Mpox Fact Sheet and Considerations for HIV Programs

Mpox is a disease caused by the mpox virus (MPXV). The virus belongs to the same family as the virus that causes smallpox and shares similar characteristics but usually presents with milder symptoms. Although mpox is endemic in countries within the rainforests of West and Central Africa and is related to contact with animals that serve as viral reservoirs, it has recently been identified in substantial numbers of people outside these regions. The two clades—branches on the phylogenetic tree—of the virus are the Congo Basin clade I and the West African clade II. Clade I MPXV is more transmissible and causes a higher proportion of severe infections than clade II MPXV.

Since January 1, 2022, cases of mpox have been reported to the World Health Organization (WHO) from 121 of its member states across all six WHO regions.[1] In the multi-country outbreak that began in 2022, cases were primarily found in historically non-endemic countries and locations with no direct travel links to the endemic region. Instead, most of the cases identified were from sexual health clinics in communities of gay, bisexual, and other men who have sex with men (MSM), especially those with multiple partners and extended sexual networks. Therefore, on July 23, 2022, WHO declared the multi-country mpox outbreak a public health emergency of international concern (PHEIC)—the highest public health alert.

From January 2022 through May, 2023, WHO reported 87,377 laboratory-confirmed mpox cases and 140 deaths from 111 reporting countries worldwide. This global outbreak was caused by clade II MPXV. The outbreak subsided significantly in late 2022 and early 2023; on May 19, 2023, WHO lifted the PHEIC.

However, mpox cases continue to be reported from non-endemic countries worldwide. The increase of clade I cases observed during 2023 in the Democratic Republic of the Congo (DRC) and neighboring countries that had not reported mpox before (Burundi, Kenya, Rwanda, and Uganda) confirms the importance of increasing human-to-human transmission, including sexual transmission.

[1] 2022-24 mpox (monkeypox) outbreak: global trends (shinyapps.io)

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In DRC alone, more than 15,000 cases clinically compatible with mpox and over 500 deaths (a 3.6% fatality rate) were reported from January through August 2024, already exceeding the number of cases observed in 2023.[2] Clade I cases have been reported from every DRC province, including areas where clade I MPXV does not normally occur, such as the capital city of Kinshasa. Genomic analysis has demonstrated a new mpox clade Ib that is different from previously circulating strains in the DRC. More than half of cases (51.9%) in the country were among women, and 29% were among sex workers, suggesting a potential role for sexual transmission.[3] Suspected mpox among sex workers raises concerns about the potential for much broader human-to-human transmission (e.g., through household transmission and care of patients and those who die from mpox) in large urban centers.[4]

WHO released the Strategic Framework for Enhancing Prevention and Control of Mpox (2024–2027)[5] in May 2024, and on August 14, 2024, determined that the upsurge of mpox in the DRC and a growing number of countries in Africa constituted a PHEIC under the International Health Regulations (IHR) of 2005.[6]

The IHR Emergency Committee considers the upsurge of mpox "extraordinary" for many reasons. These include the increase in mpox clade I disease occurrence in the DRC; the emergence of the new MPXV clade Ib; the human-to-human transmission; and the association of clade I with a more severe disease. Also raising concerns are the diverse, complex, dynamic, and rapidly evolving epidemiology of mpox in the WHO Africa Region; the severity of symptoms in children and immunocompromised individuals, including people living with uncontrolled HIV or advanced HIV disease; the incompleteness and uncertainties of available epidemiological data; the vaccine's effectiveness; and the risk of additional mutations of MPXV and their subsequent spread in settings with limited capacity to implement control measures.[7]

On August 26, 2024, WHO launched a global Strategic Preparedness and Response Plan[8] to stop outbreaks of human-to-human transmission of mpox through coordinated global, regional, and national efforts.[9]

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[2] First meeting of the International Health Regulations (2005) Emergency Committee regarding the upsurge of mpox 2024 (who.int)
[3] Sustained human outbreak of new MPXV clade 1 lineage in eastern Democratic Republic of Congo (nature.com)
[4] The time is now (again) for containment and elimination of mpox in Democratic Republic of Congo (nih.gov)
[5] Strategic framework for enhancing prevention and control of mpox- 2024-2027 (who.int)
[6] WHO Director-General declares mpox outbreak a public health emergency of international concern (who.int)
[7] First meeting of the International Health Regulations (2005) Emergency Committee regarding the upsurge of mpox 2024 (who.int)
[8] Mpox global strategic preparedness and response plan (who.int)
[9] Global strategic preparedness and response plan launched by WHO to contain mpox outbreak (who.int)

While information on the latest outbreak is changing rapidly, this fact sheet provides a general overview of the disease, its mode of transmission, those who are considered at risk, and the available preventive measures. It also highlights specific issues related to key populations and people living with HIV (PLHIV), children, and adults.

Transmission

Mpox can be transmitted from an infected animal—mostly mammals, including monkeys, anteaters, hedgehogs, prairie dogs, squirrels, and shrews—to humans (zoonotic) or from an infected human to another human.

Human-to-human transmission occurs primarily through:

- Direct contact with the rash, scabs, or body fluids
- Intimate skin-to-skin contact, including kissing, touching, cuddling, and oral, anal, and/or vaginal sex with an infected person. It is still unclear whether the virus is transmitted through semen or vaginal fluid. However, a recent study reported that mpox virus DNA was detected in seminal fluid in 29 of 32 samples tested.
- Prolonged face-to-face contact with an infected person through respiratory droplets. This puts health care workers and family members of infected persons at risk.
- Contact with contaminated materials such as clothing, bedding, sex toys, towels, or objects such as eating utensils or dishes
- Vertical (mother-to-child) transmission, which occurs across the placenta or in utero, rather than by contact during birth, with no indication for mandatory c-sections
- Animal-to-human transmission during contact with blood, bodily fluids, or cutaneous or mucosal lesions of infected animals

Signs and Symptoms

Mpox has an incubation period (time from infection to onset of symptoms) of approximately three to 20 days, with a median of seven days; a person is not contagious during this time. Early clinical manifestations include fever, intense headache, swelling of lymph nodes, back pain, muscle aches, and lack of energy. Typically, painful skin lesions develop one to three days after onset of fever. These rashes commonly present as blisters on the face, hands, feet, eyes, mouth, or genitals. They often progress from macules (lesions with a flat base) to papules (slightly raised firm lesions) to vesicles (lesions filled with clear fluid) to pustules (lesions filled with yellowish fluid) to scabs or crusts that dry up and fall off. A person is contagious from onset of rash until crusted lesions fall off.

In the current outbreak, some atypical or uncommon manifestations have been reported. These include:

- Few lesions or only a single lesion
- Absence of skin lesions, but with anal pain and bleeding
- Lesions restricted to the genital or perineal/perianal area that do not spread further
- Rash appearing at different (asynchronous) stages of development
- Lesions appearing before the onset of fever, malaise, and other constitutional symptoms

People and Animals Are at Risk

Anyone who has contact with an infected person, animal, or contaminated object is at risk; however, in the current outbreak, most cases were identified from sexual health clinics in communities of gay, bisexual, and other MSM and their extended sexual networks, as well as among sex workers, children, and adolescents.

Key Populations' Risk for Mpox

Although most cases reported so far during the current outbreak have been among MSM, the risk of mpox is not limited to MSM or members of key populations in general. Anyone who has close contact with someone who is infectious can acquire mpox, including children living in the same household. Mpox rashes can resemble some sexually transmitted infections (STIs), including herpes and syphilis, which may explain why these cases are being picked up at sexual health clinics, particularly those accessed by the MSM community. Due to the prevalence of concurrent STIs at time of mpox diagnosis, providers should consider looking for other STIs in patients with mpox.

Mpox in adults and children

Excluding data on MSM, overall, 79% of mpox cases with available data were among men and boys; the median age was 33 years, and households were the most common setting for likely exposure (the demographics of cases affected with clade Ib are not represented). While in the last six months of the outbreak, of all cases with available information, 99% were in men and boys, with 95% identifying as men who have sex with men.[10] In the WHO Africa Region, clade Ib MPXV has been spreading rapidly among adults through close physical contact, including sexual contact identified within networks of sex workers and their clients. As the virus spreads further, the affected groups are changing, with the virus also taking hold in households and other settings. In areas or congregate settings with high population density as well as in high-

[10] 2022-24 mpox (monkeypox) outbreak: global trends (shinyapps.io)

risk sexual networks, transmission could lead to explosive outbreaks, further compounded by population movements or insecurity. Conversely, the virus can also spread silently along commercial travel routes because in some cases symptoms may be less severe, access to health services in transit may be limited, and concerns about stigma may cause people who are affected to avoid seeking care.[11]

Mpox is also a significant health concern affecting children and adolescents globally, particularly in the 2024 outbreak in DRC. From January 1 through August 19, 2024, an estimated 8,772 children contracted the disease in the DRC, or more than half of the country's 15,664 total reported cases. Almost 85% of the 548 people who have died (an estimated 463) were children.[12] In Burundi, children younger than five make up 28.9% of the cases, followed by those ages 11 to 20 years (20.4%).[13]

The initial transmission of MPXV in the newly affected countries in East Africa and beyond has been linked to travel to or from the DRC, but the expansion of the outbreak in Burundi suggests that in some settings, there may already be sustained community transmission.[14]

Mpox and HIV

Whether PLHIV are at greater risk of acquiring mpox or experiencing more severe cases has not been confirmed. However, PLHIV who are not virally suppressed may be at increased risk for confluent rash, secondary bacterial infection of lesions, and prolonged illness from mpox. Mpox in PLHIV may present as an atypical rash—disseminated or confluent or partially confluent—instead of discrete lesions. Additionally, PLHIV with poorly controlled HIV are more likely to have prolonged illness. What is clear is that anyone exposed to the mpox virus through direct physical contact (skin to skin, kissing, or cuddling), respiratory droplets, or contact with contaminated materials may become infected. Individuals with severe symptoms, including those newly diagnosed with HIV or those with HIV who are not yet virally suppressed, could be managed with an antiviral medicine (such as tecovirimat [TPOXX]) or vaccinia immune globulin. PLHIV who contract mpox, are viremic, and off antiretroviral therapy (ART) should begin or re-initiate ART.

Based on the WHO case profile as of July 31, 2024, more than 96% of cases with available data were in men and boys, with a median age of 34 years. The most commonly reported form of transmission was via sexual encounters. Among those with known data on sexual behavior, 85.8% identified as men who have sex with men. Among those with known HIV status, almost 52% were people living with HIV. Two-thirds of cases likely resulted from exposure in a party setting with sexual contacts.

[11] Mpox – African Region (who.int)
[12] Children at significant risk from surging mpox outbreak in the Democratic Republic of Congo – UNICEF (unicef.org)
[13] Mpox – African Region (who.int)
[14] Mpox – African Region (who.int)

Data from a recently published study of 528 mpox infections (in North America, Mexico, Argentina, Europe, Australia, and Israel) showed that 98% of people with mpox infection were gay or bisexual men; 41% were PLHIV with median CD4 680 cells per cubic millimeter of blood; 96% were on ART; and 95% had a viral load less than 50 copies/mL. Importantly, three new cases of HIV were identified in people who were diagnosed with mpox, and 57% of the non-PLHIV in this study were on pre-exposure prophylaxis (PrEP). The clinical presentation was similar among PLHIV and non-PLHIV in this study, although the population had high ART uptake, high viral load suppression, and high baseline CD4. There were no deaths, but 70 people (13%) were hospitalized, mostly for pain control and secondary bacterial infections. Data from the study also showed concomitant STIs were reported in 29% of people with mpox, with gonorrhea, chlamydia, and syphilis found in 8%, 5%, and 9%, respectively, of those who underwent testing.

A 2024 meta-analysis found that people who had both HIV and mpox had a higher hospitalization rate and higher mortality rates than those who only had mpox; meta-regression analysis showed that CD4 levels can significantly predict the risk of hospitalization and death.[15] These findings highlight the importance of early diagnosis, prompt treatment initiation, and effective management strategies for people with HIV and mpox co-infection.

Providers should consider offering HIV testing to those who present with mpox, given that a proportion of reported cases were among gay or bisexual men living with HIV. Those who test HIV negative should then be referred or linked to HIV PrEP services.

How People Living with HIV Can Reduce Exposure

Everyone should avoid exposure to the mpox virus. Protective measures for all, irrespective of HIV status, include:

- Avoid direct contact with rashes, sores, or scabs on a person with mpox, including during sex and other intimate contact.
- Avoid contact with objects, fabrics (clothing, bedding, or towels), and surfaces used by someone with mpox.
- Avoid contact with respiratory secretions through kissing and face-to-face contact with a person with mpox.

PLHIV should also continue to adhere to antiretroviral therapy.

[15] The effect of HIV and mpox co-infection on clinical outcomes: Systematic review and meta-analysis - PubMed (nih.gov)

Mpox Treatment or Vaccine Effect on HIV Treatment

Most of the commonly used HIV medications are considered safe for people on mpox treatment. Nevertheless, clients should always inform their health care provider of any other medicines they take. There are no interactions between dolutegravir-based ART, including tenofovir, lamivudine, and dolutegravir (TLD) and TPOXX. However, TPOXX reduces serum levels of rilpivirine, doravirine, and maraviroc. Efavirenz induces uridine 5'-diphospho-glucuronosyltransferase (UGT) enzymes and therefore could decrease TPOXX exposure.

Mpox and Efficacy of HIV Pre-Exposure Prophylaxis

PrEP medications remain effective and should not be stopped even if clients are exposed and infected with mpox.

Mpox Testing

When the clinical presentation suggests mpox, tissue samples (the roof or fluid from vesicles, pustules, and dry crusts) should be sent to a reference laboratory for polymerase chain reaction (PCR) testing. Two swabs should be collected from each lesion, preferably from different locations on the body or from lesions that differ in appearance (e.g., a pair of swabs for each lesion with a total of 2–3 lesions), to ensure specimen availability for clade-specific testing. Such testing helps distinguish between cases that are part of the ongoing clade II mpox global outbreak and those associated with the clade I outbreak.[16]

Treatments Available

Mpox is usually self-limiting but may be severe in some individuals, such as children, pregnant women, or people with immune suppression due to other health conditions. There is no definitive treatment for mpox. However, antivirals such as TPOXX may be recommended for the management of severe cases, such as in those with a weakened immune system. Based on an initial analysis of data from a randomized, placebo-controlled trial in August 2024, TPOXX did not reduce the duration of mpox lesions among children and adults with clade I mpox in the DRC.[17] The international STOMP trial is examining the safety and efficacy of tecovirimat against clade II mpox.[18]

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[16] Health Alert Network (HAN) - 00513 | Mpox Caused by Human-to-Human Transmission of Monkeypox Virus in the Democratic Republic of the Congo with Spread to Neighboring Countries (cdc.gov)
[17] The antiviral tecovirimat is safe but did not improve clade I mpox resolution in Democratic Republic of the Congo | National Institutes of Health (nih.gov)
[18] U.S. Clinical Trial Evaluating Antiviral for Monkeypox Begins | NIAID: National Institute of Allergy and Infectious Diseases (nih.gov)

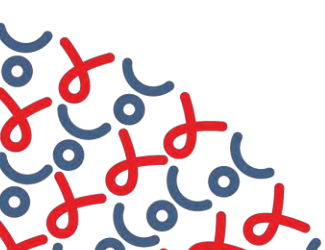
Prevention Strategies

Mpox prevention is grounded in risk communication and community engagement and reducing exposure to the virus.

- Risk communication and community engagement:
  - Engage communities most affected by mpox in the design and implementation of a risk communication strategy. These communities include gay, bisexual, and other MSM, children and their caregivers, health care workers in public and community settings such as drop-in centers and sexual health clinics, civil society organizations, and the general public. Community engagement will help address misinformation and myths about risk factors, preventive measures, and symptoms. Specific measures are needed to prevent and address stigma and discrimination against affected people and communities.
- General steps to minimize exposure:
  - Avoid close, skin-to-skin contact with people with an infected rash.
    - Do not touch the rash or scabs of an infected person.
    - Do not kiss, hug, cuddle, or have sex with an infected person.
    - Avoid sharing eating utensils or cups with an infected person.
  - Do not handle or touch the bedding, towels, or clothing of an infected person.
  - Wash your hands often with soap and water or use an alcohol-based hand sanitizer.
- If you have symptoms of mpox:
  - See a health care provider.
  - Isolate at home if you have mild or uncomplicated symptoms.
  - If you have a rash or other symptoms, isolate or stay away from people or pets you live with, when possible.

Reducing Human-to-Human Transmission

Human-to-human spread of mpox can be controlled by public health measures, including early case finding, diagnosis and care, isolation, contact tracing, and use of vaccines. Prioritize disease surveillance and prompt case finding to contain outbreaks. Close contact with an infected person constitutes a significant risk factor. Family members and health care workers, including those handling specimens from infected persons, are at substantive risk of getting infected; therefore, institute strict adherence to standard infection prevention and control measures among exposed individuals.



Reducing Transmission Risk at Social Gatherings: Raves, Parties, Clubs, and Festivals

- Assess the chance of physical contact during any event.
- Prioritize events where attendees will be fully clothed with minimal chance of skin-to-skin contact.
- Events where attendees are minimally clothed are risky. Avoid direct contact with anyone with rashes and other skin lesions.
- Sex parties and any event with possibilities of intimate or anonymous multiple sexual contacts should be considered to have the potential to be super spreader events.

Reducing Risk of Zoonotic Transmission

To prevent animal-to-human transmission, avoid unprotected contact with wild animals—including monkeys, anteaters, hedgehogs, prairie dogs, squirrels, and shrews—and pets, especially those who are sick or dead and could transmit the virus. Contact with bedding or other materials touched by sick or dead pets should also be avoided. In addition, properly cook all meat products before eating them.

Travel

If traveling—especially to countries that have ongoing outbreaks, such as DRC or neighboring countries (e.g., the Republic of Congo, Central African Republic, Rwanda, Burundi, Uganda, Zambia, Angola, Tanzania, and South Sudan)—avoid close contact with people with signs and symptoms of mpox. Also avoid contact with wild animals (e.g., alive or dead rats, squirrels, monkeys, and apes) and with contaminated materials used by people who are sick (e.g., clothing, bedding, or materials used in health care settings) or that came into contact with wild animals. Avoid eating or preparing meat from wild animals (bushmeat) or using products (e.g., creams, lotions, powders) derived from wild animals.

Those eligible for mpox vaccination should receive two doses of the vaccine at least 28 days apart. If a new, unexplained skin rash appears during or after travel, seek medical care immediately and isolate. There is no vaccination recommendation for travelers who do not meet current vaccine eligibility.[19]

[19] Health Alert Network (HAN) - 00513 | Mpox Caused by Human-to-Human Transmission of Monkeypox Virus in the Democratic Republic of the Congo with Spread to Neighboring Countries (cdc.gov)

The U.S. Centers for Disease Control and Prevention (CDC) recommends maintaining a heightened index of suspicion for mpox in patients who have recently been in DRC or to any country sharing a border with DRC and present with signs and symptoms consistent with mpox, such as rash on hands, feet, chest, face, mouth, genitals; fever; chills; swollen lymph nodes; fatigue; myalgia; headache; sore throat; nasal congestion; and cough.[20]

Vaccines Available

Vaccines are an effective public health tool. For example, there is evidence that the smallpox vaccine could provide up to 85% cross-protection against mpox because they both belong to the *Orthopoxvirus* genus. Some countries have maintained strategic supplies of older smallpox vaccines from the Smallpox Eradication Program (SEP) that concluded in 1980. These first-generation vaccines held in national reserves are not recommended for mpox at this time because they do not meet current safety and manufacturing standards.

The U.S. Food and Drug Administration (FDA) has approved JYNNEOS and ACAM2000 vaccines for the prevention of mpox. Only JYNNEOS is FDA-approved for the prevention of mpox in people 18 years and older. Local and systemic side effects of vaccination with currently licensed vaccines are generally mild. According to the CDC, vaccination can be administered before or after recent exposure to mpox.

The following strategies are currently recommended:

- Mpox Vaccine Pre-Exposure Prophylaxis (PrEP): For individuals at high risk of exposure, such as health care workers, including laboratory workers who handle infected specimens
- Mpox Vaccine Post-Exposure Prophylaxis (PEP): For individuals already exposed to the mpox virus
- Outbreak Response Mpox Vaccine Post-Exposure Prophylaxis (PEP)++ [also known as “Expanded PEP,” or “PEP plus-plus”]: For people with certain risk factors who are more likely to have been recently exposed to mpox, with the aim of reaching them for post-exposure prophylaxis even if they have not had documented exposure to someone with confirmed mpox

Even following vaccination, individuals should continue to adhere to measures that reduce their exposure to the virus, such as avoiding close, skin-to-skin, or intimate contact with an infected person.

[20] Health Alert Network (HAN) - 00513 | Mpox Caused by Human-to-Human Transmission of Monkeypox Virus in the Democratic Republic of the Congo with Spread to Neighboring Countries (cdc.gov)

Vaccine Access

As countries continue to report more cases of mpox, the need to expand access to vaccines will increase. Currently, vaccine supply is extremely limited; most countries, especially middle- and low-income countries, do not have access to these vaccines. On August 7, 2024, WHO triggered the Emergency Use Listing (EUL) assessment process to expedite the availability of as yet unlicensed mpox vaccines that are needed to respond to the growing outbreak in the DRC and neighboring countries.[21]

Given the increasing burden of mpox in endemic regions, there is a critical need for both regional and international partners to support vaccination campaigns and ensure vaccine accessibility and equity considerations. From a logistical perspective, rapid vaccine deployment strategies must consider the acquisition of vaccine doses, the transportation to key mpox circulation hotspots, cold-chain storage, and community engagement/knowledge mobilization strategies to ensure uptake among key populations at highest risk of severe disease or infection.

Modeling suggested that vaccination of 80% of children younger than 15 in DRC would result in the greatest reductions in mpox circulation. However, given the increasing identification of sexual transmission-related cases within DRC, vaccination modeling strategies will need to factor in the burden of these mpox cases in DRC to address the effects of targeted vaccination and therapeutic campaigns on key populations.[22]

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[22] The time is now (again) for mpox containment and elimination in Democratic Republic of the Congo (nih.gov)

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