NIGERIAN INFECTIOUS DISEASES SOCIETY

Editorial

Human Monkeypox Outbreak in Non-Endemic Countries: The Need for Global Health Action

Onyeaghala CA[1]*, *Iroezindu MO*[2]

1. Department of Internal Medicine, University of Port Harcourt Teaching Hospital, Port Harcourt, Nigeria
2. Clinical Research Centre, HJFMRI, Abuja, Nigeria

**Corresponding author: chizero15@gmail.com*

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Monkeypox (MPX) is a re-emerging zoonotic disease caused by the MPX virus (MPXV), a member of the orthopoxvirus genus of the poxviridae family. Before 2022, local transmission of MPX was essentially limited to the rainforest regions of Central and West Africa where the disease is known to be endemic[1]. The MPXV is a large DNA virus that is very stable and more efficient than many RNA viruses at detecting and repairing mutations. This makes the virus less prone to higher transmissibility unlike RNA viruses such as SARS-CoV-2[2]. Prior to the 2022 outbreak, two distinct clades of the MPXV were recognized: the Congo Basin (Central African) and the West African clades, otherwise known as Clades I and II in the newly proposed nomenclature. The Congo Basin clade is associated with a higher transmission rate and higher case fatality rate (CFR) of about 11% compared to the West African clade with an estimated CFR of 1%[2].

The first case of MPX in the ongoing 2022 epidemic among non-endemic countries was reported in the United Kingdom (UK) by the UK Health Security Agency (UKHSA) on 7 May 2022, in a returning traveler from Nigeria. Subsequent cases discovered one week later in London were unrelated to the index case and had no travel links to endemic regions in Africa[3]. Since then, the World Health Organization (WHO) has reported more than 64,300 cases outside Africa in over 90 countries across Europe, the Americas and the West Pacific Regions[4]. On 23 July 2022, the WHO declared MPX a Public Health Emergency of International Concern (PHEIC). A newly discovered Clade IIb among the circulating strains of MPXV in non-endemic countries has been reported to have similarities with the West African clade but with higher transmissibility[1]. The WHO projects detection of more cases as surveillance is enhanced to involve more non-endemic countries[4]. This is surprisingly occurring at a time several countries are lifting COVID-19 pandemic lockdowns with increased international travels.

MPX is transmitted to humans through close contact with an infected animal, person or material contaminated with the virus[5]. Human-to-human transmission occurs via respiratory droplet infection and contact with lesions containing replication competent viruses. There is a potential of spillover from zoonotic hosts to humans. More recently, there are discussions about a potential spread from humans to animals especially pets[6]. The definite natural reservoir of MPX remains unknown although Gambian pouched rats, squirrels and monkeys have all been infected[8,9]. Monkeypox is a mild, self-limiting illness that typically presents with a prodromal phase that consists of fever, headache, muscle aches and lymphadenopathy, followed by a rash that often begins on the face and spreads to other parts of the body including the genitals[10]. However, severe cases may be complicated by cellulitis, pneumonia, sepsis, encephalitis, ocular injuries, psychological disorders, among others[11].

The ongoing global MPX outbreak predominantly involving non-endemic countries has exposed major knowledge gaps about the disease particularly in its transmission, epidemiology, and clinical presentation thereby necessitating urgent global public health action[10,12]. Epidemiological surveillance revealed that a large proportion of circulating cases have no substantial travel history to MPX-endemic parts of Africa[4,12]. A large proportion of cases have occurred amongst those who identified themselves as gay or bisexual, and other men who have sex with men (GBMSM) raising the possibility of sexual intercourse as an important factor for MPX transmission[13]. The debate regarding recognition of MPX as a sexually transmitted infection (STI) has been on the front burner over the past few months[14]. Moreover, the co-infection of MPX and traditional STIs in GBMSM has further complicated the burden of disease in this population[15]. Unfortunately, the high burden of MPX among these sexual and gender minorities has led to issues of stigmatization and prejudice which if not properly managed might undermine the outbreak response.

The number of infections detected in the first two weeks following the diagnosis of the index case in the UK[16], has by far, surpassed the total number of cases detected in the UK, and outside MPX-endemic Africa country since human MPX was first discovered in the Democratic Republic of Congo (DRC). This could be because of increased transmission of the virus within affected communities. This argument is further strengthened by genomic sequencing data reported by scientists in Portugal which suggests that the 2022 MPXV responsible for the outbreak in non-endemic countries likely diverged from the 2018-2019 monkeypox virus that caused outbreaks in Nigeria and has far more mutations (6 to 12) than would be expected making it more transmissible. This clade IIb strain is thought to have probably emerged from Western Cameroon to Sierra Leone, and carries a less than 1% CFR[2].

Recent reports in the 2022 global outbreak have highlighted that MPX clinical symptoms could be similar to those of syphilis and other STIs, which could potentially pose a diagnostic challenge, especially when there are scanty skin lesions[17]. In some cases, there has been absence or non-recognition of prodromal symptoms, such as fever, malaise and headache, and the presence of single genital, oral or anal mucosa lesions justifying the need for inclusion of such features in the current internationally accepted case definitions for MPX[17]. This atypical presentation of MPX has added to the argument of the possibility of sexual transmission.

Most MPX cases in this ongoing outbreak are in men aged 20 to 50 years. Following the cessation of routine smallpox vaccination in 1980, the incidence of MPX in humans was expected to increase[18]. Some authorities have argued that the higher incidence of MPX in this age group might partly be due to the waning of cross-protective immunity to MPX. Available evidence from Africa suggests that the third-generation smallpox vaccine provides about 85% protection against MPX infection[18] and the drop in population-level immunity was thought to have contributed to the 2017-2020 MPX resurgence in Nigeria[19,20]. Incidentally, the availability of this vaccine developed by a Danish biotechnology (Bavarian Nordic , Hellenrup , Denmark) and other generations of smallpox vaccines increasingly being approved for use as MPX prophylaxis in high-risk groups is mostly limited to European Union and UK (Imvanex), Canada (Imvamune) and the USA (Jynneos) [21]. As COVID-19 has taught us, global inequality of vaccines for emerging infectious diseases is a threat to global health action[22]. Tecovirimat (Tpoxx), a drug produced for the treatment of smallpox by Siga Technologies, has been recently approved in the USA, Canada, and Europe for the treatment of severe human MPX cases as an investigational new drug (IND)[23], with clinical trials being proposed in the US, UK and by the WHO.

Therefore, there is a need for these vaccines and drugs, together with the specific guidelines for their use, to be made available urgently at affordable costs with special considerations for the countries with high MPX endemicity.

Although importation of MPX is not the underlying epidemiological factor for the 2022 global outbreak, it has been observed that a relatively small number of MPX cases have been reported among regions /countries that have only partially opened their borders for international travel. This is particularly true for the Western Pacific Region where travel restrictions are still being observed in Japan, Taiwan and China[24]. This is in contrast to New Zealand and Australia (the location of most detected MPX cases in the West Pacific Region) that have already opened their borders[24]. Despite the fact that all countries recognize the need to lift international travel restrictions for economic and societal reasons, many are still cautious of threats of outbreaks of infectious diseases of high consequence[24].

Also, it was observed that countries/regions that sustained the COVID-19 preventive practices such as maintenance of physical distancing, have reported relatively small number of MPX cases[23]. Despite the global decline in COVID-19 incidence, there is a need to continue to sustain the generic public health measures that might have beneficial effects in the prevention of other emerging and re-emerging infectious diseases including MPX[24].

To contain this global health emergency, it is crucial that no affected communities or groups are left behind or stigmatized. There is a need for a coordinated urgent public health response to control the ongoing global outbreak of MPX. Further research is needed to fill the knowledge gaps in the epidemiology, transmission and manifestation of MPX. The place of health education, community sensitization and risk communication cannot be overemphasized. Despite the potential benefits of vaccination targeting high-risk groups, based on the lessons we learnt from COVID-19, the benefits of prophylactic vaccines are often undermined by inequitable access, vaccine nationalism, fragile deployment mechanisms and lack of political will. Improving the availability of newly approved drugs in areas of high MPX endemicity should become a global, regional and national priority. Improving access to care among sexual and gender minorities is an important component of halting the current outbreak. Researchers, governments, public health experts, animal health experts, environmental scientists and all stakeholders should strongly consider adopting a One Health approach in the MPX global health action.

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