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Barriers to Mass Drug Administration Programmes That Sustain the Burden of Neglected Tropical Diseases in the African Continent

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Background

Neglected tropical diseases (NTDs) are a group of twenty communicable diseases of parasitic, bacterial, viral and fungal origins that burden the "bottom billion" of the world, the poorest populations in society living in areas with limited access to water, sanitation, and housing [1,2]. NTDs are mostly found in countries in the Global South which lack the capacity to deal with the disease burden of NTDs due to insufficient resources and weak healthcare systems. The five most prevalent NTDs are: schistosomiasis, trachoma, soil-transmitted helminths, lymphatic filariasis, and onchocerciasis. They can cause severe disability, disfigurement, social stigma, and mortality [2,3]. They also have considerable economic impacts resulting in reduced earnings, low school attendance, and higher dropout rates and health costs [3,4].

The World Health Organization (WHO) recommends the following five strategies for the prevention and control of NTDs: preventive chemotherapy (PCT); intensified case management; vector control; provision of safe water, sanitation, and hygiene (WASH); and veterinary public health measures [3,5]. PCT consists of the administration of antibiotics, anthelmintics, or a combination of these to prevent advanced symptoms and severe complications [6,7]. The drugs are safe, robust, quality-assured, and cost-effective [2,3,8]. Mass drug administration (MDA) programmes are periodically delivered to entire populations regardless of the presence of symptoms or an infection [2,3,8]. Community drug distributors (CDDs) are critical to these programmes in preventing and treating NTDs [8]. They distribute drugs, educate community members, monitor adverse health events, and conduct reporting and census activities [8]. While admirable strides have been made in NTD elimination across the African continent, NTD elimination targets and MDA programmes continue to face several challenges that impact programme delivery and community adherence to drug intake. This article explores some of those programme barriers and will propose reforms required in selected programme inputs.

Barriers

A. Insufficient understanding of local contexts

Complex and intersecting socioeconomic and political factors such as migration, insecurity, urbanization, and gender roles influence access to preventative medicine [2,9]. For instance, migration patterns and seasonal variations result in missed opportunities to administer drugs [10]. A study conducted in Cameroon revealed that migrant farming communities were largely missed during MDA campaigns due to the mobile nature of their work [11]. Likewise, school-based MDA programmes had no defined strategies to reach non-school-going children or those enrolled in private schools [11]. Gender roles can also impact MDA coverage. Male CDDs in Kaduna, Nigeria had

limited to no access to female household members without the presence of the head of the household [9]. Individuals that were pregnant, lactating, or belonging to reproductive age were also missed in MDA campaigns due to the lack of inclusive national policies and uncertainty felt by CDDs in administering drugs to these populations [11].

B. Inadequate support affecting CDD morale and retention

The absence of incentives and remuneration leads to demotivated workers who are less willing to perform programme delivery tasks. This is a critical barrier that in turn contributes to high attrition rates [4]. In addition, Polio and HIV/AIDS programmes that provide incentives to volunteers lead to competition, causing drug distributors to disengage from MDA programmes [10]. NTD volunteers dedicate time towards programme activities, resulting in a missed opportunity to generate income [8,9]. However, organizations may not have sufficient funds to pay CDDs and may require additional funding from the government [12]. Furthermore, inadequate support and resources have led to the exclusion of hard-to-reach areas and workers utilizing their own transportation for which they are not compensated [8,9].

C. Limited community agency, involvement, and sensitization

Even with widespread drug delivery, a community's apprehension of PCT can pose barriers to coverage. Mistrust in the programmes and the drugs can impact community engagement and programme acceptability [9]. Awareness of disease and transmission are crucial for the successful implementation of community-directed programmes and incorporating educational components can be beneficial in improving communities' health literacy [4]. However, limited resources to supervise and train staff can lead to staff feeling ill-equipped to sensitize and combat misinformation [5,8,10,13]. Additionally, hypoendemic areas with low disease visibility can lead to a lack of perceived need for MDA programmes, exacerbating challenges in NTD elimination [9].

D. Restrictive programme scope to address underlying challenges

Improving water supply and sanitation can reduce the risk of NTDs [14]. However, reliance on MDA programmes may perpetuate a dependency on chemotherapeutic treatments and disregard for other strategies such as behavioural change, sanitation improvement, case management, and vector control [10]. CDDs in Tanzania described poor levels of water and sanitation infrastructure that prevented behavioural change and disease elimination despite MDA and community education efforts around hygiene and sanitation [12]. Resource constraints and a lack of standardized disease mapping guidelines limit the ability to perform ongoing surveillance and mapping of transmission zones [4,15,16]. This makes it difficult to distinguish between non-endemic and hypoendemic zones and consequently increases the risk of sustained transmission of infection in areas otherwise thought to have eliminated the disease [4]. Lastly, the complexity of local bureaucratic procedures, local organizational limits to ensure accountability, and power struggles between different stakeholders contributed to the failure to aptly identify bottlenecks and learn from operational challenges such as funding and drug supply issues [10].

Looking Ahead

Despite these challenges, there is a growing interest in examining facilitators that could aid in scaling existing interventions in diverse settings and integrating them into local health systems to minimize barriers, build community capacity, and address underlying determinants [15,16]. Some of the focus areas proposed for the equitable delivery of NTD interventions, including MDA, are:

A. Adapting to the local context

The aforementioned barriers demonstrate that there is an optimal window to implement these interventions [10]. Drug distribution plans, as well as any other complementary intervention, such as education or sanitation improvement, should be informed by current epidemiological evidence and should reflect local strengths, needs, socioeconomic circumstances, and cultural traditions [9,10].

B. Improving community ownership and involvement

To eliminate NTDs, implementers must understand community perspectives and needs [10]. This may be achieved through the involvement of key community-level actors as well as passive or active community mobilization approaches wherein members can participate in surveillance, vector control, sanitation, or programme planning efforts [2]. A gender equity lens to promote greater participation of women in the CDD workforce and household decision-making should also be implemented [2,13].

C. Enhancing staff retention, government processes, and collaborative efforts

While external funding has helped to reduce the burden of NTDs in recent times, its restrictions, reductions, or reallocation compromises program sustainability [9, 17, 18]. Moving forward, the sustainability of programmes requires continued support to field staff through incentives, transportation support, and frequent training. Likewise, ongoing logistical and funding challenges warrant a reform of government processes, an increase in political will, and addressing power and priority imbalances between local and international players [2].

Conclusion

The barriers and potential reforms covered in this article are not an exhaustive list and context-specific variations exist between settings. NTD transmission depends on different vectors and animal reservoirs, as well as environmental and socioeconomic factors [19]. This makes NTDs a wicked public health challenge that requires consideration of several intersecting parts rather than a uniform approach to MDA. NTD elimination should be a multilevel and multisectoral collaborative effort that reflects on these implementation challenges and applies data-driven strategies that prioritize community needs and capacity building.

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