

Monkeypox

System Infection Prevention & Control
8/1/2022

**If a patient is suspected to have monkeypox,
immediately call your local Infection Prevention team**

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Disease Overview

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Background

- Monkeypox is a rare disease caused by infection with the monkeypox virus
- Monkeypox virus is part of the same family of viruses as smallpox, with similar symptoms, but milder and rarely fatal
- Monkeypox is endemic in several central and western African countries
- From 2018 to mid-May 2022, 9 imported cases of monkeypox to non-endemic countries, including the two cases into the United States
 - No flight contacts developed infection
 - One healthcare worker developed monkeypox (UK), and 2 family members acquired monkeypox (UK)
- CDC issued health advisory on May 20, 2022
- Reported cases primarily are in men who report sexual contact with other men (MSM)
- Being recognized at outpatient clinics because easily confused with sexually transmitted infections
 - Individuals may present to sexual health clinics for care
 - *Monkeypox is not a sexually transmitted infection, but it can be transmitted during sexual and intimate contact, as well as with personal contact and shared bedding/clothing*

Transmission

Monkeypox is spread via contact and respiratory route:

- Direct or indirect contact with the infectious rash, scabs or body fluids
 - Touching items (such as clothing or linens) that previously touched the infectious rash or body fluids
 - Exposure to respiratory secretions during prolonged, face-to-face contact, or during intimate physical contact (e.g., kissing, cuddling, sexual intercourse)
 - Pregnant people can spread the virus to their fetus through the placenta
- Monkeypox can spread from the time symptoms start until the rash has fully healed and a fresh layer of skin has formed. The illness typically lasts 2-4 weeks. People who do not have monkeypox symptoms cannot spread the virus to others
 - Transmission via respiratory secretions appears uncommon as patients generally describe close, sustained physical contact with other people with monkeypox
 - While viral DNA has been detected in saliva, semen, urine and fecal samples, further research on the infectious potential of these bodily fluids and their potential role in transmission is needed

Signs & Symptoms

Symptoms of monkeypox can include:

- Fever
- Headache
- Muscle aches and backache
- Swollen lymph nodes
- Chills
- Exhaustion
- A rash that can look like pimples or blisters that appears on the face, inside the mouth, and on other parts of the body, like the hands, feet, chest, genitals, or anus



Progression of Disease (1 of 2)

Incubation period:

- Roughly 1-2 weeks
- Person does not have symptoms and may feel fine
- A person is not contagious during this period

Prodrome (early symptoms):

- The first symptoms include fever, malaise, headache, sometimes sore throat and cough, and lymphadenopathy
 - Lymphadenopathy is a distinguishing feature of monkeypox from smallpox
 - Typically occurs with fever onset, 1–2 days before rash onset, or rarely with rash onset
 - Lymph nodes may swell in the neck, armpits or groin and may occur unilaterally or bilaterally

Progression of Disease (2 of 2)

Rash:

- Following the prodrome, lesions will develop in the mouth and on the body
- Lesions progress through several stages before falling off
- A person is contagious from the onset of the enanthem through the scab stage
- Pitted scars and/or areas of lighter or darker skin may remain after scabs have fallen off. Once all scabs have fallen off a person is no longer contagious

Stage	Stage Duration	Characteristics
Enanthem		•The first lesions to develop are on the tongue and in the mouth.
Macules	1–2 days	•Following the enanthem, a macular rash appears on the skin, 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).
Papules	1–2 days	•By the third day of rash, lesions have progressed from macular (flat) to papular (raised).
Vesicles	1–2 days	•By the fourth to fifth day, lesions have become vesicular (raised and filled with clear fluid).
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). •The pustules will remain for approximately 5 to 7 days before beginning to crust.
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.

Current Outbreak Clinical Presentation

- Regarding progression of disease, historically the rash has been preceded by prodromal symptoms (e.g., fever, lymphadenopathy, flu-like symptoms), however have seen a **differing presentation with current outbreak**
 - **Rash:**
 - Still characteristic (firm, pimple-like lesions), but often starting in genital and perianal areas
 - Genital and/or perianal lesions
 - Sometimes not disseminating to other parts of body
 - **Prodromal Symptoms:**
 - Mild or not occurring
- Patients are infectious once symptoms begin, whether prodromal or rash
- **Remain infectious until lesions form scabs, scabs fall off, and a fresh layer of skin forms**

Vaccines

- Vaccination options for Monkeypox are not widely available
- Vaccine supplies are being released from the US national stockpile based on need and in coordination with public health entities (e.g., CDC, local and state health departments)

Treatment

- Monkeypox specific treatment medications are not widely available
- Treatment options are being released from the US national stockpile based on need and in coordination with public health entities (e.g, CDC, local and state health departments)
- **Individual must be confirmed positive for treatment consideration**
- Many individuals infected with monkeypox virus have a mild, self-limiting disease course in the absence of specific therapy

Patient Management

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Patient Management Overview

- **Immediately place the patient in an exam room and close the door**
- To aid in source control and reduce transmission potential, **patient should wear a mask and lesions that can be covered should remain covered**, particularly when around individuals not wearing appropriate PPE and when outside of the patient room (*see PPE requirements on next slide*)
- **Use Droplet PLUS Precautions and signage**
 - Post the [Droplet PLUS isolation sign](#) on or next to the door on the corridor side of the door
 - Do not remove sign until room has been cleaned
- **Evaluate patient, if clinical suspicion for monkeypox virus and lesions are present:**
 - Contact Infectious Disease for consult
 - Order monkeypox testing via Special Lab Request
 - Complete [MDHHS Specimen Form](#)
 - Collect Specimen
 - Send specimen to HFH Laboratory with MDHHS lab specimen form, HFH Lab will send to state lab
 - Inform patient of test turn around time
 - ❖ Preliminary test result will be available from MDHHS within 24-48 hours, confirmatory testing performed at CDC
 - ❖ Testing only performed M-F, thus if sample collected on Friday may not see results until Monday
 - Provide patient information/education on isolation and home infection prevention measures

 Health Department NO LONGER needs to be called to approve testing

Isolation Requirements

- **Droplet PLUS precautions** will be utilized for all suspect/confirmed Monkeypox patients
 - Isolation Precautions must be maintained until all lesions have crusted, those crusts have separated, and a fresh layer of healthy skin has formed underneath
- **Personal Protective Equipment (PPE) Required:**
 - Gown
 - Gloves
 - Eye protection (i.e., goggles or a face shield that covers the front and sides of the face)
 - N95 or higher respirator
- **Patient Placement/Rooming:**
 - A patient with suspected or confirmed monkeypox infection should be placed in a single-person room
 - Instruct patient to wear a mask when healthcare worker is present and/or when outside of patient room
 - Special air handling (i.e., a negative pressure room) is not required per CDC, but will be utilized when able (e.g., within ED)
 - The door should be kept close (if safe to do so)
 - Transport and movement of the patient outside of the room should be limited to medically essential purposes
 - Intubation and extubation, and any procedures likely to spread oral secretions should be performed in a negative pressure isolation room when able

Patient Evaluation (1 of 2)

- **Consider history of present illness** in comparison to typical sequence of clinical manifestations (*with understanding that clinical presentation in current outbreak may not be typical*)
 - Usually fever, malaise, headache, sore throat, cough, lymphadenopathy
 - Macules → papules → vesicles → pustules → scabs
 - Tongue/mouth → face → arms/legs → hands/feet(including palms/soles)
 - Pain and pruritis may be prominent
- **Evaluate social history**
 - Travel history
 - History of travel to central or west African countries
 - Contact with a person or people with confirmed or suspected monkeypox
 - Men who have close or intimate in-person contact with other men

Patient Evaluation (2 of 2)

- **Perform physical examination**

- Perform thorough exam of all skin
- Clues may be present in other areas of the body for persons presenting with genital/perianal complaints
- Rash may concentrate on face, arms, legs (centrifugal distribution)
 - In some patients, lesions have been scattered or localized, rather than diffuse, and have not involved face or extremities
- Lesions typically similar in size and within same stage
- Lesions become umbilicated

- **The rash associated with monkeypox can be similar to other diseases that are encountered in clinical practice (e.g., secondary syphilis, herpes, chancroid, and varicella zoster) therefore thorough evaluation of patient's history is critical**

Testing (1 of 3)

PCR testing on dry lesion swabs is currently the only test available for Monkeypox

- If there are no lesions present, testing is not able to be completed
 - Education regarding monitoring and isolation should be provided to the patient
- If lesions are present and patient matches clinical picture of monkeypox, then testing should be performed

Testing (2 of 3)

If rash is present and clinical evaluation indicates testing:

1. Contact Infectious Disease (ID) for consult

- Inpatient & EDs attached to hospitals:
 - Contact your local ID team
- Ambulatory sites & Free-standing EDs:
 - North/South Market → Halo Dr. Dennis Cunningham for consultation
 - Central Market → Halo Dr. Vivek Kak for consultation

2. If ID can not be reached, call Infection Control (IC) for assistance

- Inpatient & EDs attached to hospitals:
 - Contact your local IC team
- Ambulatory sites & Free-standing EDs:
 - North/South Market → 313-953-3898, 313-850-8208, 313-953-5752, or 313-829-5693
 - Central Market → via Halo page or call 517-205-4967 or 517-205-4524 or 517-205-4943

3. If ID recommends testing, contact Microbiology Lab at 313-916-1041 (Detroit) or 517-205-5501 (Jackson) to notify lab of incoming specimen

4. Complete MDHHS Specimen Form

Testing (3 of 3)

6. Order test in Epic:

- Open the patient's Epic electronic health record
- Go to "Manage Orders"; to add a new order, search for **(1)** "special"
- Select the **(2)** "Special Lab Request, OTHER", then click **(3)** "Accept" button to open the order details
- Type **(4)** "Monkeypox" in the "Requested Lab Test" section, click the **(5)** "Accept" button
- Review the order for accuracy and click **(6)** "Sign"

❖ Samples collected for testing should not have any other orders associated with the sample

❖ Testing for monkeypox is currently performed at MDHHS state laboratory, confirmatory testing is performed at the CDC

(1) SPECIAL

Order Sets & Panels

Name	User Version Name
Specialty Hospital Admission	

Medications (No results found)

Procedures

Name	Type
Special Lab Request, BLOOD	Lab
Special Lab Request, CSF	Lab
Special Lab Request, FLUID	Lab
(2) Special Lab Request, OTHER	Lab
Special Lab Request, URINE	Lab

(3) Accept

Special Lab Request, OTHER (Once)

Priority: Routine

Frequency: Once

At: 7/22/2022 1355

Requested Lab Test, Other: **(4) Monkey Pox**

Specimen Source: lesion left forearm

(5) Accept

(6) Sign

Sample Collection & Transport

Sample Type:

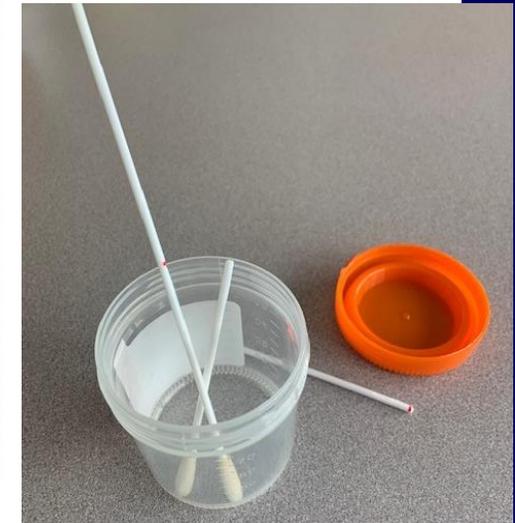
- Collect **two dry swabs** for Monkeypox testing. **eSwabs** or **BBL Culture swabs** must be used
 - ❖ Use of any other sample type may result in rejection or delay in testing
- Dry swabs should be placed together in a single sterile transport container without transport media. Screw-cap transport containers (e.g., 15 ml conical tubes or urine culture collection cups) can be used for this purpose
 - ❖ Swabs sent with transport media or any kind of liquid in tube will be rejected
- Swabs need to be cut to fit container

Sample Collection:

- It is not necessary to de-roof the lesion before swabbing. Vigorously swab or brush lesion with two separate sterile dry swabs

Sample Transport:

- Transport immediately to laboratory after collection
- Specimen must be refrigerated (2-8°C) within an hour after collection. Refrigerated specimens can be stored for up to 7 days and must be transported to Microbiology with cold packs



Room Cleaning, Disinfection & Shut Down

- Following patient discharge/at completion of visit, staff **may immediately clean the patient's room as long as they are wearing full Droplet Plus PPE**
- If no aerosol-generating procedure ([AGP](#)) occurred in that room, there is no room shut down time required; once the room has been cleaned, the next patient may be roomed
- If an AGP occurred, room to be held prior to next patient to allow for adequate air exchanges to occur. Time requirement starts when AGP ends:
 - 35 minutes for positive/negative pressure rooms
 - 2 hours for neutral pressure rooms
- Standard cleaning and disinfection procedures should be performed using [HFH approved disinfectant wipes](#)

Waste & Linen Management

- **Waste**

- Waste contaminated with monkeypox virus should be managed as **regulated medical waste** in the same manner as other potentially infectious medical waste (e.g., soiled dressings, contaminated sharps)
- Waste should be contained/bagged prior to leaving patient room and disposed of in hazardous waste bin

- **Soiled/Used Linen**

- Soiled/used linen should be handled in accordance with **standard practices**
- Avoid unprotected contact with lesion material that may be present on the linen
- Soiled linen should be promptly bagged and contained at point of use

**As a reminder, linen should never be shaken or handled in manner that may disperse infectious material*

Exposure Definitions

- Transmission of monkeypox requires prolonged close contact with a symptomatic individual. Brief interactions and those conducted using appropriate PPE are not high risk and generally do not warrant post exposure prophylaxis (PEP)

Degree of Exposure	Exposure Characteristics	Recommendations
High	<ul style="list-style-type: none"> • Unprotected contact between a person’s skin or mucous membranes and the skin, lesions, or bodily fluids from infected person (e.g., any sexual contact, inadvertent splashes of infected person’s saliva to the eyes or oral cavity of a person, ungloved contact with infected person), or contaminated materials (e.g., linens, clothing) • Being inside the infected person’s room or within 6 feet of an infected person during any procedures that may create aerosols from oral secretions, skin lesions, or resuspension of dried exudates (e.g., shaking of soiled linens), without wearing an N95 or equivalent respirator (or higher) and eye protection • Exposure that, at the discretion of public health authorities, was recategorized to this risk level (i.e., exposure that ordinarily would be considered a lower risk exposure, raised to this risk level because of unique circumstances) 	<ul style="list-style-type: none"> • Monitoring • PEP – Recommended
Intermediate	<ul style="list-style-type: none"> • Being within 6 feet for 3 hours or more of an unmasked infected person without wearing, at a minimum, a surgical mask • Activities resulting in contact between sleeves and other parts of an individual’s clothing and the infected person’s skin lesions or bodily fluids, or their soiled linens or dressings (e.g., turning, bathing, or assisting with transfer) while wearing gloves but not wearing a gown • Exposure that, at the discretion of public health authorities, was recategorized to this risk level because of unique circumstances (e.g., if the potential for an aerosol exposure is uncertain, public health authorities may choose to decrease risk level from high to intermediate) 	<ul style="list-style-type: none"> • Monitoring • PEP – Informed clinical decision making recommended on an individual basis to determine whether benefits of PEP outweigh risks
Low/Uncertain	<ul style="list-style-type: none"> • Entered the infected person’s room without wearing eye protection on one or more occasions, regardless of duration of exposure • During all entries in the infected person’s care area or room (except for during any procedures listed above in the high-risk category), wore gown, gloves, eye protection, and at minimum, a surgical mask • Being within 6 feet of an unmasked infected person for less than 3 hours without wearing at minimum, a surgical mask • Exposure that, at the discretion of public health authorities, was recategorized to this risk level based on unique circumstances (e.g., uncertainty about whether Monkeypox virus was present on a surface and/or whether a person touched that surface) 	<ul style="list-style-type: none"> • Monitoring • PEP - None

Exposure Management - Patients

Monitoring People Who Have Been Exposed

- Those exposed to people confirmed to have monkeypox should self monitor for symptoms for 21 days after their last exposure
 - Symptoms of concern include:
 - Fever $\geq 100.4^{\circ}\text{F}$ (38°C)
 - Chills
 - New lymphadenopathy (periauricular, axillary, cervical, or inguinal)
 - New skin rash
- *Fever and rash occur in nearly all people infected with monkeypox virus*

- **Exposed individuals who remain asymptomatic can be permitted to continue routine daily activities**
- **If fever or rash develop, exposed individuals should self-isolate** and contact their care provider
- **If only chills or lymphadenopathy develop, exposed individuals should remain at their residence and self-isolate for 24-hours.** During this time, the individual should monitor their temperature for fever; if a fever or rash develop, contact care provider
- Exposed individuals should not donate blood, cells, tissue, breast milk, semen, or organs while they are under symptom surveillance

Exposure Management – Healthcare Workers

Monitoring Exposed Healthcare Workers

- Healthcare workers who have unprotected exposures (i.e., not wearing PPE) to patients with monkeypox should immediately contact Employee Health and file a RL

Patient Education

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Patient Education

Home Isolation of People with Monkeypox:

Refer to CDC's Home Infection Control page → [Infection Control: Home | Monkeypox | Poxvirus | CDC](#)

- People with monkeypox should isolate until rash has fully resolved, the scabs have fallen off, and a fresh layer of intact skin has formed
- People with monkeypox should follow these recommendations until cleared by state or local public health officials:
 - Do not leave the home except as required for emergencies or follow-up medical care
 - Friends, family or others without an essential need to be in the home should not visit
 - Avoid close contact with others
 - Avoid close contact with pets in the home and other animals
 - Do not engage in sexual activity that involves direct physical contact
 - Do not share potentially contaminated items, such as bed linens, clothing, towels, wash cloths, drinking glasses or eating utensils
 - Routinely clean and disinfect commonly touched surfaces and items, such as counters or light switches
 - Wear well-fitting source control (e.g., surgical/medical mask) when in close contact with others at home
 - Avoid use of contact lenses to prevent inadvertent infection of the eye
 - Avoid shaving rash-covered areas of the body as this can lead to spread of the virus

Patient Education

Home Isolation of People with Monkeypox:

Refer to CDC's Home Infection Control page → [Infection Control: Home | Monkeypox | Poxvirus | CDC](#)

- Bathroom usage:
 - If possible, use a separate bathroom if there are others who live in the same household
 - If there is not a separate bathroom in the home, the infected person should clean and disinfect surfaces (e.g., counters, toilet seats, faucets) after using a shared space. Consider disposable glove use while cleaning if rash is present on the hands. Consider disposable glove use while cleaning if rash is present on the hands
- Limit exposure to others:
 - Avoid contact with unaffected individuals until the rash has resolved, the scabs have fallen off, and a fresh layer of intact skin has formed
 - Isolate in a room or area separate from other household members and pets when possible
 - Limit use of spaces, items, and food that are shared with other household members
 - Do not share dishes and other eating utensils. It is not necessary for the infected person to use separate utensils if properly washed. Wash soiled dishes and eating utensils in a dishwasher or by hand with warm water and soap
- Limit contamination within household:
 - Try to avoid contaminating upholstered furniture and other porous materials that cannot be laundered by placing coversheets, waterproof mattress covers, blankets, or tarps over these surfaces
 - Additional precautions such as steam cleaning can be considered if there is concern about contamination

Patient Education

Limiting Transmission Within the Home:

Refer to CDC's Home Infection Control page → [Infection Control: Home | Monkeypox | Poxvirus | CDC](#)

- **Hand hygiene is the #1 way to prevent the spread of infection**
 - the use of an alcohol-based hand rub or hand washing with soap and water – should be performed by people with monkeypox and household contacts after touching rash material, clothing, linens, or environmental surfaces that may have had contact with rash material
- Cover all skin rashes to the extent possible by wearing long sleeves or long pants. Gloves can be considered for covering rash on the hands when not in isolation such as when receiving medical care
- People with monkeypox should use well-fitting source control (e.g., surgical/medical mask), if close contact with others cannot be avoided, such as when receiving medical care
- Other household members should wear a respirator or a well-fitting mask when in close contact (e.g., within 6 feet) with the person with monkeypox for more than a brief encounter
- When possible, the person with monkeypox should change their own bandages and handle contaminated linens while wearing disposable gloves, followed by immediate handwashing after removing gloves
 - As a last resort, if assistance is needed with these activities, a household member should avoid extensive contact and wear, at a minimum, disposable medical gloves and a well-fitting mask or respirator. Any clothing that contacts the rash during dressing changes should be immediately laundered. Gloves should be disposed of after use, followed by handwashing
- Contain and dispose of contaminated waste, such as dressings, bandages, or disposable gloves