Published in final edited form as:
Ophthalmic Epidemiol. 2015 January 01; 22(3): 148–50. doi:10.3109/09286586.2015.1045987.

Global Elimination of Trachoma by 2020: A Work in Progress

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When this special trachoma issue of *Ophthalmic Epidemiology* goes to print, there will be only 67 months remaining before 31 December 2020, the deadline set by the World Health Assembly for the global elimination of trachoma as a public health problem.[1] Within the trachoma community, there is considerable optimism about our prospects for achieving the elimination objective on time. Such optimism is based on the premise that we know, or are close to knowing, where and how best to intervene against trachoma, and have, or will garner, the resources and political will to undertake the interventions. Contributions to this special issue underscore the impression that the Alliance for the Global Elimination of Trachoma by 2020 is on track for success,[2] as well as highlighting a few areas where further focused, thoughtful research is required.

A pre-requisite for undertaking an efficient disease elimination campaign is a complete understanding of where the disease is endemic. In 2006, the World Health Organization (WHO) published guidelines[3]for population-based surveys to estimate the prevalence of trachoma at the district level; these guidelines were a codification of current practice that was already being widely, if sporadically, applied to map trachoma, producing data on all scales from individual districts to surveys covering entire countries.[4–8]Several problems remained, however. First, a great deal of effort and energy was needed from individual programs to attract funding for these surveys, so coverage was patchy. Second, the WHO guidelines were generic and only went so far, with the result that they were interpreted differently in different contexts, and some considerations, such as those surrounding data ownership and data handling, were not covered at all. Three good surveys undertaken in that context are published in this issue:[9–11] although each work is a good example of ophthalmic epidemiology in its own right and has proven valuable for local programming, readers attempting to compare the results may note the variation in sample sizes, size of underlying evaluation units, grader training, field team supervision, age and sex of individuals selected for examination, and types of data collected, all of which reflect WHO's failure to make its guidelines sufficiently prescriptive or make centralized epidemiological expertise available

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Declaration of Interest
All authors have contributed to the design and conduct of the Global Trachoma Mapping Project; AWS is its Chief Scientist.

Europe PMC Funders Author Manuscripts

to support survey planning. Third, although inter-grader agreement exercises against “gold standard” graders were recommended[3] as part of the grader training pathway, there was no process in place for ensuring consistency between “gold standard” graders. The extent to which trained, experienced observers agree on the presence or absence of signs of trachoma is imperfect, probably for multiple reasons that may include the necessity for each observer to interpret the evidence they see against rather incomplete definitions of signs, plus the difficulties inherent in examining the eyelids of small children in remote communities, a process that both examiner and examinee may at times find uncomfortable. Fourth, most protocols were silent on the epidemiological consequences of incomplete enrolment of the intended sample, which probably led to overestimation of the prevalence of trichiasis.

The Global Trachoma Mapping Project (GTMP) has tried to address each of these problems, by developing a complete set of systems and processes to fund baseline surveys, facilitate ministries of health to select and train field teams and verify the adequacy of training, decide where mapping is and is not justified, construct evaluation units, sample the population, handle and analyze data while preserving national ownership, and transfer the results to the Global Atlas of Trachoma, all in standardized fashion.[12] One of the first fruits of this effort is also published here, in the form of data on trachoma prevalence covering nearly 6.4 million people in suspected trachoma-endemic districts of Malawi.[13] While undoubtedly an advance, the GTMP should continue to be scrutinized over the accuracy of the assessments that its army of individual “GTMP-certified” graders make in the field: after training and certification, graders’ practice may drift, and inservice supervision (which itself may not be perfect) cannot be continuous. A more objective means for determining the presence or absence of trachoma in an individual would be welcome. Unfortunately, as the study by Gebresillasie and colleagues demonstrates, taking conjunctival photographs for later assessment by (say) a small pool of intensively trained and highly standardized assessors in the relative calm of an office environment is not necessarily the answer.[14] More work on this is needed.

For individuals with trachomatous trichiasis, surgery is indicated. The main programmatic tensions here are throughput and quality; considerations that have a tendency to conflict. On throughput, work presented here by Gichangi and co-workers suggests that in Kenya, Malawi and Tanzania, the productivity of general health workers trained to undertake trichiasis surgery is highly variable, and on average far too low to achieve overall program goals.[15] Part of this is due to a significant attenuation of the ranks of practicing trichiasis surgeons in the 3 years after they complete training.[15] Perhaps unsurprisingly, the number of kits[16] available to the surgeon, linkage to a surgical outreach program, and the seniority of the supervisor are each associated with differences in individual-level productivity;[15] national programs must take heed of these results and create the conditions necessary to facilitate success.

On quality, programs have recognized for some time that surgical failure, trichiasis recurrence and eyelid contour abnormalities all occur more frequently than providers and recipients would wish. Retrospective data collected by Merbs and co-authors and presented here[17] suggest for the first time that the likelihood of 1-year post-surgical trichiasis is strongly associated with distance of the incision scar from the eyelid margin, with scars

located at <4.5 mm carrying higher risk. This is potentially hugely significant, because the current WHO recommendation[18] is that the incision be made at 3mm. Randomized studies on the height (and potentially the angle and shape) of the incision are required to follow up on this important observation. Notwithstanding the fact that 2 years after surgery, the majority of their subjects had an anatomically imperfect result, Oktavec and colleagues describe very positive findings from 483 individuals who had received trichiasis surgery through routine channels in Tanzania: 83% said that their daily life was better than before the operation, 87% were "very satisfied" with the outcome, 92% felt that their appearance had improved, and 96% reported an improvement in symptomatology.[19] Visual acuity was objectively improved by at least one line of Snellen in at least one operated eye in 44%.[19]

For the A, F and E components of the SAFE (surgery, antibiotics, facial cleanliness, environmental improvements) strategy, West and co-workers show that 3 years after initiating a program of annual mass azithromycin treatment in 84 neighborhoods of Kongwa, Tanzania, immigrant children were more likely than children present at the previous census to have active trachoma or ocular *Chlamydia trachomatis* infection.[20] This may have implications for intervention or surveillance strategies for populations in which migration is considerable.[20] From Guinea Bissau's Bijagos Islands, where disease prevalence is high, Thompson and co-authors report that knowledge of trachoma and of relevant measures for its prevention are inadequate.[21] More work to discuss trachoma with residents of endemic communities, and learn from them the best ways to combat the problem, is clearly required.

Global elimination of trachoma is feasible by 2020, but redoubled efforts from all parts of the international trachoma community will be needed to secure the win. The publication of this special issue will hopefully contribute another small part to that campaign.

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