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Opinion

Lessons from COVID-19: Overcoming Vaccine Hesitancy for the Malaria Vaccine in Africa

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Introduction

Vaccines have played a key role in battling infectious diseases, sparing countless lives from death. From smallpox eradication to COVID-19 control recently, vaccines have shown their efficacy in protecting populations. However, despite these successes, vaccination programs continue to face significant challenges, including vaccine hesitancy [1]. This phenomenon, characterized by a reluctance or refusal to receive vaccines, can undermine public health efforts and hinder the eradication of diseases [2]. The most compelling and most recent example of vaccine hesitancy in Africa was during the mass vaccination campaign carried out in response to the COVID-19 pandemic. Indeed, compared to other continents, Africa lagged with only 24% of the overall population fully vaccinated against the global full vaccination rate of 62%. This vaccine hesitancy was unevenly distributed on the continent, with countries like Malawi, Burkina Faso, Mali, Senegal, and Cameroon that had respectively 15%, 12.1%, 10%, 8.8% and 5.9% [3]. Vaccine hesitancy is far from being peculiar to the Coronavirus; it has/will affect other vaccination rollouts, especially for endemic diseases on the continent, like malaria.

Malaria burden in Africa

Africa mostly carries the burden of malaria with more than 233 million cases (representing 94% of all cases worldwide) and 580000 deaths (representing 95% of all deaths) in 2022; four African countries accounted for more than half of all registered cases: Nigeria (26.8%), the Democratic Republic of the Congo (12.3%), Uganda (5.1%) and Mozambique (4.2%) [4]. Throughout the years, there have been breakthroughs that made available treatments against malaria like Quinine (1820), Chloroquine (1934), Sulfadoxine-Pyrimethamine (1967), Artemisinin(1972), Mefloquine (1974) [5]. The only missing item in the battle against malaria was a vaccine, until recently.

RTS, S/AS01: A new opportunity for malaria prevention

Since October 2021, the World Health Organization (WHO) has allowed the use of a new vaccine, the RTS, S/AS01, to prevent malaria in children in regions with moderate to high Plasmodium Falciparum malaria transmission [6]. This vaccine specifically targets the circumsporozoite protein, a key surface protein found on the sporozoite—the infectious stage of the malaria parasite. The immune system of a vaccinated person is stimulated to produce antibodies against the circumsporozoite protein [7]. Henceforth, those antibodies will neutralize the sporozoite in the bloodstream when the vaccinated person is bitten by a malaria-infected mosquito, thus preventing the parasite from establishing an infection [7]. The vaccine is administered intramuscularly in a four-dose schedule: the first three doses are given at monthly intervals starting at five months of age, followed by a fourth booster dose approximately one year after the first dose, particularly in areas with highly seasonal malaria transmission [8].

Studies on the efficiency of this vaccine showed that, combined with the distribution of mosquito nets, it was

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efficient at 71% during the first 18 months and at 65% in the second 18 months [9].

The availability of a vaccine against malaria is wonderful news, as it has led to a decrease in hospitalizations and child deaths due to malaria by 13% in countries where it has been deployed [7]. However, when designing strategies for the deployment of the new vaccine, it is crucial to address the persistent challenge of vaccine hesitancy. Eradicating malaria from the African continent requires a deep understanding of the root causes of this hesitancy. It also demands that we reflect on past experiences, building on strategies that have proven effective while learning from previous shortcomings.

Understanding vaccine hesitancy: COVID-19 case

Vaccine hesitancy, for whatever vaccine, is not new and has different causes that may differ depending on specific social, political, or economic characteristics of a determined area [10]. Looking at how the vaccination against COVID-19 unfolded and the cultural contexts on the African continent, four probable reasons for vaccine hesitancy can be identified: Policies encouraging vaccine hesitancy, religious and cultural beliefs, misinformation and/or disinformation, and the limited outreach of the vaccination campaign.

COVAX, an initiative to promote vaccine equity in Low and Middle-Income Countries (LMICs), was launched in January 2021 [11]. While many African nations began rolling out COVID-19 vaccines, some countries, including Tanzania, Burundi, Madagascar, and Eritrea, were initially hesitant to acknowledge COVID-19 and to join COVAX [12]. Tanzania and Burundi's leaders were slow to acknowledge the severity of COVID-19.

Pandemic and implement appropriate policies [13]. This delay, coupled with disinformation and widespread misinformation about the virus and vaccines, created a challenging environment for promoting vaccination. By the time these countries started their vaccination campaigns, rumors and skepticism about the vaccines had taken hold, making it difficult to convince populations of their safety and efficacy [14].

Religious leaders have played a key role in COVID-19 vaccine hesitancy in Africa. Indeed, some religious groups resist healthcare, including vaccines [15]. In some countries, religious and community leaders have used their influence to openly preach anti-vaccine ideology to their followers [16]. Some apostolic groups are known to resist vaccination programs, and vaccine acceptance for most of these groups remains low [16]. The situation was exacerbated by a lack of official communication, in some countries, about the vaccines and their effects on the pandemic; but also, a lack of strategy to debunk all the fake news and misconceptions around the vaccine [14].

Cultural beliefs rooted in colonial history also play a significant role in shaping vaccine hesitancy. During the colonial era, populations were often coerced into participating in vaccination campaigns, some of which involved experimental vaccines that led to harmful physical and psychological effects. These traumatic experiences have left a legacy of mistrust, giving rise to persistent rumors that vaccines are tools of foreign domination or control [17].

The other factor that fostered vaccine hesitancy was the gap in access to vaccines between rural and urban areas. For example, in Burundi, there were six vaccine centers, four of which were in Bujumbura, the capital city, and only two upcountry [18].

The fact that a part of the population had to travel so far to get their doses deterred so many from doing so, only willing to make that effort when the vaccination was required, especially for those preparing to travel abroad. Those disparities, by reducing access to vaccines for many, were undermining the efforts to break the cycle of contamination, thus becoming a threat to public health.

Strategies to prevent Malaria vaccine hesitancy

For the malaria vaccination campaign to be successful, strategies that address the root causes of vaccine hesitancy must be adopted.

- First, Governments, Policymakers, Community and religious leaders, and the media have to partner and develop effective communication strategies to counter false narratives and provide accurate information about vaccines. This should include, for instance, addressing concerns about why the development of the malaria vaccine was hastened and reassuring the public about the effectiveness and safety of the vaccine.

  In the period before the beginning of the campaign, there should be a large media campaign to inform the population about the forthcoming activity: explain why it is needed, how it will be done, and clearly state the effect on the body. The population must be fully associated with the vaccination campaign through transparent communication. In addition, the media campaign should comprise an active strategy, with a special focus on social media, against fake news and misconceptions, to make sure that they are identified and provide the most suitable answers. The communication efforts should be relentless and must continue during the vaccine rollout. To maximize impact, the media campaigns.

  Should leverage both digital platforms and local radio, which remains a powerful tool in many communities. Governments, along with religious and community leaders, can support the development of interactive radio programs that allow listeners to call in with questions and receive real-time answers from healthcare professionals.

  In addition, trusted social media influencers, as well as community and religious leaders, should be trained to

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serve as vaccine ambassadors. Their involvement can play a crucial role in dispelling myths and spreading accurate, culturally relevant information both online and through local radio channels.

- Secondly, communication efforts have to be geared towards specific Communities. Different communities may have unique concerns and beliefs regarding vaccines. It is important to tailor communication efforts to address the specific needs and concerns of various populations. This may involve working with community leaders and organizations to understand local perspectives and develop culturally appropriate messaging.

- Lastly, everything should be done to expand the outreach of the vaccine campaign to its maximum. The targeted population must be able to reach vaccination centers without too much struggle. From that perspective, mobile vaccination centers can be used to reach inhabitants of remote areas. Furthermore, the use of mobile vaccine centers has the advantage of being able to respond to a sudden surge in cases in a particular area. Beyond mobile centers, existing healthcare facilities that already provide routine immunization services could be equipped and accredited by the ministries of health to deliver the Malaria vaccine. These facilities should be supported with appropriate cold chain infrastructure, and their healthcare personnel trained in the proper administration of the malaria vaccine.

Conclusion

For the upcoming vaccination campaigns against malaria, Africa must draw on lessons that we learnt from COVID-19. By doing so, it is possible to overcome vaccine hesitancy and leverage the potential of the malaria vaccine to significantly reduce the burden of malaria in Africa.

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