

IS ETHIOPIA ON TRACK TO ACHIEVING THE GLOBAL GOAL OF ELIMINATING TRACHOMA AS A PUBLIC HEALTH PROBLEM BY 2020?

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ABSTRACT

Background: Trachoma is slated for global elimination as a public health problem by 2020. Ethiopia carries 1/3rd of the global burden of trachoma. This paper aims to explore whether Ethiopia is on track to achieve the stated goal.

Methods: A qualitative research method was applied. Review of relevant literature and in-depth interviews with 15 key informants was carried out involving experts and program managers drawn from governmental and non-governmental organizations at national and sub-national levels in the four big regions of the country. Open-ended interview guide was used and interviews were tape-recorded.

Results: The Global and national burden of trachoma was reviewed and analyzed. If all goes as planned, a minimum of 161 districts will receive their final round of MDA in 2020. The status of the country program in scaling up trachoma interventions since 2013 was assessed. There were mixed views expressed by study participants whether Ethiopia is on track to achieve the global goal of elimination of blinding trachoma as a public health problem by 2020. The Minister's TT (trachomatous trichiasis) backlog clearing initiative has been identified as a precursor for attaining the target set for TT elimination in the country even before 2020.

Conclusion: If the new scale up plans are implemented as stipulated in the national trachoma action plan and the Health Sector Transformation Plan (HSTP), Ethiopia could be so close to achieving elimination of trachoma as a public health problem by 2020 at least in those moderately endemic (TF<30%) districts. Additional financial resources should be sought for a complete scale up of SAFE interventions in all known remaining endemic districts by 2016/17.

Key words: trachoma, elimination, Ethiopia, GET2020, SAFE strategy

INTRODUCTION

Trachoma is an infectious eye disease that causes a characteristic roughening of the inner surface of the eyelids that can lead to blindness. It is among the oldest diseases known to mankind, being mentioned in the Ebers Papyrus and found in the eyelids of Egyptian mummies (1). Trachoma is considered a neglected tropical disease (NTD) and is the leading infectious cause of blindness worldwide. It affects 51 countries in Africa, Asia, Central and South America, Australia and the Middle East. Globally, 200 million people are estimated to be living in trachoma endemic areas. Of these, three quarters are living in Africa. More than 21 million people are believed to have active trachoma with 2.2 million people visually impaired and 1.2 million irreversibly blind. The

majority of trachoma infection presents in children while women are almost twice likely as men to develop trichiasis, the blinding form of the disease (2).

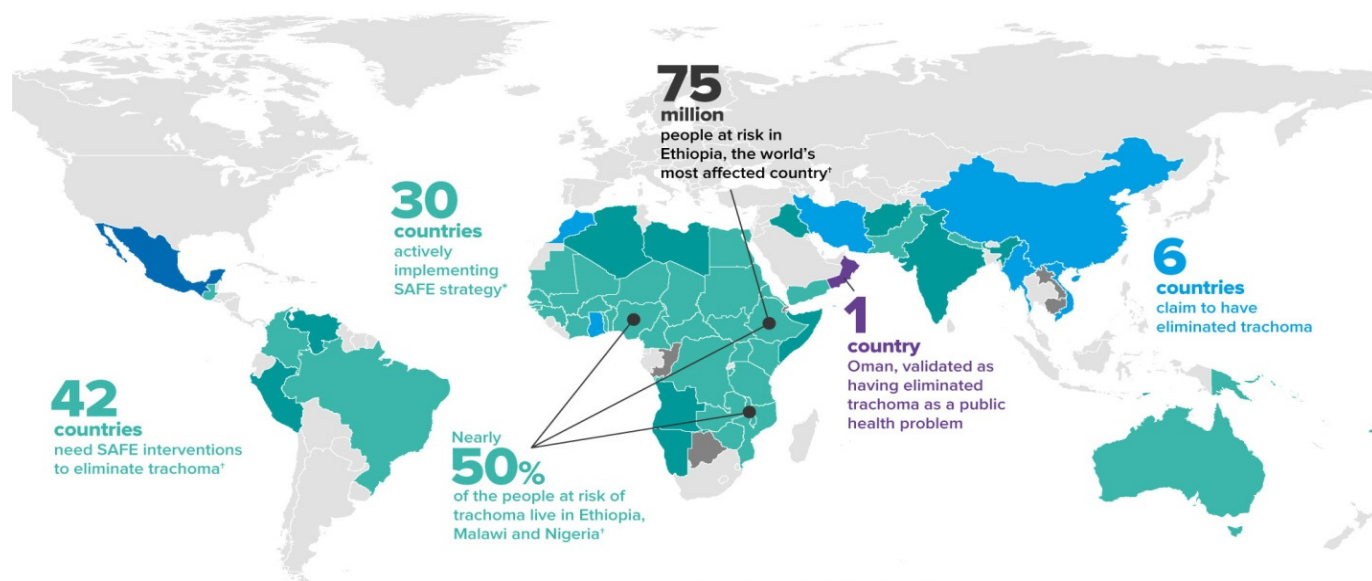
The Global Alliance for the Elimination of Trachoma by 2020 (GET-2020) was established by WHO in 1997 and endorsed by the World Health Assembly (WHA) in 1998 through WHA Resolution 51:11 for the purpose of coordinating and providing technical and logistical support for member states. Based on the current understanding of the epidemiology of trachoma and its risk factors, the WHO has endorsed what is commonly known as the SAFE strategy for countries implementing trachoma control programs. The SAFE strategy is an innovative public health approach designed to treat and prevent trachoma. This multifaceted approach is composed of four critical components, i.e., Surgery for trichiasis cases, Antibiotics to treat the community pool of infection,

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Face washing and Environmental improvement to reduce transmission. (3). In the same Resolution, it was stated that the goal of the Alliance was to achieve the global elimination of blinding trachoma by mobilizing resources with the cooperation of a worldwide partnership of Member States, non-governmental organizations (NGOs) and the private sector. The Alliance has become a leading example of a ‘public private partnership’ (PPP).

This study aimed to review the progress made thus far globally with a particular focus showcasing the Ethiopia program. Ethiopia and South Sudan have the highest prevalence of active trachoma. In some areas of these two countries, active disease is present in more than 50% of children 1–9 years of age and trichiasis affects more than 10% of adults (4). There-

fore, these are the countries where maximum effort should be placed in order to achieve the global goal of elimination by 2020. The clinical manifestations of trachoma change with age. Active trachoma is predominantly seen in young children, becoming less frequent and of shorter duration with increasing age (5). There are two core indicators for the elimination of blinding trachoma as a public health problem; 1) Less than 1 case of trichomatous trichiasis (TT) “unknown to the health system” per 1,000 population and 2) a prevalence of active trachoma sign, trachomatous-inflammation follicular (TF)<5%, in children aged 1–9 years. Ethiopia shares about 37.5% of the global burden of blinding trachoma and about 22.6% of trichiasis cases (Fig. 1).



- According to the Global Health Observatory, 2016
- Known to require interventions to eliminate trachoma as a public health problem
 - Status uncertain
 - Claims to have eliminated trachoma as a public health problem
 - Under surveillance
 - Validated as having eliminated trachoma as a public health problem
 - Thought to not require interventions to eliminate trachoma as a public health problem

*Source: ITI, 2015
 *Source: Alliance for GET2020 Database

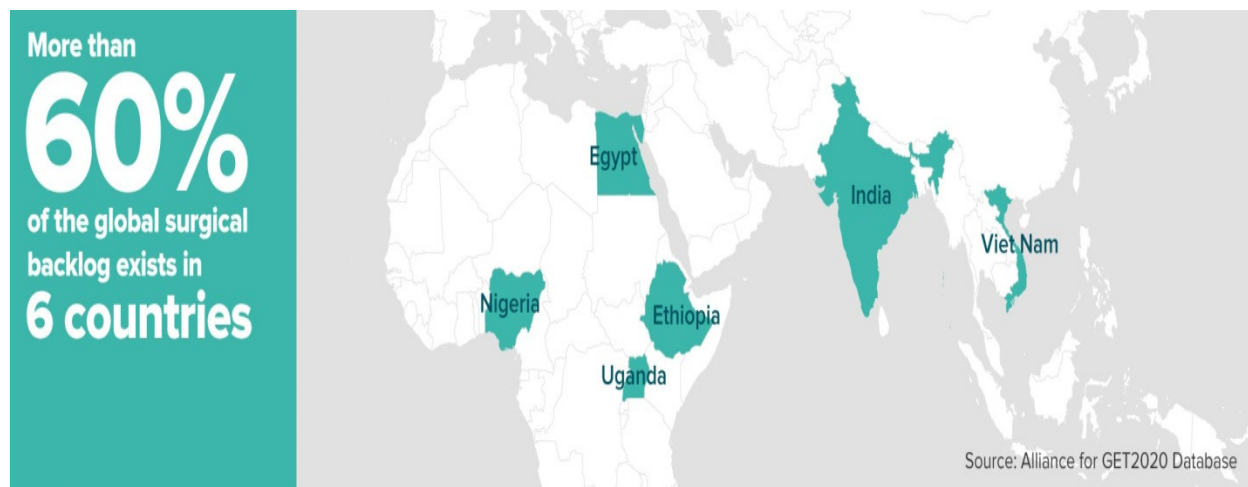


Figure 1 – Map showing the global distribution of trachoma (Source: WHO Alliance for GET2020, 2016)

Aim of the Study:

The aim of this study is to determine whether Ethiopia is on track to achieve the elimination of blinding trachoma by 2020 at national or sub-national levels.

Objectives of the Study:

There are five specific objectives for this Study.

- 1) What is the current situation of trachoma in Ethiopia?
- 2) What is the status of SAFE strategy implementation in Ethiopia?
- 3) How favorable are the existing global and national policy frameworks for enhancing the attainment of GET 2020 goals in Ethiopia?
- 4) What is the prospect of achieving the goal of eliminating blinding trachoma as a public health problem at national and/or sub-national levels in Ethiopia?
- 5) What needs to be done in order to maintain the momentum or fill the gaps and expedite progress towards eliminating trachoma as a public health problem in Ethiopia?

MATERIALS AND METHODS

This project employed two qualitative research methods; a literature review and in-depth interviews with program stakeholders for data collection and evidence generation. The national prevalence of trachoma was compiled from the Global Trachoma Mapping Project (GTMP) report. The status of medical interventions for surgery and antibiotics were collected from the joint WHO/ITI global database (GET2020 database). The national policy frameworks including aspects of political commitment and the prospect of achieving trachoma elimination goals were assessed through in-depth interviews with experts in the field and from literature reviews. Recommendations for future actions were sought from individual interviewees.

Literature reviews:

Available resources from the International Coalition for Trachoma Control (ICTC) website and published and unpublished data from the International Trachoma Initiative (ITI) that are relevant to Ethiopia were reviewed. The principal sources of unpublished data were periodic activity reports from implementing regional health bureaus (RHBs) and their NGO partners. Proceedings of national and regional annual review meetings including annual Carter Center program reviews and GET 2020 Alliance meeting reports has been used as additional sources for the reviews. The theoretical framework designed by CDC (1999) for the evaluation of public health programs was used to guide the review process.

The following keywords or phrases were used for inclusion criteria during the literature search on PubMed Central (NCBI); trachoma, trichiasis, SAFE strategy, Mass Drug Administration or MDA, trachoma prevalence and GET 2020. Published articles in other languages and those published before the year 2000 were excluded.

In-depth interviews:

In-depth interviews were conducted with 15 key informants (trachoma program stakeholders at national and sub-national levels). The interviewees were selected based on their technical expertise in trachoma control, their familiarity with national and global trachoma donors and partners including their extensive experience in trachoma and other neglected tropical disease control and elimination program management. The interviews were conducted by the lead author (TG) and were tape-recorded. A key stakeholder's interview guide has been prepared and used during the in-depth interview. Participant information sheet and consent forms were read and signed by each participant. Confidentiality was strictly maintained. Recorded data were kept securely. Open-ended questions related to the global and national situation of trachoma, status of implementation of trachoma control interventions, global and national policy environment and political commitment were discussed. The prospect of attaining the global elimination goal was explored. Opportunities and challenges related to trachoma elimination were identified and recommendations that would enhance effective program implementation were sought. Probing techniques were applied to further clarify issues. The interviews, on average, took about an hour. The interviews took place in the participants' respective places of work.

Analysis of interview data:

Interview summary sheets were prepared at the end of each interview reducing the bulk of information recorded into manageable themes, issues and recommendations. Each summary provided information about the key informant's position, reason for inclusion in the list of stakeholders, main points made, implications of these observations and any insights or ideas the interviewer had during the interview. Descriptive codes were prepared to organize responses covering key themes, concepts and ideas. Categories and subcategories for coding (based on key study questions or objectives) were developed and further refined after each interview. Reliability and validity checks were made to minimize, and if possible, avoid errors, misinterpretations and interviewer/ investigator bias.

Limitations of the study: This study mainly employed in-depth interviews with selected individual experts and program managers based on their senior role in the trachoma program and their position in the respective governmental or non-governmental organizations. This may have introduced “selection bias” since lower levels (zonal and district) program coordinators were not involved.

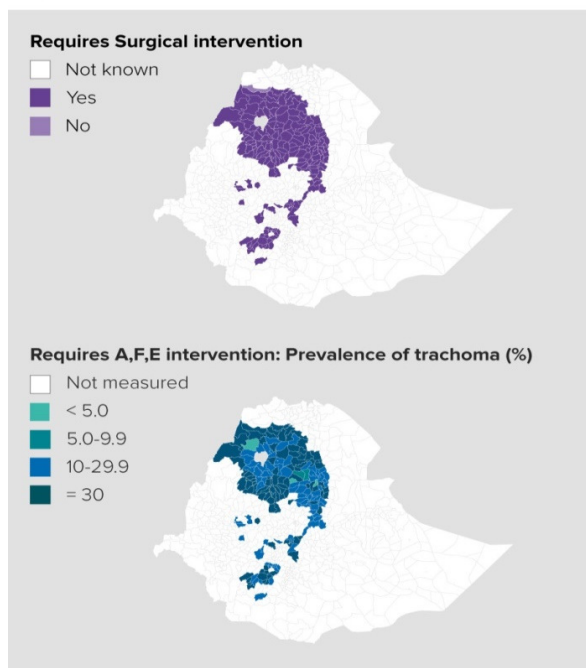
Ethical considerations: This project has been implemented in full compliance with the ethical requirements of the London School of Hygiene & Tropical Medicine (LSHTM). As per the LSHTM standard procedure, the Combined Academic, Risk Assessment and Ethics (CARE) Form has been completed and submitted via LSHTM Ethics Online (LEO) and approval has been granted. Local ethical approval was obtained from Addis Ababa University College

of Health Sciences. Interview permission request forms were signed by each employer (officer-in-charge) formally approving the participation of each interviewee in the study. Each interviewee has also signed informed consent forms.

RESULTS

The burden of trachoma in Ethiopia: Ethiopia holds about 37.5% of the trachoma burden in the world (Fig 1). The total number of endemic districts (TF >5%) is 650. There are more than 75 million people living in trachoma-endemic districts in Ethiopia, the largest number of any country in the world. There are around 693,000 trichiasis cases requiring surgical treatment, representing about 22.6% of the global burden, again the largest number of any country in the world (6).

2012



2016

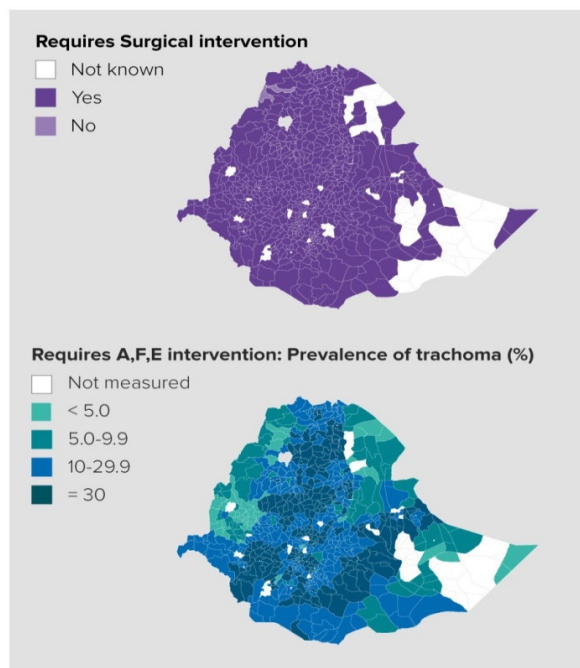


Figure 2 – Trachoma burden in Ethiopia: Prevalence and the need for intervention in 2012 and 2016 (Source: WHO Alliance for GET2020, 2016)

Before the year 2012, there were very limited trachoma prevalence data at district level. Most of the available data was mainly regional or zonal level estimates. The methodologies used to conduct the prevalence surveys were also largely variable. Although most programs claim to have used the WHO population-based survey methodology, there were variations in training the trachoma graders, selecting study clus-

ters, deciding number of study clusters and participants. All these problems were overcome by the Global Trachoma Mapping Project (7). A new standard guideline was produced, and as a result, Ethiopia became the first beneficiary of this mapping project. The 2016 map of trachoma presented above in Fig. 2 and Table 1 (below) are vivid demonstrations of this initiative.

Table 1 Trachoma prevalence in Ethiopia by region, 2016 (Source: WHO GET2020 Database)

Region	Number of woredas with TF prevalence (%)					Districts with TT prevalence (%)	
	<5	5-9.9	10-29.9	≥30	Total	<1	≥1
Afar	6	19	3	0	28	21	7
Amhara	9	20	61	62	152	9	143
B-Gumuz	9	7	4	0	20	9	11
Gambella	0	0	13	0	13	4	9
Oromia	20	17	111	117	265	152	113
SNNP	3	4	72	56	135	54	81
Somali	4	23	18	4	49	40	9
Tigray	0	3	19	17	39	5	34
Total	51	93	301	256	701*	294	407

* The total number of surveyed districts is 701 of which 650 are known to be endemic (TF>5%).

Status of SAFE Implementation in Ethiopia:

Implementation of the SAFE strategy for trachoma control started in 2003 in four selected districts in Ethiopia. The program then gradually expanded to other endemic regions and districts. Implementation coverage was patchy in most regions and highly dependent on availability of donor funds and co-implementing NGO partners. In June 2013, at the launch of its National Neglected Tropical Diseases (NTDs) Master Plan, the Ethiopian government pledged to achieve the WHO/NTD elimination and control targets by 2020. With an estimated 80 million people living in areas where one or more NTDs are endemic, this goal presented an enormous challenge for the Federal Ministry of Health. However, as of September 2015, the FMOH has managed to mobilize support to implement mass drug administration (MDA) in 84% of the trachoma endemic districts (8). In addition, 117, 087 people were operated for TT representing 51% of the annual target; 332 TT surgeons (77% of the annual target) were trained; more than 38 million doses of azithromycin were distributed (87% of the annual target); more than 1.8 million household latrines built and all targeted villages reached with health education. The Health Sector Transformation Plan (HSTP) envisages that 80% of the communities will “graduate” (with complete hygiene and sanitation coverage) by 2020 (9).

Nearly all study participants expressed their concern that the full SAFE strategy has not been implemented as a package in most trachoma endemic districts in Ethiopia. They said that the focus has been mainly on the two medical interventions; i.e. surgery and antibiotics. Some have also commented that there is no clear strategy for the implementation and monitoring of the F and E components.

The global and national policy environment for trachoma elimination:

In January 2012, the leaders of 13 Pharmaceutical companies, the governments of the United States, United Kingdom and United Arab Emirates, the Bill & Melinda Gates Foundation, the World Bank Group and other global health organizations united at the Launch event to support the “London Declaration” goals (10). This was a milestone and a turning point for trachoma, which is one of the five diseases targeted for elimination by 2020. Two years later, in April 2014, another follow up meeting was held in Paris, France, which convened all of the London Declaration partners and succeeded in mobilizing US\$ 240 million in new funding for the elimination effort. In this meeting, there were additional partners who pledged specifically for trachoma elimination. These include The Queens’ Trust (US\$ 60 million), The Hilton Foundation (US\$ 12 million) and the Lions Clubs International Foundation (US\$ 4 million). There were three annual publications of the partnership (UTC-NTDs) with selected indicators (scorecards) tracking the progress of trachoma and other NTDs. Countries and programs that were making good progress were specifically highlighted and those lagging behind were also flagged. This initiative was described as a tangible evidence of global policy and advocacy. ICTC’s critical role in global and national advocacy and resource mobilization has also been stated by some of the study participants.

The WHO has been producing and distributing guidelines and advocacy tools for trachoma control and elimination. The third WHO report on Neglected Tropical Diseases was launched in 2015(2). A guideline for “Validation of Elimination of Trachoma as a

Public Health Problem” was issued in 2016 (11). The WHO Resolution (WHA 66.12) also known as the “WHO Roadmap for the control and elimination of NTDs” is another document that helped in rallying support and mobilizing resources for all country programs. The “Addis Ababa NTD Commitment” signed in December 2014 by several African ministers of health is another advocacy tool produced for accelerating the elimination effort.

In Ethiopia, the national program has been making steady progress since the NTD Master Plan Launch in 2013. The significant progress made and the steps taken to mobilize resources in order to achieve the 2020 elimination goals is reported elsewhere (Mengistu et al 2016). The conduct of the 18th annual GET2020 meeting in Addis Ababa has given huge impetus for the national trachoma elimination effort in Ethiopia. It was during this event that the Minister of Health of Ethiopia declared his TT backlog clearing initiative with a pledge of ETB 10 million (the first groundbreaking announcement in support of trachoma elimination by the government of Ethiopia). It was the conviction of most of the interviewees that this special initiative was a game-changer in the way the trachoma elimination was being implemented in the entire country. The second such allocation of ETB 40 million, the new initiative taken by the FMOH to integrate the supply of donated azithromycin along with other medical supplies to all regions of the country, the bi-monthly monitoring meeting of H.E. the minister with Regional Health Bureau heads to follow up progress, the inclusion of trachoma elimination in the national Health Sector Transformation Plan (HSTP) and the renewed attention given to hygiene and sanitation in the woreda transformation plans are some of the supportive policy developments and national political commitments cited by study participants during the interviews. The revised national health policy, which has a strong focus on preventive and promotive services, was also mentioned as a good policy document enhancing the elimination effort.

Is Ethiopia on track for the elimination of blinding trachoma by 2020?

There were mixed responses from study participants on this issue. Considering the enormity of the burden of trachoma and the late initiation of interventions in many endemic districts, some said that it is difficult, if not impossible, to expect attainment of complete elimination of blindness from trachoma by 2020. Others were extremely enthused with the progress being made over the past couple of years and said “why not”. This group was mainly citing the minis-

ter’s TT backlog clearing initiative which they said could be a game-changer to achieving the global goal even before the year 2020. Still others argued that although achieving complete elimination at national level might be an uphill battle, sub-national level elimination could be achieved in several regions. Nearly everyone agrees that by clearing the backlog of TT, it should be possible for Ethiopia to be too close to achieving the elimination of the blinding effects of trachoma by 2020 or even sooner in some regions. Commenting on the sub-national elimination goal, one participant confidently underscored that the most affected region, Amhara, should be the first to achieve the elimination goal by 2020. He added that there are a host of factors like accumulated wealth of experience, presence of committed partners and good regional leadership and ownership witnessed in the most recent trachoma campaign. It was also mentioned that those regions like Afar, Beneshangul-Gumuz, Gambella and Tigray with relatively lower trachoma prevalence are more likely to achieve elimination by 2020. Due to its large geographic scope and late initiation of program interventions, Oromia might be trailing behind including Somali and SNNPR in those districts where interventions have not yet begun.

Results of impact evaluations conducted in various parts of the country are shown in Table 2, (in which only 9 out of 78 districts assessed have reached the target) prompting many respondents to speculate that achieving national elimination by 2020 is unlikely. This group says trachoma elimination is more than just SAFE. It is a poverty issue (12) and therefore requires a quantum change in the entire socio-economic status and cultural practices of the affected communities.

When comparing results of impact assessments between Ethiopia and other countries, we notice a huge disparity on the success rate. As indicated in Fig. 3, out of a total of 58 districts assessed in 2015, only 9 (15.5%) were below the threshold while in other countries, 83 out of 107 districts were below threshold (TF<5%).

Table 2 - Summary of baseline and impact assessments conducted in Amhara, SNNP and Oromia Regions, Ethiopia (Source: WHO GET2020 Database, 2016)

Baseline** Prevalence	Results of Impact Assessment					Number of woredas*
	<5***	5-9.9	10-29.9	30-49.9	≥50	
<5	5		1	1		7
5-9.9		2	2	1		5
10-29.9	3	8	20	12	1	44
30-49.9		1	14	2		17
≥50			3	2		5
	8	11	40	18		78

*Out of the 78 districts assessed for impact, 50 are from Amhara region.

**The first rounds of impact surveys in Amhara region were considered as baseline since the previous surveys were done at zonal/regional levels only.

***The number of districts achieving elimination goals were only 8 (10%) out of the total 78 districts that have undertaken impact evaluations.

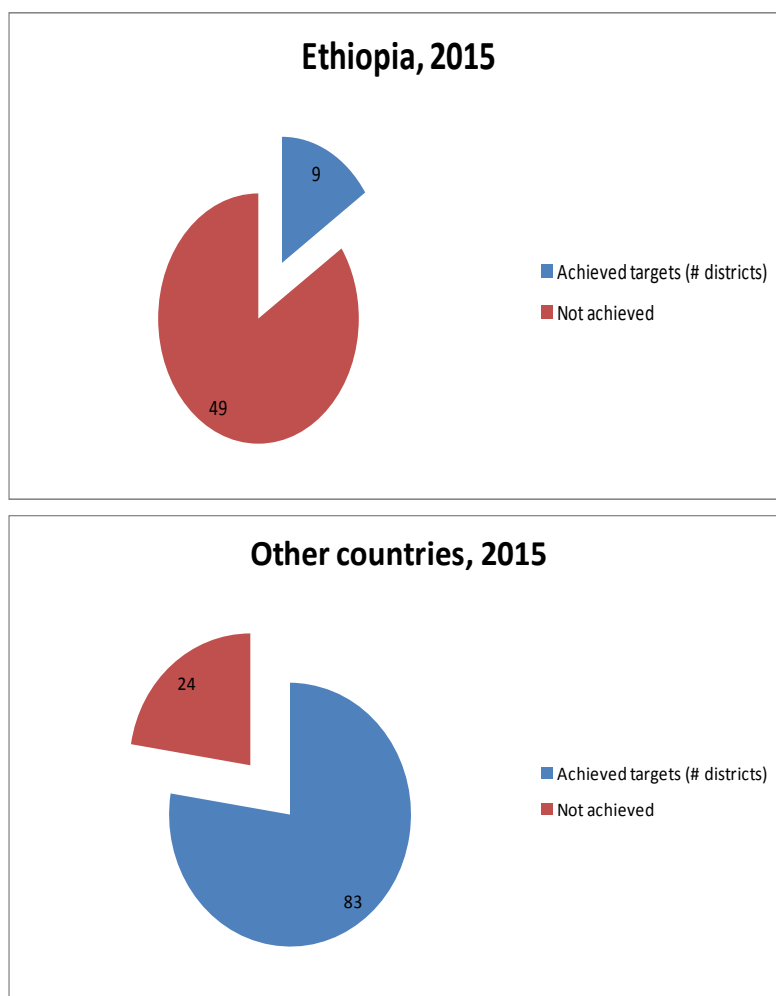


Figure 3 - Results of Trachoma Impact Evaluations, Ethiopia versus Other countries, 2015 (Source: WHO GET2020 Database)

At this juncture, it would be prudent to look into the best case scenario for scaling up and scaling down MDAs and other interventions for the next five years including the current year. Based on the projections made by the FMOH and its partners, the program will reach its peak by 2018 conducting complete SAFE interventions effectively in 479 districts with a total population of close to 60 million. The program

will then take a deeper dive in scaling down SAFE interventions in 2019 and 2020 (Fig. 4). It is assumed that all districts will complete their respective 3 and 5 annual rounds of MDA by 2020 achieving TF reductions below the recommended threshold (TF <5%). The final impact evaluation for 161 districts will be carried out in 2021.

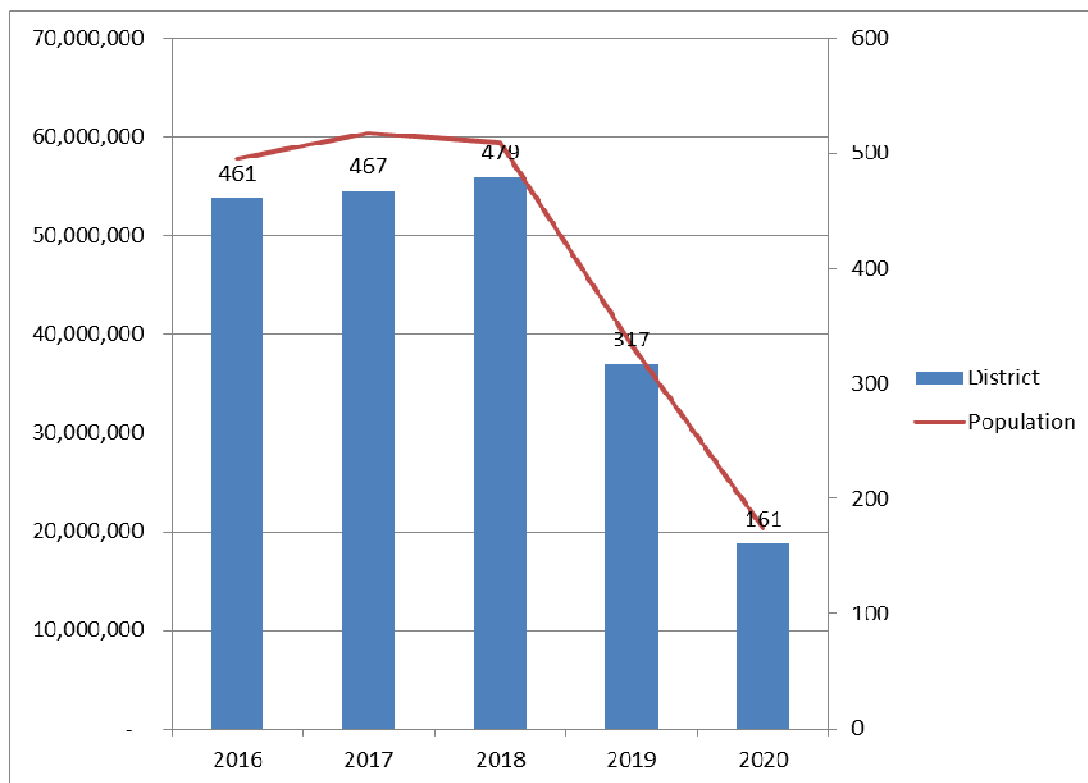


Figure 4 - Projection for MDA Scale up and Scale Down (FMOH Ethiopia, 2016)

DISCUSSION

The completion of trachoma mapping has provided concrete evidence attesting to the fact that Ethiopia is the most affected country with trachoma in the world. It is carrying over a third of the global burden of population at risk (WHO GET2020 Database). This huge burden coupled with poverty and poor hygienic practices makes trachoma elimination in Ethiopia an uphill battle.

The recent scale up of program interventions all over the country and the outstanding leadership and ownership demonstrated by the Federal Ministry of Health is extremely inspiring. SAFE implementation is at various stages of development in the endemic regions and districts. Some have completed the first

cycle of 3 and 5 years of implementation (depending on their burden of trachoma infection) and have undergone impact evaluations while others are just starting. Impact evaluations conducted thus far in different parts of the country have shown variable results but mostly indicate that additional years of intervention are warranted.

As consistently reported by the study participants, the low success rates in Ethiopia has mainly been attributed to ineffective implementation of the SAFE strategy in most program areas. These deficiencies include more focus on medical interventions (mainly mass drug distributions) but low emphasis on the F and E components. Issues of inconsistent MDA coverage reports and data management problems have also been reported as possible explanations for the slow progress achieved in the Ethiopian program. One study participant said “Trachoma is not only

about SAFE; it is much more than that". It is interwoven with the whole socio-economic challenges confronting the people in the endemic communities. "Trachoma is more than SAFE". It is a socio-economic development issue. In areas where abject poverty is so rampant and hygiene and sanitation practices are just beginning to take root, it would be unrealistic to expect attainment of trachoma elimination, to say the least. There is a mix of socio-cultural determinants prevailing in the communities that should be tackled by intersectoral collaboration.

There are mixed views and opinions with regard to the effectiveness of MDAs for trachoma/NTD elimination. A survey conducted with NTD experts to assess the possibility of elimination and eradication of NTDs with MDAs concluded that "respondents for Lymphatic Filariasis, Onchocerciasis and trachoma were more enthusiastic about the prospects of elimination and eradication than were respondents for Schistosomiasis or Soil-transmitted helminths, STH" (13). The authors further stressed that "MDAs were generally believed to be among the most important factors for the success of elimination efforts for each of the five NTDs, highlighting the opportunity for integrating drug distributions." Contrary to this view, another article by Hotez et al (14), reported that "virtually for all of the NTDs (including those slated for elimination under the auspices of a 2012 London Declaration for NTDs and a 2013 World Health Assembly Resolution (WHA 66.12), additional control mechanisms and tools are needed, including new NTD drugs, vaccines, diagnostics and vector control agents and strategies." This group concluded that "elimination will not be possible without these new tools." These two expert views appear to be a bit conflicting but their implications are more or less complementary. The previous perspective by Keenan et al is emphasizing on the importance of MDAs for the elimination of trachoma and two other diseases while the latter is generally advocating for the development of new drugs, vaccines and diagnostics for all 17 NTDs so that elimination targets for all NTDs could be achieved as per the resolutions of the World Health Assembly.

The question of whether the SAFE strategy is working well in Ethiopia was critically discussed during the in-depth interviews. Some said, if it has worked for other countries it should also work for Ethiopia. While others have argued saying that probably a revised guideline may be needed for a hyper-endemic setting like Ethiopia. Still others said, most other countries that succeeded in achieving the elimination goals were not hyper-endemic. Low baseline prevalence is a predictor of success for trachoma impact surveys (15). Failure to implement SAFE interven-

tions nationwide and delaying initiation of activities until resources are secured will have negative repercussions in the achievement of program goals. There are districts with baseline prevalence greater than 30% in which implementation has not started and reintroduction of infection could occur from untreated neighboring districts. One participant commented, "I am doubtful if there is any place in Ethiopia where the SAFE strategy has been effectively implemented as a package". He concluded that we shouldn't expect achieving elimination with the current pace of SAFE implementation. Certainly, this has been a very critical limitation of the country program for the past several years. However, as the current trend in the country is moving from patchy district-by-district implementation to achieving "universal" coverage at least at zonal and/or regional levels, the national trachoma program seems to be moving in the right direction overcoming one of its chronic limitations.

It is appropriate at this juncture to emphasize the challenges in achieving and maintaining high MDA coverage (>80%) during the successive 3 or 5 annual MDA rounds for each endemic district, most particularly for hyper-endemic districts where a minimum of 5 annual MDA rounds are recommended. A study by Gebre (2010) investigating MDA compliance and coverage in the Amhara region of Ethiopia revealed that there was a big disparity between the health facility reports and coverage evaluation survey findings. The health facility regular reports indicated that treatment coverage was consistently high (>85%) for all MDA rounds in all districts but the coverage evaluation survey found out that the number of people receiving one, two and three doses were declining from 90% to 77.3% and 48.8% respectively for the five districts that were investigated (16). This is one significant showcase that indicates flaws in the implementation of the SAFE strategy. The predictors for MDA coverage and compliance in this study were found to be knowledge of trachoma and prior awareness of distribution time and place (17).

There were some participants who suggested that the trachoma elimination approach for hyper endemic settings might need some modifications. One study, analyzing MDA data from 170 districts found that increased number of annual MDAs as well as no skipped MDAs were significant predictors of reduced TF among children 1–9 years of age at follow up. The probability of achieving the <5% target was less than 50% for areas with TF >30% prevalence at baseline among children 1–9 years, even with 7 or more continuous annual rounds (18). In connection with this, there is a mathematical modeling study conducted recently that came up with a proposal for a

slight modification in the MDA strategy. Accordingly, an annual double-dose strategy given two weeks apart combined with an enhanced F&E for five years or less was predicted to control infection more successfully than annual or 6-monthly treatment in a hyper endemic setting (19). Another clinical trial conducted in Ethiopia (20), comparing annual versus twice-yearly mass azithromycin treatment for hyper-endemic trachoma showed no statistically significant difference in the prevalence of ocular infection with Chlamydia after 42 months of treatment. However, elimination might have been more rapid in the groups of villages that received treatment twice-yearly.

Trachoma prevalence surveys were not standardized until the introduction of the GTMP. That might have resulted in poor data quality, which in turn might have negatively influenced the outcome of trachoma control interventions. Certainly, some baseline surveys were conducted at regional and zonal levels much earlier in 2006/7 (21,22) but the impact evaluations were conducted at district (woreda) levels. Due to such variations in baseline surveys and other impeding factors, the outcomes of the impact assessments were sometimes showing greater prevalence than the baseline after 3 or 5 years of SAFE interventions (23). Therefore, it is not possible to conclusively determine whether the SAFE strategy is working well or not in situations like this.

Commitment and active engagement in trachoma work is good at higher levels but not as good at implementation levels. It has been reported by some of the study participants that the NTD structure and staffing doesn't extend to zonal and woreda levels. The bulk of trachoma work is done at those lower levels by the same people who are responsible for a number of other health program activities. This must certainly have negative ramifications on the performance of the field staff. It should also be a cause for concern due to the obvious reason that this could result in compromising the effectiveness and efficiency of health staff at operational levels.

The minister's TT backlog clearing initiative has been hailed by nearly all study participants. Almost all respondents have expressed their optimism that one of the indicators for the elimination of blinding trachoma (reduction of TT prevalence to less than 0.1%) will be certainly met even before the set deadline, i.e. before December 2020. One optimistic study participant said, "I must tell you that we will undoubtedly be able to clear the backlog of TT cases in Amhara region in the next six months. He stressed further that the taboo of not doing TT surgery during the rainy season has been broken. We have done

15,000 TT surgeries just last month (June 2016). Believe me, he said, come back next year and you will see no TT backlog in Amhara." However, it should be noted that this participant's claim is not matched by program performance data. Interestingly, interviewees in other regions expressed similar statements of determination. This optimism is encouraging upfront but based on experience in the Amhara region and elsewhere in the country, we strongly hesitate to accept it. Rather, it appears to us a bit over-ambitious.

There were also serious concerns expressed on the other side of the isle related to surgical quality control. The fact that most of the regions are currently engaged in such massive operations of clearing the backlog of more than 500,000 TT cases (after deducting the 2015 surgeries), a robust supervision mechanism coupled with surgical audits (by ophthalmologists) has been proposed. Respondents argue that surgical outcomes could be compromised and negative side effects could jeopardize program performance significantly thereby hindering the achievement of GET2020 goals. Experience tells that this is a fact of life for trachoma programs everywhere. Serious considerations need to be taken in this respect.

Looking at the trachoma performance metrics for the country over the past couple of years it is evident that significant progress has already been made. However, it may not be feasible to clear such a huge backlog in such a short period. Moreover, there will be additional incident cases of TT and a good number of recurrent cases and refusals. Ethiopia being a huge country with diverse ethnic and cultural backgrounds, the acceptance of TT surgery is not the same in all districts and affected communities. One can tell from experience (with well-trained and motivated staff, adequate surgical kits and good supply of consumables including reliable financial provision) that surgery targets set by the various regional/zonal/district program partners have not been met. It would be unrealistic therefore to expect complete acceptance of TT surgery by all communities and ethnic groups across the country and the attainment of 100% coverage in clearing the backlog even by the end of 2020.

The Health Sector and Woreda Transformation Plans including the ONE-WASH Initiative are very good potential blueprints for scaling up hygiene and sanitation interventions. Certainly, physical access to WASH facilities in various parts of the country could be increased so dramatically. However, looking at the current behavioral patterns and socio-cultural practices prevailing in the endemic communities, it

might not be realistic to expect such a huge behavioral and socio-cultural transformation to take place so promptly in such a short span of time. A more intensive and sustained behavioral change interventions would be crucial.

Conclusion: All available evidence demonstrates that Ethiopia carries the highest burden of trachoma and hence deserves maximum attention if the global goal of elimination by 2020 is to be achieved. The country has been making steady progress since 2013 in scaling up SAFE interventions in most parts (>85%) of the known endemic regions and districts. The global and national policy environment and political commitment is immensely favorable. However, the outcome of interventions has not been as effective as expected. The results of trachoma impact evaluations conducted thus far indicate the need for additional years of work. The Minister's TT backlog clearing initiative is instrumental in accelerating progress to attaining one of the trachoma elimination goals (prevalence of TT < 0.1%) but achievements are behind schedule. If the Health Sector and Woreda Transformation Plans (HSTP/WTPs) are successfully implemented as stipulated in the strategic documents, Ethiopia will be close to achieving the elimination goal at national level or, at the very minimum, at sub-national levels where trachoma is moderately endemic (TF <30%) by 2020. Failure to achieve 100% geographic coverage with SAFE by 2016/17 will put the country at greater risk of missing the 2020 targets by larger margins.

Recommendations:

Policy-related

1. Development of national/regional policy guidelines that will enhance effective implementation of the Health Sector Transformation Plan (HSTP) and the Woreda Transformation Plan (WTP) would be significantly crucial for the attainment of the GET2020 targets.
2. A more comprehensive school health policy needs to be adopted in order to effectively mobilize schools for hygiene promotion (massive and aggressive mobilization effort is required to enhance face washing campaigns like that of HIV/TB and Malaria programs).
3. Effective resource mobilization policy should be designed to initiate and accelerate SAFE interventions in the remaining districts of SNNPR and Somali (where interventions have not yet begun).
4. Trachoma is a disease of poverty and therefore a more comprehensive intersectoral collaboration policy needs to be put in place so that multi-sectoral approach would be effectively applied to enhance trachoma/NTD elimination agenda.
5. A robust, well-coordinated and more systematic

SAFE strategy implementation guideline (taking into account specific local, cultural and traditional contexts) needs to be developed at national and regional state levels to enhance effective delivery of interventions in all endemic districts.

Programmatic

6. Effective social mobilization and communication strategies should be designed in order to be able to increase commitment of political and community leaders particularly at lower levels of government structures. Similarly, extension of NTD program management structures at zonal and Woreda levels needs to be considered.
7. As the country is poised to clear the massive backlog of TT cases by means of organizing and conducting surgical campaigns, a stringent surgical quality control (surgical audits) and intensive supervision by Ophthalmologists needs to be instated.
8. Face washing promotion, monitoring and reporting should be incorporated into all existing MDA-based and diarrheal diseases control programs involving children. This is perhaps the simplest and yet most impactful action point that would help to overcome one significant shortcoming of the trachoma program.
9. A more robust program management system with stricter supervision and validation of administrative coverage should be put in place at all levels of the admin structure. The mode of program operation should shift from "control" to "elimination".
10. Alternative, more aggressive, intervention strategies should be explored. The observation that trachoma prevalence falls more slowly in Ethiopia than other countries, when implementation is thorough, suggests that it is the approach rather than the delivery that needs to be changed.
11. Basic biological study on the strains of ocular chlamydia present in Ethiopia should be undertaken to establish whether they are different from the rest of the world, and whether alternative treatment strategies are warranted.

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