Clinical Updates on Monkeypox Virus: What You Need to Know

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USCHA
October 8, 2022
The Association of Nurses in AIDS Care (ANAC)

Mission: ANAC fosters the professional development of nurses and others involved in the delivery of health care for persons at risk for, living with, and/or affected by the human immunodeficiency virus (HIV) and its comorbidities. ANAC promotes the health, welfare, and rights of people living with HIV around the world.
About ANAC

Founded in 1987, we achieve our mission by:

• Creating an effective network of nurses and others in HIV care
• Studying, researching and exchanging information, experiences and ideas leading to improved care for persons with HIV/AIDS
• Providing leadership to the nursing community in matters related to HIV/AIDS
• Advocating for people living with HIV
• Promoting social awareness of issues related to HIV/AIDS

Inherent in these goals is the abiding commitment to the prevention of further HIV infection.
Disclosures

The planners and presenters of this educational activity have no relevant financial relationships to disclose.
Agenda

Welcome/Check-in

Educational Talk

• Epidemiology
• Clinical presentations & management
• Vaccines
• Stigma
• Comparisons to COVID

Think Pair Share exercise

What are the biggest concerns or challenges of PLWH experiencing Mpox?

What are you hearing in your community about Mpox vaccines?

Open Discussion & Questions
Epidemiology of Monkeypox Virus outbreak in the U.S., 2022
### 2022 Outbreak Cases and Data

**Updated September 30, 2022**

<table>
<thead>
<tr>
<th></th>
<th>U.S. Cases</th>
<th>U.S. Deaths</th>
<th>Global Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cases</td>
<td>25,851</td>
<td>2</td>
<td>68,428</td>
</tr>
<tr>
<td>Total Deaths</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[https://www.cdc.gov/poxvirus/monkeypox/response/2022/index.html](https://www.cdc.gov/poxvirus/monkeypox/response/2022/index.html)
2022 U.S. Map & Case Count

Data as of September 30, 2022 at 2:00 pm EDT

25,851 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.
U.S. Monkeypox Case Trends Reported to CDC

Data as Reported to CDC as of 28 Sep 2022 2:00 PM EDT
Español | Print

Trends of monkeypox cases reported to CDC since May 17, 2022, the start of the response to the current outbreak in the United States. Data include cases with reporting date.*

Daily Monkeypox Cases Reported* and 7 Day Daily Average

https://www.cdc.gov/poxvirus/monkeypox/response/2022/index.html
In the U.S., HIV or recent sexually transmitted infections (STIs)* are common among people with monkeypox.

Among nearly 2,000 people with monkeypox:
- 38% had HIV
- 41% had an STI in the past year
- 61% had either HIV or an STI

It is important to:
- Prioritize people with HIV and STIs for monkeypox vaccination
- Offer HIV and STI screening for people evaluated for monkeypox

https://www.cdc.gov/poxvirus/monkeypox/response/2022/index.html
528 infections in 16 countries
98% in gay, bi-sexual men
75% white; median age 38
41% HIV co-infection
29% Concomitant STI at diagnosis

MPX Case Series Report

Monkeypox Virus Infection in Humans across 16 Countries — April–June 2022


ABSTRACT

Background
Before April 2022, monkeypox virus infection in humans was seldom reported outside African regions where it is endemic. Currently, cases are occurring worldwide. Transmission, risk factors, clinical presentation, and outcomes of infection are poorly defined.

Methods
We formed an international collaborative group of clinicians who contributed to an international case series to describe the presentation, clinical course, and outcomes of polymerase-chain-reaction-confirmed monkeypox virus infections.

Results
We report 128 infections diagnosed between April 27 and June 24, 2022, at 45 sites in 16 countries. Overall, 99% of the persons with infection were gay or bisexual men, 75% were white, and 41% had human immunodeficiency virus infection; the median age was 38 years. Transmission was suspected in 59% of the persons with infection. In this case series, 95% of the persons presented with a rash with 56% having <5 lesions, 73% had concomitant lesions, and 46% had anal lesions alone (or having a single genital lesion). Common comorbid conditions preceding the rash included lower 23%, diabetes 40%, alcohol use disorder 34%, and illicit drug use 11%. Median time from rash onset to diagnosis was 7 days (range, 3 to 163 days). Monkeypox virus DNA was detected in 75% of the 32 persons in whom nasent fluid was assayed. Antiviral treatment was given to 5% of the persons overall, and 76 (59%) were hospitalized; the reasons for hospitalization were pain management, mostly for severe unrelieved pain (23 persons, 20 required supratrochanteric (SC) hip, obturator hernia (11 cases), and infection control purposes (13). No deaths were reported.

Conclusions
In this case series, monkeypox manifested with a variety of dermatologic and systemic clinical features. The simultaneous identification of cases outside areas where monkeypox has traditionally been endemic highlights the need for rapid identification and understanding of this emerging public health threat.
<table>
<thead>
<tr>
<th>North Carolina Monkeypox Case Demographic Data</th>
<th>Number of Cases (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>566</td>
</tr>
<tr>
<td><strong>Sex/Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>548 (97)</td>
</tr>
<tr>
<td>Female</td>
<td>16 (3)</td>
</tr>
<tr>
<td>Other than sex assigned at birth</td>
<td>2 (&lt;1)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>0-17</td>
<td>3 (&lt;1)</td>
</tr>
<tr>
<td>18-29</td>
<td>201 (36)</td>
</tr>
<tr>
<td>30-49</td>
<td>322 (57)</td>
</tr>
<tr>
<td>50+</td>
<td>40 (7)</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
</tr>
<tr>
<td>American Indian/Alaskan Native</td>
<td>3 (&lt;1)</td>
</tr>
<tr>
<td>Asian</td>
<td>3 (&lt;1)</td>
</tr>
<tr>
<td>Black or African American</td>
<td>394 (70)</td>
</tr>
<tr>
<td>Native Hawaiian or Pacific Islander</td>
<td>0</td>
</tr>
<tr>
<td>White</td>
<td>132 (23)</td>
</tr>
<tr>
<td>Multi-racial</td>
<td>13 (2)</td>
</tr>
<tr>
<td>Other</td>
<td>19 (3)</td>
</tr>
<tr>
<td>Unknown</td>
<td>2 (&lt;1)</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>59 (10)</td>
</tr>
<tr>
<td>Non-Hispanic</td>
<td>478 (84)</td>
</tr>
<tr>
<td>Unknown</td>
<td>79 (13)</td>
</tr>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td>Known to be living with HIV</td>
<td>295 (52)</td>
</tr>
</tbody>
</table>
History of Monkeypox Virus

• First identified in 1958

• First human case reported in 1970

• Sporadic outbreaks have occurred over past 50 years

• 2003 – first outbreak in US

• Previous outbreaks in 2018, 2019, 2021

Clade I
(prev. Congo Basin)

Clade IIa /IIb
(prev. West African)

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7694534/pdf/viruses-12-01257.pdf
Incubation and Transmission

- **Incubation**: 3-17 days

- **Transmission**
  - Direct contact with monkeypox rash, scabs, or body fluids from a person with monkeypox.
  - Touching objects, fabrics (clothing, bedding, or towels), and surfaces that have been used by someone with monkeypox.
  - Contact with respiratory secretions.

https://www.cdc.gov/poxvirus/monkeypox/if-sick/transmission.html
Clinical Presentation: General

• Lesions may be scattered or limited

• Anorectal pain/tenesmus/urethral pain may be presenting complaint

• Prodromal symptoms (fever, lymphadenopathy, fatigue) not occurring in all patients

• Some with sexually transmitted co-infections

https://www.cdc.gov/poxvirus/monkeypox/clinicians/index.htm
Clinical Presentation: Skin Lesions

• Most are well-circumscribed
  • Initial presentation, may be confused with acne vulgaris
  • Painful in many cases, but not all
  • Very itchy
  • Often with an umbilicated appearance
  • Some lesions may have surrounding erythema
  • May involve palms and soles

• Can progress **rapidly**
  • papules, vesicles, pustules, and scabs
  • may have lesions of various stages in same body area

Differential Diagnosis:
- HSV
- Syphilis
- Molluscum
- Chancroid
- Shingles
- Acne Vulgaris
- Folliculitis
- Contact Dermatitis
- Condyloma
Clinical Presentation: Skin Lesions


Shared with permission from patients, CDC 2022
Anorectal Skin Lesions

Photo Source: J. Kwong, 2022 with pt. permission
Penile Lesions

Photo Source: CDC, 2022
Perioral and Intra-Oral Lesions

Photo Source: J. Kwong with patient permission
Clinical Course

- Usually mild, self-limiting disease course without need for specific therapy

Complications:
- pneumonitis, encephalitis, sight-threatening keratitis,
- secondary bacterial infections
- strictures due to scarring

Prognosis depends on previous vaccination status, initial health status, concurrent illnesses, and comorbidities

Historical Data
PWH with advanced or poorly controlled HIV – at risk for prolonged infection, secondary bacterial infection, and confluent/partially confluent lesions

Current situation
No significant difference for those on effective ART
Diagnostic Considerations

**PCR testing**

Check with your lab on how specimen should be collected and transported (e.g., dry or in viral transport medium)

1. Take one of the swabs out of its package. Do not touch the tip of the swab with your hands. **You will only need to use one of the swabs for sample collection.** The second swab may be discarded.

2. Screw off the top of the UTM or VTM tube. Hold swab in one hand and collection tube in the other.

3. Vigorously swab or brush the base of the lesion with the swab.

4. Insert the swab into the universal or viral transport medium and break off the end of the swab, if required, to tightly close the sample. Screw the top of the collection tube back on.
Symptoms Management Options

- NSAIDS
- Topical anesthetics
- Oral antihistamines
- Gabapentin
- Sitz Baths
- Opioids
- Stool softeners
- Anti-emetics

CDC Interim Guidelines for the Treatment of Monkeypox
https://www.cdc.gov/poxvirus/monkeypox/clinicians/treatment.html
Tecovirimat

• Tecovirimat (TPOXX) FDA approved for smallpox disease
  • Oral capsule and IV formulations

• CDC-held Emergency Access Investigational New Drug (IND) Protocol allows use of Tecovirimat for primary or early empiric treatment of monkeypox in people of all ages
  • Available from the Strategic National Stockpile

• Documentation related to tecovirimat treatment required as part of the IND protocol
Tecovirimat: Dosing Considerations

*Oral: Take with a high fat meal to increase bioavailability*

- < 40kg = refer to prescribing information
- 40 – <120 kg = 600mg Twice Daily x 14 days
- 120 kg + = 600mg Three Times Daily x 14 days

*IV*

- 35 -120 kg = 200mg Twice Daily x 14 days
- >120 kg = 300mg Twice Daily x 14 days
- IV tecovirimat should not be administered to patients with CrCl <30mL/min.

https://www.accessdata.fda.gov/drugsatfda_docs/label/2022/214518s000lbl.pdf
Tecovirimat: Drug-Drug Interactions

- Repaglinide
- Midazolam

May see in NNRTI, PI, MVC, FTR, EVG/c

Some consider negligible with no dose adjustment

Some recommend temporary dose increase of DOR, RPV, MVC while on treatment and for 2-weeks post treatment

https://www.hivguidelines.org/antiretroviral-therapy/monkeypox/
Adverse Effects of Tecovirimat

• Oral:
  • headache (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%).

https://www.accessdata.fda.gov/drugsatfda_docs/label/2022/214518s000lbl.pdf
Tecovirimat: When To Consider

- Severe disease or at high-risk of severe disease
  - immunocompromising conditions
  - pediatric populations
  - pregnant or breastfeeding women
  - history or presence of atopic dermatitis, other active exfoliative skin conditions
  - one or more complications
  - infections involving eyes, mouth, genitals or anus

https://www.cdc.gov/poxvirus/monkeypox/clinicians/Tecovirimat.html
Other possible therapies – under investigational consideration

- Vaccinia Immune Globulin Intravenous (VIGIV)
- Cidofovir
- Brincidofovir

**Drug-Drug Interactions with HIV ART**

- **Cidofovir** (avoid TDF -> switch to TAF)
- **Brincidofovir** (avoid PI, EVG/c, FTR or administer 3 hours after)

CDC Interim Guidelines for the Treatment of Monkeypox, 2022
https://www.cdc.gov/poxvirus/monkeypox/clinicians/treatment.html
JYNNEOS™

• Live attenuated vaccine containing non-replicating orthopoxvirus, FDA approved 2019
• Prevention of smallpox and monkeypox in people 18 yrs and older at high risk for smallpox or monkeypox infection
• Available under Expanded Access Investigational New Drug Protocol for people < 18 yrs

Injection site reactions, fatigue, headache, and muscle pain most common side effects.

PRECAUTION:

Contains small amounts of ciprofloxacin, gentamycin, and egg protein.

Consider risks/benefits of vaccination in these individuals.

Monitor for 30 minutes post-vaccine or consider consultation with an allergist.

CDC Interim Guidelines for the Treatment of Monkeypox, 2022
https://www.cdc.gov/poxvirus/monkeypox/clinicians/treatment.html
# Table 2. Vaccination Schedule and Dosing Regimens for JYNNEOS Vaccine

<table>
<thead>
<tr>
<th>JYNNEOS vaccine regimen</th>
<th>Route of administration</th>
<th>Injection volume</th>
<th>Recommended number of doses</th>
<th>Recommended interval between 1st and 2nd dose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alternative regimen</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People age ≥18 years</td>
<td>ID</td>
<td>0.1 mL</td>
<td>2</td>
<td>Minimum Interval: 24 Days</td>
</tr>
<tr>
<td><strong>Standard regimen</strong></td>
<td></td>
<td></td>
<td></td>
<td>Maximum Interval: 35 Days</td>
</tr>
<tr>
<td>People age &lt;18 years</td>
<td>Subcut</td>
<td>0.5 mL</td>
<td>2</td>
<td><strong>no need to restart if &gt; 35 days</strong></td>
</tr>
<tr>
<td>People of any age who have a history of developing keloid scars</td>
<td>Subcut</td>
<td>0.5 mL</td>
<td>2</td>
<td><strong>no need to restart if &gt; 35 days</strong></td>
</tr>
</tbody>
</table>

Immunogenicity among PWH with CD4 < 100 cells/mm³ or who are not virologically suppressed remains unknown.

https://www.cdc.gov/poxvirus/monkeypox/interim-considerations/jynneos-vaccine.html
https://www.cdc.gov/poxvirus/monkeypox/clinicians/people-with-HIV.html
Exceptions to the 2-dose series

While supply of JYNNEOS is limited, the following are exceptions to the recommended 2 series:

• A person diagnosed with MPX after their 1st dose of JYNNEOS is not recommended to receive the 2nd dose because MPX infection likely confers immune protection.

• A person who would be eligible for vaccination but has been diagnosed with MPX during this outbreak, which started in the United States on May 17, 2022, is not recommended to be vaccinated at this time, because MPX infection likely confers immune protection.

• An immunocompromised person diagnosed with MPX after their 1st dose of JYNNEOS may be eligible to receive the 2nd dose of JYNNEOS on a case-by-case shared decision-making basis based on clinical judgment of the healthcare provider.

https://www.cdc.gov/poxvirus/monkeypox/interim-considerations/jynneos-vaccine.html#interim
Vaccine Eligibility: CDC (updated Sept 28, 2022)

Gay, bisexual, and other MSM, transgender or nonbinary people who in the past 6 months have had:

- A new diagnosis of one or more nationally reportable STI such as acute HIV, chancroid, chlamydia, gonorrhea, or syphilis
- More than one sex partner

People who have had any of the following in the past 6 months:

- Sex at a commercial sex venue
- Sex in association with a large public event in a geographic area where monkeypox transmission is occurring
- Sexual partners of people with the above risks
- People who anticipate experiencing the above risks

Source: CDC, monkeypox update Issue #14, Sept 29, 2022
People eligible for monkeypox vaccination should get vaccinated as soon as possible

Study of males ages 18–49 years eligible for vaccination*

For every 1 infection among people receiving one dose†

there were 14 infections among people receiving no doses

It's important to get both doses for best protection

* During July 31, 2022—September 3, 2022
† Received first dose of vaccine 14 days or more earlier

bit.ly/mm7140e3
SEPTEMBER 30, 2022
Intradermal Jynneos Reactions
Alternate Administration Sites for Intradermal Vaccine

https://www.cdc.gov/poxvirus/monkeypox/health-departments/vaccine-considerations.html#~:text=JYNNEOS%20vaccine%20is%20approved%20for,(EA%2DIND)%20protocol.
What we do not yet know about JYNNEOS™

- No data available on effectiveness in the current outbreak.
- No data in people who are pregnant or breastfeeding, animal data do not show evidence of reproductive harm.
- Pregnancy and breastfeeding are not contraindications to receiving JYNNEOS.

CDC Interim Guidelines for the Treatment of Monkeypox, 2022
https://www.cdc.gov/poxvirus/monkeypox/clinicians/treatment.html
Considerations for vaccine use as PEP

- CDC recommends vaccine series be initiated within 4 days from date of exposure

- If initiated between 4 and 14 days after the date of exposure, vaccination may reduce the symptoms of disease, but may not prevent the disease

https://www.cdc.gov/poxvirus/monkeypox/considerations-for-monkeypox-vaccination.html
Infection Control: Clinical Space

• PPE used by healthcare personnel should include:
  • Gown, Gloves, Eye protection, NIOSH-approved particulate respirator equipped with N95 filters or higher

• Avoid activities that could resuspend dried material from lesions (e.g., use of portable fans, dry dusting, sweeping, or vacuuming should be avoided).

• Standard cleaning and disinfection procedures should be performed using an EPA-registered hospital-grade disinfectant with an emerging viral pathogen claim.

https://www.cdc.gov/poxvirus/monkeypox/clinicians/infection-control-healthcare.html#anchor_1653508963990
Infection Control: Home and Community

• While rash persists but no fever or respiratory symptoms:
  • Cover all parts of rash with clothing, gloves, and/or bandages.
  • Wear well-fitting mask when interacting with others

• Until all signs/symptoms fully resolved:
  • Avoid sharing items that have been touched by lesion.
  • Avoid close physical contact with others.
  • Avoid crowds and congregate settings.
  • Wash hands with soap and water or use alcohol-based hand sanitizer, especially after direct contact with the rash.

https://www.cdc.gov/poxvirus/monkeypox/clinicians/faq.html
https://www.cdc.gov/poxvirus/monkeypox/pdf/Monkeypox-Interim-Guidance-for-Household-Disinfection-508.pdf
Figure 1: Cases and First Dose Vaccinations by Race/Ethnicity*

*Note: Individuals with a race/ethnicity categorized as “unknown” or “missing” were not included in the above data. These categories include 45 cases and 1,009 first dose vaccinations- 14.7% of cases and 7.4% of first dose vaccinations to date.*
Key Take Away Messages

• Early recognition and diagnosis is critical to prevent transmission.

• People with advanced or uncontrolled HIV may be at risk for prolonged infection, confluent lesions, or secondary infections.

• Antiviral therapy is available and likely reduces symptom duration and intensity; symptom management is critical to reduce morbidity.

• Vaccination is an important component of controlling this public health emergency.

• Health professionals, advocates, community-based leader play a key role in reducing stigma and advocating for equitable access to prevention and treatment.
MPV-associated stigma and discrimination
Shame
Depressive symptoms
Emotional/mental distress
Anxiety
Lack of social support
Isolation/loneliness
Not seeking health care
Public health consequences
Loss of income/employment
Fear of judgement/harrassment
Life after monkeypox: Men describe an uncertain road to recovery

Over a dozen men who contracted monkeypox talked to NBC News about their recoveries and the lingering effects of the skin lesion-causing virus.

Pain, Fear, Stigma: What People Who Survived Monkeypox Want You to Know

Seven patients share their stories of devastating symptoms, their frustration over finding care and their efforts to help each other when doctors and officials have failed.
Mitigating MPV-related Stigma

- Psychosocial supports
- Social connectedness
- Transmission knowledge
- Prevention education
- Privacy protections
- Appropriate clinical management
Comparisons to COVID-19

Zoonotic viral infections

Origin outside of U. S. = Isolationism, Xenophobic early responses

WHO Global Health Emergency of International Concern

• To engage and protect affected communities;
• To intensify surveillance and public health measures;
• To strengthen clinical management and infection prevention and control in hospitals and clinics;
• To accelerate research into the use of vaccines, therapeutics and other tools;
• And recommendations on international travel.

Mpox: July 2022 (3,000 cases in 47 countries-16,000 cases in 75 countries in 30 days)

COVID: February 2020 (242 cases to 43,000 cases in 21 countries in 6 weeks)
Comparisons to COVID-19

Fatality rates
Serious hospitalizations
Lack of initial testing, treatments & vaccines
Referral to experts/care centers
Community & individual stigmatization
Belief & trust in science & medical expertise
Isolation (2-4 weeks)
Financial & job support
“Outing” of individuals sexuality
Community mobilization
People in San Francisco waiting for vaccination

https://apnews.com/article/science-health-public-rochelle-walensky-a7d197e26f4e650600c4b2cd13e0b436
What are the biggest concerns or challenges of PLWH experiencing Mpox?
THINK. PAIR. SHARE.

What are you hearing in your community about Mpox vaccines? What else are you hearing in your community about Mpox?
For more information about ANAC visit our website!

NursesinAIDScare.org
EQUITY, COMPASSION & SCIENCE - KEYS TO ENDING THE HIV EPIDEMIC

WWW.NURSESINAIDSCARE.ORG/CONFERENCE