

FOURTH REGIONAL MEETING OF
MANAGERS OF NATIONAL PROGRAMS FOR THE
ELIMINATION OF TRACHOMA
AS A PUBLIC HEALTH PROBLEM
IN THE AMERICAS

MEXICO CITY, 6–8 SEPTEMBER 2016



**Pan American
Health
Organization**



**World Health
Organization**

REGIONAL OFFICE FOR THE **Americas**

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REPORT

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Pan American Health Organization/World Health Organization

PAHO / WHO

Washington, D.C.

Fourth Regional Meeting of Managers of National Programs for the Elimination of Trachoma as a Public Health Problem in the Americas. Mexico City, 6-8 September 2016.

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ABBREVIATIONS

DRG	Dossier Review Group
GTMP	Global Trachoma Mapping Project
NIDs	Neglected infectious diseases
STHs	Soil-transmitted helminth infections
TF	Trachomatous inflammation, follicular
TI	Trachomatous inflammation, intense
TT	Trachomatous trichiasis
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization

GLOSSARY

Clinical sign	Reliable and objective evidence of a disease perceptible during medical examination.
District	Administrative unit for health care management. For the purposes of the trachoma program, it consists of a population unit between 100,000 and 250,000 persons.
Endemic	Specific to a given locality or region.
Neglected infectious diseases (NIDs)	Diseases caused by different microorganisms that, for the most part, produce lasting adverse health effects. They mainly affect populations living in unfavorable socioeconomic conditions. NIDs reduce labor productivity and the capacity to generate sufficient income. These diseases affect both physical and intellectual development in children. Some NIDs can cause physical disfigurement leading to social stigmatization.
Preventive chemotherapy	Strategy to specifically (though not exclusively) treat populations at risk of contracting helminthic diseases that affect humans. The aim of preventive chemotherapy is to prevent the transmission of these diseases among at-risk communities, or to reduce morbidity among those with the infection or the disease, by administering one or more drugs. In the case of trachoma, which is a bacterial infection, this strategy is called mass drug administration.
Soil-transmitted helminth infections	The most common parasitic infections worldwide, transmitted through contact with soils contaminated with infective eggs. They affect poorer populations, mainly children and young people, and can cause severe physical and cognitive impairment.
Tropical Data	A World Health Organization-led initiative. It offers scientific and technological support for epidemiological surveys, data processing and management, and the development of training protocols for national neglected tropical disease programs.

SUMMARY

The Fourth Regional Meeting of Managers of National Programs for the Elimination of Trachoma as a Public Health Problem in the Americas served as an opportunity to exchange information and experiences in order to reinforce activities designed to eliminate trachoma as a public health problem in the Americas. With the participation of national representatives from countries with known trachoma foci, as well as from countries that share borders with active foci, it was possible to identify the situation in each nation and to define joint activities and technical cooperation so that the necessary epidemiological information can be compiled.

The evidence presented constitutes great progress in elucidating the epidemiological situation of the disease and in defining the actions required to eliminate it. Countries with active foci have directed their efforts toward strengthening the SAFE (Surgery, Antibiotics, Facial cleanliness and Environmental improvement) strategy, conducting prevalence surveys and active trachomatous trichiasis (TT) case-finding as well as the mapping of areas with communities living in vulnerable conditions where trachoma could constitute a public health issue.

Colombia has completed its mapping survey around the first identified focus of the disease and this allowed new active foci to be identified. Despite its adverse political and economic situation, Guatemala managed to complete mass drug administration (MDA) in 2014 and has recently published the results of the 2011 prevalence survey; the impact survey is pending but expected to be completed in 2017. In Brazil, the best results were achieved with a comprehensive campaign to tackle trachoma, leprosy, schistosomiasis, and soil-transmitted helminth infections (STHs), demonstrating the efficacy of integrated actions to combat trachoma and other NIDs. Brazil is concluding its plan for trachoma mapping and active TT case-finding in priority municipalities. Meanwhile, Mexico already meets Pan American Health Organization/World Health Organization (PAHO/WHO) indicators for validation of elimination and is awaiting arrival of the Trachoma Dossier Review Group (DRG) expert committee.

Paraguay, Peru, and Venezuela have no recent trachoma epidemiological data, but have joined the trachoma case-finding efforts in border areas with Brazil and Colombia where there are active foci. For participating countries, the general recommendations focus on strengthening active TT case-finding and monitoring, mapping of endemic and non-endemic regions, incorporating new technologies (such as the Tropical Data platform), continuous training for medical staff and examiners, and strengthening the facial cleanliness and environment improvement components, as steps toward maintaining and increasing the progress achieved so far with the SAFE strategy.

The conclusions and recommendations of the meeting, with the consensus of all participants, are presented below.

Conclusions

1. Brazil is organizing a work plan to update trachoma mapping in at-risk districts in order to define actions to be undertaken in the coming years. Action to combat trachoma continues to be implemented in integrated campaigns to fight leprosy, STHs, and schistosomiasis.
2. Colombia has identified three new trachoma foci and is advocating to obtain resources to intervene in these foci. The country plans to continue to implement active TT case-finding and to conduct an impact assessment survey of the Vaupés focus.
3. Colombia offers its skills in training trachoma examiners in endemic districts to other countries of the Americas.
4. Mexico has requested PAHO/WHO validation of the elimination of trachoma as a public health problem. The dossier is currently under review and, at the time of printing, the mission to the country was expected in November 2016.
5. Guatemala is planning an impact assessment survey in two districts, to be carried out in 2017.
6. The exchange of information and cooperation among countries is an opportunity to strengthen the fight against trachoma in border areas of countries with recent trachoma foci (e.g., information on the emergence of TF [trachomatous inflammation, follicular] and TT cases and support for training of examiners).
7. Local intersectoral work is essential in order to advance sustainable development and to improve living conditions, thereby maintaining achievements in the elimination of trachoma and NIDs. There is an opportunity to plan and carry out intersectoral joint activities under the framework of the Sustainable Development Goals (SDGs), including the global Water, Sanitation, and Hygiene (WASH) strategy for neglected tropical diseases (NTD) and Health in ALL Policies (HiAP), among others.
8. Active TT case-finding is a useful tool. On the one hand, it is used to complement trachoma elimination actions in countries with recent known foci, and on the other, it is used for surveillance purposes in countries with communities living in vulnerable conditions where recent trachoma information is unavailable.
9. WHO is working with experts to review the sample size criteria to improve precision in calculating TT prevalence. For now, the criteria to calculate sample sizes are the same for the baseline, impact, and pre-validation surveys.
10. WHO has made the Tropical Data platform available to countries so that they can plan and conduct trachoma surveys using standardized methodology and with technical support throughout the entire process.
11. WHO has published recommendations for trachoma surveillance and standard operating procedures for the validation of the elimination of trachoma as a public health problem. These recommendations are useful for the strengthening of trachoma programs in the Americas.
12. Recognition is given to the valuable contribution of the literature review of the history of trachoma in the Americas carried out by the WHO Collaborating Center for the Prevention of Blindness and

Visual Impairment (Johns Hopkins University). This review contributes to the documentation of the disease in the Region. Its publication is expected to help formulate recommendations.

13. Progress has been made in various countries in terms of action to improve identification, access to surgery, and monitoring of TT cases. However, challenges persist that are specific to each country and each context in which trachoma foci is found.
14. Recognition is also given to the efforts made by delegates from Paraguay, Peru, and Venezuela in compiling the history of trachoma cases in their countries, and their willingness to work on this subject at the meeting.
15. There is currently no evidence to suggest that recrudescence of trachoma would be a problem when treatment is suspended. However, WHO continues to work with experts to establish recommendations for post-validation surveillance.

Recommendations

All countries are urged to:

- » Apply the recommendations for trachoma surveillance, as well as the standard operating procedures for validation of the elimination of trachoma as a public health problem.
- » Continue with the F and E components of the SAFE strategy, and maintain services and the provision of surgery for TT cases during the post-validation phase, because it is a reversible state.
- » Continue to work on an intersectoral basis in an attempt to combat the social determinants associated with trachoma, to achieve elimination targets, and to reduce the risk of recrudescence.
- » Integrate trachoma actions with other public health programs or platforms that would ensure they reach the affected communities.
- » Publish survey results and SAFE strategy actions that have been implemented (e.g., baseline surveys in Colombia, survey and rapid assessments in Brazil and Mexico, and co-administration of azithromycin and albendazole in Colombia).
- » Carry out active TT case-finding, either as part of the activities undertaken to identify and channel cases to surgery in districts with known trachoma foci, or as part of the surveillance activities in at-risk communities lacking recent data. Once active TT case-finding begins, establish an information system that would enable data required for case monitoring to be collected.
- » Strengthen F and E components of the SAFE strategy for trachoma within the framework of the new strategy: Water, Sanitation, and Hygiene for Accelerating and Sustaining Progress on Neglected Tropical Diseases. A Global Strategy: 2015-2020 (WHO).
- » Emphasize the importance of the blindness surveys in detecting trachoma during training and among field operations. This is an opportunity to document trachoma in countries lacking recent information but with at-risk communities.

Brazil is urged to:

- » Define and complete a plan to conduct trachoma surveys in at-risk districts. Carry out training of examiners two weeks before the survey.
- » Analyze the efficiency and impact of detection and management of individual TF cases (including

household contacts] in comparison with the identification of trachoma cases in districts in which MDA has yet to be implemented.

- » Attempt to clarify the TT data. This could require targeting efforts in areas with indigenous populations in order to implement active case-finding and improve information systems for monitoring.

Guatemala is urged to:

- » Strengthen its ability to identify TT cases and offer surgery as part of its trachoma program, led by the Ministry of Health.

Mexico is urged to:

- » Continue to compile epidemiological information during the post-validation phase to help generate evidence that may subsequently help formulate surveillance recommendations for this phase.

Paraguay, Peru, and Venezuela are urged to:

- » Work toward positioning trachoma on the public health agendas of the ministries of health. PAHO/WHO offers technical cooperation to these countries so that the actions undertaken are adjusted to the needs for each country.

PAHO/WHO is urged to:

- » Help define regional recommendations for the integrated management of morbidity and the prevention of disability caused by NIDs (including trachoma). This definition should then be discussed and coordinated with countries.
- » Provide technical cooperation to countries with communities at risk of trachoma where recent data are not available in order to carry out actions that would enable the epidemiological situation to be documented (e.g., Bolivia, Ecuador, El Salvador, Guyana, Haiti, Paraguay, Peru, Suriname, and Venezuela).
- » Support countries in using the Tropical Data platform, in collaboration with those responsible for technology, information, and communication.

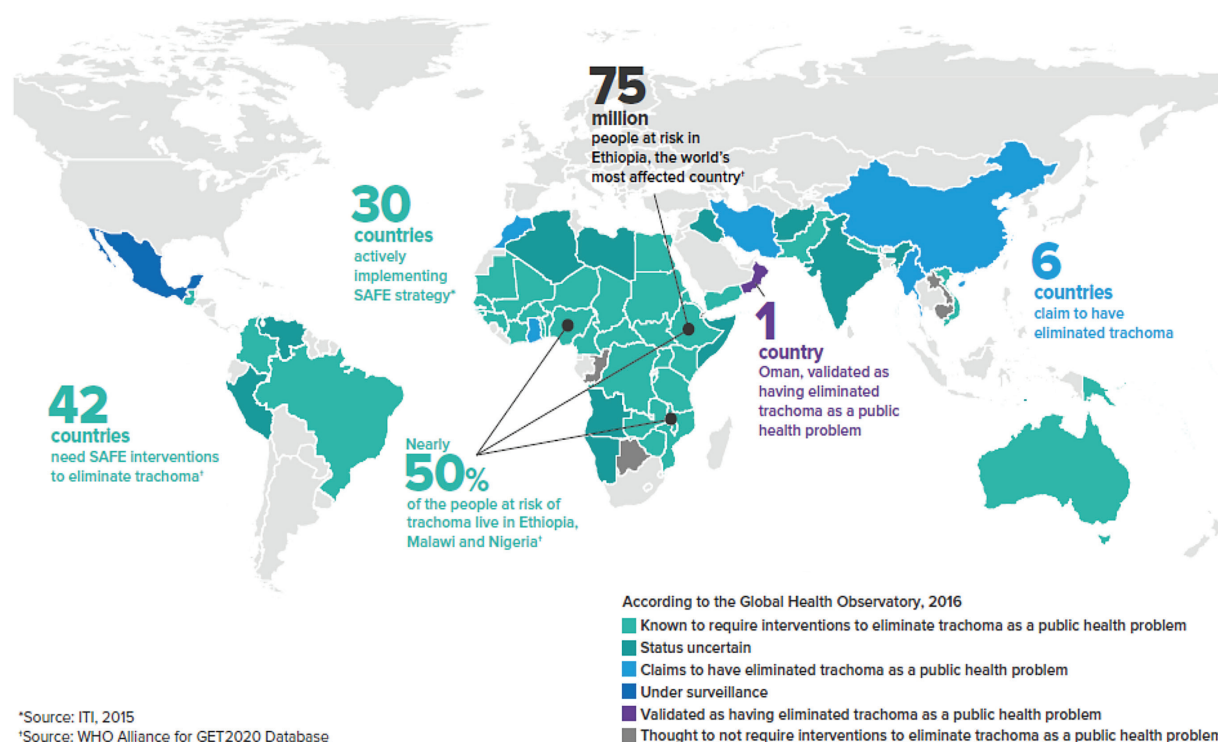
PAHO/WHO thanks the United States Agency for International Development (USAID) for its support in holding this meeting.

1. ADVANCES IN THE ELIMINATION OF TRACHOMA AS A PUBLIC HEALTH PROBLEM WORLDWIDE AND IN THE AMERICAS

Achieving trachoma elimination targets by 2020 calls for the commitment and efforts of all nations. Many parts of the world are still affected by trachoma. A total of 42 countries have been identified as requiring implementation of the SAFE strategy, and over 140 districts currently require urgent care to combat the disease (Figure 1).

An estimated one billion dollars is needed to eliminate trachoma, of which 200-300 million have been allocated so far.

Figure 1. Countries affected by trachoma worldwide, 2015



Source: Figure presented at the meeting by Dr. Anthony Solomon, WHO trachoma advisor. WHO Alliance for GET2020 and International Trachoma Initiative 2015 database.

The principal lines of action taken to combat trachoma have focused on strengthening the SAFE strategy and determining the epidemiological situation. This is applied both in affected countries and in countries with unfavorable social determinants or that share borders with endemic foci.

Great progress has been reported regarding the SAFE strategy. Improvements in the number and quality of surgeries to treat TT have resulted in the reduction of the number of people waiting for surgical care.

In 2000, over 8 million people needed surgery, but by 2016 this figure had fallen to about 3 million. The number of antibiotic doses manufactured worldwide has also increased over the past decade (Figure 2). The proportion of people requiring face washing and environmental improvement is six times lower than was estimated in 2000.

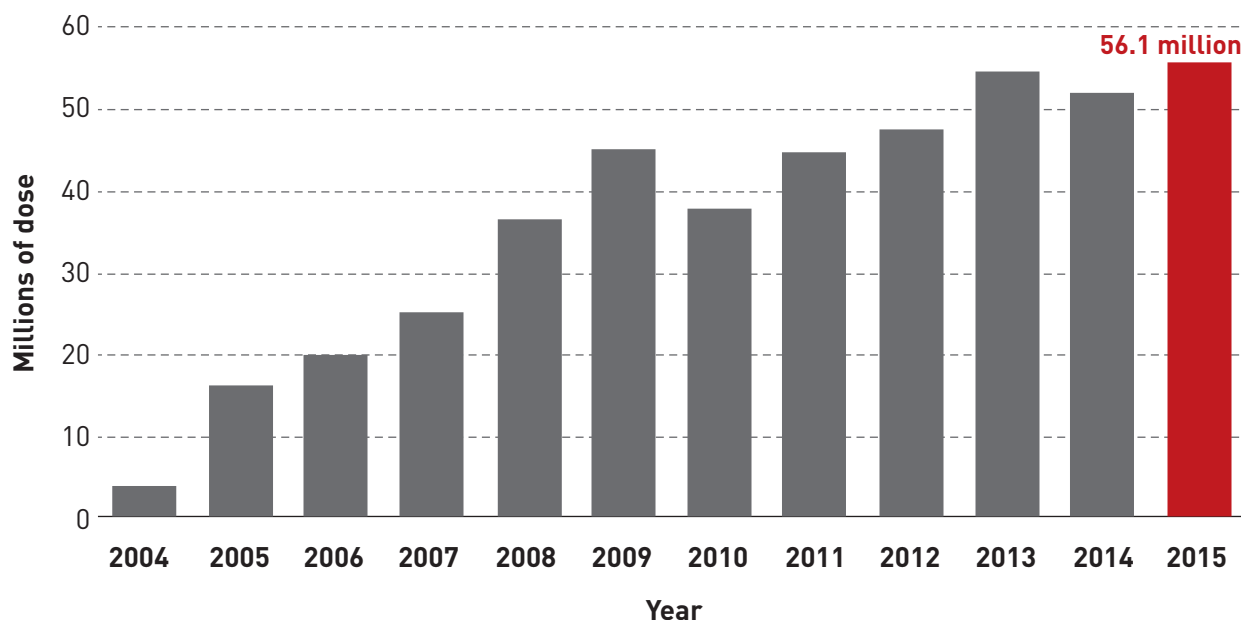


Figure 2. Dose of antibiotics produced worldwide (millions), 2004-2015

Source: Figure presented by Dr. Anthony Solomon, WHO trachoma advisor. WHO Alliance for GET2020 and International Trachoma Initiative 2015 database

Great progress has been made in the elimination of trachoma as a public health problem in the Americas. The evidence generated by the different countries has served to complement the Region's epidemiological data and the action taken has, therefore, been adjusted to the sociocultural and economic context of each territory.

In the four countries with active trachoma foci, the action taken to combat the disease has been strengthened beyond the known endemic areas. Active TT case-finding and mapping in at-risk communities living in vulnerable conditions have made it possible to identify new active foci and also to rule out the presence of the disease in other regions. Mapping of areas with indigenous population and areas bordering with active foci in other countries are currently considered priority. Despite the adverse political and financial situation of many countries, the willingness of ministries of health and intersectoral efforts have managed to position trachoma on the health agenda of governments, strengthen the components of the SAFE strategy, and integrate actions to fight trachoma with those of other NIDs.

Furthermore, clear efforts have been made to provide continuous, specialized training for medical personnel performing the surgeries in the Americas. This has led to a gradual improvement in surgical

techniques and a reduction in relapse rates. Post-surgery follow-up activities have helped identify recurrences more readily, as well as recognizing factors that favor relapses.

Regarding the F and E components of the SAFE strategy, countries have promoted healthy practices and the prevention of trachoma and other NIDs mainly at schools. Health promotion and education strategies have gradually incorporated these components which, in turn, have been adapted to the world view of each community so that they might gain greater acceptance.

Recently, the Mexican Health System ruled out the presence of unknown TT cases. The country has met the PAHO/WHO indicators for validation of elimination. At the time of printing, this country was awaiting the DRG expert committee to conduct validation.

In turn, non-endemic countries bordering on known active foci (such as Paraguay, Peru, and Venezuela) have recognized the lack of recent trachoma epidemiological data and have joined active case-finding efforts in areas with conditions favorable to the onset of the disease. In this regard, cooperation and exchange of information among the different countries will be key to the elimination of the disease across the continent.

WHO recently published recommendations for trachoma surveillance and standard operating procedures for the validation of the elimination of trachoma as a public health problem. These recommendations will be useful in strengthening and directing the action of programs to combat the disease in the Americas, and for the validation in Mexico. Finally, WHO has made the Tropical Data platform available to the different countries; this is a tool which helps incorporate new technologies into the implementation and management of surveys (via smartphone), as well as promoting the use of a standardized methodology.

2. PROGRESS AND CHALLENGES FOR TRACHOMA ELIMINATION IN COUNTRIES OF THE AMERICAS WITH ENDEMIC DISTRICTS

2.1 Mexico

After the identification of the microorganism responsible for trachoma in the 1960s, and the subsequent identification of active foci in the state of Chiapas (Figure 3), Mexico defined its regulatory health policy. It also established health care for endemic areas, with the supply of antibiotics, promotion of personal hygiene, and surgical treatment of TT cases.

In 1994, the Health Services of Chiapas formalized the first Program for Trachoma Prevention and Control that integrated primary health care and improved access to basic services. In 2000, the Institutional Trachoma Program promoted the creation of an intersectoral network and adopted the SAFE strategy. Actions were undertaken for the social development of affected communities and medical brigades were commissioned for case identification.

Since 2001, Mexico has continued to promote the SAFE strategy activities through its State Program for Trachoma Prevention and Control (PEPCT). With the collaboration of PAHO/WHO-certified physicians, activities have focused on the mass administration of antibiotics. Epilation by electrolysis and free surgery is also offered to treat TT. Actions under the F and E components of the SAFE strategy have been gradually adapted to the sociocultural characteristics of communities, so that they are more readily accepted by patients.

Figure 3. Mexico: Trachoma endemic region in the state of Chiapas, 1985-2004



Source: Presented by Dr. Gustavo Tejeda, Secretariat of Health, Mexico. Data provided by Colegio de la Frontera Sur, Mexico, 2015

Patients' personal and medical information is compiled on the TT surgery days. During their stay, members of the medical brigade offer personal support, food, shelter, and food supplies to compensate for losses due to time off work. Seventy-two hours after surgery, patients are visited by brigadiers who confirm the recovery process. From 2004 to 2014, 487 surgeries were conducted on persons from the affected municipalities of whom seven out of 10 patients were women.

A surgery day was held at the end of September 2016, with almost 30 TT patients expected to attend. Table 1 shows the number of TT patients and those who were candidates for surgery, by municipalities.

Epidemiological surveillance tasks have been carried out for over a decade now. House-by-house case-finding activities for trachoma were conducted across 264 communities in Chiapas. Prevention actions are currently promoted among children at preschool and primary school with the participation of teachers who have been trained by the health services.

Table 1. Municipalities with trachomatous trichiasis cases and number of surgical candidates and non-candidates

Municipality	Patients with trachomatous trichiasis	Candidates for surgery	Not candidates for surgery
Chanal	9	6	3
Huixtán	5	1	4
Oxchuc	97	31	66
San Juan Cancuc	14	4	10
Tenejapa	14	5	9
Total	139	47	92

Source: Presented by Dr. Gustavo Tejeda, Secretariat of Health, Mexico. Database from PEPCT of the Chiapas State Government, 2015

Following PAHO/WHO-recommended methodology, Mexico has ruled out the presence of endemic districts outside Chiapas using rapid assessments of localities living in conditions of risk but with no documented trachoma cases. The country has sufficient data to confirm zero prevalence of TT cases unknown to the health system.

From 2000 to 2015, the fight against trachoma, together with policies for the social and economic development of Chiapas, has translated into greater access to basic housing (water, electricity, and sewer systems), sanitation, and primary health care services.

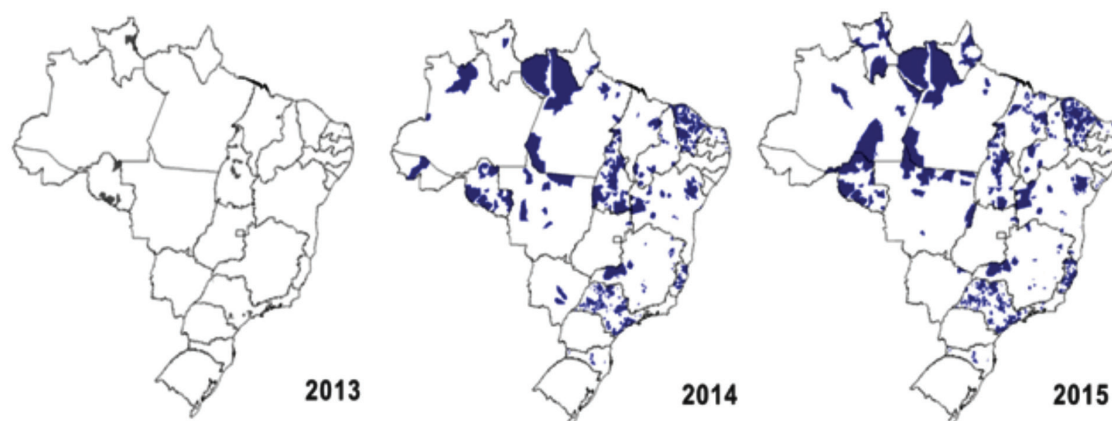
However, Mexico recognizes that in order to maintain the progress made so far, it must now face further challenges. Constant rotation of health professions requires great effort to maintain patient databases and follow-up files. Furthermore, it is necessary to reactivate priority care and prevention actions, including antibiotic supplies for active trachoma cases in children and organizing two surgery days in 2016. The lack of political will and financial resources has temporarily halted the program for the past two years.

At present Mexico meets PAHO/WHO indicators for the validation of the elimination of trachoma as a public health problem.

2.2 Brazil

In 2012, Brazil included trachoma in its integrated national plan of strategic action for the elimination of leprosy, lymphatic filariasis, schistosomiasis, and onchocerciasis as public health problems. It has been running an integrated trachoma, leprosy, schistosomiasis, and soil-transmitted helminth infections campaign since 2013, with the principal aim of examining school children for these diseases and treating them. In 2015, the campaign was carried out in 541 municipalities across 20 states, examining 900,873 school children and strengthening the F component. Figure 4 shows the increase in the number of municipalities included in the integrated campaign between 2013 and 2015.

Figure 4. Brazil: Municipalities participating in the integrated trachoma, leprosy, schistosomiasis, and STH campaign 2013-2015



Source: From presentation by Dr. Fatima Costa Lopes, Ministry of Health, Brazil. Data from Department of Surveillance of Transmissible Diseases, 2015

The downward trend of active trachoma cases in children and the decline from 5.1% (2013) to 2.7% (2015) in TF prevalence is attributed to these actions. With this campaign (Figure 5), a total of \$8,628,678 was allocated to tasks primarily aimed at trachoma prevention in school children in priority states and municipalities.

Nevertheless, there is still a pressing need to generate precise up-to-date trachoma data in the country. Most of the prevalence data are from the trachoma prevalence survey carried out between 2002 and 2007 in Brazilian schoolchildren, with publication of the results in the *Public Health Journal* 2013. Currently, epidemiological data are insufficient to specify the number of priority municipalities or the implementation of actions aimed at trachoma elimination. Furthermore, Brazil has no exact data on the number of TT cases or the number of surgical interventions carried out. The main reason for this is that the information system registers trichiasis operations without indicating cause or origin, so it is not possible to identify the number of TT cases. Information on the prevalence of active trachoma

Figure 5. Brazil: Educational material for the integrated trachoma, leprosy, schistosomiasis, and STH campaign



Source: From presentation by Dr. Fatima Costa Lopes, Ministry of Health, Brazil. Poster for the integrated campaign 2014

in children from 1 to 9 years of age in border areas and in indigenous populations of the Amazon area also needs updating. The indigenous population in Brazil is almost 27 million people.

Given all of the above, in 2015 the Ministry of Health in Brazil conducted a review of the trachoma data available on its information systems, making it possible to classify 1,245 municipalities into three groups according to their historical TF prevalence data. Figure 6 shows the distribution of these municipalities by priority group according to TF prevalence: Group 1 corresponds to municipalities with TF prevalence rates $\geq 10\%$, Group 2 with TF prevalence rates between 5 and $<10\%$, and Group 3 with prevalence rates $<5\%$.

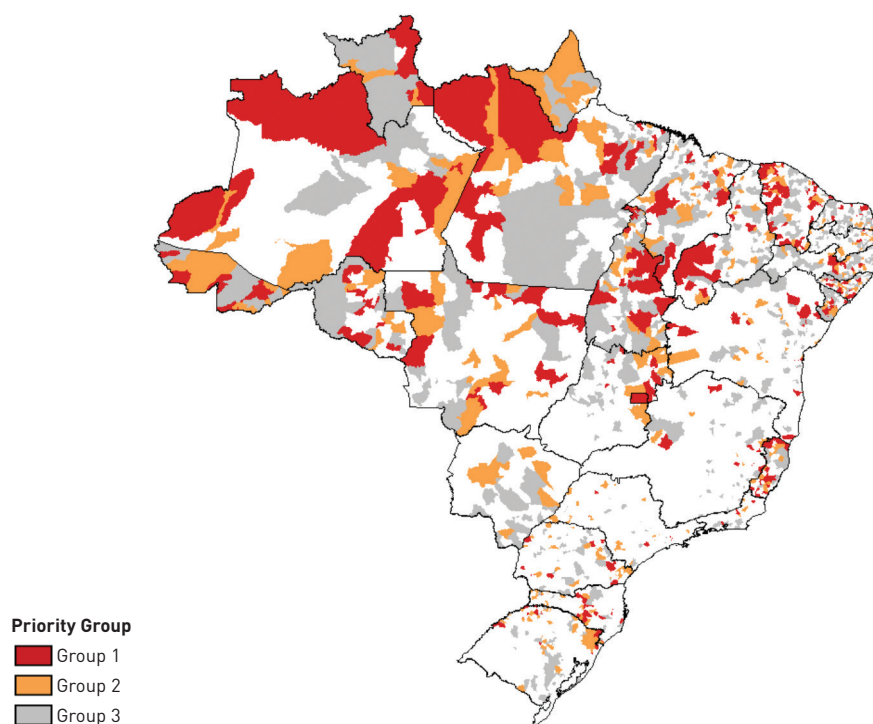
From 2008 to 2015, a total of 138,027 cases were detected in 898 municipalities, where the mean TF prevalence found was 4.1%. Slightly over 3.3 million people were screened. In this same period, the distribution of treatments has also followed a rising trend reaching an all-time record of over 160,000 azithromycin tablets dispensed in 2014.

Although coverage of access to treatment has increased in some areas of the country, largely in communities with active trachoma (areas with indigenous populations), the implementation of mass azithromycin cycles continues to be limited. In the six indigenous districts where pharmacological treatment was administered, the impact assessments have not yet been conducted.

At the time of writing this report, Brazil was planning implementation of its baseline population surveys in districts with documented cases, prioritizing the aforementioned municipalities. Meetings have

been held with state trachoma coordinators to discuss and analyze which variables to include in the information systems. With these variables, it will be possible to enter the information needed to compile exact trachoma data on the country. Similarly, discussions are in progress with states to implement national prevalence surveys following PAHO/WHO recommendations and technical guides.

Figure 6. Brazil: Distribution of municipalities by priority group according to historical TF prevalence reports, 2015



Source: From presentation by Dr. Fatima Costa Lopes, Ministry of Health, Brazil. Data from the Neglected Disease Department, 2015

2.3 Colombia

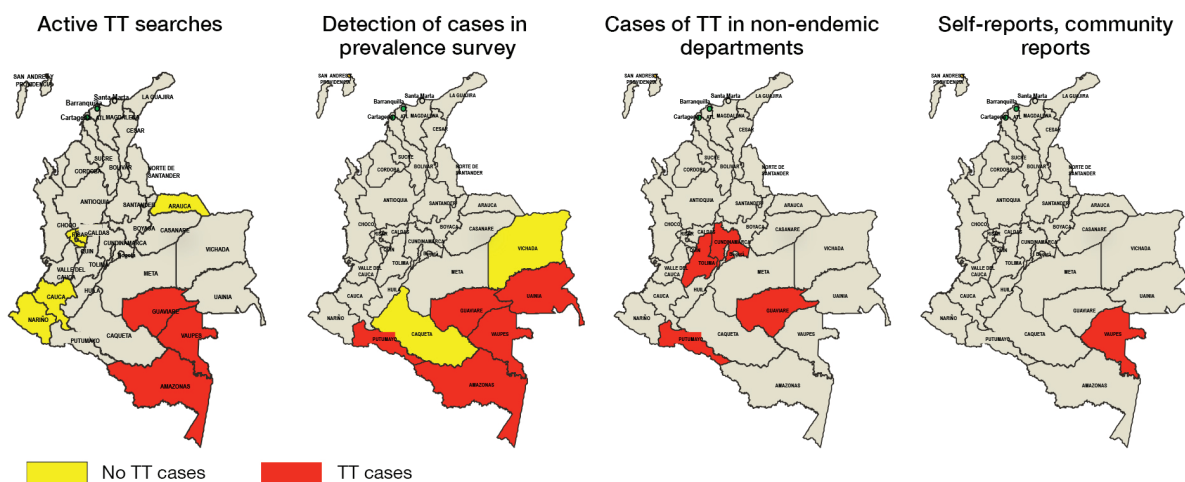
In collaboration with PAHO/WHO, Colombia continues to join efforts to conduct prevalence surveys and also continues to implement the SAFE strategy. The comprehensive struggle against trachoma and other NIDs, in addition to adequate prioritization of rural communities living in poverty or with indigenous groups, has led to the efficient use of human and financial resources, the sustainability of the actions undertaken, and the defining of common social determinants for the transmission of these diseases.

Interdisciplinary activities, in collaboration with academic institutions and various experts in social sciences and humanities, have been key in adapting the strategies to the indigenous world view. The principal lines of action have been improving the environment, mass administration of azithromycin for trachoma and albendazole for soil-transmitted helminth infections, health education, and the referral of vulnerable population groups to health centers. The aim is to consolidate efforts in the fight against trachoma based on access to care, information and education, and adopting an intercultural approach.

Colombia continues to strengthen the capacities of health workers involved in trachoma diagnosis. The presence of Global Trachoma Mapping Project (GTMP)-certified trainers has resulted in improved skills of personnel diagnosing this disease within the framework of the population surveys. There are eight qualified examiners and trainers for the diagnosis of acute trachoma forms, and 62 medical experts and health professionals trained to diagnose TT.

Active searches for TT cases have been carried out in communities living in conditions of vulnerability in which trachoma could constitute a public health problem. To improve the capacity to identify regions with TT cases, case-finding is not confined to endemic areas but has also been included in the prevalence surveys, and community reporting is being promoted (Figure 7). Thanks to these actions, new active foci have been identified and more precise prevalence estimates generated.

Figure 7. Colombia: Identification of department with trichomatous trichiasis



Source: Presented by Dr. Julián Trujillo, Ministry of Health and Social Protection, Colombia. Data from National Neglected Infectious Diseases Program 2015

In the baseline survey in the Vaupés department, which was practically a census as it covered 93% of communities, various risk factors associated with the presence of trachoma and other NIDs were identified. The principal factors included lack of footwear, open-field excrement disposal, and the presence of dirt and secretions on the face.

In children from 1 to 9 years old, a TF prevalence of 26% was observed in the eastern Vaupés region, and 21.3% in the western region. TT prevalence in the general population was 7 cases per 1,000 people, and in the west, 2 cases per 1,000 (Figure 8).

At the time of this report, areas around the known trachoma district were being mapped in order to detect other active foci. Surveys are being conducted according to GTMP standards with the participation of the territorial health authorities. Thanks to this effort, three new districts with trachoma were identified which require implementation of SAFE interventions.

Figure 8. Colombia: Trachoma focus delimitation and approach



Source: Presented by Dr. Julián Trujillo, Ministry of Health and Social Protection, Colombia. Data from National Neglected Infectious Diseases Program, 2015

Surgical techniques and procedures have been updated to include lower eyelid surgery. These surgeries have been integrated into the PAHO Eye Care Program that also provides cover for other eye diseases. It is estimated that 88.3% of patients with TT who needed surgery have received it.

The country has also been working toward strengthening the F and E components of the SAFE strategy. A pedagogical approach has been implemented at primary schools to teach children about personal care and recognizing trachoma symptoms (Figure 9).

However, Colombia acknowledges that there are still challenges to be faced. There are some complications with insurers guaranteeing coverage for transport and surgery for TT patients. Furthermore, it is proving difficult to reach agreements with authorities to organize surgery days closer to rural areas to increase coverage. Also, a plan is needed for post-surgery follow-up to detect and treat recurrences, as well as a rehabilitation program for persons with visual disabilities caused by trachoma, including rehabilitation strategies for people living in the jungle with poor access to health services.

Figure 9. Colombia: Educational material to support the facial cleanliness and environmental improvement components of the SAFE strategy in children



Source: Presented by Dr. Julián Trujillo, Ministry of Health and Social Protection, Colombia. Images from the National Neglected Infectious Diseases Program, 2015

2.4 Guatemala

The trachoma program in Guatemala has been integrated with efforts to control and eliminate others NIDs. Nevertheless, the country is going through a difficult political and economic situation that has hampered the incorporation of trachoma on the national policy agenda. Furthermore, ongoing trade union conflicts and continuous governmental staff rotation at all levels mean that fulfillment of commitments made toward combating the disease is challenging. The health authorities recognize that the support provided by PAHO/WHO has been key to overcoming the numerous political, financial, and logistic barriers in Guatemala.

Although the country has identified its endemic areas (Guineales and Xejuyup districts in the Sololá department), it admits that it needs to strengthen its epidemiological surveillance in endemic and suspect areas, particularly in border areas with Mexico. These efforts need to be complemented with other actions through intersectoral coordination, involving the Ministry of Public Health and Social Welfare, the National Health Laboratory (LNS) and National Eye Care Commission, in order to improve TT identification and its integrated management.

Large-scale antibiotic (azithromycin) distribution has been carried out, with 94% coverage in affected areas in the Sololá department, where the Healthy Municipality initiative is also implemented. This program promotes sanitation and access to basic services, as well as empowerment of localities through municipal authorities and community leaders. Figure 10 shows a child having an eye examination as one of the trachoma case-finding activities undertaken in communities with indigenous populations in Guatemala.

Figure 10. Guatemala: Children's eye examination in indigenous communities



Source: Presented by Mr. Jaime Juárez, PAHO/WHO office in Guatemala. Image from the National Program for the Prevention of Blindness, Ministry of Health, Guatemala, 2015

Guatemala recently published the 2011 survey results, but had to postpone the impact assessment survey until 2017.

3. TRACHOMA IN COUNTRIES WITHOUT RECENT TRACHOMA INFORMATION AND WITH POPULATIONS LIVING IN VULNERABLE CONDITIONS

To achieve the goal of trachoma elimination as a public health problem by 2020, the current situation in each country must be investigated and defined. Most countries of the Americas do not have information systems that include this disease, resulting in limited epidemiological data.

Recently, the WHO Collaborating Center for the Prevention of Blindness and Visual Impairment (Johns Hopkins University), in partnership with PAHO, carried out a literature review of historical trachoma data in the Americas. Following an exhaustive search for bibliographic resources in PAHO/WHO databases and information, 200 scientific articles on trachoma were found and analyzed. In addition to the information in these documents, metrics of socioeconomic indicators in the different countries were also included, such as infant mortality, per capita income, and level of education. The preliminary results were presented at this meeting to contribute information that would facilitate discussion on trachoma case searches beyond countries reporting known foci.

The exercise revealed up to 15 countries of the Americas that do not have data on trachoma, but whose socioeconomic indicators are below the average for the Region. These include Suriname and Guyana, which also have border areas with Brazil with known trachoma foci. It is strongly recommended that these countries implement TT case-finding and rapid trachoma assessment activities in high-risk areas.

Furthermore, several countries have been identified that, despite not recognizing trachoma as a problem, have below-average socioeconomic indicators. Ecuador and El Salvador are two such countries which, in addition, are close to areas with active foci or with a history of blinding trachoma, respectively, making it impossible to rule out the presence of trachoma. Rapid assessments should be carried out to clarify the epidemiological situation of the disease. The same applies to other countries with limited published data, where it is also difficult to conclude that trachoma is not currently present in their territories. Finally, eight countries were identified as having no evidence to suggest the presence of the disease. Most of these present socioeconomic indicators that are above average for the Americas, including Chile, Panama, and Uruguay, where the presence of trachoma is considered unlikely.

Given the above, in order to affirm that countries are advancing toward trachoma elimination, we must extend case-finding to other areas in the Region where risk factors are present, but up-to-date information is lacking. As long as the situation remains unknown in countries with socioeconomic characteristics that would favor the spread of the disease or that share borders with endemic areas, we cannot state that the Region of the Americas is trachoma free.

On this occasion, the regional meeting of national managers for the elimination of trachoma as a public health problem in the Americas was attended by national delegates from countries that share borders with active trachoma foci: representatives from Paraguay, Peru, and Venezuela. Their presence facilitated the sharing of information, experiences, and prospects for the elimination of trachoma and others NIDs. Bolivia and Ecuador were also invited but were unable to participate in this regional meeting.

material on comprehensive eye health care (Figure 12) has been distributed. Since 2006, the National Plan for the Sanitation Sector together with the National Rural Sanitation Program (PNSR) has been implemented with the aim of improving housing and environmental conditions of communities.

Figure 12. Peru: Informative material for eye health care



Source: Figure presented by Dr. Harvey Honorio, National Strategy for Eye Health, Ministry of Health, Peru, 2016

Peru recognizes the commitments and challenges requiring immediate attention for trachoma elimination. These include adequate training on the diagnosis and treatment of the disease, drawing up technical documents, carrying out operational and clinical research for strategy design, and implementing communication and educational disease prevention strategies. Based on recent historical evidence indicating the presence of the disease in border areas with Brazil and Colombia, implementation of a trachoma survey in the communities of these regions is being considered.

3.2 Paraguay

Trachoma cases have not been reported in Paraguay and the presence of the disease is not suspected. According to a background review, the last laboratory-diagnosed case occurred in 1982. The registry of trachoma epidemics dates back over 50 years and no cases with severe sequelae have been reported since the 1980s.

There are five Paraguayan departments with indigenous populations that share borders with endemic foci in Brazil. Although there are no reports of active transmission in those areas, physicians do not include the disease as a possible diagnosis. Furthermore, in the blindness and visual impairment data from surveys conducted in 1999 and in 2011, trachoma case-finding criteria were not included, which means that possible underreporting cannot be ruled out in these regions.

Currently, the epidemiological data on trachoma in Paraguay is very scarce. There are no standardized protocols or information on mapping, nor has the preparation of a case-finding plan been considered. The only actions that might indirectly have an impact in the fight against the disease is the promoting of

hand washing in schools and the supply of medicines to treat the disease, as a part of the basic list of inputs and drugs provided by the country's Ministry of Public Health and Social Welfare.

3.3 Venezuela

The Venezuelan health authorities have recognized possible undocumented trachoma foci. It is suspected due to the presence of communities with risk factors, a socioeconomic environment that is favorable for the disease (poverty, low educational level, lack of basic housing and sanitation services), and the presence of indigenous populations in endemic border areas with Brazil and Colombia. However, there are no national epidemiological data on trachoma and the disease is not considered a public health problem. Accordingly, an epidemiological surveillance system must be established, integrated with efforts to combat it within the National Eye Health program.

At the time of writing of this document, implementation of the Trachoma Project in Venezuela was expected by the end of 2016. The project includes training for examiners to improve diagnosis, thus allowing the prevalence of the disease to be evaluated in the indigenous populations of San Fernando de Atabapo and Isla Ratón. Informative material will be distributed among the population of the communities visited in order to acquaint them with the disease and its prevention. Ophthalmology residents and specialists from the Hospital Francisco Antonio Rísquez are expected to participate.

4. IDENTIFICATION AND MONITORING OF TT CASES

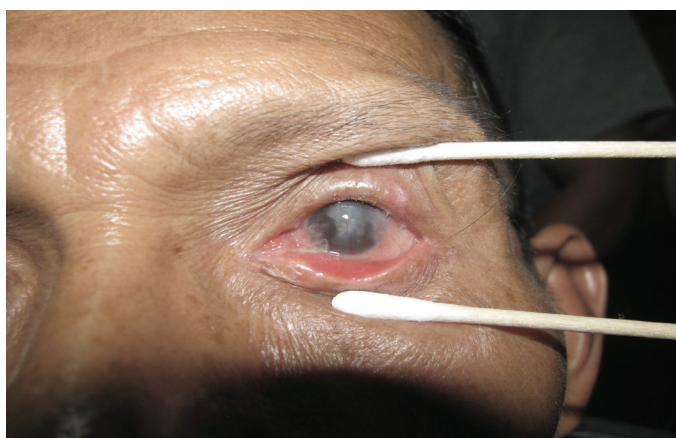
Identification of TT cases requires a medical exploration to identify the presence of at least one of its clinical signs: at least one eyelash rubbing on the eyeball, entropion, conjunctival scarring, turned-in eyelids, or evidence of recent eyelash removal (Figure 13).

Case identification should be carried out by conducting surveys in endemic areas and foci. One of the main challenges in achieving this is the inclusion of TT diagnosis in routine eye health program activities.

It is important to take into account that patients with recurrences post-surgery, those who reject the intervention and those on waiting lists should continue to count as cases. It is extremely important that the case identification surveys contain specific questions that would help identify these scenarios.

However, it is not merely a question of identifying and reporting those affected, but to ensure that they all receive proper care and that the disease is duly managed and monitored. The commitment begins with the recommendation that every suspected case of TT should be referred for complete medical evaluation and have access to treatment. The same applies to persons with other eye disorders, who should be referred to health centers and receive all necessary medical care.


Figure 13. Patient with corneal opacity and recent eyelash removal



Source: Figure presented by Dr. Julián Trujillo, Ministry of Health and Social Protection, Colombia. Images from the National Neglected Infectious Diseases Program, 2015.

In this regard, it should be borne in mind that appropriate case management demands a fully established information system before embarking on any active search operations.

The information systems must record and follow-up all cases over time. The aim is to improve access to treatment or to surgical care, and to detect recurrent or incident cases. The information may be collected passively at health centers, or actively through door-to-door searches in the case of small endemic foci.



Information systems constitute the best tool to obtain indicators on how programs are progressing and to evaluate the quality of the services provided. Countries about to be validated as having eliminated the disease are encouraged to continue to include TT cases within their information systems because of the possibility of the appearance of new cases.

5. EPIDEMIOLOGICAL SURVEILLANCE OF TRACHOMA

5.1 Challenges and opportunities for active TT case-finding

Even though historically trachoma has been documented in various countries of the Americas, epidemiological information is currently only available for known foci in Brazil, Colombia, Guatemala, and Mexico. The situation remains unclear in other countries with communities living in environments that would favor the presence of trachoma, and that have borders with foci in endemic countries.

Furthermore, in most endemic countries it has not been possible to estimate with any degree of certainty the number of people who suffer from TT. Not all TT cases are registered and referred to the health services, making it difficult to produce the basic evidence needed to evaluate control strategies and monitor progress toward elimination.

Active TT case-finding should be prioritized in communities whose inhabitants do not go to the health services. Cases may be underreported due to lack of information about the disease; geographical, cultural, or economic barriers; and use of local remedies. Efforts should focus on identifying districts that share both risk factors (poverty, poor sanitation, lack of access to health services, etc.) and borders with known trachoma foci. Within these communities, case-finding could be house-by-house or inhabitants could be invited to convene at a specific place. The choice of which is the best strategy depends on the geographical and population characteristics of each community. But we must remember that those suffering from blindness or visual impairment can only move with difficulty and are often isolated or unable to leave their dwellings.

Brazil, Colombia, and Mexico carried out TT examiner training in 2015. The latter two countries have already presented their plans to implement a TT case-finding protocol. Depending on the coverage reached by these searches, the results may be used in estimating prevalence rates. These estimates will help specify the epidemiological status of the disease and to outline the actions needed within communities, in accordance with the SAFE strategy.

Nevertheless, even if the results indicate no TT cases, health services should maintain their ability to detect and treat cases, and continue efforts to improve sanitation and access to basic housing services in collaboration with other government sectors.

Declaring a specific geographical area free of unknown trachoma cases is only viable following specific searches in endemic and non-endemic areas. Thus, this may be confirmed with specific action against trachoma and not with epidemiological silence.

Active searches for TT represent a major human, financial, and logistic effort that must be considered at the planning stage. The availability of referral networks must be guaranteed at health centers in order to treat the TT cases detected; otherwise, implementation is not recommended.

5.2 Trachoma examiners

The four countries with known foci are applying GTMP standardized methodology, recommended by PAHO/WHO, to train examiners, as an essential component of TF and TT case identification.

The examiners should be multilingual, i.e. able to speak the languages used in areas where the interventions are to be carried out. This facilitates certain aspects such as better rapport with communities and more fluid communication with inhabitants.

The number of trainers should be commensurable with the number of examiners to be trained. The suggested ratio is one trainer for every four examiner candidates.

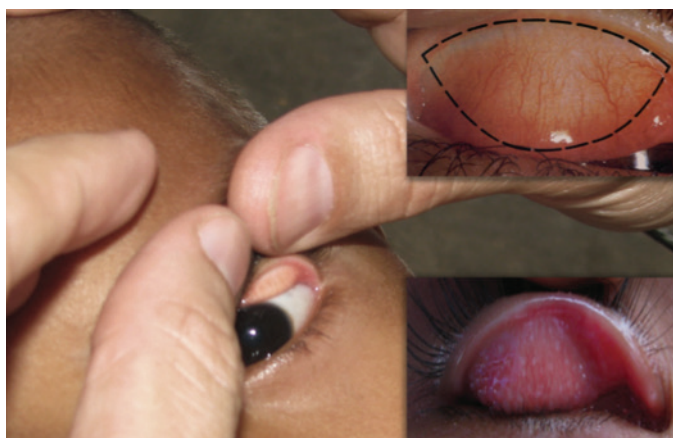
Up-to-date photographs and educational material should be used (Figure 14).

Training should be no less than eight hours to cover all skills necessary to conduct the eye examination, use the interview card, and correctly assess clinical signs.

It is important to remember that despite the best intentions of those wishing to become examiners, the requirements and evaluations must be strictly applied. Training should be carried out no more than two weeks before case-finding.

Ideally, this training should be integrated into eye health programs. It should also include ophthalmologists and oculoplastic surgeons, so that they can learn to distinguish TT cases from trichiasis due to other causes.

Figure 14. Colombia: Photographic material for examiner training



Source: Figure presented by Dr. Julián Trujillo, Ministry of Health and Social Protection, Colombia. Images from the National Neglected Infectious Diseases Program, 2015

5.3 Impact assessment in Colombia and Guatemala

There are two key indicators in the goal to eliminate trachoma as a public health problem: a TF prevalence <5% in children from 1 to 9 years of age, and less than one TT case per 1,000 inhabitants in the district. When these indicators appear to have been reached in an endemic area, assessment activities are needed to confirm the progress of the programs. The impact assessment surveys should calculate the TF and TT prevalence **unknown** to the health system.

In 2016, Colombia concluded the development of its protocol for the impact assessment of the SAFE strategy (A, F, and E components), and for the application of an integrated surveillance strategy for emerging, reemerging, and neglected infectious diseases in the Vaupés department. This involved a concerted effort between the Colombian authorities and medical institutions together with international

organizations such as PAHO/WHO and the Centers for Disease Control and Prevention in Atlanta (USA). Colombia follows the recommendation to conduct an impact assessment three years after mass azithromycin administration, and to implement other SAFE components to determine if control measures should be continued or not.

A cross-sectional observational study (prevalence-type survey) is being conducted in the eastern and western region of the Vaupés department covering a total of 27,000 people from 233 rural communities, with a 95% indigenous population. The aims of the study were to determine the TF and TF/TI prevalence, serological detection of *Chlamydia trachomatis* in children, identify changes in risk factors and protectors relative to the baseline survey, characterize the endemicity of the rural population against other priority emerging, reemerging, and neglected infectious diseases, and the stratification of operational regions for control purposes.

In the field, operational personnel include nursing auxiliaries or public health technicians duly certified in clinical trachoma diagnosis according to the simplified PAHO/WHO classification. Data are recorded with the assistance of personnel trained in the conduct of risk factor surveys and the collection of real-time information using the Tropical Data tool. To support the data, physical surveys are conducted in communities in which, for safety reasons, smartphones and work logbooks cannot be used.

Guatemala, in turn, plans to conduct the trachoma impact assessment survey in Sololá, as it envisages major advances toward trachoma elimination. In 2017, the country plans to determine the prevalence of active trachoma in children from the Xejuyup and Guineales districts of the Sololá department, following the mass antibiotic supply in both regions in 2014.

Efforts are being directed toward estimating prevalence rates for TF/TI in children and TT in adults, to characterize individual and housing risk factors, and determine the actions to be implemented, based on the results.

However, the Guatemalan health authorities recognize that they face various challenges in conducting the study: the need for political support and endorsement for the intervention, ongoing trade union conflicts, and the lack of coordination among the different government levels and community facilitators. This is further compounded by the large number of remote multilingual communities and areas with high levels of insecurity.

5.4 Elimination validation and post-validation surveillance

The aim of the elimination validation process is to evaluate fulfillment of the indicators established by PAHO/WHO to rule out trachoma as a public health problem in a given region. Nations wishing to attain validation status should be considered as having fulfilled the established criteria in all endemic, non-endemic, and risk areas, since elimination is granted on a per country basis and not on the basis of individual endemic foci.

Based on the scientific and epidemiological evidence in the country report (dossier), ministries of health can request validation via an official letter to WHO. WHO will create a DRG that will analyze the dossier in detail and communicate its view on compliance with the criteria through its report. The various DRG members will determine if trachoma elimination can be validated or whether to postpone the process and formulate the respective recommendations. This validation is reversible, however, and countries undertake to initiate post-validation surveillance actions and to maintain primary patient care.

It is not recommendable to prematurely interrupt trachoma treatment in affected areas. That said, even in the worst case scenarios, prevalence rates have not reverted to levels existing at the beginning of the intervention programs. In Ethiopia, after four rounds of azithromycin every 6 months, a prevalence of ocular trachoma infection of >60% persisted in children. Treatment was suspended and although the prevalence of the disease did not change much over the next two years, this situation is far from ideal.

There are currently no recommendations or standardized guidelines for post-validation surveillance. Countries are recommended to communicate with their health authorities and academic institutions to generate evidence to help identify possible scenarios in each territory.

Countries must remember that although validation has been reached, they must maintain services (surgeries) for a longer period because of possible new cases of TT or recurrences in treated patients. Strengthening efforts to maintain water supplies, sanitation, and health education is also necessary in preventing new infections or a rise in prevalence rates above the advised maximum.

Mexico, next in line for validation of trachoma elimination, will prioritize maintaining the trachoma brigades to continue treatment and monitoring efforts. Furthermore, its surveillance system will remain active to rapidly detect any cases that may appear in its territory in the post-validation period.

6. TROPICAL DATA INITIATIVE

Many places around the world are still affected by trachoma. Over 40 countries have requested implementation of the SAFE strategy to eliminate trachoma.

Proper identification of affected areas means that evidence can be generated to justify the need to maintain and promote programs to combat trachoma and other NIDs. From any perspective, mapping is useful. Programs in each country should adopt mapping as the best way to generate information to help clarify their health status with regard to trachoma and the progress of their respective programs.

Paper-based surveys have been the only option for the application of these instruments throughout the world. In addition to the complications involved with completing these in situ, they are constantly subject to misplacement and a wide range of errors during completion.

Tropical Data is a WHO-led service that provides support for conducting surveys, from the planning phase to result management. The aim is to provide a tool so that surveys can be managed using smartphones (Android operating system) facilitating the data collection and avoiding errors in the process.

Tropical Data was mistakenly believed to be a single application, but it is much more: it enables the generating, storing, sharing, and analyzing of epidemiological information from any telephone in any location, in addition to the security of having a cloud-based storage system. In turn, it maintains and protects countries' rights over the information generated at all times.

When a country wishes to estimate health metrics, Tropical Data ensures that the proposed methodology is consistent with PAHO/WHO recommendations. The telephone application is how Tropical Data ensures that the scientific, technical, and technological indications for the generation of quality epidemiological data are considered.

Tropical Data offers training with certified personnel, and stores and analyzes data with standardized algorithms. All the procedures are carried out with transparency, under the highest standards of data encryption and protection. The health authorities of each country can access and download the information any time or place using their password-protected accounts.

7. TRACHOMA MAPPING

7.1 Mapping plan in Brazil

The Brazilian authorities believe that most TT cases are disseminated in remote rural indigenous areas. Sometimes cases occur in communities that can only be reached after several days on a boat, posing major challenges for the case reporting, patient care, and monitoring.

It is essential for health authorities to conduct a prevalence survey to estimate the prevalence of trachoma in unknown areas and to define the health status of indigenous communities. It is expected that support from Colombia and Mexico will be sought for the development of Brazilian protocols, based on the documents those nations use.

The Brazilian authorities will soon be conducting a national trachoma prevalence survey to confirm the epidemiological situation of trachoma in at-risk municipalities, prioritizing dwellings in rural areas with low socioeconomic development and poor access to health services. It is planned to examine all residents of selected dwellings, including adults, for TT.

It is hoped that this survey will close the information gap, so that the risk of trachoma in the country can be reevaluated by defining priority municipalities. The data obtained will guide the design of control measures, i.e. the components of the SAFE strategy.

In municipalities with TF prevalence rates $\geq 10\%$, surveillance and control actions will be intensified. In areas with prevalence rates $< 10\%$, activities aimed at face washing and improving environment and sanitation will be strengthened.

Mapping will commence in municipalities with known risk factors according to the socioeconomic indicators of the Brazilian Institute of Geography and Statistics. These include inadequate water supply, low monthly income (relative to minimum wage), and the presence of indigenous populations. Sampling will be per household by clusters, focusing on children from 1 to 9 years of age living in the designated study area. The methodology envisages use of the Tropical Data platform. Any case identified will be treated with antibiotics and patients will be referred to the medical services for a complete assessment. All these tasks imply real logistic and financial challenges and require efforts at all levels of government (national, provincial and municipal).

7.2 Unknown endemicity in the Colombian Amazon region

Trachoma mapping should not be limited to areas identified as endemic. Trachoma knows no geographical borders. In this regard, certain factors should be considered when designing and implementing actions to rule out the presence of silent but active foci.

In the Colombian Amazon region, there are children living with acute forms of the disease, unfavorable social determinants, and epidemiological links with endemic areas (through person-to-person contact).

Aware of this situation, the Colombian authorities, with the support of different international institutions (including PAHO/WHO), organized a survey to delimit the trachoma focus in the Amazon and Orinoquía regions of Colombia in 2015.

This was a cross-sectional study (prevalence-type survey) to determine the prevalence of acute and advanced forms of trachoma and the associated risk factors. The data generated were processed with GTMP assistance. The prevalence rates are listed in Table 2.

Table 2. Result of the survey to define trachoma focus in the Amazon and Orinoquía regions of Colombia, 2015

Department	TF prevalence		TT prevalence	Año de la encuesta
	(1-9 years old)		(General population)	
Vaupés (initial focus)	West: 21.6%	East: 26%	0.38%	2012 and 2013
Guainía	23%		0.2%	2015
Vichada	15.5%		0.00%	2016
Amazonas	10.3%		0.02%	2015
Guaviare *	5.4%		0.01%	2015
Putumayo	3%		0.2%	2016
Caquetá	1.9%		0.0%	2016

TF prevalence in the Barrancón reservation \approx 25%, located between Guaviare and Meta departments

Source: Ministry of Health and Social Protection, Colombia

In addition to referring people with TT to the health services and for surgery, the survey produced additional benefits for the population, such as the detection of other eye pathologies, anthelmintic deworming, or health education for the prevention of other NIDs.

Recently, Colombia collaborated with Mexico in examiner training and sent facilitators who participated in a workshop in Brazil. Colombia reiterates its willingness to support and provide the facilities necessary to carry out training in its territory. These actions support the country's commitment to collaborative efforts, as proposed by PAHO/WHO.

8. CHALLENGES IN APPLYING THE SAFE STRATEGY

In affected communities, the SAFE strategy is used to combat trachoma. This is a comprehensive approach that combines surgical treatment for TT, antibiotic administration, face washing, and improving peoples' living conditions.

Over the years, the quantity of antibiotic doses produced worldwide has continued to increase, reaching 56.1 million in 2015. However, there are still some delays in manufacturing and resources are limited for the timely distribution of medicines that frequently fail to reach the most vulnerable populations due to geographical, sociopolitical, or cultural barriers.

An estimated one billion dollars is needed to eliminate trachoma, but the goal of the Alliance for the Global Elimination of Trachoma by 2020 (GET 2020) will be difficult to attain if the weaknesses of each component of the strategy are not resolved, and if communities fail to adopt sustainable actions.

8.1. S component

The S component, surgery, remains the weak link in the SAFE strategy. In 2009, over eight million people throughout the world needed medical care for TT. Although the number of surgical corrections has maintained a rising trend, progress is inadequate to cover the long list of people waiting for this treatment.

In this regard, the need for greater efforts to identify TT cases should be considered as a matter of principle. Cases unknown to the health services represent people who cannot gain access to surgeries or who are not recorded in the epidemiological metrics.

High quality surgeries should be assured by ensuring continuous education and training for surgeons. The use of practice models should be adopted in the different countries in order to improve the results of these operations. The aim is to reach a relapse rate of less than one in 10 treated persons, according to the PAHO/WHO recommendation.

It is essential not to lose track of those who have undergone surgery. Ideally, they should be re-examined a few days after the operation and then at six months, when the recurrence rate is higher. Although monitoring involves great effort, follow-up of treated patients should not be omitted, if economic and human resources permit.

In Colombia, the last five surgery days were led by oculoplastic surgeons, with 3-4 years of patient follow-up. This has made it possible for the health services to obtain information with a view to updating surgical techniques and identifying factors related to recurrences, mainly in the lower eyelid. However, the country also recognizes that there are still challenges to be addressed, including the care of several persons who did not show up for the surgeries and are still on waiting lists.

In Guatemala, the Ministry of Health considers continued provision of surgery for TT patients to be part of the trachoma program.

Mexico, in turn, recognizes its commitment to establish guidelines for surgeries and the treatment of recurring cases, in particular, for elderly people who present numerous recurrences. It is also

necessary to identify factors that make people reluctant to undergo such surgeries. Cases have been documented of patients who refused surgery up to five times.

In countries where active trachoma has been eliminated or where TT or TF rates are very low, the S component must be continued. For example, if we look at the case of the former Soviet Union where active trachoma disappeared in the 1960s, 30 years later people are still showing up at health facilities for surgery to treat infections they suffered in childhood.

8.2 F and E components

While greater efforts are still required, the economic, logistic, and human efforts have largely targeted primary care of patients (S and A components). However, we must also consider what is being done to define everything that causes people to become ill in the first place. An individual's health is related to his/her personal habits and the conditions offered by the community in which he/she lives. The F and E components are essential to complement and strengthen the progress achieved following surgery and antibiotics.

Both components must be implemented not only as part of the strategy against trachoma, but as a strategy to improve living conditions in communities. In order to move forward with these components, the social, political, and cultural characteristics of each community must first be considered. Strategies should adapt to people, and not the reverse. An understanding of the world view of the populations will help communicate the ideas more effectively, thereby reducing people's resistance to making the commitment to maintaining their health.

The first challenge is to ensure that people are capable of identifying for themselves what causes the disease. To this end, the principles of health education and health promotion, as recommended by PAHO/WHO, should be integrated.

Nevertheless, it is also clear that people's health does not solely correspond to health institutions. Without the political will to provide sanitation and access to basic services such as drinking water and waste disposal, it is very difficult to obtain sustainable results in communities. Accordingly, it is crucial to produce more evidence to support the importance of the F and E components in combating trachoma and enhancing the well-being of populations.

Colombia is committed to continue working on facial cleanliness in children, using illustrated primers in schools. The country is also committed to producing evidence on the impact of the use of latrines in the Amazon region. A current challenge is to consolidate its information, education, and social mobilization strategy, using an intercultural approach involving educational institutions to strengthen the environmental improvement component in communities.

Brazil has implemented the promotion of face washing as the principal intervention to strengthen prevention. It is expected that one million children will benefit from actions to improve access to drinking water and sanitation in their communities.

In Mexico, the F and E components have been adapted gradually to the sociocultural contexts and the world views of the affected communities. The objective is to promote social participation and to adopt healthy behavior for the prevention of trachoma and other NIDs.

9. PROGRESS TOWARD THE ELIMINATION OF TRACHOMA AS A PUBLIC HEALTH PROBLEM IN THE AMERICAS

The Region of the Americas recognizes the progress, strengths, opportunities, challenges, and threats to be considered when designing and planning actions to meet the proposed trachoma elimination goals.

Advances include those attained by following the recommendations to countries made at the 2014 Regional Meeting. These include:

1. Ongoing collaborative efforts among countries, for example, the support lent by Colombia for the training of examiners and data collectors in Mexico and Brazil.
2. Publication of the results of the prevalence survey carried out by Guatemala in 2011.
3. Reinforcement of mapping activities in indigenous or other populations bordering active trachoma foci. Colombia and Mexico extended the mapping around their known foci. Brazil is in the planning stage for the mapping of indigenous areas, and Peru will shortly conduct a survey in areas bordering endemic foci in Brazil and Colombia.
4. Use of GTMP standardized methodology, recommended by PAHO/WHO, for the training of examiners in the four countries with known foci.
5. Implementation of a nominal registry of TT cases in Colombia and Mexico.
6. Definition of guidelines to confirm the elimination of trachoma as a public health problem by the PAHO/WHO. These will be used for validation in Mexico.
7. Validation and implementation of active TT case-finding protocols. Brazil, Colombia, and Mexico and received training in 2015. Colombia is currently conducting active searches, while Brazil and Mexico already have a plan for implementation of these actions.
8. Adaptation of SAFE components to the sociocultural characteristics and needs of communities. Attention is drawn to the combined use of azithromycin and albendazole for the joint treatment of trachoma and STHs in Colombia; the integrated campaign to combat trachoma and other NIDs in Brazil; and the adapting of trachoma program activities to the indigenous world view of the Chiapas communities in Mexico.
9. Strengthening of laboratory diagnostic capabilities by integrating serological (Colombia) and molecular (polymerase chain reaction [PCR] testing (Brazil, Colombia, and Mexico).

Strengths include:

- » Inclusion of trachoma as part of national plans against NIDs in countries with known foci.
- » Specialization of TT surgeries, with the incorporation of ophthalmologists and oculoplastic surgeons in surgery days.
- » Innovation in the way SAFE strategy components are integrated in countries depending on their respective scenarios.
- » Holding Regional Meeting of Managers of National Programs for the Elimination of Trachoma as a

Public Health Problem of the Americas every 2 years in order to monitor the commitments made by countries.

Opportunities include:

- » Integration of trachoma diagnosis and care into health care and eye health systems.
- » Active TT case-finding in non-endemic countries with vulnerable populations.
- » Mapping of trachoma and other NIDs and the formulation of a new regional plan of action for NIDs in the Americas, 2016-2022, by PAHO/WHO.

However, it is clear that challenges requiring immediate attention must first be addressed. These include:

- » Lack of trachoma mapping in countries that share borders with endemic foci.
- » Difficulty in training trachoma examiners in regions with few cases.
- » Lack of standardized post-validation surveillance guidelines and protocols.

Finally, it is necessary to estimate the attention now required for newly emerging diseases such as Zika and chikungunya in order to ensure proper planning of actions to combat trachoma and the efficient use of resources. Furthermore, the potential loss of capacity when countries achieve elimination validation status should be considered. To this end, a commitment should be made to maintain seed funding. Invariably, there will be a risk of recrudescence in validated areas, so any loss of a country's capacity to respond to any adverse situation should be avoided.

10. WATER, SANITATION, AND HYGIENE (WASH) STRATEGY FOR NEGLECTED INFECTIOUS DISEASES (NIDS)

In our globalized world, there have been major advances in our knowledge and technological development. However, progress does not benefit us all equally. There are currently millions of people suffering the ravages of socioeconomic inequalities with the consequent effects on their health. The lack of basic housing and sanitation services and poor access to health services are two of the principal determinants for the persistence of NIDs. It is not by chance that trachoma affects regions that share poverty and poor environmental conditions.

WHO Water, Sanitation, and Hygiene for Accelerating and Sustaining Progress on Neglected Tropical Diseases. A Global Strategy: 2015-2020 seeks to generate and preserve public health with an approach based on addressing the social determinants of health, with intersectoral collaboration and the inclusion of health in all policies. The WASH strategy covers three basic human needs, which are the fundamental pillars in preventing all NIDs, including trachoma.

We know that the lack of water resources, overcrowding, and poor sanitation are key factors that favor *Chlamydia trachomatis* infections. But if affected communities do not even have a water supply, what can the health services recommend? Hence the importance of intersectoral collaboration, and the futility of thinking only in terms of health rather than well-being.

The health sector cannot provide a response solely in terms of disease prevention and health promotion, but must also oversee actions to ensure some of the most basic needs of communities.

The WASH proposal to combat NIDs focuses on recognizing and correcting all issues that render populations vulnerable and cause diseases. This requires that the world view of the communities be understood, ensuring effective communication. Also, the involvement of different government entities is needed to extend infrastructure and services to the population (water supply, sewer system or latrines, transportation, etc.).

Poverty remains as a constant in communities affected by NIDs but trachoma strategies are not designed to impact the economic conditions. It is important to remember that actions to eliminate the disease can also become tools to advocate for a better quality of life.

Countries with trachoma foci have been urged to adapt the WASH strategy for neglected tropical diseases, launched by WHO in 2015.

11. PRIORITY ACTIONS FOR COUNTRIES PARTICIPATING IN THE MEETING, ACCORDING TO THEIR TRACHOMA EPIDEMIOLOGICAL SITUATION

During the regional meeting, delegates from participating countries met to propose actions to facilitate progress toward the trachoma elimination goals based on their epidemiological situation. The proposals presented by each country are summarized below.

11.1 Countries with endemic foci

11.1.1 Mexico-Guatemala

- » Hold a Binational Technical NIDs Meeting with Guatemala and Mexico in Tapachula, Chiapas, convened by PAHO/WHO Mexico, with special emphasis on trachoma. This joint effort is aimed at:
 - Providing the information necessary to define the problem (localities at risk, description of population type, possible migratory movements, historical information, etc.) and the lines of action to be followed.
 - Depending on the results of the meeting, evaluating possible use of rapid assessment in localities in Guatemala. Mexico is committed to joint action to support Guatemala with technical assistance and specialized staff, with financial support from PAHO/WHO.
 - Mexico will carry out an active TT case-finding protocol, with its own resources, complemented with PAHO/WHO support. These actions are part of its post-validation surveillance commitment.

11.1.2 Colombia

- » Colombia hopes to maintain PAHO/WHO technical and financial support so that it can continue actions to combat trachoma. It will also continue to insist that this and other NIDs should be included in the country's agenda now that the armed conflict in the country is over.

11.1.3 Brazil

- » Brazil proposes including the poverty situation of border regions as an inclusion criterion for the national trachoma survey. Similarly, it expects to complete its protocol for the national trachoma survey and to adjust the information system for TT cases.

11.2 Countries bordering with endemic foci

11.2.1 Peru

- » Take internal (defensive) action to position trachoma and NIDs on the political and health agenda in the country.
- » Conduct population surveys to establish baseline TF and TT rates.
- » Review the interministerial agreement with Colombia to specify the terms of international cooperation regarding trachoma and NIDs.
- » Draw up a detailed plan to conduct a survey in the Loreto department, with the participation of the Ministry and local authorities to:
 - a. Identify border areas with Colombia with active foci.

- b. Identify personnel who would participate in conducting the survey.
- c. Open up communication channels with the community before conducting the survey.
- » Train Peruvian trainers, examiners, and surgeons (training provided by Colombia).

11.2.2 Paraguay

- » Report the recommendations and conclusions of the Fourth Regional Meeting of Managers of National Programs for the Elimination of Trachoma as a Public Health Problem in the Americas to the Ministry of Health.
- » Explain the importance of having up-to-date knowledge of the trachoma situation in the country, especially in vulnerable communities, emphasizing the opportunity for the GET 2020 initiative.
- » Conduct rapid trachoma assessments and active TT case-finding, prioritizing municipalities with socioeconomic indicators of poverty and indigenous communities.
- » Identify localities in order to begin work.
- » Prepare protocols and instruments.
- » Train human resources to carry out active TT case-finding.
- » Carry out field work, analyses, and activity reports.

11.2.3 Venezuela

- » Initiate active TT case-finding in Amazon state in 2016 in order to place trachoma on the public health agenda of the country.
- » Hold a virtual meeting together with Colombia and PAHO/WHO to report on trachoma problems in border areas, determine strategies, and start planning the survey for the Amazon district.
- » Formalize the creation of a medical team for active TT case-finding. Define the dates, activities, and logistics for training of team members: training activities are supported by Colombian facilitators and PAHO/WHO.
- » Train ophthalmologists and basic health teams in the Amazon district, defining timelines and determining in which communities active searches will be carried out.
- » Adapt the reporting file of TT cases in Colombia.
- » Inspect the capacity of the Port Ayacucho Hospital in the Amazon state to evaluate its response capacity to the number of TT cases found.
- » Analyze the results of the active TT case-finding and define the action plan.

The following is the list of support requested by countries from PAHO/WHO to develop and fulfill the priority actions proposed:

- » Maintain technical and financial support for training activities in the different countries.
- » Support implementation of a baseline survey in the Loreto Department (Peru) and active TT case-finding in Venezuela.
- » Promote the participation of academic institutions in countries to compile evidence.
- » Promote azithromycin donations, depending on needs and the results obtained in future surveys.
- » Support coordinated action between Venezuela and Colombia in order to place trachoma and NIDs on the political agenda of its governments.
- » Support Paraguay in developing the methodology and work plan for active TT case-finding.
- » Support Brazil in establishing a trachoma study plan in risk areas. Train examiners and recorders to carry out mapping following GTMP methodology. Train laboratory staff on new diagnostic techniques (such as PCR).

ANNEXES

List of participants

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Agenda

General objective: Step up efforts to eliminate trachoma as a public health problem in the Americas by 2020 by promoting cooperation among countries with known trachoma foci, countries with populations at risk of suffering ocular trachoma, partners and strategic allies, and PAHO/WHO.

Specific objectives:

1. Analyze the epidemiological and programmatic situation of trachoma in countries with recent foci and offer recommendations to accelerate efforts to meet elimination targets by 2020.
2. Establish a road map to compile information on the current epidemiological status in countries with no recent information on trachoma as a public health problem and that share borders with countries that have active foci.

Venue: Hotel Sheraton María Isabel, Salón Angel CD, Floor 19, Paseo de la Reforma 325 Col. Cuauhtémoc, Mexico City

Participants representing countries and partners: 1) managers of trachoma programs in countries with foci recent (Brazil, Colombia, Guatemala, and Mexico), 2) managers of national programs or strategies for the control and elimination of neglected infectious diseases (NIDs) from some countries bordering on countries with recent trachoma foci (Bolivia, Ecuador, Paraguay, Peru, and Venezuela), 3) partners in the elimination of trachoma as a public health problem in the Americas, 4) delegates from the WHO Department of Neglected Tropical Diseases, delegates from PAHO/WHO offices in invited countries and from the Neglected, Tropical and Vector-borne Diseases Unit at PAHO Headquarters.

MARTES, SEPTIEMBRE 6

8:30 a.m. – 9 a.m.	Registration of participants	
9 a.m. – 9:30 a.m.	Welcome and introduction <ul style="list-style-type: none">- Welcome and objectives of the meeting, PAHO/WHO- Welcoming remarks from PAHO/WHO representative in Mexico- Welcoming remarks from the Mexican Secretary of Health Introduction of the participants	Dr. Santiago Nicholls Dra. Gerry Eijkemans Dr. Cuauthémoc Mancha Moctezuma
9:30 a.m. – 9:50 a.m.	Advances in trachoma elimination as a public health problem Challenges and opportunities for global trachoma elimination by 2020 [WHO]	Dr. Anthony Solomon
9:50 a.m. – 10:10 a.m.	Progress, challenges, and opportunities in trachoma elimination in the Americas and an overview of the recommendations from the 2014 regional meeting [PAHO/WHO]	Dr. Santiago Nicholls
10:10 a.m. – 10:25 a.m.	Reports from countries with recent trachoma foci <ul style="list-style-type: none">- Experience in Mexico: How was the goal of elimination achieved?	Dr. Gustavo Sánchez Tejada
10:25 a.m. – 10:40 a.m.	<ul style="list-style-type: none">- Progress and challenges in Colombia	Dr. Julián Trujillo
10:40 a.m. – 10:55 a.m.	<ul style="list-style-type: none">- Progress and challenges in Brazil	Dra. Fatima Lopes
10:55 a.m. – 11:20 a.m.	Break	
11:20 a.m. – 11:35 a.m.	Country reports (continued) <ul style="list-style-type: none">- Progress and challenges in Guatemala	Lic. Jaime Juarez
11:35 a.m. – 12:00 m	Plenary on country reports	
12:00 – 12:15 p.m.	Trachoma mapping Tropical Data Initiative as a support tool for trachoma mapping [WHO]	Dr. Anthony Solomon
12:15 p.m. – 12:30 p.m.	Results of mapping in known non-endemic areas in Colombia [Ministry of Health and Social Protection]	Dr. Julián Trujillo
12:30 p.m. – 12:45 p.m.	Plan for mapping the trachoma situation in Brazil [Ministry of Health of Brazil]	Dra. Fatima Lopes
12:45 p.m. – 1 p.m.	Plenary on challenges to mapping the baseline trachoma situation	

1 p.m. – 2 p.m.	Lunch break	
2 p.m.- 2:30 p.m.	Plenary (continued): Mapping costs and challenges for countries	
2:30 p.m. –2:45 p.m.	Trachomatous trichiasis: active case-finding Active case-finding protocol [PAHO/WHO]	Martha Saboyá
2:45 p.m. – 3:00 p.m.	Results of active TT case-finding in Colombia [Ministry of Health and Social Protection]	Dr. Julián Trujillo
3:00 p.m. – 3:30 p.m.	Plenary on challenges and opportunities for active TT case-finding	
3:30 – 3:50 p.m.	Trachoma in the Americas: literature review Historical trachoma data in the Americas and need for trachoma screening in countries without up-to-date information [WHO Collaborating Center, DANA Center, Johns Hopkins University]	Beatriz Muñoz
3:50 – 4:10 p.m.	Plenary on the need for mapping of the trachoma situation in countries without recent information	
4:10 p.m. – 4:30 p.m.	Break	
4:30 p.m. – 5:20 p.m. 10 min por país	A history of trachoma in countries bordering with active foci Bolivia Ecuador Peru Paraguay Venezuela	Country delegates
5:20 p.m. – 6 p.m.	Plenary on trachoma in countries bordering on areas with active foci	
7:00 p.m.	Welcome event	

Wednesday 7 September

8:30 a.m. – 9:00 a.m.	Conclusions and recommendations from Day 1	
9 a.m. - 9:20 a.m.	Epidemiological surveillance of trachoma: recommendations from the WHO strategic advisory and technical group on neglected tropical diseases - Working Group of monitoring and evaluation, Subgroup 2 [PAHO/WHO]	Martha Saboyá
9:20 a.m. 9:40 a.m.	Questions and answers	
9:40 a.m. – 10:00 a.m.	Validation of the elimination of trachoma as a public health problem: standard operating procedures [PAHO/WHO]	Dr. Santiago Nicholls
10:00 – 10:20 a.m.	Questions and answers	
10:20 – 10:30 a.m.	Trachoma elimination post-validation surveillance: Why has establishing a protocol not been possible? [WHO]	Dr. Anthony Solomon
10:30 – 10:50 a.m.	Questions and answers	
10:50 a.m.- 11:10 a.m.	Break	
11:10 a.m. – 11:30 a.m.	Challenges in training TF and TT examiners: recommendations and alternatives [Institute Barraquer]	Dra. Sandra Talero
11:30 a.m.- 12 m	Questions and answers	
12 m – 12:30 p.m.	Impact assessment surveys in Colombia and Guatemala: timelines, challenges, and costs [Ministry of Health and Social Protection] [Ministry of Public Health and Social Welfare]	Dr. Julián Trujillo Lic. Jaime Juarez
12:30 a.m. – 1 p.m.	Plenary on the opportunities for integrating surveillance of other NIDs into trachoma surveys	
1 p.m. – 2 p.m.	Lunch break	
2 p.m. – 2:20 p.m.	Trachomatous trichiasis: How can we tell if all cases are known to the health system? Recommendations for a case reporting and monitoring system	Dr. Serge Resnikoff
2:20 p.m. – 3:00 p.m. 10 minutes per country	Challenges in identifying and monitoring trachomatous trichiasis cases (Colombia, Mexico, Guatemala, and Brazil)	Delegates from the four countries

3:00 p.m.– 3:30 p.m.	Plenary on the challenges for the S component of the SAFE strategy	
3:30 p.m. – 3:50 p.m.	WASH+NIDs Strategy: opportunities to strengthen the F and E components of the SAFE strategy [PAHO/WHO]	Dr. Osvaldo Medina
3:50 p.m. – 4:10 p.m.	Break	
4:10 p.m. – 4:30 p.m.	Plenary on the implementation of the WASH+NIDs strategy	
4:30 p.m. – 5:30 p.m.	Conclusions and recommendations of the day	

Thursday 8 September

9 a.m. - 11 a.m.	<p>Country group work</p> <p>Group 1: Mexico and Guatemala: trachoma case-finding along shared border areas and reinforcement of the S component of the SAFE strategy</p> <p>Group 2: Colombia, Peru, Ecuador, and Venezuela: trachoma mapping in areas bordering active trachoma foci</p> <p>Group 3: Brazil, Paraguay, and Bolivia: trachoma case-finding in areas bordering active trachoma foci</p>	
11 a.m.- 11:20 a.m.	Break	
11:20 am – 1:00 p.m.	Group work (continued)	
1 p.m. – 2 p.m.	Lunch break	
2:00 – 3:00 p.m.	Presentation of results of group sessions	
3:00 p.m. – 4:00 p.m.	Presentation and discussion of conclusions and general recommendations	
4:00 p.m.	Close of the meeting	



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