Optum

Monkeypox: Current outbreak in the United States

current as of 06.30.22

Background

Monkeypox (MP) is a member of the *Orthopoxvirus* genus in the family *Poxviridae* and a DNA virus. The *Orthopoxvirus* genus also includes variola virus (which causes smallpox), vaccinia virus (used in the smallpox vaccine), and cowpox virus.[1] MP exists in two clads in Africa, the Central African and the West African clad. The West African clad typically causes less severe disease and is the primary clad of MP being isolated in non-endemic countries in the current outbreak.

Transmission and Epidemiology of Current Outbreak

MP is primarily spread through direct skin-to-skin contact with lesions on the skin.[2] [3] Transmission via contaminated fomites and via close proximity exchange of respiratory secretions is possible.[4] Persons are infectious from the onset of the prodrome, if present, until all lesions have crusted, and scabs have fallen off.

As of 6.28.22, 4357 cases of MP have been reported in countries outside of areas of Africa where MP is endemic. In the United States, 305 cases have been reported.[5] It is likely that MP has been circulating in the United States for months.[6] Current cases are primarily occurring in men who have sex with men (99% of cases); however, any person, irrespective of gender identity or sexual orientation can acquire and transmit MP.[7]

Clinical Presentation

The clinical cases in the United States have a presentation different from endemic cases in Africa. MP has an incubation period of 5 to 21 days (most commonly 7-14 days). The clinical presentation often does not include the classic prodrome (fever, headache, malaise, weakness, lymphadenopathy) or prodromal symptoms may occur after rash has appeared. The evolution of MP lesions progresses through four stages - macular, papular, vesicular, to pustular - before scabbing over and resolving.[8] Skin lesions in the current outbreak may often be limited to genital, perineal or perianal locations. Unlike classic MP lesions, current outbreak cases can be present with lesions at multiple stages of development at the same time. The disease course is often lasts 3-4 weeks. Patients may present with tenesmus or proctitis. Lesions can be confused with other ulcerative sexually transmitted diseases (e.g., syphilis, herpes simplex, chancroid, lymphogranuloma venereum, granuloma inguinale) and other diseases associated with a diffuse rash (e.g., syphilis, varicella, disseminated herpes, molluscum contagiosum, other pox viruses, disseminated fungal infections, disseminated gonococcal infection). Co-infection with other STDs can occur. Non-infectious causes of genital ulcers should also be considered (e.g., aphthous stomatitis, Behcet's disease, trauma, squamous cell carcinoma).[9]

[1] https://www.cdc.gov/poxvirus/monkeypox/about.html. accessed 6.28.22.
[2] Di Giulio DB, Eckburg PB. Human monkeypox: an emerging zoonosis. Lancet Infect 21 Dis. 2004;4(1):15-25
[3] https://www.cdc.gov/poxvirus/monkeypox/clinicians/infection-control-healthcare.html. accessed 6.28.22
[4] Titanji B, Tegomoh B, Nemtollahi S et. al. Monkeypox - A Contemporary Review for Healthcare Professionals
[5] https://www.cdc.gov/poxvirus/monkeypox/response/2022/world-map.html accessed 6.28.22.
[6] https://www.pbs.org/newshour/health/2-distinct-strains-of-monkeypox-may-be-present-in-the-u-s-genetic-analysis-suggests.
[7] Bachmann L, Petersen B, Mena L Monkeypox Update CDC COCA call 6.29.22.
[8] https://www.cdc.gov/poxvirus/monkeypox/clinicians/clinical-recognition.html accessed 6.28.22.
[9] Rao A, Bachmann L, Petersen B, What Clinicians Need to Know About Monkeypox in the United States and Other Countries CDC COCA call 5.24.22.

CDC guidance to clinicians

- Perform thorough skin and mucosal (e.g., anal, vaginal, oral) exam for rash
- Obtain swabs if
  - Observation of classic monkeypox rash OR
  - Observation of rash that could be consistent with monkeypox in persons with epidemiologic risk factors:
    - Contact with a person or people a) with similar appearing rash or b) with diagnosis of monkeypox
    - Close or intimate in-person contact with people in a social network experiencing monkeypox activity (e.g., men who have sex with men who meet partners through an online website, digital app or social event)
    - History of recent international travel to country currently with many cases
- Diagnosis of STI does not rule-out co-infection with monkeypox
- **Note:** any person, irrespective of gender identity or sexual orientation, can acquire and spread monkeypox.

The clinician must maintain a high index of suspicion for possible MP cases. A careful travel and contact history should be obtained including sexual activity. Suspected cases should be reported to local public health and CDC.[10] A definitive diagnosis is best obtained by performing PCR for monkeypox virus on specimens obtained from skin lesions. Testing for other suspected pathogens (see differential diagnosis above) should be done as clinically indicated. The correct process for collection of specimens should be coordinated with local public health and CDC.[11]

Treatment

Treatment for MP is generally supportive. Most cases of MP are self-limited and mild to moderate in severity. No therapies have specific indications for MP. CDC does have access via the Strategic National Stockpile to options for treatment. Tecovirimat (TPOXX), Cidofovir (Vistide), and Vaccinia Immune Globulin (VIGIV) are available via an expanded access investigational new drug (EA-IND) protocol from CDC. An additional agent approved in June of 2021 for the treatment of smallpox, Brincidofovir, may also be available soon via an EA-IND from CDC.[12] Tecovirimat is the preferred agents in most cases. These agents may prove beneficial in select patients. The use of any of these agents should be coordinated with local public health and CDC. Patients considered at higher risk for severe infection or with severe disease should be considered for treatment. These patients include:

1. Persons with severe disease (e.g., hemorrhagic disease, confluent lesions, sepsis, encephalitis, or other conditions requiring hospitalization).
2. Persons who may be at high risk of severe disease:
   a. Persons with immunocompromise (e.g., human immunodeficiency virus/acquired immune deficiency syndrome infection, leukemia, lymphoma, generalized malignancy, solid organ transplantation, therapy with alkylating agents, antimetabolites, radiation, tumor necrosis factor inhibitors, high-dose corticosteroids, being a recipient with hematopoietic stem cell transplant <24 months post-transplant or ≥24 months but with graft-versus-host disease or disease relapse, or having autoimmune disease with immunodeficiency as a clinical component).[13]

[10] Contact CDC Emergency Operations Center as soon as Monkeypox is suspected. (770) 488-7100.
[11] https://www.cdc.gov/poxvirus/monkeypox/clinicians/prep-collection-specimens.html accessed 6.28.22.
[12] https://www.cdc.gov/poxvirus/monkeypox/clinicians/treatment.html accessed 6.28.22.
[13] Petersen BW, Harms TJ, Reynolds MG, Harrison LH. Use of Vaccinia Virus Smallpox Vaccine in Laboratory and Health Care Personnel at Risk for Occupational Exposure to Orthopoxviruses — Recommendations of the Advisory Committee on Immunization Practices (ACIP), 2015. MMWR Morb Mortal Wkly Rep 2016;65:257–262. DOI: http://dx.doi.org/10.15585/mmwr.mm6510a2.

b. Pediatric populations, particularly patients younger than 8 years of age[14]

c. Pregnant or breastfeeding women[15]

d. Persons with one or more complications (e.g., secondary bacterial skin infection; gastroenteritis with severe nausea/vomiting, diarrhea, or dehydration; bronchopneumonia; concurrent disease or other comorbidities)[16]

3. Persons with MP aberrant infections that include its accidental implantation in eyes, mouth, or other anatomical areas where MP infection might constitute a special hazard (e.g., the genitals or anus).

Infection control

Human to human spread of MP results from close contact. Transmission can result from contact with material from skin lesions or exposure to respiratory secretions. Transmission in health care settings is rare. Health care personnel should use PPE with any suspected MP case, including a gown, gloves, eye protection, and an N95 mask. Patients should be placed in single-person rooms. No special air handling is required. Patients should wear a surgical mask as source control. Any manipulation of the airway of a patient with MP that might generate aerosols should be done in an airborne isolation room. Care should be taken to avoid resuspending any dry material from lesions. Transportation of the patient outside of their room should be minimized and if transportation outside of the room is necessary the patient should have all lesions covered and wear a mask.

Persons with MP in their homes should be isolated in a room or separate area away from other family members including pets unless they can easily cover all draining or weeping lesions and they do not have any respiratory symptoms (e.g., cough, sore throat, runny nose). They should not leave the home except as required for follow-up medical care. Unexposed persons who do not have an essential need to be in the home should not visit. Household members who do not have MP should limit contact with the person with MP. The person with MP should wear a surgical mask, especially those who have respiratory symptoms (e.g., cough, shortness of breath, sore throat). If the person with MP cannot wear a mask, other household members should wear a surgical mask when in the presence of the person with MP. Disposable gloves should be worn for direct contact with lesions and disposed of after use. Cover all skin lesions to the extent possible (e.g., long sleeves, long pants) to minimize risk of contact with others. Contact public health to help in planning for disposal of contaminated waste (dressing and bandages). All patients with MP are considered infectious until all skin lesions have healed and scabs have fallen off.[17] [18]

Post exposure, healthcare personnel may return to work but carefully monitor for symptoms for 21 days after the last exposure. Persons exposed should watch for concerning symptoms including fever, rash, chills, and new lymphadenopathy (periauricular, axillary, cervical or inguinal). If a fever or rash develop after contact, persons should contact public health authorities. If only chills or adenopathy are present self-isolate for 24 hours and if rash or fever develops contact public health. If fever or rash do not develop consult with a clinician who can consult with public health.

Transmission of monkeypox requires prolonged close contact 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 post-exposure prophylaxis. Post exposure prophylaxis (use of vaccines approved for smallpox) is recommended for high exposure risk (direct contact with infectious material or prolonged exposure within six feet without use of PPE) and may be appropriate for intermediate exposure risk. Details are available on the CDC website.[19] Vaccines are also currently being distributed by CDC to jurisdictions with the highest transmission and areas with the greatest population of MSM with HIV or eligible for HIV PrEP.[20] Vaccination may be used in persons with certain risk factors that might make them more likely to have been recently exposed to MP. Public health strategies in this area are rapidly evolving.

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[14] Jezek Z, Szczeniowski M, Paluku KM, Mutombo M. Human monkeypox: clinical features of 282 patients. J Infect Dis. 1987 Aug;156(2):293-8. doi: 10.1093/infdis/156.2.293. PMID: 3036967.

[15] Cono J, Cragan JD, Jamieson DJ, Rasmussen SA. Prophylaxis and treatment of pregnant women for emerging infections and bioterrorism emergencies. Emerg Infect Dis. 2006 Nov;12(11):1631-7. doi: 10.3201/eid1211.060618. PMID: 17283610; PMCID: PMC3372351. Mbala PK, Huggins JW, Riu-Rovira T, Ahuka SM, Mulembakani P, Rimoin AW, Martin JW, Muyembe JT. Maternal and Fetal Outcomes Among Pregnant Women With Human Monkeypox Infection in the Democratic Republic of Congo. J Infect Dis. 2017 Oct 17;216(7):824-828. doi: 10.1093/infdis/jix260. PMID: 29029147

[16] Ogoina D, Iroezindu M, James HI, Oladokun R, Yinka-Ogunleye A, Wakama P, Otike-Odibi B, Usman LM, Obazee E, Aruna O, Ihekweazu C. Clinical Course and Outcome of Human Monkeypox in Nigeria. Clin Infect Dis. 2020 Nov 5;71(8):e210-e214. doi: 10.1093/cid/ciaa143. PMID: 32052029.

[17] https://www.cdc.gov/poxvirus/monkeypox/clinicians/infection-control-healthcare.html. accessed 6.28.22.

[18] https://www.cdc.gov/poxvirus/monkeypox/clinicians/infection-control-home.html. accessed 6.28.22.

[19] https://www.cdc.gov/poxvirus/monkeypox/clinicians/monitoring.html accessed 6.28.22.

[20] Bachmann L, Petersen B, Mena L Monkeypox Update CDC COCA call 6.29.22.

Summary

Current MP cases in the United States may have an atypical clinical presentation, lacking the classic prodrome and having lesions limited to the genital, perineal or perianal area. Supportive treatment is appropriate for most cases. Treatment with agents available from CDC may be appropriate in certain high-risk clinical situations. MP is most commonly spread via skin-to-skin contact of infectious material from skin lesions. Less commonly prolonged close contact can result in respiratory spread. CDC recommends consideration of postexposure prophylaxis depending on the type of exposure.