SHORT REPORT

# Navigating the Monkeypox Outbreak: A Call for Vigilance and Preparedness

AKHTER RASOOL*, PORTEEN KANNAN†, JAN MOHD MUNEEB‡, IRTIQA MANZOOR#

## ABSTRACT

Mpox (earlier known as monkeypox) is a zoonotic viral illness caused by the monkeypox virus, affecting both humans and various animal species. Initially endemic to Central and West Africa, the virus spread to non-endemic regions such as the United States, Brazil, Spain, France, Colombia, Mexico, and Peru. This global spread prompted the World Health Organization (WHO) to declare it a Public Health Emergency of International Concern (PHEIC) in 2022. On August 14, 2024, a surge of Mpox cases in the Democratic Republic of the Congo, along with its spread to neighboring countries, was declared a PHEIC. Transmission occurs through direct contact with infected individuals, animals, or contaminated materials. Symptoms typically include fever, rash, and swollen lymph nodes. Differentiating Mpox from other pox-like illnesses is crucial, with diagnosis confirmed through polymerase chain reaction (PCR) testing. Effective preventive strategies, such as vaccination, enhanced surveillance, and strict isolation protocols, are essential for controlling the spread. Although the risk of a widespread outbreak in countries like India remains low, continued vigilance, global coordination, and robust public health preparedness are vital to mitigating future outbreaks.

**Keywords:** Monkeypox, zoonosis, clinical presentation, prevention measures

Mpox (earlier known as monkeypox) is a zoonotic viral illness caused by the monkeypox virus, a member of the genus *Orthopoxvirus* that primarily affects humans and various animal species[1]. Initially identified in captive monkeys as the cause of a pox-like illness, the name "monkeypox" is somewhat misleading. Evidence suggests that rodents, rather than monkeys, are the primary natural reservoir of the virus[2]. Mpox is endemic in parts of Central and West Africa[3]. However, in 2022, the virus spread to non-endemic regions, including the United States, Brazil, Spain, France, Colombia, Mexico, and Peru, during an outbreak caused by the Clade IIb strain of the monkeypox virus, which originated in Europe and subsequently spread globally[4]. In response, the World Health Organization (WHO) declared Mpox a Public Health Emergency of International Concern (PHEIC) in July 2022, maintaining this status until May 2023. The global outbreak from 2022 to 2023, caused by the Clade IIb strain, resulted in over 14,000 cases and 524 deaths in Africa alone[5]. In 2024, the virus was detected in new regions, including Sweden, Thailand, the Philippines, and Pakistan, indicating its ongoing spread[6]. India has also reported its first case of a new Mpox strain in an individual from Kerala. This variant, designated as Clade 1b, is highly transmissible and has been linked to the current Mpox outbreak in Africa[7].

## TRANSMISSION AND SYMPTOMS

Mpox is transmitted to humans through close physical contact with infected individuals, contaminated materials, or direct contact with infected animals. Human-to-human transmission primarily occurs through direct contact with infectious skin or mucosal lesions, such as those in the mouth or genitals[8]. The virus can enter the body via injuries, mucosal surfaces (e.g., oral, pharyngeal, ocular, genital, anorectal), or through the respiratory tract via droplets[9].

The incubation period for Mpox typically ranges from 3 to 21 days. Infected individuals can transmit the virus

*Veterinary Gynecology and Obstetrics, Madras Veterinary College, Tamil Nadu Veterinary and Animal Sciences University, Chennai, Tamil Nadu, India
†Assistant Professor, Veterinary Public Health and Epidemiology, Madras Veterinary College, Tamil Nadu Veterinary and Animal Sciences University, Chennai, Tamil Nadu, India
‡Dept. of Animal Biotechnology, Indian Veterinary Research Institute, Bareilly, Uttar Pradesh, India
#Division of Veterinary Medicine, GB Pant University of Agriculture and Technology, Uttarakhand, India
**Address for correspondence**
Dr Akhter Rasool
Veterinary Gynecology and Obstetrics, Madras Veterinary College, Tamil Nadu Veterinary and Animal Sciences University, Chennai - 600 007, Tamil Nadu, India
Email: mirakhter1312@gmail.com

1 to 4 days before the appearance of clinical signs. Common symptoms include skin rashes or mucosal lesions, which may persist for 2 to 4 weeks, along with fever, headache, muscle aches, and swollen lymph nodes. A distinguishing feature of Mpox, compared to other pox-like illnesses such as smallpox and chickenpox, is severe lymphadenopathy. The Mpox rash typically begins on the face and spreads across the body, including the palms of the hands and soles of the feet. It may also originate in areas of contact, such as the genitals. The rash initially presents as flat lesions, which progress into fluid- or pus-filled blisters that may cause itching or pain. As the rash heals, the lesions dry out, form crusts, and eventually fall off[10]. Secondary bacterial infections can occur, leading to abscesses or severe skin damage[11]. Children, pregnant women, and immunocompromised individuals are at a higher risk of severe illness and death[12].

## SURVEILLANCE, DIAGNOSIS, AND TREATMENT

Surveillance and rapid identification of new cases are crucial for containing the Mpox outbreak[13]. Contacts should be monitored daily for 21 days after their last exposure to an infected person or contaminated materials. Laboratory diagnosis is essential, as Mpox can be challenging to differentiate from other infections with similar symptoms. It is crucial to distinguish Mpox from conditions such as chickenpox, measles, bacterial skin infections, scabies, herpes, syphilis, other sexually transmitted infections (STIs), and medication-associated allergies. Co-infection with another STI, like syphilis or herpes, is also possible in individuals with Mpox[10]. Confirmation of the virus is made by detecting unique viral DNA sequences through polymerase chain reaction (PCR) or sequencing[14]. Infected patients must be managed in isolation with strict infection control precautions to prevent further transmission.

There is no specific antiviral treatment for Mpox. Most cases require supportive care, which includes protecting compromised skin with topical antiseptics and using antibiotics to prevent secondary bacterial infections. Symptomatic relief can be provided through antihistamines for itching, topical lotions for rash, and rehydration therapy along with nutritional support[11]. Pharmacological options that have shown promise include the Modified Vaccinia Ankara–Bavarian Nordic (MVA-BN) smallpox vaccine for pre- or post-exposure prophylaxis, as well as antiviral drugs like tecovirimat and cidofovir or its prodrug brincidofovir. Additionally, Vaccinia Immune Globulin Intravenous (VIGIV) is available for severe cases[15].

## PREVENTION

Preventing the spread of Mpox requires vigilance and a collective international response. Public health workers and organizations play a crucial role in this effort. Preventive measures include enhanced surveillance, isolation of infected individuals, proper hand hygiene, and the use of personal protective equipment. Vaccination is recommended for individuals at high risk of contracting Mpox. This includes those living in forested areas near habitats of potential animal reservoirs (such as squirrels), individuals residing in homes with confirmed Mpox cases, males, children under 15 years of age, and those engaging in high-risk sexual behaviors, which is considered a potential risk factor for transmission[16]. Currently, available vaccines include Jynneos (also known as Imvamune or Imvanex) and LC16, though the latter is approved only for use in children[17]. The Centers for Disease Control and Prevention (CDC) also recommends pre-exposure vaccination for health care workers, veterinarians, animal-control personnel, and field investigators involved in treating or researching Mpox[3].

## CONCLUSION

While the risk of a large-scale Mpox outbreak in India remains low, continued vigilance is essential. Strengthening surveillance, raising public awareness, and maintaining preparedness are key to preventing the virus from establishing itself. A coordinated global response, supported by sound public health practices, will be critical in controlling the spread and mitigating the impact of future outbreaks.

**Conflict of Interest:** None.

## REFERENCES

1. Karagoz A, Tombuloglu H, Alsaeed M, Tombuloglu G, AlRubaish AA, Mahmoud A, et al. Monkeypox (mpox) virus: classification, origin, transmission, genome organization, antiviral drugs, and molecular diagnosis. J Infect Public Health. 2023;16(4):531-41.
2. Ranjan S, Vashishth K, Sak K, Tuli HS. The emergence of Mpox: epidemiology and current therapeutic options. Curr Pharmacol Rep. 2023;9(3):144-53.
3. Musuka G, Moyo E, Tungwarara N, Mhango M, Pierre G, Saramba E, et al. A critical review of mpox outbreaks, risk factors, and prevention efforts in Africa: lessons learned and evolving practices. IJID Reg. 2024;12:100402.
4. European Centers for Disease Prevention and Control; World Health Organization Regional Office for Europe. Joint ECDC-WHO Regional Office for Europe Monkeypox Surveillance Bulletin. European Centers for Disease Prevention and Control; 2023.

5. Cadmus S, Akinseye V, Besong M, Olanipekun T, Fadele J, Cadmus E, et al. Dynamics of Mpox infection in Nigeria: a systematic review and meta-analysis. Sci Rep. 2024;14(1):7368.
6. Umair M, Salman M. Looming threat of Mpox in Pakistan: time to take urgent measures. J Infect. 2024;89(4):106266.
7. Saloni S, Marate S, Soman B, Tanti A, Khan A, Goyal AK, et al. Global resurgence of monkeypox (Mpox) virus: a review of current outbreaks and public health strategies. The Evi. 2024;2(3):1-7.
8. Pinto P, Costa MA, Gonçalves MF, Rodrigues AG, Lisboa C. Mpox person-to-person transmission—where have we got so far? A systematic review. Viruses. 2023;15(5):1074.
9. Selvaraj N, Shyam S, Dhurairaj P, Thiruselvan K, Thiruselvan A, Kancherla Y, et al. Mpox: epidemiology, clinical manifestations and recent developments in treatment and prevention. Expert Rev Anti Infect Ther. 2023;21(6):641-53.
10. World Health Organization. Mpox. WHO, 2023. Available from: https://www.who.int/news-room/fact-sheets/detail/mpox
11. Betkowska A, Maciejewska M, Adrian P, Szymański K, Czuwara J, Olszewska M, et al. Key features of Mpox and its new presentations. Dermatol Rev/Przegl Dermatol. 2023;110(2):151-68.
12. Sanchez Clemente N, Coles C, Paixao ES, Brickley EB, Whittaker E, Alfven T, et al. Paediatric, maternal, and congenital mpox: a systematic review and meta-analysis. Lancet Glob Health. 2024;12(4):e572-88.
13. Giovanetti M, Cella E, Moretti S, Scarpa F, Ciccozzi A, Slavov SN, et al. Monitoring monkeypox: safeguarding global health through rapid response and global surveillance. Pathogens. 2023;12(9):1153.
14. Altindis M, Puca E, Shapo L. Diagnosis of monkeypox virus – An overview. Travel Med Infect Dis. 2022;50:102459.
15. Grosenbach DW, Russo AT, Blum ED, Hruby DE. Emerging pharmacological strategies for treating and preventing mpox. Expert Rev Clin Pharmacol. 2023;16(9):843-54.
16. Mitjà O, Ogoina D, Titanji BK, Galvan C, Muyembe JJ, Marks M, et al. Monkeypox. Lancet. 2023;401(10370):60-74.
17. Rana J, Patel SK, Agrawal A, Channabasappa NK, Niranjan AK, Das BC, et al. Mpox vaccination in global perspective: priorities and challenges. Ann Med Surg (Lond). 2023;85(5):2243-6.

■■■■