



Monkeypox

General Information

Monkeypox is a rare disease that is caused by infection with monkeypox virus. Monkeypox virus belongs to the family *Poxviridae* which also includes variola virus (the cause of smallpox), vaccinia virus (used in the smallpox vaccine), and cowpox virus. These are enveloped viruses.

Monkeypox (MPX) was first discovered in 1958 when two outbreaks of a pox-like disease occurred in colonies of monkeys kept for research, hence the name 'monkeypox.' The first human case of MPX was recorded in 1970 in the Democratic Republic of Congo during a period of intensified effort to eliminate smallpox. Since then, MPX has been reported in humans in other central and western African countries. Human MPX infections have only been documented six times outside of Africa.

The natural reservoir of MPX remains unknown. However, African rodent species are suspected to play a role in transmission. There are two distinct genetic groups (clades) of MPX virus—Central African and West African. Human infections with the Central African MPX virus clade are typically more severe compared to those with the West African virus clade and have a higher mortality. Person-to-person spread is well-documented for Central African MPX virus and limited with West African MPX.

As of May 2022, MPX is a rapidly evolving public health situation. To view the most up-to-date information and recommendations, please visit <https://www.cdc.gov/poxvirus/monkeypox/index.html> or <https://www.canada.ca/en/public-health/services/diseases/monkeypox.html>

To view the most up-to-date infection control recommendations in healthcare settings, visit <https://www.cdc.gov/poxvirus/monkeypox/clinicians/infection-control-hospital.html>,



Significance

It's not clear how people in the current 2022 clusters were exposed to monkeypox but cases include people who self-identify as men who have sex with men. Healthcare providers should be alert for patients who have rash illnesses consistent with monkeypox, regardless of whether they have travel or specific risk factors for monkeypox and regardless of gender or sexual orientation.

Symptoms

In humans, the symptoms of monkeypox are similar to but milder than the symptoms of smallpox. Monkeypox begins with fever, headache, muscle aches, and exhaustion. The main difference between symptoms of smallpox and monkeypox is that monkeypox causes lymph nodes to swell (lymphadenopathy) while smallpox does not. The incubation period (time from infection to symptoms) for monkeypox is usually 7–14 days but can range from 5–21 days.

Within 1 to 3 days (sometimes longer) after the appearance of fever, the patient develops a rash, often beginning on the face then spreading to other parts of the body.

Lesions progress through the following stages before falling off: macules, papules, vesicles, pustules, and finally scabs. The illness typically lasts for 2–4 weeks. In Africa, MPS has been shown to cause death in as many as 1 in 10 persons who contract the disease.

Transmission

Transmission of MPX virus occurs when a person comes into contact with the virus from an animal, human, or materials contaminated with the virus. The virus enters the body through broken skin (even if not visible), respiratory tract, or the mucous membranes (eyes, nose, or mouth). Human-to-human transmission is thought to occur primarily through large respiratory droplets. Respiratory droplets generally cannot travel more than a few feet, so prolonged face-to-face contact is required. Other human-to-human methods of transmission include direct contact with body fluids or lesion material, and indirect contact with lesion material, such as through contaminated clothing or linens. Animal-to-human transmission may occur by bite or scratch, bush meat preparation, direct contact with body fluids or lesion material, or indirect contact with lesion material, such as through contaminated bedding.

The reservoir host (main disease carrier) of MPX is still unknown although African rodents are suspected to play a part in transmission. The virus that causes MPX has only been recovered (isolated) twice from an animal in nature. In the first instance (1985), the virus was recovered from an apparently ill African rodent (rope squirrel) in the Equateur Region of the Democratic Republic of Congo. In the second (2012), the virus was recovered from a dead infant mangabey found in the Tai National Park, Cote d'Ivoire. At risk groups are hunters in tropical rain forests of West and Central Africa and their families, laboratory workers and other exposed directly or indirectly to rodent populations from West and Central Africa.



Treatment

Currently, there is no proven, safe treatment for MPX virus infection. For purposes of controlling a MPX outbreak in the United States, smallpox vaccine, antivirals, and vaccinia immune globulin (VIG) can be used. Learn more from CDC about [smallpox vaccine, antivirals, and VIG treatments](#).

Prevention

There are number of measures that can be taken to prevent infection with MPX virus:

- Isolate suspected and/or confirmed patients from others who could be at risk for infection. In healthcare settings, because of theoretical risk of airborne transmission of MPX, airborne precautions should be applied whenever possible.
- Practice good hand hygiene after contact with infected animals or humans. For example, washing your hands with soap and water or using an alcohol-based hand sanitizer.
- Use personal protective equipment (PPE) when caring for patients.

JYNNEOS™ (also known as Imvamune or Imvanex) is an attenuated live virus vaccine which has been approved by the U.S. Food and Drug Administration for the prevention of monkeypox. The Advisory Committee on Immunization Practices (ACIP) is currently evaluating JYNNEOS™ for the protection of people at risk of occupational exposure to orthopoxviruses such as smallpox and monkeypox in a pre-event setting.

Healthcare Infection Control Recommendations

A combination of Standard, Contact and Droplet precautions should be used for any patient with fever and vesicular/pustular rash. Airborne precautions should be applied if there is a strong suspicion of MPX. Confirmed patients should be placed in an airborne infection isolation room, if available. Masking of the patient (if tolerated) is also recommended in the presence of others. Additionally:

- Personal protective equipment should be donned before entering the patient's room and used for all patient contact. All PPE should be disposed of prior to leaving the isolation room where the patient is admitted.
 - Per CDC, optimal personal protective measures include:
 - Use of disposable gown and gloves for patient contact.
 - Use of NIOSH-certified N95 (or comparable) filtering disposable respirator that has been fit-tested for the healthcare worker using it, especially for extended contact in the inpatient setting.
 - Visit [The National Personal Protective Technology Laboratory \(NPPTL\)](#) for frequently asked questions and answers about wearing respirators versus surgical masks.
 - Use of eye protection (e.g., face shields or goggles), as recommended under standard precautions, if medical procedures may lead to splashing or spraying of a patient's body fluids.
- Proper hand hygiene after all contact with an infected patient and/or their environment during care.



- Correct containment and disposal of contaminated waste (e.g., dressings) in accordance with facility-specific guidelines for infectious waste or local regulations pertaining to household waste.
- Care when handling soiled laundry (e.g., bedding, towels, personal clothing) to avoid contact with lesion material.
 - Soiled laundry should never be shaken or handled in manner that may disperse infectious particles.
- Care when handling used patient-care equipment in a manner that prevents contamination of skin and clothing.
 - Ensure that used equipment has been cleaned and reprocessed appropriately.
- Ensure procedures are in place for cleaning and disinfecting environmental surfaces in the patient care environment.

Monitoring MPX Exposures

Contacts of animals or people confirmed to have monkeypox should be monitored for symptoms for 21 days after their last exposure. CDC exposure guidance for clinicians is available at <https://www.cdc.gov/poxvirus/monkeypox/clinicians/monitoring.html>.

Guidelines and Recommendations/Resources

Additional information is available at:

<https://www.cdc.gov/poxvirus/monkeypox/index.html>

<https://www.who.int/news-room/fact-sheets/detail/monkeypox>

<https://www.canada.ca/en/public-health/services/diseases/monkeypox.html>

Control of Communicable Diseases Manual 20th Ed., Heymann, David. Pgs 565 to 568.

Cleaning and Disinfection of Environmental Surfaces

Diligent environmental cleaning and disinfection and safe handling of potentially contaminated materials is important, especially if there are any body fluids.

There are no specific disinfectant efficacy claims for MPX virus available to date.

The EPA recommends use of a registered disinfectant that has emerging viral pathogen (EVP) language, and a claim against non-enveloped viruses.

At this time the CDC recommends any EPA-registered hospital disinfectant currently used by healthcare facilities for environmental sanitation may be used. Follow the manufacturer's recommendations for concentration, contact time, and care in handling.



The tables below highlight the products meeting these criteria for the U.S. and Canada:

U.S.

Product Name	EPA Registration Number	Registration Name	EVP Contact Time	Hospital Disinfectant?
Alpha HP® MSDC	70627-62	Phato 1:64 Disinfectant Cleaner	5 Min	Yes
Avert Sporidical Disinfectant Cleaner	70627-72	Avert Sporidical Disinfectant Cleaner	1 Min	Yes
Avert Sporidical Disinfectant Cleaner Wipes	70627-75	Avert Sporidical Disinfectant Cleaner Wipes	1 Min	Yes
Crew NA	6836-73	LONZA FORMULATION S-38	10 Min	Yes
Crew Restroom FS/Concentrate	1839-167	BTC 885 NEUTRAL DISINFECTANT CLEANER-256	10 Min	Yes
Envy Foaming Disinfectant Cleaner	70627-35	Envy Foaming Disinfectant Cleaner	3 Min	Yes
Envy Liquid Disinfectant Cleaner	70627-33	Envy Liquid Disinfectant Cleaner	5 Min	Yes
Expose 256	70627-6	Phenolic Disinfectant HG		Yes
Morning Mist	1839-169	BTC 885 NEUTRAL DISINFECTANT CLEANER-64	10 Min	Yes
Oxivir® 1 Wipes	70627-77	Oxivir® 1 Wipes	1 Min	Yes
Oxivir® HC Wipes	70627-80	Oxivir® HC Wipes	1 Min	Yes
Oxivir® Tb Wipes	70627-60	Oxivir® Tb Wipes	1 Min	Yes
Oxivir® 1	70627-74	Oxivir® 1	1 Min	Yes
Oxivir® Five 16	70627-58	Oxy-Team Disinfectant Cleaner	5 Min	Yes
Oxivir® HC Disinfectant Cleaner	70627-79	Oxivir® HC Disinfectant Cleaner	1 Min	Yes
Oxivir® Tb	70627-56	Oxivir® Tb	1 Min	Yes
Restorox	74559-9	Oxy-1 RTU	1 Min	Yes
Triad III	70627-15	Blue Chip	10 Min	Yes
Virex® Plus	6836-349	LONZAGARD RCS-256 PLUS	5 Min	Yes
Virex® Tb	70627-2	DC-100		Yes
Virex® II / 256	70627-24	Virex™ II / 256	10 Min	Yes
Wide Range II	6836-75	LONZA FORMULATION S-21	10 Min	Yes

References:

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References: <https://www.cdc.gov/poxvirus/monkeypox/clinicians/infection-control-hospital.html>
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