

Perceptions of malaria and vaccines in Kenya

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Malaria is a leading cause of morbidity and mortality in Kenya. To confront malaria, the Government of Kenya has been implementing and coordinating three approaches—vector control by distributing insecticide-treated bed nets and indoor residual spraying, case management, and the management of malaria during pregnancy. Immunization is recognized as one of the most cost-effective public health interventions. Efforts are underway to develop a malaria vaccine. The most advanced (RTS,S), is currently going through phase 3 trials. Although recent studies show the overwhelming support in the community for the introduction of a malaria vaccine, two issues—culture and the delivery of child immunization services—need to be considered.

Alongside the modern methods of malaria control described above, traditional methods coexist and act as barriers to attainment of universal immunization. The gender dimension of the immunization program (where women are the main child caretakers) will also need to be addressed. There is an age dimension to child immunization programmes. Two age cohorts of parents, caregivers or family members deserve particular attention. These are the youth who are about to initiate childbearing, and the elderly (particularly mother-in-laws who often play a role in child-rearing). Mothers who are less privileged and socially disadvantaged need particular attention when it comes to child immunization. Access to immunization services is often characterized in some Kenyan rural communities in terms of living near the main road, or in the remote inaccessible areas.

Should a malaria vaccine become available in the future, a strategy to integrate it into the immunization program in Kenya should take into account at least two issues. First, it must address the fact that alongside the formal approach in malaria control, there exist the informal traditional practices among communities. Secondly, it must address particular issues in the delivery of immunization services.

Introduction

In Kenya malaria, caused by the parasite *Plasmodium falciparum*, is mainly transmitted by the *Anopheles gambiae* complex group and *Anopheles funestus* mosquitoes.¹ The health, social and economic consequences of malaria are well-known. These include children missing out on schooling, absence from work among adults, and the loss of loved ones.^{2,3} Malaria is a leading cause of morbidity and mortality in Kenya, with close to 70% of the total population at risk of infection. While all age groups within the population are at risk of malaria, children under the age of five and pregnant women who reside in malaria-endemic regions are particularly vulnerable. A recent review of the distribution of malaria in Kenya⁴ highlighted four classifications: the lake and coast endemic region (risk of malaria parasite among children aged between two and nine years greater than 20%); the highland epidemic (5–20%); seasonal transmission (less than 5%); low-risk areas (less than 0.1%). This reclassification also showed a reduction in the areas that are malaria-endemic—for example in the coastal region—and a corresponding rise in the regions of low transmission.

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Current Malaria Control Interventions in Kenya

To confront the disease, the Government of Kenya has been implementing and coordinating a number of malaria control approaches under the national malaria strategy. These include vector control through the distribution of insecticide-treated bed nets (ITNs) and indoor residual spraying (IRS), case management and the management of malaria during pregnancy. Recent results show that 56% of Kenyans own a treated bed net, a marked improvement from 2007 and 2003.² Yet the use of bed nets among children less than five years old decreases with age. Improvements though in the use of mosquito nets among women were also registered. Recent health facility surveys indicate that 44% of health facilities surveyed have a bed net in the facility.⁵ In spite of these observations, more recent conclusive reports point to a disease that is cunningly resilient. Malaria prevalence has increased in western Kenya despite the wide distribution of ITNs in the region.⁶ Studies⁷ suggest that causes for this re-invasion are likely related to reduced efficacy of ITNs, increased resistance among mosquitoes, and improper use of ITNs.

Intermittent presumptive treatment of malaria to pregnant mothers during ante-natal visits is the other strategy for malaria control in Kenya. In 2008, 14% of mothers who frequented an antenatal clinic received the second IPT dose, an increase from the 5% recorded in 2003 (KNBS et al. 2010). This is indicative, given that 92% of all mothers of reproductive age received antenatal care from a skilled medical provider in 2009, an increase from the 88% recorded in 2003. Among children who have had fever, only 24% took antimalarial drugs. Eight percent of children with fever in the two weeks before the survey received the recommended medicine (ACT); 8% received the second line recommendation (SF). The results of the survey also show that only half of the children received these drugs within the same day of the beginning of the fever. Current interventions are working when correctly and widely implemented. However, there is a need

for additional tools to further decrease the disease burden. A comprehensive control strategy with a multi-pronged approach is the most effective means of reducing prevalence.

While administration of vaccines that prevent malaria to those at risk is not yet an option for endemic communities, efforts are underway to change this. Immunization is recognized as one of the most cost-effective public health interventions, and as far as malaria is concerned, several vaccines are under development. The world's most clinically advanced malaria vaccine candidate, GlaxoSmithKline (GSK) Biologicals' RTS,S, is going through a Phase 3 efficacy trial in several African countries as part of a partnership that includes GSK, the PATH Malaria Vaccine Initiative (MVI), and African research scientists. Data from previous studies indicate that this vaccine candidate may cut episodes of clinical malaria in young children by about half.⁸ If the efficacy trial confirms earlier findings, the World Health Organization (WHO) has indicated that a policy recommendation for RTS,S is possible as early as 2015, paving the way for implementation in countries like Kenya through their expanded programs on immunization. Final results from the trial are expected in late 2014. An overview of the child immunization program in Kenya is therefore necessary.

The Kenya Demographic and Health Survey (KDHS) conducted in 2008–2009 nevertheless presents updated results with regard to child vaccination. According to the survey, 55% of mothers reported that they had received two or more doses of the tetanus toxoid (TT) injection during the last pregnancy, a proportion that is only marginally up from 52% in the previous KDHS, conducted in 2003. The results also show that about 73% of births are protected against tetanus. For both indicators of tetanus, higher proportions are protected in Coast as compared to western province. In other areas of child health, the survey shows that 77% of children aged 12 to 23 months are fully vaccinated (against polio, measles, diphtheria and TB), an increase from 57% in 2003.

Issues to Consider: Culture and Delivery of Health Services

That culture is a determinant of health at the household level is evident.⁹ Cultural taboos can prevent mothers from taking their children for immunization. Recent qualitative studies³ as well as quantitative sample surveys⁵ show the overwhelming support in the community for the introduction of a malaria vaccine, should a candidate become available. At the same time, a number of issues would need to be considered. Alongside the modern methods of malaria control, traditional methods coexist. These range from the placement of foul-smelling leaves of certain trees in the interior of houses to the smoke from burning cow dung. The second is consultation with the local medicine person who would then prescribe a remedy—herbal or otherwise. The third is belief in the forces of evil. The fourth is cultural rites for the new born in some communities: newborns are traditionally expected to stay indoors for three to four days, thereby making the infant miss out on the first vaccinations. The fifth is religious belief that forbids taking children for immunization. Observations suggest that communities attempt to control malaria in various ways and are examples of health-seeking behavior that an immunization programme for a new (malaria vaccine) will need to build on. However, the efficacy of these traditional methods is still unknown. Reasons given for use of these methods, particularly the use of traditional medicine were cited as familiarity with these methods.

The gender dimension of the immunization program at the household level is evident in at least two ways. Women are generally more involved in the decision to take the child for immunization because of their caretaker role. Men, due to their breadwinner function, are ordinarily responsible for providing the means of transport to enable their wives to take the child for immunization. There is a regional (religious) dimension to decision-making. In predominantly Islamic coastal region, it is observed that the permission of husbands before a child is taken for immunization would be necessary. This is less evident in Christian western province where the mother would be at

more liberty to take the decisive action. In transforming communities like those examined and observed in western and Coast provinces of Kenya however, the persistence and observance of these traditional gender roles brings about conflict and may jeopardize child immunization. More active participation of housewives in other chores (for example shop-keeping) and poverty which limits incomes of households and particularly husbands as breadwinners could result in a child not being taken for immunization as it is the mother who generally takes the child to the child welfare clinic. It is also evident that information obtained on immunization is through health education at the ante-natal and child welfare clinic. Men may therefore miss out and end up knowing less about immunization.

It is important to consider the age dimension of immunization programs. Two age cohorts of parents, caregivers or family members deserve particular attention. These are the youth who are about to initiate childbearing and the elderly (particularly mother-in-laws who often play a role in child-rearing). While great effort is put into the socialization of the youth into the adult role of economic production (through formal schooling and specialization in skill-building) the same emphasis is not as clearly evident in the formal education system when it comes to preparation of the youth for adult reproduction and child-rearing. There is a continued focused emphasis though among youth on sexual health but primarily as it relates to HIV/AIDS prevention and transmission. For individual youth and young couples soon to be engaged in the important societal role of procreation, it would be expected that adequate education has been made to prepare them well for this role. However, it is not evident that most youth are well versed on issues of child health including the importance of child immunization. The existing school syllabus on health has scope for enhancing education of the youth about child immunization. This includes section of the secondary syllabus related to malaria; the school based programme initiated by the Division of Malaria Control, Ministry of Public Health and Sanitation; the school health clubs in the primary schools. However,

we need to note the high school drop out rates, especially among girls between primary and secondary schools. Thus, many youth miss out on this continued exposure to health education being delivered in schools.

Not having been exposed to health education on the value of child immunization, it is possible that some of the elderly in families might provide advice that would discourage child immunization. This brings forward the continuing importance of the extended family in social organization. There is therefore need to intensify behavior change communication activities. A cohort approach, which identifies health education issues regarding malaria and child immunization for each of the life cycle cohorts, might enhance the effect of health education. This is also the aim of the new community strategy which is attempting just this: cohort based community health education through community health workers (CHWs).

Interviews with communities³ reveal that mothers who are less privileged and socially disadvantaged need particular attention when it comes to child immunization. Giving birth at close intervals, having several children to vaccinate and being pregnant especially during breastfeeding have been mentioned as conditions which would attract scolding from health providers and frowning from other health seekers at health facilities. Being pregnant when aged above 45 years is similarly seen as a condition that could merit frowning and scorn at the vaccination center. Similarly, old women with babies to vaccinate are not free to attend the clinic with young women. Particular aspects about the child which would discourage the mother from taking the child for vaccination relate to poverty and deprivation. Not dressing and covering the baby with the basics such as a shawl (and in general a child and mother's condition relative to others such as the child and mother wearing dirty clothes or those which are not decent) may appear shameful and attract scolding from the service provider with the consequence of discouraging future attendance.

Access to immunization services is often characterized in some Kenyan rural communities in terms of living near the main road or in the remote areas or forest.

There is therefore need to offer outreach services even in the remote areas. Secondly, we should take advantage of the introduction of the community health strategy in Kenya.¹⁰ In the on-going roll out of the community strategy, thousands of community health workers are being trained on the essential elements of health care at the community, one of which include malaria and child immunization. This kind of approach is bound to enhance efforts in malaria control as communities are known to trust and have faith in themselves. Thus engaging with the community through use of community health workers from the community is bound to yield effective results. Secondly, the advent of mobile telephony offers many opportunities to address the problem of access. Many more Kenyans are getting access to mobile phones, which represent a faster means of communication even in the remote parts of the country. By the end of 2009, the four mobile phone operators in Kenya had a combined subscription base of about 25 million, representing a penetration rate of 63.2 per 100 inhabitants.¹¹ This faster and more efficient means of communication can help in informing about various access issues at the child immunization facility such as opening hours; availability of services or vaccines; reminders on appointments.

Conclusion

Should a malaria vaccine become available in the future, a cohort-based, well thought out, and comprehensive strategy to introduce and integrate a malaria vaccine successfully into the immunization programme in Kenya would be necessary. The strategy must embrace two programmatic issues that have either persisted or are new. First, it must address the fact that alongside the formal approach in malaria control, there exist the informal traditional practices among communities. Secondly, it must address particular issues in the delivery of immunization services, such as the spousal separation of roles for child immunization; the information needs (with respect to immunization) of young people who are beginning childbearing; the health education needs of elderly family members and relatives

whose advice attracts the ear of the son and daughter-in-law alike; the numerous less privileged who queue on the hospital line. Attention to these two issues may not only help to enhance the quality of immunization services for parents and guardians of the 77% of children covered by immunization, but addressing these issues may also help to reach the remaining 23% of Kenyan children yet to be reached with immunization services.

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