

## What is Mpox?

Mpox (previously named monkeypox) is caused by infection with monkeypox virus, a member of the genus *Orthopoxvirus* in the family *Poxviridae*. There are currently more than 80 poxviruses known to science and these poxviruses have been isolated from different species of birds, insects, reptiles, marsupials and mammals. Poxviruses that may cause human disease include the smallpox (or variola) virus and molluscum

## Where does mpox occur?

Mpox was first discovered in 1958 in Denmark when two outbreaks of a pox-like disease occurred in colonies of monkeys kept for research, hence the name 'monkeypox.' The World Health Organization (WHO) renamed monkeypox to mpox in 2022, following extensive public comment and in order to reduce stigma associated with the unfortunate naming. The first human case of mpox was recorded in 1970 in the Democratic Republic of Congo. Mpox has been historically reported from several countries from West and Central Africa (WCA). Mpox infections in humans have historically been noted in these countries, albeit at a relatively low level.

Prior to the 1970s, it was suspected that infections were masked by smallpox (it appears clinically similar and may be misdiagnosed) and/or cases were low due to smallpox vaccine induced cross-immunity.

An increase of human mpox cases have been noted in recent years from Nigeria. In the DRC, there has been an increase in human mpox cases from the 1990s ( $\pm 511$ ) through 2000-2019 ( $>28,000$ ), with nearly 20 000 cases reported during 2023 to May 2024. Human cases of

contagiosum virus. The former was eradicated by 1980 by mass-vaccination programs. Human disease can also be caused by infection with other poxviruses such as orf, cowpox and Tanapox viruses. These viruses are harboured by different animal species and may spillover to the human population but are not highly transmissible from person-to-person.

mpox have been reported outside of countries where the virus has historically been reported including in the USA in 2003 in an outbreak related to the exotic pet trade (with exportation of animals from Ghana). Prior to 2022, the former outbreak was the only major mpox outbreak in a Western country that did not feature community transmission. Countries such as the USA, Israel, Singapore and the United Kingdom have reported. travel-associated cases from Nigeria and nosocomial transmission in healthcare workers during 2018-2021.

A multi-country outbreak was reported in May 2022, with subsequently more than 90,000 confirmed cases from 117 countries. Since the peak of this epidemic in August 2022, the number of mpox cases caused by the global outbreak strain (Clade IIb) has declined, although low levels of transmission continue.

In mid-August 2024, the WHO and Africa CDC declared the mpox outbreak in Africa a public health emergency of international concern (PHEIC) and public health emergency of continental security (PHECs), respectively. Clade I, previously known as the Congo Basin clade, has

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1. Amended from the National Institute for Communicable diseases (NICD). Division of the National Health Laboratory Service. Website [www.nicd.ac.za](http://www.nicd.ac.za) accessed on 18 September 2024

2. World Health Organization (WHO), Clinical management and infection prevention and control for monkeypox: Interim rapid response guidance (June 2022), <https://www.who.int/publications/i/item/WHO-MPX-Clinical-and-IPC-2022>.

two sub-clades, Ia and Ib. Clade Ib denotes the new strain of the disease discovered in September 2023 that has taken hold in the DRC and neighbouring countries. The mode of transmission and the high-risk population groups distinguish the deadlier Clade I strain from Clade II. In addition to sexual contact, Clade Ia is transmitted through household contact and contact with contaminated animals. The new variant, Clade Ib, seems to spread more easily through routine close contact, as evidenced by the number of children affected by the outbreak.

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### How is the virus transmitted?

In countries where the natural animal host of the virus are found, the monkeypox virus may be spread from handling infected bush meat, an animal bite or scratch, body fluids and contaminated objects. The monkeypox virus has been found in many animal species: rope squirrels, tree squirrels, Gambian rats, striped mice, dormice and primates. In countries where zoonotic transmission is not reported, persons are most likely to be exposed to mpox through contact with an individual that is already sick with mpox. Cases of mpox spreading through animals, outside of the endemic areas, are very rare, but may involve the exotic pet trade or potentially through contact with infected animal-derived

### What are the signs and symptoms of mpox?

The incubation period (time from infection to symptoms) for mpox is on average 7–14 days but can range from 5–21 days. Initial symptoms include fever, headache, muscle aches, backache, chills and exhaustion. Within 1–3 days of onset of disease, blister-like lesions will develop on the face, the extremities including soles of the feet and palms of the hands. The lesions may however occur on other parts of the body. The number of

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***No cases of Clade I have been detected in South Africa to date***

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This outbreak is happening concurrently with the multi-national outbreak that started in 2022. Clade II, previously known as the West African clade, has two sub-clades, IIa and IIb. Clade IIb is the strain that caused the 2022 global outbreak and is primarily transmitted through sex. In this outbreak, the most at-risk group was identified as men who have sex with men. South Africa reported 5 cases in 2022 and 24 cases in 2024, as of August 2024. No cases of Clade I have been detected in South Africa to date.

materials such as skins and leather. Person-to-person transmission involves close contact with an infected person or materials that have been contaminated by an infected person.

In the context of multi-country outbreaks, a notable mode of transmission has been through sexual contact in the community of men having sex with men (MSM). A risk factor identified from early epidemiological investigations is having multiple sexual partners. It is also believed that several large social gatherings may have served as super-spreading events aiding in the international spread of the virus.

lesions will vary and lesions tend to appear similar in appearance and size (i.e. will be at the same stage of development). The lesions progress through several stages before scabbing over and resolving. Most human cases resolve within 2–4 weeks of onset without side-effects. The case fatality rate in more recent outbreaks have been on average 1%.

## When is a mpox infected person no longer contagious?

An infected person is contagious from the onset of the rash/lesions through the scab stage. Once all scabs have fallen off, a person is no longer

contagious. It is currently not known how long viable virus may persist for example in semen.

## How is mpox diagnosed?

Mpox is diagnosed by a healthcare worker on consideration of the clinical presentation of the patient. The nature of the rash would be the most telling sign. However, the healthcare worker will

consider possible exposures for the case taking into consideration the low likelihood of contracting mpox. Many other diseases, such as chickenpox, may cause similar rashes and are more common.

## Differential diagnosis

Other rash illnesses, some commonly found, include chickenpox (caused by varicella virus), hand-foot-and-mouth disease, measles, bacterial and fungal skin infections, syphilis, molluscum contagiosum and drug-related rashes.

Samples can be tested at the National Institute for Communicable Diseases (NICD) or private pathology services (contact your preferred service for more information) to confirm the diagnosis.

Lymphadenopathy in the prodromal phase of illness distinguishes mpox from chickenpox.

## How is mpox treated?

Treatment is supportive, as with most viral infections. Most human cases of mpox do not require any specific treatment and the disease resolves on its own. There are anti-viral drugs that a clinician may consider using for treatment of more severe cases of mpox on a case-by-case basis. One such anti-viral is tecovirimat that is used for people with severe mpox disease or those with weakened immune systems.

Tecovirimat can reduce the amount of virus in the body and may help to treat severe mpox disease involving the eyes, mouth, throat, genitals and anus. It is currently unknown whether tecovirimat works or how well it works to treat mpox. Researchers are now testing the safety and effectiveness of tecovirimat for all people with mpox.

## How can mpox be prevented?

Mpox outbreaks can be controlled by diagnosis and laboratory confirmation of cases. This allows for contact tracing and monitoring to enable the pro-active recognition of any other linked cases of mpox. It is recommended that confirmed cases of mpox isolate to ensure that risk of transmission is minimized. Isolation may be through self-isolation at home if circumstances allow, but cases may be isolated in hospital if so required. The World Health Organisation (WHO) does not recommend mass- vaccination as a measure to contain the outbreak. Nonetheless, the United States and certain European nations are providing smallpox

vaccination to high-risk households and identified close contacts up to 14 days after exposure and gay and bisexual men with multiple sex partners (Imvanex, Bavarian Nordic, Kvistgrd, Denmark). Although being endemic in West and Central Africa, Africa has just lately received donations of mpox vaccine doses to be administered to medical personnel and severely impacted regions.

## Vaccines for mpox

The smallpox virus (virus that caused the now eradicated smallpox disease in humans) and mpox virus are closely related. Smallpox vaccination which was provided through mass-vaccination programs during the smallpox eradication program provides some level of cross-immunity to mpox. Residual immunity from smallpox vaccination in the population aged 40 (in South Africa smallpox vaccination was abandoned during 1980) and above may also contribute to preventing cases or lead to milder infections. There is about 85 % protection offered by the smallpox vaccine (which was used to eradicate the human pox virus disease known as smallpox) and mpox. Currently, the WHO does not recommend mass-vaccination as a measure to contain outbreaks.

There are currently two mpox vaccines on the market: the ACAM2000 vaccine and the Jynneos vaccine. Vaccines can be administered either

before or after a person is exposed to the virus, but for maximum protection, vaccination prior to exposure is advised. A virus that has been altered in YNNEOS®, a modified vaccinia Ankara strain vaccination (MVA-BN), cannot replicate in the human body. Bavarian Nordic is the manufacturer of JYNNEOS®. For those 18 years of age and older, it is administered as 2 doses, at least 28 days apart. The live-attenuated smallpox vaccination ACAM2000™ also protects against mpox. Emergent BioSolutions produces ACAM2000™; its administration demands specialized training and resources. ACAM2000™ is not recommended for diagnosed cases who have a severe immunodeficiency, are pregnant or nursing, have a heart condition or have risk factors for a heart condition, have active eczema, or are younger than 12 months old. Based on its safety profile and ease of administration, JYNNEOS® is the chosen vaccine for usage.

## What is the risk of contracting mpox in South Africa?

The implications for South Africa are that the risk of importation of mpox is a reality. The WHO has not recommended any travel restrictions and is working with the affected countries to limit transmission and determine sources of exposure.

South Africa reported 5 cases in 2022 and 24 cases in 2024, as of August 2024. These cases have been associated with Clade IIb, the global outbreak strain. The mpox risk classification for South Africa is moderate.

## Management of uncomplicated cases of mpox

The WHO recommends that patients with suspected or confirmed mpox with mild, uncomplicated disease and not at high risk for complications can be isolated at home, for the duration of the infectious period, as long as a home assessment determines infection, prevention and control (IPC) conditions are fulfilled at home setting.

Clinicians managing a mild, uncomplicated case of mpox will have to consider the following on a case-by- case basis when deciding on whether home isolation is appropriate:

- Clinical severity, presence of complications, care needs, risk factors for severe disease

(i.e. children, pregnant women or immunosuppressed) and access to referral for hospitalisation if condition deteriorates.

- Patients isolating at home should require minimal to no assistance from a caregiver who is in good health.
- Patients living with vulnerable people who are at risk for severe disease and where IPC requirements and adequate isolation cannot be guaranteed may require hospital admission for isolation.
- Vulnerable people who should be identified in the home of a patient at risk for severe disease if infected with mpox include young children, pregnant women and persons who are

immunosuppressed, such as those living with unmanaged HIV.

- As a precaution patients with chronic skin conditions (e.g. atopic dermatitis) or acute skin condition (i.e. burns) should also be considered to be at higher risk for complications.

Assessment of the home should be conducted, with the following considerations:

- A health worker should assess whether the home of the patient is suitable for the isolation and provision of care of the patient with mpox, including whether the patient and/or other

household members have the capacity and required provisions to adhere to home isolation.

- Limited or no access to water, sanitation or resources for personal hygiene and limited ability to maintain isolation and IPC measures pose risks for household and community members.
- The patient and designated person that is facilitating self-care should be counselled regarding the risks of transmission. It is preferred that the designated person be previously vaccinated against smallpox or mpox and not be a vulnerable person at risk for severe disease.

### Mpox preparedness today

#### An update for Physicians, Accident and Emergency Practitioners and Laboratorians

In mid-August 2024, the WHO and Africa CDC declared the mpox outbreak in Africa a public health emergency of international concern (PHEIC) and public health emergency of continental security (PHECs), respectively. Clade I, previously known as the Congo Basin clade, has two sub-clades, Ia and Ib. Clade Ib denotes the new strain of the disease discovered in September 2023 that has spread in the DRC and neighbouring countries. The mode of transmission and the high-risk populations distinguish the deadlier Clade I strain from Clade II. In addition to sexual contact, Clade Ia is transmitted through household contact and contact with contaminated animals. The new variant, Clade Ib, seems to spread more easily through routine close contact, as evidenced by the number of children affected by the outbreak.

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### Transmission

Monkeypox virus can be transmitted to a person upon contact with the virus from an animal, human, or materials contaminated with the virus. Person-to-person transmission of the virus is through close contact (i.e. prolonged face to face contact, kissing). Entry of the virus is through

multi-national outbreak that started in 2022. Clade II, previously known as the West African clade, has two sub-clades, IIa and IIb. Clade IIb is the strain that caused the 2022 global outbreak and is primarily transmitted through sex. In this outbreak, the most at-risk group was identified as men who have sex with men. South Africa reported 5 cases in 2022 and 24 cases in 2024, as of August 2024. No cases of Clade I have been detected in South Africa to date.

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Source: Division of Public Health Surveillance and Response and Centre for Emerging Zoonotic and Parasitic Diseases (NICD) 24-hour hotline number: 0800 212 552

broken skin, respiratory tract, or the mucous membranes (eyes, nose, or mouth). A person is contagious from the onset of the rash/lesions through to the scab stage. Once all scabs have fallen off, a person is no longer contagious.

## Response to a suspected case:

1. Establish that the patient meets the signs and symptoms for suspected mpox.
2. Observe appropriate infection control procedures (i.e. isolation with universal precautions). As soon as the decision is made to proceed based on a presumptive diagnosis of mpox, measures should be applied to minimize exposure of HCWs, other patients and other close contacts.
3. Clinical management is supportive and will vary from case to case, but typically cases are self-resolving. Tecovirimat is an anti-viral agent that may be used for people with severe mpox

disease.

4. Inform the NICD hotline (0800 212 552) and notify the local and provincial communicable disease control co-ordinator (CDCC) telephonically so that additional case finding and extensive contact tracing can be conducted.
5. Notify the case telephonically and through the NMC App Reporting ([nmc.nicd.ac.za](https://nmc.nicd.ac.za)) – complete the Case Investigation Form (CIF-MPOX). Submit forms also to provincial CDCC.
6. Submit samples to NICD for laboratory testing.

## Sample collection and testing for mpox:

Laboratory guidance on submission of samples for mpox testing. Please refer to lab guide Mpox <https://www.nicd.ac.za/diseases-a-z-index/mpox-2/>

Compiled by deNovo Medica for the Lunch Chat, 8 October 2024.

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Published by

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Reg: 2012/216456/07

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