



Nepal National Trachoma Program: Review and Recommendations

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About the Neglected Tropical Disease Control Program

In September 2006, the U.S. Agency for International Development (USAID) launched the Neglected Tropical Disease (NTD) Control Program. The NTD Control Program is the first global effort to support country programs to integrate and scale up delivery of preventive chemotherapy for five targeted NTDs: lymphatic filariasis (elephantiasis), schistosomiasis (bilharzia; snail fever), trachoma (blinding eye infection), onchocerciasis (river blindness), and soil-transmitted helminthiasis (intestinal worm infection).

Our Program supports national NTD control programs' efforts to expand their existing disease-specific control programs by integrating mass drug campaigns for co-endemic NTDs and benefiting from cost-efficiencies that result from streamlined service delivery. The Program also works closely with key global NTD partners and donors to advocate for global policies and initiatives to prioritize treatment and control of NTDs.

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Nepal National Trachoma Program

Review and Recommendations

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Nepal has a special opportunity to eliminate trachoma, and the dedication of these people to that goal is especially noteworthy. Dhanyabad.

Acronyms

BTRP	Bilamellar Tarsal Rotation Procedure
CBO	Community Based Organizations
CDD	Community Drug Distribution
CHD	Child Health Division
DEC	Diethyl-carbamazine
DEO	District Education Officer
DG	Director General
DHS	Department of Health Service
DoE	Department of Education
DPHO	District Public Health Officer
DWSS	Department of Water Supply and Sewerage
EDCD	Epidemiology Disease Control Division
FCHVs	Female Community Health Volunteers
HKI	Helen Keller International
HP	Health Post
IEC	Information, Education and Communication
ITI	International Trachoma Initiative
IU	Implementation Unit
LF	Lymphatic Filariasis
LMD	Logistic Management Division
MCHWs	Maternal and Child Health Workers
MDA	Mass Drug Administration
MGs	Mothers' group
M&E	Monitoring and Evaluation
MOE	Ministry of Education
MoHP	Ministry of Health and Population
MOU	Memorandum of Understanding
NNJS	Nepal Netra Jyoti Sangh (Comprehensive Eye Care Services)
NPC	National Planning Commission
NTD	Neglected Tropical Diseases
NTP	National Trachoma Programme
PBS	Population Based Trachoma Prevalence Survey
PCT	Preventive Chemotherapy
PECC	Primary Eye Care Center
PHC	Primary Health Centre
PSC	Project Steering Committee
SAE	Serious adverse events
SAFE	Surgery, Antibiotic, Face washing and Environmental change
SHP	Sub-health Post
SRC	Swiss Red Cross
STH	Soil-transmitted Helminthiasis
TAP	Trachoma Action Plan
TBA	Traditional Birth Attendants

TF	Trachomatous Follicular
ToR	Terms of Reference
TT	Trachomatous Trichiasis
TRA	Trachoma Rapid Assessment
TWG	Technical Working Group
USAID	United States Agency for International Development
VDC	Village Development Committees
VHW	Village Health Worker
WHO	World Health Organization
ZTX	Zithromax (Azithromycin)

1. Executive Summary

1.1 Key Findings

Nepal is justifiably proud of the National Trachoma Program (NTP), which has accomplished a great deal since its inception in 2002. Originally started as a vertical program with entirely external funding, the program leadership has moved its multi-faceted components into the public health structure for delivery of mass antibiotic and programs for hygiene and sanitation, and has a commitment largely from the eye care delivery system in Nepal, Nepal Netra Jyoti Sangh (NNJS), for the trachomatous trichiasis (TT) surgery component. The mapping of trachoma is largely completed, and the program is committed to carry out impact surveys in the districts that have completed three rounds of Mass Drug Administration (MDA). To date, the impact surveys have shown that trachoma follicular (TF), the marker of disease, is less than 5% in children ages under ten after the program implementation, a marker of program success.

In spite of this success, there are challenges to achieving Nepal's goal of elimination of blinding trachoma by 2014. The World Health Organization (WHO) has two elements that are required for certification of elimination within a country. The first is that there should be less than 1/1,000 population at district level of TT cases unoperated and unknown to the system. The second is that TF should be less than 5% at district level. Against these benchmarks, the following are seen as major impediments to achieving elimination.

First, at least 35,000 and likely more TT surgeries (or records of refusal) must be achieved for the target by 2014 to be reached. NNJS has no TT case finding system in place, no plan to scale up, and no priority to achieve this goal. While all the documents reviewed espoused the commitment of NNJS to take on the TT surgery component, at present it is managed only as a by-product of the cataract surgery program. Last year, against a target of 3,000 surgeries, only an estimated 900 were done. This problem must be addressed soon in order not to hold back achievement of elimination for Nepal.

Second, there are 19 districts where the estimates of trachoma are between 5% and 9.9%. These districts have no trachoma program other than the work on hygiene and sanitation carried out by the Department of Water Supply and Sewerage (DWSS), yet do not meet the Ultimate Intervention Goal of being less than 5%. Some of the surveys were done almost seven years ago, and they indicated a rate close to 5%, so given the secular trend and improving water and sanitation, it is likely that an impact survey of the Facial hygiene (F) and Environmental sanitation (E) components would reveal that TF rates are now below 5%. However, there are several other districts in this category of limbo that had rates 7% or higher, where there are likely sub districts of greater than 10%. In addition, the surveys are more recent and it is unlikely that the F and E components

would have had time to work. A plan to address active trachoma in these districts is urgently needed, as without some intervention, they will impede progress to the goal of 2014.

The NTP had developed a Strategic Plan for trachoma that covers 2009 to 2014. It was comprehensive and ambitious. However, the plan is outdated now with different partners and activities which have not occurred. A new, district by district Trachoma Action Plan (TAP), as unveiled at the last WHO Global Alliance meeting, is needed with reinforcement of the commitments by various partners to achieve the goals of 2014.

The commitment of the USAID Neglected Tropical Disease (NTD) Control Program is critical to the ongoing mission of the NTP. The NTP is a full partner within the Nepal national NTD program. The elimination of trachoma in Nepal would be a huge boost for the national NTD program, and as such, the commitment to complete the mapping, ongoing and future impact surveys, and programs where needed for active trachoma, will help ensure the timely achievement of that goal.

1.2 Recommendations

Priority recommendations, listed below are those that address large issues that influence the ability of the program to achieve its goal for trachoma elimination.

Priority Recommendations

Strategic Plan:

- The current strategic plan needs to be revised to reflect current realities and realistic goals. It should follow in principle the new Trachoma Action Plan presented at WHO, wherein district level targets are set for surgery and for AFE
- In remaining districts, or possible sub districts (see section 4.9 below), the NTP staff, as part of training, should develop a three year strategic plan for the trachoma focal person regarding trachoma activities. There is clearly training for the MDA activities, but minimal for other activities that should also be going on during the three years of MDA.

Mapping:

- With only eight districts remaining to be mapped, funds should be directed to complete this activity, in order to be certain there are not districts that need MDA that are yet unknown.

Surgery:

- NTP should create a plan and actively seek funds from donors willing to address the unmet need for surgery and a recording system. The consultant suggests that donors, including Government of Nepal, send funds directly to NTP for the

development of a small dedicated trachoma unit in sentinel district eye hospitals in 4-5 formerly endemic districts where the backlog is greatest. Even with this approach, Nepal is unlikely to achieve the UIG for TT by 2014, but at least it can show progress towards the UIG in districts where the need is greatest

Monitoring and Evaluation (M&E):

- Impact assessments need to be carried out in 8 of the districts where starting prevalence was less than 7% to be certain that they are now below 5%.
- A plan for the remaining districts, where the estimate of trachoma was 7% or greater but less than 10%, needs to be developed. The absence of a plan for these districts will delay progress towards elimination

Severe Adverse Events (SAEs):

- The NTP and national NTD program should work together to provide an approach for the trachoma focal person, who needs very specific training to counter these unfortunate perceptions, and ways to teach the health post in charge and other distributors to explain the proper use of azithromycin and the absence of serious adverse events, but in a way that does not damage the LF program

Surveillance:

- The NTP should proceed with the planned workshop in 2012 to develop plans for surveillance.
- As per the guidelines, Nepal NTP can propose a workable system as other countries have done for this surveillance, and should seriously consider recommendations for streamlining the number of districts.
- The surveillance system should not get underway until there is a strategy to address the TT backlog.

Other Recommendations

Advocacy:

- The NTP staff should continue its strong advocacy role with partners, and seek every opportunity to find a strong champion within the government and within NNJS for its work.

Mapping:

- The TRA methodology and population based prevalence survey methodology should be revised to include a random component of household selection.

Surgery:

- NTP create and implement with NNJS Central a TT referral form for each district eye hospital serving rural Nepal to record cases screened and if surgery was done or refused.
- The NTP seek a strong advocate within the ophthalmic community who can champion the cause of TT surgery within NNJS and within the district hospitals.

Drug Management:

- Pfizer should be contacted immediately to determine how long azithromycin can be kept above 30 degrees before degrading.
- Once the shipment has arrived in the district for the first MDA, the NTP staff or member of Central stores should visit the district storekeeper and observe the storage and accounting procedures for the donation program. The lag time between the initial training and actual need to implement the procedures suggest that reinforcement would be advisable.
- A specific information sheet on best practices for drug management, including an image of the bottle and where to find the expiration date, should be part of training at each round of MDA for the storekeeper and, if stored at the health post, the health post in charge

IEC/social mobilization:

- NTP should stress at all trainings that the handbills must be provided to the community before or at time of MDA, and provide sufficient copies for each household. Materials for the village level should be reproduced in the local language
- Trachoma handbills could be enhanced for messages on surgery, such as if you have your lashes irritating the eye, seek care at the district eye hospital, potentially to correct the problem before you lose vision.
- A detailed activity plan for the trachoma focal persons that includes F and E activities should be created by NTP at the time of starting a district. This recommendation also complements the recommendation in various sections. The activity plan and training for MDA is thorough and satisfactory, but there is no clear plan for F and E activities that could happen at the time of MDA and in between MDAs.
- NTP should continue its efforts at the Central Level to bring trachoma interests to the other Ministries, and continue to invite them into planning meetings for trachoma activities. Most importantly, if a revised Strategic Plan is created with action plans for each endemic district, the Ministries and NNJS should declare their activity plans for each district.

Training:

- NTP should create a TT audit form and work with NNJS to train the Ophthalmic Assistants on surgical audits as part of their routine TT follow up care. This should be considered as part of re-training for existing Ophthalmic Assistants or other TT surgeons, and part of new training.
- Trachoma focal persons need to communicate with NTP around needs for possible re-training in connection with second and third round of MDA in districts. This is especially critical at community level, where the actual MDA occurs, and if the Health post in charge or sub health post in charge is new, the MDA could be in jeopardy.
- The NTP should consider a final “certification” process for its training that would require the trachoma focal person and supervisors to demonstrate verbally or otherwise some basic competencies.
- During the initial training, special emphasis should be given to the trachoma focal person and district supervisors, including hands on experience with reconstitution of liquid, understanding expiration dates and where to find them.
- During the VDC training, special emphasis should be placed on managing rumors of adverse events at the outset, understanding nausea and diarrhea with MDA using azithromycin, and management of these adverse events.
- NTP staff should gather information on other G/NGO training programs for community level volunteer staff, and work to integrate face washing messages into their training programs. This is especially critical for districts between 5% and 9%, where these activities are expected to finish the reduction of trachoma to less than 5%. This activity should be part of the revised strategic plan for each endemic district, following Trachoma Action Plan (TAP).

MDA:

- The NTP staff should help the districts plan the MDAs so that they can occur outside of the planting/monsoon season.
- When the new census figures arrive, NTP staff should use some average of 2001/2011 figures to re compute coverage, and use the new figures going forward.
- Donors for the MDA program should advance at least partial funding to NTP to alleviate the considerable juggling of funds and projects that otherwise occurs.

M & E:

- The impact surveys must include children ages 1-9 years, and be powered to detect a prevalence of 4% +/- 2% to be accepted for certification purposes.

- The NTP program consider a re-standardization of trachoma graders in a workshop, to be certain they have good agreement at this point.

NTD integration:

- The NTP office appears to be fully engaged in the NTD integration efforts. They should work closely with the national NTD Steering Committee to make sure that the hygiene focus of the IEC and BCC materials is maintained, to complement the work on water and the efforts of the DWSS within the districts.
- The azithromycin distribution should continue to be separate from the LF distribution in time, in order to continue with high compliance and minimize the collateral damage from the perception of side effects with DEC.

2. Background

2.1 Scope of Work

The consultant traveled to Nepal July 10-19, 2011 to meet with the National Trachoma Program (NTP) in Nepal, recognize program achievements and identify areas that need additional support in order to meet the NTP goal of trachoma elimination by 2014. Key questions to be addressed during the consultancy included the following--

1. What are the achievements and areas to be strengthened regarding the following activities?
 - Advocacy/ Strategic planning
 - Mapping
 - Surgery (process and backlog)
 - Drug Management
 - IEC. Social mobilization, including all aspects of SAFE
 - Training, including all aspects of SAFE
 - Supervision
 - MDA, including timing, distribution mechanism
 - M and E
2. Should trachoma rapid assessment or detailed population based mapping be conducted in any of the 14 districts which remain unmapped? If so, which ones?
3. Which districts should have impact assessments?

Activities to be completed as part of the consultancy include --

- Obtain relevant information and data of implementation of the SAFE strategy in Nepal
- Conduct background review of historical documentation of the NTP program
- Conduct interviews with program staff and MOHP partners at central and district levels
- Assess progress in attaining national program goals
- Identify achievements
- Provide recommendations, including post-elimination strategies and surveillance
- Complete a complete report of findings and recommendations to be shared with the NTP, MOHP, USAID, RTI, ITI, and other partners/stakeholders.

2.2 Methodology

The consultant used the following documents as background for this report, and to guide questions for subsequent interviews.

- Strategic plan for Trachoma Elimination in Nepal, 2010-2014
- National Trachoma Program Guidelines for Zithromax Distribution, 5/10/11 version
- Memorandum of Understanding (MOU) between Ministry of Health and Population (MoHP), Nepal Netra Jyoti Sangh (NNJS) and Department of Water Supply and Sewerage (DWSS) for implementation of National Trachoma Program (NTP)
- WaterAid in Nepal data sheet updated May 2011
- Neglected Diseases in Nepal: an integrated National Control Programme focused on diseases controlled by preventive chemotherapy, approved April 2010
- National Trachoma Program Annual reports, 2009, 2008, 2007
- Nepal National Trachoma Program Mid-term program Review, August 2008
- Nepal Netra Jyoti Sangh Annual Report 2007, presented 2008
- Report of Consultancy for International Trachoma Initiative (ITI) submitted January 2005
- National trachoma Program Nepal Zithromax guidelines 2004
- Evaluation of the National Trachoma Program of Nepal for ITI, January 2003
- Various IEC materials (handbills, training materials, guidelines)

In addition to visits in Kathmandu, two districts, Parsa and Rautahat were also visited. Parsa district had just completed three rounds of MDA, and Rautahat was just starting their program, planned for the fall of 2012. A visit to a third district was planned but could not be accommodated due to traffic strike in Doti, landslide in Rasuwa, although the trachoma focal person came to Kathmandu for discussion and concern for USAID clearance due to the political situation and also concern for monsoon landslides blocking access at the end of the trip to Rolpa. However, the Trachoma Focal person for Rasuwa and the District Health Officer in Charge for Rolpa were interviewed in Kathmandu. The consultant held detailed interviews with the following persons:

In Kathmandu: Mr. Dharmपाल Prasad Raman, Director, NTD Control Program, RTI Nepal; Mr. BB Thapa, Director, Nepal Trachoma Program, Mr. Shekhar Sharma, Administrator and Finance Director of Nepal Trachoma Program, Dr Nihal Singh, Medical Officer with NTD portfolio, WHO-Nepal; Dr RP Pokhrel, Director, NNJS, Mr. Krishna Acharya, Director General of DWSS; Dr GP Pokhrel, Consultant Ophthalmologist, formerly of WHO-Geneva and now with Lions Sightfirst.

In Parsa and Rautahat Districts: Dr Ram Shankar Thakur, DPHO; Mr. Nenda Chaudhury, Trachoma focal person, Mr. Ram Adhar Singh, Supervisor, Mr. Krishna Acharya, DWSS, Mr. Prem Jaiswal, Trachoma focal person; Mr. Rajasthan Prasad, Storekeeper; Mr. P Sah, Trachoma focal person; Mr. Y Pokhrel, DPHO; Mr. Pawan Neupane. Administrator for Gaur Eye Hospital, Nurse and Assistant Health Officer at the Health Post in Rauthahat VDC; four village women with children in treatment VDC; other community members.

The report was presented in full to Mr. Raman and Mr. Thapa. They approved of the contents of the report. The USAID/Nepal Mission and the Director General for Health Services were briefed on the contents and major findings.

3. Background to National Trachoma Program

3.1 Problem of Trachoma

3.1.1 Introduction

The leading infectious cause of blindness, trachoma was largely forgotten as a public health issue until a renewed focus by the WHO resulted in a resolution by the World Health Assembly to eradicate blinding trachoma by the Year 2020. Trachoma continues to be endemic in many of the poorest and most remote areas of Africa, Asia, Australia, and the Middle East. Communities with trachoma are often those with the fewest resources to take on health issues, and trachoma strikes the most vulnerable members of those communities, women and children. Trachoma affects an estimated 40 million people and an estimated 7.6 million are blind or severely visually impaired due to trachoma. The total productivity loss from trachoma is estimated at \$5.3 billion USD (2003) and health economists suggest this figure would increase by 50% when factoring in disability due to trichiasis prior to visual impairment.

3.1.2 Clinical Signs of Trachoma and Infection

The clinical signs of ocular infection by *C. trachomatis* are the result of immunopathology, and the host response to infection is key to understanding the manifestations of trachoma, including the sequelae of scarring and trichiasis. Scarring is the result of repeated, or persistent, episodes of infection. In trachoma-endemic communities, trachoma is a chronic disease, with classic age-dependent manifestations. The community pool of active inflammatory disease resides in children, where disease is characterized by follicles and, in severe cases, thickening of the conjunctiva with inflammation obscuring the deep tarsal blood vessels. Using the WHO simplified grading for trachoma, these signs are follicular trachoma (TF) and intense trachoma (TI) [4]. Multiple infections and/or prolonged, severe infection are followed by evidence of scarring of the conjunctiva (scarring trachoma or TS), which can be observed even in childhood and early adult hood. The scarring can become significant enough to cause entropion and trichiasis (TT), or inturned eyelashes. Trichiasis, and entropion, are most often seen in middle aged to older adults but in some countries like Ethiopia, are apparent in young persons. Women are at greater risk of developing the blinding complications of trachoma compared to men. Trichiasis requires lid surgery to correct the eyelashes rubbing on the globe and prevent visual loss from corneal opacification.

Ideally, a laboratory test to also monitor the presence of infection would be a useful addition to monitoring decline in trachoma. Unfortunately, currently available NAATS are not realistic options for monitoring infection in trachoma endemic countries because of the expense and lack of facilities for processing specimens. As more formerly

trachoma-endemic countries move towards low prevalence of disease, the ability to test communities for remaining infection or re-emergent infection is a high priority. The development of a simple, inexpensive, rapid, point-of-care test for *Chlamydia* that is robust under field conditions is urgently needed.

3.1.3 Epidemiology of Trachoma

Trachoma has declined in many areas, notably in the Middle East, India, Latin America, and Asia. Some formerly endemic countries, like Morocco, Oman, and Mexico, are applying for certification by WHO that the country has eliminated blinding trachoma, with a host of other countries set to meet the elimination timeline. However, trachoma continues to be a major cause of ocular morbidity in Africa. Hyper-endemic communities are common in Ethiopia, Sudan, and Tanzania. A summary of trachoma prevalence surveys published by WHO demonstrates that the burden of disease is primarily in Africa, but due to the large population sizes, many cases of active trachoma are estimated to be in China and India, despite low prevalence estimates.

Where still endemic, trachoma is most often found in rural, economically underdeveloped areas, where good water supplies and basic sanitation services are lacking. Even within hyper-endemic regions, trachoma clusters by village, and clusters both at the neighborhood and at the household level.

3.1.4 Intervention for Trachoma Control: SAFE

The World Health Organization has recommended the use of “SAFE” strategy for countries implementing trachoma control programs. This multi-faceted approach includes Surgery for trichiasis cases, Antibiotics to treat the community pool of infection, Face washing to reduce transmission, and Environmental change to sustain reduction in transmission. There is epidemiological evidence to support each component of the SAFE strategy, which must be implemented on a community wide basis.

Surgery

Even if current control strategies are effective in reducing active trachoma in children, trichiasis will continue to occur in the adult population as result of previous years of exposure to trachoma, and many will progress to corneal opacification and blindness without surgical intervention. Outcomes of surgery reported from trachoma programs after follow-up are sometimes dismal. A two year follow up study of trichiasis surgery cases, done in several districts of Tanzania, found a recurrence rate of trichiasis of 28%, varying by district from 16% to 38%. In The Gambia, trichiasis recurrence rates at one year were 41%, and varied among surgeons from 0% to more than 80%. Yet, in controlled clinical trials under strict surgical conditions, adverse outcomes following surgery are low, 10% to 18%. Use of azithromycin following surgery can decrease recurrence rates by 30%.

WHO has established an Ultimate Intervention Goal for trichiasis at less than 1/1000 population at the district level. One of the criteria for elimination of trachoma will be that there are less than 1/1,000 population of trichiasis cases unoperated and unknown to the system (this takes into account TT cases who refuse and who are scheduled for surgery but the surgery has not yet happened), and some system of audit to determine quality of surgery.

Antibiotics

The WHO recommends mass treatment, preferably with a single dose of azithromycin, when the prevalence of TF is more than 10% in children ages under ten years. Mass treatment shifts to targeted treatment when prevalence is between 5% and 10%; when TF rates are less than 5%, the Ultimate Intervention Goal is achieved and antibiotic treatment can cease. Current WHO guidelines suggest mass treatment of communities for at least three years, then re-evaluation to determine continued need. If prevalence rates are 30% at baseline, then five years of MDA with F and E are recommended before impact surveys are carried out.

The Ultimate Intervention Goal for active trachoma is TF less than 5% at district level. However, the certification guidelines recommend that sub district surveys be carried out to be certain there are not pockets of TF that need attention. Thus, if TF at the district level is less than 5% then sub district surveys to confirm the low rate are indicated. This replaces the former recommendation that each village be surveyed to be certain it is less than 5%, an impossible constraint.

There is still uncertainty of what to do with districts between 5% and 9% which technically have not reached the Ultimate Intervention Goal. ITI currently does not provide azithromycin for these districts, although will consider provision to sub districts where surveys show a prevalence greater than 10%.

Face Washing and Environmental Change

One of the earliest risk factors noted for trachoma was eye-seeking flies, which are presumed to act as a physical vector for transmission of *C. trachomatis*. The evidence base for them as actually capable of transmission of infection is uncertain, based on clinical trials. However, latrine construction and use has been heavily promoted as a way to reduce flies for trachoma control. While latrine construction and use is important for a number of public health reasons in these impoverished settings, the value added for a trachoma control program is not evident.

Trachoma disappeared in many countries prior to the advent of antibiotic use. The disappearance is attributed to improvements in socioeconomic conditions, better hygiene and environmental sanitation. Without the inclusion of hygiene and environmental behavior changes as part of trachoma control within trachoma endemic communities, it is unlikely that antibiotics alone will create a long-term solution to reduction in disease, although clearly they are helping accelerate reductions in infection. The challenge for

trachoma control program managers will be resisting the lure of an antibiotic siren, and integrating persons skilled in community development for water and sanitation into the country strategy. Considerable progress has been made in eliminating blindness from trachoma, with encouraging evidence of declines from several formerly hyper-endemic countries, but reaching a target of world-wide elimination by 2020 will be a challenge.

3.2 Trachoma in Nepal and Establishment of NTP

In 1981, a country-wide blindness survey found that trachoma was the second leading cause of avoidable blindness in Nepal. Trachoma clustered in the Terai region, where it was over 20% in the population. Most of the trichiasis was in women, and the overall rate was 2%. At present, within 75 districts, active trachoma (TF) is still above 10% in two districts, where programs are planned to start this year, with 8 districts still to be mapped. It is not expected these 8 districts will have TF above 10% but the true rate is unknown. Of note, the impact surveys done on formerly endemic districts where programs have taken place have uniformly shown TF rates after three years below 5%, showing the value of impact surveys in being able to move resources to other districts once the Ultimate Intervention Goal for TF has been achieved. There are 19 districts where the trachoma rate is between 5-9% and these represent a challenge to the elimination targets as described under key findings and the relevant sections of the report. There are still at least 35,000 unoperated TT cases in the country and likely more as the calculation does not include districts where assessments were done using a rapid assessment methodology.

In 2002, the NTP program was established as a vertical program with funding from International Trachoma Initiative (ITI). A quadric-partite agreement between Ministry Of Health and Population (MOHP), NNJS, DWSS, and ITI defined the organizational responsibilities for implementing SAFE in Nepal. The program started out using a case-finding and treatment approach, but then began to shift to a mass drug administration strategy in endemic districts. In 2004, ITI abruptly withdrew funds due to its own internal funding issues, and the NTP organized a workshop to revise its strategic directions and work plan. A 2005-2009 Work Plan was adopted and approved by the Ministry of Health, and a modest budget from the government, but a line item for NTP, was provided. NTP was charged with fully integrating the trachoma program into the existing public health systems in Nepal for drug distribution, and advocate for water and sanitation programs within the DWSS. The mid-term review carried out by a consultant for ITI noted the achievements of the NTP program, and also noted the funding constraints that NTP faces, the low rate of surgeries against the backlog, and the political uncertainty in Nepal at that time. Recommendations were made concerning the lack of focus on surgery to meet targets, the need for more supervision during distribution, and the problem of acquiring funds for production of IEC materials. Interestingly, several of these recommendations still hold in the present report.

The NTP program continued to build connections across the ministries and non government organizations (NGOs) for its activities. In 2010, NTP prepared a new Five Year Plan to carry it through to 2014, the target date for Trachoma Elimination in Nepal. This plan was approved by the NTP Project Steering Committee, a multi-faceted body with representatives from government, NNJS, UNICEF, HKI, and others. This committee approves the activities and allocation of funds for the activities proposed by NTP. The NTP program is a full member of the Steering Committee and Technical Working Group within the national NTD program, and benefits from its resources while also providing experience and expertise to the group.

Last year in Nepal, the USAID funded NTD Control Program, led by RTI International in Nepal began providing support for trachoma. The NTD Control Program also provides support for Lymphatic Filariasis (LF), and soil transmitted helminthes (STH) control efforts.

4. Findings and Recommendations

Since 2005, the NTP has shifted emphasis away from responsibility for the full SAFE strategy to a focus on the MDA of antibiotics for trachoma control. There is awareness of the importance of the full SAFE strategy, but a realistic appraisal of what, with limited resources, can be done within NTP and its current administrative situation within NNJS. NTP has a line item budget in the government red-book in support of its MDA activities, which the government approves for approved activities.

NNJS is, largely, the system of eye care provision for Nepal apart from some NGO activities. As the administrative house for NTP, it (together with the Ministry of Health) approves all plans for activities and has taken onto itself responsibility for the TT surgery component. The NTP office, under the leadership of Mr. Thapa, has committed itself to collecting data on TT surgeries done by the NNJS system and others, finding funds when opportunity presents for TT programs, but NTP is not in a position to implement TT surgery programs without NNJS involvement. The ramifications of this arrangement are discussed further under the surgery findings.

The NTP staff has made close links with the Department of Water Supply and Sewerage (DWSS) and the Division of Environmental Sanitation, and relies on them and their network of district offices to enhance water and sanitation activities at the district level, and conduct programs on improving hygiene and latrine use. When NTP can acquire funds for IEC materials, it will do so and provide them to the DWSS during Sanitation week to pass on to the districts. HKI is no longer funding provision of IEC materials for NTP, and funds are acquired in part for specific districts from RTI and from government resources.

The primary focus of the NTP program, and for which most funds are available directly for NTP, is in the A component of SAFE. The antibiotic component is the primary focus of the training programs, the forms, the supervision activities, and the evaluation of the district. The NTP staff does try to insert hygiene messages where they can, but this is not an emphasis.

The other focus is on completing the mapping and carrying out the impact surveys. The mapping surveys have almost been completed, and this is a source of pride to have knowledge of the country situation. The impact surveys are very important for advocacy within the Nepal government and motivation for the districts and the NTP program itself. Mr. Thapa has rightly targeted funds from his limited resources for these activities.

In the sections below, findings and recommendations are reported for specific areas within the NTP programs.

4.1 Advocacy and Strategic Planning

The NTP program was largely a vertical program within Nepal under the former ITI Framework, and after 2004 massive advocacy for government support, integration of the elements of the program within the existing ministry of health structure and NNJS was needed quickly or the program would collapse. Mr. Thapa and the NTP staff have demonstrated true leadership in accomplishing the integration that has happened to date, and it is largely due to their efforts that Nepal has a national trachoma program. The NNJS system has taken responsibility for the bulk of the TT surgery component, and the DWSS and Department of Education have largely taken over the hygiene and environmental change component, as described in detail below. The NTP program is careful to include all related ministries and partners in its program planning committee, and NTP staff sits in on meetings of the various partners to advocate for trachoma. The NTP program has developed a Five Year Strategic Plan since 2005, and has one that covers 2009-2014, when the target date for elimination has been set.

At the National level, the NTP program is functionally under the NTP Steering Committee, a multi-sectorial group that includes representatives from the Nepal Government ministries and central Nepal Netra Jyoti Sangh. The Steering Committee approves the policies for NTP and the Plans of Action, and this arrangement is important to keep as it ensures no one organization can direct its activities or even dis-band it. The NTP staff appears able to leverage the stature of Dr RP Pokhrel to help garner Ministry support for its activities. Dr Pokhrel is revered within Nepal for his eye work and is able to persuade the government at high levels for activities. However, it is not clear that NNJS as an organization does advocacy for trachoma control, and the NTP staff carries out this largely on its own. NNJS does not direct any of its funds to NTP. There is concern about the successor to Dr Pokhrel and the likely degree of interest in trachoma programs in the future, which could have destabilizing consequences for the NTP program, at least in terms of surgery. At the district level, there appear to be limited commitment of the district and zonal NNJS hospitals, which are largely independent units, to trachoma control outside of routine activities.

Mr. Thapa has good connections in various ministries, from his time with the DWSS and HKI, and this has helped keep functional the NTP program in –AFE”. For example, at the meeting with the WHO NTD coordinator, mention was made that if the Nepal Ministry of Health asks WHO to direct more funds towards the TT surgery program, then WHO can re-arrange funds to do that. By the next day, Mr. Thapa had already contacted the MOH to initiate a letter requesting re-direction of funds for the TT program. There is a Memorandum of Understanding for the next five years signed by Chairman of NNJS, the Director General of the Department of Water Supply and Sewage, and the Chief of policy, planning and international cooperation division of the Ministry of Health and Population that outlines the roles and responsibilities of each partner for trachoma. In this document, NNJS agrees to advocate for NTP at the national and international level, and to take over TT surgeries, but this has not been clearly operationalized.

Previous consultancies have remarked on the need for advocacy to place the NTP office on firmer financial footing, but this has been a challenge since many NGOs and government funds do not pay for central administrative support and NNJS does not direct any of its own funds to the program for administrative support. The office has largely existed on indirect costs of programs and costs for specific program level activities.

At the district level, there appears to be variable advocacy for the trachoma program, except for the antibiotic component. The primary focus is on MDA, and for that the DPOHs appear to be well mobilized, but there is scant recognition of the other components of SAFE. The district eye hospitals will operate on TT when such cases present, but do not have an active program for either recruiting cases or recording cases other than those operated. One District Health Officer in Charge (DHOC) stated all eye health is part of the eye hospital and does not include TT as part of his mandate or advocacy role. The trachoma focal person in the district sits in on DWSS meetings, which are quarterly in one district, but following MDA the focal persons interviewed have no plans for F and E activities. There does not appear to be a district strategic plan for SAFE outside of the MDA program.

There is a strategic plan for trachoma elimination by the year 2014. This was an ambitious plan and covered all elements of SAFE, as well as monitoring, supervision, and program evaluation. The NTP office laid out a road map forward but lacks the funding and hence the authority in the S, F and E components to carry out the plan. By 2011, there are elements of the strategic plan that have not been carried forward, for a variety of reasons.

Some of these will be discussed in more detail below, but in summary the following components for achieving elimination are at risk:

Surgery. The goal is to have 15,000 TT patients operated by 2014 (an estimated 30% of the backlog). This is not enough to satisfy the requirement of 1/1000 population unoperated and unknown to the system by 2014. Last year's goal of 3,000 TT surgeries was not met, with only an estimated 900 carried out in all endemic districts. The plan to have female community health volunteers and government health staff mobilized for identification and surgery motivation is unlikely to happen, and there is no TT referral form. Although part of the strategic plan, there is no follow up of TT cases to estimate the quality of surgery, except from one research report and plans by Dr GP Pokhrel to carry out follow up as part of SightFirst activities. With TT surgery largely under the purview of the NNJS system, there is no coordinated TT surgery activity and unless drastic changes are implemented, this will hold back the achievement of the elimination goals.

Antibiotics. The plan discusses antibiotic distribution activities for districts with trachoma between 5% and <10%. There are 18 districts in this category, a sizeable fraction of the districts remaining with trachoma and there is no specific plan for them, other than "targeted" treatment in five to start in 2012, and no specific activities

underway. This is a potential impediment towards the elimination of blinding trachoma by 2014, and the subject of several recommendations below.

Program coordination. The strategic plan calls for NTP to coordinate all components of the SAFE strategy throughout the country, but under the current administrative structure for NTP, it must rely on partners to coordinate TT surgery, and the F and E components. NTP plays at best an ancillary and advocacy role in these activities, except for isolated districts.

Recommendations:

- The NTP staff should continue its strong advocacy role with partners, and seek every opportunity to find a strong champion within the government and within NNJS for its work.
- The current structure of the NTP Program Steering Committee having responsibility for formulating policies and approving strategic plans for NTP is reasonable and should continue.
- The current strategic plan needs to be revised to reflect current realities and realistic goals. The plan can incorporate many of the specific recommendations discussed below, and in addition to a budget, it needs specific plans for partners, particularly NNJS, for funding and action items. It should follow in principle the new Trachoma Action Plan presented at WHO, wherein district level targets are set for surgery and for AFE.
- In remaining districts, or possible sub districts (see section 4.9 below), the NTP staff, as part of training, should develop a three year strategic plan for the trachoma focal person regarding trachoma activities. There is clearly training for the MDA activities, but minimal for other activities that should also be going on during the three years of MDA. In particular, NTP should consider detailed information gathering on activities and other NGOs that are working on other activities in each of the districts, information best obtained from the district offices. For activities involving those who directly work with community members, like FCHV, these represent opportunities for integrated training on hygiene promotion. In addition, they may be involved, as suggested under the recommendations for surveillance, as part of the surveillance activities for their district.

4.2 Mapping

Using very limited resources, the NTP staff have completed mapping in all but 8 of the 75 districts in Nepal. Few countries can point to such an accomplishment, and this attests to the value placed on understanding the country situation by the NTP staff. They have chosen a survey strategy that is practical for their country, and the consultant has only a few suggestions for improving the approach to these surveys.

The NTP staff uses two approaches for mapping of trachoma at the district level. Trachoma Rapid Assessment (TRA) is used when there is high suspicion that the district has little trachoma. If the district, following TRA, has trachoma <10%, then no further mapping is done. If the TRA shows 10% or more, than a population-based prevalence survey is done. Impact surveys are population-based prevalence surveys. Details of the methods of the two approaches are described in Appendix one. Of note, in both types of survey there is not a random selection of children or adults in the sampling units chosen, which is the basis for the consultant's first recommendation.

The NTP staff has now mapped, using this approach, all but 8 of the 75 districts in Nepal. This is an important achievement, considering the struggle for funds that pervades the NTP and their commitment to finishing the mapping of burden of disease. The eight remaining districts include Tanahu (West), Dolpa (Midwest), Sindhuli (Central), and five districts in the East (Bhojpur, Ilam, Panchthar, Sankuwasabha, and Tapeljung). It is likely that the districts in the East and Midwest have low trachoma rates, but they need to be completed. The Technical Working Group of NTD has approved the final mapping of trachoma. There is no source of funds for these surveys at present, and if there is trachoma present, this will delay achieving target until the mapping is complete. Also, if they are found to have trachoma, then there is the potential that MDA and IEC materials can be integrated with other NTD activities at the district level, providing opportunities for fast track programs. The cost of TRA surveys is minimal, about \$1,000 per district (depending on terrain). Population-based follow up surveys may only be needed in the three of the districts not in the East, and if needed for securing drug, should also be supported. Again, the costs of these are minimal compared to published reports from the Carter Center; the NTP staff can carry these out for an estimated \$3,000 per district including the necessary supervision.

Recommendations:

- The TRA methodology and population based prevalence survey methodology should be revised to include a random component of household selection. This can be accomplished by securing a list of head of households from the VDC or sub-VDC community leader, or a random walk approach that ensures the furthest households are included. Suggested details on such approaches are described in Appendix two.
- With only eight districts remaining to be mapped, funds should be directed to complete this activity, in order to be certain there are not districts that need MDA that are yet unknown. Funds should be provided directly to NTP to carry out this activity, as they have good experience and contacts to enable this to be completed promptly.

4.3 Surgery

To date, an estimated 15,165 TT surgeries have been done from 2002 to 2010, and the TT surgery component of SAFE was moved into the purview of NNJS. NTP has received modest funding from WHO to enable surgeries in Jajarkot district, and there is an active request for more funds. TT camps comprise an estimated 70% of surgeries, and the other 30% are done in local district facilities. TT surgery is provided by Ophthalmic Assistants, following a six day course provided by NNJS. NTP provided resources to train 46 TT surgeons during 2002-2003, and 50% are still active in Nepal.

At present, NTP estimates there are, cumulatively, 49,000 cases of TT in the country. The estimated backlog by NTP is 34,000 cases, although with few surgeries done since recent surveys, and the absence of TT data from the surveys done by TRA, the estimate of TT cases needing surgery is likely higher. The Strategic Plan has targeted 15,000 surgeries by 2014, but this is insufficient to achieve the UIG overall. Last year, only 900 TT surgeries were done, so even the yearly goals set with NNJS have not been accomplished.

Although NNJS has stated it is the partner that will take on the role of provision of TT surgeries, there is no plan in place to accomplish this goal by 2014 with the scale up required. The current operations are done largely in the context of the cataract camps and walk-ins to district facilities. There is no specific trachoma unit for TT surgery, and no apparent strong advocate for this role within NNJS senior management. In part, as Dr R Pokhrel explained, the NNJS hospitals are relatively autonomous within each district—they largely set their own budgets and generate their own funds. The strategy is that the hospitals in the endemic districts bill the central NNJS for TT surgery done and are reimbursed from project funds acquired by NNJS. In non-program districts, TT patients are charged an estimated \$8 for surgery. NNJS has funds from the Government of India to carry out 1,000 TT surgeries, about an estimated 1,500,000 rupees, and the Lions Club of the US has donated an estimated \$84,000 for TT surgeries but this was given directly to the SightFirst office in Nepal for implementation. WHO Nepal has provided funds for 300 surgeries directly to NTP for Jajarkot.

The surgery component of SAFE is source of frustration for NTP, as they are aware of the need to achieve the WHO goal, but because of their administrative arrangement within NNJS, they are hamstrung in moving forward. NTP can, and has done, fund raising efforts to increase TT surgeries, but the administration of the funds and monitoring maybe outside of their jurisdiction within NNJS. Because NNJS is outside the government system, there is no mandate to follow any government prioritization for TT surgeries. There is no other eye care service delivery system in rural Nepal that could fill this void.

The consultant found that the situation is a serious impediment to the achievement of the goal of elimination of blinding trachoma by 2020. WHO has enacted new criteria for elimination that states that the level of trichiasis that is unoperated and unknown to

the health care system must be < 1/1,000 population at district level, with systems in place to monitor surgical quality.

The consultant agreed with one interviewee who stated that NNJS cannot be depended upon to fulfill this role as they have cataract as a priority and a cost-effective approach for TT surgery is unclear. He estimated that for all the logistics of screening camps it costs about \$1500/TT surgery, although the consultant could not confirm the cost with any data.

Recommendations:

- NTP create a plan and actively seek funds from donors willing to address the unmet need for surgery and a recording system. The consultant suggests that donors, including Government of Nepal, send funds directly to NTP for the development of a small dedicated trachoma unit in sentinel district eye hospitals in 4-5 formerly endemic districts where the backlog is greatest. Just as there is a trachoma focal person within the district hospital, there can be a TT focal person within the eye hospital. The job would consist of organizing logistics for TT screening in district VDCs by Health post-in charge, or sub-health post in charge, create a list of all suspected TT cases, and organize camps for TT surgery to be run by ophthalmic assistants. TT cases that refuse surgery can be noted as refusals, which within the WHO recommended certification system are cases known to the system. The cases which are operated are also checked off as completed. These lists are forwarded to NTP every year for the duration of the program. Even with this approach, Nepal is unlikely to achieve the UIG for TT by 2014, but at least it can show progress towards the UIG in districts where the need is greatest.
- NTP create and implement with NNJS Central a TT referral form for each district eye hospital serving rural Nepal to record cases screened and if surgery was done or refused. These forms should be sent each year to NTP for maintaining district records on TT surgery. The referral form at least tracks using the NNJS passive TT recruiting system the cases that also refused surgery in each district.
- The NTP seek a strong advocate within the ophthalmic community who can champion the cause of TT surgery within NNJS and within the district hospitals. This person might be supported for international meetings on TT surgery, and given visibility in the ophthalmology community for their role as a supporter in order to encourage commitment.

4.4 Drug Management

Previous consultants have committed on the satisfactory drug management practices of NTP, and this continues to be the case. They have created excellent training programs for drug management, and tracking procedures from Central to VDC level.

The consultant has not reviewed the latest supply chain audit from ITI. However, there are detailed forms in the record books at NTP of Zithromax entering Nepal and sent to Central Stores, then shipped from Central stores to the districts, and the districts to the VDC for distribution. Import taxes and customs are paid by Ministry of Health. The district reports back on doses dispensed during the nine day MDAs and district public health office store managers then report inventory on hand. If MDA is required next year, the NTP determines the stores in inventory and adds to the stores the number of doses needed for the next MDA. During MDA, a member of the NTP team travels to the district and spot checks some VDC distribution. They check that treatment is observed, and reinforce not providing treatment that is not taken immediately. Overall coverage, based on doses to population, appears to be high but population figures come from the 2001 census and so may be lower or higher than reported. The NTP staff noted that coverage in the district, as observed during the spot check, was higher for women and children than for men, who are often at work or have migrated to India.

ITI expressed concern to the consultant that 2.3 million treatments were not accounted for by the time of the Technical Expert Committee meeting in June 2011. The NTP staff, when queried, immediately noted that first, that accounting did not include the early 2011 year treatments, which covered Sarlahi, Accham, Doti, Dailekh, and Rolpa for a total of 1.2 million doses, and second, NTP produced the inventory in the central store that came to the equivalent of 1.1 million doses. The balance seemed to be ably accounted.

In the district store visited, there was a room that was devoted just to the boxes of azithromycin. However, storage was haphazard with no easy way to determine the lot and expiration dates of the various boxes. The room was very hot, more than 30 degrees, but clearly there is no room at the district level that will have air-conditioning or other means to keep the donated Zithromax cool. Since the leftover boxes are kept in the district for the next year's rounds of MDA, there is an urgent need to determine how rigid is the requirement for storage of the powder and tablets below 30 degrees.

The accounting for drug appears to be largely satisfactory, especially from the central to the district and district to the VDC level. Once MDA is completed, the VDC are allowed to keep remaining drug at the VDC level, and the amount shipped for the next MDA takes account of the remainder left with the VDC, although this varies by district. There is no mechanism to be certain it is unused in the interim at the health post or sub health post, although this appears to be very minimal. At the one health post visited, two bottles of 30 azithromycin tablets, already open, were in the dispensing tray of the assistant health person indicating that at least some is being used outside the trachoma program, but from the detailed accounting it appears to be very minimal. From interviews at district level there is clear awareness of the value of azithromycin in treating UTI, ARI, STD, and other infections so this is not surprising.

The concept of expiration of the drug, and where to look for the expiration date, is probably not reinforced except at the initial training, and there is a lot of other information at those sessions. The health post in charge and the trachoma focal persons,

as well as the storekeeper should probably have reminder sheets as part of the MDA training about this aspect of drug control.

Recommendations:

- Pfizer should be contacted immediately to determine how long azithromycin can be kept above 30 degrees before degrading.
- Once the shipment has arrived in the district for the first MDA, the NTP staff or member of Central stores should visit the district storekeeper and observe the storage and accounting procedures for the donation program. The lag time between the initial training and actual need to implement the procedures suggest that reinforcement would be advisable.
- A specific information sheet on best practices for drug management, including an image of the bottle and where to find the expiration date, should be part of training at each round of MDA for the storekeeper and, if stored at the health post, the health post in charge.

4.5 IEC/social mobilization for SAFE

NTP together with the former ITI designed and disseminated IEC materials for the hygiene component of **SAFE**. Face washing posters, trachoma brochures, flip charts on all aspects of **SAFE**, and trachoma calendars were produced. Simple one page trachoma “handbills” were created for each family that includes a discussion of face washing for children is handed out in connection with MDA. NTP together with Helen Keller International has now integrated simple messages about trachoma and importance of face washing in the curriculum of the primary education system of the Ministry of Education. The DWSS has overall responsibility for implementing, with its NGO partners, functional water supplies and latrines, and NTP staff sits on the Sanitation Steering Committee to provide advocacy for trachoma when prioritizing districts. NTP also uses Sanitation week to provide trachoma IEC materials to DWSS to add to the materials on latrine use they send to the district offices for the local campaigns. Nepal has an ambitious program to improve water and sanitation, and the trachoma program will benefit from these activities.

The NTP has managed to integrate its MDA successfully into the district health care system, identifying a trachoma focal person who is assigned the task through a letter from the Ministry of Health. The chain of training, described in more detail in the next section, ultimately uses the Nepal system of female community health volunteers, as well as other community health workers, to rally the community members during MDA. NTP wisely provides some compensation for these efforts, in recognition of their activities.

The issues with materials and mobilization for surgery have been described under the surgery component, and the primary recommendations are under that section. The issues

with social mobilization and materials for the **A** component are described largely in that section. In this section, the focus is on IEC and mobilization for **F** and **E**.

At the central level, The NTP staff does not have a budget for the production of IEC materials. Helen Keller International no longer supports the production of IEC materials; it no longer has a trachoma program in Nepal. The NTP staff relies on support from its government funds, and funds for the RTI supported districts, to produce its materials. Most of this budget goes toward training materials for Awareness campaigns around MDA, where hygiene messages are also incorporated. Given the strong culture of word-of-mouth in rural Nepal, this is likely a wise use of funds because adequate training of the trachoma focal person and district supervisors is critical, as they in turn are expected to train the Health Post in charge and sub health post in charge personnel, who are then expected to train and mobilize the female community health volunteers and village health workers for social mobilization.

The trachoma focal persons interviewed had some novel suggestions for materials that should be considered. One suggestion was a single, sturdy cloth poster that summarized the brief messages on trachoma treatment and prevention. This could be used by VDC staff at the time of MDA –it would show dosing, health education messages, and tips to help remind the staff of messages, but all in one place. Another person suggested that more training should be provided at the community level (for village leaders and female community health volunteers) during the Awareness campaign, particularly about the drug, the safety, and the use with water. Although this should be the content of training for the community workers, this is variable by VDC. Another suggested that the programs utilize district schools to get materials home to the parents about the MDA, as the school children can read the materials but parents may not be able to read. Some districts provide the trachoma handbills in advance of the MDA timing, others hand it out at the time of MDA. The interview with the Health Post in charge in one district found that no handbill about trachoma was given with MDA, and this same district had a problem with management of side effects from Azithromycin.

The materials from the DWSS are very generally related to health matters, describing that eye diseases are associated with low levels of latrine coverage or lack of water. The DG for DWSS noted that many of the personnel at the district level do not have the health background to fully understand health issues other than very basic concepts, so their training does not incorporate specifics on trachoma. However, there is general training in Katmandu on social mobilization for hand and face washing and latrine construction and maintenance. Moreover, 20% of the water budget goes for sanitation promotion. The DG noted that NTP sits together with them on the Sanitation Steering Committee, and if a focused program is needed in a particular district, this can be done. The Steering Committee decides who (among the NGOs and other stakeholders) will take the lead role in a district, which means the organization responsible for training (largely on building and maintaining a latrine), implementing a latrine building program and subsidy, and mobilizing communities through an awareness campaigns for latrines. During sanitation

week there is a mass campaign for latrine use in all districts, which includes a radio campaign.

At the district level, the DG noted there is not really proper planning or ample resources for getting more sanitation coverage or determining the functionality of water sources. They rely on stakeholders for some program implementation, but there is not sufficient coordination yet in place. At the visit to the district DWSS offices, although the district health office was preparing soon for MDA implementation, the DWSS office had received nothing from either the national DWSS office or District staff on trachoma. The district DWSS manager noted that promoting latrines was hard in his area, because latrines are not a priority, and he has no specific plan for face/and washing awareness campaigns. The DWSS district office appeared to have little investment in trachoma, and at least in that district, was not part of any of the planning but did come to at least part of the initial training.

The trachoma focal person has other responsibilities at the district level, such as newborn care or vitamin A distribution, or vector borne diseases. The trachoma focal persons interviewed were satisfied with their efforts at MDA, but did not see themselves having any further roles for trachoma in between the rounds of MDA. None of them described any **F** or **E** activities, apart from at the time of MDA, during the two years of active program. They had the IEC materials provided by NTP and knew what was in them, but were using them for training rather than any other activities themselves. The hygiene awareness activities tied to trachoma at community level largely occur during the one day MDA activity.

Recommendations:

- NTP should stress at all trainings that the handbills must be provided to the community before or at time of MDA, and provide sufficient copies for each household. Materials for the village level should be reproduced in the local language
- Trachoma handbills could be enhanced for messages on surgery, such as if you have your lashes irritating the eye, seek care at the district eye hospital, potentially to correct the problem before you lose vision. Since these are provided to the families, they have wide distribution and could provide information on eye care services for TT.
- A detailed activity plan for the trachoma focal persons that includes **F** and **E** activities should be created by NTP at the time of starting a district. This recommendation also complements the recommendation in section 4.1, and under surveillance. The activity plan and training for MDA is thorough and satisfactory, but there is no clear plan for F and E activities that could happen at the time of MDA and in between MDAs.
- Part of the responsibility of the District trachoma focal person should be to visit the DWSS office after the initial training and provide further modest training on

the link between water use, hygiene and sanitation and trachoma. This might help the local DWSS sanitation awareness campaigns, and would help ensure some concurrent activities between MDA rounds.

- The integration of hand and facewashing messages with the other activities, such as vitamin A distribution and newborn care, especially for training of FCHV or other persons who deal directly with the community, could be done as they carry out those activities.
- During MDA supervision, the trachoma focal person should meet with female health volunteers and community health workers-people at the community level-to reinforce with them and ask them to repeat the message that one treatment per year is enough if face and hands of children are kept clean.
- The NTP staff should consider the suggestions provided during the interviews for new IEC materials for use at the VDC level. In particular, as described in the next section, a particular set of materials for the Health Post in Charge for understanding and managing adverse events like nausea and diarrhea after the MDA.
- NTP should continue its efforts at the Central Level to bring trachoma interests to the other Ministries, and continue to invite them into planning meetings for trachoma activities. Most importantly, if a revised Strategic Plan is created with action plans for each endemic district, the Ministries and NNJS should declare their activity plans for each district.

4.6 Training for SAFE

In the early days, NTP helped train 46 TT surgeons, of whom 50% are still active. NTP has created advocacy for inclusion of eye diseases as part of motivation in the training of personnel in the DWSS, and includes hygiene awareness as part of its training in the districts for MDA. NTP was active in securing training in trachoma grading for the Ophthalmic Assistants who do the baseline and impact surveys, and in recognition of trichiasis for those who do surgery. The primary training activities are connected with preparation of a district for MDA, and there is good evidence, in terms of coverage and the results of impact surveys, that the training, from district to VDC, is successful. The consultant had only minor recommendations for MDA training.

All the trachoma focal persons interviewed felt that they had received adequate training and materials to carry out the MDA activities. They understood the content of the training materials and the uses for each, and felt they had the resources to, in turn, carry out the district level training. When queried about the content of their training, they described a number of components like understanding trachoma, the treatment, the importance of hygiene and sanitation, discussion of side effects and how to minimize by taking with ample water, mechanisms for dosing and using height sticks. Two of the trachoma focal

persons who had already carried out the MDAs also described learning how to plan to carry out MDA and supervision in the MDAs (one had 82 VDCs in the district and only 12 district supervisors, so planning was key). One trachoma focal person also described the informal education he received whenever he had questions, and made liberal use of calling the NTP staff with issues to get advice. NTP allows the district to largely create its own plans, which builds ownership of the MDA program and its successes. The consultant did not observe any training programs for the trachoma focal person, and so could not evaluate the approach or content. The training materials were comprehensive.

A primary issue that emerged from the interviews was the problem of lack of training for new personnel that join the district or VDC during the two years after the initial training. In Rasuwa, for example, the trachoma focal person stated that the third round of MDA was the most difficult because all the VDC staff had changed in the two years, and either he failed to ask NTP for more budgetary support for additional training or there was no provision given for re-training. Some interviewees also noted that although the training covered the use of water during MDA to minimize adverse events, there was not a very good understanding at the community level during the first MDA of possible side effects and management, and community people reported nausea and diarrhea that led to some refusals the following year. The health post in charge, when asked how he treated diarrhea after MDA, pointed to Metronidazole (which might have even exacerbated the symptoms). During the interview with the trachoma focal person in the district where MDA was just going to start, it was clear he did not know how to properly open the bottle of tablets or how to reconstitute the liquid properly. Reconstitution was also an issue in the 2003 consultancy report. This may reflect the bottle label which states it is 30ml when constituted. Since the bottle contains just powder, persons may feel that 30 mls of water is necessary to be added.

The training for the storekeepers seemed adequate—the record keeping was clearly described by both storekeepers interviewed, and the need to properly dispose of empty bottles and expired medicine. The consultant did not observe the training and could only ask about the contents. In practice, the actual storage observed, as described earlier, was inadequate in one district and more supervision once the drug arrives in district is recommended, as in that district it would be impossible to prioritize for distribution the drugs with the earlier expiration date.

NTP staff do not themselves train any Ophthalmic Assistants for surgery, but rely on NNJS. At present the training for TT surgeons does not include creating an audit of their surgical outcomes. NTP staff do not train for behavior change communication for facial cleanliness and sanitation within the district, but rely on training done by others within DWSS or NGOS working in those areas. NTP does provide materials as described above. Given limited resources within NTP, this is a reasonable approach and NTP should continue to collaborate with partners to help integrate trachoma (or at least eye diseases) as part of the training provided by others.

As a general comment about training, apart from the NTP or any specific program, proper training to effect behavior change is rarely fully done. Most of the training is imparting information, properly labeled Awareness Campaigns. There should not be expectations that awareness translates necessarily into practice. For trachoma hygiene programs, true behavior change training would best be done for those who actually interact with the community, the community health volunteers and female community health volunteers. However, there is an estimated 48,000 of these volunteers, about one per 500 persons, and planning such training would be a formidable undertaking.

Nevertheless, some NGOs are working with these community outreach workers for other activities, like newborn care. The opportunity to insert face washing into the direct behavior change training of these FCHV, apart from awareness campaigns, should be further explored, as the primary job of the FCHV appears to be getting people to the MDAs. It is sometimes hard to motivate the community health volunteers as they have a lot of programs to cover, as noted by one DHOC, although there are messages that can clearly cross programs like hygiene. Now that NTP is relying largely on **F** and **E** to further the decline in trachoma in districts that are between 5% and 9%, it should be proactive in finding out, from the District officials and the trachoma focal persons, who is working in these districts with FCHV and coordinate insertion of hygiene messages into their program if possible. Such an activity could be part of the revised Strategic Plan, and is recommended under section 4.1 above.

Recommendations:

- NTP should create a TT audit form and work with NNJS to train the Ophthalmic Assistants on surgical audits as part of their routine TT follow up care. This should be considered as part of re-training for existing Ophthalmic Assistants or other TT surgeons, and part of new training. Even if the audit is only 10% of each surgeon's cases, this is important information for Nepal, to understand how well their surgeons are performing.
- Trachoma focal persons need to communicate with NTP around needs for possible re-training in connection with second and third round of MDA in districts. This is especially critical at community level, where the actual MDA occurs, and if the Health post in charge or sub health post in charge is new, the MDA could be in jeopardy. Some of the districts have huge numbers of VDC, so it cannot expect the trachoma focal person and district supervisors to be at each one in subsequent years during MDA to help with corrective actions.
- The NTP should consider a final “certification” process for its training that would require the trachoma focal person and supervisors to demonstrate verbally or otherwise some basic competencies.
 - During the initial training, special emphasis should be given to the trachoma focal person and district supervisors, including hands on experience with

reconstitution of liquid, understanding expiration dates and where to find them. This should be part of basic competencies

- During the VDC training, special emphasis should be placed on managing rumors of adverse events at the outset, understanding nausea and diarrhea with MDA using azithromycin, and management of these adverse events. This should also be part of basic competencies for the trachoma focal person and supervisor, as they have to train the VDC level staff. The district staff might even consider making this component part of basic competencies for VDC staff.
- NTP staff should gather information on other G/NGO training programs for community level volunteer staff, and work to integrate face washing messages into their training programs. This is especially critical for districts between 5% and 9%, where these activities are expected to finish the reduction of trachoma to less than 5%. This activity should be part of the revised strategic plan for each endemic district, following TAP.

4.7 Supervision

The NTP team has stressed appropriate supervision for the MDA activities, and created systems for accounting with its partners. The supervisory chain, from NTP to district to VDC appears to work well, and is being emulated by other NTD programs. NTP encourages ownership of the program at district level in terms of planning and budgeting, which also results in better supervision. The NTP staff performs supervisory roles and plan spot checks of training by district staff at VDC level, and by VDC staff at community volunteer level. The design of the supervision, in addition to the training, has led to a high degree of success with the MDAs, as evident in the coverage and the outcome.

The NTP system includes spot checking the training done by the district focal person, and the training carried out at the VDC level. Of necessity, not many of these can be observed but corrective actions can take place as needed. This sport checking is done at all three rounds of MDA, and this was corroborated by an independent interview with a trachoma focal person in a district. The trachoma focal persons who had participated in MDAs reported ease of supervision of many of their VDCs during MDA, because they had motor bikes and could travel. They have a budget specifically for this supervision. There is the realization that with lots of VDCs in a district, the focal person and district supervisors may have trouble getting to all of them, although of note, one trachoma focal person noted that went to 50 of the 82 VDCs during MDA. In one district, the Ilaka personnel were also trained to be supervisors, increasing the number of supervisors.

The Logistics Management Division assists in training the storekeepers for drug management. As noted above, the storage observed was of variable quality, with inadequate understanding of expiration dates and the need to use older drug first in the

newly trained district. In one of the districts with experience with MDA, the storekeeper reported making arrangements, with the help of NTPO staff, to ship drug from his district that would expire soon to the upcoming distribution in Sarlahi,

Recommendations

There were no recommendations for altering the supervision practices, apart from reiterating a recommendation under Section 4.4 about development of a Best Practices handbill for the storekeepers, and a visit from the LMG staff when the drug shipment arrives in the district prior to the first MDA.

4.8 MDA

The NTP program has moved the antibiotic program delivery structure fully into the Department of Health Services networks of District Public Health Offices (DPHOs), health and sub health posts. While NTP must find funds for the training, supervision and distribution costs, this structure for delivery has worked well. They have collected data on Nepali children that were used for the creation of appropriate height sticks for height based dosing. They have carried out MDA in 19 districts, and in nine of these the impact surveys indicate TF rates less than 5%. Depending on the outcome of the last districts to be mapped, they have at present 1 district to complete the third round (Sarlahi) and 2 districts to start 3 rounds of MDA to finish the districts with >10% TF. In 2009, the NTP staff managed to deliver 3.26 million doses of Zithromax through its networks. Overall, ITI has estimated that over 11.8 million doses of Zithromax have been delivered in Nepal by the end of 2010, a remarkable accomplishment for the small country office.

The estimates have indicated good coverage, and although there is no way to track age specific coverage, the impression of the NTP team and the districts is that women and children have even higher coverage than men, indicating the target demographics are being reached. The proof is in the impact surveys, which have consistently shown that after 3 rounds of MDA < trachoma has fallen to less than 5%.

The previous sections have covered findings and recommendations for drug management, social mobilization, training, and supervision for MDA. This section will cover the network for MDA and the timing of the distributions.

The interviews indicate the network of Department of Health Services used by NTP to deliver the MDA and monitor the donated drug is working well, with minor recommendations as provided in the previous sections to improve some components. Most of the comments garnered by the consultants suggested that additional training and motivational efforts for the community health volunteers would help manage rumors and allow adverse event management in connection with MDA. The training they receive is the most difficult to supervise, because of the short time frame in which to accomplish the training in numerous VDCs. Some indication of this difficult might be reflected in the comparison of coverage rates for the first round of MDA in Bara (population =559,135)

where coverage was 82%, Para (population=497,219) where coverage was 74%, and Rasuwa (population=44,731) where coverage was 87%. Rasuwa had ¼ the VDCs to supervise compared to Parsa, for example.

The storekeepers, trachoma focal persons, supervisors, and VDC staff had minor suggestions for improvement, mostly having to do with level and timing of compensation. The NTP staff also indicated some difficulty with having to organize and carry out MDAs prior to receiving any funds. Since there is a relatively limited budget for activities, they have to expend precious funds to carry out the MDAs, and then receive reimbursement for those funds, but only then can the funds be used for the projects for which the original funds were designated. Now that NTF has carried out activities and showed accountability, at least partial funds from RTI should be provided in advance of activities to enable NTP staff to also carry out their other activities.

Two of the trachoma focal persons mentioned that getting persons to come during the planting season was difficult. NTP staff gives the districts a window in which to carry out their activities, but NTP is also constrained by using the funds in a particular time frame. Thus, for example, Parsa district just finished their MDA and Rautahat district must finish theirs by September. It is more challenging to carry out MDA in monsoon, either because of planting or difficulty in drug transport in districts with difficult terrain, and timing of MDAs should take place prior to monsoon season, preferably in the cold season.

At least one person in every district, including members of the community, mentioned concern with MDA for LF. The rumors of death with DEC are widespread and the trachoma focal persons consistently expressed concern about managing these perceptions for azithromycin. Comments expressed by the community members included “the donors are experimenting on us”; “I heard about the deaths with these drugs for communities and will not participate”. NTP staff felt that the lower coverage in the last years round of MDA may be due to this problem. Recommendations for handling this are provided in the next section, but when starting the new districts, rumor management and adverse event management need to be a significant part of training and MDA delivery. In particular, the materials should be honest and say that some diarrhea and nausea may occur but should be not a problem if the doses are consumed with lots of water. No serious adverse event, since the original program in 2002 had the series of cases of stomach problems, has been reported by the VDCs to NTP staff.

Recommendations:

- NTP staff should help the districts plan the MDAs so that they can occur outside of the planting/monsoon season.
- When the new census figures arrive, NTP staff should use some average of 2001/2011 figures to re compute coverage, and use the new figures going forward.

- Donors for the MDA program should advance at least partial funding to NTP to alleviate the considerable juggling of funds and projects that otherwise occurs.

4.9 Monitoring and Evaluation

The NTP has carried out 9 impact surveys in trachoma endemic districts following program implementation, and all have shown that the rate of TF is now less than 5% in 1 to 9 year olds. These surveys are very important for advocacy for the NTP program and essential for momentum towards elimination. Nepal is justly receiving a lot of credit nationally and internationally for its progress, which has been measured through these surveys.

The impact surveys are carried out using exactly the same approach as the population based surveys described in section 4.2. The recommendation that they include a random component for selection of households applies to these surveys as well, and will not be reiterated here. The trachoma graders are Ophthalmic Assistants who were originally trained by Dr Thomas Lietman and his colleagues from University of California at San Francisco in 2002, and NTP continues to use the same Ophthalmic Assistants for all its surveys. The graders have loupes and torches they use for grading. Dr Lietman runs a rigorous training program for grading trachoma, although a refresher course now after almost ten years would be in order.

In the printed documents, it is noted that trachoma is assessed for children ages 3 to 9 years. The NTP staff noted that the Ophthalmic Assistants do not like to flip lids of the very young children ages 1-2 years. However, the 1-2.9 years old may be a significant group for active trachoma, and the surveys must include this age group. NTP staff commented that this age group is included in many areas, and that the problem is more Ophthalmic Assistant dependent. For impact assessments, it is essential that standardized methods be used, so the protocol and written documents should be changed to ensure that all ages between 1 and 9 years are included.

Currently, the NTP program has no activities, apart from the general Nepal program for water and sanitation, in the districts where the initial surveys suggested that trachoma was between 5 and 9%. There are five districts where this was assessed using a population-based prevalence survey, and thirteen where this was assessed using TRA. There is also one district assessed using TRA where the estimate was 10.5%, and nothing has been done. These districts do not meet the Ultimate Intervention Goals and will be a source of delay for reaching the 2014 goal if some plan for them does not happen. The NTP staff is counting on the improvements in water and sanitation, plus a secular trend for decreasing trachoma, to reach the Ultimate intervention goals, but impact surveys are needed to be certain this has happened.

Recommendations:

- The impact surveys must include children ages 1-9 years, and be powered to detect a prevalence of 4% +/- 2% to be accepted for certification purposes.
- The NTP program consider a re-standardization of trachoma graders in a workshop, to be certain they have good agreement at this point. Re-standardization ensures that now that trachoma rates are low, there is not overcalling of TF.
- Impact assessments need to be carried out in 8 of the districts where starting prevalence was less than 7% to be certain that they are now below 5%. At present, these districts are Dhanusa, Morang, Dadeldhura, Darshula, Palpa, Parbat, Syangia, and Salyan. There may be more as a result of the new mapping or impact surveys.
- All the impact surveys should be funded. These surveys are likely to lead to close out of MDA and are important for the push towards elimination and the data base for certification.
- A plan for the remaining districts, where the estimate of trachoma was 7% or greater, needs to be developed. These districts include Sunsari (9.6%), Saptari (7.8%), Baitadi (7.2%), Baglung (8.8%), Gorkha (7.6%), Lamjung (7%), Bhajang (8.8%), Pyuthan (8.8%), Arghankhancho (7.2%), Rupandehi (8.1%), and Siraha (10.5%). (There may be more as a result of the final mapping or impact surveys). The last five of these were recent estimates, so it is unlikely that F and E have had sufficient time to have an impact.
 - All data suggests that trachoma clusters. The consultant suggests that these districts be divided into logical geographic zones (perhaps Ilakas, but in any case 2-5 sub districts). In the sub districts where trachoma is not felt to be a problem, using best available information on TT, TF, and TRA/prevalence survey data, plan a follow up survey of ten clusters in those sub districts.
 - In the sub-districts where trachoma is felt to be a problem, and they are the likely source of the estimate being above 5%, then secure permission from ITI to allow use of Zithromax for targeted treatment in these sub-districts, defined as the VDCs (and their neighboring VDCs) where trachoma prevalence was highest. NTP will have to estimate the population that will need Zithromax for this purpose, and secure permission to use it even if the estimate is below 10% in those sub-districts. The ITI Technical Expert Committee has traditionally not approved drug for areas with TF prevalence less than 10%, and not on the basis of TRA. However, it is unclear what other approach can be used to achieve elimination quickly in these last remaining areas, other than waiting for F and E to occur or using this approach with tetracycline eye ointment.

- A commitment to a proper sub-district population based survey at the end of the intervention must also be secured, to be certain a level of less than 5% has been achieved.
- Without a targeted program for these districts, and assurances they have reached the UIG, certification for elimination will be delayed.

4.10 Integration with NTDs

Under the direction of Mr. Raman and Mr. Thapa, the NTP appears to be a full partner within the Nepal NTD program, and has benefitted greatly from the resources directed towards the NTP program. At the same time, the experience of the NTP in conducting MDA has already had an impact on the other NTD programs, so the cooperation has been of mutual benefit.

The NTD integrated program is at an early stage. It appears to be a challenge to integrate 3 separate programs which are already running with their own contacts, support networks, and systems. Because the trachoma program is largely outside the government domain (although with government approval and government funds), it is more of a challenge to integrate the trachoma program with the other two. It is not feasible at present to have government incorporate eye care (in general) into the government system as it likely does not have the resources to manage eye care, and as the physicians in the NNJS system receive greater compensation than they would in the government system, there would be great opposition to such a move. The NNJS system, in the private sector, has reasonably wide distribution, and there is no eye care in government system. As long as the NTP system is under that umbrella, there will be a challenge for full integration.

There are two main committees that direct the integration process. First is the Steering Committee, which is comprised of the heads of all the programs and chaired by the Director General (DG) of Health Services, Dr Pradhan. He is very senior and in charge of seven divisions, and it is felt that a senior person in this position is key to forward movement with integration. Mr. Thapa attends these meetings as the head of NTP. While there was an initial plan to appoint an NTD Coordinator within the government system, no one has as yet been appointed. At this time, the decision is very sensitive politically and there is no time line for this appointment. Of note, WHO has funded for 6 months an NTD person from outside (who used to be the LF program manager, Mr. RakeshThakur) to sit in the government offices to do advocacy work in the government and provide an advocate for WHO NTD officer with the government offices.

The second committee is the Technical Working Group (TWG) committee, which also includes the 3 heads of the NTD program and the program managers. Mr. Thapa also attends these meetings. The goal is to develop a plan of action for integrated NTDs. The committee has made the following recommendations:

4. *The districts that are now being covered by the individual programs will carry on as they are, without integration.* This is both positive and negative for the NTP program. On the positive side, it enables NTP to complete their work in the existing program districts using the same MOH framework and trained health workers without having to change the time line for MDA or await further training of health workers in integration. The NTD Control Program is supporting the training costs and MDA delivery costs for trachoma in two districts, Rautahat and Rukum. On the negative side, the NTP program cannot access funds for further training, supervision, or IEC materials for existing districts other than the two supported already by NTD Control Program. However, the USAID/RTI program is supporting impact surveys for trachoma for 5 districts currently in the program, a welcome and positive source of funding that needs to be expanded.
 - *Integration is being planned for the new districts.* At present, the integration will consist of integrating IEC and BCC materials, and integration of training materials.
 - *The first steps in integration will be LF and STH because of the ease of MDA with the drugs for this program.* It is planned that December will be the NTD month, although most activities for trachoma will be finished by that time. The LF program has learned from the trachoma program in MDA, and has changed its house to house approach in favor of a central site approach, where trained health care workers can distribute drugs and information.

There is concern within the NTP, and the national NTD program, about the experience with DEC in the country, and the deaths (though not attributed to DEC by the government inquiry) have been the substance of rumors throughout the districts. NTP feels that the lower coverage in the MDA in their districts last year was due to concern, as expressed by persons, that MDA drugs can be fatal. They are not eager to push azithromycin MDA at same time as DEC MDA for this reason, and feel the separation—for program purposes—is good. The consultant independently found evidence for considerable concern for the deaths attributed to DEC in the district visits, where the trachoma focal persons volunteered this as a challenge, and interview with local persons also confirmed that there is reluctance and active informal advice to avoid MDA with DEC.

There is also uncertainty of how the IEC and BCC materials can be integrated for the NTDs, as the trachoma posters and materials stress face washing and hygiene. The importance of proper use of latrines can cross both STH and trachoma, although the hygiene messages from the trachoma standpoint are the most important.

The consultant has seen the damage wrought by integration attempts that move too fast, and end up jettisoning working programs. The efforts at integration are moving well and at least from the trachoma side, are most reasonable. There is a feeling that the national NTD program understands the need to move deliberately towards integration and in general is supportive of the trachoma program. The NTP office should definitely continue

to attend all meetings and include the national NTD program in their trachoma specific planning meetings.

Recommendations:

- The NTP office appears to be fully engaged in the NTD integration efforts. They should work closely with the national NTD program to make sure that the hygiene focus of the IEC and BCC materials is maintained, to complement the work on water and the efforts of the DWSS within the districts.
- The azithromycin distribution should continue separate from the LF distribution in time, in order to continue with high compliance and minimize the collateral damage from the perception of side effects with DEC.
- The NTP and national NTD program should work together to provide an approach for the trachoma focal person, who needs very specific training to counter these unfortunate perceptions, and ways to teach the health post in charge and other distributors to explain the proper use of azithromycin and the absence of serious adverse events, but in a way that does not damage the LF program.

5. Further Recommendations: Post elimination strategies and surveillance in line with WHO policies

It is unlikely that, based on the need for three rounds of MDA in the current two districts, plus an impact survey, and the need for a plan for the districts between 5% and 9%, that we can be certain elimination of active trachoma will be achieved by 2014. However, it will be very close, and it is reasonable to start now to plan for surveillance activities in line with WHO recommendations. It must be stated that the likely severe constraint to elimination will be the slow pace of TT surgeries, and this report has made several recommendations to start to address this issue.

NTP is planning a workshop in 2012 at the central level to start to build consensus and a strategy for the establishment of a trachoma surveillance system. They intend to follow the current WHO recommended strategy, which is appended in this report as Appendix three. There are three key parts to the surveillance in this document. First, a National Committee to receive the reports and recommend action on surveillance must be established (In Nepal, perhaps the NTD or NTP Steering Committee could be used for such a purpose). Second, the recommendation is for two sentinel VDCs in each formerly endemic district be surveyed, using school based surveys of 5-6 year olds where school attendance in that age group is high, or a population-based approach if not. The VDCs should be biased to the most endemic or with the poorest indicators of water and sanitation. Also, two new VDCs should be chosen per district for each of the three years. Third, this surveillance must also incorporate surveillance for TT cases. The surveillance document is older than the latest WHO Global Scientific Meeting recommendations of 2010, so the inclusion of “community by community” searches should not be considered as required but if possible, could be incorporated.

In Nepal, the total number of districts that would need surveillance, strictly defined as formerly endemic where trachoma was above 5%, is over half of all districts. This would be a huge undertaking, as none of the VDC staff is trained to recognize trachoma, and they are often changed every two years and so are inconsistent over the three years. If no one else is trained, the Ophthalmic Assistants would be needed, but they would have to travel as they do for the impact assessments. In districts where there is no eye hospital, like Rasuwa, the logistics become formidable. The consultant had two suggestions: The surveillance system could probably be reduced to include the districts where initial surveys were above 10% (20 districts) and a random sample of 2-3 districts where the initial assessment was between 5-10% TF. Second, the trachoma focal person, who seems to be more stable, could be trained to assess trachoma and given loupes, so that they are responsible for the surveillance grading. They already have the trachoma knowledge, and the motivation, to carry out the task.

Recommendations:

- The NTP proceed with the planned workshop in 2012 to develop plans for surveillance. It is essential that Dr Mariotti attend this workshop, so that WHO headquarters has buy-in to the approach that is selected. International partners should also be included, like ITI. At least one methodologist should also be part of the workshop, to assist with surveillance issues.
- As per the guidelines, Nepal NTP can propose a workable system as other countries have done for this surveillance, and should seriously consider recommendations for streamlining the number of districts.
- The surveillance system should not get underway until there is a strategy to address the TT backlog. Otherwise, the three years surveillance will have finished but certification cannot be applied for unless the TT component is addressed, and then either the active surveillance will have to run longer than anticipated or the data from the active surveillance will be considered too old and likely will be need to start again.

Appendix 1: Methodology for Trachoma Rapid Assessments (TRA) and for Population based Surveys

Trachoma Rapid Assessment (TRA) is used by NTP to target its survey to the worst areas in a district, where the district is felt to largely be free of trachoma. If the survey confirms that TF is below 5%, no further trachoma specific activities are planned. The TRA method used is as follows -

1. The NTP staff collects the best available data on location of cases of TT cases and TF cases from the district eye hospital or primary eye care center, or other health sources. The VDC and wards where these cases are reported are targeted for rapid assessment. These areas are informed that a survey will take place, and children age 1 to 9 years and person age fifteen and older will be needed.
2. There are at least ten wards that are purposefully chosen for survey, and these comprise the ten clusters.
3. The day of the survey, the team, lead by the trachoma grader who is an Ophthalmic Assistant, arrives at the VDC. An assistant goes house to house to bring people for the survey. The first 50 children who arrive are used for assessment of TF. The first 100 adults who arrive are used for assessment of TT in each cluster. At the end of the TRA, there are 500 children and 1,000 adults who have been examined.
4. There is neither random selection of clusters nor random selection of households/ participants.

The **population based prevalence survey** is used if the TRA suggests that trachoma is above 10%, to confirm the finding and provide baseline data. If the population based survey finds that trachoma is below 5% , nothing further is done. The survey method used is as follows:

1. Census data is used for the district, where the population of each VDC and ward is available. A random sample of 20 wards and sub-wards, chosen with population proportional to size, is chosen for the survey. These wards and sub wards are informed in advance of the survey date and the need for participation
2. The day of the survey, the team arrives at a central location in the ward, and randomly chooses a direction to start (either right or left, depending on the number/letter of the ward).
3. After the direction is selected, the enumerator and assistant go house to house and collect census data and then send the family members for examination. Again the first 50 children are in the sample, and the first 100 adults. At the end of the TRA for that district, there are 1,000 children participants and 2,000 adult participants.
4. There is a random selection of clusters, and a semi-random selection of participants because the direction of the walk was pre-determined. It is not a random selection of participants.

Appendix 2. Approaches for Selecting at Random Households in VDCs/Wards

The point of trying to get a random sample of children is to be certain the sample is representative of trachoma in the ward or sampling unit. If only the children in the first few houses close to the survey site are seen, then the children who live farther away from the survey site are not represented. In not every case is there enough information to undertake a random selection of households, but if possible this should be tried. The availability of census data at the ward level, which includes number of households in the ward, greatly facilitates the random selection of households.

If there is a ward map of the households, then the following could be carried out

1. If 50 children are needed, and there are on average two children per household, a random selection of 25-30 households would need to be selected.
2. Divide the number of households in the ward by 30, to determine how many houses would need to be skipped after the random start. For example, if there are 90 households, then division of 90 by 30 means every third house in the ward is selected.
3. Assign all the houses on the map a number. In our example, the 90 households would be assigned a number between 1-90.
4. Pick a random number from the table of random numbers-again, in our example, the number would be between 01-90 and selected as the first number that is between 01 and 90 from a table of random numbers. Start the survey at the house whose number was chosen. For our example, if the first number in the table is 05, then start the survey at house 05.
5. In this example, the next house to be surveyed is the third house away from the first house. For example, after surveying house 05, go to house 08. The next house is 11, 14, etc until 30 houses are chosen.

If there is no map of the households, but a list of head of household's names, then the following could be carried out.

1. If 50 children are needed, and there are on average two children per household, a random selection of 25-30 households would need to be selected.
2. Divide the number of households in the ward by 30, to determine how many houses would need to be skipped after the random start. For example, if there are 90 households, then division of 90 by 30 means every third house in the ward is selected.
3. Assign the names on the list a number; as in our example, we would assign each name a number between 1-90.

4. Pick a random number between 01-90 from a table of random numbers, and start the survey at the name of the household whose number was picked. For example, if the first number in the table is 05, then start the survey at house 05.
5. In this example, the next house to be surveyed is the third house on the list from the first house. For example, after surveying house 05, go to house 08. The next house is 11, 14, etc until 30 houses are chosen.
6. The disadvantage of this approach is the head of household names may not be easily geographically grouped, so local assistance from community leaders who know where the households that are chosen live will be needed to assist.
7. If the ward is large, say over 300 households, then the ward can be separated into segments. Each segment could contain, for this example, groups of 100 households. Then one segment is chosen at random, and only those houses are listed with a random number assigned, etc.

If there is no map and no list of household names, but just the number of households, then the following could be carried out.

1. If 50 children are needed, and there are on average two children per household, a random selection of 25-30 households would need to be selected.
2. Divide the number of households in the ward by 30, to determine how many houses would need to be skipped after the random start. For example, if there are 90 households, then division of 90 by 30 means every third house in the ward is selected.
3. When the survey team arrives at the ward, the first house should be selected at random. Starting at the center of the ward, count the houses that you can see from that spot. Assign a number starting at 01 to each house that can be seen. Starting with the first number on the table, go until a number that corresponds to one of the house numbers comes up. That is the house that will be first surveyed. From that household, then head away from the center of the ward towards the periphery, skipping houses as per the skip pattern decided in step two. At the edge of the ward, turn to the right and come back into the ward, still skipping households as the census taker heads toward the center again. Keep following this pattern until the 30 households have been visited.
4. If the ward is large, say over 300 households, then the ward can be separated into segments, which may necessitate a cursory map drawing. Each segment could contain, for this example, groups of 100 households. Then one segment is chosen at random, and only those houses are included in the skip pattern walk.

If the ward has no map, no list of household names, and the number of households is unknown, then estimate the number of households by dividing the population by the average number of persons per household. Follow the procedures described immediately above, as follows:

1. If 50 children are needed, and there are on average two children per household, a random selection of 25-30 households would need to be selected.

2. Divide the number of newly estimated households in the ward by 30, to determine how many houses would need to be skipped after the random start. For example, if there are 90 households, then division of 90 by 30 means every third house in the ward is selected.

3. When the survey team arrives at the ward, the first house should be selected at random. Starting at the center of the ward, count the houses that you can see from that sport. Assign a number starting at 01 to each house that can be seen. Starting with the first number on the table, go until a number that corresponds to one of the house numbers comes up. That is the house that will be first surveyed. From that household, then head away from the center of the ward towards the periphery, skipping houses as per the skip pattern decided in step two. At the edge of the ward, turn to the right and come back into the ward, still skipping households as the census taker heads toward the center again. Keep following this pattern until the 30 households have been visited.

4. If the ward is large, say that there are an estimated 300 households, then the ward can be separated into segments. Each segment could contain, for this example, groups of 100 households. Then one segment is chosen at random, and only those houses within that geographical segment are part of the walk.

If the ward has fewer than 60 households, or even the size of the population of the ward is unknown, then the following “random walk” can be followed.

When the survey team arrives at the ward, the first house should be selected at random. Starting at the center of the ward, count the houses that you can see from that sport. Assign a number starting at 01 to each house that can be seen. Starting with the first number on the table, go until a number that corresponds to one of the house numbers comes up. That is the house that will be first surveyed. From that household, then head away from the center of the ward towards the periphery, going until 30 households have been included. Ensuring that houses at the periphery are also included means that the sample is more representative, but if the ward is small, then skipping houses can be carried out as per the skip pattern decided in step two in the methods above.. At the edge of the ward, turn to the right and come back into the ward, still skipping households as the census taker heads toward the center again. Keep following this pattern until the 30 households have been visited.

Appendix 3: Report on the Meeting on Post-Endemic Surveillance for Blinding Trachoma

World Health Organization,
Geneva, 4 to 5 November 2008

1. INTRODUCTION

The Meeting on Post-Endemic Surveillance for Blinding Trachoma of the WHO Alliance for the Global Elimination of Blinding Trachoma by the Year 2020 (GET 2020) was held at the headquarters of the World Health Organization (WHO), Geneva, Switzerland, from 4 to 5 November 2008. The meeting was attended by 12 participants.

Dr Lorenzo Savioli, Director, Control of Neglected Tropical Diseases, WHO, Geneva, opened the meeting, welcomed the participants, and underlined the opportunity to link operationally trachoma control activities with those for control of the other NTDs in order to simplify control strategies.

Dr Serge Resnikoff, Technical Advisor for Chronic Diseases and Health Promotion (CHP), WHO, Geneva, welcomed the opportunity to participate in the meeting. The SAFE strategy – with its four components, eyelid surgery (–S”), antibiotic treatment (–A”), facial cleanliness (–F”) and environmental improvement (–E”) – shows that trachoma is connected to economic factors and can be eliminated through a comprehensive strategy direct to fight blindness. It provides improved treatment of infection and case management, reversing the eye damage caused by the disease, and tackling the underlying causes.

Dr Serge Resnikoff was elected Chairman, Prof Sheila West (Johns Hopkins School of Medicine) and Professor Hugh Taylor (University of Melbourne) Vice-Person. The Proposed Agenda was unanimously adopted

2. SURVEILLANCE IN BLINDING TRACHOMA ELIMINATION

Dr Silvio Paolo Mariotti, Medical Officer, GET 2020 Secretary, World Health Organization, Geneva, Switzerland

Trachoma disappeared in industrialized countries, but it remains an important cause of avoidable blindness in the poorest communities of low-income and very low-income countries. In 1997 WHO established the international framework for the Global Elimination of blinding Trachoma (GET) by the year 2020. WHA 51.11 endorsed the SAFE strategy to control and eliminate blinding trachoma by 2020. Target dates for the elimination of trachoma have been adjusted for some countries, but the 2020 goal remains attainable.

The impressive progress made by several countries, especially Morocco and Oman, showed the need to set up the surveillance system in order to monitor and control coverage achievements avoiding dispersal of skills, competences, and support.

The data collected for the 3 years following the attainment of the UIG (ultimate intervention goals) will be functional to the process for certifying the elimination of blinding trachoma in the countries.

Certification will also require to: ensure that facial cleanliness and environmental improvement, FE components of the SAFE strategy, will continue to control trachoma transmission; and detect risk situations to provide quick feedback and trigger response where needed.

The current meeting provides an opportunity to define minimum requirements and clear guidelines that would enable countries to monitor the situation in term of trachoma reemergence and move forward to the attainment of the WHO-GET 2020 secretariat certification.

Discussion

Assessment. It is necessary to define the methodology (not the model) to develop a surveillance system design, and the criteria and performance indicators to evaluate the quality and efficacy of the process.

Costs. Surveillance need to be sustainable for all range of countries and part of integrated public health systems. The methodology will develop in order to give the opportunity to the countries to use national resources at best.

3. PRINCIPLES OF SURVEILLANCE

Dr Simona Minchiotti, Medical Officer, World Health Organization, Geneva, Switzerland

The main goal of a surveillance system is to monitor and control trends in endemic diseases in order to evaluate interventions, needs, progress in achieving elimination objectives and programme performances. Surveillance – the systematic collection, analysis and dissemination of data to inform public health activities – may be active or passive. Active surveillance requires specific action to obtain information, while passive surveillance relies on the recording of information that comes to the notice of the health system. All public health intervention programmes require constant monitoring and feedback on performance to enable programme managers to monitor the quality of programme performance and direct or modify their interventions to meet the changing environment. Furthermore, decisions on the inclusion of a new public health intervention require critical information on the disease burden and epidemiology, as well as the expected cost-effectiveness and impact of the intervention itself.

Once interventions for prevention and control of the disease have been identified, it is necessary set specific, measurable, realistic and time related objectives with particular attention to the indicators that are the measures of the evaluation. Set objectives means

decide between epidemiological (presence or absence of the disease, level or burden of a disease, progress towards a control objective), operational (performance of a control programme), social (social/development factors relate to an intervention), and impact indicators.

An ideal surveillance system design must consider the existing infrastructure and eye health care programme of each country, that means it would be necessary to develop a methodology to be applied in all countries responding to their needs and possibilities. For the same reason is necessary to consider costs, acceptability and data quality. The collection of the data and the dissemination of the information are functional to an adequate evaluation and feedback.

Surveillance rationale. The rationale for the surveillance of a specific health event should be established and based on clear national priorities, disease control objectives and strategies. What data to collect depends on the analyses that are needed to guide decisionmaking on matters of public health. In order not to overburden health staff at the peripheral levels the surveillance system should be as streamlined as possible, i.e. the *minimum necessary* amount of data should be collected. The most efficient and appropriate means of collecting, consolidating and transferring such data should be employed. Staff at all levels should be trained and encouraged to analyse and use their data.

4. SURVEILLANCE SYSTEMS FOR TRACHOMA IN OMAN

Dr Rajiv Bhalchandra Khandekar, Ophthalmologist and Epidemiologist, Eye & Ear Health Care, Eye Health Care Programme, Ministry of Health Muscat, Oman

Oman is on the verge of applying for certification of the elimination of blinding trachoma and has appointed a team to conduct the certification process. Oman began surveillance for trachoma in 1983. Oman, a Member State of the WHO Eastern Mediterranean Region, has 11 health regions divided into 61 districts (*wilayats*), and the 175 Ministry of Health institutions have well-demarcated catchment areas. The eye health care programme is conducted under the guidance of a national eye health care through numerous optical and cataract clinics. The Ministry of Health has one tertiary hospital and nine regional hospitals, 21 eye clinics with ophthalmologists for outpatient care, and 163 primary health care centers where the physicians are trained in primary eye care. There are also private health and eye care facilities, and a nongovernmental organization, Al Noor Association for the Blind, supports many activities to combat blindness.

Education is free and school enrolment is 100% at the primary and 80% at the secondary level. Each year, all primary schoolchildren (around 45 000) undergo a comprehensive eye screening, and prevalence rates for TF and TI in children aged 6–7 years are recorded.

The households of all the children with active trachoma are visited and family members are screened for TF, trachomatous conjunctival scarring (TS) and TT (1200 persons in 2007). All cases of active trachoma are treated with azithromycine. Health care facilities implement a surveillance system that comprises notification on a monthly basis of all cases of TF and TT presenting for care.

Regular surveys have also been undertaken. In 1996–1997 a community-based survey of blindness showed that active trachoma was not common in the south of the country; prevalence in the north was 1–3% at district level. Prevalence of TT was also low in the south and higher in the north. In 2004–2005, an additional survey of all primary school children aged 6–12 years in three districts showed that prevalence was <5%. Active surveillance for TF in preschool children in three regions endemic for trachoma, undertaken as part of a poliomyelitis campaign in 2005, indicated a prevalence of 0.4–1.0%. It is hoped that pre-school surveillance can be implemented in the future. In 2005, a national glaucoma survey used to estimate the prevalence of TT in people aged >40 years showed a prevalence of >5% in two districts. Surveillance in people aged >12 years since 1998 has consistently shown that prevalence of TT is higher, but not significantly so, in females; uptake of surgery, which is free of charge, is also higher in females.

Primary health care centers maintain a TT registry. In 2007, 1648 cases of TT were reported; corrective surgery was undertaken in 125 and electroepilation in 77. A study of TT in 2008 indicated a prevalence of 4.3–14.6%, including previously managed cases; however, in some districts no new cases were found.

There is a clear and regular flow of computerised trachoma surveillance information from the periphery to the centre and on to the international level. The data are analysed at the national level and results are disseminated every six months. The private sector reports information on eye diseases annually but data on trachoma are not currently included. Incidence of active trachoma has declined significantly since surveillance began and in recent years has remained at <5%. Active trachoma is classed as a group B notifiable disease and, in 2007, 64 reported cases of TF were confirmed, mostly from previously endemic areas.

Trachoma control, including the importance of face-washing, is incorporated in the school curriculum, and health education campaigns are conducted weekly in schools and also for adults. Activities related to the “E” component are integrated in those aimed at the attainment of the Millennium Development Goals. In schools, quality of water, ventilation, illumination and sanitation are checked twice a year. Such efforts may be sufficient to monitor the “F” and “E” components, without specific activities related to trachoma control.

Surveillance has helped Oman to monitor the reduction of trachoma and progress towards the elimination of blinding trachoma. It also helps in identifying trouble spots, in generating internationally acceptable indicators and timely action in pockets of high endemicity, and in appealing for additional funding from higher government authorities.

It has also highlighted areas where resurgence was occurring. The Oman programme shows that surveillance for active trachoma can be incorporated in health, eye-care and school-based programmes, and in communicable disease surveillance. A TT register can be useful in case-finding in high-risk populations. A reliable health information and management system can incorporate information on eye care, including trachoma, thereby avoiding duplication of effort.

Discussion

Surveillance system. In Oman, information related to the 0-5 year olds are collected during the vaccination campaign. Otherwise, the entire population is screened and followed through primary health care centres (that are compulsory the same for life); that means that they are screened for trachoma (TF, TS, and TT) during the first visit independently by the reason of the visit.

In any case, the best surveillance system for this pathology in Oman remains school children examination, due to the attendance rate that exceeds 95% for both boys and girls.

Surveillance cost. Oman is a country in transition from developing to developed, and noncommunicable diseases are becoming a burden. Its primary health care and eye care systems are well developed and provide a good model for others. Several surveillance and monitoring functions – detection, analysis, data management, analysis and reporting – are common to all health programmes. Linkage with other systems to strengthen surveillance and monitoring makes sense since it can reduce duplication, time and cost while increasing the efficient use of the often limited human and financial resources and physical structures.

5. SURVEILLANCE SYSTEMS FOR TRACHOMA IN MOROCCO

Dr Silvio Paolo Mariotti, Medical Officer, GET 2020 Secretary, World Health Organization, Geneva, Switzerland on behalf of Dr Jaouad Hammou, National Coordinator of the Prevention of Blindness Programme, Rabat, Morocco

Active surveillance, prevention and control activities, including implementation of the SAFE strategy at a community level have been implemented in Morocco since 2006 and integrated in the national health plan action from 2006 to 2008. The endemic zones extend across 143 communities in five provinces (Errachidia, Figuig, Ouarzazate, Tata, Zagora).

Sentinel surveillance is implemented to detect TF forms. All villages of the 5 endemic provinces with a TF prevalence under 2% and between 4% and 5%, as estimated in the 2004-2005 surveys, and with a rate of poverty >20% are target for surveillance on a rotational system. In the selected villages, all children from 1 to 9 years are examined for TF at school or at the primary health care services. All negative and positive cases are registered every six months and the households of all the children with active trachoma are visited and family members screened for TF. All detected cases of active trachoma are reported to the province level and treated with azithromycin.

Prevalence of TT in all villages of the endemic provinces are evaluated with a house-to-house case detection and also the surgery refusal cases and recurrences are reported. Surgery is offered free of charge and TT cases have to refuse surgery three times before to be considered a final refusal person. The offer of free of charge TT surgery remains valid also after the 3rd refusal.

Results of surveillance to the end of 2007 indicated that prevalence of TF/TI in children aged 1–9 years in five districts was <5% with a range between 0% and 3.83% and a school coverage rate >90%. School enrollment is 96.6-99.4% for males and females. In 2007, 1886 cases of TT were reported; corrective surgery was undertaken in 1122 and 347 refused surgery. The coverage rate correspond to 80% of Annual Intervention Objective for 2007

Discussion

Strengths. The programme is intersectoral and employs trained personnel. The active surveillance system provides reliable epidemiological data.

Weaknesses. In 2007 there were changes in personnel due to lack of motivation and limited resources; while the costs increased.

Threats. The emergence of other diseases may reduce the resources available for combating trachoma and the attention of partners in supporting trachoma elimination activities.

Opportunities. Surveillance system and elimination of active trachoma are included in the action plan of the Ministry of Health for 2008-2012 in order to collect data to apply for certification from WHO.

6. INTEGRATED IMPLEMENTATION, AND MONITORING AND EVALUATION OF PREVENTIVE CHEMIOTHERAPY

Dr Dirk Engels, PCT Coordinator, World Health Organization, Geneva, Switzerland

The NTDs, including trachoma, are diseases of poverty and are associated with poor living conditions and lack of access to good quality health services. Case management, preventive chemotherapy and transmission control are the three main strategies for NTD control.

Preventive chemotherapy is a rapid impact intervention that can bring immediate benefits while transmission control measures, environmental improvements, and education for behavioural change are taking effect.

WHO has issued guidelines to help countries choose appropriate treatment algorithms and to coordinate and implement their large scale preventive treatment programmes respecting all existing disease-specific guidelines.

It is critical to have an accurate map of disease epidemiology and a national plan of action addressed to implementation of strategies, drug delivery and programme

performance surveillance. Short-term and long-term effect evaluation of preventive chemotherapy must also be considered, thereby monitoring disease-specific impact, socio-economic impact and cost-effectiveness. Specific indicators to measure programme performance must be set.

The existing template for country profiles referring to other NTDs contains: maps of disease endemicity, maps of required interventions, progress in implementation of these interventions, progress towards disease-specific targets, and monitoring of disease endemicity decline. Substantial financial support for elimination programme monitoring and surveillance should be, primarily, the responsibility of national governments who should be urged to provide this support in a sustainable way through standardized plan of action showing situation analysis and summary budget.

Discussion

Trachoma and the integrated control of NTDs. As new NTD initiatives evolve, it will be important to ensure that important specific characteristics of the control programmes for the individual diseases, including trachoma, are maintained. That means to maintain the pressure on trachoma also when UIGs will be achieved and to continue to train the ophthalmologists to diagnose the pathology.

There was also some evidence that parallel systems of NTD control were developing, and concern that advocacy for preventive chemotherapy may weaken well-established existing vertical programmes and implementation of the –S”, –F” and –E” components of the SAFE strategy for trachoma control. Probably indicators will be extended to integrate trachoma in existing NTDs strategy.

7. POST TRACHOMA UIG ACHIEVEMENT SURVEILLANCE

Professor Sheila West, Epidemiologist, Dana Center for Epidemiology and Preventive Ophthalmology, Dana Center, The Wilmer Institute, John Hopkins School of Medicine, Baltimore, USA

Countries are eligible for certification when they have demonstrated the achieved reduction of TF <5% in children under 10 years at community level in the endemic areas, for at least 3 years following the cessation of antibiotic mass treatment, targeted treatment, and vertical programme. This reduction would be documented by two different surveys: the first one conducted on time 0 (achievement of UIG) to justify the cessation of mass treatment, targeted treatment, or treatment campaigns. Eliminate blinding trachoma, as for WHO guidelines means not eradication or complete elimination of trachoma at any level, but control to maintain the active form under a low level (TF <5% in children <10 year olds). The second survey will confirm the maintenance of these levels 3 years after the cessation of mass antibiotic treatments.

The other request to satisfy in order to obtain certification is the existence of a programme to reduce prevalence of trichiasis through surgical management and followup in the health system of the country considered.

A good transmission and analysis of data are functional to maintain a "certification standard" surveillance. Surveillance approach depends on country needs considering that: 1) TF requires active yearly surveillance based on clinical recognition; 2) TT case finding cannot depend on waiting for cases to appear; and 3) the selected surveillance system must be validated.

NTDs approach uses an Integrated Disease Surveillance and Response for onchocerciasis, leprosy, tuberculosis, and other pathologies but for now trachoma is not reported in the list of diseases investigated. On the other hand, not one of the diseases on this list has a surveillance system ahead of the ones proposed for trachoma. A good, but expensive example for reporting and treating cases was the Guinea Worm Eradication Program in Uganda.

The active surveillance for trachoma would investigate yearly by routine surveys 2 areas: a specific sample of the worst district and a random sample of other areas selected between the first to be cleared or the migrant border areas. The routine surveys could be conducted in the maternal and child health services, in the vitamin A distribution centres and/or during immunization campaigns with reduced additional costs. It would be useful to decide the approach to the re-emergence cases of TF during the surveillance period in order to give valid advices to the countries.

Surveillance for TT would be based on the existence of a registry of cases and refusals with a low post surgeries recurrence rate documented by registry information.

Reporting procedures and completeness must be considered to validate the surveillance system and, in particular, it would be evidence that: 1) district reports are received by a national committee every 3 months initially and then yearly; 2) investigations of outbreaks have occurred shortly after discovery; 3) follow-up procedures have been instituted; 4) data analyses and connected action plans are carried out at the district level for a more rapid response. The national committee should regularly assess the internal validity of the reports.

8. SURVEILLANCE FOR BLINDING TRACHOMA: HOW DIFFERENT FROM OTHER SURVEILLANCE SYSTEM

Professor Hugh Taylor, Professor of Ophthalmology, Center for Eye Research, University of Melbourne, Melbourne, Australia.

Every Country should have the capacity to conduct programme and routine coverage monitoring, disease-specific surveillance, and detect and respond to outbreaks.

Concerning trachoma, the reasons of surveillance are detection of recurrence and/or recrudescence of active forms and management of new TT cases.

In countries with high school enrollment rate (>90%) the TF screening and evaluation may be conduct in the first grade children, that means in the 5-6 years old population.

The areas to control could be the worst for the TF, detected by a TRA, compared to other random rotation selected areas.

The TT could be assessed in a passive manner considering the surgical TT volume with occasional survey of collected health service data. This process requires also a quality control of the surgical services by the country.

Evidence of recurrence or recrudescence of the disease above threshold levels would be treated at local level (district) re-establishing the SAFE strategy.

Linkage with other systems to strengthen surveillance and monitoring makes sense since it can reduce duplication, time and cost while increasing the efficient use of the often limited human and financial resources and physical structures. Linkage should be appropriate and efficient and provide « added value » to achieve mutual benefit. For this reason the PHC workforces, who are the first line of the surveillance system, should be trained to collect data and to disseminate information on SAFE strategy to the population. All data collected would be analyzed at central level.

Discussion

Feasibility. The screening in first grade schools has the objective to reduce costs and to evaluate, where school rate is high, the biggest part of children in the country in order to identify communities needing trachoma intervention..

9. SURVEILLANCE SYSTEM: FEASIBILITY AND APPLICABILITY IN REAL WORLD SITUATION

Dr Abdou Amza , Coordinator, National Programme for the Prevention of Blindness, Ministry of Public Health, Niamey, Niger

Niger has 7 regions and a population of around 13 million, with a children mortality of 126‰ and a life expectancy of 47 years. Only 52% of the population has access to safe water and in 1987, the prevalence of blindness was 2.2%. Ophthalmic human resources are inadequate in number and distribution, in particular 7 of the 10 existing ophthalmologists (1/1,388,256 vs. 1/500,00 recommended) work in Niamey and 25 of the 40 nurses (1/347,064 vs. 1/100,000 recommended) practise in the capital. The active cataract surgeons are 2 in all the country. Estimation for active trachoma undertaken between 1999 and 2001 indicated a prevalence: from 5% to 8% in the region of Agadez and in Niamey; from 20% to 50% in three regions; and >50% in the remaining three regions (Diffa, Maradi, Zinder)

A trachoma control strategy was developed some seven years ago and an impact survey conducted after 3 years of SAFE strategy implementation in Zinder region; it showed that TF/TI prevalence was reduced from a range between 26.4% and 63.8% at baseline to a range between 4.9% and 31% after SAFE strategy implementation; while prevalence of TT was reduced from a range between 1.2% and 7.7% at baseline to a range between 0.04% and 2.3% after implementation.

Since 2001, an integrated diseases surveillance sentinel system was developed in Niger with coordination at national level. The monitoring indicators for trachoma are TF/TI in children aged 1-9 years; TT in women >15 years of age; and antibiotic coverage.

Strengths. The programme uses existing and active structures. It provides reliable followup data. The programme is intersectoral and employs trained personnel.

Weaknesses. Vertical approach to some diseases as trachoma and lack of financial resources affect delivery of the programme.

The programme for the prevention of blindness is not informed on the results of surveillance activities. Further, trachoma control may be integrated to the national health system and rapid intervention may be required for treatment of active trachoma and TT.

Discussion

School surveys. Niger should plan to conduct population-based surveys as recommended by WHO.2 As trachoma programmes develop, current prevalence data at the district and then community level should be collected.

10. SURVEILLANCE CHALLENGES IN NEW COUNTRIES: ZIMBABWE

Dr Ruth Welbeck, Ophthalmologist, Harare, Zimbabwe

Zimbabwe has an area of just under 400 thousand km² with 10 administrative provinces and a population of around 11 million, 65% living in rural areas. Since 2000, the country's infrastructure of one of the most stable economies in Africa has been decimated by socioeconomic crisis. Gross domestic product growth in 2007 was < 5.7%. Poverty affects 80% of the population with an unemployment rate around 85%. Post independence, Zimbabwe developed a plan for equity in health and a primary health care approach was adopted with a massive expansion of public health sector in 1990. The system is organized in 4 functional levels, from national to primary/rural health centres under Ministry of Health and Child Welfare (MOHCW) control. In this health organization 85% of population refers to health centres with trained personnel at not more than 8 km. However, the economic crisis restricted medical activities due to: inadequate government budget allocation; lower personnel interest due to poor remuneration and working condition; community economic difficulty in accessing to health care services.

The current status of surveillance system in Zimbabwe is mainly passive with hospital admission and outpatient records evaluation. Active surveillance for HIV/AIDS in sentinel sites is supported by international NGOs. Data flow are irregular and incomplete and control activities have also been hampered by lack of trained staff and logistic organization.

Trachoma seems to be confined to north-east and south areas with 50% of population at risk. Reliable data are insufficient due to lack of ophthalmologist and eye-care trained personnel in rural areas. For this reason a rapid assessment would be useful as a basis for

national discussion on trachoma control. At present trachoma is not a health top priority, Political awareness and commitment are requested to create a functional trachoma control programme. Support from WHO and other partners will be needed to mobilize resources, to integrate trachoma control with NTDs plan, and to involve human resources as Ophthalmological Society of Zimbabwe (OSZ).

11. SURVEILLANCE SYSTEM IN ETHIOPIA: WORK AND COLLABORATION OF A WHO COUNTRY OFFICE

Dr Adamu Liknaw, NPO/PBL, World Health Organization, Addis Ababa , Ethiopia

In 1996, Ethiopia introduced an integrated diseases surveillance and response (IDSR) programme focusing on 22 priority diseases. The strategy was strengthened after the World Health Organization's Regional Office for Africa (WHO/AFRO) resolution of the 48th assembly in 1998. On this basis, Ethiopia structured its national surveillance system into central, regional and district (Woreda: 100,000-300,000 habitants) levels. The establishment of an IDSR task force in the Ministry of Health, the adaptation of technical guidelines, the adoption of a five-year national plan, and the implementation of training activities have contributed to an overall improvement in data collection, analysis and interpretation for public health action. Federal Ministry of Health (FMoH) coordinates the National Committee for the Prevention of Blindness (NPPB). Primary eye care units are 47, ophthalmologists are 103 (60% in the capital) and ophthalmic nurses are 96. Personnel are trained every year to improve their number in the country.

A national survey on the visual impairment undertaken in 2006, showed a prevalence of blindness of 1.6% and a prevalence of low vision of 3.7%. People affected by avoidable blindness were 1,049,198. Trachoma is the second cause of blindness and it is endemic in 529 of the 611 districts with a population at risk estimated at 65 million. Prevalence of active trachoma was higher in Amhara (63%), Oromia (41%) and SNNPR (33%). TF prevalence in children aged 1–9 years was of 40%, while 1.3 million of TT cases were detected in aged >15 years.

Ministry of Health of Ethiopia used the survey results to adapt a 5-year national strategic plan for trachoma control in 2006. Major performance indicators for this plan are: 1) number of TT surgery done in aged >15 years, as results of prevalence surveys; 2) number of Woredas covered by Azithromycin distribution and prevalence of TF in aged 1-9 years after a 3 year treatment; 3) proportion of children 1-9 years with clean face, as per survey results; % of latrines available and water supply.

Although national and regional review meetings involving all stakeholders are organized every year, data collection and flow of standardized trachoma information are irregular and incomplete. The mid-term evaluation of the 5-year national strategic plan for trachoma is under preparation .

The role of WHO Country Office is to provide assistance to the Federal Ministry of Health and the Prevention of Blindness programme in assessment, planning,

implementation, monitoring and evaluation of eye care activities. In particular, the National Survey on Blindness , Low vision and Trachoma was held in 2006 with technical support of WHO Country Office.

Discussion

Integration in IDSR system. Trachoma would be integrated in the IDSR system to facilitate the information flow and the feedback. Reports will be sent to the FMOH quarterly by all partners involved in the trachoma activities in the country in order to create an overview of the situation. Epidemiological surveys are too expensive for the FMOH at this moment and to obtain community level reports 30,000 health workers are to train for trachoma.

10. CONCLUSIONS

The participants in the Meeting on post-endemic Surveillance for Blinding Trachoma adopted the following conclusions and proposed the following recommendations to WHO-GET 2020.

1. Countries should commence planning as early as possible for trachoma postintervention surveillance as part of their blinding trachoma elimination plan, taking into account existing national surveillance systems. WHO should provide guidance, issue guidelines for the establishment and management of such surveillance in different settings.
2. Experience from active ongoing programmes shows that surveillance is not necessary in countries where the trachoma rate is >45-50%. Surveillance should start in countries or part of the endemic districts where reaching or approaching of objectives are achieved.

The Ultimate Intervention Goals to achieve for all components of the SAFE strategy are:

- TT <0.1% in total population;
- TF <5% in children 1-9 years old;
- 80% of communities should receive health promotion to encourage facial cleanliness
- 80% of households should either have a functional and used latrine or use other methods of safe disposal of faeces; and 80% of households should be within 1 km (a 15 min walk one way) of the nearest point from which water is available during the dry season;

As trachoma programmes develop, prevalence data at the district and then community level should be collected. When the district-level prevalence of TF in children aged 1–9 years is <10%, a community-by-community approach to assessment and intervention is recommended. If school enrolment is very high (>90%) and district-level prevalence of TF in children 1–9 years of age is between 5% and 10%, trachoma surveys in schools

may be useful to identify “hotspots” that need trachoma intervention, in addition to but not replacing population-based surveys.

! In communities in which the baseline prevalence is 10% or greater, mass treatment should be undertaken annually for 3 years and F and E components should be put in place or implemented. A repeat survey should be carried out after 3 years.

! In communities in which the baseline prevalence is 5% or greater but less than 10%, F and E interventions should be implemented (without antibiotic treatment) for 3 years. A repeat survey should be carried out after 3 years.

If the district-level population-based survey or the district prevalence of TT in persons aged 15 years or more is $<0.1\%$ TT surgery should be performed within routine Eye care. If the TT prevalence is $>0.1\%$ TT cases should be detected and managed in an active manner.

3. Once a country has met criteria for elimination, it should consider to apply to the WHO for certification, entering in the pre-certification phase. During this interim period of 3 years, surveillance must be in place.

Rationale for surveillance would be:

- to justify stopping treatment and to evaluate re-emergence of TF in place where it was under control at the end of the SAFE strategy implementation;
- to demonstrate that routine eye care services are managing incident and recurrent TT cases and monitoring incidence to detect any increase in blinding disease.

4. Trachoma surveillance for TF prevalence should be conducted in 2 selected communities (with 1,000-2,000 habitants each) per endemic district per year biased to the least developed and suspected most endemic. The selected sites should rotate annually. If the selected districts have more than 200,000 habitants, the sentinel sites to evaluate in those districts shall be 4.

The evaluation must involve all school entrance-aged children where attendance is $>90\%$ and there is no gender bias. In the other cases the investigation should be conducted on a minimum of 50 children in the community (5-6 \pm 2 years of age), but if it is feasible all children in the community should be examined.

If the response to the examination is a TF $<5\%$ no actions are required.

If the response to the examination is a TF $>5\%$, all children aged 1-9 year olds should be examined and all the positive cases should be treated and their families and neighbours should be investigated and treated. In these cases the examination should be also extended to nearby villages. Facial cleanliness and environmental change must be verified and implemented.

If TF $>5\%$ in all 1-9 year olds, AFE coverage should be assessed and the entire community should be treated. All school entrance aged children in all the surrounding

sub-district communities should be examined and in TF results to be >Z5%, AFE strategy should be re-implemented for 3 years and the situation evaluated at the end of this period.

5. Trachoma surveillance for TT prevalence should be conducted as a TT screening in all people aged >40 years in the same 2 selected sentinel communities per endemic district per year (see recommendation 4, mentioned above) . On the other hand, National Health System should be able to collect, analyses and furnishes every year number of TT cases evaluated and/or operated in the Country. In other words, also refused and recurrence cases must be reported per year. For this reason, all people referring to a hospital must be screened for trichiasis and in any cases volunteers in villages should be trained to detect trichiasis, also after the achievement of the certification. The ideal way to detect all cases should be organizing house-to house evaluation, but where this is not possible it must be useful to take advantage of other ophthalmic campaigns. The refused cases should be investigated as a further follow-up on surgical quality, that in any cases must be scheduled in the criteria for certification. In fact, each country must demonstrate the ability to discriminate approached/ unapproached cases and to manage the incident cases.

6. During the three year surveillance period a designated National Committee should quarterly receive district data reports with TF and TT data coming from district where the collection and analysis should be monthly. 7. From available evidence, surveillance should be continue at least 10 years after the achievement of certification. Facial cleanliness and environmental change must remain in place also after the elimination of trachoma to ensure the conditions of elimination. Where possible the surveillance system should be integrated into other surveillance programmes in order to be under the direct responsibility of member States involved. However partners must be engaged and should continue their role in the control of the disease.