

# Emerging Threat: Monkeypox Virus - Unraveling the Challenges and Preparedness

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Monkeypox is a DNA virus that belongs to the family of smallpox, with an incubation period of seven to 14 days and may last up to 21 days<sup>1</sup>. The Virus replicates on reaching the host cells, from where it spreads to lymph nodes and then to distant organs. The symptoms include fever, lymphadenopathy, and mucocutaneous lesions. The infection does not spread during the incubation period but may spread on being symptomatic to drying of scabs. Smallpox vaccination protects against monkeypox but its vaccination has been developed. An outbreak of pox appeared and spread rapidly across Europe, America, and then to all six continents<sup>2</sup>.

Since 2019, the world has suffered from COVID-19 and while infections from Covid-19 continue to be reported, the fatality rate has decreased due to increased vaccination. Among those who suffered from COVID-19, approximately 50% of people still report long-term health problems, also known as post-COVID conditions (PCC)<sup>3,4</sup>. Research studies show that patients suffering from PCC have low immunity with deranged cytokines levels and are more prone to suffer from other viral infections like monkeypox<sup>5</sup>.

While the world grappled with COVID-19, in early 2022, reports of monkeypox started to emerge from countries like Europe and North America, where monkeypox had not previously been endemic. Monkeypox is a zoonotic disease that was endemic in Africa but now has reached other countries around the world<sup>6</sup>. Its mode of transmission is still not precisely known but research findings to date suggest its transmission from infected animals to humans via bodily fluids, saliva, respiratory excretions, and fecal excreta. CDC report published on 4<sup>th</sup> January 2023, points out that any species of mammal can be infected by it and it can be transferred from animal to humans and from human to animals. It can cross the species and can affect domestic and wild animals which can be the source of the spread of infection. The animals may not manifest any symptoms but it is symptomatic in humans<sup>1</sup>. It is transmitted by close contact with fluids like saliva, eye water, sweat, respiratory droplets, and contaminated materials such as roads, bedding, etc. The first case of human-to-domestic dog transmission was reported in the Lancet, in 2022, where an infected man co-sleeping with the dog was the cause of the spread. There is a need to be cautious as the transmission from humans to animals may create animal reservoirs, which may pose a risk to new geographic areas<sup>7</sup>.

## Factors Increasing the Risk of Infection in Developing Countries

Monkeypox cases have been reported in South Asia, particularly in India, Bangladesh, Nepal, and a few cases in Pakistan. In developing countries, scarcity of resources and infrastructure makes them more prone to these types of infections. The sacrifice of animals without due aseptic measures, and sleeping on streets with animal excreta makes them vulnerable to infection. Moreover, contaminated food and water increase the risk manyfold<sup>8</sup>. It has now been firmly established that live animal markets including pet markets, have a large role to play in the transmission of zoonotic diseases. Research has indicated that the Human Seafood Wholesale Market in Wuhan, China was an early epicenter of the Covid 19 outbreak. The Seafood Market was documented to have sold live wild animals including red foxes, hog badgers, and common raccoon dogs who could have all been possible hosts for the virus<sup>9</sup>. The original outbreak of monkeypox in West and Central Africa was also surmised to be due to the bushmeat and live animal market trade<sup>10</sup>. It is, therefore, crucial that live animal markets be strictly regulated to prevent further zoonotic disease outbreaks.

## Safety Measures in Domestic and Wild Animals

The world has suffered a lot during the COVID-19 pandemic and there is an urgent need to prevent the

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spread of zoonotic diseases such as monkeypox. Special attention should be paid to establishing hygiene, vaccination, and quarantine protocols for animals being sold in live animal markets. Close confinement of animals in dirty and unhygienic conditions lowers immunity in animals and increases the likelihood of the spread of infection. Screening the animals in live animal markets periodically for infections such as monkeypox should be encouraged. Moreover, governments in developing countries should focus on creating awareness amongst the masses regarding hygiene and disinfection of shops and local areas; ensuring regular visits of veterinary doctors to the animals in such markets, and avoiding close contact of animals with each other. Lastly, animal welfare measures should be ensured in animal markets because stressed animals are prone to have lower immunity and contracting diseases. Early preventive measures may protect the world from the hazards of another pandemic which not only affects the health of human beings but also drains the resources of the world as we can see the financial recession in most of the countries post-COVID-19. This needs strong collaboration between multiple sectors like public health, animal experts, and wildlife to ensure a safe future.

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