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Editorial: Increasing Human Mpox Cases: A Signal for Potential Re-emergence of Smallpox?

Samuel Munalula Munjita

Department of Biomedical Sciences, School of Health Sciences, University of Zambia, Lusaka, Zambia, Email: samuelmunjita@gmail.com

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INTRODUCTION

As the world recovers from the COVID-19 pandemic, a new public health concern has re-emerged: Mpox. Since 2022, Mpox cases have surged globally, with nearly 100,000 reported cases by mid-2024. This rise has predominantly been observed in individuals under 45, a demographic that was never vaccinated against smallpox. Given that the smallpox vaccine confers over 80% protection against Mpox, the growing incidence raises an urgent question: could declining population immunity lead to a potential re-emergence of smallpox?

The Protective Role of the Smallpox Vaccine

Vaccination has historically played a critical role in disease eradication, as evidenced by the global elimination of smallpox in 1980. However, the discontinuation of smallpox vaccination has inadvertently created a population susceptible to Mpox. Studies indicate that individuals vaccinated against smallpox retain significant immunity even after four decades, but this immunity wanes at an estimated rate of 1.29% per year. The resurgence of Mpox in Nigeria in 2017- almost 40 years after smallpox vaccinations ceased- highlights this growing vulnerability. Additionally, the emergence of new Mpox virus (MPXV) strains raises concerns about the potential evasion of existing immunity. While this hypothesis remains unproven due to limited vaccine availability, the rapid increase in Mpox cases suggests the need for further research into the longevity and efficacy of smallpox-induced immunity.

A Public Health Warning

Although Mpox is not as deadly as smallpox, its rising incidence serves as a stark reminder of how lapses in vaccination coverage can lead to the resurgence of infectious diseases. Historical data on measles re-emergence highlights how rapidly diseases once controlled can return when immunity levels drop. Similarly, an increasing pool of individuals unprotected against smallpox presents a potential risk for its re-emergence, whether through natural means or bioterrorism.

Urgent Actions Required

To mitigate these risks, it is crucial to:

1. **Assess Residual Immunity:** Large-scale studies should evaluate the presence and durability of smallpox immunity in previously vaccinated individuals.
2. **Develop Targeted Vaccination Strategies:** Data from immunity assessments should inform policies on whether booster vaccinations or new vaccine formulations are necessary.
3. **Enhance Surveillance and Modelling:** Mathematical models incorporating current Mpox outbreak data can help predict future outbreaks and guide public health responses.

CONCLUSION

The recent rise in Mpox cases underscores a significant immunity gap stemming from the discontinuation of smallpox vaccination. Urgent research is needed to assess residual immunity levels and refine vaccination strategies to prevent potential outbreaks of both Mpox and smallpox. The lessons from history are clear: proactive measures are essential to avert the resurgence of devastating infectious diseases.