NATIONAL INSTITUTE FOR COMMUNICABLE DISEASES
Division of the National Health Laboratory Service

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CENTRE FOR EMERGING ZOONOTIC AND PARASITIC DISEASES
OUTBREAK RESPONSE UNIT, DIVISION OF PUBLIC HEALTH SURVEILLANCE AND RESPONSE

Mpox

Frequently Asked Questions

1. 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 contagiosum virus. The former was eradicated by 1980 by mass-vaccination programs. In addition, human disease can be caused by infection with other poxviruses such as orf, cowpox and Tanapox viruses. These viruses are harbored by different animal species and may spillover to the human population (i.e. they are zoonotic viruses) when there is sufficient exposure. Orf, cowpox and Tanapox viruses are not highly transmissible from person-to-person.

2. 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) has 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). This distribution of mpox virus is attributed to the fact that it is naturally harboured by animals that are found in this part of Africa. It is believed that rodents, most likely certain species of squirrels found in the deep forested areas of this region of Africa, may be the natural host of the virus. Mpox infections in humans have historically been noted in these countries albeit at a relatively low level. Prior to the 1970s, it is 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 but also other locations in WCA. In the DRC, there has been an increase in human mpox cases from the 1990s (nd=511) through 2000-2019 (>28,000), with nearly 20 000 cases reported during 2023 to May 2024. Human cases of 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 reported travel-associated cases ex Nigeria and nosocomial transmission in health care workers during 2018-2021. An outbreak have been reported since May 2022 with more than 90 000 confirmed from 117 countries. Since the peak of this epidemic in August 2022, the number of mpox cases have declined although low level of transmission continues.

Between June 2022 and May 2024, a total of seven cases of mpox have been reported in South Africa. These cases were unlinked and reported in males between the ages of 28 and 42.

3. 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. Certain species of rodents are suspected of being the main disease carrier or host (reservoir host) of mpox, although this has not been proven yet. 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 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 the multi-country outbreak 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.

4. 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 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 progresses 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%. There are many other causes of rash illness, many of which are fairly common, that may be managed or treated in different ways. It is important to diagnose these diseases accurately in order for appropriate management to ensue.

5. 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.

6. How is mpox diagnosed?

Mpox is diagnosed by a healthcare worker in 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 with the consideration that the likelihood of contracting mpox is very low. Many other diseases, such as chickenpox, may cause similar rashes and are more common. Samples can be tested at the National Institute for Communicable Diseases or private pathology services (contact your preferred service for more information) to confirm a diagnosis of mpox. For more information on laboratory testing of mpox, refer to the NICD website.

7. How is mpox treated?

Treatment is supportive, as with most viral infections. Most human cases of mpox virus infection 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 includes 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.

8. 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 Organization did 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 endemic in West and Central Africa, Africa has only recently been donated mpox vaccine doses which will be for health care workers and higly affected areas. 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.

9. Vaccines for mpox

The smallpox virus (virus that caused the now eradicated smallpox disease in humans) and mpox virus is 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 more mild 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 did not recommend mass-vaccination as a measure to contain the 2022 outbreak. 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 the 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 ACAM2000TM also protects against mpox. Emergent BioSolutions produces ACAM2000TM. ACAM2000TM administration demands specialized training and resources. ACAM2000TM is not recommended for those 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.

10. 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 as lessons learnt from COVID-19 have illustrated that outbreaks in another part of the world can fast become a global concern. The WHO has not recommended any travel restrictions and are working with the affected countries to limit transmission and determine sources of exposure.

The risk of mpox to the South African population remains low, given the low transmissibility of the virus. Nevertheless, South Africa has diagnosed five cases from the multi-country outbreak as of 14 March 2023, all men between 28 and 41 years of age, three of which with recent travel from Switserland, Spain and Netherlands.

11. Where can I find more information?

Laboratory results and queries:

Dr Jacqueline Weyer 011 386 6376 jacquelinew@nicd.ac.za

Dr Naazneen Moolla 011 386 6338 naazneenm@nicd.ac.za

Clinical queries (Healthcare workers only):

NICD Doctor on Call 0800 212 552

Outbreak related queries:

NICD Outbreak Team outbreak@nicd.ac.za

Media/Press queries:

Mr Vuyo Sabani VuyoS@nioh.ac.za

Other:

Guidelines and other useful resources are available on the NICD website: www.nicd.ac.za/mpox

Centers for Disease Control and Prevention, Atlanta, United States of America. https://www.cdc.gov/poxvirus/mpox/index.html

World Health Organization. http://www.who.int/mediacentre/factsheets/fs161/en/