

Preventing Mpox Importation: Strengthening Public Health Surveillance in Pakistan

Faiz Ahmed Raza

Principal Research Officer, National Institute of Health, HRI TB Research Centre, King Edward Medical University, Lahore, Pakistan
Email: faiz.raza@gmail.com

Mpox is an infectious disease caused by the Monkeypox virus. The virus was discovered in Denmark (1958) in monkeys from where it got its name, Monkeypox virus. Mpox virus is a double-stranded DNA virus, classified under the genus *Orthopoxvirus* in the *Poxviridae* family¹. It has two genetic Clades (Clade I and Clade II), having different clinical presentations, modes of transmission, and geographical distribution. Clade I (with sub-clade Ia and Ib) is known as a Central African Clade and is associated with more severe disease manifestations and higher mortality rates (up to 10%). Clade I is primarily transmitted by rodents with low human-to-human transmission. On the contrary, Clade II (with sub-clades IIa and IIb) is common in the Western African region and is generally associated with milder clinical manifestations as compared to Clade I. Clade IIa is zoonotic, while Clade IIb is spreading globally through a human-to-human transmission cycle.^{2,3}

The incubation period of MPXV ranges from 1 to 21 days after exposure. Commonly, the patients experience any rash (91%), fever (49.7%), any lymphadenopathy (26%), headache (24.6%), muscle aches (24.1%), fatigue (14.7%), sore throat (13.0%), chills (6.5%), and other less common symptoms (<5%).⁴ Some people develop a rash first followed by the development of other symptoms while others develop other symptoms first (fever, headache, muscle aches, etc.) followed by the development of a rash. Rash initiates as flat sores, which progress to liquid-filled blisters. As the rash subsides, the lesions dry up and the crust falls off. The number of lesions can vary significantly, ranging from a single lesion to over a hundred. The lesions could develop in any part of the body including, palms of hands, soles of feet, face, mouth, throat, groin area, genital area, and anal area⁵.

A case of Mpox keeps on transmitting the virus from the onset of symptoms till the healing of skin lesions (2-4 weeks).³ Generally, Mpox cases have a mild clinical presentation but certain groups including young children, pregnant women and immune-compromised

persons might develop severe disease⁴.

One of the serious challenges in the diagnosis and control of the disease is the occurrence of asymptomatic cases (i.e. those having no signs of disease) in the community.^{6,7} Although there is a scarcity of information available regarding the prevalence of such cases in the community, they can play a significant role in the silent transmission of the disease.

The human-to-human transmission of the Mpox virus occurs through close physical or sexual contact. The transmission of the virus through respiratory droplets alone is considered to be low.^{3,8} The virus can also be transmitted through fomites, needle stick injuries, or tattooing.⁵ The Mpox virus is a teratogen and thus can be transmitted from mother to fetus increasing the odds of miscarriage, intrauterine fetal mortality, and vertical transmission⁹. The virus also tends to be transmitted through breastfeeding, most probably through skin-to-skin contact rather than through breast milk.¹⁰ However, more research will be needed to determine the transmission exclusively through breast milk or skin-to-skin contact. Furthermore, in the absence of compelling evidence, it will be best to take precautionary measures to prevent transmission of the virus to children.

Currently, no specific treatment is available but it mainly focuses on treating the symptoms and managing complications. An antiviral medicine tecovirimat if available can be administered to prevent complications in high-risk patients. In the absence of specific treatment modalities, prevention remains the cornerstone to control infectious diseases with epidemic potential (a single case of Mpox labelled as an outbreak). WHO recommends, three different vaccines including MVA-BN, LC16m8, and OrthopoxVac.¹¹

On 14 August 2024, the World Health Organization (WHO) once again announced the ongoing Mpox outbreak in the Democratic Republic of Congo (DRC) as a Public Health Emergency of International Concern (PHEIC). The first Mpox PHEIC was declared in May 2022 after the emergence of cases from non-endemic countries outside the African continent particularly involving Europe and

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North America.^{11, 12} Starting from 1 January 2022 to 30 November 2024, a total of 117,663 laboratory-confirmed cases with 263 deaths have been reported from 127 countries of the world.⁴

In Pakistan, a total of eight Mpox cases have been reported in 2024 with the most recent case reported on 20 December.¹³ So far Pakistan has imported 17 Mpox cases (nine in 2023 and eight in 2024) from the Kingdom of Saudi Arabia and UAE, with one mortality. The sequencing of Mpox samples by the National Institute of Health, Islamabad detected less severe Clade IIb and lineage A.2.1 in all cases.¹²

Thus far, no case of human-to-human local transmission has been detected from Pakistan. However, in the absence of effective border screening programs, lack of surveillance, non-existent nationwide diagnostic facilities, a shortage of trained workforce, a weak case reporting system, and stigma associated with the disease, it cannot be confidently claimed that no Mpox cases exist in the country. Moreover, the presence of asymptomatic cases and similarities with other diseases further make detection of the cases challenging.

The global cases are declining over time due to increased awareness and vaccination efforts, localized outbreaks, asymptomatic transmission, and limited surveillance remain critical barriers to eradication. Therefore, there is a need to strengthen public health surveillance, diagnostic services, trained manpower, and public health systems to prevent future outbreaks. A collective response from international and national bodies is required to stop the spread of the disease and to reduce associated morbidity and mortality.

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