
Mpox

An Overview of Current CDC Guidance

Disclosures

- I have no financial disclosures to reveal



Objectives

- Understand the epidemiologic risk factors for contracting mpox
 - Recognize typical and atypical clinical presentations of mpox
 - Discuss risk-stratification based on exposure and who to test
 - Overview of current issues with testing for mpox
 - Brief overview of therapeutics and immunizations
 - Discuss post-exposure prophylaxis
 - Considerations in the HIV population
 - Be aware of resources available for clinicians and patients
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mpox, background information

- On July 23, 2022, the WHO declared this outbreak of mpox a public health emergency of international concern
 - Most cases identified in MSM
 - Of 528 cases confirmed in 16 countries, 98% of those positive results were from MSM.
 - Household transmission possible to younger children
 - The cases have **not** been linked to recent travel.
 - As of July 2022, thousands of confirmed mpox/orthopoxvirus cases in dozens of countries have been reported.
 - “The U.S. Department of Health and Human Services announced it would not renew mpox, the virus formerly known as monkeypox, as a public health emergency after January 31, 2023, following a drop in cases.”
(<https://www.npr.org/2022/12/03/1140480443/mpox-will-not-be-renewed-as-a-public-health-emergency-next-year>)
 - <https://www.cdc.gov/poxvirus/monkeypox/index.html>
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mpox, background information

- Rash similar to smallpox
 - Person-person spread OUTSIDE of the household and mortality from mpox infection are significantly less than for smallpox
 - mpox rash may mimic other rashes as well,
 - Secondary syphilis
 - HSV
 - VZV
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Routes of Transmission

- **Direct contact**
 - Primary route of transmission
 - Contact with infected sores, scabs, or bodily fluids.
 - During the ongoing worldwide outbreak of mpox reported beginning in May 2022 in nonendemic countries, close contact with infectious material from skin lesions (eg, occurring during sexual and/or close intimate contact) is considered the **main risk factor** for infection
 - Indirect contact through **fomites**
 - Transmission can occur through contact with materials or fomites that have become contaminated with infected material, such as clothing or linens contaminated with infectious material from body fluids or sores
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Routes of Transmission

- **Respiratory** secretions
 - mpox virus is also thought to be spread through respiratory secretions, although **prolonged** face-to-face contact may be required for transmission to occur via this route
 - **Vertical** transmission
 - The virus can cross the placenta from the mother to her fetus, which can lead to congenital mpox, although the rate of transmission or risk by trimester is not known
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Routes of Transmission

-Viral shedding and period of infectiousness

- A person is considered infectious from the onset of clinical manifestations until **all skin lesions have scabbed over and re-epithelialization** has occurred

Routes of Transmission

- Current outbreak appears to be largely human-human transmission.
 - Animal-human transmission possible, 2003 US outbreak involving prairie dogs.
 - Animal-human transmission in Africa largely associated with preparation of bushmeat.
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Clinical Presentation

- Incubation period is 4-21 days, typically 5-13.
 - Signs/Symptoms
 - Fevers, chills, and myalgia and characteristic skin changes.
 - Rash more concentrated on **face** but often develops on the **palms** and **soles** of the **feet**. Other sites may include **oral mucous membranes, conjunctiva, anus, and genitalia**.
 - Some patients may present with **rectal pain with or without** with lesions located on the genital or perianal area alone.
 - Prodromal period usually precedes development of rash
 - Lasts up to 5 days
 - Fever, intense headache, lymphadenopathy(localized or generalized), back pain, myalgia, and severe fatigue
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Clinical Presentation

- Prodrome(F/C/Lymph); –1-4 days→ Rash develops, persists 2-3 weeks
 - Rashes without prodrome have been reported.
 - Extent of the rash varies from few lesions to thousands that can coalesce and cause skin sloughing.
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Rash

- Most often, begins as 2-5mm macules(flat!)
 - Macules evolve to papules, vesicles, and then pustules.
 - Lesions well circumscribed, deep seated, and often umbilicated.
 - 7-14 days after the appearance of the rash, the lesions will crust over, dry up and then fall off.
 - Patient need to be educated to dispose of these properly, if they are reconstituted in water or aerosolized when changing linens it is possible for the virus to reactivate and become infectious.
 - The lesions may **NOT** all be in the same stage and lesions that have not dried up are considered infectious.
 - **Prior to the 2022 outbreak it was generally considered true that all of the lesions progress at the same rate.**
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MONKEYPOX

VISUAL EXAMPLES OF MONKEYPOX RASH



Photo Credit: NHS England High Consequence Infectious Diseases Network



MONKEYPOX

VISUAL EXAMPLES OF MONKEYPOX RASH



Photo Credit: UK Health Security Agency



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Course of Disease and Prognosis

- Most commonly, the disease follows a benign course with symptoms lasting from 2-4 weeks and patients can recover at home with a period of isolation based on the appearance of their lesions.
 - **Risk Factors for SEVERE Disease**
 - Children(<8yoa)
 - History of presence of atopic dermatitis
 - Persons with other active exfoliative skin conditions
 - Pregnant or breastfeeding
 - Extent of virus exposure(high,intermediate, or low risk exposure)
 - “Underlying immune deficiencies may lead to worse outcomes...”
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Risk Based on Exposure

- High-risk
 - Unprotected contact between a person's skin or mucous membranes and the skin, lesions, or bodily fluids from a person with mpox
 - **Sexual contact**, inadvertent splashes of patient saliva to the **eyes/oral cavity**, **ungloved** contact with a patient or contaminated materials.
 - Being inside a patient's room or within six feet of a patient during any procedures that may create aerosols from oral secretions, skin lesions, or resuspension of dried exudates(example shaking of soiled linens) **without wearing N95 or equivalent AND eye protection**
 - Intermediate-risk
 - Being within **six feet for three hours or more** of an unmasked person with mpox without wearing, at minimum, a surgical mask
 - Engaging in activity that results in contact between **sleeves and other parts of an individual's clothing** and the patient's skin lesions or bodily fluids or their soiled linens or dressings
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Risk Based on Exposure

- Low-risk or uncertain exposure
 - Entering the room of a person with mpox without wearing eye protection on one or more times, regardless of duration of exposure.
 - Being within six feet of an unmasked person with mpox for less than three hours without any PPE.
 - <https://www.cdc.gov/poxvirus/mpox/clinicians/monitoring.html>
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Monitoring After Exposure

- Anyone with exposure of any risk-level should monitor for symptoms for 21 days.
 - They should not restrict their activities as long as they remain asymptomatic.
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Diagnostics

- **If the patient develops skin lesions, they should be tested** if the diagnosis is suspected based on epidemiologic risk factors or exposure risk. Lesions need to be present for testing. Multiple lesions should be sampled and two swabs should be used per lesion.
 - For testing options and procedure, the OSDH Epi-on-Call should be contacted at 405-426-8710.
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Diagnostics

- Other lab values may be abnormal but are non-specific
 - Abnormal LFTs
 - Leukocytosis
 - Thrombocytopenia
 - Hypoalbuminemia
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Infection Prevention and Control

- Basically, the same as COVID
 - Contact, droplet, and respiratory precautions are recommended
 - PPE
 - Gown/Gloves/Eye protection and N95
 - Standard cleaning and disinfection procedures
 - <https://www.cdc.gov/poxvirus/mpox/clinicians/infection-control-healthcare.html>
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Patient Isolation

- Most patients can **recover at home** under isolation
 - Patients should not leave the home unless for necessary follow up medical care
 - Unexposed persons who do not have an essential need to be in the home should not visit while the individual remains infectious.
 - Isolate in room or area separate from other family members and pets.
 - **Skin lesions should be covered** if person-person contact is required.
 - Individuals with mpox should wear a **facemask** and household members should wear a facemask when in the presence of the person with mpox.
 - Household members providing care to patients with mpox should use disposable gloves for direct contact with lesions.
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Patient Isolation

- Isolate until not transmissible
 - Transmission of mpox between patients is possible until all lesion scabs have fallen off and re-epithelialization has occurred(**dry**).
 - TYPICALLY, lasts **2-4 weeks**.
 - **Condoms** should be used during any sexual activity for **12 weeks** after recovery.
 - <https://www.cdc.gov/poxvirus/mpox/if-you-are-sick.html>
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Clinical Management

- Supportive care
 - Most patients recover without needing to be hospitalized.
 - Patients at risk of needing hospitalization include those at risk from dehydration (nausea, vomiting, dysphagia), severe pain from lesions, and those who develop severe disease or complications.
 - Antiviral therapy
 - Indicated in those with severe disease or those at risk
 - Immunization
 - PEP
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Possible Complications

- Secondary infection of lesion
 - Pneumonia
 - Sepsis
 - Encephalitis
 - Corneal infection
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Therapeutics

- Tecviromat(Tpoxx)
 - Treatment of choice, very limited availability
 - Approved for smallpox treatment in 2018
 - **Oral and IV** available
 - Weight based dosing
 - Significant difference in dosing based on weight
 - Treat for 14-days
 - Most often reported adverse effects are headache, nausea, and abdominal pain.
 - **“Protects nonhuman primates from lethal mpox virus infections and is likely to be efficacious against this infection in humans as well.”**
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Therapeutics

- Triflourodine (and vidarabine) eye drops or ointments
 - OFF-LABEL use for mpox eye involvement
 - Apply every 4 hours for 7-10 days
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Therapeutics

- Vaccines
 - MVA(modified vaccinia Ankara) vaccine(JYNNEOS)
 - Highly attenuated non-replicated vaccinia virus
 - Excellent safety profile, even in immunocompromised people and those with skin disorders.
 - Administered as two doses subcutaneous four weeks apart
 - In the US, JYNNEOS is approved for the prevention of smallpox and mpox
 - ACAM2000
 - REPLICATION COMPETENT smallpox vaccine
 - Only for use in select patients
 - MUST BE healthy, non-pregnant, immunocompetent with high-risk exposure
 - Use in mpox allowed under an expanded access investigational new drug (IND) application through the CDC.
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Post-Exposure Prophylaxis (PEP)

- Who qualifies for PEP?
 - CDC expanded indication for vaccination to include people who are likely to have been exposed to mpox (enhanced PEP or PEP++) though this strategy is only being implemented in limited areas due to limitations of the JYNNEOS vaccine.
 - Sexual partner within last 14 days who developed confirmed mpox
 - Multiple sexual partners in the past 14 days in a jurisdiction with known mpox
 - Patients who have high risk exposure, defined previously, they should receive PEP
 - Intermediate-risk exposures and patients who are NOT at risk of severe disease should receive PEP on a case-by-case basis.
 - Low-risk exposures with no risk factors for severe disease should NOT receive PEP
 - Patients who qualify for post-exposure prophylaxis should be vaccinated **within 4 days of exposure**. Vaccination can be considered for up to 14 days after exposure to prevent severe disease in those at risk but this may NOT prevent the disease.
 - The OSDH Epi-on-Call should be contacted at 405-426-8710 if you believe a patient qualifies for PEP. There is very limited supply.
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People with HIV

- This population represents 30-50% of patients with mpox, worldwide.
 - ART should be continued and ART start should not be delayed in newly diagnosed individuals with HIV.
 - PEP with MVA(JYNNEOS) should be administered to those who warrant
 - CD4 counts >350 had antibody response after MVA vaccination similar to non-HIV infected patients.
 - Another study revealed that for HIV patients with CD4 counts between 200 and 350 mounted an antibody response but not as robust as a non-HIV patient.
 - ACAM2000 vaccine is absolutely contraindicated in immunocompromised persons as it is a live, replication-competent vaccine. HOWEVER, if patient has CD>500 and no other contraindications ACAM2000 may be used for PEP on a case-by-case basis.
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People with HIV

- **CDC Guidance:** “severe outcomes have been observed in people with inadequately treated HIV who have CD4 counts $\leq 350/\text{mm}^3$ and are likely not virologically suppressed; however, the available data are presently insufficient to define actionable thresholds. Until more is known, clinicians should exercise clinical judgement to assess the extent of immunosuppression (from HIV or any other sources) and the risk for severe mpox illness.”
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Questions?

References

<https://www.cdc.gov/poxvirus/mpox/clinicians/isolation-procedures.html>

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References

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