

Elimination and Eradication of Malaria: Nigeria in Perspective

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Eradication globally is the current goal for malaria control by eliminating the disease locally in all countries where it is endemic [1,2], but plasmodium species continue to evolve different survival mechanisms including development of resistance to all class of antimalarial drugs [1,3]. In Africa, *Plasmodium falciparum* infection; which causes the most virulent form of malaria, is highly endemic because of the favorable existence of competent species of mosquito vectors that effectively transmit the disease [3]. The World Malaria report 2018 indicates that there is a stalled progress in reduction of malaria incidence in the African region within the past few years. This notwithstanding, some countries recently have achieved the elimination status for malaria control in other regions while others reported reduced incidence [4].

Cues from such nations can be used to reproduce similar effective reduction in Africa but notably, there are differences in environmental factors, control strategies and implementation by governmental structures between these countries. Nigeria is the most populous African nation with projected population size of over 200 million people. Nigeria had the highest burden of malaria from the world malaria report of 2018 bearing a quarter of the global malaria incidence globally in 2017 [4]. This is alarming as malaria trend in Nigeria continues to be sustained, hence there is need to evaluate the impact of control strategies [5], as multiple approaches are required to effectively eradicate the disease [4]. There is a need for a more holistic approach for effective reduction of malaria in Nigeria, ultimately reducing the global incidence. This review briefly highlights current and potential strategies for eliminating malaria in Nigeria to achieve a malaria free nation.

Malaria Control in Nigeria

Many factors pose challenges for malaria elimination in Nigeria including environmental factors and insecticide resistance which limits vector control, high asymptomatic infections and parasite resistance to many antimalarials [6-10] Dokunmu, et al. as well as poor access to primary healthcare [11]. Some of the control measures used in Nigeria include vector control; indoor and outdoor residual spraying [6], adoption of ACTs as firstline treatment for malaria and evaluation of its efficacy [12], and inclusion of newer combinations, presumptive treatment of febrile children <5 year olds with firstline antimalarials, use of insecticide treated mosquito nets for all household, intermittent preventive treatment in pregnant women, evaluation of drug efficacy, surveillance through population-based Malaria Indicator Survey among others [3,11,13].

To date in Nigeria, most of these challenges persist and to overcome them, newer policies and improved implementation strategies have been set by National Malaria Elimination Program of the Federal Ministry of Health, Rollback Malaria, USAID's President's Malaria Initiative and other collaborating agencies, to achieve record low transmission in Nigeria by the year 2020 [11,13]. Some of these include: making available preventive measures for malaria protection in 80% populations, mass education on prevention, malaria screening by RDTs for people seeking care and reporting of cases, effective treatment of confirmed malaria cases hospital settings, availability of effective antimalarials, etc.

Exploring New Strategies for Elimination

Routine nation-wide epidemiological surveillance is not in place yet, malaria detection in persons not seeking care - asymptomatic carriers would still be missed if this

is not implemented which should be included under the malaria surveillance system. This strategy has been effective in other low endemic regions who implement mass drug administration because of minimal concern for drug resistance and associated side-effects [14,15]. In the case of Nigeria, other new drug combinations can be explored because of resistance [16,17] for mass drug administration in school-age children as well as older persons. It is of great importance to carry out country wide periodic malaria epidemiology to upscale surveillance for malaria elimination in Nigeria. In conclusion, Nigeria has set improved strategies for a road track to malaria elimination, but critical review of the effectiveness of these strategies is important. These strategies build on the ones previously used over the past decades, showing little progress in transmission reduction; however it is recommended that adopting different strategies as well institutional policy change can be more effective to drive malaria elimination in Nigeria.

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