Michigan Local Health Departments: Investigation of Mpox Cases

(Updated 8/29/2023)

Contents

Background

Mpox (previously named monkeypox) is a zoonotic disease that is caused by infection with the *monkeypox virus*. *Monkeypox virus* (mpox virus) belongs to the *Orthopoxvirus* genus in the family *Poxviridae*. The *Orthopoxvirus* genus also includes variola virus (which causes smallpox), vaccinia virus (used in the smallpox vaccine), and cowpox virus. Mpox was first discovered in 1958 when two outbreaks of a pox-like disease occurred in monkeys kept for research. The first human case of mpox was recorded in 1970 in the Democratic Republic of the Congo (DRC) during a period of intensified effort to eliminate smallpox. Since then, mpox has been reported in people in several other central and western African countries: Cameroon, Central African Republic, Cote d'Ivoire, Democratic Republic of the Congo, Gabon, Liberia, Nigeria, Republic of the Congo, and Sierra Leone.

Until May 2022, mpox cases in people outside of Africa were linked to international travel or imported animals from endemic areas in Africa. Beginning in May 2022, multiple countries that do not usually have mpox, including the United States, began to report cases not associated with the traditional epidemiologic risk factor of travel to places where the disease is endemic. A map and list of the current mpox cases by state is available at 2022 U.S. Map & Case Count | Mpox | Poxvirus | CDC.

Mpox does not spread easily person-to-person, but transmission can occur through direct contact with lesions or bodily fluids, indirect contact through fomites (materials that were in contact with lesions or bodily fluids), and through exposure to large respiratory droplets from prolonged face-to-face contact. Individuals with exposures that support the highest likelihood of transmission should follow the latest guidance for post-exposure vaccine. No commercially available vaccines exist; products are only available through request from the federal government by a public health authority. All individuals with a potential exposure to an infected person should be monitored for 21 days post-exposure for the

development of symptoms. Both vaccine acquisition for post-exposure and symptom monitoring should be coordinated with public health authorities.

Clinical Characteristics

- Lesions are firm or rubbery, well-circumscribed, deep-seated, and often develop umbilication (resembles a dot on the top of the lesion).
- 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 are often described as painful until the 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.
- Lesions typically develop simultaneously and evolve together on any given part of the body. The evolution of lesions progresses through four stages—macular, papular, vesicular, to pustular—before scabbing over and desquamation.
- For rash example photos, visit https://www.cdc.gov/poxvirus/mpox/clinicians/clinical-recognition.html

Incubation Period: usually 5–13 days (range: 3-17 days) after being exposed to the virus. The average onset is 7.6 days.

Communicable Period: typically from the time symptoms start until the rash has fully healed and a fresh layer of skin has formed. As of February 2023, new data show that some people with mpox may have infected others from one to four days before they develop symptoms (pre-symptomatic spread). For more information on mpox detection and transmission, visit https://www.cdc.gov/poxvirus/mpox/about/science-behind-transmission.html.

Duration of Illness: typically 2-4 weeks

Testing

- Testing is available through commercial, clinical, and public health laboratories. Consult the laboratory for their specimen collection and handling requirements. Below are links to commercial lab mpox testing information; additional laboratories may offer testing.
    - Aegis https://www.aegislabs.com/our-services/mpox/
    - ARUP https://ltd.aruplab.com/Tests/Pub/3005716
    - Labcorp https://www.labcorp.com/infectious-disease/mpox
    - Mayo https://www.mayocliniclabs.com/test-catalog/overview/75817

    - Quest https://www.questdiagnostics.com/healthcare-professionals/about-our-tests/infectious-diseases/mpox
    - Sonic https://www.sonichealthcareusa.com/about-us/news/2022/07/sonic-healthcare-usa-announces-testing-availability-for-mpox/
- The Michigan Department of Health and Human Services (MDHHS) Bureau of Laboratories (BOL) provides testing for non-variola orthopoxvirus. For instructions, see Appendix B: Specimen Collection Instructions for Testing at MDHHS BOL.
- Providers may want to continue to consider testing at MDHHS BOL for individuals who are uninsured/underinsured where commercial testing cost may be a burden.
- Testing Resources:
    - Guidelines for Collecting and Handling Specimens for Mpox Testing (CDC)
    - Tips for Adequate Collection of a Lesion Specimen from a Suspect Mpox Case (CDC)
    - Testing Patients for Mpox (CDC)
    - MDHHS BOL Mpox Testing Basics (MDHHS)
    - MDHHS BOL Mpox Test Requisition Form (DCH-1396) (MDHHS)

Vaccination

- JYNNEOS is a 2-dose vaccine developed to protect against mpox and smallpox infections. Both doses are needed for the best protection against mpox. The second dose should be given 4 weeks after the first dose.
- The standard regimen for JYNNEOS is a subcutaneous route with an injection volume of 0.5mL. An alternative regimen, intradermal administration with a volume of 0.1mL, may be used under the existing Emergency Use Authorization (EUA).
- **Post-exposure Prophylaxis (PEP):** Mpox vaccine can be given as PEP to people with known or presumed exposure to mpox virus. As PEP, vaccine should be given as soon as possible, ideally within four days of exposure; administration 4 to 14 days after exposure may still provide some protection against mpox.
- In Michigan, JYNNEOS vaccine is available to those who have been exposed to someone with mpox and/or anyone who thinks they may be at risk.
- At risk includes:
    - Known or suspected exposure to someone with mpox
    - Had a sex partner in the past 2 weeks who was diagnosed with mpox
    - A gay, bisexual, or other man who has sex with men or a transgender, nonbinary, or gender-diverse person who in the past 6 months has had any of the following:
        - A new diagnosis of one or more sexually transmitted diseases (e.g., chlamydia, gonorrhea, or syphilis)
        - More than one sex partner
    - Had any of the following in the past 6 months:
        - Sex at a commercial sex venue (like a sex club or bathhouse)
        - Sex related to a large commercial event or in a geographic area (city or county for example) where mpox virus transmission is occurring
        - Sex in exchange for money or other items
    - Have a sex partner with any of the above risks

  - Anticipate experiencing any of the above scenarios
  - Have HIV or other causes of immune suppression and have had recent or anticipate future risk of mpox exposure from any of the above scenarios
  - Work in settings where you may be exposed to mpox (i.e., work with orthopoxvirus in a laboratory)
- People who are vaccinated should continue to take steps to protect themselves from infection by avoiding close, skin-to-skin contact, including intimate contact, with someone with mpox.
- For vaccination questions, contact the MDHHS Division of Immunizations at MDHHS-MPV-Vaccine@michigan.gov.

- Vaccination Resources
  - JYNNEOS Vaccine (CDC)
  - JYNNEOS Vaccine Resource Guide (MDHHS)
  - Interim Clinical Considerations for Use of JYNNEOS and ACAM2000 Vaccines during the 2022 U.S. Mpox Outbreak (CDC)
  - Fact Sheet for Healthcare Providers for JYNNEOS (FDA)
  - How to administer JYNNEOS vaccine intradermally (MDHHS)
  - How to administer subcutaneous vaccine (page 2) (Immunize.org)
  - Integrating Mpox Vaccination, Testing, and Treatment into Sexual Health and HIV Clinical Care (MDHHS)
  - When Am I Protected After Getting the Mpox Vaccine (MDHHS)
  - www.michigan.gov/mpox

Treatment

- Patients with mpox benefit from supportive care and pain control implemented early in illness.
- Treatment for mpox infection with tecovirimat (TPOXX) should be considered for individuals with severe disease, pain, involvement of anatomic areas that might result in serious sequelae that include scarring or strictures, and people who are at high risk for severe disease, including people with HIV, immunocompromised individuals, and children.
- Treatment Resources:
  - Guidance for Tecovirimat Use (CDC)
  - Ordering TPOXX for Michigan Health Care Providers (MDHHS)
  - Integrating Mpox Vaccination, Testing, and Treatment into Sexual Health and HIV Clinical Care (MDHHS)
  - Treatment Information for Healthcare Professionals (CDC)
  - Interim Clinical Treatment Considerations for Severe Manifestations of Mpox — United States, February 2023 (CDC)
  - Clinical Considerations for Pain Management of Mpox (CDC)
  - CDC Mpox Clinical Team: Eocevent482@cdc.gov (non-urgent) (770)-488-7100 (urgent)

Recommendations for Clinicians

- CDC is urging healthcare providers in the U.S. to be alert for patients who have rash illnesses consistent with mpox, regardless of whether they have travel or specific risk factors for mpox and regardless of gender or sexual orientation. Suspicion for mpox should be heightened if the rash occurs in people who, within 21 days of illness onset:
    1. Report having contact with a person or people who have a similar appearing rash or received a diagnosis of confirmed or probable mpox, or
    2. Had close or intimate in-person contact with individuals in a social network experiencing mpox activity, this includes men who have sex with men (MSM) who meet partners through an online website, digital application ("app"), or social event (e.g., a bar or party).
    3. Traveled outside the U.S. to a country with confirmed cases of mpox, or where mpox virus is endemic.
    4. Had contact with a dead or live wild animal or exotic pet that is an African endemic species or used a product derived from such animals (e.g., game meat, creams, lotions, powders, etc.)
    5. Lesions may be disseminated or located on the genital or perianal area alone. Some patients may present with proctitis, and their illness could be clinically confused with a sexually transmitted infection (STI) like syphilis or herpes, or with varicella zoster virus infection.
- Diagnostic testing for mpox has become more widely available, therefore clinicians no longer need to seek public health approval for testing.
    - However, it is encouraged to continue to report suspected mpox cases to your Local Health Department and order testing.
- Evaluate any individual presenting with genital, anal, or perianal ulcers, proctitis syndrome, or diffuse rash for sexually transmitted infections (STI) per the 2021 CDC STI Treatment Guidelines. ***The diagnosis of an STI does not exclude mpox, as a concurrent infection may be present.***
- Test for HIV in every sexually active adult and adolescent in whom mpox is suspected if current HIV status is unknown. Discuss and facilitate access to HIV pre-exposure prophylaxis (PrEP) for those who are HIV negative and at risk for HIV.
- Ensure those with HIV and with suspected or confirmed mpox are on effective antiretroviral therapy and linked to care to optimize immune function.
- For clinical considerations in these populations
    - People with HIV or other immunocompromising conditions https://www.cdc.gov/poxvirus/mpox/clinicians/people-with-HIV.html
    - Children and adolescents https://www.cdc.gov/poxvirus/mpox/clinicians/pediatric.html.
    - People who are pregnant or breastfeeding https://www.cdc.gov/poxvirus/mpox/clinicians/pregnancy.html
- For guidance managing ocular mpox infections, visit https://www.cdc.gov/poxvirus/mpox/clinicians/ocular-infection.html
- Instruct patients with suspected mpox to follow isolation recommendations and avoid close contact with other people and with animals, including pets.

- Information on infection prevention and control in healthcare settings is provided on the CDC website Infection Control: Hospital | Mpox | Poxvirus | CDC.
- Transmission of mpox requires prolonged close interaction with a symptomatic individual. Brief interactions and those conducted using appropriate PPE in accordance with Standard Precautions are not high risk and generally do not warrant PEP. Risk exposure assessments should be conducted as recommended by the CDC.
- Vaccine is available for post-exposure prophylaxis (PEP). As PEP, vaccine should be given as soon as possible, ideally within four days of exposure; administration 4 to 14 days after exposure may still provide some protection against mpox.
- Mpox is a reportable condition in Michigan. Clinicians should notify their local health department of patients suspected of, being tested for, or testing positive for mpox virus or orthopoxvirus. If possible, suspect patients can also be entered into the Michigan Disease Surveillance System (MDSS) by the healthcare facility infection prevention staff.
- Additional Clinical Resources:
    - Mpox Clinical Recognition (CDC)
    - Mpox Update: Stay Up to Date on Testing, Treatment, and Vaccination (May 18, 2023 webinar) (CDC)
    - 2022 Mpox Clinical Guide—University of Washington Infectious Diseases Education and Assessment Program (IDEA)
    - Clinician FAQs (CDC)
    - A Guide to Taking a Sexual History (CDC)
    - Additional Tools for Providers Delivering Sexual Health Services (National Coalition for Sexual Health)
    - 2021 STI Treatment Guidelines (CDC)
    - STI Screening Recommendations and Considerations Referenced in 2021 STI Treatment Guidelines (CDC)

Recommendations for Health Departments

- Enter suspect mpox cases into the Michigan Disease Surveillance System (MDSS) under the Reportable Condition: Mpox with the Case Status of Unknown. See Case Definition section below for further case classification guidance. LHDs no longer need to use the outbreak ID MONKEYPOX2022.
- When appropriate, assign outbreak names that are specific (e.g., location/event, month/year) to prevent overlap with other outbreak names. Because Outbreak Name is a free text field, all cases associated with the outbreak should have the exact same name (e.g., same spacing or other punctuation). For example, [FACILITY OR EVENT NAME MMYYYY]
    - Tip: To see if an outbreak name already exists, a user can search the outbreak name field in MDSS using asterisks as wildcards, e.g., *CampExample* would pull up all cases containing CampExample anywhere in the Outbreak Name field.
- For cases related to gatherings or events, work with the facility or event organizers to obtain a guest list to do direct notification to attendees about their possible exposure.
    - If a guest list is not available, a HAN message, Epi-X, or Press Release may be used to send a broader message about cases associated with the facility or event.

    - Regional Epidemiologists are available to assist with notification efforts.
- If an Mpox case from your jurisdiction reports previous travel to another state or country during their infectious period, or believes that they were exposed while traveling outside of Michigan, please report this to your Regional Epidemiologist and the Traveler's Health Team (MDHHS-TravelersHealth@michigan.gov) for notification to the respective state or country.
- After diagnosis of mpox, begin contact tracing for individuals who may have been exposed to the patient while communicable (four days prior to symptom onset until the rash has fully healed and a fresh layer of skin has formed).
    - As of February 2023, new data show that some people can spread mpox to others from one to four days before their symptoms appear. There is currently no evidence showing that people who never develop symptoms have spread mpox virus to someone else.
    - Contacts should be monitored for 21 days after their last date of contact with the patient.
    - People with mpox may want to notify their own contacts to alert them of potential exposure. LHDs should coach and provide information on reputable notification tools to people with mpox who wish to self-notify their partners or contacts. One free, online site is TellYourPartner.org.
- Responding to cases and management of contacts within congregate settings (e.g., dormitories, shelters, residential treatment facilities, correctional and detention facilities) requires close coordination between the health department and facility.
    - https://www.cdc.gov/poxvirus/mpox/community/congregate.html
    - Mpox Toolkit for Correctional and Detention Facilities (CDC)
- Share this document and any mpox-related Health Advisory with relevant healthcare provider networks, including Sexually Transmitted Infections (STI) clinics that may not always receive CDC HAN messages.
- Additional resources:
    - www.michigan.gov/mpox
    - Michigan Mpox Epi and Vaccination Dashboard (MDHHS)
    - Mpox: Information for Health Departments (CDC)
    - Communication Toolkits for Community, Work, and School (CDC)

Appendix A: Case Definition

The full case definition (effective August 1, 2022) is available at https://ndc.services.cdc.gov/case-definitions/monkeypox-virus-infection/.

Confirmed: Meets confirmatory laboratory criteria

- Detection of mpox virus nucleic acid by molecular testing in a clinical specimen; OR
- Detection of mpox virus by genomic sequencing in a clinical specimen.

Probable: Meets presumptive laboratory criteria

- Detection of orthopoxvirus nucleic acid by molecular testing in a clinical specimen AND no laboratory evidence of infection with another non-variola orthopoxvirus; OR
- Detection of presence of orthopoxvirus by immunohistochemistry in tissue; OR
- Detection of orthopoxvirus by genomic sequencing in a clinical specimen; OR
- Detection of anti-orthopoxvirus Immunoglobulin M (IgM) antibody using a validated assay on a serum sample drawn 4-56 days after rash onset, with no recent history (last 60 days) of vaccination***.

****Recent administration of ACAM2000 and JYNNEOS vaccines need to be considered when interpreting an antibody titer. RABORAL V-RG, an oral rabies vaccine product for wildlife, is a recombinant vaccinia virus, and could lead to an antibody response in an individual exposed to the liquid vaccine; this is expected to be an extremely rare occurrence.*

Suspect: Meets Clinical Criteria AND Epidemiologic Criteria AND no evidence of a negative test for either non-variola orthopoxvirus or mpox virus

^The presence of clinically compatible rash lesions should be combined with either a higher or lower epidemiologic linkage criterion for case classification. A person presenting with lymphadenopathy or fever without any clinically compatible rash lesions must meet a higher risk epidemiologic risk criterion for case classification.

Clinical Criteria: A person presenting with new onset of:

- clinically compatible rash lesions*; OR
- lymphadenopathy or fever**

**The presence of clinically compatible rash lesions should be combined with either a higher or lower epidemiologic linkage criterion for case classification.*

***A person presenting with lymphadenopathy or fever without any clinically compatible rash lesions must meet a higher epidemiologic risk criterion for case classification.*

Epidemiologic Criteria: epidemiologic risk factors within 21 days of illness onset:

Higher Risk Epidemiologic Linkages

- Contact, without the use of appropriate personal protective equipment (PPE)‡, with a person or animal with a known orthopoxvirus or mpox virus infection; OR

- Contact, without the use of appropriate PPE‡ or Biosafety Level (BSL) protocols‡, with laboratory specimens or other items that could serve as fomites that have been in contact with a person or animal with a known orthopoxvirus or mpox virus infection; OR
- Member of an exposed cohort as defined by public health authorities experiencing an outbreak (e.g., participated in activities associated with risk of transmission in a setting where multiple cases occurred).

Lower Risk Epidemiologic Linkages

- Member of a cohort as defined by public health authorities experiencing mpox activity; OR
- Contact with a dead or live wild or exotic pet animal of an African species, or used or consumed a product derived from such an animal (e.g., game meat, powders, etc.); OR
- Residence in or travel to a country where mpox is endemic.

‡The language "without the use of appropriate PPE or Biosafety Level (BSL) protocols" includes breaches in the recommended PPE and deviations from appropriate BSL protocols.

Criteria to Distinguish a New Case from an Existing Case

For surveillance purposes, a new case of mpox virus infection meets the following criteria:

1. Healthy tissue has replaced the site of all previous lesions after they have scabbed and fallen off; AND
2. New lesions are present which have tested positive for orthopoxvirus or mpox virus DNA by molecular methods or genomic sequencing.

Appendix B: Specimen Collection Instructions for Testing at MDHHS BOL

- MDHHS BOL offers orthopoxvirus and non-variola orthopoxvirus PCR testing.
- All samples must be accompanied with test request form DCH-1396 labeled Vaccinia/Variola/Pox Virus.
- For questions about specimen collection and submission, contact the BOL at 517-335-8063.
- Acceptable specimen types for testing at BOL are dry swab of lesion, dried vesicular fluid on a slide (touch prep), fresh biopsy (no formalin), or skin or crust from roof of vesicle.
- **Duplicate swabs are no longer necessary.** A single swab per site is acceptable. Swabs from up to three body sites or lesions may be submitted. If more than three specimens are submitted, the laboratory will select those for testing based on site (genital, anal, etc.) or presence of visible clinical material on the swab.
- Instructions are described below and available in MDHHS BOL Mpox Testing Basics.
- Instructions for collecting swab:
    1. Vigorously swab or brush lesion with a sterile, dry synthetic swab (nylon, polyester, or Dacron). **Do not place swab into transport media.**
    2. Break off end of applicator of each swab into a 1.5- or 2-mL screw-capped tube with O-ring or place each entire swab in a separate sterile container (e.g., sterile urine cup-swabs from single site can go in the same container).
    3. Write collection site on tube or cup**.**
    4. Specimens must be labeled with two unique identifies (full legal name, Date of Birth, Patient Number) that matches the BOL Test Requisition Form.
- Store: Refrigerate (2-8°C) or freeze (-20°C or lower) specimens within an hour after collection. If specimens are refrigerated, send to BOL on cold packs and, if frozen, send on dry ice. Refrigerated specimens can be stored for up to 7 days and frozen specimens may be stored for up to a month.
- Specimens **must be sent with a completed test request form DCH-1396** Vaccinia/Variola/Pox Virus. Form must include:
    - Submitter information
    - Patient Name
    - Date of Birth
    - Date of Collection
    - Specimen Source – lesion, scab, body location
- Ship clinical specimens following category B packaging and shipping guidelines.

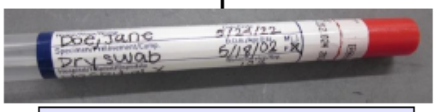
How to Collect Swab Specimens for Mpox Testing

Swab MUST be **synthetic** (Nylon, polyester, or Dacron) with a plastic or metal stem

Do I have a peel pouch or a swab in a tube?

Swab in tube (i.e. Copan FLOQSwab)

Open tube with the swab; ensure the swab stays sterile and dry



Label tube and requisition with matching patient information

Vigorously swab/brush lesion with FLOQ swab and place entire swab in sterile container

Peel Pouch (i.e. Puritan)

Open the peel pouch; ensure the swab stays sterile by grabbing the stem

Label collection tube and requisition with matching patient information

Vigorously swab/brush lesion with swab and break off stem into a sterile container (i.e. 1.5/2.0mL O-ring tube, urine collection cup, 50mL conical tube)