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**Title:**

**Reducing the growing threat of transmission and globalization of epidemic prone infections at Mass Gathering religious events**

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Mass Gathering (MG) sporting, religious, festival and celebratory events attract people from across the world and create optimal conditions for the transmission of a range of infectious diseases with epidemic potential.(1) Living together and frequent interactions between people results in exposure to or contact with respiratory droplets, skin lesions, excreta and other contaminated materials is inevitable. Thus countries hosting recurrent annual religious pilgrimages cater for millions of overseas and local pilgrims have the arduous task of reducing risk for the importation and transmission of infectious diseases between pilgrims, and to indigenous populations, and exportation overseas after the event. Several mass gathering events were cancelled, postponed or held in restricted numbers during the COVID-19 restrictions guided by WHO recommended risk-based approach to decision-making for mass gatherings (2).

With COVID-19 related travel restrictions lifted, and just as MG events are now normalizing, since 13 May 2022, the world is now facing the largest, unprecedented, unusual, unexpected epidemic of Monkeypox outside Africa. As of 8 June, 1285 laboratory confirmed cases have been reported to WHO from 28 countries across European, Eastern Mediterranean, Western Pacific and other regions where monkeypox is not endemic or not previously been reported (Ref3). Many cases were in men who have sex with men, linked to travel to countries in Europe and North America, some attributed to gay festivals, but no travel to West or Central Africa where the monkeypox virus is endemic, thus indicating undetected transmission for a while followed by recent amplifier MG events. Monkey, despite earlier warnings, was not considered a threat (3). WHO is now taking monkeypox seriously. There is a dire need for concerted global action to contain monkeypox in both non-endemic and non-endemic contexts before the virus establishes more efficient human-to-human transmission.

This also brings to the fore several important issues on the global dialogue and discourse on reducing the risk of the growing threat of transmission and globalization of all epidemic prone infections at future MG events and developing more accurate evidence base for developing travel regulations and preventive measures (4). Over the past five years epidemic prone infectious diseases such as, Ebola, Cholera, MERS, ZIKA, Lassa Fever, Yellow fever, Rift valley Fever, COVID-19 and other(5), have been on the agenda of global public health authorities. Since many of the epidemic prone zoonotic diseases are endemic in the WHO Africa region, travellers from West and Central Africa have repeatedly faced the brunt of travel restrictions to MG events such as the Olympics and Hajj infections with consequential

isolation, stereotyping and stigmatization. So, where does the current context of monkeypox now fit into the agenda of organizers of mass gathering events?

In the next three months, two of the world's largest religious mass gatherings events will take place where monkeypox and other zoonoses will be on the radar of public health authorities. The Hajj (6) pilgrimage in Saudi Arabia (July 7-12th, 2022) and The Grand Magal of Touba in Senegal (14-15th September, 2022). After two years of COVID-19 related restriction, Saudi Arabia has opened up the 2022 Hajj to 182 countries. Over 1 million pilgrims are expected to travel to Mecca including 70,000 pilgrims from West Africa (7), many of whom had registered for 2020 and 2021 Hajj but had to cancel. The Grand Magal attracts over 3-4 million people, including 1 million Senegalese diaspora from Africa, USA and Europe (8). Since for the first time monkeypox cases and clusters are being reported concurrently in non-endemic and endemic countries in widely disparate WHO geographical areas the risk of importation, transmission and globalization of monkeypox, other zoonoses, antibiotic resistance, respiratory tract infections applies to both MG events (9).

While the exact mechanisms of transmission of the ongoing monkeypox outbreaks are still being investigated based on available information, WHO does not recommend that countries introduce restrictions for incoming or outgoing travelers (10). In the current context of monkeypox WHO and ECDC have issued interim recommendations for public health authorities of host countries of MG events guide their prevention, educational and awareness-raising and interventions before, during and after MG events. Most of the recommendations are well known public health practices. The risk assessment for Monkeypox outbreak at Hajj is considered low.

For the past 2 years (2020-2021) due to the unprecedented COVID-19 pandemic and in lieu of WHO risk management guidelines and travel restrictions, several MG sporting and religious events were cancelled or minimized to prevent the spread of the COVID-19. Unique opportunities to conduct surveillance, research and operational studies were missed. No quality data from well-designed large cohort studies and are available yet on the effects or impact of these measures on transmission, globalisation of COVID-19 and other infectious diseases. The 2020 and 2021 Hajj were symbolic with restricted numbers of local pilgrims and no major public health issues reported (11). The Grand Magal went ahead without any major travel restrictions, and a very small cohort study showed no significant increase in COVID-19 or other infections (12). This highlights a dire need for further global dialogue and discourse on developing accurate evidence base regarding the most effective interventions

for risk reduction at MG events. The varying quality and quantity of data from MG events held across the world exposes huge knowledge gaps and highlights the need for a universal approach to uniformly collect more comprehensive and accurate data for development of reliable metrics, risk reduction and public health interventions for MG events and pandemic preparedness and response(14). These should include what the specific impact of these has been: banning participants from endemic areas, WHO recommended public health measures, including risk communication, education, raising participants and community awareness, pre-travel vaccination, and enhanced communication and surveillance. Available research data from MG events have been from individual countries of small cohorts or databases and the data have not yet changed global policy. The vision set during the launch of Mass Gathering Medicine as a formal discipline at the WHA in Geneva in 2012 and the Lancet MG series (14) now needs to be taken forward seriously by organisers of all MG events, including those held in the west. The Monkeypox outbreak, COVID-19 and the global rise of antimicrobial resistance due to ease of travel highlight that obtaining political visibility, engaging all stakeholders, and obtaining cross-continental unity of purpose and is required is we are to reduce risk of the global threat of epidemic prone infections.

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