MONKEYPOX OUTBREAKS
(See also MONKEYPOX CASES)

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

2. **Identification**:
   
   a. **Symptoms**: In humans, the symptoms of monkeypox are similar to but milder than the symptoms of smallpox. Monkeypox symptoms can include fever (≥100.4°F), headache, muscle aches, backache, swollen lymph nodes, chills, exhaustion, rash and sometimes sore throat and cough.

   The development of the initial symptoms of fever, headache, muscle aches, backache, swollen lymph nodes, chills, and exhaustion marks the beginning of the prodromal period. Shortly after the prodrome, lesions typically develop in the mouth and on the body. Cases can also present with a rash in the genital or perianal area with or without a prodrome. These lesions typically begin to develop simultaneously and evolve together on any given part of the body. 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 monkeypox, 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 monkeypox from other diseases. The diseases, which can look similar to monkeypox, 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 7-14 days but can range from 5-21 days.
4. **Reservoir**: Human infections have been documented through the handling of 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 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. Asymptomatic transmission is unknown.

8. **Specific Treatment**: There are no treatments specifically for monkeypox virus infections.

However, monkeypox and smallpox viruses are genetically similar, which means that antiviral drugs and vaccines developed to protect against smallpox may be used to prevent and treat monkeypox virus infections. Antivirals, such as tecovirimat (TPOXX), may be recommended for people who are more likely to get severely ill, like patients with weakened immune systems. Tecovirimat is available in oral and intravenous formulations. Informed consent is required for all patients treated with tecovirimat and providers must follow the CDC expanded access Investigational New Drug (EA-IND) protocol. See DPH website for Guidance for Treatment: [www.publichealth.lacounty.gov/acd/monkeypox/docs/GuidanceforTreatmentMonkeypox-TPOXX.pdf](http://www.publichealth.lacounty.gov/acd/monkeypox/docs/GuidanceforTreatmentMonkeypox-TPOXX.pdf)

9. **Vaccine**: JYNNEOS is a live, non-replicating vaccine that is FDA licensed for prevention of smallpox and monkeypox in people >18 years, and for those under 18 in special circumstances. JYNNEOS can be considered for monkeypox vaccine in people who have had a high- or intermediate-risk exposure to monkeypox, as a method to prevent or reduce severity of disease. Monkeypox vaccine should be given, if possible, within 4 days of exposure to prevent disease but may still reduce severity of disease if given up to 14 days after exposure. It is administered as two subcutaneous or intradermal injections 4 weeks apart. For current groups eligible for JYNNEOS vaccine refer to our LAC Monkeypox webpage.

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

**REPORTING PROCEDURES**

1. **Report outbreaks within one working day**: All outbreaks of monkeypox 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 ACDC 213-240-7941.

b. After working hours, contact Administrative Officer of the Day (AOD) through County Operator 213-974-1234.

2. **Outbreak Definition:**

Five or more laboratory-confirmed cases of monkeypox 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. Address and 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 monkeypox line list that could include:
   a. Contact Name
   b. Date of Birth
   c. Address
   d. Role at facility
   e. Job Title
   f. Symptomatic
   g. If symptomatic, symptom onset date
   h. If symptomatic, test date
   i. Test Result
   j. Date MPX vaccines given
   k. Vaccine given as part of OB response

   See MONKEYPOX 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. Consider offering vaccine to employees of the venue/event
8. Provide Environmental Infection Control education to staff regarding Infection Control including:
   a. Laundry. When handling dirty laundry from people with known or suspected monkeypox 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 monkeypox 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 monkeypox should be medically evaluated by a provider and tested for monkeypox 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 monkeypox 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 monkeypox 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 monkeypox 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 monkeypox 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 monkeypox 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 monkeypox 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 monkeypox spent time.

d. Waste. The person(s) with monkeypox 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.

Recommendations that apply to Special Circumstances.
This includes single cases in certain special settings outside of an identified outbreak (e.g., 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)

1. SNF—see Guidance for Long Term Care Facilities (LTCFs): Skilled Nursing Facilities (SNFs) and Community Care Facilities (CCFs)

2. Schools, ECE, camps and other settings: refer to CDC: Guidance on Congregate Settings:
https://www.cdc.gov/poxvirus/monkeypox/specific-settings/congregate.html

3. Single case investigation to be done with venue to assess the situation, to ensure there are no more cases, and to offer vaccine where appropriate.

4. May warrant PEP vaccine at the site based on exposure risk levels and vaccine availability. Vaccine will be offered based on results of investigation.

GENERAL CONTROL ACTIONS AND RECOMMENDATIONS FOR OUTBREAKS

1. Individuals identified to have monkeypox 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 monkeypox should be medically evaluated by a provider and tested for monkeypox 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 monkeypox.

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 monkeypox

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 monkeypox 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 monkeypox 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 monkeypox.

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 monkeypox.

Epidemiological Criteria:

- Reports having contact with a person or people with a similar appearing rash or who received a diagnosis of confirmed or probable monkeypox OR
- Had close or intimate in-person contact with individuals in a social network experiencing monkeypox 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 monkeypox or where Monkeypox 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 monkeypox infection (monkeypox 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 monkeypox. (See CDC Guidance: Interim Community Exposure Risk Assessment and Recommendations for Monitoring and Postexposure Prophylaxis in Individuals Exposed to Monkeypox Virus in a Community Setting: https://www.cdc.gov/poxvirus/monkeypox/clinicians/monitoring.html)

1. Identify close contacts to the case
2. Asymptomatic contacts can continue their routine daily activities
3. Offer post-exposure vaccination to Higher and Intermediate risk contacts
4. Consider mass vaccination of attendees and/or employees
5. Inform contacts they should self-monitor for signs or symptoms consistent with monkeypox 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.

PREVENTION-EDUCATION

1. Avoid close, skin-to-skin contact with people who have a rash that looks like monkeypox.
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. Monkeypox (Orthopoxvirus) DNA, PCR
2. Serology

REFERENCES

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