

# Mpox Update

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DECEMBER 12, 2022



*DELAWARE HEALTH AND SOCIAL SERVICES*  
Division of Public Health

# Agenda

- **Background**
- **Clinical Guidance**
- **Testing, Vaccination, Treatment**
- **Case Statistics**
- **Public Health Surveillance**
- **Delaware Resources**

# Terminology Update

Delaware Public Health (DPH) and the CDC are updating websites and materials to reflect the change from monkeypox to mpox. This change is aligned with the recent World Health Organization decision.

# Mpox Clinical Overview

## Agent

- Orthopoxvirus

## Symptoms

- Similar symptoms to smallpox but milder and less deadly
- Rash (genitals, anus, hands, feet, face, mouth)
- Fever, chills, swollen lymph nodes, muscle aches, exhaustion, headache, congestion, sore throat
- Complete full clinical evaluation - don't assume mpox

## Timeline

- Symptoms start within 3 weeks of exposure
- Rash will typically start 1-4 days following flu-like symptoms
  - A febrile prodrome may not always be present



Source: [Key Characteristics for Identifying Monkeypox-  
www.cdc.gov/poxvirus/monkeypox/clinicians/clinical-recognition.html](https://www.cdc.gov/poxvirus/monkeypox/clinicians/clinical-recognition.html)

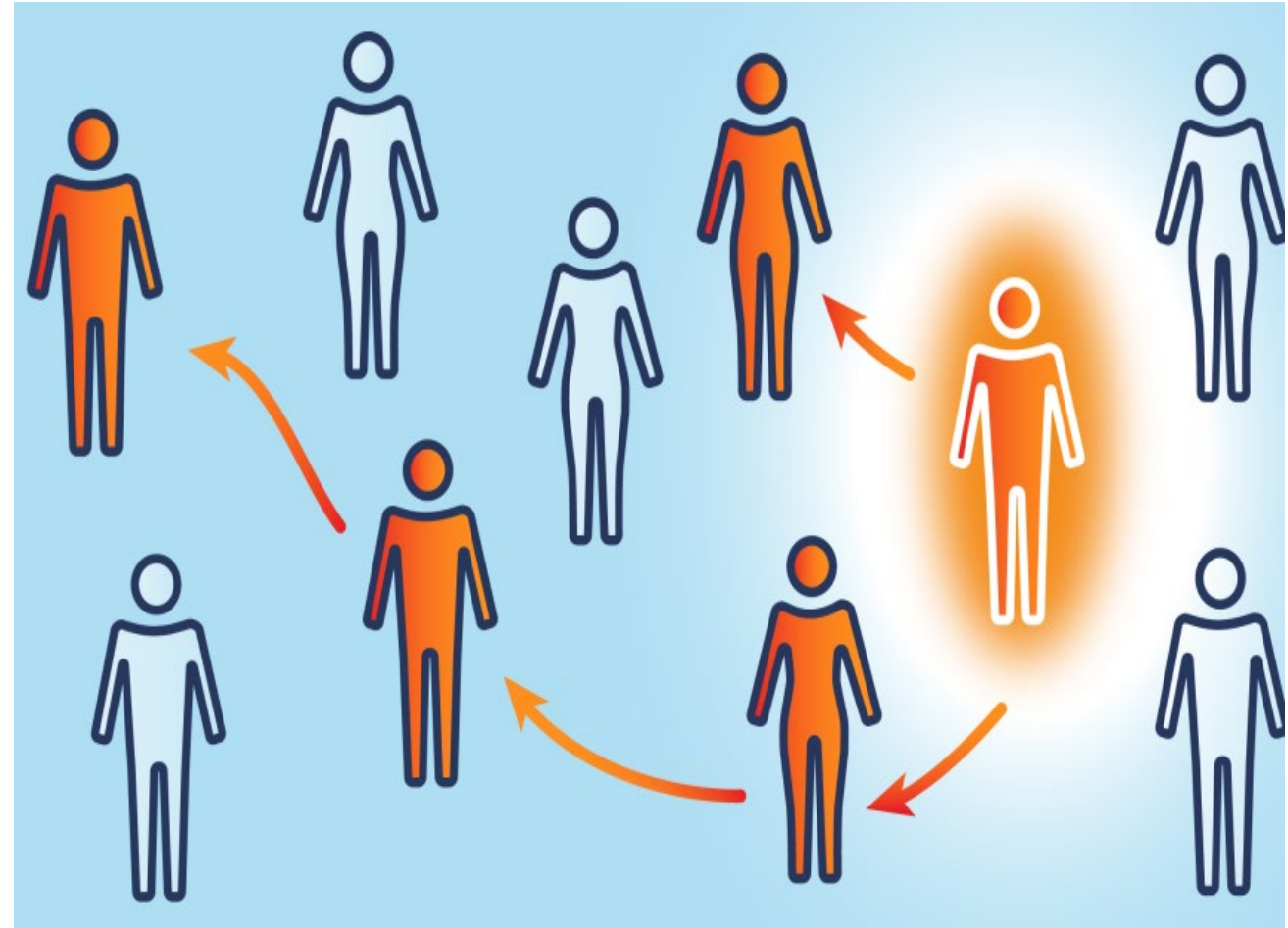
# Mpox Clinical Overview (cont.)

## Transmission

- Close, personal, often skin-to-skin contact
- Touching fabrics (clothing, bedding, towels), objects and surfaces that have been used by someone with mpox
- Contact with respiratory secretions
- Transplacental transmission

## Contagious period

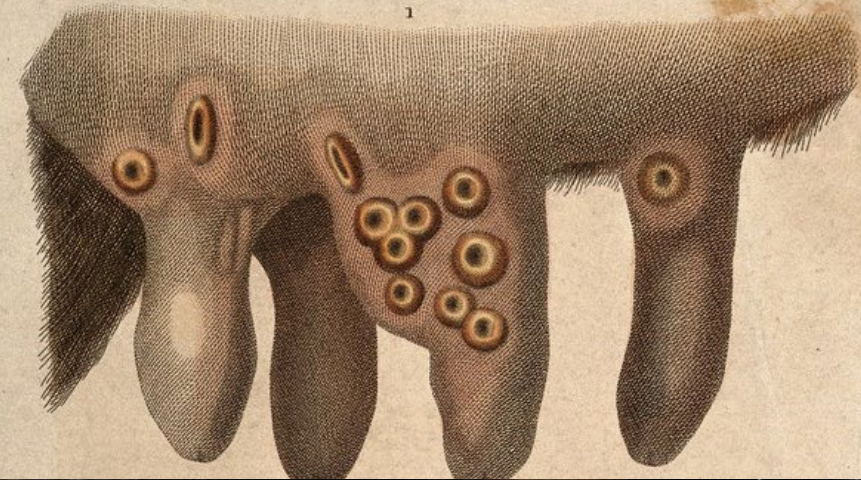
- Symptom onset until rash has healed and new skin has formed (2-4 weeks)



Source: [Johns Hopkins Offers New Free Virtual Course on Infectious Disease Transmission Models for Decision Makers](#) | Johns Hopkins | Bloomberg School of Public Health (jhu.edu)

INOCULATION.

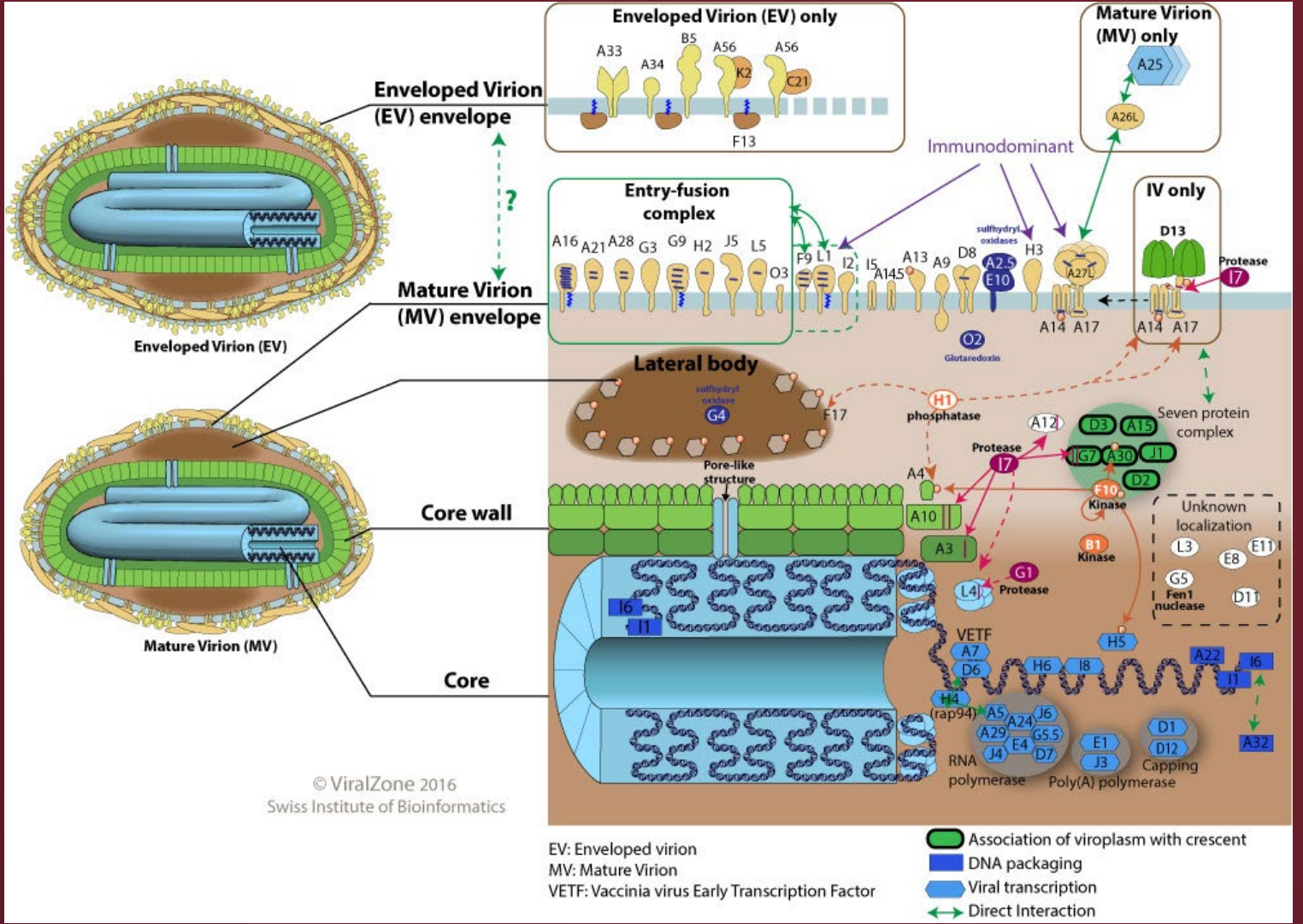
1



# What is an Orthopoxvirus?

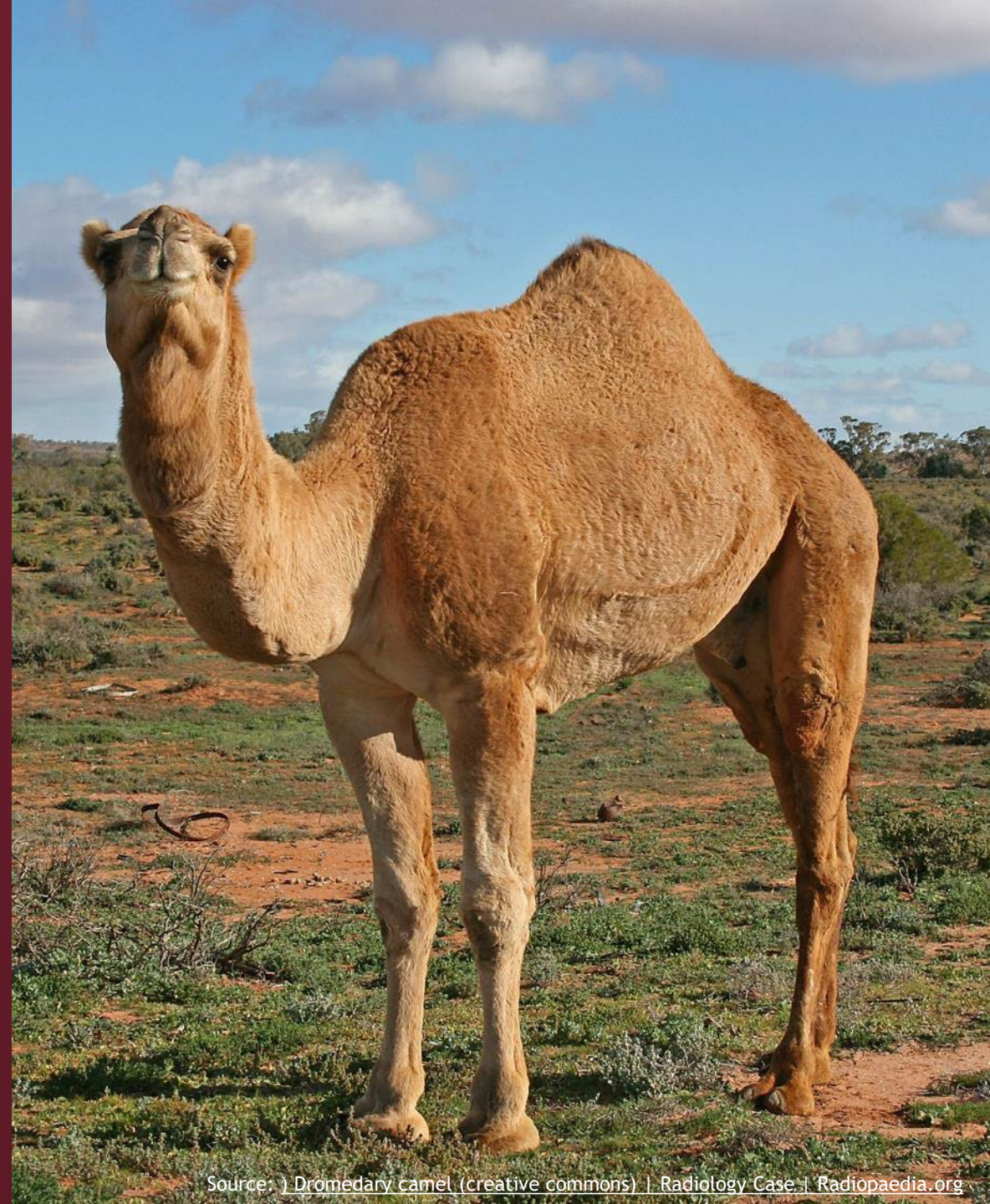


# Microbiology



Source: Orthopoxvirus structural proteins - ViralZone (expasy.org)

# Distribution





# Where did mpox come from?

Mpox was discovered in 1958 when two outbreaks of a pox-like disease occurred in colonies of monkeys kept for research. Despite originally being named “monkeypox,” the source of the disease remains unknown. However, African rodents and non-human primates (like monkeys) might harbor the virus and infect people.

# Is Mpox a Zoonotic Disease?

Zoonotic diseases (also known as zoonoses) are caused by germs that spread between animals and people.



Source: [What prairie dogs tell us about the effects of noise pollution \(phys.org\)](#)

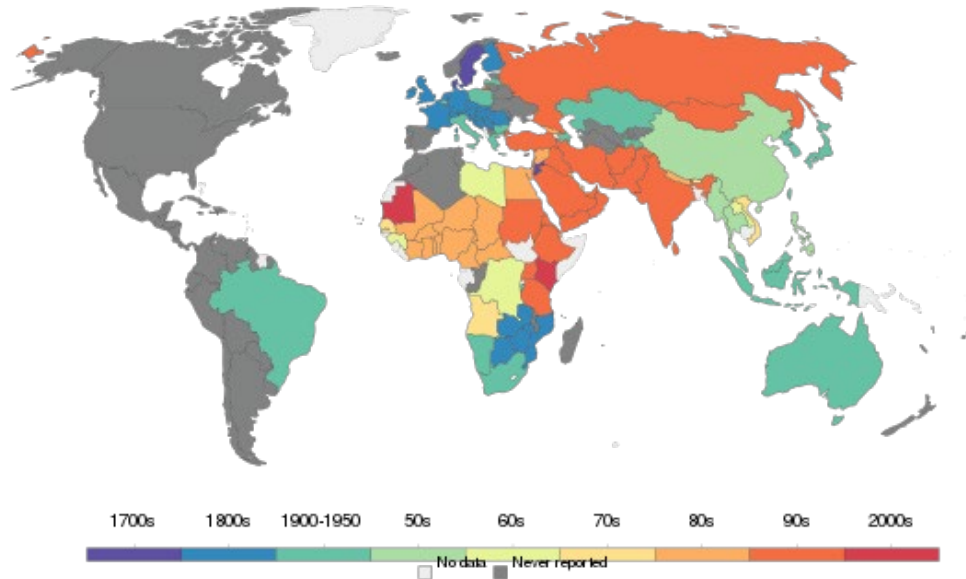


Source: [Dog Italian Greyhound Owner - Free photo o](#)

# Was Smallpox a Zoonotic Disease?

## Year of the last reported Rinderpest case

Rinderpest, also known as cattle plague, was a disease that infected ruminant animals, primarily cattle and buffalo. The last case was recorded in Mauritania in 2003 and the disease was officially declared eradicated in 2011.



Source: OIE (2018)

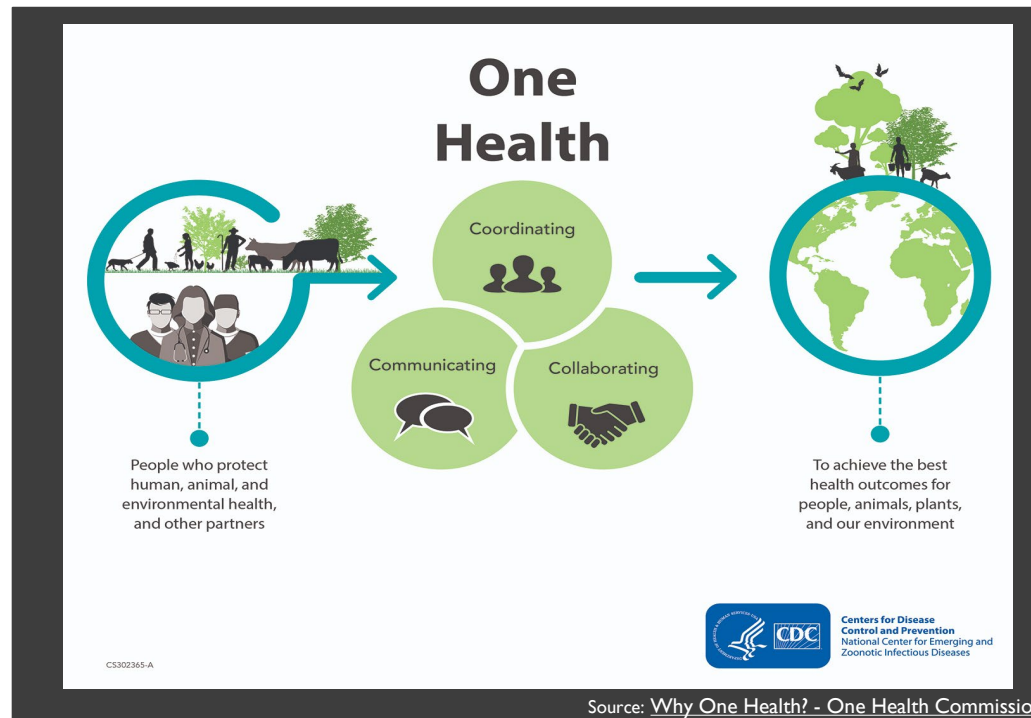


Source: Rinderpest - Wikipedia

Source: Nguni cattle - Wikipedia

# Is this a One Health Concern?

One Health is the interdependence of Human, Animal, and Environmental Health



Source: [Why One Health?](#) - One Health Commission

# One Health

- What's One Health

Human Health

Environmental Health



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Animal Health

Policy

# One Health

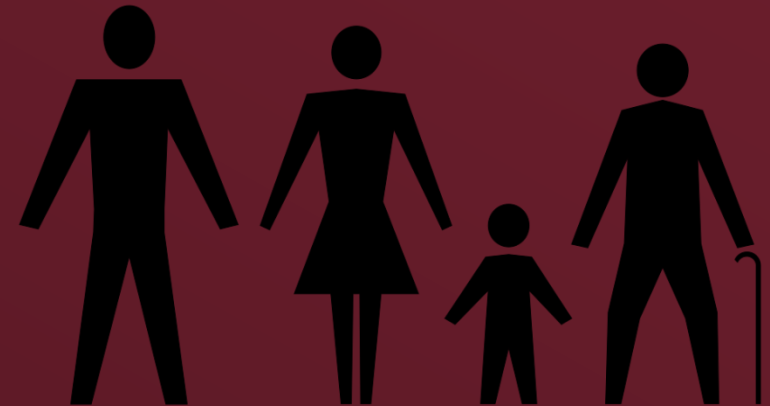
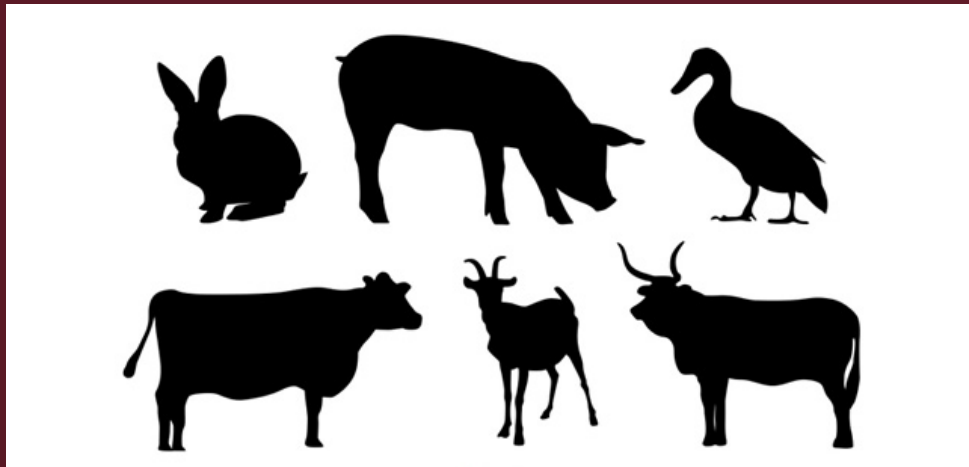
- What's One Health
- History of One Health



[This Photo](#) by Unknown Author is licensed under [CC BY-SA-NC](#)



# Origin of “One Health”

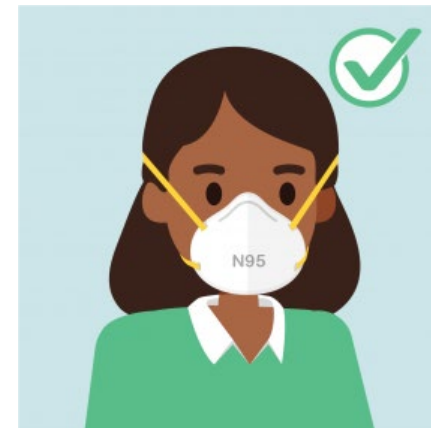




# Clinical Guidance

# What to do if you suspect a patient has mpox

- Specimen collection and testing
  - HIV and other STI's
- Protect your patient, yourself, and others
  - Have the patient wear a mask and place them in a single-person room. Follow CDC's infection prevention and control guidelines for healthcare facilities, including using appropriate PPE around the patient.



Source: [Masks and Respirators \(cdc.gov\)](#)

# Personal Protective Equipment (PPE)

- Standard precautions with:
  - Gloves
  - Gowns
  - Eye protection
  - Well-fitting mask (N95 or higher for patient care)
- Handling dirty laundry
- Cleaning and disinfecting



Source: [Conservation Tip # 5: Removing mould from records](#) | NSW State Archives

# Cleaning and Disinfecting

- Handwashing after touching lesions or clothing, linens, or surfaces that may have had contact with infected lesions
  - Soap and water or hand sanitizer with at least 60% alcohol
- Avoiding activities that could spread dried material from lesions (fanning, dry dusting, vacuuming, shaking soiled laundry)
- Using EPA-registered disinfectant
- Laundering using regular detergent and warm water



Source: [Handwashing 101 | UofL Health](#)

# What to do if you suspect a patient has mpox (cont.)

- Share resources with your patient
  - Manage symptoms and rash relief
  - How to identify close contacts and tips on what to say
  - If treatment may be right for them
  - How to prevent spreading mpox to others

The screenshot shows the CDC website page for Monkeypox, specifically the 'Information For Healthcare Professionals' section. The page is updated as of November 4, 2022. The main heading is 'Information For Healthcare Professionals' with a sub-heading 'Interim Clinical Considerations for Monkeypox Vaccination'. The text states that CDC has updated its interim clinical considerations for using the JYNNEOS and ACAM2000 vaccines during the 2022 U.S. monkeypox outbreak, including an alternative regimen for administering the JYNNEOS vaccine intradermally. A 'Vaccine Considerations' button is visible. Below this, there are two columns of content: 'Caring for Patients' and 'Prevent and Control Monkeypox'. The 'Caring for Patients' section includes 'Key Characteristics for Identifying Monkeypox' and a 'Clinical Recognition' button. The 'Prevent and Control Monkeypox' section includes 'Vaccine Information' and a 'Vaccines' button. A left sidebar contains a navigation menu with items like 'Your Health', '2022 Outbreak Cases & Data', 'Healthcare Professionals', 'Case Definition', 'Clinical Guidance', 'Vaccines', 'Specimen Collection', 'Infection Control', 'Completing Death Certificates', 'Clinician FAQs', 'Laboratories', 'Health Departments', and 'Veterinarians'. The CDC logo and tagline 'CDC 24/7: Saving Lives. Protecting People™' are at the top.

# Testing, Vaccination and Antivirals

# Testing

- [CDC Specimen Collection Guidelines](#)

- Two lesion swabs



## *Monkeypox Virus* Infection Resulting from an Occupational Needlestick — Florida, 2022

- /

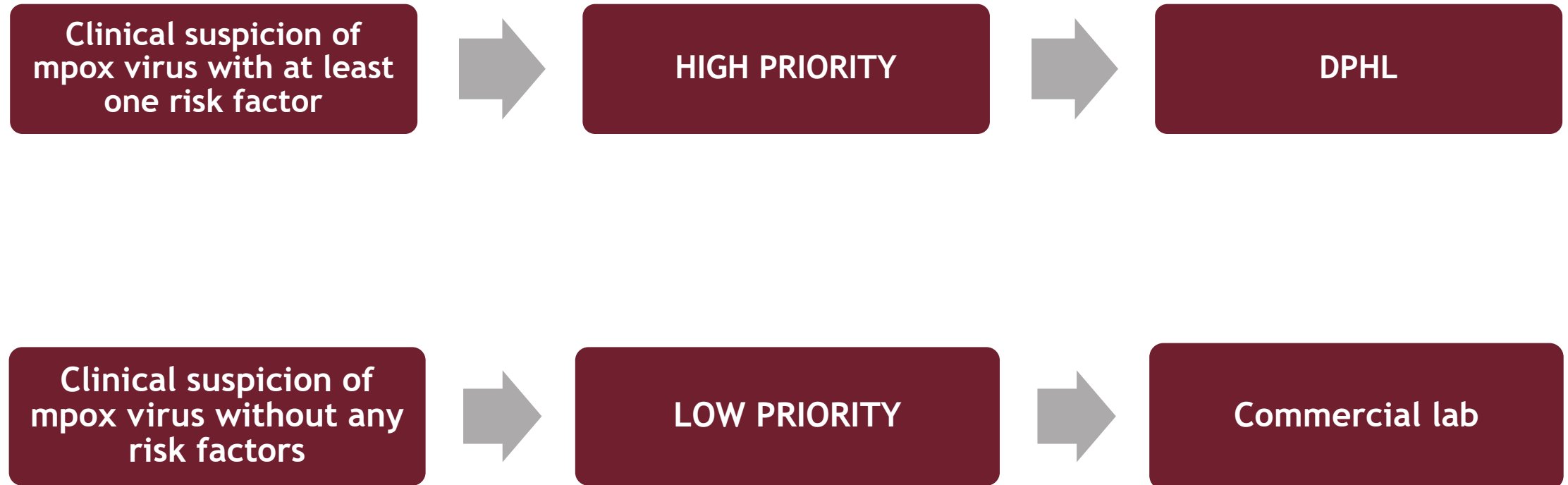
*Weekly* / October 21, 2022 / 71(42);1348–1349

*On October 17, 2022, this report was posted online as an MMWR Early Release.*

Rafael Mendoza, MPH<sup>1,\*</sup>; Julia K. Petras, MSPH<sup>2,3,\*</sup>; Patrick Jenkins, MPH<sup>1</sup>; Margaret J. Gorenssek, MD<sup>4</sup>; Susan Mablesen<sup>4</sup>; Philip A. Lee, MSc<sup>5</sup>; Ann Carpenter, DVM<sup>2,3</sup>; Heather Jones, DNP<sup>2</sup>; Marie A. de Perio, MD<sup>2</sup>; Zeshan Chisty, MPH<sup>2</sup>; Scott Brueck, MS<sup>2</sup>; Agam K. Rao, MD<sup>2</sup>; Johanna S. Salzer, DVM, PhD<sup>2</sup>; Danielle Stanek, DVM<sup>5</sup>; Carina Blackmore, DVM, PhD<sup>5</sup> ([VIEW AUTHOR AFFILIATIONS](#))

- Whole Genome Sequencing

# Testing process





# Tecovirimat (TPOXX)



Source: <https://medicalxpress.com/news/2022-09-monkeypox-mutate-resist-antiviral-drug.html>

- Eligible persons include:
  - Individuals with severe clinical manifestations
  - Involvement of anatomical sites that might result in serious long-term consequences
  - Individuals at high-risk of severe disease
- EMSPS orders allocated amount through **Strategic National Stockpile (SNS)**
- Small stockpiles of TPOXX are kept at DPH warehouse and hospitals.
- 11 courses administered in Delaware
- 6 remaining courses at DPH warehouse

# Jynneos

## Eligible persons include:

- Persons known or presumed to be exposed to someone with mpox in the last 14 days
- Certain individuals who have sex with men and who have had multiple sex partners within the past 14 days
- Those living with HIV or receiving HIV PrEP
- Immunocompromised persons
- Those treated for a sexually transmitted infection (STI) in the last six months
- Those engaging in high-risk activities, including sexual practices, that increase exposure to mpox
- Staff (of any sexual orientation/gender) at establishments where sexual activity occurs (e.g., bathhouses, saunas, sex clubs)

**Hotline – 1-866-408-1899**

# Jynneos



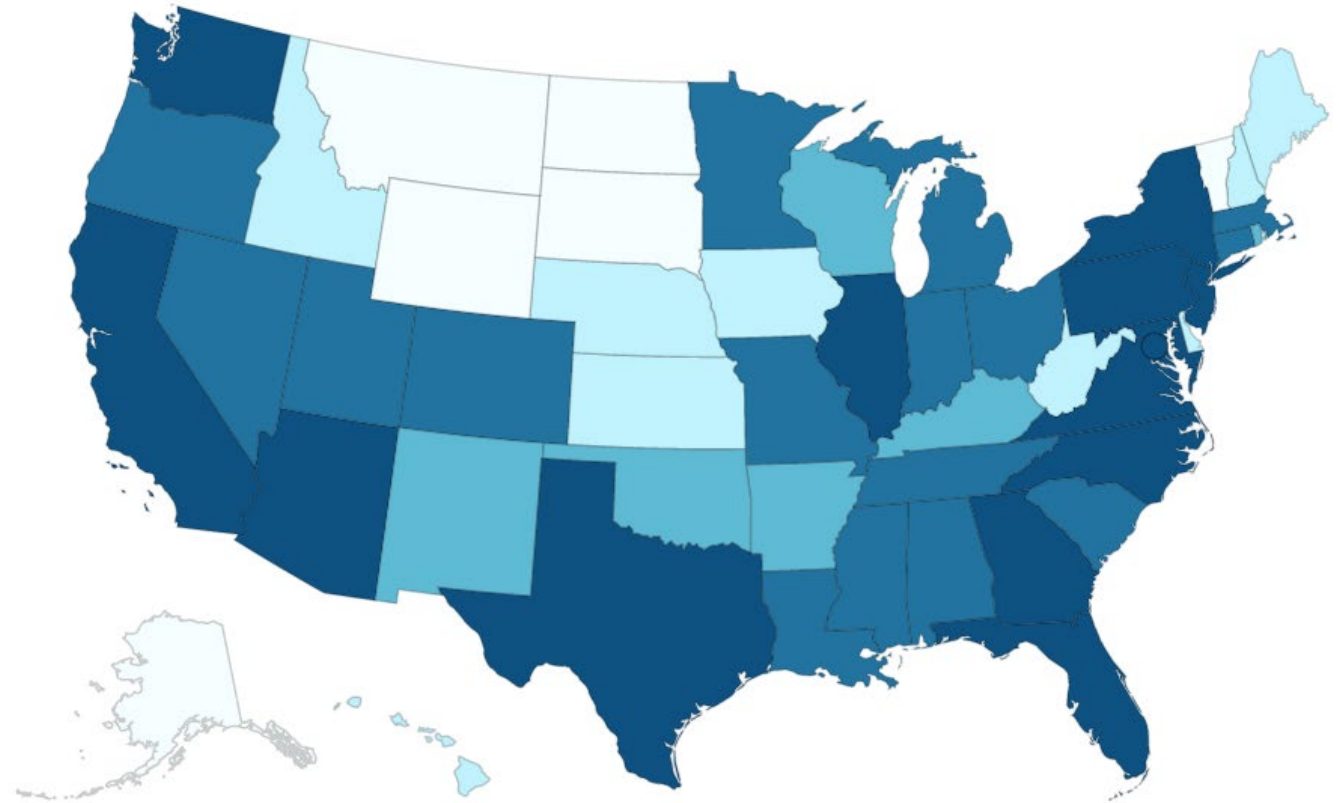
Source: <https://www.cidrap.umn.edu/us-begin-intradermal-injections-jynneos-stretching-supply>

- **As of 12/9**
  - **1st Dose – 1,784**
  - **2nd Dose – 1,421**
  - **Total – 3,205**
- **Ordering**
  - Fill out SHOC Resource Request Form found on [de.gov/mpox](https://de.gov/mpox) website
- **Reporting**
  - DelVax within 24 hrs of administration

# Case Statistics

# Cases in U.S.

- **29,711** Cases as of 12/9
- Cases reported in all states
- 20 Deaths



Territories PR



### Legend

○ 1 to 10

● 51 to 100

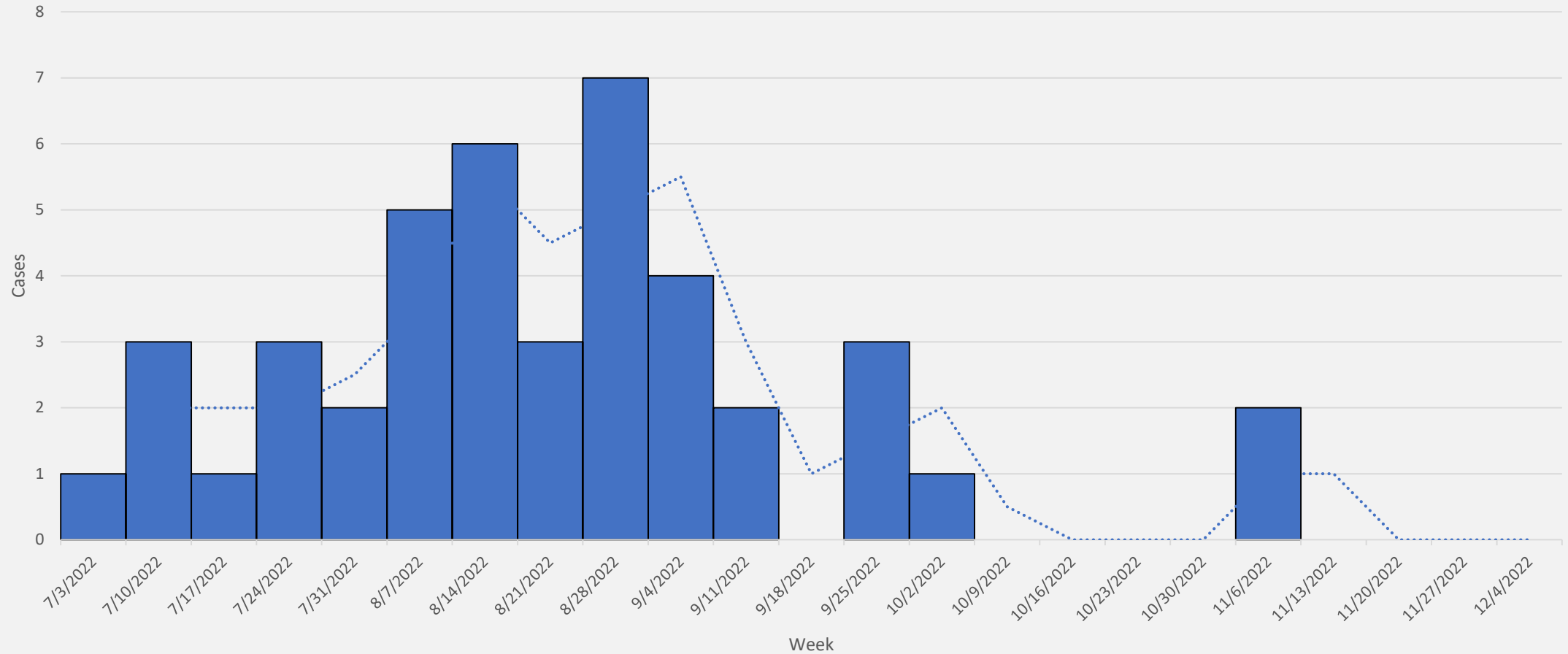
● >500

● 11 to 50

● 101 to 500

# Cases in Delaware

## Mpox Outbreak 2022, Delaware

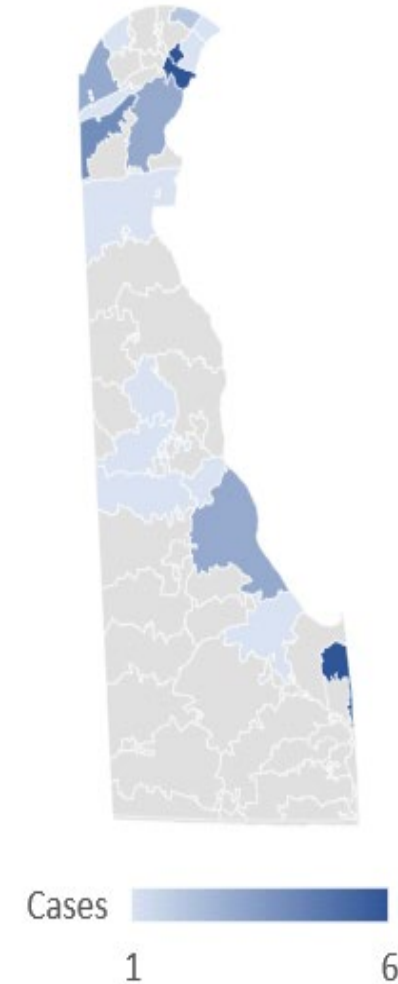


# Delaware cases: Demographic information (n=43)

- Median age: 33 years
- 98% male
- 60% Black or African American
- 74% non-Hispanic or Latino
- 60% described their sexual orientation as homosexual
- No deaths/No hospitalizations
- 34 cases successfully interviewed

County	Percentage
New Castle	67%
Kent	12%
Sussex	21%

Geographic Distribution of Cases by Zip Code



## Severe Manifestations of Monkeypox among People who are Immunocompromised Due to HIV or Other Conditions

[Print](#)



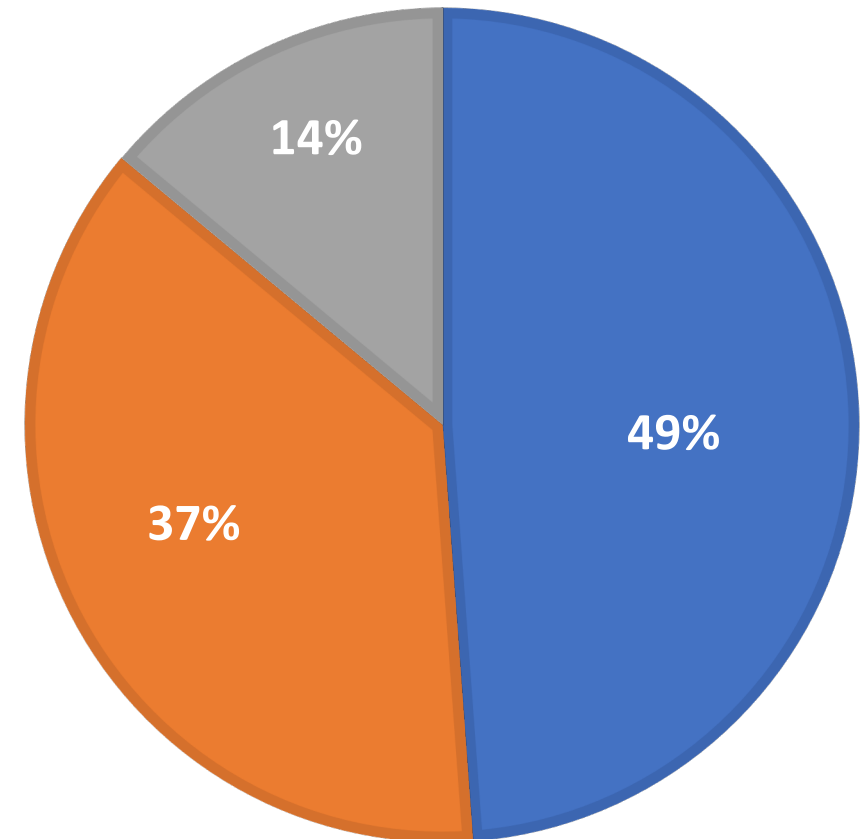
Distributed via the CDC Health Alert Network  
September 29, 2022 02:15 PM ET  
CDCHAN-00475

### CDC Recommendations:

- Upon initial presentation of signs and symptoms consistent with mpox, in addition to mpox, test all sexually active adults and adolescents for HIV (including acute infection) and other sexually transmitted infections (such as syphilis, herpes, gonorrhea, and chlamydia), and assess for other immunocompromising conditions.

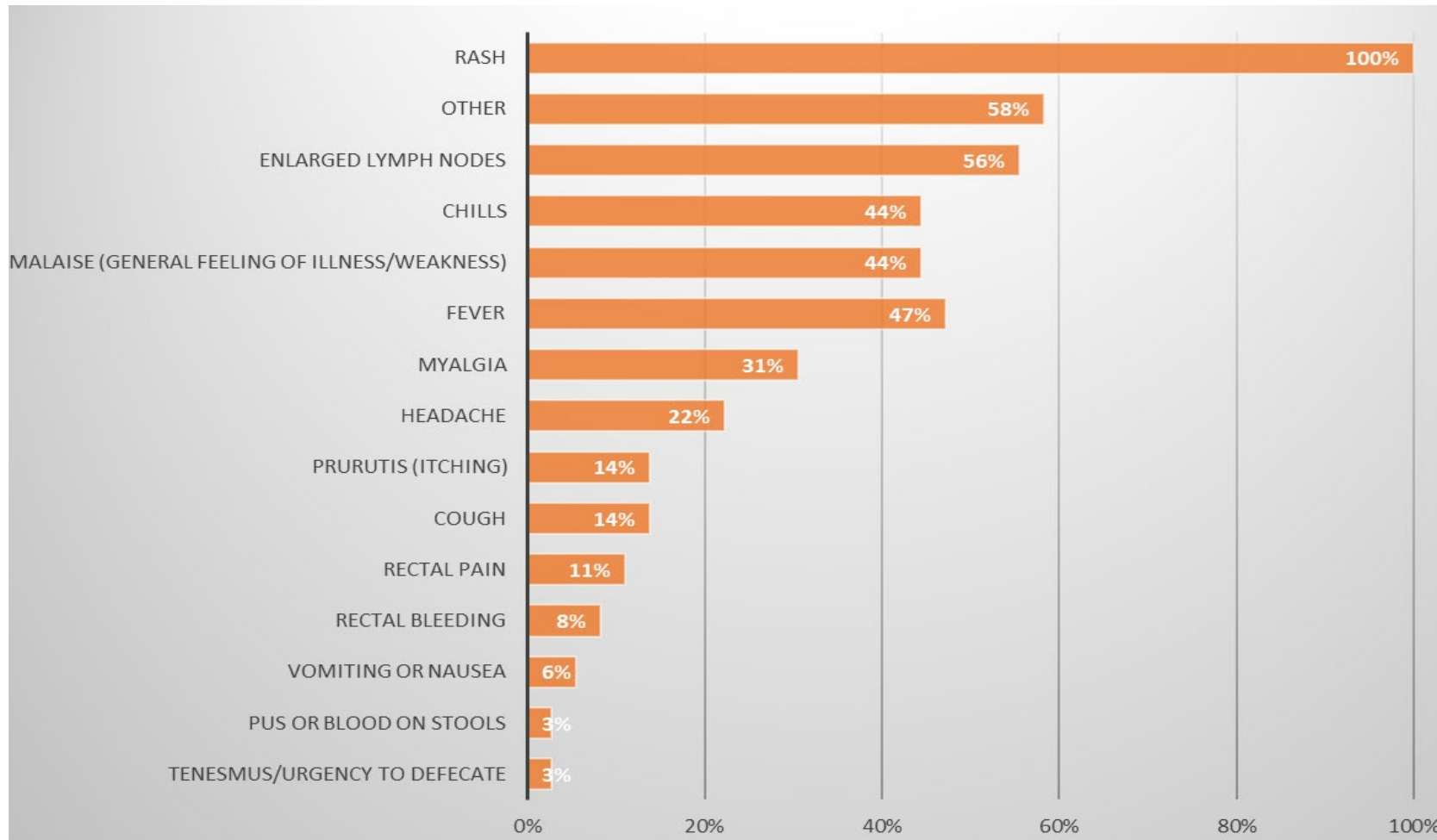
## HIV STATUS IN DE MPOX CASES

■ Negative ■ Positive ■ Unknown

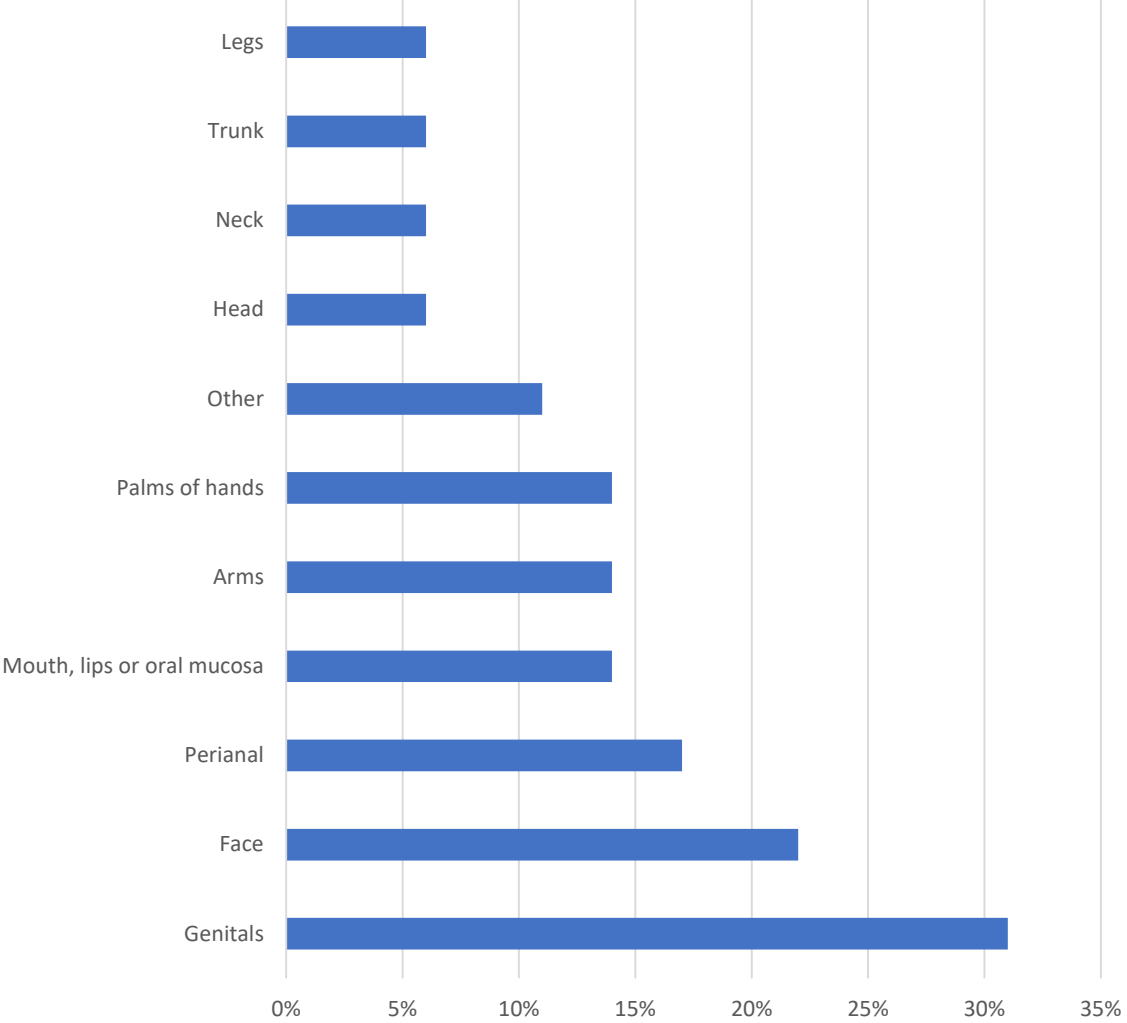




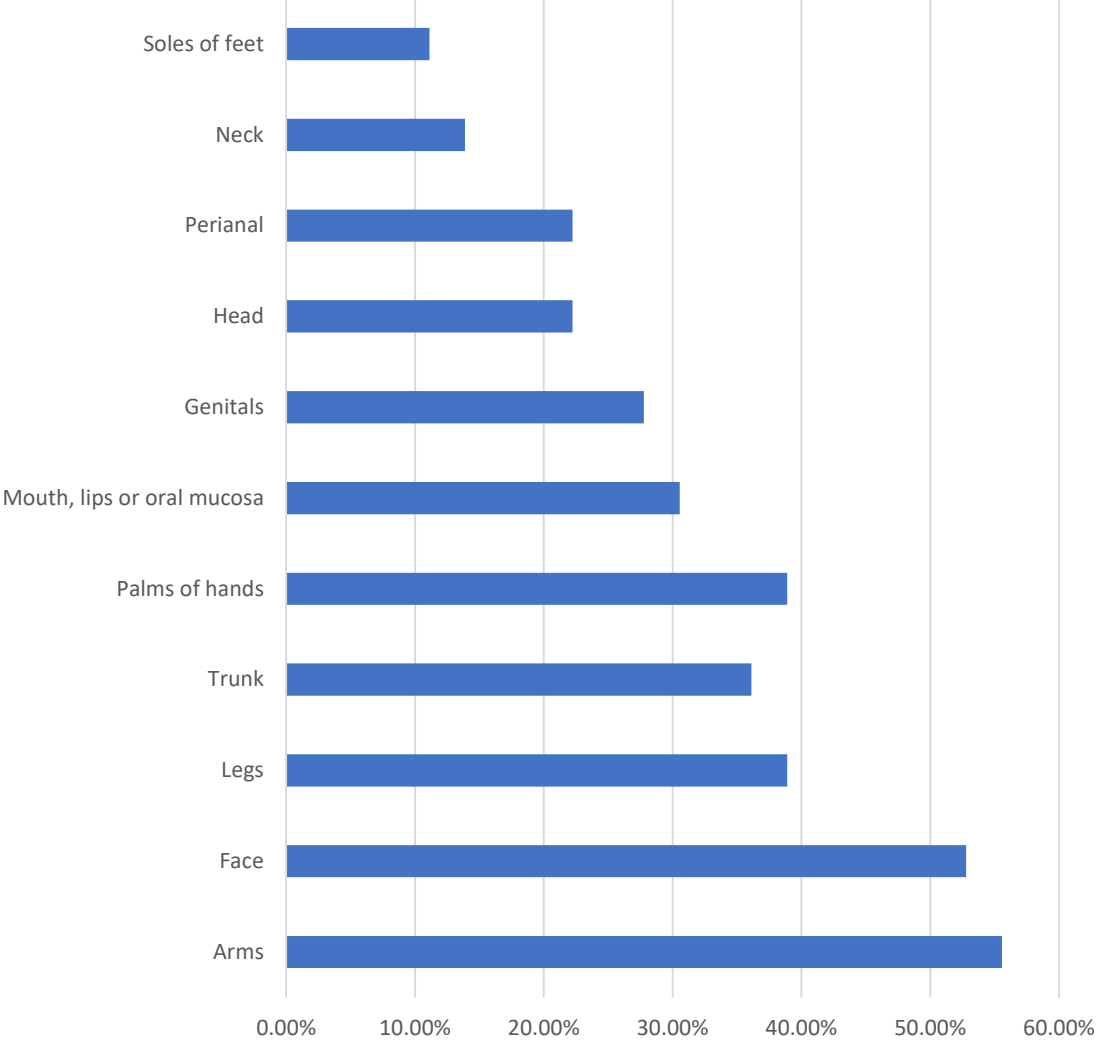
# Mpox Symptoms During the Course of Illness, Delaware



Location of Rash Onset (N=34)



Location of Rash during Illness (N=34)



# Public Health Surveillance

# Surveillance

## Passive surveillance

- Electronic lab reports (DERSS) \* *mpox is a reportable disease*
- Provider call-ins
- Self-reported cases

## Active surveillance

- Pursue investigation based on exposure reports
- Active case finding through syndromic surveillance

## Syndromic surveillance

- ESSENCE
- Chief complaints/ ICD-10 codes



Source: [Public Health Surveillance: Importance, Types and Steps of Conducting It ! - Public Health Notes](#)

# Case definitions

## Suspect Case

- New characteristic rash **OR**
- Meets one of the epidemiologic criteria (exposure to rash/mpox, travel, animal exposure) and has a high clinical suspicion for mpox

## Probable Case

- No suspicion of other recent *OPXV* exposure (ACAM2000) **AND** demonstration of the presence of
  - *OPXV* DNA by PCR of a clinical specimen **OR**
  - *OPXV* using immunohistochemical or electron microscopy testing methods **OR**
  - Demonstration of detectable levels of anti-orthopoxvirus IgM antibody during the period of 4 to 56 days after rash onset

## Confirmed Case

- Demonstration of the presence of *mpox virus* DNA by PCR testing or NGS of a clinical specimen **OR** isolation of *mpox virus* in culture from a clinical specimen



Source: [Incident Investigation Report Writing \(safetywise.com\)](https://www.safetywise.com)

Suspected,  
probable and  
confirmed cases  
of mpox are  
reportable to the  
Division of Public  
Health

## Case interview

- Demographics
- Clinical
- Pre-illness exposures
- Post-illness exposures (contact tracing)
- Public health recommends
  - Isolating in a room with door and a dedicated bathroom
  - Well-fitting disposable mask over nose and mouth when leaving isolation
  - Long pants/sleeves to cover skin lesions
  - Antivirals, if eligible
  - Isolation until scabs have fallen off and new skin has formed

## Case investigations

# Contact tracing

## Epidemiologists conduct a risk assessment

- High
- Intermediate
- Low
- No risk

## Public health interventions

- Education, no quarantine if asymptomatic
- No blood, cells, tissue, breast milk, semen, or organ donations
- PEP (some intermediate/all high-risk)
- Daily symptom monitoring via TIM (intermediate and high) and self monitoring (low risk) for 21 days



Source: [How Contact Tracing Helps Mitigate COVID-19 Transmission at WPI | News | WPI](#)

# Genomic epidemiology

- Successfully uploaded sequencing data of MPXV to NCBI for further use in research & surveillance
- Able to determine clade of samples which is critical in determining threat level
  - Clade I is of high concern
  - Clade II is of lower concern
    - All samples classified as Clade II to date
- Phylogenetic trees for cluster detection



Source: [Next Generation Sequencing - Ushering in a New Era of HLA Typing \(stanfordbloodcenter.org\)](#)



# Delaware Resources

Delaware.gov Agencies News Topics Contact

CURRENT HEALTH TOPICS CONTACT NEWS

Select Language  
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# Mpox

Based on the information about mpox in Delaware available at this time, the risk to the public appears low.

[Information for Medical Professionals →](#)

## Mpox Data Dashboard

This information is updated by the Division of Public Health daily.  
[Learn more about mpox data in Delaware](#)

Total Positive Cases		
New Castle	Kent	Sussex
29	5	9

[View mpox vaccine information →](#)

### Mpox Menu

- [Information and Resources](#)
- [What You Need to Know ▲](#)
- [Data in Delaware](#)
- [News](#)

## General Information


The current number of identified mpox cases can be found on [Centers for Disease Control and Prevention \(CDC\) webpage](#). Based on the information about mpox in Delaware available at this time, risk to the public appears low.

At this time, [national data](#) suggest that gay, bisexual, and other men who have sex with men make up the majority of cases in the current mpox outbreak. However, anyone, regardless of sexual orientation or gender identity, who has been in [close, personal contact](#) with someone who has mpox, is at risk.

## What You Need to Know

Mpox is a viral disease that can be spread between people and certain animals. The mpox virus is a part of the same family of viruses as the virus that causes smallpox.

### What is mpox?



An example of a mpox rash. View of a person's shoulder and back with a blistering rash that includes pus filled lesions.

The first human case of mpox was recorded in 1970. Prior to the 2022 outbreak, mpox had been reported in people in several central and western African countries. Previously, almost all mpox cases in people outside of Africa were linked to international travel to countries where the disease commonly occurs or through imported animals. These cases occurred on multiple continents.

[Transmission: How it Spreads](#)

CURRENT HEALTH TOPICS CONTACT NEWS

Select Language  
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- [de.gov/mpox](https://de.gov/mpox)
  - Public and Medical provider section
  - Flyers and other resources
- **CDC resources:**
  - [Clinical Considerations for Monkeypox in Children and Adolescents](#)
  - [Isolation and Prevention Practices for People with Monkeypox](#)
  - [2022 U.S. Monkeypox Outbreak](#)
- **Hotline – 1-866-408-1899**

# MONKEYPOX: WHAT YOU NEED TO KNOW

Monkeypox is a rare disease caused by the monkeypox virus. Until spring 2022, monkeypox cases were rare in the U.S. The Delaware Division of Public Health (DPH) announced Delaware's first case on July 12, 2022.

## TRANSMISSION OF MONKEYPOX

Incubation period 7 to 14 days



CONTACT WITH LESIONS    BODY FLUIDS    CONTAMINATED MATERIALS    RESPIRATORY DROPLET

- It can spread to anyone through close, personal, often skin-to-skin contact, including:
  - Direct contact with monkeypox rash
  - Scabs
  - Body fluids from a person with monkeypox
- It can spread by touching objects:
  - Fabrics, clothing, bedding, or towels
  - Surfaces that have been used by someone with monkeypox
  - Contact with respiratory secretions
- Exposure can happen during intimate contact, including:
  - Sex with a person with monkeypox
  - Hugging
  - Kissing
- Having multiple or anonymous sex partners may increase your chances of exposure to monkeypox.

**HOTLINE: 1-866-408-1899**

- Available Monday-Friday 8:30 a.m.-4:30 p.m.

**WEBSITE: [de.gov/monkeypox](https://de.gov/monkeypox)**

**EMAIL: [DPHcall@delaware.gov](mailto:DPHcall@delaware.gov)**

## MONKEYPOX SYMPTOMS

- Symptoms usually start within 3 weeks of exposure.
- Most people will get a rash that may look like pimples.
- Flu-like symptoms: fever, headache, muscle aches and backache, sore throat, cough, swollen lymph nodes, chills, or exhaustion.
- Rash will appear 1-4 days after flu-like symptoms.
- Rash will go through several stages, including scabs, before healing.
- The rash may also be inside the body.
- Monkeypox can be spread from the time symptoms start until the rash has healed, all scabs have fallen off, and a fresh layer of skin has formed. This can take several weeks.

## SUSPECTED INFECTION: NEXT STEPS



Call your doctor. Ask about getting tested.



Wear a mask to visit a doctor.



Smallpox antivirals may be prescribed.



Isolate until rash has healed and new layer of skin has formed.

Adapted from the CDC, July 2022



- Flyers in English/Spanish
- Press Releases
- Media interviews
- Social media posts

# Questions?



Source: [7 Effective Problem-Solving Techniques in the Workplace](https://tycoonstory.com) 7 Effective Problem-Solving techniques in the Workplace (tycoonstory.com)



*DELAWARE HEALTH AND SOCIAL SERVICES*

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**Division of Public Health**

Office of Infectious Disease Epidemiology

[reportdisease@Delaware.gov](mailto:reportdisease@Delaware.gov)

888-295-5156 (24/7)