



## Short Communication

## Monkeypox and spillover effects: Stigmas, solutions and strategies

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The Human Monkeypox virus, first identified in the 1970s in Congo during the smallpox surge [1] and endemic in Western and Central Africa, has had recent outbreaks in countries including United States of America (USA), Singapore, United Kingdom (UK), and Israel owing to travelers and imported animals from endemic regions [2–4]. On May 21st, the World Health Organization (WHO) reported 28 cases of monkeypox in non-endemic countries. This announcement stirred the medical community, which was left to grapple with the spread of yet another spill-over infection. As of July 22nd, 2022, the centers for disease control and prevention (CDC) has reported 16,836 cases in 65 nations, with the most of them being recorded in Spain, Canada, UK, Northern Ireland, Germany and the US [5].

A member of the poxvirus family of Orthopoxviruses and a close relative to variola (the causative agent for smallpox), monkeypox's transmission route includes respiratory droplets, skin-to-skin contact, contact with virus-infected fomites and oral fluid interactions that may occur during sexual contact [6]. In the early stages of infection, common signs and symptoms parallel that of the flu (fever, chills and myalgias), soon followed by swollen lymph nodes (near the groin and armpit areas) and a centrifugally spreading rash that initially presents as flat and reddish, overtime evolving into fluid-filled pustules which eventually dry, forming scabs that fall off.

The Food and Drug Association (FDA) has approved one vaccine as prophylactic treatment for the virus: Jynneos® (MVA-BN) comprising of an attenuated virus and stipulated as 2 doses to be given 28 days apart. Another vaccine, ACAM2000®, previously used for smallpox and constitutes a live replicative virus, is also currently being used to vaccinate individuals [7]. Although evidence regarding Jynneos's effectiveness is limited as animal models have been used during its research, WHO and CDC, citing observational studies from Africa, have approved the vaccine. These studies delineate the smallpox vaccines to be 85% effective in preventing monkeypox [8,9]. Furthermore, two antiviral medications greenlit for emergency use by the FDA include tecovirimat and brincidofovir [10]. Tecovirimat acts by inhibiting the viral envelope protein p54, preventing the virus from leaving infected cells after it has

replicated while brincidofovir, inhibits the viral DNA polymerase and prevents the virus from replicating. In a retrospective research conducted in UK, four individuals suspected of monkeypox were given brincidofovir (300 mg orally once a week), while one patient was given tecovirimat (600 mg twice a week orally) [11]. The results demonstrated that brincidofovir group patients exhibited markers pertaining to impaired liver function with no association between dose and reduction in clinical or viral parameters and displayed poor efficacy overall. Contrastingly, tecovirimat use results in decreased viral shedding from the upper respiratory tract, a shorter duration of symptoms, and no adverse effects.

The infection disproportionately affects people who identify as men having sex with men (MSM) [12]. According to a Euro surveillance survey in Spain, 93% of Monkey pox patients identified as MSM [13]. Of these, 84% reported having intercourse with multiple partners 21 days prior to the onset of symptoms. Stigma surrounding high-risk groups like MSM make it tedious to identify such a population. In addition to health care disparities, MSM individuals are likely to present with comorbidities, namely HIV, which can undermine vaccine uptake due to an immunocompromised state [14]. Moreover, some cases of monkeypox manifest with a rash near the genitals and no flu-like symptoms, causing clinicians to frequently overlook and misdiagnose monkeypox as other sexually transmitted infection (STI) [15]. The largest study on monkeypox to date, identified single genital lesions, to be the major differentiator from (STI); in the additional symptoms noted 73% had anogenital lesions and 41% had mucosal lesions [16].

Vaccination programs confront a non-exhaustive list of challenges. Vaccine phobia, limited vaccine uptake among high-risk individuals, and vaccine scarcity in endemic areas, is attributed to disrupting mass immunization efforts. Nevertheless, attempts have been made to ring-vaccinate people vulnerable to contracting monkeypox and those in close contact with a suspected or confirmed case. With the vaccine demand exceeding supply in the US, it is only a matter of time when resource poor countries would also join the race to procure vaccines.

The COVID-19 pandemic should be a pressing reminder for the

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health sector to act promptly against monkeypox transmission. The virus's spread via respiratory droplets should not be underappreciated when compared to the aerosol droplet spread of COVID-19. Appropriate measures to quickly isolate and quarantine patients presenting with symptoms is a compelling need [17]. A spillover infection like monkeypox is highly virulent with subsequent mutations surfacing, monitoring its epidemiology henceforth is imperative. Establishing a global open-access database like the Global health GitHub repository can be a possible method. Developed countries must deploy experts in areas affected by outbreak for devising better control and management strategies. Screening programs, such as the ones in US which target all Orthopoxvirus families, must be enacted to further record and contain this disease until more specific and rapid screening tests become available [17]. It is crucial to understand that monkeypox is not just a 'gay disease' and everyone is susceptible due to its multiple modes of transmission [18]. Healthcare professionals need to consider this disease when conferring a differential diagnosis especially in high-risk individuals [19].

Awareness campaigns can be integral in this regard for disseminating information in the medical community and the masses at large. One such inspiration can be CDC'S highly successful Let's Stop HIV together campaign [19]. Sensitizing individuals and encouraging them to take responsibility for their health can be immensely helpful in combatting the virus. As monkeypox emerges as an international threat and poses newer hurdles each day, timely interventions can be pivotal in preventing any global mayhem.

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### Registration of research studies

1. Name of the registry: Not applicable.
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### Guarantor

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### Consent

This study was not done on patients or volunteers, therefore no written consent was required.

### Declaration of competing interest

None.

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