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## Correspondence



## Preparedness of Eastern Mediterranean countries in view of monkeypox emergence during the COVID-19 pandemic: A call for action

Dear Editor,

In 2022, for the first time, many Monkeypox (MPX) outbreaks were reported worldwide in non-endemic countries that had no epidemiological links to travel or imported mammals [1]. As of August 10th, 2022, MPX has infected more than 31747 confirmed cases across 86 countries [2]. MPX was recognized by the World Health Organization (WHO) as a Public Health Emergency of International Concern (PHEIC) on 23<sup>rd</sup> July 2022 [3]. In the WHO Eastern Mediterranean Region (EMR), as of August 10th, 2022, 31 cases of monkeypox have been reported from six countries: UAE (n = 16), Lebanon (n = 6), Saudi Arabia (n = 5), Qatar (n = 2), Morocco (n = 1) and Sudan (n = 1) [2].

Although the disease is generally mild, the overall case fatality rate has been reported to be 8.7%, and the basic reproduction number ( $R_0$ ) to be  $> 1$  in men who have sex with men (MSM), especially in countries such as Spain (1.8), the United Kingdom (1.6), and Portugal (1.4). However,  $R_0$  is  $< 1$  in other settings [3,4].

MPX is caused by the monkeypox virus (MPXV), a double-strand DNA virus, which can be transmitted through close contact with infected lesions, body fluids, respiratory droplets, and contaminated items (i. e., fomites), and sexual intercourse (predominantly homosexual, bisexual and MSM) [5]. MPXV belongs to the Orthopoxvirus genus of the Poxviridae family, which is the same family of variola virus causing smallpox, leading to similarity between both viruses in genetic structure, clinical symptoms and manifestations, and cross-protection provided by smallpox vaccines (85%) [6].

JYNNEOS™, a live non-replicating virus vaccine, is indicated for preventing smallpox and monkeypox illness. No major adverse effects are seen with its administration; however, it is considered only in high-risk people due to limited stocks. Another vaccine, ACAM2000, is contraindicated in immunocompromised individuals as it contains a live replicating virus, but due to its abundant supply, it is considered for prevention of monkeypox disease after outweighing its risks. Myocarditis and pericarditis are some major adverse effects of ACAM2000 [7]. Tecovirimat (TPOXX®), approved by the FDA in 2018, and inhibits Orthopoxvirus VP37 envelope wrapping protein is indicated against smallpox infection in adults and children [8]. In August 2022, Japan's Health Ministry has approved smallpox vaccine LC16 KMB for pre-exposure prophylaxis against MPX [9].

According to the WHO-EMR regional office, the overall risk of a monkeypox outbreak is moderate, though an increasing pattern has been witnessed. The region in this article is well-prepared for surveillance and case detection, having delivered monkeypox diagnostic kits to 20 member countries. However, the availability of antivirals and vaccines remains a problem in this area, as it is in other parts of the world [10,11].

The repercussions of the COVID-19 pandemic continue to impact on

the EMR, making any MPX outbreak to overload the already strained healthcare systems. However, by paying attention to the lessons learned from COVID-19, a potential health catastrophe can be avoided [10]. The EMR countries should ensure early readiness of their healthcare systems to tackle any sudden rise in number of MPX cases in an efficient and timely manner. They should widen their surveillance programs to determine who are the people at risk (i. e., MSM community), and follow appropriate measures to protect them and their contacts through ring vaccination, for example. They should ensure availability of enough vaccines and antivirals. Due to limited resources, especially vaccines in the EMR countries, ring vaccination will be of importance and focus is due in its applicability here [10]. Ring vaccination, by administering the vaccine to close contacts of confirmed cases, has begun to be implemented in countries like the US, UK, and Canada, which have sufficient supplies and a higher number of cases. However, its implementation in the EMR countries is challenging because many cases have been reported to involve men having sex with men (MSM), and therefore new cases might not be reported in these countries due to the fear of stigmatization and persecution, which would hamper contact-tracing efforts. Moreover, vaccine compliance could also be an issue due to the adverse effects of the vaccines [12].

Inadequate funds, poor infrastructure, a shortage of qualified and skilled human resources, political instability, and conflicts are some of the major causes that have weakened healthcare systems in some EMR countries, including Afghanistan, Iraq, Libya, Syria, Sudan, Somalia, Yemen and Lebanon. Identical issues also exist in Iran and Pakistan although they are minor [13,14]. It is challenging for Lebanon's healthcare system to manage a new catastrophe, as it is already struggling due to the recent COVID-19 pandemic, economic pressures, political unrest, a neglected refugee crisis, and an increasing number of healthcare professionals leaving the country. In addition to these problems, the chemical explosion on August 4, 2020, at the Beirut port also added to these challenges, with the incident destroying nearby hospitals and related loss of healthcare resources [15]. The rest of the regional countries like Saudi Arabia, UAE, and Qatar may not have these concerns; however, the recent pandemic of COVID-19 has affected all these nations negatively and has strained their healthcare systems [13, 14]. Furthermore, several concerns have also been observed during that period, including undesirable technical assistance, medical logistics, supplies management, limited human resource availability, and inadequate and weak public health interventions (e.g., contact tracing and epidemiological surveillance) [13,14]. All these can cause significant obstacles to preventing the spread of newly emerging diseases, such as the current MPX outbreak [13,14].

Monkeypox still offers us a chance to improve timely catastrophe prevention. Emphasis on intensified surveillance, therapeutic

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interventions, and continuing research efforts is the key. Collaboration between animal and human health sectors is weak [16]. Thus, the WHO-One Health approach is recommended [10]. Due to the outbreak of MPX in some EMR countries, we recommend some measures to be taken to lessen the recent burden of MPX outbreak in these historically fragile healthcare systems [16]: First, early preparedness and readiness of the healthcare systems in EMR countries are paramount to deal with the MPX outbreak in an effective and timely manner. In this regard, it is foremost to enhance training healthcare workers on how to timely detect and care for MPX, in addition to the logistic means for diagnosis and care in case of an outbreak.

Second, vaccination programs and campaigns, especially ring vaccination should be established and prioritized for high-risk vulnerable groups (i.e., close contact with confirmed cases, medical personnel, laboratory workers), which can be protective and effective interventions [7]. In addition, establishing trusted and free-of-charge community clinics with easy accessibility can help the public, especially the MSM community to seek screening and help them with early detection of MPX infection. Moreover, it is essential to intensify disease surveillance by setting national policies with clear guidelines for case definitions of MPX [17].

Third, due to the popularity, usability, and feasibility of different social media apps (i.e., Facebook, Instagram, WhatsApp, and Telegram) in EMR (i.e., Egypt only has 44 million users of social media platforms), they can be used by the medical community and public figures to increase public awareness and knowledge about the ongoing outbreak and what to do in case of being infected or finding a MPX case [18]. In this regard, accurate official medical information about MPX is of importance, especially to attenuate the effect of stigma against the MSM community which will inevitably lessen the burden of MPX. This can be achieved through a flag-based system on different social media platforms to prevent offensive content against MSM community [19].

To conclude, the number of cases of monkeypox have made it a matter of concern for which WHO declared it to be a global health emergency. To date (August 2, 2022), the cases have reached 27 in the EMR nations. Despite MPX seems to have lesser transmissibility and propensity for mortality than COVID-19, it would be imprudent if another pandemic is not anticipated. Therefore, a proper and timely preparedness of nations against the outbreak of MPX from the root level is advisable. Proper screening and surveillance should be warranted in every sector of the country and healthcare workers should be informed and regularly updated concerning the two deadly viruses of this time, COVID-19 and MPXV. Early isolation and contact tracing should be mandated for every possible sign and symptom relating to MPX. The emergence of another threat to humankind i.e., the MPXV has engendered fear among many people. The Health Ministry and other allied bodies should take steps to ease the situation by creating mass public awareness and campaigns. Epidemiologists and researchers must be engaged in different sectors to observe and collect data on the present situation and make plans. Similarly, enforcement of strict rules and regulations from the ground level like a compulsion of wearing mask, sanitizer to isolation by people themselves or by the government if signs and symptoms appear. In addition, a protocol for management of MPX cases by every health policymaker is mandatory. Reflecting on the sheer situation of the healthcare systems by COVID-19, another outbreak could turn out to be a nationwide health crisis, especially concerning developing nations. Thus, a beforehand protocol for minimizing and mitigating MPX outbreaks is necessary for the EMR countries. Moving forward, further robust research is needed in the EMR to help direct context-specific public health interventions and unify the local community's awareness regarding the different aspects of the ongoing MPX outbreak, and finally to prevent the stigma against MSM, as set in the recommendations above.

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## Author contribution

RAF: designed the study. RAF, TPU, SHK, ABS and AK: made the first draft. RAF and RHE: updated the manuscript. RAF, MYE and RHE: reviewed the final draft and edited final. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

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## Declaration of competing interest

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