



PHICS-PHICNA

Version 1

Interim Guidelines on the Prevention and Control of Monkeypox



BACKGROUND

Monkeypox (MPX) is a zoonotic disease caused by the monkeypox virus, which is a double-stranded DNA virus belonging to the *Orthopoxvirus* genus. The genus also includes the smallpox and cowpox viruses. The disease is usually present in Central and West African regions with sporadic travel-related cases reported internationally. In July 23, 2022, the World Health Organization declared the current monkeypox outbreak a “public health emergency of extraordinary concern,” --- the 7th time the WHO has made the designation in the last 15 years. The present outbreak is unique as most of the cases have been reported in countries where the virus is not normally found. Most people infected are men who identify as gay, bisexual, or men having sex with men (MSM).

A person can contract monkeypox when they come into close contact with an infected animal, infected person, or materials contaminated with the virus. The virus can enter the body through broken skin, the respiratory tract, or through mucous membranes. Transmission can occur via direct contact with monkeypox skin lesions, non-intact skin or scabs, indirect contact with clothing or linens used by an infected person, or close contact with the respiratory tract secretions of an individual with monkeypox. Monkeypox is not usually thought of as a sexually transmitted infection, and it is not yet clear if sexual bodily fluids play a role in transmission. In the current outbreak countries with reported MPX cases, transmission appears to occur primarily through close physical contact, including sexual contact (oral, vaginal and anal).

After an incubation period from 7 to 14 days (range from 5 to 21 days), patients can present with fever and skin lesions that progress from macules, to papules, to vesicles, to pustules that eventually crust over. Infections typically last 2-4 weeks before they resolve. A person is considered infectious during the symptomatic period, including the prodrome. Lesions are considered infectious until the scabs fall off and new skin can be seen.

The guiding principles of care, from the World Health Organization, recommend that patients with monkeypox should receive respectful, patient-centered care that maintains dignity, privacy, and confidentiality, while ensuring appropriate and adequate protection of health care workers, visitors, and other patients.

The purpose of this document is to provide Infection Prevention and Control guidance on the management and prevention of transmission of monkeypox in healthcare facilities.



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I. STANDARD PRECAUTIONS

A. Conduct a Point of Care Risk Assessment (PCRA)

The PCRA is a component of standard precautions which should be conducted before every patient interaction by a healthcare worker (HCW) to assess the likelihood of exposing themselves and/or others to infectious agents. This assessment informs the selection of appropriate actions and additional Personal Protective Equipment (PPE) to minimize the risk of exposure in addition to any Infection Prevention and Control recommendations already in place.

Case Definitions for Surveillance of Monkeypox:

Suspected Case	<ol style="list-style-type: none"> 1. A person of any age presenting with an unexplained acute rash AND 2. One or more of the following signs or symptoms: <ol style="list-style-type: none"> a) Headache b) Acute onset of fever ($>38.5^{\circ}\text{C}$) c) Myalgia d) Back pain e) Asthenia f) Swollen lymphadenopathy, AND 3. For which the following common causes of acute rash do not explain the clinical picture of: varicella, herpes zoster, measles, herpes simplex, bacterial skin infections, disseminated gonococcal infection, primary or secondary syphilis, chancroid, lymphogranuloma venereum, granuloma inguinale, molluscum contagiosum, allergic reaction; and any other locally relevant common causes of papular or vesicular rash. <p><i>As per WHO, it is <u>not necessary</u> to obtain negative laboratory results for listed common causes of rash illness in order to classify a case as suspected.</i></p>
Probable Case	<p>A person meeting the case definition for a suspected case AND One or more of the following:</p> <ul style="list-style-type: none"> ● Has an epidemiological link (face-to-face exposure, including healthcare workers without respiratory protection; direct physical contact with skin or skin lesions, including sexual contact; contact with contaminated materials (such as clothing, bedding or utensils) to a probable or confirmed case of monkeypox in the 21 days before symptom onset ● Reported travel history to a monkeypox endemic country in the 21 days before symptom onset ● Has had multiple sexual partners in the 21 days before symptom onset ● Is hospitalized due to the illness



Confirmed Case	A case meeting the definition of either a suspect or confirmed case and is laboratory confirmed for monkeypox by detection of unique sequences of viral DNA either by real-time polymerase chain reaction (PCR) and/or whole genome sequencing.
Close Contact	<p>A person who, in the period beginning with the onset of the source case’s first symptoms, and ending when all scabs have fallen off, has had one or more of the following exposures with a probable or confirmed case of monkeypox:</p> <ul style="list-style-type: none"> ● Face-to-face exposure (including healthcare workers without appropriate PPE) ● Direct physical contact, including sexual contact ● Contact with contaminated materials such as clothing or bedding.

B. Hand Hygiene

Hand hygiene is the single most important means of preventing the spread of infection. An alcohol-based hand rub (ABHR) is the preferred method of hand hygiene, unless hands are visibly soiled, then plain soap and water is recommended. Perform hand hygiene after the removal of gloves.

The WHO five moments of hand hygiene:

1. Before Patient Contact
2. Before Aseptic Procedures
3. After Body Fluid Exposure
4. After Patient Care
5. After Environment Contact

C. Respiratory hygiene and cough etiquette

Respiratory hygiene/cough etiquette infection prevention measures are instructed to patients with symptoms of respiratory infection.

1. Ask patients to cover their nose and mouth with a mask, tissue or elbow when coughing or sneezing.
2. Dispose used tissues and masks in the wastebasket.
3. Clean hands after contact with respiratory secretions.
4. Wear a medical mask.
5. Stay at least one-two meters (3-6 feet) away from the patient whenever possible.

D. Patient Placement – See under transmission-based precautions

E. Personal Protective Equipment (PPE) – see under transmission-based precautions

F. Patient Transport

If a patient who is clinically suspected or confirmed to have monkeypox requires transportation, the patient must not use public transportation, instead use an inpatient transportation within a facility. If for transport, the patient must:



1. Clean their hands
2. Be provided with and wear a medical mask if tolerated, and shown how to put it on so that it fully covers their nose and mouth.
3. Have their lesions covered as much as possible (e.g., with a clean patient gown, clean sheet, or dry dressing)

Ensure that the receiving department/facility and transporting personnel are informed of the need for airborne, droplet, and contact precautions prior to the patient's arrival.

G. Safe injection practices

Safe injection practices are intended to prevent transmission of infectious diseases between one patient and another, or between a patient and the HCW during preparation and administration of parenteral (e.g., intravenous or intramuscular injection) medications. The seven steps for safe injection are:

1. Ensure a clean workplace.
2. Clean hands and wear gloves.
3. Use sterile injection equipment.
4. Use each vial once for one patient.
5. Properly disinfect skin before injection.
6. Ensure sharps disposal.
7. Ensure proper waste management.

H. Cleaning and Disinfection Procedures

In general, large enveloped viruses have less intrinsic resistance to inactivation by either physical or chemical methods of disinfection compared to nonenveloped viruses and many types of bacteria or fungi. The envelope surrounding the core particle of a large virus (e.g., variola virus) contains lipids, and this biochemical property renders this and other enveloped viruses particularly sensitive to chemical disinfection.

Equipment and Environmental Surfaces

1. Dedicate patient care equipment to a single patient.
2. Use hospital-grade disinfectants that have a Drug Identification Number (DIN) for equipment and environmental cleaning and disinfection.
3. Follow standard health authority and organizational procedures and manufacturer's recommendations for concentration, contact time, safe use, and the compatibility of materials being cleaned and disinfected.
 - a. Medical equipment for reuse should either be sterilized or subjected to high-level disinfection depending on their intended use as per the Spaulding classification.
 - b. There is no need to pre-soak the instruments unless the instruments cannot be cleaned and reprocessed immediately after use. In this situation, water or saline with or without detergents are adequate soaking agents.



- Clean and disinfect all surfaces that were in contact with the patient including chairs, exam tables and washroom used by the patient. Attention should be paid to frequently touched surfaces, such as doorknobs, call bell pulls, faucet handles and wall surfaces that may have been frequently touched by the patient.

Note: *While there are no disinfectants registered for use against monkeypox, all products with Emerging Viral Pathogens claims have been tested against viruses that are more difficult to kill than monkeypox. It has been established, however, that viruses with biophysical and biochemical properties similar to those of smallpox virus and variola virus (i.e., vaccinia virus) are readily inactivated by a variety of active ingredients found in EPA-registered chemical germicides that provide **low- or intermediate-level disinfection** during general use. The use of high-level disinfectants or liquid chemical sterilants on large environmental surfaces (e.g., table tops, floors, walls) is not indicated under any circumstances.*

Chemicals Used on Environmental Surfaces for Low- or Intermediate-Level Disinfection

Chemical Disinfectant	Minimum Concentration to Achieve Inactivation
Ethyl alcohol	40%
Isopropyl alcohol	30%
Benzalkonium chloride	100 ppm
Sodium hypochlorite	200 ppm
Ortho-phenylphenol	0.12%
Iodophor	75 ppm

Decontamination of air space in rooms or vehicles

There is no evidence to support air space decontamination of rooms, facilities, or vehicles (eg. fumigation). By the time cases appear in the community following an aerosol release, the presumption is that no viable virus would be remaining in the environment from that release due to certain factors affecting viral inactivation as **temperature** (a high temperature inactivates the virus), **humidity** (increasing levels of humidity have little effect), and **exposure to ultraviolet irradiation**.

It is also unlikely that the poxvirus embedded in the fibrin material from scabs will be easily released from this material and dispersed into the air.



For discharge environmental cleaning and disinfection:

1. Healthcare workers (HCW) must wear a gown, gloves, fit-tested and seal-checked N95 respirator or equivalent and eye protection during cleaning and disinfection.
2. Use standard environmental services/housekeeping discharge cleaning and disinfection protocols (as per Additional Precautions).
3. All disposable items in the patient's room must be discarded.
4. Privacy curtains must be changed.
5. Equipment/supplies that cannot be disinfected must be discarded.

I. Handling Linen and Laundry

All used linen should be managed as potentially infectious (standard precautions) and appropriate PPE should be worn including facial protection to prevent inhalation of skin squames from linen and gowns for environmental contact.

The laundry materials should carefully be placed in a clearly labeled, leak-proof bag, sealed, or tied and placed inside an impermeable bag for transport to laundry area (double bagging is appropriate).

In ambulatory care settings, standard medical laundry facilities should be used. If not available, the items may be washed in a standard washing machine using hot water (> 60 degrees Celsius) with detergent followed by hot air drying. The use of chlorine bleach during hot-water washing can provide additional measure for safety. Due to the lack of available research with the monkeypox virus, there is uncertainty about the precise concentration of chlorine or the amount of risk reduction which might be achieved.

When handling soiled laundry, care should be taken to avoid contact with the worker's skin and clothing.

Do not shake laundry, as it disperses contaminated infectious particles into the air and onto the surrounding surfaces.

J. Containment and Disposal of Contaminated Waste

Waste should be segregated (general waste, infectious waste and sharps) and placed in appropriate bins at point of use. Biomedical waste should be contained in impervious waste-holding bags or double bagged.

Management and disposal of waste (including PPE) should be done in accordance with local regulations for infectious waste.

Ensure health workers wear appropriate PPE (e.g. gloves, gown, respirator [e.g. N95, FFP2], eye protection) during handling of waste.



II. TRANSMISSION-BASED PRECAUTIONS

- A. Contact and droplet** Precautions are used at a minimum in all suspected, probable and confirmed monkeypox cases.
- B. Airborne** precautions are initiated if an aerosol generating medical procedure (AGMP) is being performed or other airborne infections are being considered as tuberculosis (pulmonary and laryngeal involvement), measles and varicella (hickenpox).
- C. Patient Placement**

Additional precautions signage for droplet, contact, and airborne precautions can be placed outside the room.

1. For patients placed on contact and droplet precautions, the patient should be placed in a single/private room with the door closed.
2. For patients requiring additional airborne precautions, the patient should be placed in an AIIR, when available. If an AIIR is not available, the patient can be placed in a single/private room with the door closed.
3. For inpatients, a dedicated patient bathroom is required, and commode can be used if a dedicated bathroom is not available
4. Visitors should be restricted to those necessary for care or compassionate grounds. The care team in consultation with ICC makes decisions regarding visitation.

D. Personal Protective Equipment

Healthcare workers should wear the following PPE when providing care to, and before entering the room of a patient suspected or confirmed of having monkeypox.

The group decided to put a matrix for PPE used depending on activity.

Patient:

1. Patient must perform hand hygiene.
2. Patient must wear a medical mask, if tolerated (upon entry to facility and outside patient room).
3. Skin lesions must be kept covered with a gown, clothes, sheet, or bandage, except during examination.

Health care worker - Personal Protective Equipment (PPE): Health-care workers should be trained on procedures for safe donning and doffing of PPE.

1. Fit-tested and seal-checked N95 respirator or equivalent
2. Gown (long sleeve-cuffed or uncuffed, fluid resistant-level 2)
3. Gloves (12 inch preferable, may use 9 inch with thumb loop gown)
4. Eye protection (e.g., face shield or goggles)
5. Dedicated footwear that can be decontaminated.



III. MANAGEMENT OF DECEASED MONKEYPOX PATIENT

A patient who died of monkeypox is classified as category 3 risk for transmission of infection when not handled very well. In addition to standard precautions, stringent precautions are necessary.

A. Before handling dead bodies, make sure that the following immunizations are complete

- Hepatitis A
- Hepatitis B
- Tetanus

B. Hygienic measures

- The HCW should cover one's cuts or lesions with waterproof dressings.
- Do not touch your face, eyes, nose and mouth during the handling of dead bodies to prevent exposing the mucous membranes.
- Do not touch environmental surfaces unnecessarily during the handling of dead bodies, to reduce contamination of environmental surfaces.
- Do not eat, drink or smoke during handling the deceased.
- Perform hand hygiene after handling dead bodies and after removing and disposing PPE.

C. Category 3 dead bodies are handled to a minimum. The following PPE are required during body preparation

- Cap/hood
- Face shield/goggles
- N95 respirator
- Water resistant gown
- Disposable plastic apron
- Long nitrile gloves/double nitrile gloves
- Full length shoe covers/boots
- If reusable, disinfect properly. If disposable, burn after.

D. Packing of the dead body

- Do a two-layer cover of the body and use a leak proof bag. Disinfect outer packing. Body bags made of polyvinyl chloride should not be used if the body is to be cremated because of the risk of dioxin emissions

E. Transport to storage site

- No special transport is required as long as it is clean, road-worthy and compartmentalized.
- Decontaminate the vehicle and minimize contact with human remains.
- If moving to another place, check restrictions.

F. Storage site

- It should remain clean and disinfected.
- Ensure a properly ventilated facility and illuminated.



- Temperature of cold chambers should be kept at 4 °C (1-8 °C).
- Ensure safe waste disposal.
- Minimize direct contact with human remains. Aerosol generating procedures are not allowed.

G. Viewing

- The body is not removed from the body bag. No unzipping. No PPE needed when viewing.

H. Embalming

- Embalming is not allowed. If the body has been embalmed, removal from the refrigerator storage for the purpose of funeral rites up to three days may be considered.

I. Burial

- Sealed metal coffin burial is allowed.

J. Cremation

- Cremation is strongly advisable within 24 hours. Relatives can view the dust.



IV. MONKEYPOX AND SURGERY

Elective surgery should be postponed for a patient who has a suspected or confirmed monkeypox until the patient is determined to be non-infectious.

If surgery cannot be postponed, the surgery should be scheduled when a minimum number of perioperative personnel are present and at the end of the day when possible.



REFERENCES

1. WHO Clinical management and infection prevention and control for monkeypox: Interim rapid response guidance, 10 June 2022
2. <https://www.who.int/emergencies/disease-outbreak-news/item/2022-DON385>
3. <https://www.cdc.gov/poxvirus/monkeypox/clinicians/infection-control-hospital.html>
4. <https://www.cdc.gov/poxvirus/monkeypox/clinicians/monitoring.html>
5. <http://www.bccdc.ca/health-professionals/clinical-resources/monkeypox>
6. Public Health England: Monkeypox: Guidance for environmental cleaning and decontamination, October, 2018.



ANNEXES

Table 1.
Appropriate IPC Measures and Personal Protective Equipment (PPE)s per Area/Activity

Areas/ Activities	Hand Hygiene	Face Shield/ Goggles	Medical/ Surgical Mask	Respirator Mask	Gown	Gloves	Head Cover	Shoe Cover
Entrance Guard	Yes	No	Yes	No	No	No	No	No
Triaging/ Screening Area	Yes	No	Yes	No	No	No	No	No
With closed- contact, no AGPs	Yes	Yes	Yes	No	Yes	Yes	No	No*
With closed- contact, With AGPs	Yes	Yes	No	Yes	Yes	Yes	No	No*
Surgical Procedure	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes

**Dedicated shoes that can be decontaminated is recommended*