MPOX OUTBREAKS (previously known as Monkeypox)

(See also MPOX CASES)

1. **Agent**: Mpox virus, belongs to the Orthopoxvirus genus in the family Poxviridae.

2. **Identification**:

   a. **Symptoms**: In humans, the symptoms of mpox are similar to but milder than the symptoms of smallpox. Mpox prodromal symptoms can include fever (≥100.4ºF), headache, muscle aches, backache, swollen lymph nodes, chills, exhaustion, rash and sometimes sore throat, nasal congestion and cough. The swelling of the lymph nodes may be generalized or localized to several areas. Prodromal symptoms can occur before rash but may occur after rash or not be present at all. Rectal symptoms such as pain, bleeding or purulent or bloody stools have been reported. Rash may be located on or near the genitals or anus and could be on other areas like the hands, feet, chest, face or mouth.

   Lesions are firm or rubbery, well-circumscribed, deep-seated, and often develop umbilication. Lesions typically develop simultaneously and evolve together on any given part of the body. They are often described as painful until crusts form. Lesions progress through the following stages before falling off:

   1. Enanthem: first lesions develop on the tongue and in the mouth.
   2. Macules (1-2 days): starting on the face and spreading to the arms and legs and then to the hands and feet, including the palms and soles. The rash typically spreads to all parts of the body within 24 hours becoming most concentrated on the face, arms, and legs (centrifugal distribution)
   3. Papules (1-2 days): by the third day of rash, lesions have progressed from macular (flat) to papular (raised).
   4. Vesicles (1-2 days): by the fourth to fifth day, lesions have become vesicular (raised and filled with clear fluid).
   5. Pustules (5-7 days): by the sixth to seventh day, lesions have become pustular (filled with opaque fluid), sharply raised, usually round, and firm to the touch (deep seated). Lesions will develop a depression in the center (umbilication). Pustules will remain for approximately 5-7 days before beginning to crust.
   6. Scabs (7-14 days): by the end of the second week, pustules have crusted and scabbed over. Scabs will remain for about a week before beginning to fall off.

      The illness typically lasts for 2-4 weeks. If vaccinated for smallpox or mpox, the rash may be more pleomorphic and not in a uniform stage of development.

   b. **Differential Diagnosis**: Although there are other causes of generalized rash illness which present as vesicles and pustules, the severe prodrome along with the nature of the rash, lymphadenopathy and its evolution distinguishes mpox from other diseases. The diseases, which can look similar to mpox, include smallpox, Tanapox, orf, bovine stomatitis, varicella, disseminated herpes simplex, disseminated herpes zoster, hand foot and mouth disease, drug eruptions, contact dermatitis, measles, bacterial skin infections, syphilis, scabies, parapoxvirus infection, and anthrax.

   c. **Diagnosis**: Definitive diagnosis can be made with laboratory confirmation. Diagnostic tests include PCR and virus isolation by cell culture, ELISA and antigen tests can detect exposure to the virus.

3. **Incubation**: usually 3-17 days but can range from 3-21 days.

4. **Reservoir**: Human infections have been documented through the handling of infected monkeys, Gambian giant rats and squirrels, and rodents (most likely reservoir).

5. **Source**: Macules, papules, vesicles, pustules, and scabs on the skin and tongue and in the mouth of humans. Also, direct contact with body fluids or lesion material of infected animal

or indirect contact with lesion material, such as through contaminated bedding.

6. **Transmission**: Droplet and contact transmission occurs when a person comes into contact with the virus from an animal, human, or materials contaminated with the virus. The virus enters the body through broken skin (even if not visible), respiratory tract, or the mucous membranes (eyes, nose, or mouth).

   Human-to-human transmission can occur through direct contact with infectious rash, scabs or bodily fluids, respiratory secretions during prolonged, face-to-face contact, or during intimate physical contact such as kissing, cuddling or sex, and indirect contact with lesion material, such as through contaminated clothing, sex toys, or linens. Pregnant people can spread the virus to their fetus through the placenta.

   Animal-to-human transmission may occur by through direct contact with infectious rash, scabs, crusts or fluids from sores, saliva or infected bodily fluids, including respiratory secretions. Urine and feces can also contain infectious particles. Transmission can also occur through bite or scratch, eating or preparation of bush meat or using products from an infected animal.

7. **Communicability**: A person is infectious from the time symptoms start until all scabs have separated, the rash has fully healed, and a fresh layer of skin has formed. The illness typically lasts 2-4 weeks.

8. **Treatment:** The prognosis for mpox depends on multiple factors, such as mpox vaccination status, initial health status, concurrent illnesses, and comorbidities among others. Supportive care and treatment of symptoms should be initiated for all patients who have mpox infection. This may include different topical, systemic medications, or other clinical interventions to control pain, itching, nausea and vomiting. Proctitis can occur and progress to become severe and debilitating, that may require prescription medication.

   a. **Antiviral Treatment:**

   - In addition to the above supportive therapies, tecovirimat (Tpoxx) therapy should be considered for patients with severe disease, for patients at high risk for severe disease (see section 10 below), or patients with lesions in anatomic areas that may be at high risk for complication such as scarring or stricture. This includes lesions in and around the eye, pharynx, genitals, anus and rectum.

   - Please note, Tpoxx should be taken within 30 minutes after a full meal containing moderate or high fat (ex. peanut butter), so supporting clients to ensure they are aware and have consistent access to high fat foods may be needed.

   See DPH website for Guidance for Treatment: LAC DPH Mpox Treatment Provider Hub

   b. Skin Rash

   - Patients with pruritis, consider: Calamine lotion, petroleum jelly, menthol lotion, or camphor lotion.
   - If uncontrolled pruritis despite topical therapy: Consider antihistamines (e.g. loratadine).
   - Anticipatory guidance for patients:
     - Keep the area clean and dry when not bathing to prevent bacterial infections.
     - Seek care if pain increases or they observe any pain, redness, swelling, or cloudy fluid at the site of the rash.

   c. Oral Lesions

   - Saltwater rinses 4 times daily.
   - Consider chlorhexidine mouthwash to keep the lesions clean. Alcohol-free mouthwash (e.g. Listerine Zero Alcohol) can also be used to keep the lesions clean.
   - Magic/Miracle Mouthwash can be prescribed if significant oral pain.

- Consider oral lidocaine gels if significant pain that makes eating difficult. These should be limited to recommended dosages.

d. Painful Genital and Anorectal Lesions and Proctitis

- Warm sitz baths lasting 10 minutes several times a day.
  - Sitz baths: Warm bath made up of water and baking soda or Epsom salt to help reduce inflammation and cleanse area. Patients can buy sitz baths online or at a pharmacy, or can sit in a bathtub with shallow water.
- Topical lidocaine gels or creams (at recommended dosages)
- For proctitis:
  - Stool softeners should be prescribed early
  - If pain is not improving with OTC medications (e.g. acetaminophen and ibuprofen) and with topical remedies mentioned above, consider prescription medications (such as gabapentin or opioids.) If prescribing opioid medications, note the possibility of side effects such as constipation. Consider corticosteroid/local anesthetic (e.g. hydrocortisone/lidocaine) gels/creams
  - Anticipatory guidance for patients: Seek care if blood in the urine, difficult urinating, inability to retract foreskin (or foreskin cannot return to normal position after retracting), rectal bleeding.

e. Nausea, Vomiting, and Dyspepsia

- Consider antiemetics and ensure adequate hydration.
- Consider temporary PPI therapy for dyspepsia.

f. Diarrhea

- Anti-motility agents NOT recommended (given potential for ileus).
- Ensure adequate hydration and electrolyte replacement.

g. Ocular Involvement

- Trifluridine is a topical antiviral medication that can be used for ocular complications of mpox.
- For lesions near the eye or eyelid lesions, there is still a risk for autoinoculation, prophylactic Trifluridine drops along with Tecovirimat therapy should be considered.

h. Nutrition and Hydration

- Ensure adequate hydration and nutrition. If it is not adequate, evaluate whether therapies for pain/nausea are needed.

i. Mental Health Considerations

- Isolation can be associated with anxiety. First line therapy is to connect the patient with a mental health counselor.

9. **Immunity**: Unknown at this time, pending more research data.

10. **Risk Factors for Severe Disease**: Although most mpox cases have been self-limited, occurrences of severe manifestations and death have been observed in the United States. People who are high risk for severe disease include:

    a. People currently experiencing severe immunocompromise due to conditions such as advanced or poorly controlled human immunodeficiency virus (HIV), cancer, solid organ transplantation, or receiving immunosuppressive treatment for some other illness
    b. Pediatric populations, particularly patients younger than 1 year of age
    c. Pregnant or breastfeeding people
    d. People with a condition affecting skin integrity such as atopic dermatitis or eczema

In cases with severe disease, or with ongoing disease despite treatment, providers may need to extend tecovirimat (TPOXX) treatment beyond 14 days and escalate therapy to include other available treatments. For cases with advanced HIV disease (CD4<200) who are not on antiretroviral therapy (ART), providers should initiate ART as soon as possible as this can be essential for resolution of mpox infections. All sexually active cases with suspected or confirmed mpox should be tested for HIV at the time of testing for mpox, or as soon as possible once diagnosed if not already done at time of mpox testing, unless the case is already known to have HIV infection.

11. **Vaccine**: JYNNEOS is a live, non-replicating vaccine that is FDA approved for prevention of smallpox and mpox in people ≥18 years administered as a subcutaneous injection. It is also FDA authorized for people ages <18 years. In addition, intradermal vaccination is FDA authorized for people ages ≥18 who do not have a history of keloid formation and is the preferred route of administration for eligible individuals at this time. It is a 2-dose series, with the doses given 28 days apart. For current groups eligible for JYNNEOS vaccine refer to our LAC DPH Mpox Vaccine Information for Health Professionals.

REPORTING PROCEDURES

1. **Report outbreaks within one working day**: All outbreaks of mpox virus in the community are reportable within one working day of identification per County of Los Angeles Department of Public Health (Title 17, Section 2500, California Code of Regulations all suspected outbreaks are reportable).
   a. During working hours, call DHSP 213-368-7441.
   b. After working hours, contact County Operator 213-974-1234 and ask for physician on call.

2. **Outbreak Definition**:
   Five or more laboratory-confirmed cases of mpox in persons associated with a sex-on-premises venue/event.

   OR

   Three or more laboratory-confirmed cases at shelters, correctional facilities, group homes, similar settings within a 21-day period.

   OR

   Special Circumstances: Single cases in certain settings outside of an identified outbreak (SNF, K-12 schools, early care and education (ECE) programs, camps, and other community settings serving children or adolescents (for example, sports leagues and after-school programs).

3. **Report Form**:
   For outbreaks in non-healthcare facilities:
   OUTBREAK/UNUSUAL DISEASE CASE REPORT (CDPH 8554)

4. **Epidemiologic Data**:

   Shelters, correctional facilities, group homes, similar settings and single cases in certain settings outside of an identified outbreak (e.g. SNF, shelter, daycares, schools)
   Create a line list of cases and contacts that could include:
   Cases:
   a. Names of cases
   b. Date of birth/age
   c. Phone number
   d. Date of illness onset
   e. Specimen collection date
   f. Dates at facility
   g. Hospitalization status
   h. Symptoms including description and location of any lesions.
   i. Vaccination status
   j. Epi links to other cases (sexual, household, shared rooms, social group, meetings, team sports etc.).
   k. Occupation/role at OB setting.
   l. Close contacts (household, sexual, teammates, etc.,) with active skin infections.

   Sex-on-premises venues/events
   Creation of a line list of cases associated with the venue/event may not be possible.

   Create a line list of employees under the contacts tab of the mpox line list that could include:
   a. Contact Name
   b. Date of Birth
   c. Role at facility

d. Job Title
e. Symptomatic
f. If symptomatic, symptom onset date
g. If symptomatic, test date
h. Test Result
i. Date MPOX vaccines given
j. Vaccine given as part of OB response

See MPOX LINE LIST TEMPLATE

Maintain surveillance for new epi-linked cases for 21 days from last case.

If point of contact (POC) at outbreak facility/venue can provide names of cases, create a line list. If POC at facility is not able to provide case information, no line list is needed.

CONTROL ACTIONS AND RECOMMENDATIONS FOR OUTBREAKS

Recommendations that apply to sex-on-premises venues/events.

1. Site visit to be determined by AMD
2. DPH staff to wear PPE per DPH Safety Plan
3. Collect line list of staff under the contact list tab of the line list.
4. Offer Post-Exposure Prophylaxis (PEP) to staff as appropriate.
5. Post public notification at venue/facility and through other channels (internet, website, etc.).
6. Consider offering vaccine via mobile vaccination unit (MVU) for attendees at the venue.
7. Provide Environmental Infection Control education to staff regarding Infection Control including:
   a. Laundry. When handling dirty laundry from people with known or suspected mpox infection, staff, should wear a gown, gloves, eye protection, and a well-fitting mask or respirator. PPE is not necessary after the wash cycle is completed.
   b. Conduct routine cleaning. Routine cleaning should be conducted on surfaces between clients using an EPA-registered disinfectant. Staff should wear a gown, gloves, eye protection, and a well-fitting mask or respirator when cleaning areas where people with mpox spent time.
   c. Use wet methods to clean. Avoid vacuuming or dusting.

Recommendations that apply to shelters, correctional facilities, group homes, or similar settings.

1. Site visit to be determined by AMD.
2. DPH staff to wear PPE per DPH Safety Plan.
3. Collect line list with detailed contact tracing follow-up.
4. Offer PEP as appropriate.
5. Consider offering vaccine via MVU for all residents depending on the situation.
6. Post signage at venue to notify patrons of potential exposure (include exposure period).
7. Staff, volunteers, or residents who are suspected to have mpox should be medically evaluated by a provider and tested for mpox if they have symptoms. If a person does not have a regular provider, they can call 2-1-1 for assistance.
8. Anyone who is identified to have mpox should isolate away from others until all scabs separate and a fresh layer of healthy skin has formed underneath. Decisions about discontinuation of isolation should be made in consultation with the Department of Public Health.
9. Staff or volunteers who have mpox should isolate at home until they are fully recovered.
10. Some congregate living facilities may be able to provide isolation for residents on-site while others may need to move residents off site to isolate. Resident isolation spaces should have a door that can be closed and a dedicated bathroom that other residents do not use. Multiple residents who test positive for mpox can stay in the same room.
11. Reduce the number of staff who are entering the isolation areas to staff who are essential to isolation area operations.
12. If residents with mpox need to leave the isolation area, they must wear a well-fitting disposable mask over their nose and mouth and cover any skin lesions with long pants and long sleeves, or a sheet or gown.
13. Educate staff, volunteers, and residents regarding appropriate personal protective equipment (PPE) in the following circumstances:
    a. Entering isolation areas. Staff who enter isolation area or interact with a person with mpox should wear a gown, gloves, eye protection, and a NIOSH-approved

particulate respirator equipped with N95 filters or higher.

b. Laundry. When handling dirty laundry from people with known or suspected mpox infection, staff, volunteers, or residents should wear a gown, gloves, eye protection, and a well-fitting mask or respirator. PPE is not necessary after the wash cycle is completed.

c. Cleaning and disinfection. Staff, volunteers, or residents should wear a gown, gloves, eye protection, and a well-fitting mask or respirator when cleaning areas where people with mpox spent time.

d. Waste. The person(s) with mpox should use a dedicated, lined trash can in the room where they are isolating. Any gloves, bandages, or other waste and disposable items that have been in direct contact with skin should be placed in a sealed plastic bag, then thrown away in the dedicated trash can. Staff should use gloves when removing garbage bags and handling and disposing of trash.

GENERAL CONTROL ACTIONS AND RECOMMENDATIONS FOR OUTBREAKS

1. Individuals identified to have mpox should isolate away from others until all scabs separate and a fresh layer of healthy skin has formed underneath.
2. Individuals who are suspected to have mpox should be medically evaluated by a provider and tested for mpox if they have symptoms. If a person does not have a regular provider, they can call 2-1-1 for assistance.
3. Avoid close skin-to skin contact with people who have a rash that looks like mpox.
4. Do not share objects and materials such as linens, towels, clothing, cups, dishes, eating utensils, etc., with others.
5. Review infection control practices.
6. Reinforce good hand hygiene.
7. Ensure adequate and easily accessible supplies for good hygiene, including:
   a. No touch hand sanitizer dispenser
   b. Handwashing sinks
   c. Soap
   d. Paper towels
8. Provide facility with accurate and updated Public Health educational materials about mpox.
9. Use cleaning chemicals with EPA-registered disinfectant.
10. Post public notification at venue/facility and through other channels (internet, website, etc.) Notification Poster pending.
11. Notify employees/caregivers of mpox exposure at the site while maintaining patient privacy. Written notice may include but is not limited to, personal service, email, text, or text message if it can reasonably be anticipated to be received within one business day. The notice should be written in a way that does not reveal any personal identifying information of the mpox case, and in the manner the employer normally uses to communicate employment-related information. The employer may provide verbal notice to employees that have limited literacy in the language(s) used in the notice or if they have reason to believe that the employee did not receive the notice or if they employee.
12. Instruct site point of contact to notify public health if additional employees, students, clients test positive for mpox.
13. Collect line list with detailed contact tracing follow up, if possible.
14. Consider closure of facility per AMD recommendation.

CONTROL OF CASE, CONTACTS & CARRIERS

CASE:

Case Definitions

Suspect: New characteristic rash or meets epidemiological criteria and has a high clinical suspicion for mpox.

Epidemiological Criteria:

- Reports having contact with a person or people with a similar appearing rash or who received a diagnosis of confirmed or probable mpox. **OR**
- 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). **OR**
- Traveled outside the US to a country with confirmed cases of mpox or where *Mpox virus* is endemic. **OR**

- 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.).

Probable: Clinically compatible case with no suspicion of other recent Orthopoxvirus exposure and laboratory-confirmed Orthopoxvirus (Orthopoxvirus PCR).

Confirmed: Clinically compatible case with laboratory-confirmed mpox infection (mpox PCR positive).

Person:
1. Advise to isolate until rash has healed, and a new layer of skin has formed.
2. Wear a well-fitting mask if around other people.
3. Stay away from other people and do not share common objects.
4. Stay away from pets and other animals.
5. Appropriate hand hygiene should be emphasized.
6. Skin lesions should be covered with a clean dry bandage and patients should be taught how to dispose of soiled bandages appropriately. Hand hygiene should be performed before and after changing bandages.

Environment:
Use an Environmental Protection Agency (EPA) registered disinfectant with claims against emerging viral pathogens (see https://www.epa.gov/pesticide-registration/disinfectants-emerging-viral-pathogens-evps-list-q) to clean areas where case spent time and objects case may have used

CONTACTS:

Contacts are persons in close contact with patient with probable or confirmed mpox. See CDC: Mpox Monitoring and Risk Assessment for People Exposed in the Community.

1. Identify close contacts to the case.
2. Asymptomatic contacts can continue their routine daily activities.
3. Offer post-exposure vaccination as appropriate.
4. Consider mass vaccination of attendees and/or employees.
5. Inform contacts they should self-monitor for signs or symptoms consistent with mpox for 21 days after their last exposure:
   a. If rash develops, the contact should isolate and seek medical care for testing.
   b. If other signs or symptoms are present but no rash; contact should isolate for 5 days after onset of symptoms, and if after 5 days there are no new skin changes, isolation can stop.
6. Emphasize hand hygiene.

PREVENTION-EDUCATION

1. Avoid close, skin-to-skin contact with people who have a rash that looks like mpox.
2. Practice good hand hygiene.
3. Avoid contact with objects and materials that a person with monkey has used, do not share lines, towels, or clothing, utensils or plate or cups etc.
4. Get vaccinated, if eligible.

DIAGNOSTIC PROCEDURES

Follow the LAC DPH PHL Preparation and Collection of Specimens webpage to collect the following specimens and send to PHL for testing:

1. Mpox (Orthopoxvirus) DNA, PCR
2. ELISA Serology

REFERENCES

1. LAC DPH: Mpox Information for Health Professionals
2. CDC: Information for Healthcare Professionals
3. LAC DPH: Mpox Resources
4. LAC DPH: Mpox Case Dashboard