

## **Summary of the Seventeenth Meeting of the International Task Force for Disease Eradication (II) October 12, 2010**

The Seventeenth Meeting of the International Task Force for Disease Eradication (ITFDE) was convened at The Carter Center from 8:30 am to 3:30 pm on October 12, 2010 to discuss elimination of blinding trachoma. The Task Force members are Sir George Alleyne, Johns Hopkins University; Mr. Ekkehard Betsch, The World Bank; Dr. Stephen Blount, Centers for Disease Control and Prevention (CDC); Dr. Mickey Chopra, UNICEF; Dr. Donald Hopkins, The Carter Center (Chair); Dr. Adetokunbo Lucas, Harvard University; Professor David Molyneux, Liverpool School of Tropical Medicine (Rtd.); Dr. Mark Rosenberg, Task Force for Global Health; Dr. Lorenzo Savioli, World Health Organization (WHO); Dr. Harrison Spencer, Association of Schools of Public Health; Dr. Dyann Wirth, Harvard School of Public Health; and Dr. Yoichi Yamagata, Japan International Cooperation Agency (JICA). Seven of the Task Force members (Betsch, Blount, Hopkins, Lucas, Rosenberg, Wirth, Yamagata) attended this meeting, and Dr. Savioli was represented by Dr. Dirk Engels.

Presenters on trachoma at this meeting were Dr. Paul Emerson of The Carter Center, Dr. Danny Haddad of the International Trachoma Initiative at the Task Force for Global Health, Mr. Jonathan King of The Carter Center and Prof. Thomas Lietman of the Francis I. Proctor Foundation at the University of California/San Francisco. Dr. David Joa Espinal of the National Center for Control of Tropical Diseases of the Dominican Republic and Dr. Roland J. Oscar of the Malaria and Lymphatic Filariasis Programs of Haiti's Ministry of Health presented an update of the status of efforts to eliminate lymphatic filariasis and malaria from Hispaniola.

### **Trachoma**

Trachoma results from infection of the eye with one or more serovars A, B, Ba or C of the bacterium *Chlamydia trachomatis*. There is no extra-ocular reservoir of these serovars, which are transmitted via fingers, cloths, and flies that have been contaminated by contact with ocular or nasal discharges of an infected person. A single infection can cause a self-limiting conjunctivitis, but repeat infections result in chronic inflammation of the conjunctivae. Conjunctival scarring associated with the immune response to chronic inflammation causes eyelashes to rub against the cornea of the eye as the eyelid turns inward. Such scarring leads to corneal opacity and blindness. The World Health Organization's (WHO) simplified grading system for trachoma includes five pathological signs: trachomatous inflammation—follicular (TF), trachomatous inflammation-intense (TI), trachomatous scarring (TS), trachomatous trichiasis (TT), and corneal opacity (CO). TF and TI are most common in children under 5 years old, including infants less than one year old, whereas more advanced disease is more common in older adults, with women being almost twice as likely to be affected by TT as men. The duration of infection is also longer in children. Poor hygiene (especially ocular or nasal discharges on the face), having a sibling infected with trachoma, household crowding and poverty are among the

risk factors most commonly associated with signs of active trachoma and infection with ocular *Chlamydia trachomatis*.

Research supported largely by WHO and the Edna McConnell Clark Foundation defined the SAFE Strategy to prevent blinding trachoma by addressing immediate and long term aspects of the disease: Surgery to stop scarring of the cornea by inward-turned eyelashes, Antibiotic distribution to treat the infection and reduce prevalence of active disease and transmission in endemic communities and households, Facial cleanliness to reduce contamination of fingers, flies and fomites, and Environmental improvements to reduce transmission potential and re-infection by improved access to, and use of water for hygiene, and basic sanitation.

Surveys of TF prevalence in 1-9 year old children at district and sub-district levels are recommended to determine the need for mass distribution of antibiotics and/or implementation of other elements of the SAFE strategy, with the goal being to achieve sustained reduction of TF to <5% among 1-9 year olds in any sub-district. District prevalence surveys of TT are recommended to estimate the backlog of TT cases, after which affected persons are identified and offered free trichiasis surgery, with the goal being to reduce TT prevalence to <0.1% among the total population. Achievement of threshold levels for TF *and* for TT is required in order to demonstrate that blinding trachoma is no longer a public health problem. Recommendations for when to stop annual mass distribution of antibiotics, the type of surveillance required to detect and respond to resurgent TF and new cases of TT, and what geographic level to use in follow up assessments are less clear pending publication of the report of the Third Global Scientific Meeting by WHO. Elimination of blinding trachoma is different from virtually all other elimination programs in that interventions should not stop after achieving the WHO threshold levels; in this instance “it’s not over when it’s over”. It is necessary to sustain an on-going post-elimination capacity to treat persons presenting with active trachoma and to ensure that there is a system in place to provide trichiasis surgery for new and recurrent trichiasis cases. The process of certification of elimination of blinding trachoma thus poses new and unique challenges. It may perhaps be more appropriate and practical to “verify” achievement of the WHO-suggested thresholds rather than to “certify” elimination of blinding trachoma or the more vague “elimination as a public health problem”.

When the global effort to eliminate blinding trachoma began, an estimated 540 million persons were believed to be at risk of trachoma (*Resnikof, 2004*), and about 84 million were thought to have active disease, in 57 countries (*Mariotti, 2009*). As of 2009, an estimated 41 million persons were suffering from active trachoma and 8.2 million were believed to have trichiasis (*Mariotti et al 2009*), while about 120 million persons remain at risk of the disease (*WHO, 2010*). The biggest burden of infection is in Africa, especially Ethiopia and Sudan, but there are important gaps in data for three large countries: China, India and Nigeria. The estimated economic loss due to trachoma of US\$5.3 billion is probably an under-estimate because the affected persons are so poor.

Of the 57 countries where trachoma was endemic, eight have reported achieving elimination targets to WHO (Algeria, Ghana, Iran, Libya, Mexico, Morocco, Oman, Vietnam) (*Mariotti, personal communication*), while four others (Saudi Arabia, South Africa, Tunisia and the United Arab Emirates) also may have met the targets, according to program reports at various

international meetings (P. Emerson, personal communication). Several other countries (Botswana, Djibouti, Laos, Rwanda, Sierra Leone, and the Pacific Island nations of Fiji, Kiribati, Nauru, and Vanuatu) may also be formerly endemic or still have only insignificant levels of disease. Seventeen countries have inadequate data to be categorized at present (Afghanistan, Cambodia, Cameroon, Chad, China, Cote d'Ivoire, Democratic Republic of Congo, Egypt, India, Iraq, Malawi, Mozambique, Pakistan, Somalia, Yemen, Zambia, Zimbabwe), and more information from them may alter current estimates of disease burden. Some of the reduction in trachoma during the past two decades is attributed to improvements in economic status, some is due to implementation of the SAFE strategy, some to improved data, and some may be due to increasingly widespread use of antibiotics to treat other diseases. In general however, trachoma does not appear to be disappearing on its own from foci that are meso-endemic (a prevalence of TF in children aged 1-9 years of 15-30%) or hyper-endemic (a prevalence of TF in children aged 1-9 years of >30%).

WHO estimates that about half of the remaining global burden of active trachoma is probably concentrated in five countries: Ethiopia, Guinea, India, Nigeria and Sudan, and a similar proportion of the burden of trichiasis in four countries: China, Ethiopia, Nigeria and Sudan (First WHO NTD report, 2010). Of the trachoma-endemic countries for which there is sufficient information available to categorize as to priority, ten putative priority *programs* are: Burkina Faso, Ethiopia, Guinea, Kenya, Mali, Niger, Nigeria, Southern Sudan, Tanzania, and Uganda. All of the latter ten programs are receiving Zithromax donated by Pfizer for mass distribution, about 31% (654/2,097) of their districts have been surveyed, and their estimated TT backlog is about three million persons. Almost half (57.7 million) of the ten countries' estimated population in districts with >5% TF (129.5 million) are in areas where the SAFE strategy is being implemented.

According to available information on the ten putative priority countries, only Mali and Niger are implementing the full SAFE strategy at scale (nationwide). Overall, about 150,000 persons received surgery for trichiasis in 2009, which marks significant progress from less than 10,000 surgeries in 1999. But the level in 2009 constitutes only about 5% of the estimated backlog of 3 million trichiasis patients in the ten putative priority programs alone, a rate that would require about twenty years to clear that backlog. There has, however, been greater progress in scaling up distribution of azithromycin, from less than one million treatments in 1999 to about 40 million treatments, or approximately 27% of the 150 million persons at risk of infection, in 2009. If there are an estimated 41 million active cases of trachoma and if each case corresponds to three people in need of treatment, the Ultimate Intervention Goal (UIG) for mass antibiotic treatment could be estimated at about 120 million.

The International Trachoma Initiative is collaborating with the London School of Hygiene and Tropical Medicine and endemic countries to help refine and consolidate data from published and unpublished Cluster Random Surveys and Trachoma Rapid Assessments, in order to map TF prevalence data in all endemic districts. This *district level mapping needs to be completed by 2012 in order to provide Pfizer reliable forecasts of the amount of Zithromax that will be required for the global program until 2020*. The forecasts of azithromycin needs are a vital part of strategic and national plans for eliminating blinding trachoma by 2020, including situational analyses, and financial gap analysis for implementing the full SAFE strategy.

Comparison of impact data from implementing countries so far confirms the principle that hyper-endemic countries (e.g., Ethiopia) will require interventions for longer periods than hypo-endemic countries (e.g., Ghana), and therefore it is urgent that the global program identify and help begin implementing the full SAFE strategy in all of the hyper-endemic countries as soon as possible in order to eliminate blinding trachoma by 2020.

Among key research needs are efforts to help define when programs can safely stop mass drug administration without risking resurgence of transmission of infection, and how best to identify trachoma infection. Regarding the latter, the Task Force discussed needs for better training, as well as the potential utility of photography combined with the smart phone app “Google goggles” to improve diagnostic accuracy, pooled Polymerase Chain Reaction (PCR) tests to reduce costs, RNA-based PCR which would be more sensitive but also more expensive, and Point of Care rapid diagnostic tests which would yield immediate infection data without requiring elaborate laboratory procedures. It was suggested that an animal model would help to understand better the dynamics of trachoma infection and transmission.

## **Malaria and lymphatic filariasis elimination on Hispaniola**

There has been significant progress since 2006 when the ITFDE first recommended the elimination of malaria and lymphatic filariasis from the Dominican Republic and Haiti. The island of Hispaniola is the only remaining island in the Caribbean that still has endemic malaria, and it contains over 90% of the lymphatic filariasis in the Western Hemisphere. Haiti is more highly endemic for both diseases than the Dominican Republic. Beginning in October 2008 The Carter Center funded an 18 month long demonstration project to foster bi-national cooperation in controlling malaria in two adjacent communities on the border between Haiti and the Dominican Republic. As a result, the ministries of health of the two countries synchronized data systems, held regular joint meetings, mapped location of cases, and distributed Long-Lasting Insecticidal Nets in the two communities, and aligned their protocols for treating malaria (Haiti began providing malaria diagnosis and treatment free of charge and added primaquine therapy to chloroquine for treating cases). Meanwhile, Haiti increased the percentage of its targeted communes that received mass drug administration for lymphatic filariasis from 21% in 2005 to 66% in 2009, with the goal to reach 92% in 2010 and 100% in 2011.

In October 2009, both governments used the occasion of a visit by former U.S. President Jimmy Carter to announce a jointly prepared \$194 million bi-national plan to eliminate malaria by 2020. Haiti announced a \$49.4 million plan to eliminate lymphatic filariasis by 2020, while the Dominican Republic expects to eliminate lymphatic filariasis in 2010. Of the budget for malaria, about \$10 million is earmarked to support continued and expanded coordination of efforts by the two countries. A single outbreak of malaria in 2004 alone cost the Dominican Republic an estimated \$200 million in lost tourism revenues. The major earthquake in Haiti in January 2010 disrupted that country’s plans to combat both diseases, but bi-national meetings have resumed, with the most recent having occurred in July. So far none of the major funding for reconstruction in Haiti over the next decade includes support for efforts to help free the island of these two important diseases. While the Global Fund for AIDS/HIV, Tuberculosis and Malaria

approved malaria funding for the Dominican Republic and for Haiti in 2009, Haiti's funds have not yet been released while administrative issues are being resolved, and the Dominican Republic does not have sufficient funding for its lymphatic filariasis activities. Donors are still approaching the two countries for these two diseases not as the epidemiological unit that they are, but by political boundary.

## Conclusions and Recommendations

1. There has been significant progress towards elimination of blinding trachoma since the global program began after the World Health Assembly resolution (WHA51.11) in 1998. The estimated population at risk has been reduced from 540 million in 1997 to about 120 million, the number of people with active disease from 84 million to about 41 million, and an estimated 8-19 of the 57 countries which the World Health Organization (WHO) listed as endemic when the global program began appear to be endemic no longer.
2. Based on the progress achieved to date the ITFDE believes that blinding trachoma can be eliminated by 2020, as defined by the threshold levels set by WHO, meaning prevalence of trachomatous inflammation (follicular--TF) below 5% in 1-9 year olds *and* prevalence of trachomatous trichiasis (TT) below 0.1% in the total population.
3. In order to eliminate blinding trachoma by 2020, the pace and scale of interventions must be accelerated significantly over the next decade, especially over the next five years. Most urgent is the need for greater clarity on the remaining endemic countries and on the subset of those countries that are the most highly endemic, and to begin implementing the full SAFE strategy at scale in the latter countries by 2015. Ascertaining the status of active trachoma and trichiasis in China, India and Nigeria should be a high priority.
4. The ITFDE notes that surveillance and interventions for trachoma, both antibiotic treatment for active cases and trichiasis surgery service, will need to continue for several years, although at a lower level, after the threshold levels defined by WHO are achieved.
5. The ITFDE urges the World Health Organization to issue the report of its most recent Global Scientific Meeting on Trachoma Elimination, held in July 2010, including clarification of recommendations on certification of elimination of blinding trachoma, as soon as possible.
6. The World Health Organization and the International Trachoma Initiative (ITI) should work with endemic countries and other partners to publish an annual summary of the status of the Global Program to Eliminate Blinding Trachoma, including available data on prevalence of TF and TI and coverage with interventions of the SAFE strategy, in each of the endemic countries remaining, in WHO's *Weekly Epidemiological Record*, beginning in 2011 for the year 2010.
7. WHO, the ITI, endemic countries and other partners should establish a timeline and interim benchmarks as quickly as possible to serve as a road map for monitoring activities between now and 2020.
8. Although additional assessments, surveys and/or mapping are needed urgently in order to refine knowledge of the status of trachoma and to forecast the amount of Zithromax that will

be needed, the absence or inadequacy of such precise quantified knowledge should not delay beginning interventions in apparent highly endemic areas.

9. There is need to build capacity for the full SAFE strategy, particularly for scaling up trichiasis surgery, in order to remove the backlog of TT patients and provide other interventions at the necessary scale.
10. Programs should seek and exploit opportunities to integrate interventions against trachoma with activities directed against other Neglected Tropical Diseases, water and sanitation projects, primary health care services and other initiatives for strengthening health systems, wherever practical.
11. Potentially useful research includes investigation of what further surveillance and interventions may be needed once the WHO thresholds for prevalence of TF and TT are met; understanding better the implications of hypo- and hyper-endemicity and identification of other antibiotics in case resistance to azithromycin becomes a constraint.
12. The ITFDE affirms its endorsement of the need to eliminate malaria and lymphatic filariasis from the island of Hispaniola, the tragic earthquake of January 2010 notwithstanding; notes the projected costs to achieve those goals that were announced by the governments of the Dominican Republic and Haiti in October 2009; and deplores the inadequate external funding available to implement those efforts, especially to continue and expand bi-national cooperation between the two countries towards those achievable and desirable goals.

## References

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