https://doi.org/10.1038/s41564-024-01813-8

We must learn from past outbreaks

To successfully tackle the current mpox public-health emergency, we must learn from past outbreaks to focus research questions and take collaborative action.

On 13 August 2024, the Africa Centres for Disease Control and Prevention (Africa CDC) declared its first ever public health emergency since it was established in 2017 (ref. 1). A day later, the World Health Organization (WHO) announced a 'public health emergency of international concern', a formal declaration previously used for Ebola, COVID-19 and the 2022 mpox outbreak[2]. This was in response to the growing number of mpox cases and rapid spread of a new clade I variant in the Democratic Republic of the Congo, as well as other countries previously unaffected. This occurred just 15 months after the WHO declared the end of the previous mpox global health emergency.

Case numbers reported so far this year have already exceeded those in 2023. At the time of writing, there have been more than 17,000 suspected cases and 537 deaths[1,2]. Current data suggest that the new monkeypox virus (MPXV) lineage, clade Ib, is driving the increase in cases. The data also suggest that this lineage is more lethal than subclade IIb (B.1), which was responsible for the global epidemic in 2022. Genomic analysis of circulating strains during an outbreak in the eastern Democratic Republic of the Congo between September 2023 and January 2024 revealed that this new lineage increased known diversity within clade I by 54%. The authors found a higher-than-expected number of mutations associated with a human apolipoprotein B messenger RNA editing enzyme, catalytic subunit 3 (APOBEC3), which is linked to ongoing human-to-human transmission and was observed in the epidemic B.1 lineage[3].

Given that clade I MPXV is typically more virulent than clade II, these emerging traits together with changes in epidemiology, such as emergence in different countries and urban areas, require further investigation. Bernard Moss argued in a recent Perspective that we need to study MPXV biology, including both viral pathogenesis and host immune responses, to better understand human-to-human transmission and enable the development of additional therapeutics[4]. This can, in part, be achieved by applying our existing understanding of other orthopoxviruses with similarities in fundamental biology, such as vaccinia virus.

We can also learn from past outbreaks, even when caused by very different pathogens. In this issue, Ott and colleagues reflect on a conference that took place earlier this year, which brought together researchers working on a range of emerging and re-emerging viral pathogens with the aim of facilitating pandemic preparedness. This timely meeting enabled key questions spanning viruses from HIV to SARS-CoV-2 to be identified, new connections to be forged and promoted an environment of 'cross-viral' thinking. Most importantly, it highlighted the ever-increasing importance of collaboration across disciplines and countries.

Beyond biological questions, extant socioeconomic inequalities will impact our ability to successfully respond to the current mpox outbreak. Large parts of the world still suffer from poor public-health infrastructure, affecting disease surveillance and access to preventive care, diagnostics and therapeutics. This is exacerbated by vaccine inequality. Unfortunately, these are not new issues. Writing in *the BMJ*, Ifedayo Adetifa, former Director General of the Nigeria Centre for Disease Control and Prevention, and Madhukar Pai, the Chair of the Department of Global and Public Health at McGill University, argue that global solidarity, equity and urgent support for African countries is needed[5]. They share concerns regarding stockpiling of vaccines by higher-income countries, meaning reduced access to those who need them most, something that was seen with COVID-19 vaccines. Although the Africa CDC has requested 200,000 vaccine doses to protect against MPXV, an estimated 10 million doses are needed[6]. The 2022 mpox epidemic showed that vaccination can help to contain the virus, but only when the vaccines are shared.

Public messaging will also be crucial, as scientists have compared this moment to the early days of the HIV pandemic[7]. Mpox human transmission occurs via physical contact and during the 2022 epidemic, transmission was linked to sexual networks. Epidemiological studies reported an increased risk of infection in sex workers and gay, bisexual and other men who have sex with men[8,9]. As a result, there have been calls for campaigns to reduce stigma so those most at risk can receive appropriate information and necessary access to diagnostics, vaccines and treatment[5,7].

Past and ongoing outbreaks have demonstrated that infectious disease is a global health problem. Rather than repeating the same mistakes, we must reflect on all past learnings and take rapid, decisive and collaborative action.

Published online: 3 September 2024

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