

# Factors Hindering Effective Implementation of Trachoma MDA Programme among Communities in Three Districts in Tanzania

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## Abstract

**Background:** Trachoma is a neglected tropical disease affecting many communities in the low-income countries. This study explored in the Trachoma endemic districts in Tanzania factors that have contributed to poor success in the elimination of trachoma using Mass Drug Administration.

**Methods:** We reviewed reports from the Neglected Tropical Diseases (NTD) Control Programme on the assessment outcome investigations on trachoma surveillance in Monduli, Mpwapwa and Kalambo districts in Tanzania. The reports contained data collected using interviews and focus group discussions with key informants, District Medical Officers, NTD Programme Coordinators, WASH focal persons, veterinarians; frontline health workers and community drug distributors (CDDs). Quotes from participants were used to generate themes and subthemes.

**Results:** Planning for mass drug administration; regional and district council's programme coordination; household registration; logistic, supply chain and community perception on Azithromycin emerged as major concerns.

**Conclusion:** Participants expressed that planning, logistical, operational issues and socio-cultural factors have compromised successful elimination of Trachoma in the studied communities. It is recommended that the NTDC programme should develop targeted socio-cultural, behavioural, change communication materials for elders, men, women and youth groups and should work closely with partners to conduct situation analysis and develop a long-term strategy to address social norms, misconceptions about trachoma and the medicines.

**Keywords:** Planning, organisation, Mass Drug administration, record keeping, supplies

## 1. Introduction

Trachoma is the leading infectious cause of blindness worldwide and is the eighth common blinding disease caused by the obligate intracellular bacterium *Chlamydia trachomatis* and is one of the eighteen neglected tropical diseases that affect more than one billion people (Mariotti et al., 2009). The disease is spread through contact with contaminated hands or clothing and by flies coming into contact with a person's eyes. The bacterium causes recurrent bouts of conjunctival infection and chronic inflammation which initiates scarring of the inner eyelid which in some cases leads to irreversible blindness. Approximately 1.3 million people are blind from trachoma and another 1.8 million have low vision (Resnikoff et al., 2004). One hundred years ago trachoma was also widespread in Europe and North America, but it was contained during the first half of the 20<sup>th</sup> century as living conditions improved (Taylor, 2008). Trachoma, however, is still endemic in more than 50 countries, predominantly in sub-Saharan Africa, the Middle East, and Asia and the burden of the disease on the affected individuals and

communities is huge both in terms of disability and economic costs (WHO, 2003). It is estimated that globally, about 50 million people are infected with trachoma, and 3 to 10 million people become blind due to the infection (WHO, 2022). Previous reports have indicated that about 40.6 million people worldwide suffer from active trachoma, of which 77% are from 29 endemic African countries, including Ethiopia (WHO, 2014; WHO, 2016). However, more recent WHO weekly epidemiologic report has indicated that the number of people living in Trachoma active districts is about 157.7 million, 88% of which are in Africa and 50% (66,802,693) are in Ethiopia (WHO, 2018). The report indicates an increasing trend of the disease which needs urgent attention.

According to the reports of WHO, about 1.9 million people are blind or had moderate to severe visual impairment due to trachoma and the sub-Saharan African countries have highest prevalence, particularly in the Sahel belt and East Africa (WHO, 2020). In 1996, trachoma was globally targeted for elimination as a public health problem (Polack et al., 2005; WHO, 1997) and since then, global initiatives to control blinding trachoma are led by the World Health Organization and the Global Alliance for the Elimination of Blinding Trachoma (WHO, 2020).

The active trachoma criterion (trachomatous inflammation follicular -TF) for national elimination as a public health problem is a TF 1–9 years old < 5%, sustained for at least two years in the absence of antibiotic mass drug administration (MDA), in each formerly endemic evaluation unit (WHO, 2015). The recommended control strategy for trachoma is a combination of Surgery, Antibiotics, Facial cleanliness, and Environmental improvement (SAFE) interventions which have been implemented in many endemic countries (Mariotti & Pruss, 2000; Roba et al., 2011; WHO, 2015; WHO, 2003). While in 2002, an estimated 1517 million people lived in evaluation units in which implementation of the A, F and E components of SAFE were needed for the purposes of global elimination of trachoma (Marx, 1989; Mabey et al., 1992). By June 2021, that number had declined to 136.2 million, a 91% reduction (World Development Report, 1993).

As part of the SAFE trachoma control strategy, WHO recommends mass antibiotic treatment annually for at least three years for all individuals in any district or community where the prevalence of TF in children aged 1–9 years is at least 10%. After three or more years of A, F and E interventions, the prevalence is reassessed, and a decision is made regarding the need to continue or cease treatment (WHO, 2022). Mass treatment aims to clear infection from communities, most of which is found in children (Kuper et al., 2003). In Tanzania, among children aged 1–9 years, trachoma is endemic in some districts with estimated active trachoma prevalence of 27% (Belseti et al., 2021; Kabona et al., 2013). Tanzania has since 1999 been implementing the SAFE strategy and mapping for trachoma was completed in 2014. A total of 71 districts were identified as trachoma endemic with TF  $\geq$ 5% prevalence. As of March 2022, the Ministry of Health reported that 62 districts were found to have reduced TF prevalence below 5% in children aged 1–9 years old, thus, meeting the criteria for stopping Azithromycin Mass Drugs Administration (MDA).

From 2011 to 2015, the NTDCP scaled up MDA interventions to reach all endemic districts at least once a year in accordance with the WHO recommendation. Trachoma elimination activities in the country are implemented in an integrated approach under the NTDCP, and different districts are at different stages of SAFE strategy implementation; and the numbers of districts implementing Azithromycin MDA have scaled down from 71 to 6 and the 65 districts have scaled down MDA having achieved TF prevalence of <5% as per WHO threshold. There is, however, concern that in Monduli, Mpwapwa and Kalambo districts the TF prevalence had remained at about >5%, hence, this report provides an analysis of the factors which have contributed to poor MDA performance in those districts.

## **2. Methodology**

### *2.1 Study Design*

This report is based on an analysis of the 2022 National Tropical Diseases Control Programme (NTDCP), Ministry of Health surveillance survey reports on the implementation of the MDA strategy. The synthesis analysis was carried out in February – March 2023.

### *2.2 Study Settings*

This report is a synthesis of reports from the NTDCP on studies carried out in Monduli, Mpwapwa and Kalambo District in Arusha region, Tanzania. According to the Tanzania National Census of 2022, the populations in the districts are 403,247 and 316,783 for Monduli, Mpwapwa and Kalambo districts respectively ([www.citypopulation.de](http://www.citypopulation.de)).

### *2.4 Sampling*

From the survey report, a minimum of three days was used to collect data at district and selected villages.

Interviews were conducted at both the district as well as at the community levels in two sites in each district. These community sites (villages) were selected purposely to include one with a TF of < 5% and another with a TF >30% from the Trachoma surveillance survey report. Community participants were aged 18 years and above, residents in the villages. They were selected purposefully with the aid of village leaders based on their experience on how the programme had been implemented in their localities. Two FGDs were conducted for community participants per village involving separate groups of adults. On average, each FGD consisted of 10 males and 10 females separately making a total of four FGDs per district.

In each district, the group of Key Informant Interviews (KIIs), consisted of frontline health workers (DMO, WASH, Veterinary Officer and the NTD coordinator; one male and one female community drug distributor (CDD) making a total of six individual KIIs. For FGDs, these were community members. These were selected purposefully to include those who have participated in more than one round of MDA and conversant about the program. At the district level, four such interviews with KIIs were conducted.

### 2.5 Data Collection

Interview teams consisted of a pair of interviewers (Research Assistants) who were trained for three days where two days were for theoretical part and one day was used for pretesting of the tools in Meserani village in Monduli. In Monduli, interview teams were also accompanied by a translator to facilitate data collection in the local (Maasai) language. All other interviews were conducted in Swahili. Research assistants responsible for data collection were accompanied to the field by a consultant, ActEast Tanzania team member and one officer from NTDCP who facilitated the fieldwork and addressed other logistic issues during field work. Interviews were audio recorded, and one member of the interview team took notes of key issues for follow up.

### 2.6 Sources of Data and Analysis

Data were extracted from reports from the NTDCP, Ministry of Health Surveillance Survey on the implementation of the SAFE programme carried out in February and March 2022. The study sites were those with TF  $\geq$ 5% prevalence in Monduli, Kalambo and Mpwapwa districts in Tanzania. From each district, data were collected from the headquarters and two villages (Table 1) through interviews and Focus Group Discussions (FDGs) with Key Informants (KIIs), District Medical Officers, NTDCP, Coordinators, WASH focal persons, veterinarians; frontline health workers and Community Drug Distributors (CDDs) using structured questionnaires.

### 2.7 Data Quality

From the survey report, at the end of each field data collection day, a debriefing meeting was held to discuss key issues emerging from the field and areas of further inquiry. Audio recordings were labelled on the same day following an agreed file naming procedure. Quantitative data collected from the first part of study tools were complete and submitted and filed for review. After thorough review of audio records, the data collectors submitted the files to the supervisors for archival and onward transmission to the transcribers on the same day. The data were also transmitted and stored on RTI secure servers along with the written transcripts produced from the audio recordings and notes. Transcription and translations were done word for word/verbatim for each KII and FGD, translated into English and reviewed by a consultant for accuracy.

## 3. Findings

The characteristics of the participants in each district is presented in table 1 and gender distribution of the participants is presented in Table 2. A total of 122 participants including 59 female and 63 males were included in the study. Six thematic areas emerged: coordination and oversight; household registration; logistics & supply chain issues; communication strategies; record keeping & report writing, and supportive supervision emerged.

### 3.1 Coordination and Oversight

Two subthemes emerged from this theme:

**Planning meetings:** We found that planning meetings at the Council level were held as planned and the meetings usually involved all Community Health Management team members, the District Executive Director, District Commissioner, District Education Officer, Ward Executives, villagers and teachers.

**Regional and Councils Organization:** DMOs and other Council staff indicated that the existing government structures were appropriate and supportive in the supply of drugs; frontline workers do supervise CDDs well during issuance of the medicine at the community level, in documenting and reporting. However, inconsistencies in the documentation were raised by CDDs and other key informants citing lack of required skills among CDDs. In addition, some CDDs reported different duration of training prior to MDA e.g., the CDDs from Arkaria reported a five-days training period compared to only one day at Loswira. This is supported by the statement:

*“The time for training was too short... only one day; it must be extended a little bit...to at least two days” (KII, CDD; Loswira)*

In Kalambo district, additional training of CDDs was recommended because some CDDs have limited understanding of the medicines and the side effects that may result from the medicine:

*“Yes, some CDDs in our village need training so that they have common understanding about what these drugs are for and how they should be administered in the community. In the previous exercise some were reported to be skipping households without explanation” (KII, FLHW; Kalaela).*

### 3.2 Household Registration

The NTDCP directs that before distribution and issuance of medicines to communities, household registration should first be conducted to determine the number of community members and to quantify the amount of medicine needed. Frontline workers, CDDs and Council officials have indicated that lack of transport, communities scattered on large areas where the terrain and poor road infrastructure (hard- to-reach areas) make access difficult. Similarly, limited budget and few CDDs are major factors affecting effective household registration and drug distribution to communities:

*“In order to improve this exercise of registering household, allowance to staff doing registrations should be increased so as to allow these people to work for more days which will enable them to reach all households, use of motorcycles or cars can also help. Others suggested use of drones to register households” (KII, NTDCo; Mpwapwa HQ).*

In order to ensure that all households were reached, DMOs and NTDs Coordinators have suggested that a comparison should be made between data registered and data from the Tanzania National Bureau of Statistics. They recommended that a +/-5% difference can be acceptable, but anything above or below may cause repeated registration:

*“Sometimes it is difficult to tell exactly and with certainty that all targeted households have been registered...and we could compare the numbers we register with the National Bureau data to see whether we have adequately covered the required number...if there is a difference with national figures...say difference of above for example 5 percent then we can make judgement if our household registration is OK or there is a problem somewhere” (FGD, NTDCo; Kalambo HQ).*

### 3.3 Logistics and Supply Chain Issues

#### **Poor infrastructures and large coverage areas**

In the hard-to-reach areas some districts CDDs fail to reach communities resulting in uneven drug delivery to people in some hamlets:

*“Most places in Monduli district are hard to reach areas for instance if you go to “Engaruka” there is a good road but when it rains the rivers get flooded. At “Loksale” another village in Monduli district, the area is good but, on the way, when it rains you cannot cross. Most places in Monduli when it rains, the roads are impassable, that is it for Monduli, streams or canyons get full of water, let’s say rivers or channels get full of water” (KII, DMO; Monduli HQ).*

Similarly, the size of some villages e.g., Arkaria in Monduli district is large with scattered households making it difficult to reach all households during household registration:

*“We are only two CDDs here, a woman and a man...you can see how difficult it could be to reach all households... the challenge was after registration the village that I was assigned to go...you find that households are scattered, it is almost one kilometre to reach the other household” (KII, CDD; Arkaria, Monduli district).*

The house-to-house approach for drug dispensing is challenging CDDs who have resolved to use specific spots in the village including religious sites, village offices or other designated areas in the village to reach households during MDA as stated:

*“Given the size of our village and challenges of reaching all households; we have adopted a strategy of using identified spots to issue medicines during MDA. For example, in Kimagai we use public address system to inform community members that they can assemble at the Church or village office to allow those who are missed at households to come and swallow the medications” (FGD, Males; Kimagai, Mpwapwa district).*

#### **Non-availability of reliable transport and delayed drug delivery**

With respect to transport, an official from Mpwapwa Head Quarters described that non-availability of reliable

transport makes it difficult to reach some of the geographically challenging terrain and bad roads.

*“We rely on transport from other departments...they will come to pick you up to the villages for supervision but, you can't even manage to visit three villages, and they are located far apart from each other...There is a place called Winza, found in Manza ward, there is Mang'aliza, Matonya, Galigali, Mbuga, Idodoma, Lufu, then we have Wangi, all these are situated in the highlands” (KII, NTDCo; Mpwapwa HQ).*

Another described that delays of arrival of drugs for distribution to households are due to transport issues:

*“Sometimes we arrived late due to transport challenges, sometimes getting fuel, so we find some of the beneficiaries have been waiting for a long time and given up, now you find instead of spending one day there we add more days so that we can achieve the target we had set for ourselves” (KII, CDD; Kalambo HQ).*

These statements suggest that implementation of the programme has been challenged by the lack of dedicated and reliable vehicles, fuel supplies and dependence on transport from the non-programmatic transport pool which hindered making timely visits to the communities for effective drug distribution.

### **Transport and subsistence allowance**

It is common practice that when individuals are asked to assist CDD in the drug administration they receive a token allowance as compensation for their time. Most participants were, however, concerned about the allowances given to those involved in drug administration. One participant was quoted saying: *‘I think will need improvement in the issue of allowance that should be given to those who participate in the activity especially the teachers who we work closely with for a long time, they*

*have been complaining the allowance rate is very low although this is a service and people are not required to be paid high rate” (KII, FLHW; Singiwe, Kalambo district).*

Another added that:

*“I think when it comes to payments, payment procedures should change instead of the co-opted people to follow the CDD and teachers to pay them, payment should be made through phone or bank, for those with a bank account payment should be made through banks, for those who do not have a bank account payment should be made through their mobile phone directly”. (KII, FLHW; Singiwe, Kalambo district).*

### **Medicine dispensing and misconceptions among livestock keeping communities**

The MDA training manual provides operational guide to CDDs that children's height should be measured in order to determine the dose, and drugs should be taken only after meals. CDDs reported that taking medicine after meals is challenging among livestock keeping communities because they may arrive at a household when family members have not had meals therefore, CDDs do not dispense medicines to such families. The timing was captured in a statement that:

*“Um-uh! As you know we are from livestock keeping communities, during summertime people go around far there looking for pastures, so once you visit their houses you find no body there, sometimes you find only kids”. (FGD; CDD; Monduli HQ).*

### **Misuse of Azithromycin**

One of the most unique findings from this study is the reported use of Zithromax to treat human wounds and also as medication for treating chicken. This was reported from interviews and FGDs. To indicate the misuse of the medications; one of the CDDs respondent reported that the drug is also used to treat wounds and chicken:

*“Oh! They say these drugs help us a lot but some still don't believe in them. Other people who are given drugs tend to apply them to their wounds so we still need to educate them that they should take the drugs orally” (KII, CDD; Chamanda, Mpwapwa district).*

Another participant added that:

*“Here in our village, some use these drugs to treat chicken... and others for treating their wounds and they say the drugs are very effective in that regard. But in Chamanda village, is where the medicines are mostly used for treating chicken diseases” (FGD, participants; Kimaga, Mpwapwa district).*

### **Community perceptions of Azithromycin**

Some community members refused to take the medicine because of beliefs that it can cause harm, affect fertility, cause bodily fatigue and sudden death. Others went further to say that is why the drugs are provided for free while communities are used to buying medicines from pharmacies. In one of the FGD, a woman was quoted saying:

*“Some worry that they may not get pregnant or if she was pregnant, she may get miscarriage” (FGD, participants; Singiwe, Kalambo district).*

Another community member added that:

*“When it comes to mothers, there are minor side effects from the drugs after you have swallowed them; maybe a person may not have eaten or has not eaten enough food she may find herself tired because they say these drugs exhausts you and may even cause you to lose consciousness or perhaps lose your life” (FGD, participants; Kimagai, Mpwapwa).*

It was suggested that these misconceptions should be addressed by raising community awareness about the medications as follows:

*“The very first thing there must be provision of appropriate education and information... people are supposed to be educated because once they are aware it become simple, for example on our place people tend to get stuck to their existing ideas about health services...so when you introduce something suddenly they must be on high alert..., because they understand most of the services nowadays require money, but when you bring medications to someone for free you are supposed to tell them why you give such a thing to him or her...and when they understand it will be helpful...in addition women group are supposed to receive more education because they are the ones who are family carers” (KII, WASH; Kalambo HQ).*

Another misconception cited was that the medicines are lethal and aim at reducing male potency:

*“What I know is, men are the most difficult people. For instance, we already have Corona vaccines now, and you say there are drugs at the dispensary, men especially the youth don't participate (in MDA) and claim that they want to kill and reduce male potency” (FGD, participants; Singiwe, Kalambo district).*

Similar sentiments were also raised during FGD in Chamanda, Mpwapwa district.

### 3.4 Communication Strategies

Interviews with different participants reveal numerous communication strategies that have been used by the program in achieving the intended goal. However, there have been some limitations during the implementation process which have resulted in some community members still refusing to get medication when provided to them. The following communication strategies were mentioned by majority of participants including use of community leaders, announcements using speakers for the events happening next day and use of village meetings to make announcements for the events. Most of the respondents mentioned that these strategies are working better in town as compared to the remote villages. In one interview, a participant was quoted saying:

*“For us here who live in town, we are civilized as we use village representative to encourage people, in the interior villages there, in the Maasai land, the elders known as Laigwanan are the ones used to spread the news in their communities but announcement using cars is not enough” (KII, FLHW; Arkaria, Monduli district).*

Participants have also expressed the need for continuous community mobilisation as opposed to the ad-hoc ones which occur just a few days before MDA. Majority of the participants believe that misconceptions and inappropriate beliefs about medication cannot be removed by one time event and suggested that effective social and behavioural change communication strategies should be developed and implemented on long term basis to dispel myths and misconceptions about the medication. In one of the sessions a participant suggested targeted communication strategies to reach different audiences in the community as follows:

*“Considering the coverage with regards to schools and community level, the challenge is still on the community level, especially the elderly, mothers, and youth groups. I do not see any major challenges on youth and children at school, but there are challenges in the elderly, mothers as well as people with disability” (KII, FLHW; Kimagai, Mpwapwa district).*

In addition, a CDD suggested that there is a need to target community gate keepers such as village or hamlet chairpersons who hold the key for success or failure of MDA exercise. One health worker stated that:

*“The elected leaders at the local and village levels, for example, hamlet chairman, village chairman, ten cell leader are the ones who have been challenging us in areas where coverage has been low, so it is the people who have been living with the community for a long time and the community has been trusting what they say” (KII, FLHW; Singiwe, Kalambo district).*

### 3.5 Record Keeping & Report Writing

From the interviews, participants expressed confidence in the data collection procedures. They reported that data collection process is done appropriately following laid down procedures and accountability is ensured because

data from CDDs are usually submitted first to health care providers at the facilities who compile and submit to the NTD coordinator at district level. They further explained that there is verification process at the facility before the health provider submits data to NTD coordinator. There is also belief or confidence from most of the participants that data collected is of high quality because people who were assigned the role understand. This is supported by the following citation:

*“We have confidence in the reports because the data collectors are regularly trained on the data collection tools and they follow the guidelines. We do not have worries also because the reports are checked by health workers” (FGD, participants, Loswira, Monduli district).*

Another participant stated that:

*“Usually, CDDs recruited individuals who are trusted and understand how to read and write thus, the chances of the data collected being of acceptable quality was high. Also, when providing medication to community members, some of them request to be given medication to swallow later; in these scenarios CDDs do not report these medications as issued medication” (FGD, participants; Kalaela, Kalambo district).*

### 3.6 Supportive and Supervision

The reports indicate that the tools for supervision were found at all district levels, but each district has its own customized tool. Supervision for rural community healthcare providers was not done regularly or only when funds were available, and supervision visits were not conducted as required and were being done when funds were available. The major challenges supportive supervision activities face includes; distance from one area to another, which is precipitated by lack of reliable means of transport and the payment process seems to be cumbersome. This is supported by a statement by one participant that:

*“transport is a problem, earlier I told you transport is the problem you need to ask for vehicles from other departments, that is when you can visit” (KII, NTDCo; Mpwapwa HQ).*

Another participant added that:

*“I think when it comes to payments, payment procedures should change instead of following the CDD and teachers to pay them then payment should be made through phone or bank, for those with a bank account payment should be made through banks, for those who do not have a bank account payment should be made through their mobile phone directly. KII, FLHW; Mpwapwa HQ”.*

## 4. Discussion

In 1993 Bailey et al., published results of a randomised, single blind trial conducted in two trachoma endemic villages in Gambia, west Africa. The study showed that a single oral dose of Azithromycin (20 mg/kg) resulted in 78% success but, for various reasons including non-adherence to the medication, perceptions about Azithromycin, low level of awareness; in more than 20% of the subjects, a single oral dose failed to resolve clinical signs (Bailey et al., 1993). Using the same approach of mass drug administration of Azithromycin, Trachoma has been eliminated in some endemic areas in Africa (Aboe et al., 2022). Tanzania still has districts including Kiteto, Longido and Mpwapwa districts in Manyara, Arusha and Dodoma region respectively where trachoma prevalence is > 25% (<https://Atlas.trachomadata.org>). The findings from the reports of the NTDs Control Programme have indicated similar findings to previous studies (Bailey, 1993; Aboe, 2022) that institutional and administrative factors e.g., organizational at districts and village levels, planning and coordination with other key stakeholders e.g., departments of water supply and NGOs and poor supervision of service providers are among the factors compromising MDA. To address these challenges, regional, district and village levels should review their modes of operations and institute good planning and effective coordination of MDA, mass campaign and health promotion activities. They should also use existing resources from other players, and work with development partners to solicit additional resources to facilitate reaching hard to reach areas/populations. In addition, efforts should be made to integrate MDA exercise with other ongoing interventions in the districts.

Poor determination of Azithromycin needs coupled with inaccurate demographic data of households have in some communities caused inflated or underestimated needs leading to a perception of poor coverage when the reality is reasonable coverage (Sheila W, 2013). Our study reports similar findings (Sheila, 2013) that while household registration should first be conducted to determine the number of community members and to quantify the amount of medicine needed, these stages were not followed because of lack of transport, poorly trained providers and lack of motivation, consequently, Azithromycin needed were inadequate in some villages. The NTDs Control Programme should motivate service providers to ensure that data on target populations are accurate and be well trained. Use of CDDs and frontline workers during MDA should be strengthened to include validation exercise

using projected population data from the National Bureau of Statistics. Modest payment or other motivations should be considered; and joint efforts e.g., a combined malaria and trachoma week campaign should be organized where Azithromycin would be distributed along with long-lasting insecticidal nets, health education and malaria testing and treatment. Such strategies are likely to alleviate the human capital shortage and enhance optimal use of the few human resources for the programme.

Studies have indicated that without the 'F and E' components, trachoma will re-emerge once antibiotic pressure is removed (Lakew et al., 2009). Multi-pronged strategies at district levels, have shown to succeed in reducing trachoma disease transmission in some countries (Ngondi et al., 2006). Mobilising resources to improve facial hygiene and environmental hygiene are formidable undertakings which should not only be carried out by Ministries of Health, who typically have the trachoma program in their portfolio. At the district level, this may even prove more challenging as water and sanitation staff may have their priorities set at the national level. Nevertheless, district health, water and sanitation teams who often meet should discuss ways to collaborate and intensify the campaign to eliminate trachoma in their districts. Such strategies have shown positive results (Mecaskey et al., 2003).

Nomadic life affects the ability of CDDs to reach some target populations and together with unreliable means of transport, some target populations miss medication during MDA. Coordination between Regional Health Management Teams, Councils Health Management Teams and community members in the planning and implementing interventions should be strengthened. In addition, the NTDCP should communicate early with regional and council teams on appropriate time to issue medication in a particular community. Use of seasons/months/days and working with development partners in soliciting additional resources to strengthen logistics and supply would work to ensure that programs are appropriate to local situations and sustainable. In some countries, trained community volunteers to diagnose trachoma and to treat infected people using Azithromycin have produced promising results (WHO/PBL/93.36.2003. pdf).

With regards to record keeping, it is recommended to develop proper implementation guidelines for data collection and other aspects of MDA implementation; funds and technical personnel should be available to support the implementation plan.

Communication is essential for bringing behavioural change and empowering communities to accept and adhere to MDA and to dispel misconceptions and beliefs about the control strategies. We have found in this report that there is low community awareness of Azithromycin, its mode of action, interaction and side effects. The programme should develop targeted social, behavioural, change communication materials for elders, men, women and youth groups and should work closely with partners to conduct situation analysis and develop a long-term strategy to address social norms, misconceptions about trachoma and the medicines. In addition, the programme should effectively use CDDs on continuous basis to provide health education about trachoma and the importance of MDA. Refresher training for CDDs prior to MDA should be strengthened and to take longer to fit skill need of CDDs.

## **5. Conclusion**

Trachoma disease has been reported among the mobile livestock keeping communities in Tanzania. This report provides findings on the factors which compromised effective implementation of MDA among these communities. The findings are important to inform researchers, neglected tropical diseases programme managers and policymakers to carry out large scale studies using innovative approaches e.g., design thinking to interrogate these factors further to develop implementable and cost-effective interventions to address these factors.

### *5.1 Limitation*

This report provides valuable information on the factors which have affected effective implementation of MDA in the communities studied. The information, however, is limited to few districts and not representative of the entire country, therefore, cannot be extrapolated to other places in the country. The findings of this study have however, highlighted factors which have impacts on implementation of MDA in the studied areas and opened several avenues for further research.

### *5.2 Data Availability*

The datasets analysed are not publicly available because it belongs to the National NTDs Control Programme under the Ministry of Health, Tanzania. However, the data can be obtained from the corresponding author on special request whose approval must be determined by the NTD Control Programme and the Ministry of Health.

**Declarations****Ethics Approval**

This study reviewed secondary data, hence, did not have any direct contact with participants from the communities. Ethical clearance to carry out the synthesis of the reports was granted by the Hubert Kairuki Memorial University (Ref. HKMU/IREC/27.10/190) and permission to review the data was obtained from the NTDs Control Programme Coordinator at the Ministry of Health.

**Consent for Publication**

Not Applicable.

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**Authors' contributions**

GK, AKM, EC, VK implemented the surveillance under the Ministry of Health, Tanzania; AM, DK, AT, BM, AS, IS, CM, GN and YM participated in the synthesis of the report, critically scrutinised the data, wrote and proofread the manuscript to its final state. All authors approved the manuscript for publication.

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**Informed Consent**

Obtained.

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All authors have declared no conflict to any part of the manuscript.

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