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Helminthiasis and mpox vaccination: challenges in Sub-Saharan Africa

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ABSTRACT

The ongoing mpox outbreak in sub-Saharan Africa has highlighted the critical need for equitable vaccine access and robust logistical support. However, these factors alone are insufficient to ensure the success of vaccination campaigns in regions characterized by unique epidemiological and immunological challenges. One significant issue is the high prevalence of helminth infections, which are known to impair immune responses to vaccines, potentially reducing both short-term efficacy and long-term antibody titers. This paper explores the implications of helminthiasis for mpox vaccination in sub-Saharan Africa, emphasizing the need for integrated strategies to address this co-infection. We discuss whether combining deworming programs with vaccination campaigns could enhance vaccine responses and examine the applicability of emerging data on single-dose mpox vaccination in the context of endemic helminth infections. Furthermore, we highlight the importance of real-time surveillance to monitor vaccine effectiveness and identify breakthrough infections in regions with high helminth prevalence. Our findings underscore the necessity of a context-specific approach to mpox vaccination policies, one that considers the intricate interplay between helminth infections and vaccine efficacy. Addressing these challenges is essential to ensure the success of vaccination efforts and to mitigate the broader public health impact of mpox in Africa and beyond.

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The ongoing mpox outbreak in Africa has appropriately prioritised vaccine access within the global health agenda. While securing sufficient vaccine supplies and establishing robust logistical support are paramount, it is essential to acknowledge that these represent only one facet of a multifaceted challenge. The success of any large-scale vaccination campaign hinges upon a nuanced understanding of the interplay between immunological and epidemiological factors.

A crucial consideration, particularly within the context of sub-Saharan Africa, is the potential for interference between mpox vaccination and endemic helminth infections. A growing body of evidence suggests that helminth infections can suppress both the short-term immune response to various vaccines and the long-term antibody titres following vaccination. Notably, deworming treatment may mitigate some of these inhibitory effects [1–3].

Given the high prevalence of helminth infections in tropical regions currently affected by the mpox outbreak, it is essential to consider the potential impact of this co-infection during the development of vaccination policies.

Several key concerns warrant attention during the planning of a mass vaccination campaign:

First, it is crucial to determine whether the inhibitory effect of helminth infections on vaccine response extends to the current mpox vaccine. Urgent research is needed to ascertain if integrating mass drug administration programs for common intestinal helminths alongside mpox vaccination could enhance vaccine responses.

Second, given the logistical challenges inherent in both vaccine supply and administration of the two doses recommended for optimal immunisation, the applicability of emerging real-world data suggesting that a single dose of the third-generation mpox vaccine may provide acceptable protection requires careful consideration [4,5]. It remains unclear whether these data, primarily obtained from outside Africa, hold true in the context of countries grappling with endemic helminth infections.

Finally, robust surveillance for vaccine breakthrough infections is paramount. Closely monitoring vaccine effectiveness in real-world settings, particularly in areas with high helminth prevalence, is crucial to inform policy adjustments.

The current mpox outbreak demands a nuanced and context-specific approach. Failure to consider the critical interplay between helminth infections and vaccine responses risks jeopardising vaccination efforts and

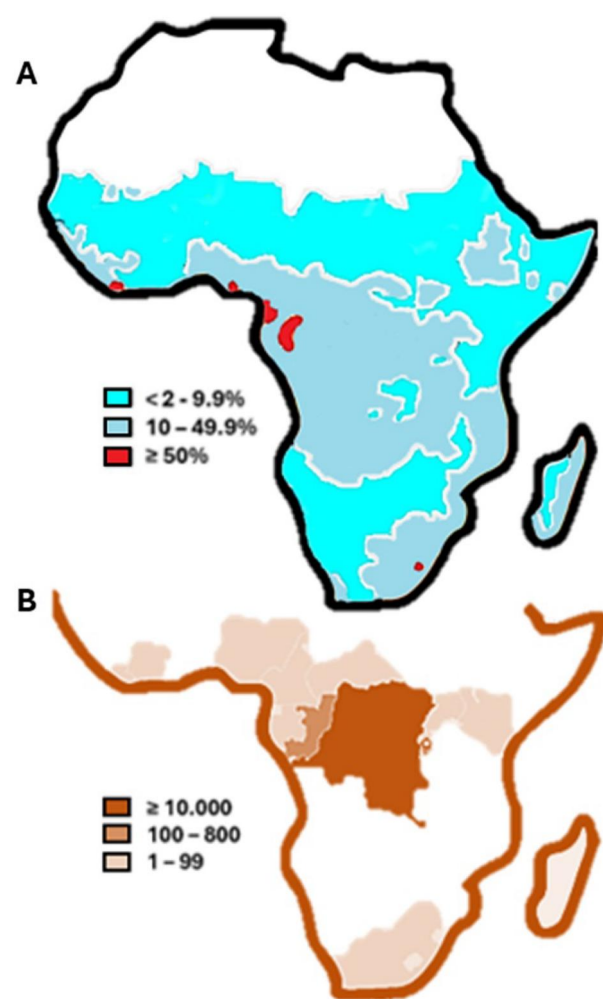


Figure 1. Spatial correlation between the 2024 mpox outbreak and soil-transmitted helminth prevalence in Sub-Saharan Africa. This map visually represents the intersection of (A) the prevalence of soil-transmitted helminth infections with (B) suspected/confirmed mpox cases reported in Africa between January 1 and August 23, 2024. (data sources: (a) [6] (b) [7]).

could have unintended consequences for mpox control in Africa and globally (Figure 1).

Disclosure statement

No potential conflict of interest was reported by the author(s).

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