AfricaCDC
Centres for Disease Control and Prevention

Safeguarding Africa's Health

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Mpox Technical Factsheet

Key facts

- Mpox is a rare, viral zoonotic disease that is caused by the mpox virus with two distinct clades: Clade I and Clade II.
- It occurs primarily in tropical rainforest areas of central and west Africa.
- Mpox can spread in humans through close contact, often skin-to-skin contact including intimate or sexual contact, with an infected person or animal, or with material contaminated with the virus such as clothing, bedding, towels, etc.
- Signs and symptoms of mpox include fever, rash (macules, papules, vesicles, pustules, umbilication before crusting and desquamating over a period of 2 to 3 weeks) and swollen lymph nodes.
- Mpox is usually mild, and most people recover within a few weeks if detected and treated early.
- Diagnostic testing to confirm cases involves using real-time or conventional polymerase chain reaction.
- There are vaccines authorized for use to prevent mpox virus infections.
- Currently there are no specific treatments for mpox. However, palliative care is available.

What is mpox?

Mpox is a zoonotic disease caused by a double-stranded DNA virus that belongs to the Orthopoxvirus genus of the Poxviridae family. The disease presents with symptoms similar to smallpox but with a lesser severity. It was first discovered in 1958 when two outbreaks of a pox-like disease occurred in colonies of monkeys kept for research, hence the name 'mpox. The first human case of mpox was recorded in 1970 in the Democratic Republic of the Congo (DRC), which has subsequently spread to other central and western African countries. There are two known clades of the virus: clade I and clade II. Clade I, which is most frequently reported from countries in Central Africa, tends to be more severe than clade II. Cameroon is the only country known to harbour both clades.

Distribution in Africa

Since the beginning of this year and as of 26 August 2024, a total of 22,863 cases (19,222 suspected; 3,641 Confirmed) and 622 deaths, Average CFR 2.06% (95%CI: 0-4.26%) of mpox have been reported from 13 Africa Union (AU) Member States (MS): Burundi, Cameroon, Central African Republic, Congo Republic, Côte d'Ivoire, Democratic Republic of the Congo, Gabon, Liberia, Kenya, Nigeria, Rwanda, South Africa and Uganda (refer to map on page 2).

Transmission

Transmission between animals to humans occurs from direct contact with infected blood, bodily fluids, lesions, or infected fomites. Person-person transmission mostly is through close contact with respiratory droplets (amplified by sustained face-to-face contact, skin lesions, infected fomites, and mother-to-child transmission via the placenta or at birth through close contact. Sexual transmission of mpox has been reported especially among commercial sex-workers.

Animal reservoir host

Although the transmission cycle of mpox is not clearly understood nor has the primary reservoir host of the virus been identified, the African rope squirrel (Funisciurus spp.), among a wide range of mammal species, including monkeys, anteaters, hedgehogs, prairie dogs, squirrels and shrews, is considered a potential reservoir host of the mpox virus in endemic regions in Africa.

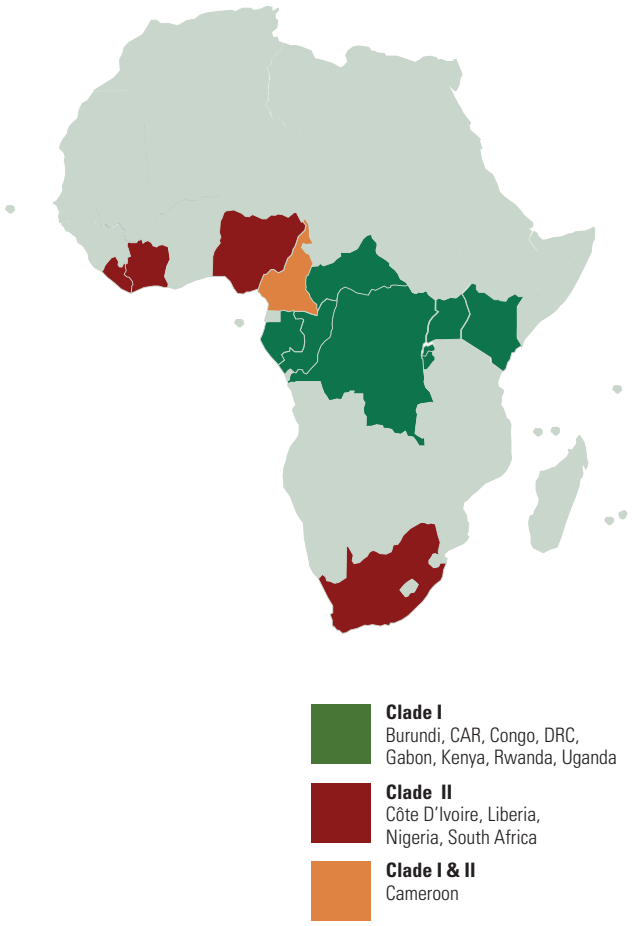

Figure 1. *Map of confirmed mpox cases reported from African Union Member States, 1 January 2024 to 25 August 2024*

Clinical features

Symptoms in humans include fever, headache, muscle ache, chills, exhaustion, and swollen lymph nodes. Rash develops within 1 -3 days of infection lasting 2-4 weeks. The disease is self-limiting, and the case fatality rate is between 3-6%. Immunosuppressed individuals are thought to be more vulnerable to severe disease.

Signs in animals are not clearly understood but could include lethargy, lack of appetite, coughing, nasal and/or eye secretions, bloating, fever, and pimple- or blister-like skin rash and crust. A veterinarian should promptly be notified when such symptoms are noticed in animals. Additionally, the index of suspicion should be high if an animal becomes sick within 21 days of contact with a probable or confirmed mpox case and should be reported immediately.

Surveillance and contact tracing

Surveillance remains a key strategy for early detection of infectious diseases, including mpox, and provides a basis on which to respond effectively to an outbreak. Mpox surveillance strategies should include early detection of cases, tracing of all close contacts of confirmed cases, and protecting high-risk populations to prevent further person-to-person transmission. Below are several different types of surveillance systems that can be used for mpox.

1. Event–based surveillance

Event-based surveillance (EBS) can be implemented using a One Health approach to strengthen a country's early warning and response capacity. The various modalities are explained in detail within the Africa CDC EBS Framework. For mpox, it will be important to strengthen the community and facility-based components and utilize a One Health approach in its implementation. Human and animal signal definitions can be developed and incorporated into an existing EBS system to help identify mpox-related events.

Example of signal definitions

Human	Animal
Any person with a rash, with or without fever or headache or body pain.	Any animal or cluster of animals presenting with a rash.
Illness in a healthcare worker after caring for a patient with a similar illness.	
Rapid increase of mpox cases based on the clinician's judgment or available data.	
Two or more cases of people presenting with similar severe signs/symptoms from the same. community, school, or workplace within one week.	

2. Cross-border surveillance

If mpox has not been previously detected within your country, enhanced screening at all points of entry (PoE) could potentially help identify travel-related cases. Screening should include detecting symptoms of mpox such as rash and fever and strengthening reporting and data-sharing mechanisms across borders.

3. Indicator- based surveillance

Where feasible, integrating mpox surveillance into existing indicator-based surveillance, especially at the health facility, could quickly help identify new cases of mpox.

World Health Organisation recommended case definitions [4]

Suspected case: A person who is a contact of a probable or confirmed mpox case in the 21 days before the onset of signs or symptoms, and who presents with any of the following: acute onset of fever (>38.5°C), headache, myalgia (muscle pain/body aches), back pain, profound weakness, or fatigue

OR person presenting with an unexplained acute skin rash, mucosal lesions or lymphadenopathy (swollen lymph nodes).

AND

for which the following common causes of acute rash or skin lesions do not fully explain the clinical picture: varicella zoster, herpes zoster, measles, herpes simplex, bacterial skin infections, disseminated gonococcus infection, primary or secondary syphilis, chancroid, lymphogranuloma venereum, granuloma inguinale, molluscum contagiosum, allergic reaction (e.g., to plants); and any other locally relevant common causes of papular or vesicular rash.

Probable case: A person presenting with an unexplained acute skin rash, mucosal lesions or lymphadenopathy (swollen lymph nodes). The skin rash may include single or multiple lesions in the ano-genital region or elsewhere on the body. Mucosal lesions may include single or multiple oral, conjunctival, urethral, penile, vaginal, or ano rectal lesions. Ano-rectal lesions can also manifest as ano-rectal inflammation (proctitis), pain and/or bleeding.

AND one or more of the following:

- has an epidemiological linka to a probable or confirmed case of mpox in the 21 days before symptom onset.
- has had multiple and/or casual sexual partners in the 21 days before symptom onset.
- has a positive test result for orthopoxviral infection (e.g., OPXV-specific PCR without MPXV-specific PCR or sequencing) b Confirmed case: A person with laboratory confirmed MPXV infection by detection of unique sequences of viral DNA by real time polymerase chain reaction (PCR)c and/or sequencing.

Confirmed case: A laboratory confirmed case detected using real time PCR and/or sequencing.

4. Contact Tracing

For any suspected, probable, or confirmed case of mpox, contact tracing should be initiated immediately. This is especially important to not only reduce the transmission of the disease to other individuals but also to ensure that any close contacts of confirmed cases receive post-exposure prophylaxis (PEP). Following exposures, all contacts should be rapidly identified and followed up for 21 days from the last day of contact with suspected, probable or confirmed cases to quickly detect any symptoms that may occur. This could be done through self-monitoring or by health personnel.

Laboratory diagnosis

The Africa CDC recommends strict adherence to infection prevention and control guidelines during specimen collection, transportation, and management in the laboratory.

- **Mpox specimens for testing:** Lesion specimens are preferred sample types for testing, this include lesion fluid, lesion tissue, lesion crust or skin biopsy. Throat or nasopharyngeal swabs are also suitable specimens for patients with prodromal symptoms who present with no lesions, e.g., a contact who develops symptoms. It is advisable to collect samples from more than one lesion where possible and swabbed vigorously to ensure the collection of adequate samples for testing, however excessive sample collection should be discouraged to minimise risk to healthcare workers or laboratory personnel. Swabs can be transported dry in capped tubes or placed in viral transport media (VTM).
- **Collection, packaging and transport of mpox specimens:** The Africa CDC recommends strict adherence to infection prevention and control guidelines during sample collection, handling, packaging, transportation, and testing. National and international regulations for packaging and transport of infectious substances should be strictly followed. Samples taken from persons with suspected mpox should be safely handled by trained staff working in suitably equipped laboratories using a proper IPC measures. Collected specimens should be stored at 2-8°C within an hour after collection and immediately transported to the testing laboratory. It is worthy of note that correct collection, handling, and storage of specimens during transportation is essential for accurate diagnosis. Specimen collection, handling and transportation of specimens should comply with applicable national and/or international bio-safety and bio-security guidelines and regulations.
- **Specimens storage:** Specimens collected for mpox virus investigation should be refrigerated 2– 8°C within an hour after collection (for up to 7 days) or at -20°C or lower for longer storage (up to 1 month). If transport exceeds 7 days for the sample to be tested, specimens should be stored at -20°C or lower. Longer term specimen storage (>60 days from collection) is recommended at -70°C or lower.

1. https://journals.plos.org/plosntds/article?id=10.1371/journal.pntd.0005809
2. https://www.who.int/publications/i/item/WHO-MPX-laboratory-2022.1
3. https://www.cdc.gov/poxvirus/mpox/if-sick/notifying-close-contacts.html
4. WHO mpox standard case definitions 2024

- **Laboratory testing:** Mpox testing should be performed in appropriately equipped laboratories by staff trained in the relevant technical and safety procedures. The recommended method for the confirmation of mpox infection is based on nucleic acid amplification testing (NAAT) for detection of unique sequences of viral DNA. PCR can be used alone, or in combination with sequencing to detect clades and subclades. Virus isolation is not recommended as a routine diagnostic procedure and should only be performed in laboratories with appropriate experience and containment facilities.

  Mpox testing can sometimes yield a negative result in the laboratory even when the disease is present due to several factors:

  1. Timing of Sample Collection: The accuracy of Mpox testing depends significantly on when the sample is collected. If the sample is taken too early or too late in the course of the infection, the viral load might be too low to be detected.
  2. Type of Sample Collected: The type of sample collected (e.g., from a lesion, blood, or other bodily fluids) can affect the test results. Lesion swabs are typically the most reliable, but if a different type of sample is used, it may not contain enough viral material for detection.
  3. Quality of the Sample: Poor sample collection techniques can lead to inadequate samples, resulting in a false negative. This might include improper handling, storage, or contamination of the sample.
  4. Test Sensitivity and Specificity: No test is perfect, and some Mpox tests may have lower sensitivity, meaning they might not detect very low levels of the virus. This can result in a false negative if the viral load in the sample is below the test's detection threshold.
  5. Viral Variability: Different strains or mutations of the Mpox virus might not be as easily detected by certain tests, especially if the tests were designed for a specific strain.
  6. Host Immune Response: In some cases, an individual's immune system might clear the virus or suppress its replication to levels undetectable by laboratory tests, even though the disease was present.

- **Laboratory reagents:** Reagents should be stored according to manufacturer recommendations.
- **Disposal of waste:** Specimens collected for mpox virus investigation should be refrigerated 2– 8°C within an hour after collection (for up to 7 days) or at -20°C or lower for longer storage (up to 1 month). If transport exceeds 7 days for the sample to be tested, specimens should be stored at -20°C or lower. Longer term specimen storage (>60 days from collection) is recommended at -70°C or lower.
- **Result interpretation:** Confirmation of mpox infection should consider clinical and epidemiological information. Positive detection is confirmed by the detection of mpox via PCR and/or sequencing.

Infection Prevention and Control (IPC) for mpox

Infection prevention and control (IPC) measures should be implemented using the One Health approach to break the chain of transmission of mpox both in community and healthcare settings.

IPC in healthcare settings

Standard precautions are essential when managing all patients, but for suspected or confirmed mpox cases, additional precautions are required until the infection is ruled out:

- **Isolation Precautions:** Patients with suspected or confirmed mpox should be placed in a single-patient room with a dedicated bathroom. Isolation should continue until all lesions have crusted, separated, and a fresh layer of healthy skin has formed. During transport within the facility, the patient should wear a mask and have exposed skin lesions covered.
- **Personal Protective Equipment (PPE):** Healthcare personnel should wear appropriate PPE, including gowns, gloves, eye protection, and a N95 respirator. These precautions should be especially stringent during aerosol-generating procedures such as intubation.
- **Environmental Disinfection:** Standard cleaning and disinfection procedures should be followed, using EPA-registered hospital-grade disinfectants that are effective against viral pathogens (see List Q: https://www.epa.gov/pesticide-registration/disinfectants-emerging-viral-pathogens-evps-list-q). Avoid dry cleaning methods that may resuspend infectious particles; instead, use wet cleaning methods.
- **Waste Management:** All waste, including PPE and patient dressings, should be treated as regulated medical waste and disposed of according to local and/or international guidelines.

IPC in community

The following guidelines should be adopted in community settings to minimize the risk of transmission:

- **Isolation and Movement:** Persons with suspected or confirmed mpox should remain isolated at home, leaving only to seek medical care. They should avoid contact with wild or domestic animals to prevent zoonotic transmission.
- **Hygiene Practices:** Emphasize rigorous hand hygiene, including handwashing with soap and water or using alcohol-based hand sanitizers, especially after contact with potentially contaminated surfaces or materials.
- **Lesion Management:** Skin lesions should be covered as much as possible (e.g., wearing long sleeves and trousers) to minimize the risk of contact transmission. Disposable gloves should be worn when touching lesions, and gloves should be disposed of after each us.
- **Environmental Cleaning:** Laundry, dishes, and surfaces contaminated by the patient should be cleaned with hot water, detergent, and disinfectants

like a 0.5% sodium hypochlorite solution. Wet cleaning methods should be preferred to avoid aerosolizing viral particles.

IPC for veterinarians

Veterinarians should assume that all animals may be susceptible to mpox and should use appropriate IPC measures when treating animals with suspected infection:

- **PPE:** Full PPE, including gowns, gloves, and eye protection, should be worn when examining animals suspected of having mpox.
- **Hygiene and Cleaning:** Veterinarians should practice thorough hand hygiene after handling animals or contaminated materials and ensure proper cleaning and decontamination of all surfaces and equipment.

Treatment and care considerations

Isolation of patients

- Suspected or confirmed mpox cases with lesions should be isolated in a room separate from other patients.
- Confirmed cases should be segregated from suspected cases.
- The isolation room should have signage posted at the door indicating that patient(s) is (are) under contact and droplet precautions.
- Precautions should be taken by healthcare workers to minimize exposure to surrounding persons by restricting access to the isolation room except when necessary.
- Isolated patients with extensive lesions and exudates should be covered gently with sheets or light gowns
- Affected individuals should avoid close contact with immunocompromised persons (e.g., diabetics, HIV/AIDS patients, cancer patients etc.) until all crusts have fallen off.
- Isolation should be continued until all the lesions have resolved.
- Following the discontinuation of isolation precautions, 1% choline solution should be continuously used for decontamination.

Treatment

- Many people with mpox virus infection have a mild self-limiting disease.
- There are no specific treatments for mpox virus infection currently.
- Treatment is recommended for people who are severely ill; patients with compromised immune systems like HIV/AIDS patients and people on long-term steroid therapy.
- Treatment is also recommended for children, particularly patients younger than 8 years of age; pregnant or breastfeeding women; and people with atopic dermatitis and exfoliative skin conditions.

Mental health considerations

Mental health psychological support services (clinical psychotherapy) should form part of treatment for isolated patients (prior to isolation and during isolation)

- Prompt identification and assessment for anxiety and depressive symptoms in the context of mpox should be done. Initiation of basic psychosocial support strategies and first-line interventions for the management of new anxiety and depressive symptoms should be taken.
- Psychosocial support strategies should be the first-line interventions for the management of sleep problems in the context of acute stress.

Considerations for special populations people living with HIV

- It is currently unknown if HIV increases the risk of infection with mpox. However, people living with HIV (PLHIV) who are not virally suppressed may be at increased risk of severe morbidity, prolonged illness, and increased mortality.
- There is no counter-indication for people on pre-exposure prophylaxis who have mpox.
- PLHIV should follow the same recommendations provided in this document to protect themselves from mpox.
- They should also ensure to be adherent to their antiretroviral drug treatment and present for regular follow-ups at their local clinics for continued care.

Vaccination

- Vaccination is a known means of prevention against the mpox. Africa CDC recommends postexposure prophylaxis (PEP) with the approved vaccine for all close contacts of a confirmed case.
- Close contacts include those living in the same household or those who had sex with the case including kissing, hugging and cuddling, sharing of utensils, towels, bedding, etc, or came in contact with or touched the rashes on the body of the case.
- High-risk populations such as Health Care Workers, immunocompromised individuals and sex workers should also be prioritised for vaccination as mass vaccination is not currently recommended for mpox.
- Two vaccines are available for preventing mpox infection: JYNNEOS (Imvamune or Imvanex) and ACAM2000.
- A vaccine recipient is considered fully vaccinated two weeks after receiving the second dose.
- The available vaccine does not cause mpox, smallpox, or any significant adverse reaction.
- Indications for vaccine include known and presumed contacts of a case of mpox and individuals who have had multiple sexual partners (including men having sex with men) in the last 14 days.

Social behavioral change communication

- Structural factors including the physical, social, cultural, organizational, community, economic, legal, or policy features of the environment encourage or inhibit people from engaging in healthy behaviors.
- Stigma and discrimination can impede the response to mpox, creating barriers for priority population groups to seek timely medical advice, testing and treatment services .
- Multipronged strategies are needed to build trust and skills and influence behaviors, such as training, supervision and constructive feedback.
- Communication- Messaging must be informed by behavioral science and exemplars from social learning.

Africa CDC's responses to the current mpox outbreak

- Africa CDC has officially declared the ongoing Mpox outbreak a **Public Health Emergency of Continental Security (PHECS),** marking the first such declaration by the agency since its inception in 2017. Declaration on this Link.
- The declaration will enable the mobilization of resources across affected countries, unlocking essential funding, strengthening Risk Communication and Community Engagement (RCCE), boosting surveillance and laboratory testing efforts, and enhancing human resource capacities to respond effectively to Mpox through a One Health approach. Africa CDC continues to provide technical support to African Union Member States affected by mpox in order to interrupt the chain of transmission of the disease across the continent. The following actions have been conducted since the start of the outbreak:
    - Established a continental incidence management team to coordinate the continental mpox response efforts.
    - Conducted various high-level meetings with leaders of member states and partners.
    - Supported Member States in developing mpox contingency and response plans. This support is for both countries that have reported outbreaks and also those that are yet to report mpox outbreaks. This action tends to improve internal capacities within Member States to prepare and respond to the mpox outbreaks as they occur.
    - Africa CDC is also ensuring that sufficient quality assured testing for mpox diagnosis and genomics surveillance are conducted by Member States while ensuring improved research activities through accelerated studies to obtain sufficient information to fill the scientific knowledge gaps on mpox.
    - Africa CDC supports the establishment and maintenance of supply chains for shared resources including IPC, lab supplies and equipment, and medical countermeasures with member states.
    - Africa CDC is also strengthening event-based and community surveillance to improve the detection and reporting of mpox signals and cases in Member States.
    - Technical support is being provided to Member States to enhance thorough outbreak investigations, improve surveillance to detect more cases and monitor contacts.
    - Laboratory strengthening to improve capacities for diagnosis and laboratory confirmation of mpox including genomic sequencing is provided to Member States.
    - Training and retraining of Health Care Workers (Healthcare Workers (HCWs)) on IPC and case management is a priority support provided to Member States by Africa CDC.
    - Supporting Member States through the deployment of the trained and equipped Africa Volunteer's Health Corps (AVoHC) to respond to the outbreaks.
    - Bolstering the health systems to effectively manage the outbreak through trainings on Incident Management System (IMS) and overall coordination of response using the One Health approach.
    - Africa CDC is in the process of procuring/ receiving donations of mpox vaccines for African Union Member States.
    - Africa CDC is working towards coordinating Research and Development efforts of the continent to generate evidence that support mpox response.