

Given the health, social, and economic upheavals of the COVID-19 pandemic, there is understandable anxiety about another virus, monkeypox, quickly emerging in many countries around the world. In West and Central Africa, where the disease has been endemic for several decades, monkeypox transmission in people usually happens in short, controllable chains of infection after contact with infected animal reservoirs. Recent monkeypox infections have been identified in non-endemic regions, with most occurring through longer chains of human-to-human spread in people without a history of contact with animals or travel to endemic regions. These seemingly different patterns of disease have prompted public health investigation. However, ending chains of monkeypox transmission requires a better understanding of the social, ecological and scientific interconnections between endemic and non-endemic areas.

In this set of companion briefs, we lay out social considerations from previous examples of disease emergence to reflect on 1) the range of response strategies available to control monkeypox, and 2) [specific considerations for monkeypox risk communication and community engagement \(RCCE\)](#).

We aim for these briefs to be used by public health practitioners and advisors involved in developing responses to the ongoing monkeypox outbreak, particularly in non-endemic countries.

This brief on social considerations for monkeypox response was written by Syed Abbas (IDS), Soha Karam (Anthrologica), Megan Schmidt-Sane (IDS), and Jennifer Palmer (LSHTM), with contributions from Hayley MacGregor (IDS), Olivia Tulloch (Anthrologica), and Annie Wilkinson (IDS). The brief was reviewed by Boghuma Titanji (Emory University School of Medicine). This brief is the responsibility of SSHAP.

## URGENCY TO RESPOND

### Increased activity of monkeypox virus

The monkeypox virus was identified over 60 years ago, but has mostly been restricted to countries in Central and Western Africa. In these regions, it is largely found in wild animals and rodents, but can also affect humans. However, over the past ten years, there has been an increase in the number of reported outbreaks in endemic countries including Nigeria which is experiencing a re-emergence after 40 years without reported cases.<sup>1</sup>

Outbreaks in endemic countries have tended to cause few deaths. The reported case fatality ratios have historically ranged from 0 to 11% in the general population, depending on the virus 'clade' or type and context.<sup>2</sup> However, immune-compromised people with untreated HIV can be particularly vulnerable to poorer health outcomes after monkeypox infection, alongside pregnant women and small children. In the past, a large proportion of the world had some immunity to monkeypox through cross-protection from the smallpox vaccine. Since the eradication of smallpox in 1980, the vaccine is no longer given, and 70% of the world's population is estimated to be unprotected.<sup>3</sup> Reduced immunity, along with the growing number of cases, has prompted concerns among experts about the potential increase for monkeypox transmission in both endemic and non-endemic countries.<sup>4,5</sup>

### Emergence and spread in current outbreak

Over the course of 2022 (1 January to 8 June), 1,536 suspected and 59 confirmed monkeypox cases (including 72 deaths) have been reported in endemic countries which include (Cameroon, Central African Republic (CAR), Nigeria, Liberia, Sierra Leone and the Republic of the Congo). During the

same time period, 1,285 confirmed cases (and no deaths) have been identified in 28 non-endemic countries across four WHO regions.<sup>6</sup>

There are two clades of monkeypox virus circulating in endemic regions - the Central African (Congo Basin) clade and the West African clade with the latter being known to result in less severe disease and fatality.<sup>1</sup> So far only the West African clade of monkeypox has been isolated from cases in non-endemic regions.

Experts have hypothesised that the emergence, or re-emergence, of monkeypox in endemic regions could be associated with multiple interconnected factors including climate change, rain forest exploitation, geopolitical and armed conflicts in endemic areas, highly mobile populations, and waning cross-protective immunity.<sup>7</sup> Outside of these areas, there are several indications that widespread human-to-human transmission is happening including the wide geographic scope, rapid spread, and occurrence of many cases without epidemiologic links to endemic countries. It is plausible that the virus may have been circulating in some countries undetected for several weeks or months. The sequence of events and factors that led to these outbreaks are still unclear, however, the current evidence suggests that among the more than 1,000 new global non-endemic country cases, initial transmission was predominantly, but not exclusively, via dense sexual networks of men who have sex with men (MSM).<sup>8</sup>

## **Transmissibility of the virus**

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Monkeypox transmission occurs through contact with virus in blisters and scabs, which form on the skin, as well as other bodily fluids of an infected individual or animal. Material that has been in contact with infected body fluids can also spread the virus, including bedding. Transmission generally requires a close level of contact. Household contacts and caregivers, including health care workers, have tended to be considered the groups most at risk of contracting monkeypox. The recent outbreaks have drawn attention to other routes of exposure, including intimate contact with infected individuals during sexual activity. Public health experts have called for a consideration of all settings where there is sufficient contact for monkeypox to spread, emphasising that “the longer the outbreak continues and the higher the prevalence, the more likely that monkeypox will find these other niches.”<sup>9</sup>

## **Establishment in new animal reservoirs**

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In previous outbreaks, monkeypox has spread to non-native animal species.<sup>10</sup> This has prompted concerns about the risks for the establishment of a persistent animal reservoir within non endemic countries. Early messages from agencies such as European Centre for Disease Prevention and Control (ECDC) have called for limiting contact with pets for confirmed or suspected cases of monkeypox.<sup>8</sup> Other settings for transmission to newer animal species could include wildlife trade and potentially, waste disposal sites, which need to be targeted for surveillance and training.

# **RESPONSE STRATEGIES FOR MONKEYPOX**

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## **Surveillance and contact tracing require strong health systems**

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Disease surveillance is an essential public health function.<sup>11</sup> It requires strong public health capacities and ties to communities for identifying and responding to potential outbreaks.<sup>12-14</sup> The long incubation period of monkeypox (5-21 days),<sup>15,16</sup> coupled with the high number of untraced contacts in the current outbreak, means the virus has had ample opportunity to seed new transmission clusters.<sup>17</sup>

Therefore, given the reports of high number of cases, breaking viral transmission networks will require a high degree of awareness about the disease among the general population, as well as health care providers. While health agencies prioritise sexual health clinics and MSM community groups for risk communication and contact tracing, it will also be important to reach out to the rest of the population. This will ensure awareness of the disease among the wider population who are at risk

of catching the disease and prevent the identification of the monkeypox with specific communities and sexual practices.

Case identification and contact tracing will be much easier if people know and trust the person asking questions. These activities should therefore be coordinated with strong risk communication and community engagement **strategies and attention to avoiding stigmatisation**. Health care professionals should also be targeted with detailed information about presentation and transmission of monkeypox to ensure timely diagnosis, support for those infected, and public health notification of cases.

## **Diagnostic capacities will be crucial to informed decision-making**

Laboratories play a central role in shaping the trajectory of outbreaks. Monkeypox is identified through laboratory testing using RT-PCR<sup>18</sup> – a relatively resource-intensive diagnostic tool. As such, early cases in non-endemic countries caused an ongoing backlog in laboratory testing to diagnose monkeypox.<sup>19</sup> Delayed diagnoses results in late or missed identification of infected individuals and hampers efforts to prevent transmission to close contacts.

## **The promises and pitfalls of vaccination and antivirals**

Even though the earlier generation of smallpox vaccines helped complete a global eradication programme, there is now limited capacity for smallpox vaccine production. To date, weakened strains of vaccinia virus vaccine are used to inoculate individuals at high risk of poxviruses (including monkeypox), such as laboratory workers.<sup>20</sup> These vaccines are estimated to be 85% effective against monkeypox based on cohort studies carried out in the Democratic Republic of Congo in the late 1980s.<sup>20</sup> Other pharmaceutical measures to treat monkeypox, such as antiviral treatments, are also available. There is no evidence yet on their effectiveness in the treatment of human monkeypox, although two antivirals have shown positive results *in vitro* and in animal research studies.<sup>21</sup>

Some countries, such as the U.K., have already ordered stockpiles of vaccines and antivirals, while the U.S. is known to stock large number of smallpox vaccine doses to vaccinate its entire population in the face of an emergency.<sup>9,22</sup> However, the global COVID-19 response has emphasised the importance of equitable vaccine and therapeutic distribution globally. This is particularly important given both the needs of endemic countries in Africa to contain outbreaks, and these countries' contributions to our understanding of monkeypox. Indeed, research on vaccines and other clinical epidemiology carried out in these regions has substantially contributed to our knowledge of the virus.<sup>20</sup> The epidemiology of the current outbreak, including transmission among sexual contacts is reflective of the trends observed in Nigeria.<sup>23</sup> Outbreaks in countries with stretched health systems and large untreated HIV populations would be a major shock. Therefore, if vaccines and other treatments were to be rolled out at a larger scale, distribution must address the needs of the most affected populations globally, not only the needs of high-income countries impacted by the recent outbreaks.

The uncertainty involved in predicting disease spread often results in authorities rapidly taking decisions to be 'seen to be acting' and thus be 'in control' of the disease situation.<sup>24–26</sup> The temptation, in such situations, is to rely on simplistic pharmaceutical interventions as a quick fix solution. However, disease outbreaks build upon and exploit inequities. If these interventions are implemented without addressing underlying social challenges and political tensions faced by affected populations, they run the risk of being less acceptable, less adopted, and less effective.<sup>27,28</sup>

## **Community engagement key to success of 'nonpharmaceutical' social measures**

A robust, acceptable, and sustainable monkeypox response would need to recognise and address the structural drivers of disease emergence, including social, cultural, and ecological factors. This is especially important in the context of monkeypox, given the limited reach and availability of vaccines and antivirals. The focus of the response is likely going to rely on sound public health strategies, referred to as non-pharmaceutical interventions or Public Health and Social Measures (PHSM). These might include measures such as distancing, barrier protection, and quarantine. Since the emergence of COVID-19, there is a rich body of knowledge to draw upon when considering PHSM.

Again, the social nature of these interventions means they are unlikely to be accepted – and therefore should not be implemented – in the same manner across different epidemiological, geographic, social, and cultural settings and should be developed in response to local circumstances'.<sup>29–31</sup>

## CONCLUSION

To contain the current global outbreak of monkeypox, we need to consider the evolving **social nature of the monkeypox disease** as it spreads in new contexts, and the risk of monkeypox establishing in new socio-ecological niches. We also need to consider the social nature of control options, including how they can be implemented to reach populations most at risk.

Pharmaceutical tools such as vaccines, point of care diagnostics, and antivirals remain under development or are out of reach for many national health systems. In such a context, the social targeting and implications of other interventions such as awareness-raising, surveillance including self-reporting, and quarantining measures deserves careful consideration. Addressing monkeypox, and other emerging or re-emerging diseases in the future, will require a close understanding of the social circumstances within which diseases originate, as well as the social drivers influencing their transmission and control.

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## CONTACT

If you have a direct request concerning the brief, tools, additional technical expertise or remote analysis, or should you like to be considered for the network of advisers, please contact the Social Science in Humanitarian Action Platform by emailing Annie Lowden ([a.lowden@ids.ac.uk](mailto:a.lowden@ids.ac.uk)) or Olivia Tulloch ([oliviattulloch@anthrologica.com](mailto:oliviattulloch@anthrologica.com)). Key Platform liaison points include: UNICEF ([nnaqvi@unicef.org](mailto:nnaqvi@unicef.org)); IFRC ([ombretta.baggio@ifrc.org](mailto:ombretta.baggio@ifrc.org)); and GOARN Research Social Science Group ([nina.gobat@phc.ox.ac.uk](mailto:nina.gobat@phc.ox.ac.uk)).

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