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Prevention, Vaccination, Management and Infection Control of Monkeypox Outbreak: an Update Global Recommendation for the Next Year 2023

Sirwan Khalid Ahmed[1,2]

[1]Department of Pediatric, Rania Pediatric & Maternity Teaching Hospital, Rania, Sulaimani, Kurdistan region, 46012, Iraq.
[2]Department of Nursing, University of Raparin, Rania, Sulaimani, Kurdistan region, 46012, Iraq.

Abstract

A sudden increase in human monkeypox infections that began in non-endemic nations in May 2022 has sparked concerns about a new global infectious threat. The number of people who are vulnerable to infection with MPXV is growing worldwide. On July 23, 2022, the World Health Organization (WHO) announced that the recent outbreaks of monkeypox (MPX), an infectious sickness caused by the monkeypox virus (MPXV), have been declared a global public health emergency. As of November 26, 2022, there have been 80.850 confirmed cases and 55 deaths across 110 countries and territories. The present report highlights recommendations for prevention, vaccination, management, and infection control of the probable monkeypox outbreak.

Keywords: Monkeypox, Monkeypox Virus, Vaccination, Treatment, Management, Infection Control

***Correspondence:** sirwan.ahmed1989@gmail.com

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INTRODUCTION

A sudden increase in human monkeypox infections that began in non-endemic nations in May 2022 has sparked concerns about a new global infectious threat. On July 23, 2022, the World Health Organization (WHO) announced that the recent outbreaks of monkeypox (MPX), an infectious sickness caused by the monkeypox virus (MPXV), have been declared a global public health emergency. As of November 26, 2022, there have been 80.850 confirmed cases and 55 deaths across 110 countries and territories.[1] In addition, the global community is unprepared to manage the virus in the same manner as COVID-19. Unlike previous outbreaks, where transmission was mostly from animals to humans,[2] it is now believed that human-to-human transmission is the primary route of infection. The majority of monkeypox cases manifest as a generalized (at first localized) rash. Most patients in the current outbreak display vaginal or peri-anal rashes. Infected skin is observed to have very high virus concentrations.[3]

MPXV is an enclosed, linear, double-stranded DNA virus that is a member of the *Chordopoxvirinae* subfamily of the *Poxviridae* family and the *Orthopoxvirus* genus. In most cases, monkeypox is a self-limiting infection, with symptoms returning after two to four weeks. However, the illness can be severe in certain individuals, such as children, pregnant women, and immunocompromised people.[4,5]

In 1970, a viral zoonotic infection known as monkeypox was detected for the first time in humans. Historically, the poorest and most vulnerable individuals have been the primary victims of this disease, which mostly affects Africa's tropical rainforests. It did not become a substantial public health hazard until 2003. The most recent epidemic has three primary reasons. First, because the symptoms were mild, the transmission was not stopped in time. Second, MPXV sequences underwent mutations more rapidly than anticipated during this outbreak. Third, herd immunity has reduced over time due to the abandonment of universal smallpox vaccination efforts in the 1970s.[6]

Monkeypox Prevention

Currently, the pandemic of COVID-19 and the multi-country epidemic of monkeypox in non-endemic countries have attracted global attention. As the global economy and tourism continue to expand, there are no longer national boundaries for communicable diseases.[6]

In response to this epidemic, the World Health Organization (WHO) developed a clinical and public health incident response to coordinate thorough case discovery, contact monitoring, laboratory investigation, clinical management, isolation, and the implementation of infection control measures.[7] Under the leadership of the WHO, endemic nations exchange comprehensive information and collaborate to battle epidemics. Several European countries (Belgium, Finland, France, Germany, Israel, Italy, the Netherlands, Portugal, Slovenia, Spain, Switzerland, the United Kingdom, and Northern Ireland), as well as the United States, have released complete or partial genome sequences of MPXV strains isolated during this outbreak.[8]

It is recommended that a universal protocol be developed in order to assist each country in improving their levels of awareness, surveillance, laboratory diagnosis and testing, case investigation and contact tracing, clinical management and infection prevention and control, immunization in addition to vaccinations, risk communication, as well as community involvement 6. In addition, the psychological consequences should be reduced at a practical level.[5,9,10]

Disease Control and Monitoring

Reduce the chances of future monkeypox outbreaks by increasing our knowledge of the disease.[11] In public places and areas where an outbreak of a contagious disease is likely to occur, it is especially important to wash your hands frequently and control your breathing. Everyone, but especially those working at entry and departure points, needs to be aware of the dynamics of the monkeypox outbreak and stay away from wild monkeys, rodents, and other non-human primates, as well as their blood and excrement. Further key preventative measures include avoiding the consumption of raw or undercooked meat and other animal products from potentially infected animals.[4] Gloves and other protective gear should be worn whenever possible. The next steps could include increasing health education, raising public awareness, and fostering better communication and cooperation between airports and airlines.[6]

Stemming epidemics necessitates the development of surveillance methods and the prompt identification of new cases. The primary objectives of monkeypox surveillance are the rapid detection of illnesses and the interruption of further transmission. The following measures may need to be taken to achieve the following goals: Improvements to entry inspections and quarantine methods include stricter enforcement of health declarations, temperature monitoring, medical inspection, sampling, and testing. Decreasing the risk of virus transmission by limiting the import of rodents and primates from that continent. At admission, patients should be screened for monkeypox and their cases documented; after 21 days, a routine checkup should be performed to look for symptoms and signs. Establishing reliable methods for detecting and controlling MPXV by increasing the stringency of quarantine regulations for imported goods, especially shipments of rodents.

After immunizations successfully eradicated smallpox in 1980, the preventative practice of immunizing against the disease was abandoned. However, the effectiveness of the vaccine's protection can decline with time if more cohorts are not vaccinated. The number of people vulnerable to infection with MPXV is growing worldwide. In the United States, MPXV vaccines against ACAM2000 and JYNNEOS (also known as imvamune or imvanex) are now legal. The live attenuated virus vaccination JYNNEOS has been approved by the US Food and Drug Administration for use by certain patients at high risk of exposure to the poxvirus. As a result of its devastating side effects, the European Union has revoked ACAM2000's approval. These two vaccines have mostly been given to people who live close to people who have been diagnosed with monkeypox.[6]

Training Healthcare Workers

Healthcare workers who have received extensive training will be able to identify secondary cases and intervene to prevent further harm. Early discovery, reporting, diagnosis, research, and treatment are all crucial steps that must be taken seriously. In the event of a pandemic, swift action is required to contain the situation and protect at-risk populations. There should also be a focus on cleanliness because MPXV can be treated with any typical antiseptic 6. Additionally, the safeguarding of frontline healthcare professionals should be a key focus during this global public health concern.[12]

CONCLUSION AND RECOMMENDATIONS

There has been an unexpected and alarming rise in instances worldwide; therefore, medical personnel should be on high alert in case the smallpox vaccination needs to be prepared for an outbreak. The creation of antiviral drugs specifically targeting MPXV is urgently needed. Further, we need to enhance cross-sectoral collaboration between health, forestry, agriculture, environmental protection, customs, and other agencies in order to develop effective monkeypox control strategies. Increasing medical and technical aid may be necessary to strengthen the ability of vulnerable areas with poor public health to deal with epidemics and lessen the likelihood of epidemics spreading to nearby regions.

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DATA AVAILABILITY

All datasets generated or analyzed during this study are included in the manuscript.

ETHICS STATEMENT

This article does not contain any studies on human participants or animals performed by the author.

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