Monthly Healthcare Provider & Public Health Partner Webinar

Emerging Public Health Issues: Monkeypox Virus

August 11, 2022

NH DIVISION OF
Public Health Services
Department of Health and Human Services

Agenda

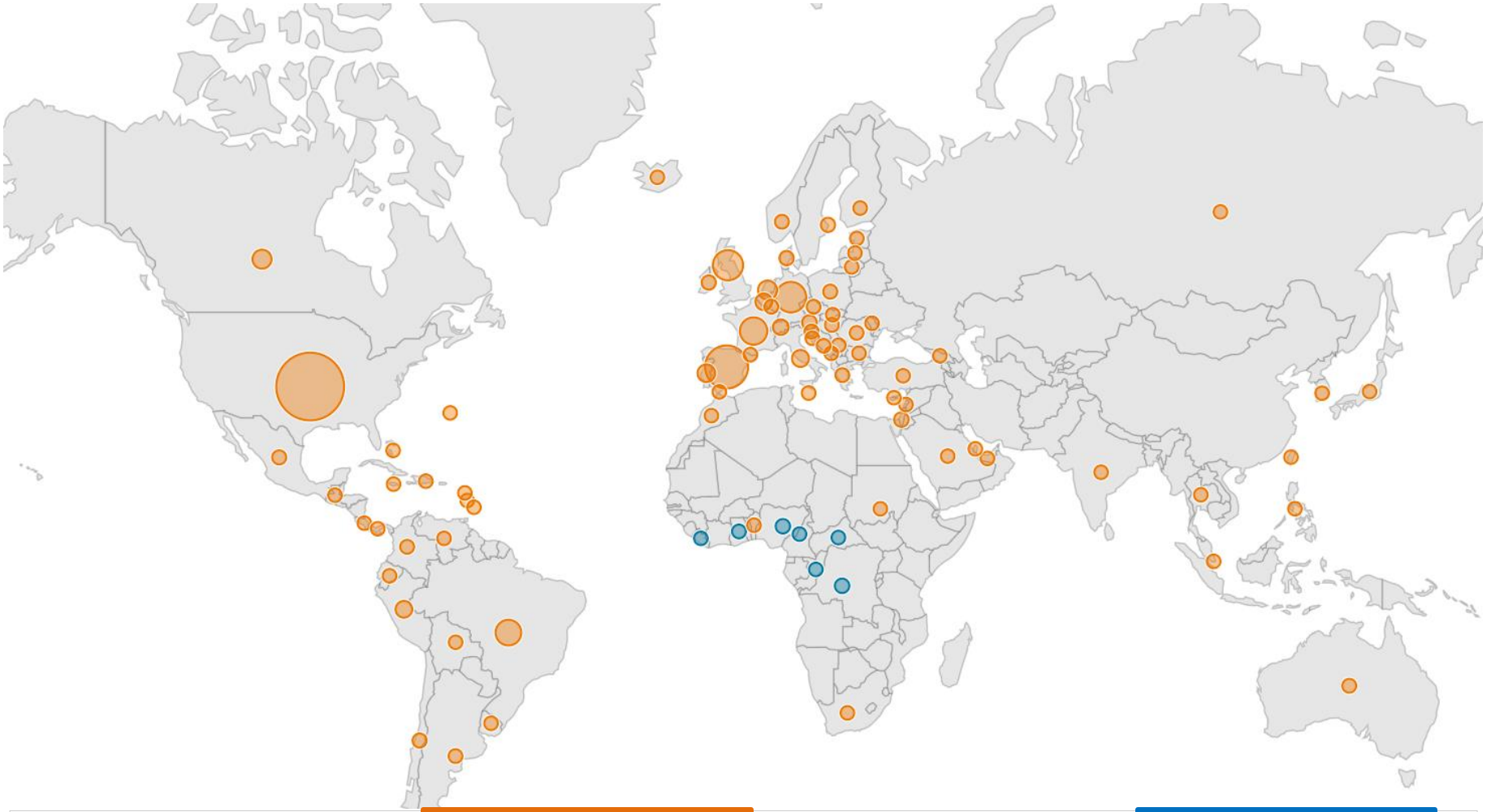
- Monkeypox virus epidemiology
- JYNNEOS vaccine to prevent monkeypox
- Tecovirimat (TPOXX) to treat monkeypox
- Q&A

Monkeypox Virus Epidemiology

Situational Update and Overview

- Infections are increasing in the U.S. and globally
- World Health Organization (WHO) on July 23rd declared the escalating global outbreak a Public Health Emergency of International Concern (PHEIC)
- Spread of this virus is occurring largely through sexual networks through male-to-male sexual contact
- Mostly mild disease is being reported, but the monkeypox skin lesions can cause significant scaring and pain (e.g., proctitis, tonsillitis), and complications (secondary bacterial infections)
- There have been no deaths from monkeypox reported in the United States

Global Monkeypox Outbreak Cases, 2022



https://www.cdc.gov/poxvirus/monkeypox/response/2022/world-map.html

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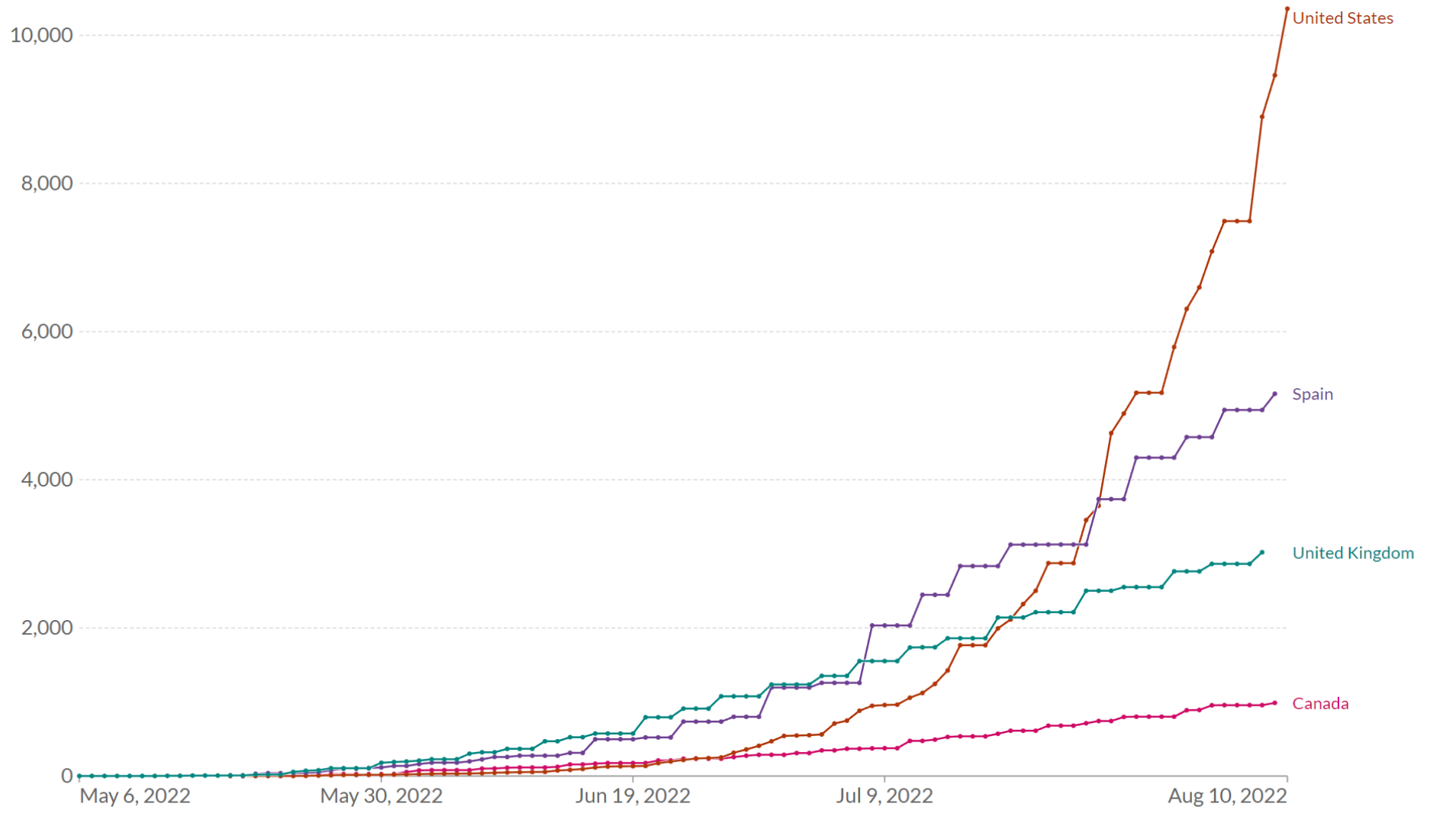
Monkeypox: Cumulative confirmed cases

Our World in Data

LINEAR | LOG



Source: Data produced by the 'Global.health' team — available at github.com/globaldothealth/monkeypox

https://ourworldindata.org/monkeypox

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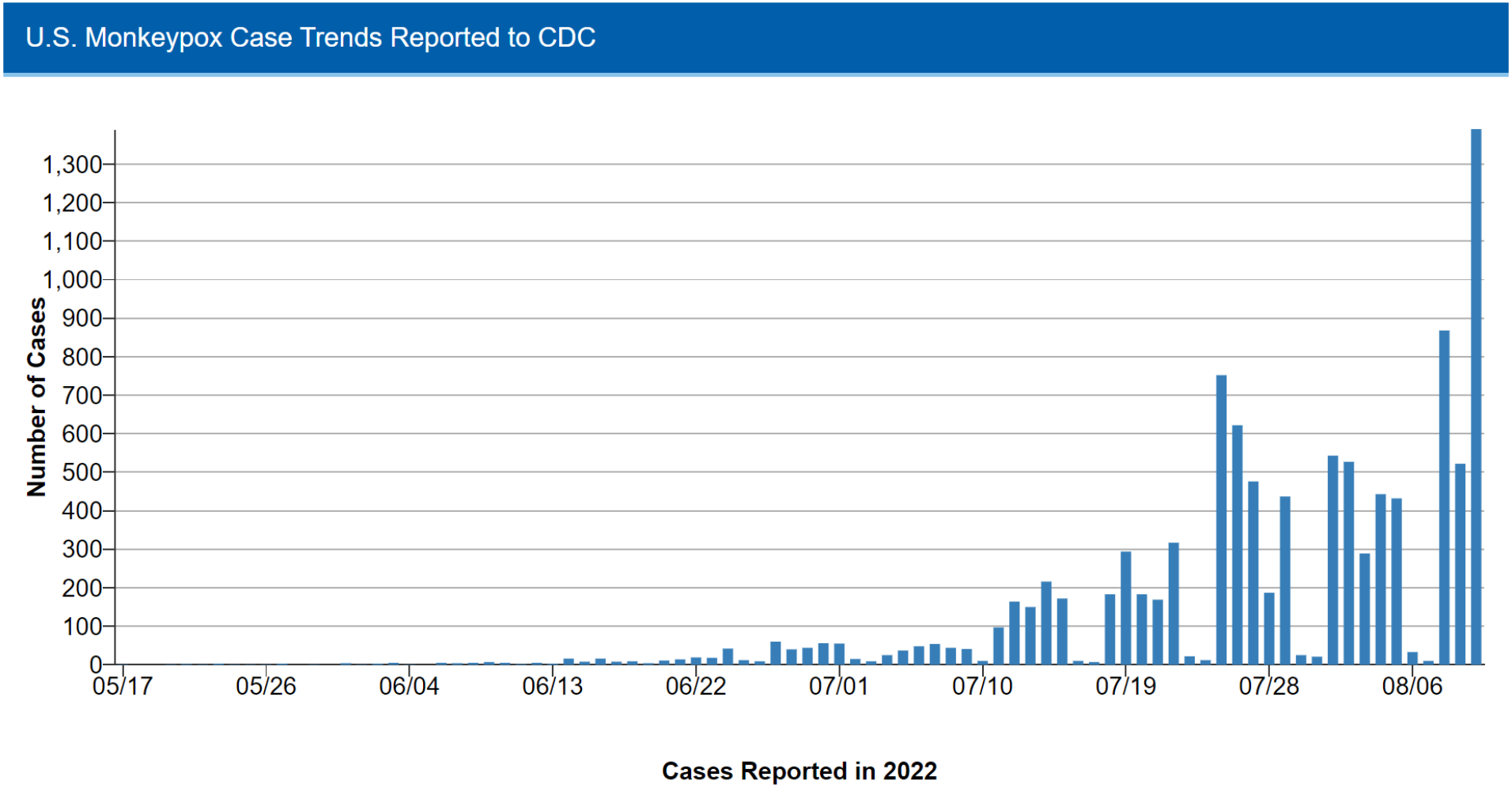
U.S. Epi Curve (# of Cases Reported by Day)



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

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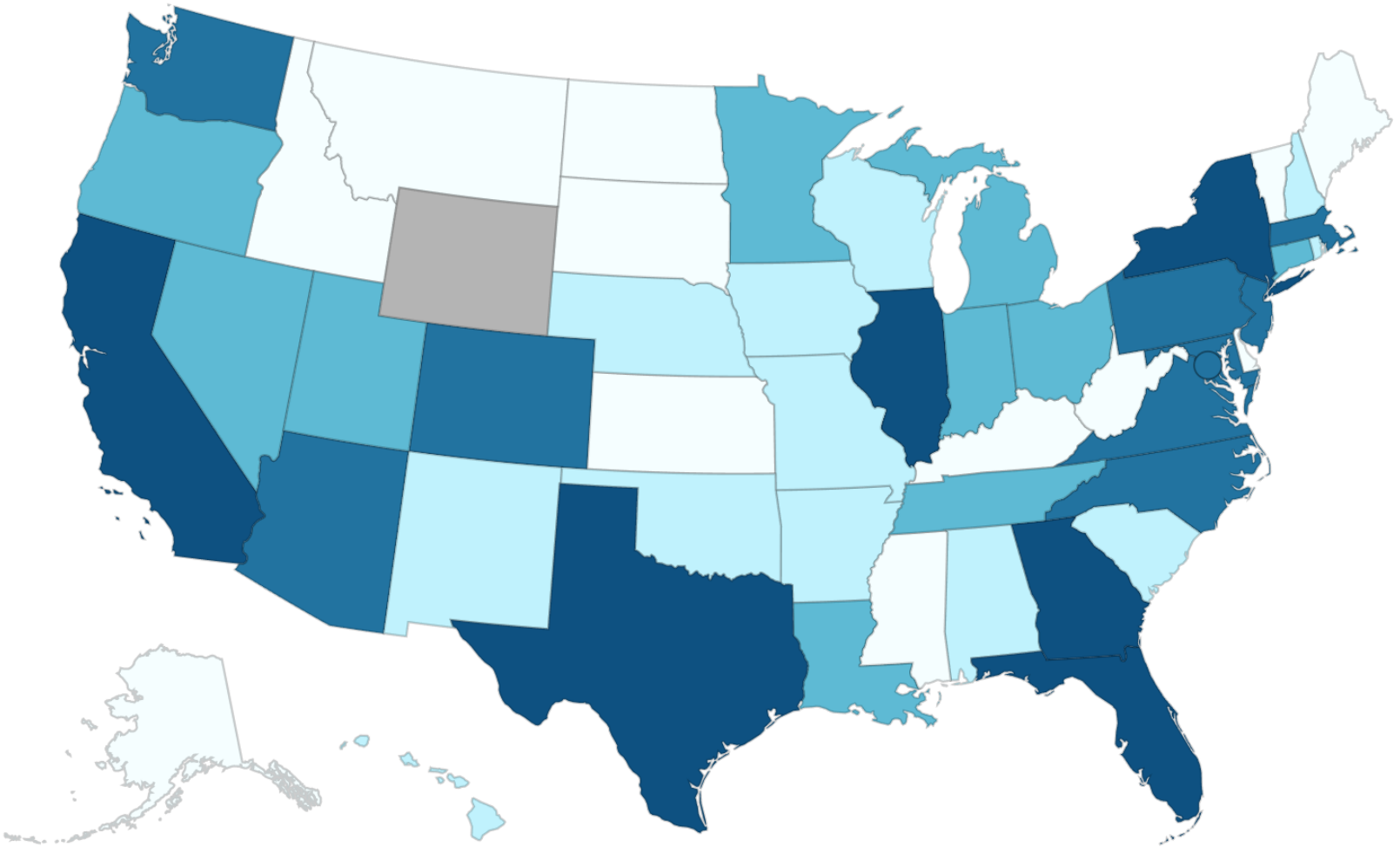
10,392 Total confirmed monkeypox/orthopoxvirus cases

*One Florida case is listed here but included in the United Kingdom case counts because the individual was tested while in the UK.



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

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JYNNEOS Vaccine for Prevention of Monkeypox Virus Infection

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THIS IS AN OFFICIAL NH DHHS HEALTH ALERT

Distributed by the NH Health Alert Network
DHHS.Health.Alert@dhhs.nh.gov
August 10, 2022 Time 1330 (1:30PM EDT)
NH-HAN 20220810

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Monkeypox Virus Outbreak, Update #3

JYNNEOS™ Vaccine and Tecovirimat (TPOXX) Access

- NH DPHS recommends that the JYNNEOS vaccine be administered to persons:
  - Within 14 days AFTER an exposure to the monkeypox virus (post-exposure prophylaxis)
  - At high risk for monkeypox BEFORE exposure occurs (pre-exposure prophylaxis)
- NH DPHS has been connecting patients to vaccination after an exposure is identified on a case-by-case basis
- We are starting vaccination for people at highest-risk for exposure
- Vaccine supply is still limited, so we need to prioritize who is eligible for vaccine
  - NH has been allocated only 1,467 total doses which is enough to vaccinated ~730 persons using the standard subcutaneous dosing regimen
  - We are not expecting more vaccine allocation for the next 2-3 months

Post-Exposure Prophylaxis (PEP)

- JYNNEOS vaccine PEP should be offered to:
  - Persons who report in the prior 14 days prolonged (i.e., hours of) face-to-face contact, or any direct physical/intimate contact to another person with suspect or confirmed monkeypox.
  - Persons who report in the prior 14 days coming into physical contact with items (e.g., clothing or linens) that are known to have previously touched the infectious rash or body fluids of a person with monkeypox.
  - Healthcare workers who in the prior 14 days had an exposure (above) without wearing all recommended personal protective equipment (PPE), as outlined in CDC's Exposure Risk Assessment tables.

- Timing of vaccination: the sooner the better
  - Vaccination within **4 days** of exposure may prevent the onset of disease
  - Vaccination between 4-14 days after an exposure may reduce the symptoms, but is not likely to prevent disease

Pre-Exposure Prophylaxis (PrEP)

- JYNNEOS vaccine PrEP (vaccination before exposure) should be offered to men who have sex with men (MSM) who report any of the following:
  - 3 or more new sex partners in the last month
  - Engaging in group or anonymous sex
  - Engaging in sex with others at sex-on-site venues or events
  - Exchanging sex for money, drugs, or other services
  - Taking medications for HIV prevention (i.e., HIV PrEP)

Vaccine Access

- Because of limited supply, there is not enough vaccine to widely distribute
- NH DPHS is working to provide JYNNEOS vaccine through healthcare clinics that have agreed to vaccinate their own patient population, take referrals from providers, and accept new patients for vaccine appointments
- Clinic locations, availability, and contact/referral information will be publically available on the NH DPHS monkeypox website starting Monday, August 15th
- Additional clinics will be added as they become operational

https://www.dhhs.nh.gov/programs-services/disease-prevention/infectious-disease-control/monkeypox

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JYNNEOS Vaccination Schedule

- FDA-approved/licensed vaccination schedule:
  - Adults 18+ years of age: 2 doses (0.5 mL/dose) administered subcutaneously, separated by 28 days
- FDA Emergency Use Authorization (EUA) vaccination schedule (changes to standard recommendations highlighted in orange):
  - Adults 18+ years of age: 2 doses (**0.1 mL/dose**) administered **intradermally**, separated by 28 days
  - **Children and Adolescents** <18 years of age: 2 doses (0.5 mL/dose) administered subcutaneously, separated by 28 days
- Vaccine providers should transition now to use the intradermal (ID) dosing under FDA's EUA (for persons 18+ years of age) – this dose-sparing strategy will potentially increase vaccine availability by 5-fold (i.e., we can vaccinate 3,650 person instead of 730)

https://www.cdc.gov/poxvirus/monkeypox/interim-considerations/jynneos-vaccine.html

Vaccine 33 (2015) 5225–5234

Contents lists available at ScienceDirect

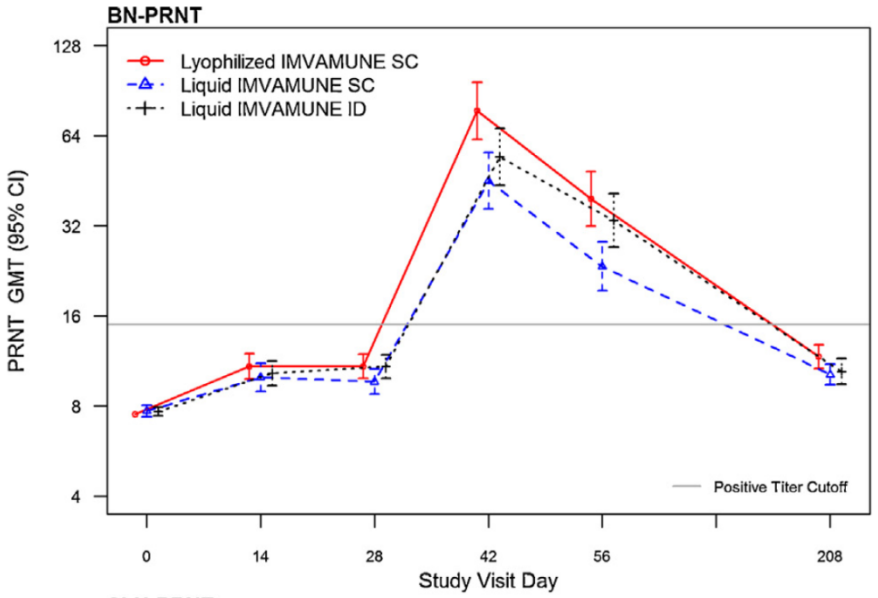
Vaccine

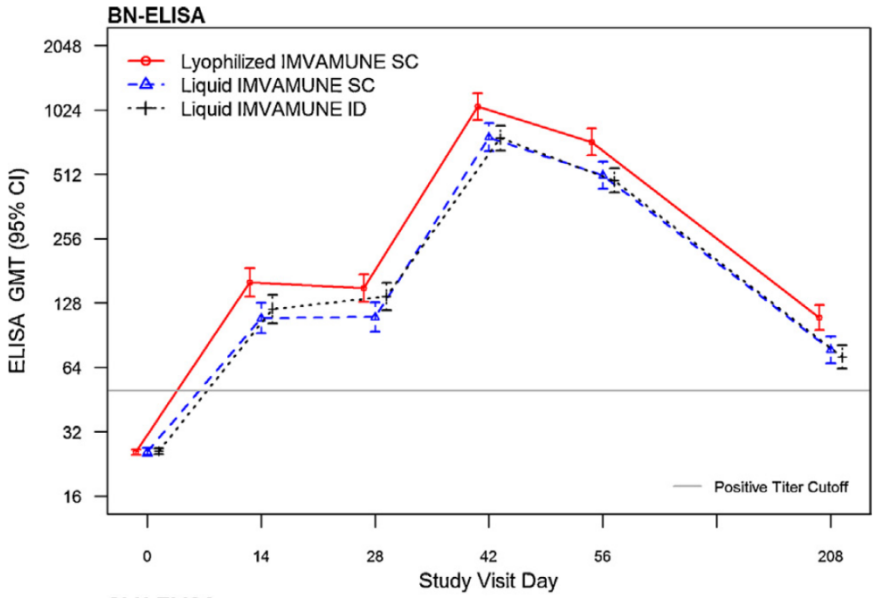
journal homepage: www.elsevier.com/locate/vaccine

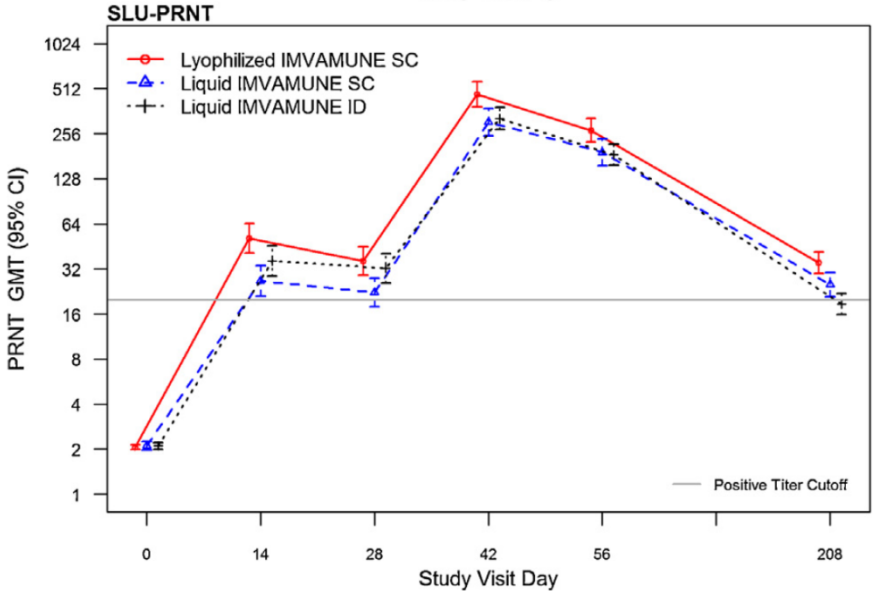
Comparison of lyophilized versus liquid modified vaccinia Ankara (MVA) formulations and subcutaneous versus intradermal routes of administration in healthy vaccinia-naïve subjects

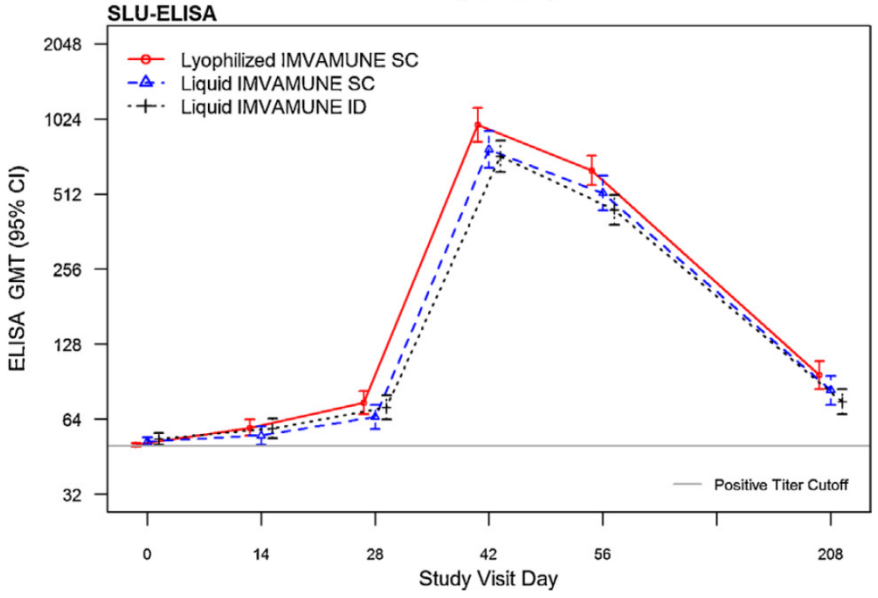
- Compared different formulations and routes of administration:
  - lyophilized subcutaneous (SC) at 0.5 mL/dose
  - liquid subcutaneous (SC) at 0.5 mL/dose
  - liquid intradermal (ID) at 0.1 mL/dose
- Measured antibody response using 4 different assays (next slide)
- Antibody response was non-inferior for ID compared to SC admin
- ID administration had a greater occurrence of local side effects, some of which lasted for a prolonged period in some participants

https://www.sciencedirect.com/science/article/pii/S0264410X15008762









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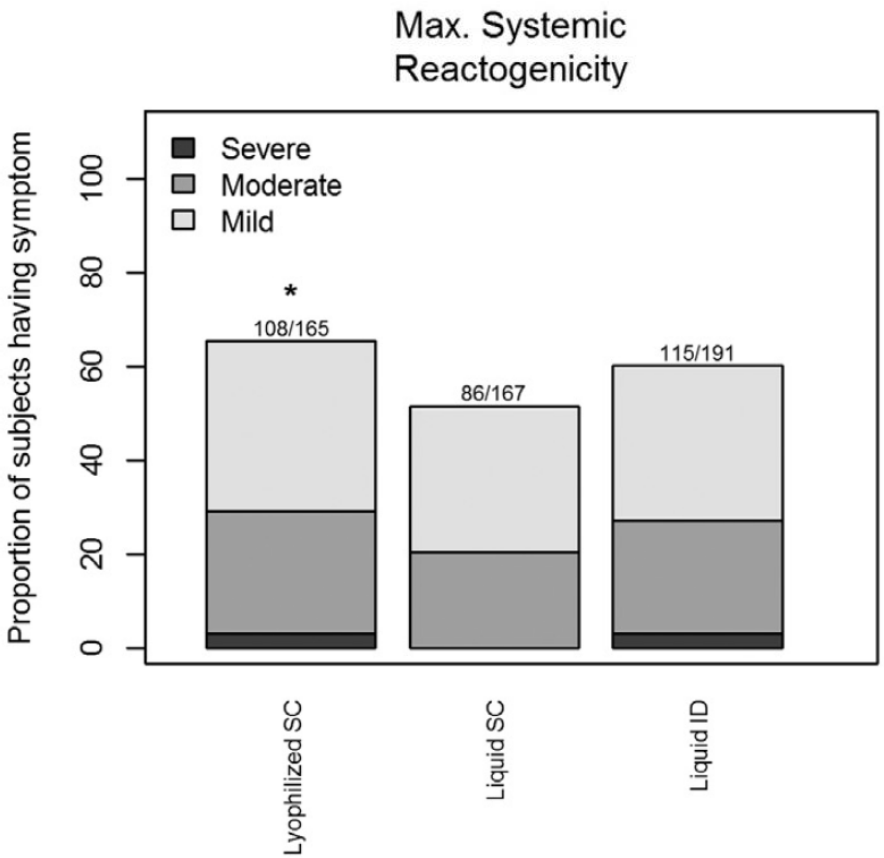
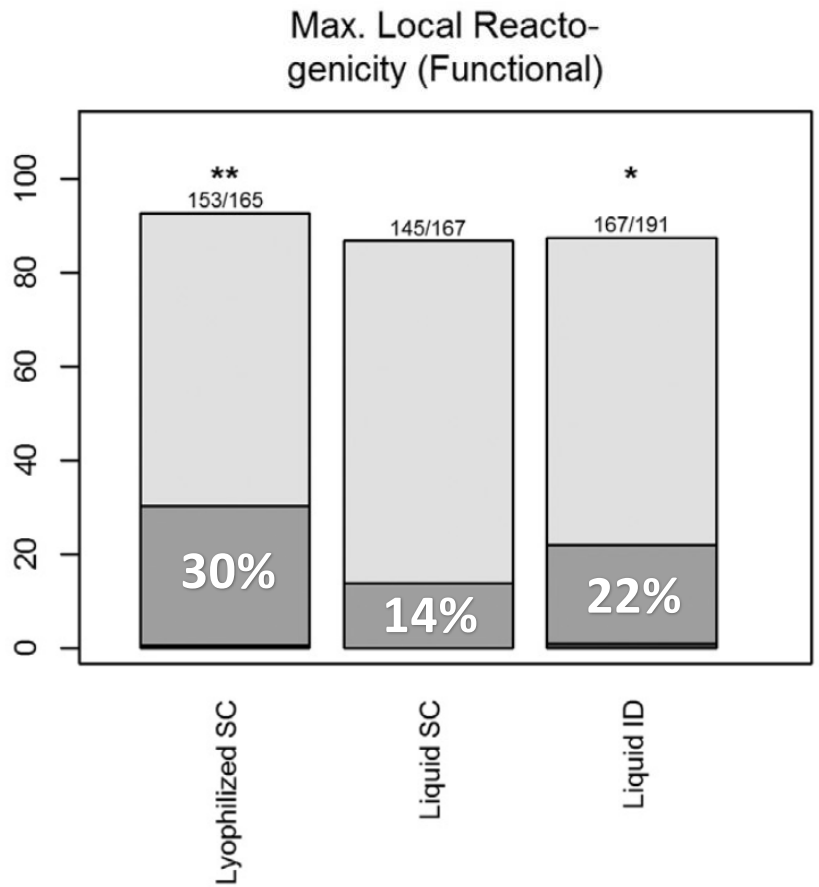
Systemic & Local Reactogenicity after Dose 1





* P < 0.05 (comparing investigational arm to "Liquid SC")
** P < 0.01 (comparing investigational arm to "Liquid SC")

Intradermal (ID) group had a higher proportion of participants experience moderate/severe local reactions after dose #1 compared to subcutaneous (22% vs. 14%), but not after dose #2 (data not shown)

https://www.sciencedirect.com/science/article/pii/S0264410X15008762

Systemic & Local Reactogenicity Summary

Table 2. Adverse reactions reported in >10% of individuals within 15 days following any dose

Reactogenicity event	SC (%) N=166	ID (%) N=190
Feeling Tired	49.7	51.3
Muscle Aches	41.3	30.4
Headache	43.1	41.4
Nausea	21.6	23.0
Change in Appetite	15.0	20.4
Chills	12.6	14.7
Joint Pain	9.0	17.8
Pain at injection site	91.0	65.4
Erythema at injection site	81.4	99.5
Induration at injection site	69.5	99.5
Itchiness	48.5	89.0
Underarm pain	18.0	20.9
Underarm swelling	6.0	10.5

Data were not available for one individual in each of the two groups

https://www.fda.gov/media/160774/download

Summary of Findings

- JYNNEOS vaccine immunogenicity when given at a lower dose via intradermal administration is the same compared to the standard subcutaneous dose administration
- Local side effects are common with ID administration:
  - Primarily symptoms of redness, swelling, induration, itchiness
  - Some participants had prolonged symptoms of induration and erythema that were mild (more than one-third of participants at 180 days)
  - Some participants also developed skin discoloration and nodules at injection site
- Counsel patients about likelihood of local injection-site reactions so they're not alarmed when symptoms occur and know that some mild symptoms may linger

Video on Administering JYNNEOS Intradermally

VIDEO

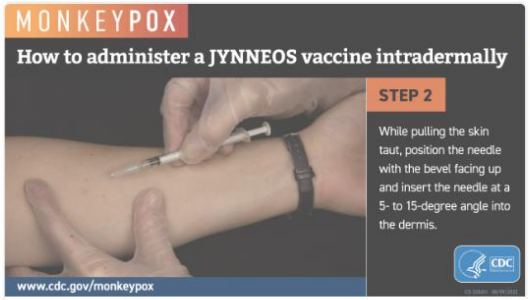
How to administer a JYNNEOS vaccine intradermally

Video Length: 00:00:55

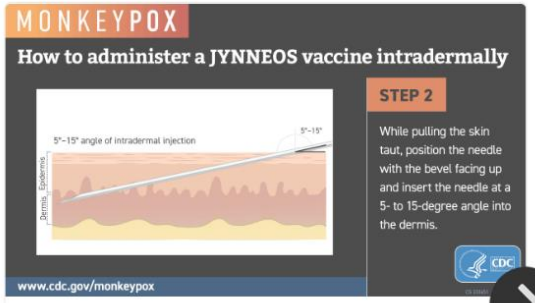
Watch Video

Images on Administering JYNNEOS Intradermally

Step 1: Locate and clean a site for injection in the inner (volar) surface of the forearm.



Step 2a: While pulling the skin taut, position the needle with the bevel facing up and insert the needle at a 5- to 15-degree angle into the dermis.



Step 2b: While pulling the skin taut, position the needle with the bevel facing up and insert the needle at a 5- to 15-degree angle into the dermis.

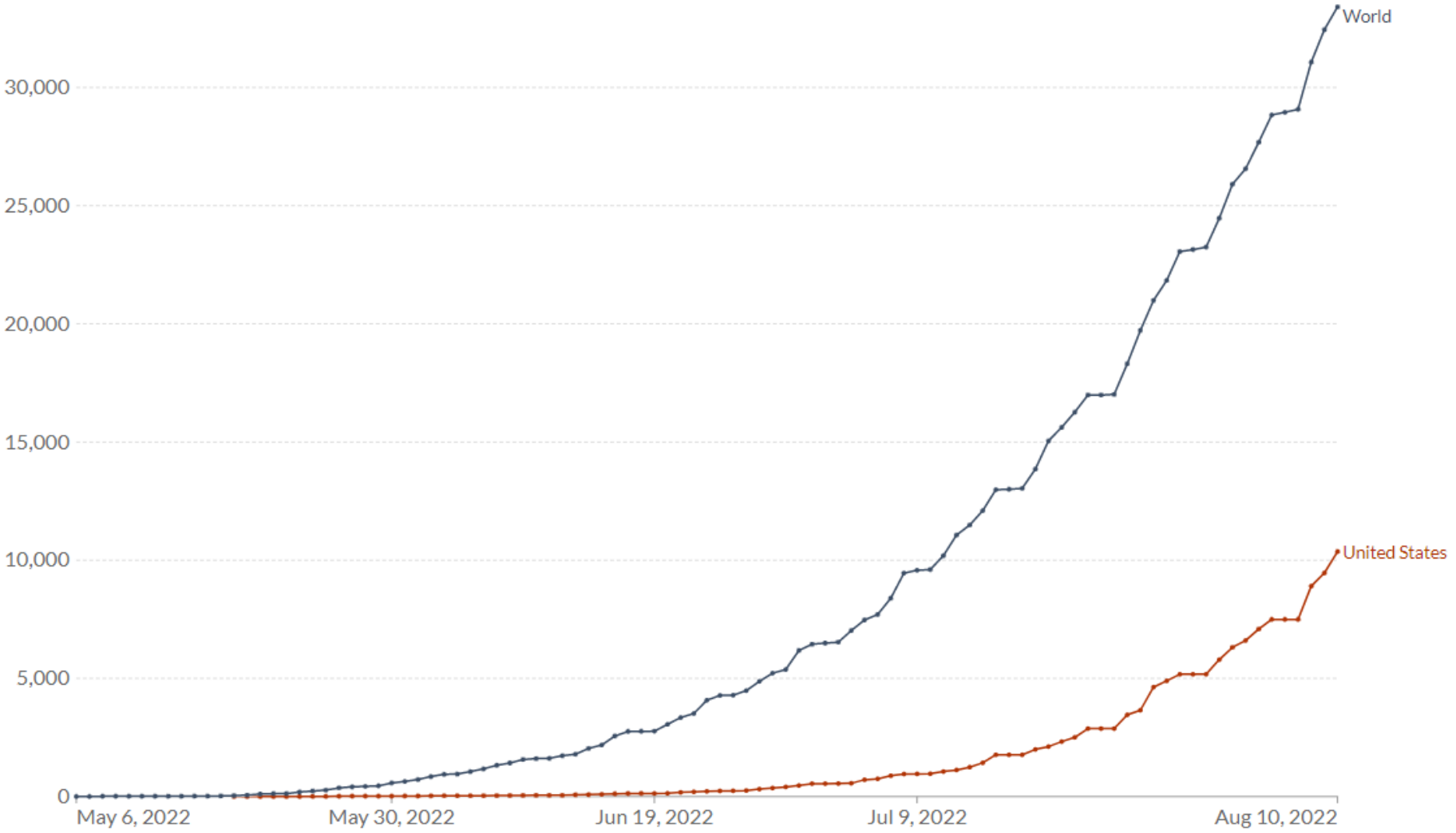
https://www.cdc.gov/poxvirus/monkeypox/interim-considerations/jynneos-vaccine.html

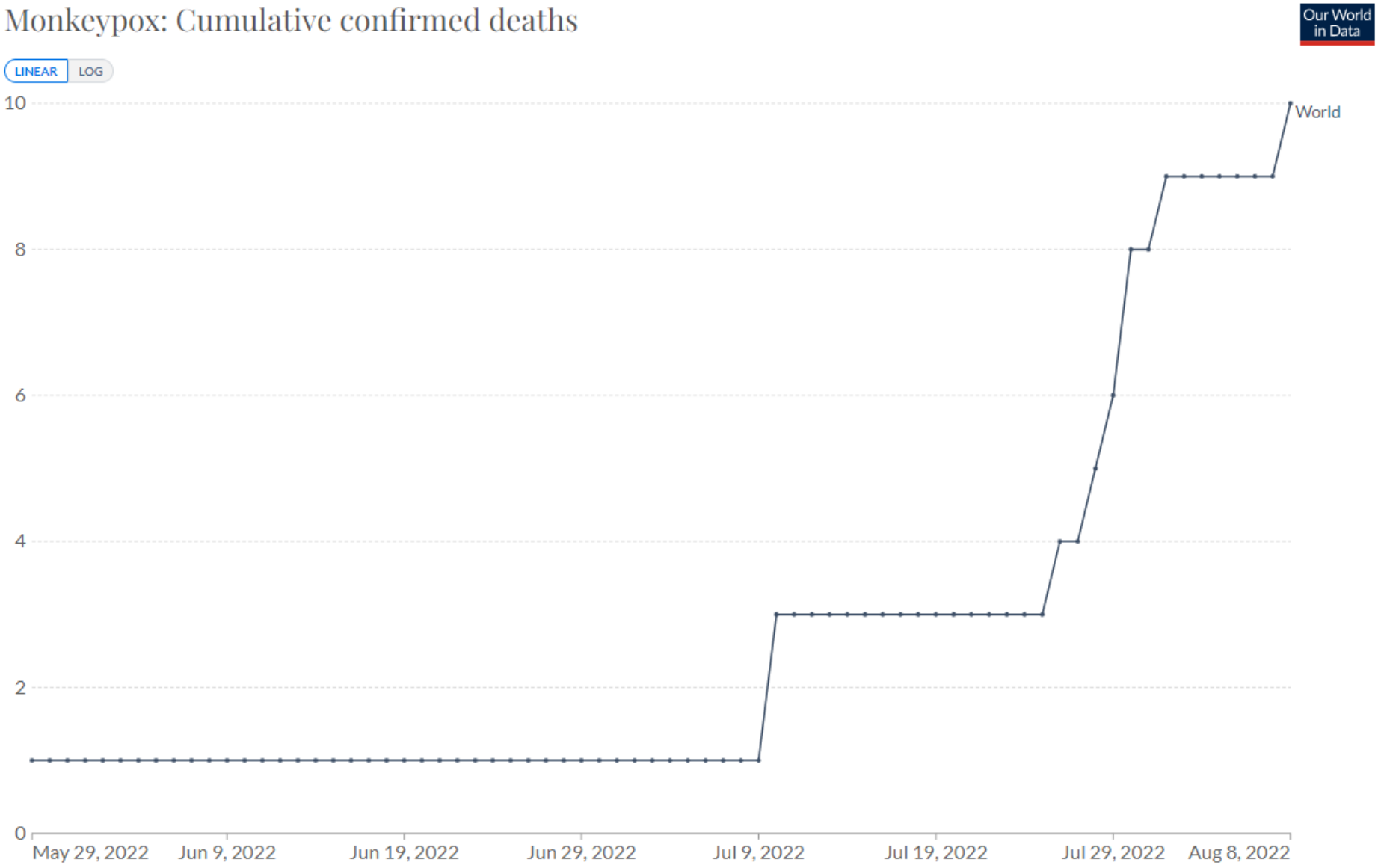
Tecovirimat (TPOXX) for Treatment of Monkeypox Virus Infection

Monkeypox: Cumulative confirmed cases

Our World in Data

LINEAR LOG




Monkeypox: Cumulative confirmed deaths
Our World in Data
LINEAR
LOG
10
8
6
4
2
0
World
May 29, 2022
Jun 9, 2022
Jun 19, 2022
Jun 29, 2022
Jul 9, 2022
Jul 19, 2022
Jul 29, 2022
Aug 8, 2022

Tecovirimat (TPOXX or ST-246)

- Potent inhibitor of orthopoxvirus protein required for formation of infectious virus particle that is essential for dissemination within patient
- FDA-approved 2018 for treatment of smallpox (Variola virus) in adults and children
- Use for other orthopoxvirus infections, including MPX, not approved by FDA
- CDC holds expanded access Investigational New Drug (EA-IND) protocol that allows for primary or early empiric treatment of non-variola orthopoxvirus infections, including MPX, in adults and children

Efficacy

- 2 animal (NHP and rabbit) studies showed protection against lethal smallpox and MPX infection
- Case series 7 MPX patients MPX Aug 2018 - Sept 2021
  - 5/7 spent >3w (range 22–39 days) in isolation due to prolonged PCR positivity
  - 3/7 treated with brincidofovir, all developed DILI
  - 1/7 treated with tecovirimat
    - No AEs
    - Shorter duration of viral shedding and illness c/w other 6
- “Tecovirimat may shorten the duration of illness and viral shedding”

7 Cases Before 2022 Outbreak

Antivirals received	Brincidofovir 200 mg (one dose) orally	Brincidofovir 200 mg (two doses) orally	Brincidofovir 200 mg (two doses) orally	None	None	None	Tecovirimat 600 mg twice daily for 2 weeks orally
Day of illness treatment commenced[†]	7	6	7	..	..	..	5
Complications of treatment	Transaminitis (peak ALT 331 U/L)	Transaminitis (peak ALT 550 U/L)	Transaminitis (peak ALT 127 U/L), nausea, and abdominal discomfort	..	..	..	None
Duration of hospitalisation with monkeypox, days	26	27	35	39	13	22	10

TPOXX Indications

- Those with severe disease: hemorrhagic disease, confluent lesions, sepsis, encephalitis, or other conditions requiring hospitalization
- Those at risk for severe disease
  - Children, esp <8yo: used in 1 28-m children
  - H/o or current atopic dermatitis or other active exfoliative skin conditions
  - Persons who are pregnant or breastfeeding: risk/benefit consideration
  - Patients with complications of infection
  - Immunocompromised patients
    - Advanced HIV-1 infection, leukemia, lymphoma, generalized malignancy, solid organ transplantation, therapy with alkylating agents, antimetabolites, radiation, TNF inhibitors, high-dose corticosteroids, recipient with hematopoietic stem cell transplant <24 months post-transplant or ≥24 months but with GVHD or disease relapse, or autoimmune disease with immunodeficiency
- If lesions in "traditionally atypical sites (mouth, eyes, genital area)"

CDC Website

- In 2017–18 case series of 122 Nigerian MPX patients, 4 of 7 deaths occurred among persons with untreated advanced HIV
- 2022 outbreak 30-51% HIV prev among cases for whom status known
- Compared with other persons with MPX, case reports among persons with inadequately treated HIV who have CD4 counts ≤350 reported higher rates
  - Secondary bacterial infection
  - More prolonged illness (presumed longer period of infectiousness)
  - Higher likelihood of confluent or partially confluent rash, rather than discrete lesions
- EU observation that PLWH with MPX on effective ART no deaths or evident excess hospitalizations to date
- Consider both viral suppression and CD4 count in weighing risk

Eligibility for TPOXX

- When there is high suspicion for MPX (clinical presentation consistent after known high-risk exposure), treatment can be started before results have returned
- Only ineligibles are those without informed consent or with known allergy to tecovirimat
- IV tecovirimat should not be administered if CrCl <30mL/min. Oral formulation remains an option
- IV tecovirimat should be used with caution in patients with moderate (CrCl 30-49 mL/min) or mild (CrCl 50-80 mL/min) renal impairment and pediatric patients < 2y given immature renal tubular function

Adverse Reactions	Drug-Drug Interactions
• 360 volunteers in expanded safety trial, which found AE profile similar to placebo • Oral: HA (12%), nausea (5%), abdominal pain (2%), and vomiting (2%). Neutropenia was found in one study participant. • IV: infusion site pain (73%), infusion site swelling (39%), infusion site erythema (23%), infusion site extravasation (19%), and headache (15%)	• Repaglinide (hypoglycemia) • Midazolam (decreased effectiveness of midazolam) • Few interactions expected with ARVs: dose adjustment for NNRTIs and CCR5 antagonist and consideration of long-acting cabotegravir/rilpivirine, consider adding oral rilpivirine 25 mg once daily during and 2 weeks after

How to Request

CDC, in partnership with FDA, has made it easier for healthcare providers to provide tecovirimat (TPOXX) treatment to patients with monkeypox under the expanded access investigational new drug (EA-IND).

The streamlined process allows healthcare providers to start treatment before the paperwork is submitted, and reduces the number of required forms, patient samples, photos, and gives patients the option to see their doctor virtually.

To request tecovirimat for use in a patient with suspected, probable, or confirmed monkeypox, please contact your state/territorial health department or CDC through the CDC Emergency Operations Center (770-488-7100).

> How to obtain tecovirimat (TPOXX)

- dhhs.eprr@dhhs.nh.gov 8-4pm or 603-271-4496 for afterhours urgent request
- Receive provider packet
- Consent patient
- EPRR will coordinate delivery

Provider Packet

- TPOXX (tecovirimat) Fact Sheet: dosage and administration info, contraindications, warnings and precautions, adverse reactions, DDI, and ingredients
- TPOXX Package Insert: storage and handling instructions and expanded information about dosing and the full prescribing information
- Attachment 1 Informed Consent Form: filled out prior to initiating treatment; retained by your office
- Attachment 2 Form A Patient Intake Form: filled out and sent to CDC within 3d
- IND FDA 1572 Form: completed if your first time prescribing within your facility; also 3d to CDC
- Clinical Outcome Form: return to CDC within 3d of last follow up
- MedWatch Form: use to report any life-threatening or SAE

Additional TPOXX Resources

- Guidance for Tecovirimat Use Under EA IND: https://www.cdc.gov/poxvirus/monkeypox/clinicians/Tecovirimat.html
- Treatment Info for Healthcare Professionals: https://www.cdc.gov/poxvirus/monkeypox/clinicians/treatment.html
- Info for Healthcare Providers on Obtaining and Using TPOXX (Tecovirimat) for Treatment of Monkeypox: https://www.cdc.gov/poxvirus/monkeypox/clinicians/obtaining-tecovirimat.html
- Patient diary [226 KB, 2 pages]: Ideally, give the diary to the patients during baseline assessment. Patient can use this form to record how they feel and any side effects to TPOXX.
- Instructions for mixing TPOXX capsules with food

Q&A

COCA Call

CDC Clinician Outreach and Communication Activity

CDC and FDA Update: Interim Clinical Considerations for Monkeypox Vaccination

Overview

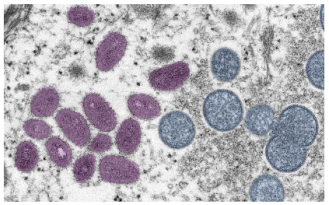
The U.S. Food and Drug Administration (FDA) has issued an emergency use authorization (EUA) for the JYNNEOS vaccine. The EUA allows healthcare providers to administer the vaccine by intradermal injection for individuals 18 years of age and older who are at high risk for monkeypox infection, which will result in up to a five-fold increase in the total number of doses available for use. In addition, the Centers for Disease Control and Prevention (CDC) has released Interim Clinical Considerations for Use of JYNNEOS and ACAM2000 Vaccines during the 2022 U.S. Monkeypox Outbreak that provides guidance for using the alternative (intradermal) regimen, as well as the standard (subcutaneous) regimen for JYNNEOS vaccine.

During this COCA Call, presenters from FDA and CDC will provide updates on FDA's EUA of the JYNNEOS vaccine and CDC's Interim Clinical Considerations for using the JYNNEOS and ACAM2000 Vaccines during the 2022 U.S. Monkeypox Outbreak. Presenters will also provide training on how to administer the vaccines using the interim clinical considerations.

If you are unable to attend the live COCA Call, the recording will be available for viewing on the COCA Call webpage a few hours after the live event ends.

The slide set will be available on the day of the call on the COCA Call webpage under Call Materials.

Continuing Education (CE) will not be offered for this COCA Call.



Date: Thursday, August 11, 2022

Time: 3:00 PM – 4:00 PM ET
Note time differs from standard COCA Calls

Webinar Link:
https://www.zoomgov.com/j/1613504249?pwd=a25JSXJMSGp4Qk5Ka3h0dm1PVENXUT09

Passcode: 181119

Dial In:
US: +1 669 254 5252
or +1 646 828 7666
or +1 551 285 1373
or +1 669 216 1590

International Numbers

One-tap mobile:
US:
+16692545252,,1613504249#,,,,*181119# or
+16468287666,,1613504249#,,,,*181119#

Webinar ID: 161 350 4249

https://emergency.cdc.gov/coca/calls/2022/callinfo_081122.asp

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Department of Health and Human Services

Just in time: Testing, Vaccination, and Treatment for Monkeypox

Course Description

The explosive global outbreak of Monkeypox has occurred while we are transitioning our COVID pandemic response from its emergency phase. The WHO has now declared Monkeypox a Public Health Emergency of international Concern that demonstrates we must now turn our attention to all available emerging evidence to become experts in control measures. This Project Echo session is a just in time, crash course about the epidemiology, strategies for prevention and medical countermeasures.

Who Should Attend

Clinicians, Nurses, PAs, LNAs, MAs, CHWs, and others in clinical settings in New Hampshire with interest (All states are welcome, but the ECHO will focus on NH recommendations)

Schedule

Sessions held weekly on Wednesdays from 12-1pm EST

8/17/2022	Efficient effective testing
8/24/2022	Vaccine: PEP and PrEP : *This session will be followed by a 30-minutes just-in-time training for how to give intradermal vaccination. Stay on if you are someone who may be giving the vaccine yourself, are supervising a team that does, or want to be able to address your patients' concerns about the administration.*
8/31/2022	Treatment: TPOXX and beyond

Questions?

Email: ECHO@hitchcock.org

Website: https://go.d-h.org/project-echo

Registration Information

To register, visit: https://echo.zoom.us/meeting/register/tZYsdOuorzkoEtCtQzp3oWQclFc_Cup7pJaa

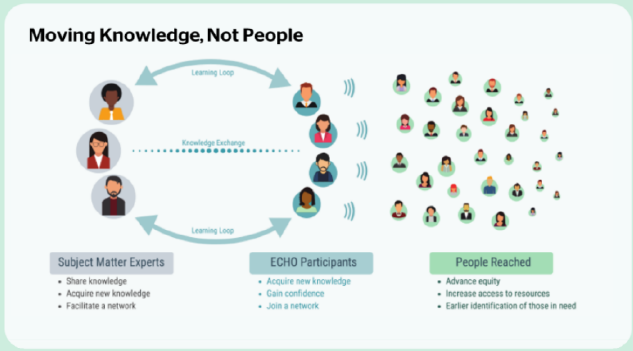
Sessions are free or charge

What is Project ECHO?

Project ECHO (Extension for Community Healthcare Outcomes) is a telementoring model. Virtual technology is used to support case-based learning and provide education. This will assist participants to care for more people right where they live.

Benefits

- Participants learn from experts.
- Participants learn from each other.
- Experts learn from participants as best practices emerge.



Dartmouth Health

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