EVALUATION
OF THE NATIONAL TRACHOMA
PROGRAMME OF ETHIOPIA
Evaluation of the National Trachoma Programme of Ethiopia
Prepared by

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Summary

In some areas of Ethiopia, despite prolonged implementation of the SAFE strategy, progress towards elimination of trachoma as a public health problem has apparently stalled. To generate advice on future action, the Federal Ministry of Health of Ethiopia requested the World Health Organization (WHO) to convene an evaluation of the national programme. The first two phases of the evaluation, involving a desk review and a country visit, took place in March 2018.

A participatory evaluation team, led by WHO, comprised an independent consultant and staff from the Federal Ministry of Health. The review of trachoma prevalence data, prevalence survey protocols and data on implementation of the SAFE strategy was supplemented by in-country interviews with staff of the Federal Ministry of Health and selected nongovernmental organizations involved in trachoma elimination. These activities were followed by site visits to four programme areas in which key informants were interviewed at zone, woreda and kebele levels.

Main findings

- The Government of Ethiopia has demonstrated steadfast commitment to the goal of elimination of trachoma as a public health problem.

- The Federal Ministry of Health has made exemplary efforts to integrate implementation of the SAFE strategy with other services, including those delivered by non-health sectors.

- The national trachoma elimination programme has received consistent support from external partners for many years. However, recent expansion may have stretched financial and human resources beyond capacity.

- Comparison of prevalence survey estimates obtained for the same woredas at different times is potentially fraught because (a) the boundaries of the evaluation units subjected to survey and/or (b) the methodologies used for the surveys have often not been comparable. Great caution should therefore be exercised before concluding that the prevalence of trachomatous trichiasis (TT) or trachomatous inflammation—follicular (TF) has decreased, increased or stayed the same in any given woreda.

- There are inherent difficulties in estimating coverage of antibiotic mass drug administration (MDA) in trachoma elimination programmes. Both programmatic coverage data and post-MDA coverage surveys may be wrong: the coverage data primarily because the denominators are generally inaccurate; the coverage surveys because they rely on recall and are affected by sampling error and chance. The extent to which programmatic coverage data reflect actual coverage in Ethiopia may be particularly important.

- The populations served by the national programme are highly diverse culturally and linguistically.

- The extent to which government officials at various levels feel ownership of programmes is unclear; some may consider that the programme is owned or even imposed by partners.

- Staff turnover and attrition are ongoing challenges.

Recommendations to the Federal Ministry of Health
• Exercise great caution when comparing prevalence estimates generated at different time points where (a) the boundaries of the evaluation units subjected to survey and/or (b) the methodologies used for the surveys have not been the same.

• Enforce the recently set minimum standards for the conduct of trachoma prevalence surveys.

• Continue efforts towards integration of work to eliminate trachoma.

• Consider establishing a national technical expert group on trachoma.

• Consider the most powerful ways to sustainably incentivize individual programme actors.

• (As phase three of the evaluation) work with partners to undertake special studies to:
  – genotype ocular *Chlamydia trachomatis* in woredas that have already received 10 or more rounds of antibiotic MDA without the TF prevalence in 1–9-year-olds falling to < 5%, to identify, if possible, genotypes of pathogens associated with reduced response;
  – trial geographical information system-based methods, to maximize and better estimate antibiotic MDA coverage; and
  – investigate, with input from appropriately skilled anthropologists and researchers familiar with local cultures and languages, possible reasons for the widespread refusal of antibiotics in some communities.
1. Background

1.1 Trachoma, a blinding disease caused by particular strains of *Chlamydia trachomatis*, affects Ethiopia more severely than any other nation worldwide. In 2016, an estimated 693,000 people in the country had trachomatous trichiasis (TT), and more than 74 million people lived in districts in which the prevalence of the sign of active trachoma “trachomatous inflammation—follicular” (TF) exceeded 5%, thereby qualifying for district-wide implementation of the A, F and E components of the SAFE strategy, including mass treatment with antibiotics (1, 2).

1.2 Ethiopia has nine regional states (Afar, Amhara, Benishangul Gumuz, Gambella, Harari, Oromia, Somali, Tigray, and the Southern Nations, Nationalities and Peoples’ Region) plus two city states (Addis Ababa and Dire Dawa). These divisions are shown in Figure 1. Each regional state is divided into zones, which are subdivided into woredas (districts). Woredas are made up of kebeles, which in rural areas each have approximately 5000 residents. The estimated national population in 2016 was 102 million; it is growing rapidly and is highly diverse, with 83 ethnic groups described.

Figure 1. Location of regional states in Ethiopia

1.3 Regional health bureaus are responsible for providing health services in Ethiopia, while the Federal Ministry of Health determines overall health policy. Primary health care is delivered through primary health care units, composed of one primary hospital and 3–5 health centres per woreda, plus satellite health posts in each kebele. A two-room health post serves as the base for at least two health extension workers, most of whom are female and who conduct outreach at community level
focused on preventive care, health promotion and referral of patients to health centres, as required. Above the primary health care unit, referral to zone-level hospitals, regional hospitals and specialized hospitals is available.

1.4 To help overcome a shortfall in the number of specialist eye care personnel, a “task shifting” approach (3), involving the preparation and deployment of a cadre of integrated eye care workers, has been constructed. General nurses (having already received 2 years of basic training) or health officers (having already received 4 years of basic training) are selected for entry to this programme, and specifically trained to undertake TT surgery and deliver other services.

1.5 Population-based work against trachoma has been ongoing in Ethiopia since the 1950s and 1960s, when the Ministry of Health worked with WHO to estimate the prevalence of active trachoma in schools of three regions and treated affected individuals with tetracycline eye ointment. From 1976, the Ethio-Italian trachoma control project trained a network of village volunteers to administer tetracycline systematically to entire communities; compliance was poor, however, and efforts to improve facial cleanliness or access to water and sanitation were fragmented. MDA of azithromycin began in 2003, in three woredas (4). By the 2016 programme year, MDA had been expanded to cover 510 woredas of the 645 woredas qualifying for it on the basis of the most recent estimates of the prevalence of TF. This scale-up was supported by completion of baseline prevalence mapping in all secure, accessible woredas (5-18), and robust support from the Government of Ethiopia, donors and partners.

1.6 Impact surveys in some regions have revealed an apparently heterogeneous effect of interventions. This heterogeneity relates principally to lower-than-expected reductions in TF prevalence following multiple rounds of antibiotic MDA in some woredas, although implementation cycles have reportedly followed or exceeded WHO recommendations (19), and coverage has reportedly been high. In some woredas, impact surveys following MDA have been interpreted as showing an increase in TF prevalence from previous estimates, whereas in other woredas the TF elimination prevalence target of < 5% in 1–9-year-olds (20) has been rapidly achieved.

1.7 The apparent lack of progress towards elimination of trachoma in some areas is a concern for the national programme and its partners, jeopardizing plans to expand interventions throughout the country. In response, Ethiopia’s Federal Ministry of Health asked WHO to support an evaluation of the national programme.
2. Terms of reference of the evaluation

2.1 **Aim:** To optimize the future work of the national trachoma programme of Ethiopia.

2.2 **Objectives**
1. To identify future priorities for programme stakeholders.
2. To identify areas where technical assistance, training, human resources and infrastructure may be needed.
3. To identify key scientific questions which need answering for future programme success.

2.3 **Scope**
1. Data on disease prevalence, and the methodologies used to generate those data.
2. Data on and descriptions of current approaches for implementation of the SAFE strategy, comprising surgery, antibiotics, facial cleanliness and environmental improvement.
3. Programme organization.

Financial management was not included.

3. Methodology

3.1 A participatory evaluation was designed in three phases. In phase one, documentation on disease prevalence and SAFE strategy interventions was reviewed. During phase two, the evaluation team convened in-country to further explore the protocols used for estimating disease prevalence, the protocols used for SAFE strategy interventions, and the organization of the programme. Phase three will involve special studies dedicated to the collection of new data. The present document reports on the first two phases and makes recommendations for phase three.

3.2 During phase two, security considerations arising from the national State of Emergency affected selection of the programme areas to be visited. Insecure areas were excluded. The team visited woredas in two regional states (Amhara Region and Southern Nations, Nationalities and Peoples’ Region) and in each, purposively selected two woredas: one “reduction” woreda, in which interventions had been accompanied by an apparently considerable reduction in the prevalence of TF; and one “no-reduction” woreda in which they had not. In Amhara the reduction woreda was Chilga and the no-reduction woreda was Ebinat; both woredas are in North Gondar Zone, which is approximately 700 km from Addis Ababa.

3.3 In Southern Nations, Nationalities and Peoples’ Region the reduction woreda was UBA-Debretehay and the no-reduction woreda was Arba-Minch; both woredas are in Gamo Gofa Zone, which lies approximately 500 km from Addis Ababa.

3.4 The trachoma programmes of the two regional states were supported by different sets of partners. Within each regional state, the two woredas selected were supported by the same primary partner, each with a single zonal coordinator.

3.5 A series of key informant interviews was held with relevant stakeholders (Federal Ministry of Health, Regional Health Bureau, Zonal Health Office, partners), and visits made to operational units of the programme at national, zone, woreda, health centre and health post levels. Discussants were reassured that the purpose of the evaluation was to optimize future performance of the programme, not to find fault with previous work. The restricted window through which the evaluation team was
able to observe the work and effect of the programme provided illustrative rather than representative data, facilitating identification of and reflection on factors that could have contributed to progress against disease, and factors that could have limited such progress.

3.6 Reference was also made to documents describing contemporary international best practice (20-31), many of which were either unavailable at the time that some of the activities considered here were designed and conducted or that supersede the guidance that would have been available at that time.

3.7 For these reasons, and perhaps most importantly because the desired outcome of the evaluation was to plan future work rather than question any possible historical shortcomings, a detailed account of the case studies included and of partners interviewed is not included. The focus of this report is therefore on conclusions and recommendations.

3.8 Much of the prevalence and SAFE implementation data that have precipitated concern were extracted from routine reporting systems and were unpublished at the time of the evaluation. Unpublished sources are not specifically cited in this report.

3.9 The acknowledged limitations of the approach used for the evaluation include that: (a) key informants were interviewed in groups, including both government representatives and staff of one or more programme partners, which could have limited candour; (b) many of these interviews required interpretation; (c) phase two was conducted during a national State of Emergency; and (d) only four programme woredas were purposively selected.

4. Findings

4.1 The Government of Ethiopia has demonstrated steadfast commitment to the goal of elimination of trachoma as a public health problem. This commitment is apparent at all levels of the health system, notably through the Minister’s Fast-Track TT Initiative to clear the surgical backlog, the establishment and ongoing operation of national, regional, zone and woreda trachoma task forces, and the inclusion of “treatment of active trachoma, promotion of facial cleanliness and environmental improvement education” as one of the 18 health intervention packages delivered to local communities by health extension workers.

4.2 The Federal Ministry of Health has made exemplary efforts to integrate: (a) TT case-finding and service delivery with other community-based interventions, such as vaccination programmes; (b) antibiotic MDA with delivery of other community-based interventions, such as preventive chemotherapy for helminth infections of humans; and (c) facial cleanliness and environmental improvement programming with the water, sanitation and hygiene and education sectors.

4.3 The national trachoma programme has received unwavering support from external partners for many years. However, recent scale-up may have stretched financial and human resources beyond capacity.

4.4 In Ethiopia, as elsewhere, progress to eliminate trachoma through SAFE strategy implementation is assessed using impact surveys. This potentially allows comparison of the estimates of TT prevalence thus obtained with those determined at baseline or by the previous impact survey (22). Comparison of estimates is potentially fraught when (a) the boundaries of the evaluation units subjected to survey and/or (b) the methodologies used for the surveys are not the
same at the two time-points for which the data are being compared. In Ethiopia, both of these pitfalls for comparison are evident (see 4.5–4.6).

4.5 Generally, baseline mapping was undertaken at zone level in Amhara (13), and at sub-zone and woreda level in Southern Nations, Nationalities and Peoples’ Region (7, 11). Generally, impact surveys are being performed with each woreda surveyed as a single, separate evaluation unit. The decrease in the size of the evaluation unit (and the accompanying increase in the resolution of data) from baseline to impact survey stages is consistent with the recommendations of the Third Global Scientific Meeting on Trachoma (Baltimore, 19–20 July 2010) which endorsed the use of data derived from geographical areas larger than districts to start a programme “if the evidence shows that trachoma is widespread and highly endemic” but recommended use of district-level evaluation units for impact surveys (32). The endorsement by this meeting of the use of data from areas larger-than-districts at baseline should perhaps have included a caution that prevalence estimates generated for an evaluation unit covering multiple districts should not be extrapolated separately to each of the evaluation unit’s constituent districts.

4.6 Successive rounds of surveys conducted in Ethiopia have used divergent methodologies. Differences are apparent in approaches to standardizing graders, sample sizes, sample selection, data analysis and presentation of confidence intervals.

4.7 In such circumstances, great caution should be exercised before concluding that the prevalence of TT or TF has decreased, increased or stayed the same in any given woreda.

4.8 There are inherent difficulties in estimating coverage of antibiotic MDA in trachoma elimination programmes. These difficulties are not unique to Ethiopia, or even to antibiotic MDA for trachoma. Differences between data on programmatic coverage and estimates of coverage generated by post-MDA coverage surveys are to be expected, in part because they measure different things. Both programmatic coverage data and post-MDA coverage surveys may be wrong: the coverage data primarily because denominators are generally inaccurate, and the post-MDA coverage surveys because they rely on recall and are affected by sampling error and chance. The extent to which programmatic coverage data reflect actual coverage in Ethiopia may be particularly important, given that (a) programmatic coverage data from some no-reduction woredas of Ethiopia suggest that the minimum acceptable coverage of 80% has been exceeded in each of many successive rounds of antibiotic MDA, and (b) data from elsewhere have not provided evidence that striving to achieve substantially-greater-than 80% coverage confers additional benefit in reducing disease. If achieving very high coverage is more critical in Ethiopia than elsewhere, it would be helpful to demonstrate this as soon as possible.

4.9 There is considerable cultural and linguistic diversity in the populations served by the programme.

4.10 The extent to which government officials at various levels feel ownership of the programme is unclear; some may consider that the programme is owned or even imposed by partners.

4.11 Staff turnover and attrition are challenging at all levels of the programme.

4.12 The common features of woredas achieving apparent reductions in TT and TF prevalences included:
   - Presence of at least five integrated eye care workers
   - Use of mannequin-based refresher training of TT surgeons (25)
   - Strong systems for identification of TT cases (33)
• Regular audits of TT surgery with feedback to integrated eye care workers
• Surgical staff incentives linked to number of TT patients correctly managed
• Use of TT patients with good outcomes as ambassadors for the programme
• Adequate time for microplanning before antibiotic MDA (29)
• Good collaboration between partners supporting antibiotic MDA and partners supporting improvements in water, sanitation and hygiene (28, 34)
• Better access of the population to water and sanitation
• Use of role models for behavioural change
• Presence of a diligent trachoma focal person at woreda level
• High levels of community involvement, including women’s groups
• Community outreach timed to occur more frequently outside periods of intense farming activity
• Regular meetings of the woreda trachoma task force
• Engagement of kebele leaders
• Adequate logistical support, including transport, for supervision purposes
• Availability and adequate implementation of supervisor check lists
• Demonstrable community ownership of the programme
• Involvement of senior political figures in antibiotic MDA (sensitization, training and delivery of MDA)

4.13 The common features of woredas not apparently achieving reductions in TT and TF prevalences included:
• Lower rainfall
• More widespread unwillingness among the population to accept offered antibiotics (35)
• Lower reported antibiotic MDA coverage
• Fewer health extension workers and fewer supervisors
• Fewer kebeles free of open defaecation
• Less active identification of TT cases
• Higher incidence of post-surgical TT
• Incentives for surgical staff linked to the number of TT patients identified (not managed)
• Reported lack of reduction in TF prevalence following MDA leading to community disillusionment
5. Recommendations

The evaluation team:

5.1 Advises against comparison of prevalence data generated at larger-than-woreda level with prevalence data generated at woreda level; the distribution of trachoma is heterogeneous and such comparisons are likely to be misleading.

5.2 Advises against the use of cluster-level data generated as part of larger-than-woreda-level surveys for post-hoc estimation of woreda-level prevalence; such analyses are likely to be misleading unless the sample size and method of selection of first-stage clusters was designed to adequately represent the individual woredas concerned.

5.3 Advises caution in comparison of prevalence estimates generated in the same evaluation units at different time points if the training, fieldwork or data analysis protocols at those time points were very different.

5.4 Endorses the decision by the Federal Ministry of Health to set minimum standards for the conduct of trachoma prevalence surveys, including insistence on adequate sample sizes to provide appropriate power.

5.5 Encourages continuing efforts to integrate work on elimination of trachoma; such efforts are likely to yield dividends in uptake, coverage, impact and provision of a progressively more complete package of care for residents of woredas affected by trachoma.

5.6 Suggests consideration be given to establishing a national technical expert group on trachoma as an independent body to advise the Federal Ministry of Health.

5.7 Suggests consideration be given to finding the most powerful ways to sustainably incentivize individual programme actors.

5.8 Recommends that as phase three of the evaluation, the national programme works with partners to undertake special studies to:
   – genotype ocular C. trachomatis in woredas that have already received 10 or more rounds of antibiotic MDA without the TF prevalence in 1–9-year-olds falling to < 5%, to identify, if possible, pathogen genotypes associated with reduced response;
   – trial geographical information system-based methods, to maximize and better estimate antibiotic MDA coverage (36, 37); and
   – investigate, with input from appropriately skilled anthropologists and researchers familiar with local cultures and languages, possible reasons for the widespread refusal of antibiotics in some communities (13).
References

