# Infection Prevention and Control of Mpox in Healthcare Settings

Updated October 31, 2022

> These recommendations are intended for healthcare settings. Non-healthcare settings such as correctional facilities and homeless shelters should continue to follow CDC's Preventing Mpox Spread in Congregate Settings.

## Summary of Changes

**On 10/31/2022:**

- Clarified considerations for deceased compared to living donors.
- Added links to FDA, AABB and the OPTN Advisory Committee.

Information about human-to-human transmission of mpox virus is described in How it Spreads | Mpox | Poxvirus | CDC. Transmission in healthcare settings has been rarely described.

Infection prevention and control recommendations for healthcare settings are provided in the Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings (2007). Recommendations and practices described in this 2007 guideline are intended to be used when providing care for any patient in a healthcare setting, including those with mpox infection. Additional supporting infection prevention and control information is provided below.

Guidance addressing isolation for people with mpox infection outside of healthcare settings is available at: Duration of Isolation Procedures | Mpox | Poxvirus | CDC

# Precautions for Preventing Mpox Virus Transmission

In addition to Standard Precautions, if a patient seeking care is suspected to have mpox infection, additional infection control precautions (as described below) should be implemented. Infection prevention and control personnel should be notified immediately.

Activities that could resuspend dried material from lesions (e.g., use of portable fans, dry dusting, sweeping, vacuuming) should be avoided.

# Patient Placement

A patient with suspected or confirmed mpox infection should be placed in a single-person room; special air handling is not required. The door should be kept closed (if safe to do so). The patient should have a dedicated bathroom. Transport and movement of the patient outside of the room should be limited to medically essential purposes. If the patient is transported outside of their room, they should use well-fitting source control (e.g., medical mask) and have any exposed skin lesions covered with a sheet or gown.

Intubation, extubation, and any procedures likely to spread oral secretions should be performed in an airborne infection isolation room.

# Personal Protective Equipment (PPE)

PPE used by healthcare personnel who enter the patient's room should include:

- Gown
- Gloves

- Eye protection (i.e., goggles or a face shield that covers the front and sides of the face)
- NIOSH-approved particulate respirator equipped with N95 filters or higher

## Waste Management

Waste management (i.e., handling, storage, treatment, and disposal of soiled PPE, patient dressings, etc.) should be performed in accordance with U.S. Department of Transportation (DOT) Hazardous Materials Regulations (HMR; 49 CFR parts 171-180.)

Required waste management practices and classification (i.e., assignment to a category under the HMR) currently differ depending on the mpox virus clade (strain). The DOT indicates that waste contaminated with Clade II [PDF – 4.06 MB] of mpox virus should be managed as UN3291 Regulated Medical Waste (RMW) in the same manner as other potentially infectious medical waste (e.g. soiled dressings, contaminated sharps). Clade I of mpox virus is classified as Category A under the HMR and should be managed accordingly. See the DOT website for more information. Facilities should also comply with state and local regulations for handling, storage, treatment, and disposal of waste, including RMW.

Pursuant to 49 CFR 173.134(a)(1)(i), classification of waste as a Category A substance for transportation must be based on the known medical history or symptoms of the patient, endemic local conditions, or professional judgment concerning the individual circumstances of patient.

**During the ongoing 2022 multi-national outbreak of Clade IIb mypox**, if a clinician or their public health authority determine that a patient does not have known epidemiological risk for Clade I of mpox virus (e.g. history of travel to the Democratic Republic of the Congo, the Republic of Congo, the Central African Republic, Cameroon, or Gabon in the prior 21 days; 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) it is appropriate to manage the patient's waste as Regulated Medical Waste. However, if epidemiological risk factors indicate a risk for Clade I mpox virus, waste should be managed as a Category A infectious substance pending clade confirmation, and while local and state public health authorities are consulted. DOT has provided clarifications about enforcement of mpox waste management on their website .

## Environmental Infection Control

Standard cleaning and disinfection procedures should be performed using an EPA-registered hospital-grade disinfectant with an emerging viral pathogen claim. Products with Emerging Viral Pathogens claims may be found on EPA's List Q . Follow the manufacturer's directions for concentration, contact time, and care and handling.

Soiled laundry (e.g., bedding, towels, personal clothing) should be handled in accordance with recommended [2.47 MB, 241 pages] standard practices, avoiding contact with lesion material that may be present on the laundry. Soiled laundry should be gently and promptly contained in an appropriate laundry bag and never be shaken or handled in manner that may disperse infectious material.

Activities such as dry dusting, sweeping, or vacuuming should be avoided. Wet cleaning methods are preferred.

Management of food service items should also be performed in accordance with routine procedures.

Detailed information on environmental infection control in healthcare settings can be found in CDC's Guidelines for Environmental Infection Control in Health-Care Facilities and Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings [section IV.F. Care of the environment].

## Duration of Isolation Precautions for Patients with Suspected or Confirmed Mpox Infection

For patients with suspected or confirmed mpox infection in a healthcare setting:

- Those with suspected mpox infection should have recommended isolation precautions for mpox maintained until mpox infection is ruled out.
- Those with confirmed mpox infection should have recommended isolation precautions for mpox maintained until all lesions have crusted, those crusts have separated, and a fresh layer of healthy skin has formed underneath.

Decisions regarding discontinuation of isolation precautions in a healthcare facility may need to be made in consultation with the local or state health department, depending on the jurisdiction.

# Management of Patients with an Mpox Virus Exposure

In general, patients in healthcare facilities who have had an mpox virus exposure and are asymptomatic do not need to be isolated, but they should be monitored. Monitoring should include assessing the patient for signs and symptoms of mpox, including a thorough skin exam, at least daily, for 21 days after their last exposure. Postexposure risk assessment and management for patients should be adapted from community guidance or healthcare guidance, depending on the nature and location of a patient's exposure.

During the 21-day monitoring period:

- If a rash occurs, patients should:

Be placed on empiric isolation precautions for mpox until (1) the rash is evaluated, (2) testing is performed, if indicated, and (3) the results of testing are available and are negative.

- If other symptoms of mpox infection are present, but there is no rash, patients should:
  - Be placed on empiric isolation precautions for mpox for 5 days after the development of any new symptom, even if this 5-day period extends beyond the original 21-day monitoring period.
    - If 5 days have passed without the development of any new symptom and a thorough skin and oral examination reveals no new rashes or lesions, isolation precautions for mpox can be discontinued.
    - Isolation precautions may be discontinued prior to 5 days if mpox has been ruled out.
    - If a new symptom develops again at any point during the 21-day monitoring period, then the patient should be placed on empiric isolation precautions for mpox again, and a new 5-day isolation period should begin.

Some patients may be unable to communicate onset of symptoms (e.g. a newborn, patients with delirium).

- For such outpatients, consider use of isolation precautions for mpox for their healthcare visits until they are able to communicate about onset of symptoms (e.g. following delirium resolution) or for up to 21 days after their last exposure.
- For such inpatients, consider use of isolation precautions for mpox and monitoring for signs of infection until they are able to communicate about onset of symptoms (e.g. following delirium resolution) or for up to 21 days after their last exposure.

Decisions on whether to isolate exposed patients who are unable to communicate about onset of symptoms should be informed by the risk of their exposure incident (how likely they are to develop mpox infection), risk that transmission would pose to other patients on their unit (e.g., immunocompromised patients), and other factors.

# Blood Transfusion and Organ Transplantation Clinical Considerations

To date, there have been no confirmed reports of mpox virus transmission from medical products of human origin (MPHO) including blood transfusion, organ transplantation, or implantation, transplantation, infusion, or transfer of human cells, tissues, or cellular or tissue-based products (HCT/Ps). As a precaution, people who have a high- or intermediate-risk exposure (Monitoring and Risk Assessment for Persons Exposed in the Community | Mpox | Poxvirus | CDC) should not donate blood, cells, tissue, breast milk, or semen while they are being monitored for symptoms. Given the morbidity and mortality among individuals awaiting organ transplantation, potential deceased donors who have been exposed and have no evidence of mpox virus infection, based on a physical examination, could be considered for organ donation following appropriate risk-benefit considerations. Potential living donors who have been exposed to mpox could consider deferring donation until 21 days following their last exposure. The risk of such wait time should be weighed against the morbidity and mortality risk for individuals awaiting organ transplantation. All decisions should be based on appropriate risk-benefit considerations, recognizing that mpox virus has been detected in some samples taken from people who reported no symptoms. CDC will continue to monitor case data and available science for new or changing information about transmission.

Additional information on safety considerations for blood and plasma donation is available at FDA's Information for Blood Establishments Regarding the Mpox Virus and Blood Donation and from the Association for the Advancement of Blood & Biotherapies (AABB) [251 KB, 9 pages].

The Organ Procurement and Transplantation Network (OPTN) Disease Transmission Advisory Committee is evaluating the implications for organ transplantation: OPTN/HRSA's Mpox and Solid Organ Donation

For further questions please contact CDC: eocreport@cdc.gov

# Visitation

Visitors to patients with mpox infection should be limited to those essential for the patient's care and wellbeing (e.g., parents of a child, spouse). Decisions about who might visit, including whether the visitor stays or sleeps in the room with the patient, typically take into consideration the patient's age, the patient's ability to advocate for themselves, ability of the visitor to adhere to infection prevention and control recommendations, whether the visitor already had higher risk exposure to the patient, and other aspects. In general, visitors with contagious diseases should not be visiting patients in healthcare settings to minimize the risk of transmission to others.

# Assessing Risk of HCP with Mpox Virus Exposures to Guide Monitoring and Recommendations for Postexposure Prophylaxis

Each risk level category in the table below is intended to highlight the need for monitoring and assist with determining the need for postexposure prophylaxis (PEP). The exposure risk level of any incident may be recategorized to another risk level at the discretion of occupational health services or public health authorities due to the unique circumstances of each exposure incident.

Correct and consistent use of PPE when caring for a patient with mpox infection is highly protective and prevents transmission to HCP. However, unrecognized errors during the use of PPE (e.g., self-contaminating when removing contaminated PPE) may create opportunities for transmission to HCP. Therefore, **in the absence of an exposure described below, HCP who enter a contaminated patient room or care area while wearing recommended PPE, should be aware of the signs and symptoms of mpox; if any signs or symptoms of mpox occur, HCP should notify occupational health services for further evaluation and should not report to work (or should leave work, if signs or symptoms develop while at work).**

| Risk level of exposure | Exposure characteristics | Recommendations | |
|---|---|---|---|
| | | Monitoring | PEP¶ |
| Higher | Unprotected contact between an exposed individual's broken skin or mucous membranes and the skin lesions or bodily fluids from a patient with mpox (e.g., inadvertent splashes of patient saliva to the eyes or mouth of a person), or soiled materials (e.g., linens, clothing) -OR- | Yes | Recommended |
| | Being inside the patient's room or within 6 feet of a patient with mpox during any medical procedures that may create aerosols from oral secretions (e.g., cardiopulmonary resuscitation, intubation), or activities that may resuspend dried exudates (e.g., shaking of soiled linens), without wearing a NIOSH-approved particulate respirator with N95 filters or higher and eye protection | | |
| Intermediate | Being within 6 feet for a total of 3 hours or more (cumulative) of an unmasked patient with mpox without wearing a facemask or respirator -OR- | Yes | Informed clinical decision making recommended on an individual basis to determine whether benefits of PEP outweigh risks of transmission or severe disease ¶¶ |
| | Unprotected contact between an exposed individual's intact skin and the skin lesions or bodily fluids from a patient with mpox, or soiled materials (e.g., linens, clothing) -OR- | | |
| | Activities resulting in contact between an exposed individual's clothing and the patient with mpox's skin lesions or bodily fluids, or their soiled materials (e.g., during turning, bathing, or assisting with transfer) while not wearing a gown | | |
| Lower | Entry into the contaminated room or patient care area of a patient with mpox without wearing all recommended PPE, and in the absence of any exposures above | Yes | None |
| No Risk | No contact with the patient with mpox, their contaminated materials, nor entry into the contaminated patient room or care area | No | None |

¶ ACAM2000 and JYNNEOS are available for PEP.

¶¶ Factors that may increase the risk of mpox transmission include (but are not limited to): the person with mpox infection had clothes that were soiled with bodily fluids or secretions (e.g., discharge, skin flakes on clothes) or was coughing while not wearing a mask or respirator, or the exposed individual is not previously vaccinated against smallpox or mpox. People who may be at increased risk for severe disease include (but are not limited to): young children (<8 years of age), individuals who are pregnant or immunocompromised, and individuals with a history of atopic dermatitis or eczema.

## How to monitor HCP

Decisions on how to monitor exposed HCP are at the discretion of the occupational health program and public health authorities. In general, the type of monitoring employed often reflects the risk for transmission with more active-monitoring approaches used for higher risk exposures. Self-monitoring approaches are usually sufficient for exposures that carry a lesser risk for transmission. Even higher risk exposures may be appropriate for a self-monitoring strategy if occupational health services or public health authorities determine that it is appropriate. Ultimately, the person's exposure risk level, their reliability in reporting symptoms that might develop, the number of persons needing monitoring, time since exposure, receipt of PEP, and available resources, are all factors when determining the type of monitoring to be used.

## When to use work restrictions in HCP

Asymptomatic HCP with exposures to mpox virus do not need to be excluded from work, but should be monitored (e.g., at least a daily assessment conducted by the exposed HCP for signs and symptoms of mpox infection) for 21 days after their last exposure.

If symptoms develop, HCP should be managed as described below. If pox infection is ruled out, they may still have work restrictions recommended if their diagnosis is one where restriction from work is recommended (e.g., varicella).

During the 21-day monitoring period:

- If a rash occurs, HCP should:
  - Be excluded from work until (1) the rash can be evaluated, (2) testing is performed, if indicated, and (3) the results of testing are available and negative.
- If other symptoms are present, but there is no rash, HCP should:
  - Be excluded from work for 5 days after the development of any new symptom, even if this 5-day period extends beyond the original 21-day monitoring period.
    - If 5 days have passed without the development of any new symptom and a thorough skin examination reveals no skin changes, HCP could return to work with permission from their occupational health program.
  - If a new symptom develops again at any point during the 21-day monitoring period, then HCP should be excluded from work and a new 5-day isolation period should begin.

As a precaution, HCP with exposures categorized higher than 'No risk' in the above table should not donate blood, cells, tissue, breast milk, or semen while they are being monitored for symptoms. Given the morbidity and mortality among individuals awaiting organ transplantation, HCP who have been exposed, but who are asymptomatic and without evidence of mpox virus infection, could be considered for organ donation following appropriate risk-benefit considerations.

HCP with confirmed mpox infection should be excluded from work until all lesions have crusted, those crusts have separated, and a fresh layer of healthy skin has formed underneath. Ultimately, the decision on when to return to work will be made with their occupational health program, and potentially with input from public health authorities.

## Definitions

Healthcare personnel (HCP) refers to all paid and unpaid persons serving in healthcare settings who have the potential for direct or indirect exposure to patients or infectious materials, including body substances (e.g., blood, tissue, and specific body fluids); contaminated medical supplies, devices, and equipment; contaminated environmental surfaces; or contaminated air. These HCP include, but are not limited to, emergency medical service personnel, nurses, nursing assistants, physicians, technicians, therapists, phlebotomists, pharmacists, students and trainees, contractual staff not employed by the healthcare facility, and persons not directly involved in patient care, but who could be exposed to infectious agents that can be transmitted in the healthcare setting (e.g., clerical, dietary, environmental services, laundry, security, engineering and facilities management, administrative, billing, and volunteer personnel).

Healthcare settings refers to places where healthcare is delivered and includes, but is not limited to, acute care facilities, long-term acute-care facilities, inpatient rehabilitation facilities, nursing homes, home healthcare, vehicles where healthcare is delivered (e.g., mobile clinics), and outpatient facilities, such as dialysis centers, physician offices, dental offices, and others.

Active monitoring typically involves in-person visits, regular communications (e.g., phone calls, video conferences) between occupational health services, public health representatives, and the person being monitored.

Self-monitoring typically involves persons self-reporting symptoms to occupational health programs or health departments if symptoms appear.

## Previous Updates

On 8/11/2022:

- Added recommendations on how to monitor exposed patients and when they should be isolated.
- Added recommendations for assessing the risk of healthcare personnel (HCP) with mpox virus exposures, including how to monitor HCP and when to apply work restrictions.
- Updated the risk assessment table for HCP.
  - Moved the entry addressing HCP wearing all recommended PPE from the low/uncertain category in the table to the table's preamble and described why self-monitoring remains recommended for these HCP.
  - Changed intact skin contact with potentially infectious materials or surfaces from higher risk to intermediate risk.

On 7/01/2022:

- The Waste Management section was updated to provide more detail on the handling of waste and align with the Department of Transportation website on waste management for mpox patients.
- Sections on management of healthcare personnel and patients with an mpox exposure, and visitation, were also added.

## Additional Resources

- Personal Protection Equipment (PPE)
- Sequence for Donning and Removing Personal Protective Equipment [PDF – 3 pages]
- Hand Hygiene in Healthcare Settings
- Source Control [PPT – 7 MB]

Last Reviewed: October 31, 2022