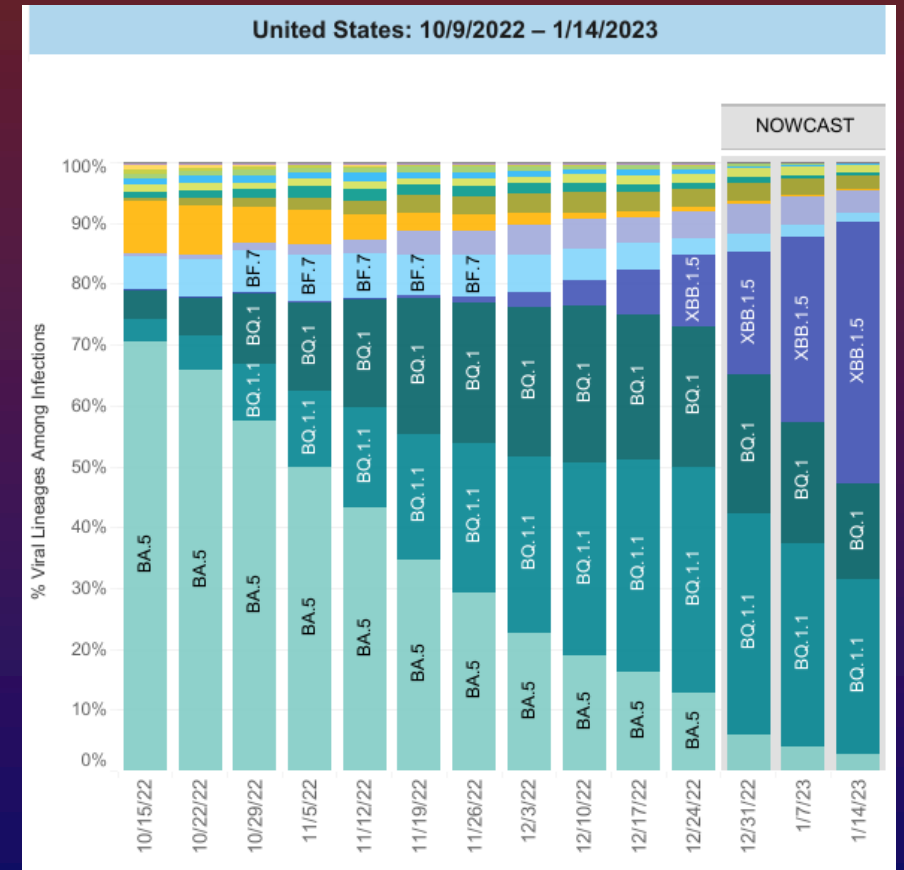
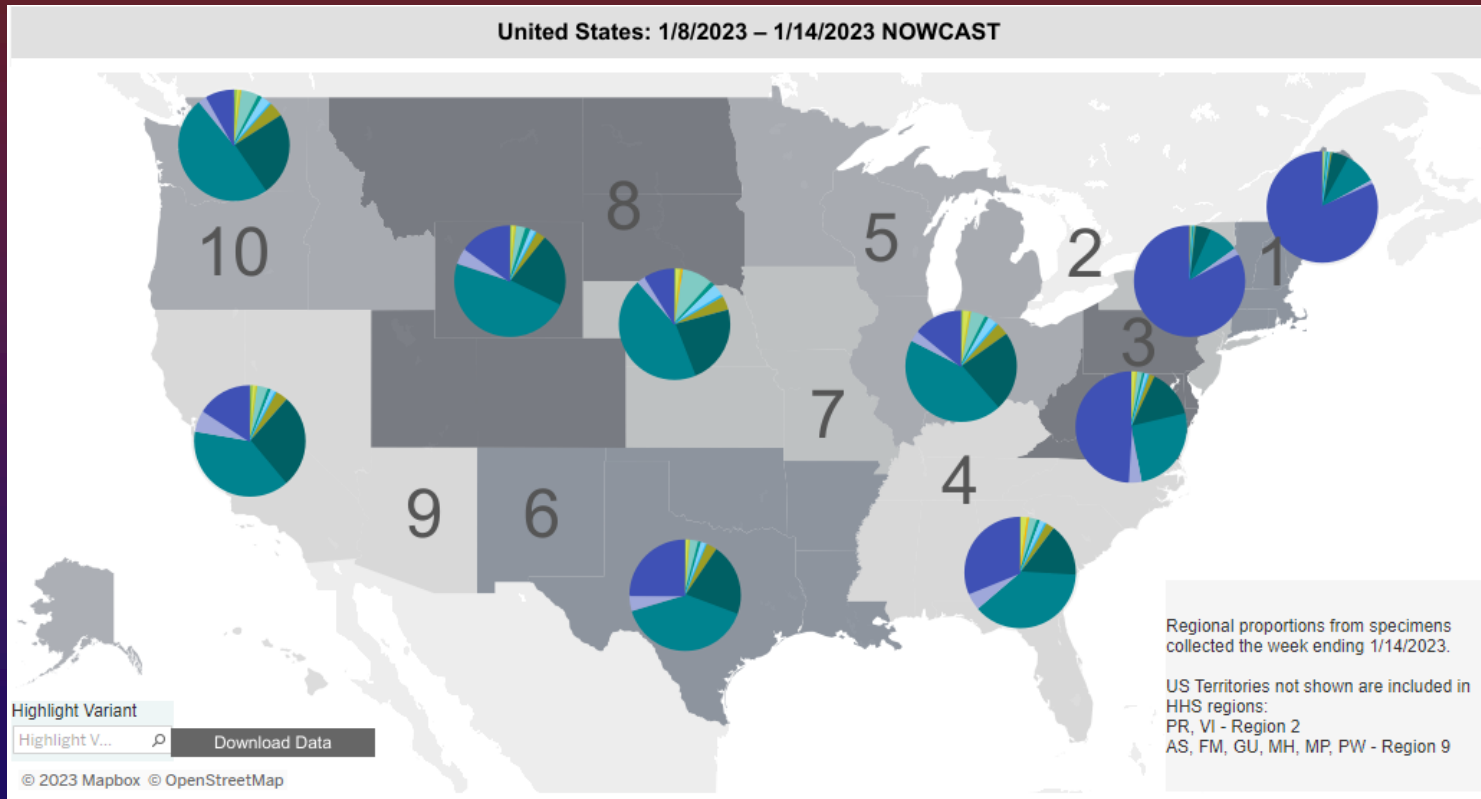


COVID-19/Mpox Clinical Update

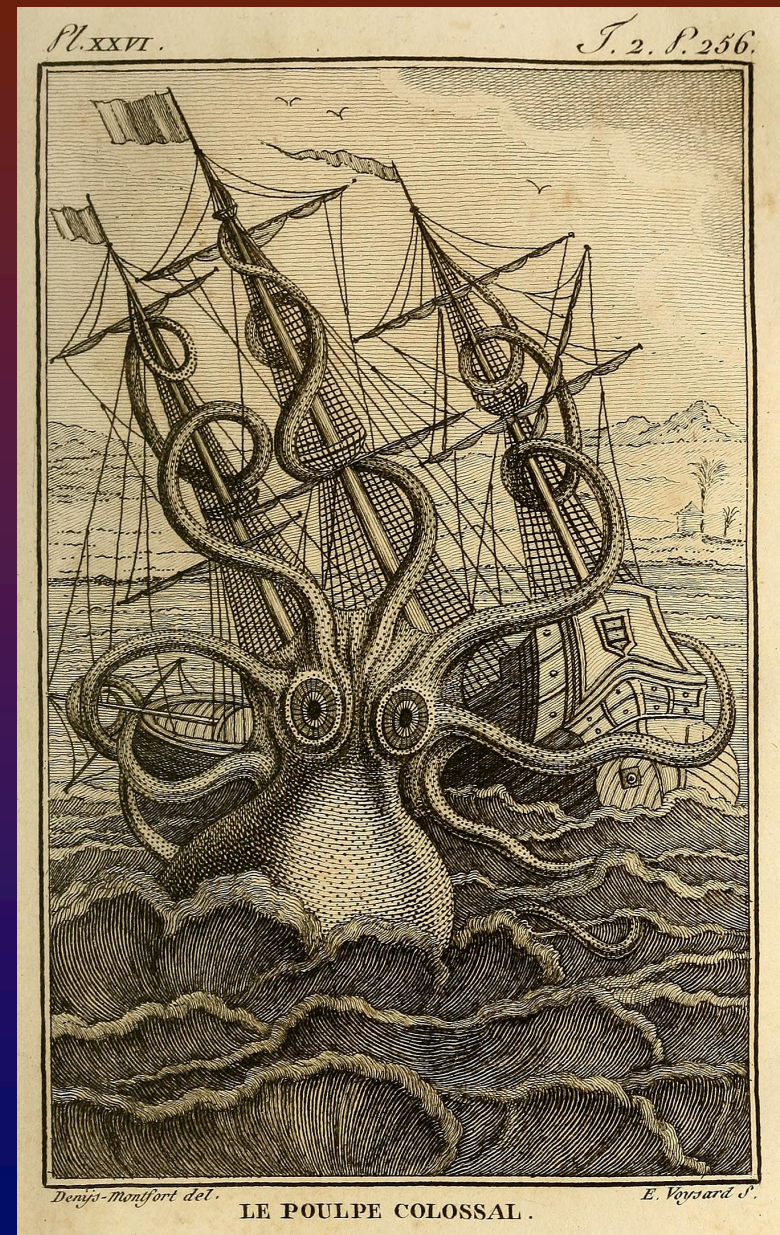
Jonathan Vilasier Iralu, MD, MACP, FIDSA

Indian Health Service Chief Clinical Consultant
for Infectious Diseases

Virology



The Kracken!!!





Virology

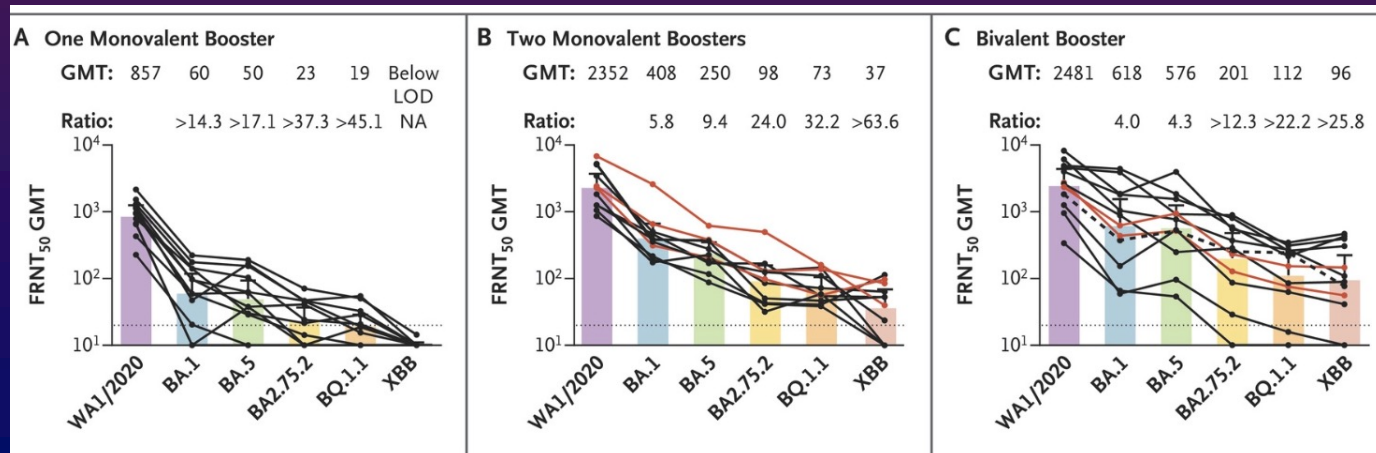
- ❖ **XBB.1.5** (Yue et al, bioRxiv 1/3/2023-Singlomics Biopharmaceuticals)
 - ❖ Currently outcompeting BQ1.1 and XBB.1
 - ❖ Has a **higher affinity for the hACE-2 receptor** than BQ 1.1 and XBB/XBB.1
 - ❖ Convalescent plasma from early omicron variants are significantly evaded
 - ❖ Evusheld and Bebtelovimab do not neutralize XBB.1.5
 - ❖ Sotrovimab is weakly active
 - ❖ New monoclonal **SA55 is highly effective** at neutralizing XBB.1.5

<https://www.biorxiv.org/content/10.1101/2023.01.03.522427v1>

Vaccines

❖ Davis-Gardner et al, NEJM, 2022

- ❖ Took sera from 1-dose vs 2 dose monovalent vs bivalent mRNA booster patients
- ❖ Tested against WA1/2020 and omicron variants (BA.1, BA.5, BA2.75.2, BQ.1.1, XBB)
- ❖ Bivalent vax recipients had better neutralizing activity against BA2.75.2, BQ.1.1 and XBB than monovalent vaccine recipients

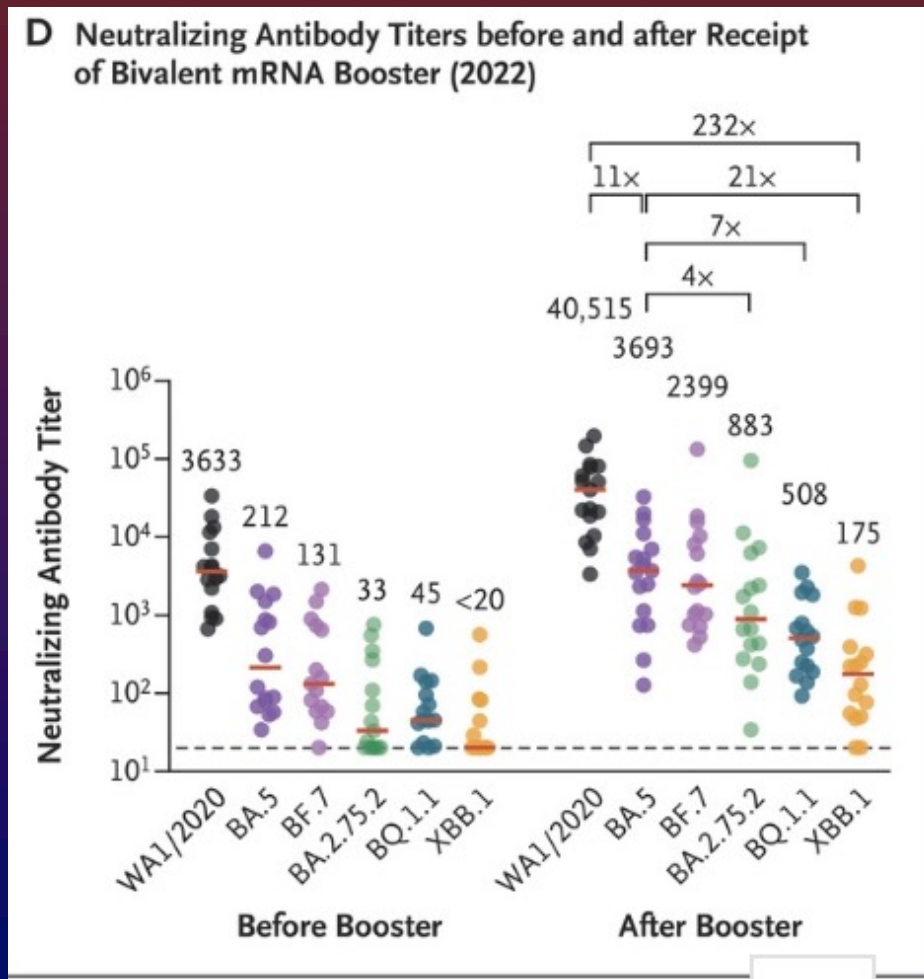


Substantial Neutralization escape by Omicron Variants BQ.1.1 and XBB.1

❖ Miller et al, NEJM 1/18/2022

- ❖ Bivalent booster yields 232-fold lower neutralization titers for XBB.1 than WA1/2020
- ❖ Driven by R346T Spike mutation
- ❖ Vax protection may depend more on CD8-T-cell responses

❖ <https://www.nejm.org/doi/full/10.1056/NEJMc2214314>





Pfizer vaccine news

❖ CDC Vaccine Safety Datalink

- ❖ Increase in strokes in persons age 65 and older who received Pfizer Bivalent vaccine within 21 days of vaccine compared with day 22-44
- ❖ No post vaccine stroke signal noted in
 - ❖ CMMS database
 - ❖ VAS database
 - ❖ VAERS
 - ❖ Pfizer data in US
- ❖ No change in vaccine practice is recommended

•Are not able to be fully vaccinated with any available COVID-19 vaccines due to a history of severe adverse reactions to a COVID-19 vaccine or any of its components.

NIH Treatment Guideline Update- December 28, 2022

- ❖ Bebtelovimab is not currently authorized by FDA for Rx of COVID-19
- ❖ Options for patients with GFR < 30 or on dialysis (if Benefits>> Risks)
 - ❖ Off-label lyophilized remdesivir (CATCO study showed no increased risk of AKI)
 - ❖ Off-label use of Paxlovid using [University of Waterloo/University of Toronto drug interaction guide](#) to dose adjust for low GFR

<https://www.covid19treatmentguidelines.nih.gov/about-the-guidelines/whats-new/>



University of Waterloo/University of Toronto
drug interaction guide

Special Dosing Considerations:

eGFR[†] 30 to 59 mL/min:

Nirmatrelvir 150 mg and ritonavir 100 mg taken together orally BID x 5 days.

eGFR[†] <30 mL/min:⁴

Day 1: Nirmatrelvir 300 mg and ritonavir 100 mg

Days 2-5: Nirmatrelvir 150 mg and ritonavir 100 mg once daily.

Dialysis: Dose for eGFR <30 mL/min; give after dialysis.

If dialysis and weight <40 kg:

Nirmatrelvir 150 mg and ritonavir 100 mg q48h x 3 doses; give after dialysis.

Severe hepatic impairment (Child-Pugh Class C):

Nirmatrelvir/ritonavir is not recommended.



NIH Treatment Guideline Update- 1/10/2023

- ❖ Now say 91% of isolates are likely resistant to tixagevimab /cilgavimab and it is **unlikely to be effective** for “the vast majority of individuals”
- ❖ Since no alternate option for PrEP is available “**clinicians could still administer**” tix/cil after considering individual patient risks and regional prevalence of resistant sub-variants

<https://www.covid19treatmentguidelines.nih.gov/>



New Oral Drug for COVID-19 Rx

- ❖ **VV116** : deuterated remdesivir hydrobromide, (PO bid x 5 days)
- ❖ **Compared vs Nirmatrelvir-ritonavir (Cao et al, NEJM, 12/28/2022)**
 - ❖ Phase 3 non inferiority, blinded RCT for mild to moderate COVID-19
 - ❖ 771 participants randomized between the two regimens (five days)
 - ❖ Non-inferior in **time to sustained clinical recovery** (4 vs 5 days)
 - ❖ Time to **sustained symptom resolution and first (-) test** did not differ
 - ❖ **No deaths or progression** to severe COVID-19 in either group at day 28
 - ❖ Fewer adverse events in VV116 group (67.4% vs 77.3%)

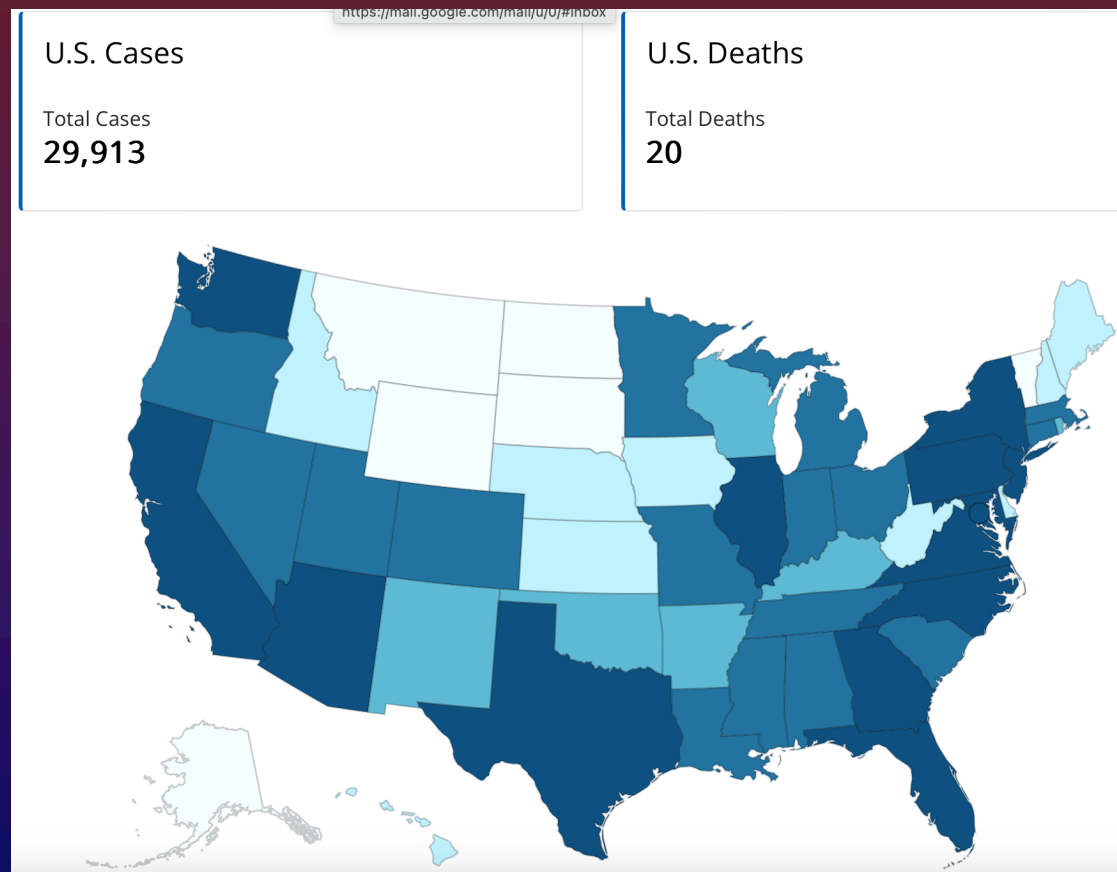


Infection Prevention

- ❖ **Medical Masks vs n95 respirators for preventing Covid-19 among HCWs**
 - ❖ RCT from Canada, India, Pakistan, Egypt (Loeb et al, Ann Intern Med, 12/2022)
 - ❖ 1009 HCWs providing direct care to COVID-19 or COVID-19 suspect patients
 - ❖ Randomized to Medical masks vs fit-tested N95 respirators (universal masking)
 - ❖ Primary outcome was positive RT-PCR for SARS-CoV-2
 - ❖ ITT analysis PCR (+) in 10.46% medical mask vs 9.27% N95 ->HR 1.14 [.77-1.69]
 - ❖ **Ruled out a doubling in hazard for medical mask vs N95**
 - ❖ **Wide variance by country: HR in Canada was 2.83 and Egypt 0.95**

<https://doi.org/10.7326/M22-1966>

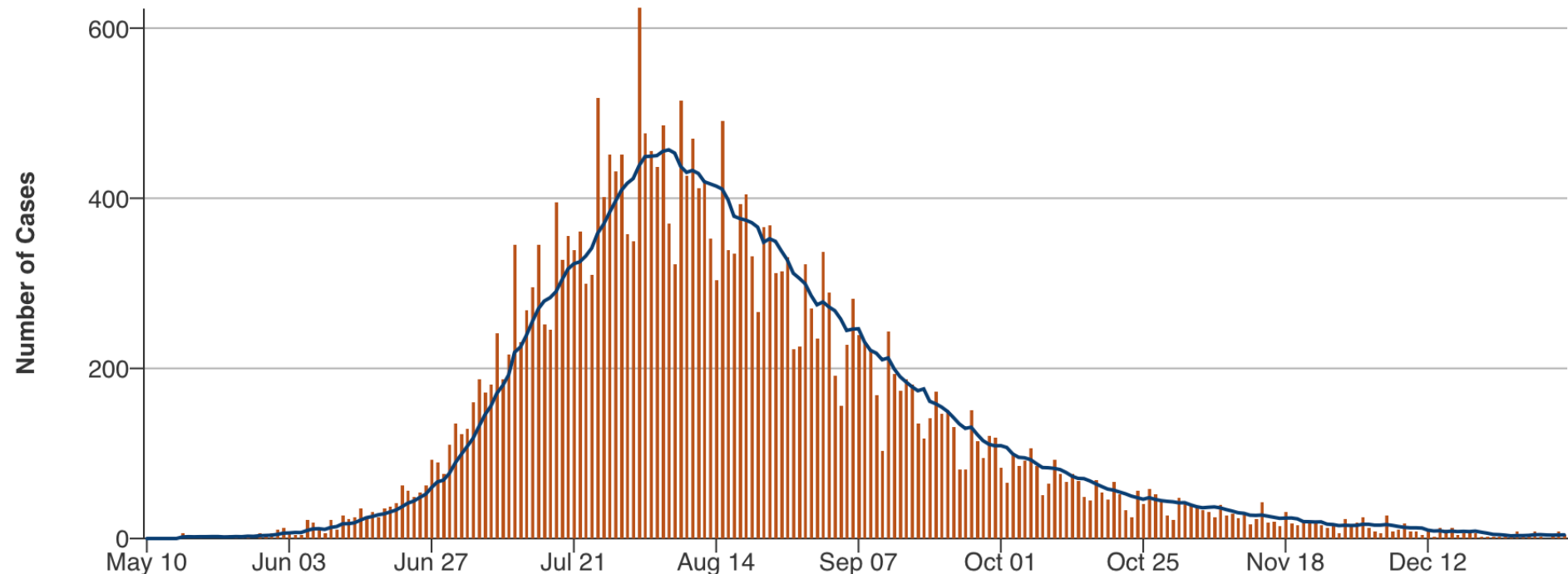
Mpox Cases, deaths, and distribution 1/5/2023



<https://www.cdc.gov/poxvirus/monkeypox/response/2022/us-map.html>

Mpox case count, CDC

Daily Mpox Cases and 7 Day Daily Average



<https://www.cdc.gov/poxvirus/monkeypox/response/2022/mpx-trends.html>



Mpox News

- ❖ **Mpox was linked to tattooing and piercing (Baum, NEJM, 12/14/2022)**
 - ❖ 21 people in Spain caught monkeypox from a single parlor
 - ❖ Not sexually transmitted
 - ❖ 7 days after procedure → Regional adenopathy followed by rash
 - ❖ 15 of 16 tested instruments were positive for Mpox
- ❖ **A single dose of JYNNEOS may attenuate severity (Farrar, MMWR, 2022)**
 - ❖ Fewer and less severe symptoms
 - ❖ Less fever and chills
 - ❖ Hospitalization 2% for singly vaccinated vs 8% for unvaccinated

