MONKEYPOX (MPV)
Clinician Webinar with KPHD
PANELISTS

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Kitsap Public Health District

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Kitsap Public Health District
1. Monkeypox (MPV) Outbreak Overview and Status Update
2. Clinical Recognition and Pathology
3. Testing
4. Infection Prevention
5. Vaccination
6. Treatment
7. Public Health Role and Follow-up
8. Q&A
MONKEYPOX (MPV) OUTBREAK OVERVIEW AND STATUS UPDATE

with Gib Morrow

• Epidemiologic Overview
History of Monkeypox (MPV)

- **1958** - Identified among lab monkeys
- **1970** - First human cases in DRC;
- **1980’s** - 300 cases in Africa, vastly zoonotic
- **2003** - 1st US outbreak of 71 cases, all cases traced to rodents imported from Ghana
- **2018-22** Sporadic cases in UK, travel related.
- **May 2022** – First cases in Europe and US, all travel related
  - West African virus clade; milder illness than Congo Basin virus
  - Human transmission through skin contact-MSM
Monkeypox: An Overview

- Orthopox family (ds dna viruses), like but less severe than smallpox (eradicated in 1980 primarily using ring vaccination)
- Two distinct clades (West and Central African)
- Primarily zoonotic (squirrels, Gambian poached rats, dormice, different species of monkeys...)
As of 8/8/2022:

- **Global**: 30,189 cases in 88 countries
- **US**: 8,934 cases in 49 states + PR
  - NO deaths in US
  - NO transmission in health care settings
- **Washington State**: 213 cases in 12 counties
- **Kitsap County**: 2 cases
Case Trends

U.S. Monkeypox Case Trends Reported to CDC

- 2 Large Pride Events in Canary Islands and Belgium, with outbreaks of MPV
- Initial US cases with foreign travel
- Spread overwhelmingly in MSM
- WHO declares public health emergency 7/23 - Tedros
- US on 8/4

Cases Reported in 2022
• 95% Gay or bisexual men – transmission sexual 95%
• 75% white
• 42% with HIV
• 29% Concomitant STI – GC > CT > Syphilis > HSV > LGV
• Presented to STI > ED > PCP > Derm
• Sx: Rash (95%), Fever (62), nodes (56), lethargy (41), Myalgia (31)...

Monkeypox Virus Infection in Humans across 16 Countries — April–June 2022
Figure 2. Epidemiological curve of Monkeypox cases, by reporting date (defined as LRN positive date, case reporting to the CDC Call Center, or case entry into Data Collation and Integration for Public Health Event Responses (DCIPHER)). Dates for some cases may be updated when additional LRN test dates are provided to CDC via DCIPHER.
CLINICAL RECOGNITION AND PATHOLOGY

with Gib Morrow

- Signs and symptoms
Key Characteristics for Identifying Monkeypox

- Lesions are firm or rubbery, well-circumscribed, deep-seated, and often develop umbilication

- During the current global outbreak:
  - Lesions often occur in the genital and anorectal areas or in the mouth
  - Rash is not always disseminated across many sites on the body
  - Rash may be confined to only a few lesions or only a single lesion
  - Rash does not always appear on palms and soles

- Rectal symptoms (e.g., purulent or bloody stools, rectal pain, or rectal bleeding) have been frequently reported in the current outbreak

- Lesions often described as painful until healing phase when they become itchy (crusts)

- Fever and other prodromal symptoms (e.g., chills, lymphadenopathy, malaise, myalgias, or headache) can occur before rash but may occur after rash or not be present at all

- Respiratory symptoms (e.g. sore throat, nasal congestion, or cough) can occur
Identifying Monkeypox: Continued

- Lesions typically develop simultaneously and evolve together on any given part of the body.
- Incubation period is 3-17 days. During this time, a person does not have symptoms and may feel fine.
- Lesions progress through four stages—macular, papular, vesicular, to pustular—before scabbing over and desquamation.
- The illness typically lasts 2-4 weeks.
- Patients are infectious once symptoms begin, whether prodromal or rash
- Remain infectious until lesions form scabs, scabs fall off, and a fresh layer of skin forms

Photo Credit: NHS England High Consequence Infectious Diseases Network
What clinicians need to know: Diagnosis

- Be vigilant to possibility of monkeypox if characteristic rash present*
- Know that illness is presenting atypically
- Clinicians working in outpatient clinics may be first to suspect monkeypox
  - Many patients have mild symptoms
  - Could be confused with sexually transmitted infection and varicella zoster virus infection
  - STI diagnosis does not exclude monkeypox infection; infections may be concurrent
  - Obtain sexual and travel history; determine if any contacts have/had a similar rash
- Obtain specimens †

*https://www.cdc.gov/poxvirus/monkeypox/clinicians/clinical-recognition.html
† https://www.cdc.gov/poxvirus/monkeypox/clinicians/monitoring.html
• Monkeypox is notifiable to Public Health “at first clinical suspicion”; WAC 246-100

• When sending a specimen that is **HIGHLY** suspicious for monkeypox call KPHD
  • Normal business hours: 360-728-2235
  • Afterhours: 360-728-2235
TESTING
with Wendy Inouye

• Who to test
• Where to test
• How to test
Who to Test for Monkeypox

Consistent Symptoms

Epidemiologic Evidence

Provider Suspicion

Also Test For:
- Syphilis
- HIV
- STI panel
- Other possible rash etiologies

# Where & How to Test

<table>
<thead>
<tr>
<th>LabCorp, Mayo Clinic, Aegis Sciences</th>
<th>Quest Diagnostics</th>
<th>UWVL</th>
<th>WS PHL</th>
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</thead>
<tbody>
<tr>
<td><strong>Test Type</strong></td>
<td>PCR/DNA assay (CDC)</td>
<td>PCR/DNA assay (Quest)</td>
<td>PCR/DNA assay (UW)</td>
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<tr>
<td><strong>Tests for</strong></td>
<td>Orthopox (non-variola)</td>
<td>Orthopox (non-variola) Monkeypox</td>
<td>Monkeypox</td>
</tr>
<tr>
<td><strong>Specimen</strong></td>
<td>Swab (lesions)</td>
<td>Swab (lesions)</td>
<td>Swab (lesions)</td>
</tr>
<tr>
<td><strong>Transport</strong></td>
<td>UTM or VTM</td>
<td>UCM, UTM, VTM</td>
<td>UTM or VTM</td>
</tr>
<tr>
<td><strong>Transport temp</strong></td>
<td>Refrigerated or frozen</td>
<td>&lt;=7 days: refrigerated &lt;=30 days: frozen</td>
<td>UTM, VTM, dry swab: refrigerated if 7d ro less; ship on dry ice</td>
</tr>
<tr>
<td><strong>Turnaround Time</strong></td>
<td>2-3 days from receipt</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td><em>not FDA-approved</em></td>
<td><em>See link for additional specimens and shipping</em></td>
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INFECTION PREVENTION

with Wendy Inouye

• Transmission
• PPE
• Monitoring of exposed HCWs
TRANSMISSION OF MONKEYPOX

Incubation period 7 to 14 days

CONTACT WITH LESIONS  BODY FLUIDS  CONTAMINATED MATERIALS  RESPIRATORY DROPLET

Examples of high and intermediate risk exposures

- Skin-to-skin contact with a patient who has monkeypox

- Being inside the patient's room or within 6 feet of a patient during any procedures that may create aerosols from oral secretions, skin lesions, or resuspension of dried exudates, without wearing an N95 or equivalent respirator and eye protection

- Shared towels and bedding (infectious body fluids and scabs may be present)

[Monkeypox in the United States: What Clinicians Need to Know (cdc.gov)]
Infection Prevention Overview

- **PPE = Standard Precautions**
  - Gloves
  - Gown
  - Eye protection
  - N95+ respirator

- **Other precautions:**
  - Single-person room w/ dedicated bathroom
  - Avoid activities that can resuspend dried material from lesions
  - Handle in accordance with US DOH Hazardous Waste Regs
  - Limit pt visits to those “essential to patient’s care and wellbeing”

- **Monitor HCWs exposed to MPXV pts w/o PPE:**
  - 21 days of active surveillance
  - Temperature checks 2x/day
  - Evaluate before each work shift for fever or rash

https://www.cdc.gov/poxvirus/monkeypox/clinicians/infection-control-healthcare.html
VACCINATION

with Liz Davis

• Vaccines indicated for monkeypox
• Vaccination rollout strategy
# Old school ACAM2000 vs. JYNNEOS

<table>
<thead>
<tr>
<th></th>
<th>ACAM2000®</th>
<th>JYNNEOS™</th>
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<tbody>
<tr>
<td>Vaccine formulation</td>
<td>Live replicating vaccinia virus</td>
<td>Live non-replicating vaccinia virus</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>Emergent</td>
<td>Bavarian Nordic</td>
</tr>
<tr>
<td>Schedule</td>
<td>Single dose</td>
<td>2 doses, 28 days apart</td>
</tr>
<tr>
<td>Inadvertent inoculation and autoinoculation</td>
<td>Risk exists</td>
<td>No risk</td>
</tr>
<tr>
<td>“Take”</td>
<td>Take</td>
<td>No take</td>
</tr>
<tr>
<td>Contraindications</td>
<td>• Hx atopic dermatitis</td>
<td>• Serious vaccine component allergy</td>
</tr>
<tr>
<td></td>
<td>• Immunosuppression</td>
<td></td>
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<tr>
<td></td>
<td>• Pregnancy or breastfeeding</td>
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<tr>
<td></td>
<td>• Age &lt;1 year</td>
<td></td>
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<tr>
<td></td>
<td>• Underlying heart disease</td>
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Jynneos vaccine
(Also known as IMVAMUNE, IMVANEX, MVA)

- **JYNNEOS** is a live vaccine produced from the strain Modified Vaccinia Ankara-Bavarian Nordic (MVA-BN), an attenuated, non replicating orthopoxvirus

- Licensed by FDA in September 2019

- **JYNNEOS** is indicated for prevention of smallpox and monkeypox disease in adults 18 years of age and older determined to be at high risk for smallpox or monkeypox infection

[Link to FDA page](https://www.fda.gov/vaccines-blood-biologics/jynneos)
## Vaccination Roll-out Strategy

### HHS National Strategy

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Population</th>
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<tbody>
<tr>
<td>Standard PEP</td>
<td>Close contacts to cases; “High” and “Intermediate” exposure levels&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>PEP++</td>
<td>People with “risk factors [who] are more likely to have been recently exposed to monkeypox”</td>
</tr>
<tr>
<td>PrEP</td>
<td>“persons at risk for occupational exposure to orthopoxviruses”; Laboratory workers who routinely work with OPX</td>
</tr>
</tbody>
</table>

<sup>1</sup> [https://www.cdc.gov/poxvirus/monkeypox/clinicians/monitoring.html](https://www.cdc.gov/poxvirus/monkeypox/clinicians/monitoring.html)
How is KPHD supporting Jynneos administration?

• Serving as a Jynneos hub

• Vaccinating high risk close contacts of monkeypox cases (PEP)

• Working with local providers and community groups that serve the LGBTQ+ community to plan for vaccine administration when doses are available for PEP++
TREATMENT: TPOXX

with Liz Davis

• Who to treat
• How to treat
Who to Treat

LAC DPH TPOXX Treatment Algorithm

Has the patient tested positive for monkeypox?  

YES

Does the patient have severe disease as defined by one of the following:
1. Hospitalization
2. Encephalitis
3. Hemorrhagic disease
4. Confluent lesions
5. Sepsis
6. Painful mucosa lesions (genitals, anus) limiting activities of daily living or implantation in the eyes or mouth.

NO

Does the patient meet criteria as at risk for severe monkeypox as defined by one of the following:
1. Immunocompromise (e.g., poorly controlled HIV, active cancer, organ transplant, immune suppressing medications).
2. Age <8 years of age.
3. Pregnant or breastfeeding women
4. History of severe skin disease

NO

Please refer to updated information on monkeypox vaccination and post-exposure prophylaxis

YES

Healthcare providers should speak to their patient regarding monkeypox treatment-see FAQs below. Providers can treat using the CDC IND protocol.
To obtain tecovirimat call the DPH healthcare provider line at 213-240-7941 (this line is reserved only for providers and not patients or the public).

YES

1. Isolation
2. Supportive Care
3. Monitor for complications

* Courtesy of LA County Public Health: http://publichealth.lacounty.gov/acd/monkeypox/docs/GuidanceforTreatmentMonkeypox-TPOXX.pdf
TPOXX (Tecovirimat) for Treatment of Monkeypox

- Tecovirimat (also known as TPOXX or ST-246) is an antiviral medication that is approved by the FDA for the treatment of human smallpox disease in adults and pediatric patients weighing at least 3 kg.
- CDC-held Emergency Access Investigational New Drug Protocol allows use of Tecovirimat for Non-Variola Orthopoxvirus Infection (e.g., monkeypox).
- Available from the Strategic National Stockpile as an oral capsule formulation or an intravenous vial.
Guidance for Treatment of Monkeypox

Many individuals infected with monkeypox virus have a mild, self-limiting disease course in the absence of specific therapy. The prognosis for monkeypox depends on multiple factors.

People who may be at high risk of severe disease:

- The immunocompromised
- Pediatric populations, particularly patients younger than 8 years of age
- People with a history or presence of atopic dermatitis, persons with other active exfoliative skin conditions Pregnant or breastfeeding women
- People with one or more complications
- People with monkeypox virus aberrant infections that include accidental implantation in eyes, mouth, or other anatomical areas where monkeypox virus infection might constitute a special hazard (e.g., the genitals or anus)

[Monkeypox in the United States: What Clinicians Need to Know (cdc.gov)]
How do you prescribe TPOXX?

The CDC recently streamlined the EA-IND protocol for providers to prescribe TPOXX.

**Required**

1. **Informed Consent Form [214KB, 5 pages]:** Obtain prior to treatment.
2. **Patient Intake Form [321KB, 3 pages]:** Baseline assessment.
3. **FDA Form 1572 [1MB, 2 pages]:** One signed 1572 per facility suffices for all TPOXX treatments administered under the EA-IND at the same facility.
4. **Clinical Outcome Form [279KB, 4 pages]:** Progress information during and post treatment, due within 3 business days of last patient follow up.

5. **Serious Adverse Events:** Report life-threatening or serious adverse events associated with TPOXX by completing a [PDF MedWatch Form [226KB, 3 pages]](https://www.cdc.gov/poxvirus/monkeypox/clinicians/obtaining-tecovirimat.html) and returning it to CDC via email (regaffairs@cdc.gov)

https://www.cdc.gov/poxvirus/monkeypox/clinicians/obtaining-tecovirimat.html
PUBLIC HEALTH ROLE & FOLLOW-UP

with Gib Morrow

• What Public Health is doing for cases and contacts
• Public Health ask for Providers
What can Public Health do?

- Consultation on case (diagnosis, appropriate testing, treatment recommendations)
- Case management and counseling (including linkage to other services)
- Contact tracing
- Notifying Infection Control/Prevention
- Investigation
- Public notification of exposures
- Coordinating specimen testing
- Coordinating drug and vaccine acquisition
Our Ask for Providers:

- Be familiar with the clinical presentation and local epidemiology of monkeypox.
- **PPE!** Gloves | Mask | Eyes
- If high clinical suspicion, coordinate testing with KPHD.
- Educate your patients on transmission and infection prevention.
- Work with Public Health to identify close contacts and coordinate vaccination, if indicated.
- Identify and talk with high-risk patients about vaccination.
- Enroll as a TPOXX prescriber with CDC.
Sign up for Provider Alerts:
https://providers.kitsappublichealth.org/email-notifications/(Select “News and Alerts”)
QUESTIONS?
WHAT TO KNOW ABOUT MONKEYPOX

What is monkeypox?

Monkeypox is a disease caused by a virus. Monkeypox is being reported this year in many countries that do not normally have monkeypox cases, including the United States. People who get monkeypox typically recover in 2-4 weeks, but monkeypox can cause severe illness.

HOW DOES IT SPREAD?

Monkeys most often spread through skin-to-skin contact, including during sex.

Monkeys can also spread through:
- Respiratory droplets or saliva during face-to-face contact, such as kissing.
- Contact with items such as clothing or bedding used by someone with monkeypox.

WHAT ARE THE SYMPTOMS?

A rash, bumps, or sores can appear anywhere on the body.

Some people have flu-like symptoms including fever, aches, or swollen glands.

Symptoms begin 5-21 days after exposure.

Who is at risk?

Anyone who has close contact with someone with monkeypox is at risk. Many — but not all — people affected in the current outbreak have been gay, bisexual, and other men who have sex with men.

Prevent monkeypox

- Avoid skin-to-skin contact with anyone who has symptoms similar to monkeypox, such as a rash or sores.
- Talk to sexual partners about their health. Having sex with multiple partners could increase your risk for monkeypox.
- If you have a rash or other symptoms similar to monkeypox, avoid close contact with other people and call a healthcare provider.

STOP STIGMA

Anyone can get monkeypox. Singling out any one community can cause discrimination and harm public health efforts.

LEARN MORE:
cdc.gov/monkeypox | doh.wa.gov | kitsapplublichealth.org | 360-728-2235

Call a healthcare provider if you have a rash or sores similar to monkeypox or think you have been in contact with someone with monkeypox. Find images of monkeypox rashes at cdc.gov/monkeypox.

https://kitsapplublichealth.org/CommunityHealth/files/MonkeypoxFactSheet.pdf
RESOURCES

EPIDEMIOLOGY
DOH: https://doh.wa.gov/you-and-your-family/illness-and-disease-z/monkeypox
CDC: https://www.cdc.gov/poxvirus/monkeypox/response/2022/index.html

INFECTION PREVENTION
CDC Infection Control: https://www.cdc.gov/poxvirus/monkeypox/clinicians/infection-control.html

VACCINE
https://www.cdc.gov/poxvirus/monkeypox/clinicians/smallpox-vaccine.html
https://www.cdc.gov/poxvirus/monkeypox/considerations-for-monkeypox-vaccination.html

TREATMENT
CDC Interim Clinical Guidance for the Treatment of Monkeypox: https://www.cdc.gov/poxvirus/monkeypox/clinicians/treatment.html#anchor_1655488137245
Information for Healthcare Providers on Obtaining and Using TPOXX (Tecovirimat) for Treatment of Monkeypox https://www.cdc.gov/poxvirus/monkeypox/clinicians/obtaining-tecovirimat.html