USAID-Supported TB Control Activities in Mexico
Final Evaluation

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Contents

Acronyms

ACSM	advocacy, communication, and social mobilization
CENAPRECE	National Center for Disease Prevention and Control Programs (Mexico)
CDC	Centers for Disease Control and Prevention (US)
DGE	National Directorate of Epidemiology
DGPS	National Directorate of Health Prevention
DM	diabetes mellitus
DOT	directly observed treatment
DOTS (TAES)	directly observed treatment, short course
DST	drug-susceptibility testing
EQA	external quality assurance
FLD	first-line drugs
GFATM	Global Fund to Fight AIDS, Tuberculosis, and Malaria
GLC	Green Light Committee
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
IMSS	Mexican Social Security Institute
InDRE	Institute of Diagnosis and Epidemiological Reference
INER	National Institute of Respiratory Diseases
ISSSTE	Institute for Social Security and Services for State Workers
ISTC	International Standards for TB Control
IUATLD	International Union Against Tuberculosis and Lung Diseases
KNCV	Netherlands Royal Tuberculosis Association
MDR-TB	multidrug-resistant tuberculosis
M&E	monitoring and evaluation

MSH	Management Sciences for Health
MOU	memorandum of understanding
NTP	National Tuberculosis Program
PAHO	Pan-American Health Organization
PCI	Project Concern International
PEMEX	Mexican Petroleum Company
PHC	primary health care
PPM	public-private mix
SLD	Second Line (TB) Drugs
SOAG	strategic objective grant agreement
SSA	Mexican Secretariat of Health
TB	tuberculosis
TBCAP	Tuberculosis Control Assistance Program
TBCTA	Tuberculosis Coalition for Technical Assistance
USAID	US Agency for International Development
WHO	World Health Organization

Executive summary

USAID provided technical assistance to the National Tuberculosis Control Program of Mexico based on a memorandum of understanding (MOU) signed in 1999 by Presidents Bill Clinton and Ernesto Zedillo and a strategic objective grant agreement (SOAG) in 2000. The US Agency for International Development (USAID) commitment was approximately US$16 million; support started in 2004 and ends in 2012. This document aims to update the findings and recommendations from the 2010 evaluation of activities by USAID and the Tuberculosis Coalition for Technical Assistance (TBCTA);[1] document USAID's legacy in Mexico for TB control; assess the sustainability of USAID investments in Mexico for TB; identify priority activities at risk of not being continued after the phase-out of USAID support; and recommend options for ensuring sustainability. The document also analyzes the past and current epidemiological situation of tuberculosis in Mexico and includes recommendations to USAID and to the National Tuberculosis Program (NTP) for future action to sustain gains and increase the impact of control activities on TB transmission, incidence, and mortality.

TB is still a major health problem in Mexico and impacts TB control in the United States, particularly along the border and in US states with many immigrants. Because TB has decreased more rapidly in the USA, TB mortality is four times higher and reported incidence up to five times higher in Mexico. Some Mexican border states, such as Baja California, have the highest incidence and mortality in the country, more than ten times higher than the average in the United States. Fortunately, Mexico has avoided creating TB drug resistance, and the prevalence of multidrug-resistant TB (MDR-TB) cases is low.

USAID cooperation has had a major impact on the Mexican capacity for TB control, disproportionate to the funds invested (about $0.01 per capita per year). The main areas strengthened were the laboratory network; human resource capacity at national, state, and district level (particularly for advocacy, communication, and social mobilization (ACSM)); the information system; and multi-drug resistant tuberculosis diagnosis and case management. Technical cooperation accelerated directly observed treatment, short course (DOTS, the World Health Organization (WHO)-endorsed strategy for TB control), implementation and increased political commitment at national level, as well as priority states and additional geographical areas. In areas with direct support for service improvement, public-private mix (PPM), and ACSM, the detection of suspects and notification of smear-positive TB cases increased rapidly. The international targets of 70 percent case detection and 85 percent treatment success rate, strategic objectives of the SOAG, were achieved at national level.

Although the MOU was signed in 1999 and the SOAG in 2000, effective support was not implemented until 2004, so the impact can only be measured from 2005 onwards. Most of the delay was to find appropriate partners for implementation of the technical assistance. In general, the partners monitored and evaluated the interventions in the selected areas, but did not evaluate the impact of their activities and other factors on national NTP indicators or the expansion of the successful experiences at service level.

TB incidence and mortality stabilized in Mexico in 2007, soon after support was received. This trend was most likely due to increased capacity for diagnosis and to a real increase in incidence, with the main risk factors being economic factors, HIV, and diabetes. Low detection of sources of infection and late diagnosis reduced the impact of the good treatment success on TB transmission. The WHO-recommended smear microscopy screening of adults presenting at health facilities for any reason and with persistent cough is rare; in places where the partners have instituted interventions (PPM, ACSM,

[1] USAID, TBCTA. *Evaluacion de la Colaboracion en Tuberculosis–Mexico. Informe preliminary*. September 2010.

and service improvement), the number of suspects and infectious cases detected increased, but this increase was not expanded to the health facility network and is not reflected in national data.

The real TB incidence in Mexico is higher than the estimates of WHO, both for smear positive and for smear negative pulmonary TB. This is evidenced by the rapid increases in incidence where interventions (ACSM, PPM, service improvement) were done.

Determining the prevalence of MDR-TB in TB patients was a major achievement of USAID support to the NTP. The proportion and absolute number of MDR-TB cases are low, and MDR-TB does not represent a major problem for national TB control. In contrast, the increase of TB and HIV and TB and diabetes constitute serious problems of comorbidity, and their prevention is not within the scope of the NTP. The increase in TB/diabetes, linked to obesity, may also be a problem in the United States, and should receive special attention.

Most key interventions of the USAID supported project are sustainable by the national TB program. However, NTP funds are scarce ($0.12 per capita, an amount similar to funding in India but only half that of Peru). USAID funding represented more than 10 percent additional financing, and the NTP needs to compensate for the end of that support with increases in the regular budget and a strict selection of priorities for intervention. Interventions with relatively large additional financing from USAID (staff, communication, and incentives) are unsustainable or not appropriate for expansion, even if successful; however, most of those interventions are not critical to achieve a reduction of TB transmission. The impact of advocacy on support by health authorities at state level was quite variable, and political and staff changes often interfered with the implementation of planned activities.

USAID should disseminate the experience acquired in the support to the TB program in Mexico, highlighting:

- Sustainability and impact of the NTP and TB laboratory network capacity-building.
- Effect on political commitment, funding and staffing of the TB program to improve cure rates and the quality of laboratory diagnosis.
- Low sustainability of projects based mainly on external or additional financing for patient care (e.g., staff incentives) and mass media information campaigns.
- Effectiveness of direct support to improve quality of TB services delivery at district and local level.
- Feasibility and advantages of technical assistance through repeated short-term consultant missions with long-term planning and follow-up by a single agency.
- Limited epidemiological impact of ACSM, PPM and capacity building when not accompanied by a national activity to detect infectious (smear positive) TB suspects, particularly in outpatients of large hospitals.
- Need to follow closely and to provide periodic oversight of key operational and epidemiological indicators for action, such as the number of persons examined with microscopy for diagnosis, the positivity rate of microscopy, trend of case notifications, proportion of smear positive among pulmonary TB patients, prevalence of comorbidity with HIV/AIDS and diabetes, and TB mortality.

USAID should also:

- Inform relevant agencies in the United States that TB in Mexico is still a major factor for American TB incidence and transmission.

- Encourage reactivation of CDC cooperation, border TB activities, and technical assistance by agencies that receive USAID core funding.
- Promote a new National TB Program review to the national health authorities in Mexico in 2013 to analyze the epidemiological situation, control strategies and resources, and provide recommendations for action.

The Mexico NTP should use the capacity acquired to increase the impact of the program on TB transmission, mobilize additional resources to compensate for the end of USAID support, and revise the current strategy to increase the impact of the program activities. In particular, the NTP should:

- Carry out a joint NTP review (with the Pan-American Health Organization (PAHO), WHO, CDC, TBCTA) according to WHO guidelines for policy decisions regarding priorities, control strategies, and resources.
- Increase detection of respiratory suspects by implementing non-medical screening for TB suspects in general health facilities, particularly in outpatients of n large hospitals, as well as study the real prevalence of adults with persistent cough in outpatients and use the number examined by microscopy and proportion of smear positive as key indicators of case detection.
- Analyze the reasons for stabilization of reporting and mortality, including by state and health provider, and concentrate advocacy, training, supervision, and monitoring on the states and jurisdictions with higher burdens and poorest operational results.
- Request support from WHO to establish new TB incidence and trend estimates

I. Introduction and methods

On February 15, 1999, US President Bill Clinton met with Mexican President Ernesto Zedillo in Merida, and the governments of both countries recognized the re-emergence of tuberculosis as a major threat to global health, which represents an important public health challenge in both countries, and signed an MOU for bilateral cooperation. A commitment was made to enhance the relations between the two countries in the areas of epidemiological surveillance and tuberculosis control, and led to a strategic objective grant agreement (SOAG) between USAID and the Mexican Secretariat of Health in 2000. The strategic objective was to develop a sustainable and effective institutional capacity to diagnose, control, and monitor tuberculosis in target areas. The project aimed to increase political commitment to the TB program, increase use of laboratory-based diagnosis, improve directly observed therapy, and strengthen mechanisms to monitor program activities to reach 70 percent TB case detection and 85 percent cure rate.

A team convened in 1999 by the USAID/Mexico office, in coordination with NTP, staff prepared a draft proposal to support the national TB program, for an approximate amount of $1 million per year for five years. The initial USAID SOAG grant was $3.72 million for five years (2000–2004). The project was later expanded to ten years (until 2010) and then extended for two more years, with a total budget of approximately $16 million US. The final activities will take place by the end of 2012.

Activities focused on specific components of the DOTS/Stop TB Strategy and the partners have used a variety of innovative approaches, including PPM, ACSM, strengthening of TB laboratory services, support to programmatic management of MDR-TB, and activities to address TB/diabetes co-morbidity. As the US government phases out funding for health activities throughout the Latin American region, documenting accomplishments of support mechanisms, such as the SOAG between USAID/Mexico and the NTP and subsequent USAID-funded TB activities, is a critical step.

In 2012, USAID/Mexico requested that PATH update the findings and recommendations from the preliminary final evaluation of activities funded through the ten-year strategic objective agreement, undertaken in 2010 by USAID and TBCTA,[2] document the USAID's legacy in the area of TB control, assess the sustainability of USAID investments in TB, identify priority activities at risk of not being continued after the phase-out of USAID support, and recommend options for ensuring sustainability.

The present report was based on a desk review of available documentation plus personal and phone interviews with national and local authorities and implementing partners (Annexes B and E). Methods did not include field observation of health facilities or interviews with insurance schemes that deliver most of the health care services in Mexico, but included observation of a training workshop on ACSM for heads of state and district TB programs in Guadalajara. Although the mission objective was to evaluate USAID support, evaluation of the epidemiological situation and TB control program was a necessary component, and the observations in this regard may be valuable for the NTP future activities. The consultant debriefed USAID/Mexico and NTP staff before departing from the country.

[2] USAID, TBCTA. *Evaluacion de la Colaboracion en Tuberculosis–Mexico, Informe preliminar*, 23 August–3 September 2010.

II. Background

Tuberculosis is a major health problem in Mexico. In 1999, Mexico had four times the estimated incidence of TB as that of the United States, and in 2007, the country reported a total of 23,575 cases for an estimated population of 95 million, a rate of 25 per 100,000. The TB mortality rate in Mexico in 1997 was nearly 5 per 100 000, a level more than five times that of the United States. Mexico's tuberculosis problem has a number of implications for the United States. Among these concerns is the migration of TB-infected individuals and TB cases from Mexico and Central American countries to US border areas and beyond;, the difficulty in promptly identifying these individuals and ensuring continuity of adequate treatment once in the United States, the probability of drug resistance, and the risk of epidemics facilitated by HIV/AIDS**.** According to the CDC, in 2007, 58 percent of all TB cases in the United States occurred among foreign-born persons, outnumbering US-born cases for the fifth consecutive year. Most foreign-born TB cases were reported from only four countries (Mexico, Philippines, Vietnam, and India), and Mexico alone accounted for 25 percent of the foreign-born cases. The six Mexican states along the US border report approximately 20 percent of the nation's cases and had morbidity and mortality rates higher than the national average. This statistic is directly reflected in high TB rates in the US border states of California, Arizona, and Texas. The spread of multidrug-resistant tuberculosis is a major international public health threat, and in 1999, Mexico had not yet documented the rate of multidrug resistance in the country, which was estimated at 2.5 percent of new cases.

Several groups, including the Centers for Disease Control and Prevention (CDC), Ten against TB, Project Concern International, Project HOPE, and others had undertaken collaborative activities along the US-Mexico border before 1999 in an attempt to address this problem. However, the reduction of incidence and transmission of TB cannot be achieved solely through prevention and control activities among the US-Mexico border populations. Infected persons arrive in the border areas from the rest of the country and from neighbor countries to the south, where conditions favor continued TB transmission. Effective TB control requires strong political commitment and appropriate direction from the national and state levels; appropriate standards, technical norms and procedures; rapid expansion of the DOTS strategy to all health jurisdictions; and an efficient monitoring and evaluation system.

In response to the findings of a 1995 Joint Program Review of Tuberculosis Control in Mexico carried out by the Secretary of Health of Mexico and PAHO/WHO, which revealed a number of major weaknesses in the National TB Program, the Government of Mexico adopted in 1996 the WHO-recommended TB control strategy (DOTS) and initiated its application**.**

In 1999, the Presidents of Mexico and the United States signed an MOU recognizing the importance of TB for both countries and agreeing on international cooperation for effective TB control. This resulted in a grant agreement signed in 2000, including technical and financial support from the US Government through USAID to the National Tuberculosis Program of Mexico to improve the institutional capacity to diagnose, control, and implement surveillance of TB at national level and specifically in 13 priority states. The budget assigned was $16 million.

Priority was given to states with common borders with the United States and those with highest TB rates and concentration of migrants, including Baja California, Sonora, Chihuahua, Coahuila, Nuevo León, and Tamaulipas on the northern border; Chiapas on the southern border; and the central states of Oaxaca, Jalisco, Veracruz, Michoacán, Guerrero, and Zacatecas (Figure 1). However, capacity-strengthening of the NTP and the TB laboratory network covered the whole country, and support was expanded to the other 19 states with NTP resources. The principal partner was the Mexican Secretariat of Health (SSA), who worked through the Division of Prevention and Control of Mycobacteriosis in the National Center for Disease Prevention and Control Programs (CENAPRECE), the National Center for Epidemiological Surveillance, the Institute of Epidemiological Diagnosis and Reference, and the State Health Secretariats.

The implementing partners were the CDC, the International Union against TB and Lung Disease (IUATLD), Project Concern International (PCI), PAHO/WHO and LINKS Media.

Implementation of the grant was initially delayed while methods for financial oversight were developed and implementing partners were selected. The SOAG was revised in 2002 to increase funding, revised again in 2003 to establish the legal framework, in 2004 to designate the implementing partners. The SOAG as amended ended on September 30, 2010. The extension of two additional years as mentioned in the text was an extension of USAID technical assistance, not the SOAG itself. The assistance 2010-2012 took place outside the SOAG, and included targeted (not expanded) support for programmatic management of MDR-TB (PMDT), reducing stigma, addressing co-morbidities (TB/HIV and diabetes), evaluating support and achievements, and analyzing their sustainability.

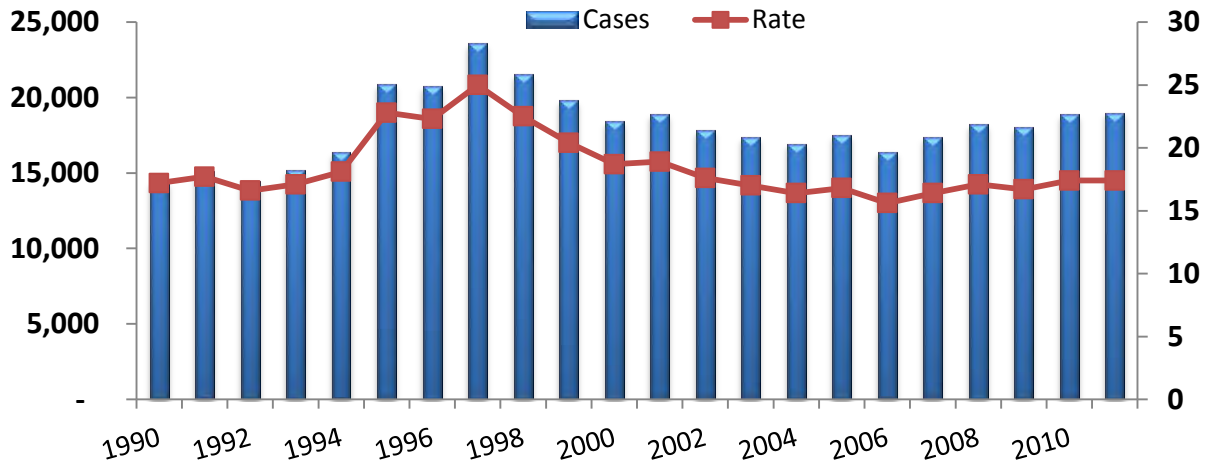
Figure 1. Priority Mexican states for USAID cooperation in TB control, 2000-2010.

The first major support under the SOAG was provided to the country NTP in 2004, and included TB laboratory equipment, infrastructure, and human resource development to improve the diagnostic capacity in 302 laboratories of the 13 priority states; development of capacity for an integrated information system; and training to health workers to improve skills and patient management. In addition, substantial resources from USAID, the NTP, and the laboratory network, and support from PAHO/WHO were required to develop capacity for the preparation and implementation of a national TB drug resistance survey that took place in 2008–2009.

III. Epidemiology of TB in Mexico

Tuberculosis is still an important public health problem in Mexico. In 2011, the country reported 18,986 new TB cases, with an incidence of 17.4 per 100,000 inhabitants. Of these cases, 15,456 were new cases of pulmonary TB (81.4 percent); 20.9 percent were associated with diabetes and 7.4 percent with HIV. As in most countries, most of the TB patients are male (61 percent). Extra pulmonary forms are frequent, mainly because of a large proportion of lymphatic TB (16 percent) which may include over diagnosis. From 1990 to 1997, the number of TB cases reported increased due to improved detection and notification, in particular due to better coordination among the public and corporate health providers (Secretary of Health, Social Security Systems, Mexican Petroleum, etc.) for management of TB during the implementation of the DOTS strategy. (See Figure 2.) The peak of reported incidence was in 1997, with 23,575 cases (25 per 100,000). WHO estimates at the time indicated a probable incidence of 38,000 cases.

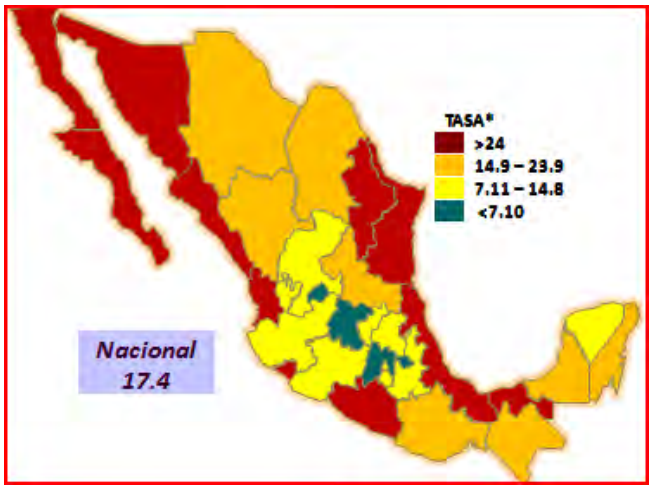
Figure 2. Reported TB incidence in Mexico, 1990-2012, number of TB cases and rate per 100,000.



Source: NTP, 2012.

From 1997 onwards, the reported incidence diminished at over 4 percent per year to 15.6 per 100,000 in 2006, and then increased to 17.4 in 2011. The variation in the number of cases for the country was -5.2 percent between 2000 and 2005 and + 8.6 percent between 2005 and 2011; for the 13 priority states, the increase was respectively +14.4% and +18.3% (Annex D). Most of the increase was in three border States: Baja California, Chihuahua and Nuevo Leon. In the last few years the number of cases reported nationally has grown approximately at the same rate as the population increase, with stabilization of the rates. The states with higher incidence are in the coastal areas (Baja California, Guerrero, Sonora, Nayarit and Baja California Sur on the Pacific and Veracruz, Tabasco, Nuevo Leon and Tamaulipas on the Gulf of Mexico). The highest absolute number of incident cases is in the north, bordering USA (Baja California, Nuevo Leon, Tamaulipas) and in south (Guerrero, Chiapas, Veracruz).

Figure 3. Distribution of TB reported incidence by state, Mexico, 2011.



Source: Information system, Mexico Health Secretariat.

TB mortality decreased steadily from 8.0 in 1990 to 2.0 per 100,000 in 2007, and then stabilized. In 2010, the country reported 2,414 TB deaths (1.9 per 100,000), with the highest rates in Baja California, Chiapas, and Sonora. (See political map in Annex C.)

Analysis of reasons behind changes in TB incidence and mortality is important because the national authorities, as well as the providers of technical assistance and financial support, expect that interventions should produce an epidemiological impact that will be reflected in available data (often without considering the delays between intervention and impact and the appropriateness of the indicators).

The reported incidence of TB in Mexico is influenced by various factors, including: TB control interventions (case detection) and the epidemiological impact of diagnosis and treatment; changes in the coverage and quality of the reported information; and risk factors influencing the real incidence and prevalence of the disease. The reduction after reaching fair information coverage in 1997 can be attributed mainly to the implementation and expansion of the DOTS strategy, with improved bacteriological detection of sources of infection and effective treatment. The successful treatment outcome in cohorts of new smear positive cases has been over 85 percent since 2008. The default (under 5 percent) and the failure (1.5 percent) were low, and the mortality during treatment is relatively high (over 5percent).

After 2007, the absolute annual number of cases increased and the reported rates stabilized. As a result, WHO current projections estimate a lower incidence than the cases reported by the program.[3] The obvious explanation would be an increase of detection and reporting (stimulated by the additional USAID support to NTP capacity), and this increase has been observed in sites with direct support. However, the total number of persons examined by smear microscopy at national level has not increased, and in fact has decreased in the past decade (see the section titled TB Control). The improvement of the reporting system, also supported by USAID, could also be responsible for part of the stabilization.

Although Mexico receives migrants from Central America, their TB rates are not so different and the number of persons is not large; migration does not seem an important cause for TB in Mexico as it is in United States. Malnutrition is a major factor that contributes to developing TB, but socioeconomic status does not seem to have changed drastically in Mexico during the decade except for the impact of global

[3] WHO. *Global tuberculosis control 2011.* Geneva: WHO, 2012. Available at: http://www.who.int/tb/publications/global_report/en/.

recession and the reduction of tourism in states affected by violence. The municipalities with higher proportions of indigenous population (11 percent) seem to have similar access to health and TB services as the rest of the country, and there were no obvious changes in the decade. A survey of MDR-TB prevalence carried out with USAID support confirmed the previous estimates, finding low proportions of MDR-TB in untreated and previously treated patients (2.3 percent and 7.2 percent), so MDR-TB is not a major reason for incidence increase or stabilization.

The most important factor that has stabilized TB incidence and mortality is most likely a real increase of TB due to associated diseases (HIV/AIDS and diabetes mellitus) that results in reduced immunity and increased breakdown from infection to active disease. The prevalence of TB/HIV in newly detected TB patients was 7.7 percent in 2011 in a study population covering two-thirds of patients. The increase of TB/HIV from 2007 to 2011 was 154 percent. Most TB/HIV cases occur in males (83 percent). Diabetes mellitus (DM) increases the risk of poor TB treatment outcomes by about three times, and it was the most frequent TB comorbidity identified, more frequent than malnutrition, alcoholism, obstructive pulmonary disease, or HIV/AIDS. In 2011, 20.8 percent of the reported TB cases were associated with diabetes mellitus.[4] The increase of TB/DM patients from 2003 to 2011 was 190 percent. The states with high proportions of diabetes in TB cases in 2011 were Veracruz, Guerrero, Tamaulipas, Nuevo Leon, and Chiapas, all priority states for USAID support. Diabetes is increasing at global level as improved economic capacity, food intake, and more sedentary lifestyles lead to increased prevalence of obesity, but there is limited global information on the impact of diabetes on TB incidence. The results of TB treatment can be similar for non-diabetics, as is the case in Mexico.

In summary, the impact of the NTP is not sufficient to compensate for epidemiological and operational factors despite the additional support from USAID, and the TB reported incidence and mortality are stable. The end of USAID support will weaken the NTP, and a re-evaluation of the national strategy is required to sustain effective interventions and achieve epidemiological impact.

[4] Martin Castellanos Joya. Presented at: CENAVECE, July 2011; Mexico City, Mexico.

IV. TB control

The national tuberculosis control program (NTP) follows the DOTS strategy, and the national norms are compatible with international recommendations. The NTP team in the National Center for Disease Prevention and Control Programs (CENAPRECE) of the Health Secretariat is supported by a national TB laboratory network under the Institute of Diagnosis and Epidemiological Reference (InDRE). A large proportion of outpatient consultations is provided by government and corporate health insurance schemes (IMSS, ISSTE, PEMEX) and by private practitioners. The NTP coordinates with these health providers for management of TB patients and reporting of cases. The NTP and the national HIV/AIDS program collaborate for the management of TB/HIV co-infection.

In general, there is very high reliance on smear microscopy for diagnosis of pulmonary tuberculosis: 82 percent is confirmed by direct smear microscopy, suggesting that some smear negative, culture positive patients are lost from diagnosis. Culture is available but, as in most countries, physicians do not wait for the results before diagnosing TB and indicating treatment.

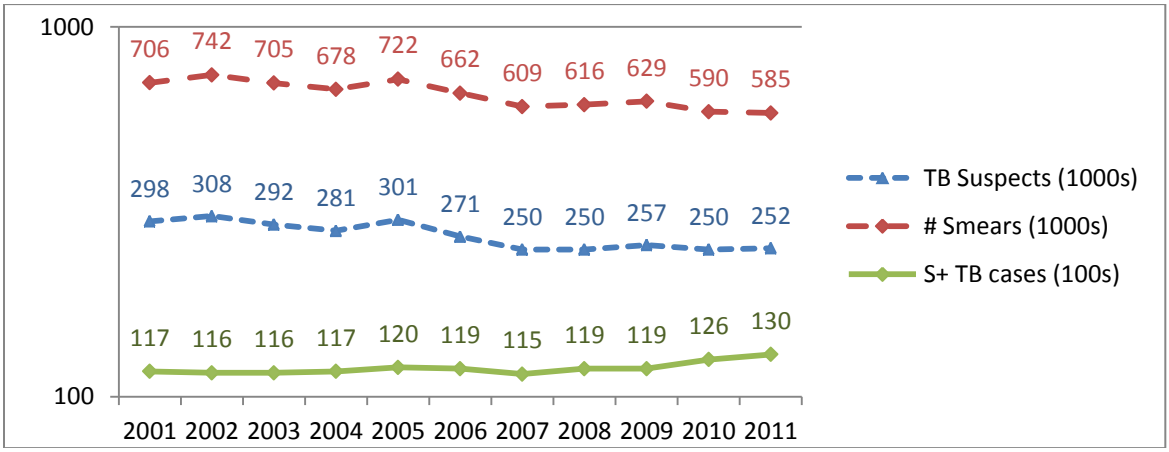
TB diagnosis (for any localization) is carried out on patients presenting themselves because of symptoms, and uses all available methods (clinical, bacteriology, pathology, X-rays).

Case detection is an additional public health activity to detect sources of TB infection representing a risk for the community (persons with cough and smear-positive pulmonary TB) or with high individual risk (contacts, prisoners, HIV-infected persons).

People with cough and smear-positive TB are the main sources of infection in the community, and they are best detected in outpatient health facilities.

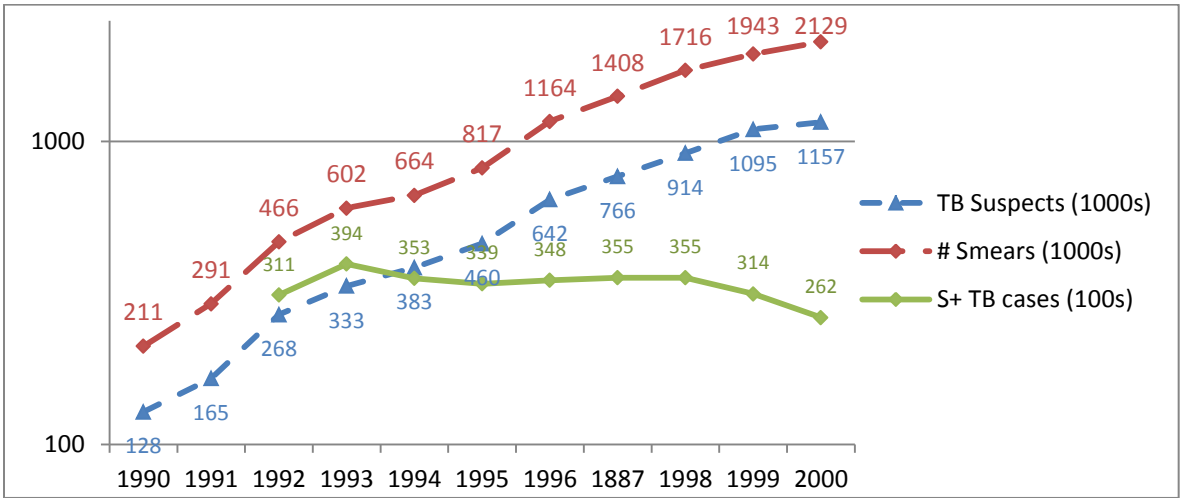
There is very little screening for respiratory symptoms (cough), and physicians only request microscopy in patients presenting symptoms. As a result, detection of respiratory suspects and sputum microscopy examination for TB is about 2 per 1,000 inhabitants per year, compared with 5 in the Philippines, 6 in India and over 40 in Peru. The use of sputum microscopy to detect the main sources of infection in the community has decreased during the decade (Figure 4). This can be compared with the TB microscopy increase and its impact on incidence in Peru from 1990 to 2000 (Figure 5). The quality of the information on suspects examined is unclear, as the totals in some of the consultant reports do not coincide with the current NTP data. The main problem is that the NTP has not given priority to systematic suspect detection and accurate reporting by the large hospitals, which concentrate the majority of the outpatient visits.

Figure 4. Number of TB suspects (thousands) examined by microscopy, number of sputum smears (thousands), and number of people (in hundreds) with positive microscopy for acid fast bacilli, Mexico, 2001-2011.



Source: NTP, Mexico 2012.

Figure 5. Number of TB suspects (thousands) examined by microscopy, number of sputum smears (thousands) and number of people (in hundreds) with positive microscopy for acid fast bacilli, Peru, 1990-2000.



Source: NTP, Peru.

The number of people examined for diagnosis at national level in facilities reporting to the Health Secretariat has decreased from about 300,000 per year in 2001 to 250,000 in 2011, with an average smear positivity of 4 percent and 5 percent, respectively. This decrease delays diagnosis of infectious cases and reduces the impact of the program on TB transmission. The laboratory network currently has ample capacity to increase the number of microscopy examinations for diagnosis.

The TB laboratory network, under InDRE of the Health Secretariat, supports the NTP with bacteriological diagnosis and control of treatment. Currently, the network includes 31 State laboratories of public health (LESP) plus the national reference laboratory in Mexico City, which means that Mexico has 0.6 microscopy units per 100,000 inhabitants, 1 culture laboratory per 5 million, 0.7 drug- susceptibility testing (DST) laboratories per 10 million and 1 laboratory (InDRE) with capacity for second-line DST.[5] The average number of smear per microscopy unit is well below ten per day, with external quality assurance and sufficient capacity for expansion.

The budget of the NTP was US$16 million in 2011 and $14 million in 2012. This is approximately $700 per case reported and $0.12 per capita. The per capita budget is similar to that of India and half of that available to the TB program in Peru in the 1990s, when Peru achieved rapid expansion of case detection and major impact on transmission, incidence and mortality. However, in Mexico, there may be additional funding from the state level. The funding from USAID during the decade represented an additional 10 percent, about $0.01 per capita.

[5] WHO Global TB Report 2012.

V. Implementing partners and findings

USAID support aimed to develop sustainable institutional capacity to control TB in priority areas in Mexico. The initial funding strengthened infrastructure for detection, diagnosis, supervision, surveillance, and training in 13 states. Support included 14 supervision teams, 157 computers, and 306 sets for sputum microscopy with a total additional budget of US$1 million. A second phase expanded activities to 19 additional states and included 11 supervision teams, 151 computers, and 215 microscopy sets. All equipment was transferred to the NTP, which was responsible for maintenance.

The additional funding allowed expansion and improvement of DOTS activities at national and State level, and support research and ACSM. The main Mexican institutions involved were the national and State Health Secretariats, InDRE, INSP, and INER; the main external partners were Project Concern International, the US Centers for Disease Control and Prevention (CDC), LINKS Media, Management Sciences for Health, the USAID-funded TB CTA/TB CAP (the International Union Against Tuberculosis and Lung Disease and KNCV) and Pan-American Health Organization (PAHO)/WHO. In addition, there was collaboration with projects such as Puentes de Esperanza (supported by the San Diego County, California) and US universities. PATH has been an additional partner in the extension of the project from 2009 to 2012.

The NTP received multiple consultant visits to monitor progress of the agreement implementation and to advise on specific areas, such as MDR-TB. The main conclusions of the final TBCTA monitoring mission and the observations collected from interviews and document review by the consultant during the current mission were as follows.

Overall conclusion

USAID financial and technical support was a key contribution to improve the coverage and quality of TB control activities, mainly in treatment success, case detection, and quality of patient-centered TB services. Expansion of the methods used in the projects to ensure sustainability is a major challenge for the NTP.

Observations

The conclusion is correct. The main improvements were related to the laboratory infrastructure and the human resource capacity of the NTP at all levels. A very positive observation is that USAID support leveraged political commitment in some states and increased resources at national level to improve the quality of the TB laboratory network. The number of TB cases diagnosed and the cure rates have increased. Multiple experiences to increase detection of TB suspects through quality of care and ACSM were successful at pilot level, but did not expand nationally. The most probable reason is that the NTP did not give priority to identification of persons with cough attending health facilities for any reason (particularly in the large hospitals). The capacity of the laboratory system is still underutilized. Political commitment at the state level was variable, with the lowest in high priority/high burden states.

PCI/Solución TB

Activities

- Expand DOTS with community support, TB/HIV co-infection, and TB/diabetes.
- Expand community DOTS in 39 priority jurisdictions in 13 states.
- Support the states in hiring human resources for the NTP.
- Apply ACSM strategies and new tools.
- In 2010, the PCI project focused on co-morbidities (TB/HIV and TB/diabetes) in eight states.

Findings

- In nearly all jurisdictions involved, there was an increase of detection of suspects and cases and of cure rates.
- More than 30 percent of the staff hired by PCI was absorbed by the national or state health services.
- Screening for TB in HIV-infected people was implemented in the integrated care centers. There was coordination with the HIV/AIDS program at state level to implement isoniazid prophylaxis, but rapid HIV tests were not sufficient at primary health center level for the screening of HIV infection in TB patients.
- Knowledge, attitude, and practice surveys were administered to health workers, TB patients, families, and homes. A great variety of strategies and high staff motivation for ACSM were observed. However, ACSM activities are not systematic or incorporated in local or state plans.
- The experiences have been disseminated through workshops and a monthly bulletin.

Observations

- The increase of suspects (adults with cough) examined by sputum microscopy did not increase at national level, indicating that the activity was not expanded in the network of health facilities. The number of cases in the priority states increased much more than in the country in general in the period 2005–2011 (18.3 percent versus 8.3 percent, see Annex D). Treatment success rates, which were rather good, increased for the country in general and passed the target of 85 percent.
- Part of the staff was absorbed by national or state TB programs, but there are large variations in political commitment among different states.
- ACSM capacity was developed, but activities were not always focused and evaluated regarding impact on service activities and expansion. The knowledge, attitudes, and practice surveys provide useful data, but the strategy put the load of diagnosis (recognition of the disease) on the population, and not on the health system. This decreases the impact, as most persons with cough do not have TB and do not recognize cough as a reason for consulting a physician. Interventions were focused on recognition and knowledge of TB and not on the most common symptoms to promote consultation by the infectious patients.
- Most PCI activities which led to capacity-building seem sustainable by the NTP, but ACSM requires a much more focused strategy to make a substantial impact on TB transmission, and it should be coordinated with an improvement of health service delivery (including supervision) and systematic microscopy screening of adults with cough.

LINKS Media

Activities: Information to the community

- Design a system of incentives for the NTP.
- Develop and pilot a strategy for information education and communication for Mexico.
- Develop printed and audio materials to increase knowledge of TB in the general population and high risk groups.
- Implement, supervise and evaluate a radio campaign in five jurisdictions.

Findings

- In 2009, workshops on radio campaigns and monitoring and evaluation were done in five cities, and a radio spot of 30 seconds was done for the general population and evaluated through surveys. Although there was some increase in general knowledge, this was not reflected in increase of detection of suspects (an epidemic of H1N1 influenza may have interfered with measurements).

- The investment in radio does not seem to show sufficient evidence of benefits in relation to cost.

Observations

- The radio intervention does not seem cost-effective, sustainable, or worth adoption by the NTP.

TBCAP/TBCTA

Activities

- Adapt the International Standards for TB Treatment and Care ISTB for Mexico.
- Expand public-public and public-private mix to improve interinstitutional coordination.
  Develop and implement training courses on clinical management of multidrug-resistant TB and provide technical assistance on MDR-TB management.
- Develop technical guides.
- Monitor and evaluate the agreement of USAID and the Ministry of Health.

Findings

- The Union, KNCV, MSH, and ATS participated in the project from 2007 to 2010.
- Two national and 14 local workshops were carried out. Over 400 health workers were trained in ISTC and PPM. The ISTC was printed in Spanish and distributed.
- The first-year evaluation of the areas covered showed an increase of detection of suspects of 80 percent and a 300 percent increase in new pulmonary cases diagnosed.
- A strategic guide for PPM was prepared.
- Training programs were implemented with university medical schools (Tampico, Matamoros).
- In MDR-TB, there was an initial assessment of the situation in two states, a national strategy, a guide for patient care, training of trainers courses, and a training kit developed.

Observations

- The activities were effective, well-received, and increased national and state capacity. There was evaluation of impact in diagnosis of cases and detection of suspects. Most activities led to sustainable gains and can be continued by the NTP.
- The responsibility of the different partner organizations changed over time, and was not clearly defined in the monitoring reports. There was very limited evaluation of how much influence project activities had on the expansion of the NTP, as well as its impact on national data. To complement service delivery, simple operational procedures for TB suspect detection, diagnosis, and follow-up should be developed for staff at the local health delivery level.

CDC

Activities

- Technical support for operational research and a prevalence study of drug resistance.
- Pilot project on infection control in health centers and hospitals.
- Network of experts on MDR-TB for clinical management.

Findings

- Three states participated in training workshops in 2009–2010 (four hospitals and two health care units). A pilot project was implemented in health facilities in six cities. An agreement was signed between the NTP and the TB Center of the University of Florida and the National TB Center in San Francisco for training and follow up.
- In MDR-TB, a one-year cooperation project was carried out by the NTP and the TB Center Heart Land/CDC for long-distance training.

Observations

- The activities were effective and increased capacity. However, in general, they were area- and time-limited, and did not convert into institutionalized long-term collaboration, so sustainability is doubtful unless funding or active promotion is added in the future.

MSH

Activities

- Design a system of incentives for the NTP.

Findings

- The system developed was not considered appropriate by the NTP, so it was not implemented.

Observations

- Incentive systems (particularly monetary to health staff) are, in general, not recommended by WHO, as they interfere with integration of TB activities as a routine responsibility of the general health staff, and are not sustainable with NTP financial resources.

PAHO/WHO

Activities

- Coordinate the National Prevalence Survey on drug resistance and operational research.
- Strengthen the TB laboratory network and the quality control program.
- Develop human resources through projects of participatory improvement of local health systems in priority jurisdictions to stop TB.

Findings

- The project of participatory improvement lasted only two years (2007–2009), with very good results in case detection and cure rates, as well as quality of care and staff leadership. In one state (Nuevo Leon), the methodology was applied to other health programs.
- Operational research was promoted, and the staff of the NTP was trained. Fifty protocols resulted in presentations at the Union Regional Conferences.
- Strengthening of the laboratory network has been a success and continues with its own resources. USAID support leveraged political commitment from the national authorities and the direction of InDRE, including the construction of a new national reference laboratory, definition of roles, and

improvement of quality assurance at national, state and local levels. The Federal District is covered by the national reference laboratory and does not yet have its own intermediate level lab.

- The survey of drug resistance was carried out in a sample in nine states and showed low levels of MDR (7.2 percent in previously treated patients and 2.3 percent in new cases). The results of the study have not yet been sufficiently disseminated. The results are very important to define priorities by the NTP and evaluate risk in migrants to the United States.

Observations

- The drug resistance survey was a major accomplishment of USAID support, with long-reaching consequences.
- Strengthening of the laboratory network had the additional benefit of mobilizing political commitment and resources for TB laboratory development. The average smear workload per microscopy unit was below four per day early in the project; it has now increased with a rationalization of the microscopy network. The organization and the quality of work have improved substantially. However, the capacity of the network is still underutilized by the NTP, particularly regarding microscopy of suspects with persistent cough attending general health facilities for any reason. This is not the responsibility of the laboratory network, but of the NTP strategy and implementation.
- Operational research capacity was developed, but has not yet been used efficiently by the NTP to develop standard protocols on key areas of public interest or for general use at district, jurisdiction, state, and health facility levels.

Puentes de Esperanza

Activities:

- Puentes de Esperanza is a project in Baja California supported by the County of San Diego, CA, and by PCI until 2008 to develop capacity and treat MDR-TB patients. Originally supported for 10-20 patients, drugs provided by the NTP allowed more than double the number of patients supported. Staff was trained by IUATLD and the results in cure rates are excellent. The project includes patients from different institutions.
- Treatment is individualized, with second-line drug DST carried out in the United States. Patients on ambulatory care are followed and supported for DOT by promoters, who receive payment for their services.

Observations:

- The results are excellent, and the project developed capacity for MDR-TB diagnosis and management in the state. The project is not appropriate to the national resources of Mexico (individualized treatment, DST to second line drugs, payment of the DOT providers) and can be neither expanded nor sustained without additional resources.

PATH

Activities

- PATH has been implementing a technical assistance project with core and field USAID funding since 2009. In Mexico, it continues activities carried out by TB CAP/TB CTA under the SOAG: MDR evaluation in four states, expansion of MDR-TB, PPM and ACSM, training, and data analysis for

MDR and ACSM. Some activities will continue until 2015 but without field funding, which will cease in 2012.

- Activities are carried out with support from short-term consultants and visits from headquarters, without staff in country. There is cofunding from the states for training activities.
- Decentralization of PMDT to the state level has been achieved in 22 states; in 2012, 269 MDR patients were on treatment in 30 states.
- From January 2010 to April 2011, in five states the PPM activities showed an increase of 82 percent in detection of suspects and 47 percent in smear positive cases detected. PPM includes links with the insurance system, prisons, private providers, and medical schools.
- Conducted two sustainability planning meetings with USAID and the NTP.
- While PATH is providing technical assistance for infection control, it remains an important issue that requires attention.

Observations

- The use of short-term consultants seems to be a more sustainable and cost-effective method for technical assistance than permanent staff. The activities seem to be well planned and monitored, and more rapidly expanded than in previous years.
- The focus of population ACSM training should be more on symptoms than on knowledge of TB. (It should not be expected that the person with symptoms will self-diagnose; the health facilities are general, and not all people will have TB). Informing the population should be complemented by health facility organization to identify and examine infectious patients with cough attending for any reason. The focus of advocacy activities should be mobilizing political commitment and resources to sustain the most effective TB program interventions.
- The increase in suspects detected is not reflected in the national statistics, probably because it happened only in a limited number of facilities receiving direct support. For an epidemiological impact on transmission, the increase must be national and the strategy applied to all health facilities, particularly large hospitals.

VI. Conclusions

USAID cooperation had a major impact on the national capacity for TB control, disproportionate to the funds invested (~US$0.01 per capita per year). The main areas strengthened were the laboratory network; human resource capacity at national, state, and district level; the information system; and MDR-TB diagnosis and case management. Technical cooperation accelerated DOTS implementation and increased political commitment at national level and in geographical areas in addition to the priority states. There were increased treatment success rates, and the strategic objectives of case detection and treatment success were achieved. In areas with direct support to service improvement, PP/PPM and ACSM, the detection of suspects and notification of smear-positive pulmonary TB cases increased rapidly.

Although the MoU was signed in 1999 and the SOAG in 2000, effective support was not implemented until 2004. Therefore, the impact of supported activities can only be measured from 2005 onwards. There were changes of the partners involved in the project (usually for relatively short periods), overlapping responsibilities, and unclear criteria to decide coverage of jurisdictions. The partners in general monitored and evaluated the interventions in the selected areas but did not evaluate the impact of their activities and other factors on national NTP indicators or the expansion of the successful experiences at service level. Low priority was given by technical assistance to interpret data for action and monitor epidemiological impact.

TB incidence and mortality have stabilized in Mexico since 2007, soon after support was received. This was probably due to increased capacity for diagnosis and to a real increase in incidence (risk factors economic, HIV, and diabetes) and late diagnosis (low detection). Real TB incidence is higher than the estimates of WHO, both for smear-positive and for smear-negative pulmonary TB. This is evidenced by the rapid increases in suspects and TB cases where interventions (ACSM, PPM, service improvement) were made and the low proportion of smear-negative pulmonary TB among new cases. The increase in suspects detected was not reflected in national data, probably because it was in limited areas and for short periods. The WHO 2011 and the PAHO 2005 review estimates of the TB problem are not correct because they assumed continuation of the trends from 1997–2006, which underestimates the problem.

Detection of suspects stabilized or decreased at national level, indicating a low priority for expansion of microscopy in adults with cough. The increased laboratory capacity is currently underutilized. The low detection of sources at the national level is a major factor that reduces the impact of good treatment on TB transmission and TB mortality. In addition, the strategies used for USAID cooperation increase knowledge and reduce stigma (ACSM), or improve diagnosis and treatment (PPM), but add only marginally to early detection of sources of infection unless the health facilities have an active screening of outpatients with persistent cough for sputum microscopy examination and treatment. Much of the ACSM component provides information on TB, which is not critical to attract persons with persistent cough to the health care facilities, since only a small proportion of the persons with respiratory symptoms have active TB.
Finding the MDR prevalence is a major achievement of USAID's support. The proportion and absolute number of MDR-TB cases are low, and MDR-TB does not represent a major problem for national TB control. In contrast, the increase of TB/HIV and TB/diabetes constitute serious problems of comorbidity, though their prevention is not within the scope of the NTP.

Most key interventions of the USAID-supported projects are sustainable by the national TB program. However, NTP funds are scarce ($0.12 per capita). USAID funding represented about 10% additional financing, and the NTP needs to compensate for the end of that support with increases in the regular budget and a strict selection of priorities for intervention. Interventions with large additional financing (staff, communication, and incentives) were shown to be unsustainable or inappropriate for expansion, even if successful; however, most of those interventions are not critical to achieve a reduction of TB transmission.

The revised norms, mainly for clinical use, did not reach the periphery timely and were not converted in simple operational instructions for program implementation. Training and pilot interventions (such as infection control) have not yet been adapted for expansion to the health system. The impact of advocacy on state support was quite variable, and political and staff changes often interfered with the implementation of planned activities.

In summary, USAID support leaves a legacy of strengthened capacity for TB control, particularly for the TB laboratory network, the ACSM knowledge of staff at state and jurisdiction levels, knowledge of the prevalence of MDR-TB, and capacity to manage MDR-TB cases. The gains are sustainable by the NTP, and the activities that are not sustainable (because they require additional resources) are not critical for TB control. Two areas of risk are co-infection with HIV and diabetes; the NTP can implement case management but prevention is outside its responsibility. Despite USAID support, reported incidence and mortality of TB are stable or growing due to multiple factors. The key intervention to reduce TB transmission (rapid identification of infectious pulmonary TB though screening of adults with cough, mainly in outpatients of large hospitals) has not been widely implemented. TB on the border continues to be a problem, particularly as the state of Baja California has over ten times the US reported incidence.

VII. Recommendations

For USAID

- Disseminate the experience acquired in the support to Mexico, highlighting:
    - The sustainability and impact of the NTP and TB laboratory network capacity building; and the effect on political commitment, funding, and staffing of the TB program to improve cure rates and the quality of laboratory diagnosis.
    - The low sustainability of projects based mainly on external or additional financing for patient care (e.g., staff incentives) and mass media information campaigns.
    - The effectiveness of direct support to improve quality of TB services delivery at district and local level and the feasibility and advantages of technical assistance through repeated short-term consultant missions with long-term planning and follow-up by a single agency.
    - The limited epidemiological impact of ACSM, PPM, and capacity building when not accompanied by a national activity to detect infectious (smear-positive) TB suspects, particularly in outpatients of large hospitals.
    - The need to follow closely and provide periodical oversight of key operational and epidemiological indicators for action, such as the number of persons examined with microscopy for diagnosis, the positivity rate of microscopy, the trend of case notifications, proportion of smear-positive among pulmonary TB patients, the prevalence of comorbidity with HIV/AIDS and diabetes, and the TB mortality.
- Inform interested agencies in the United States that TB in Mexico is still a major factor for the US TB incidence and transmission, and encourage reactivation of CDC border TB activities and technical assistance by agencies that receive USAID core funding.
- Support the national health authorities in Mexico in carrying out a new NTP review in 2013 to analyze the epidemiological situation, control strategies and resources, and provide recommendations for action.

For the NTP

- Carry out a joint NTP review (with PAHO/WHO, CDC, and TBCTA) per WHO guidelines for policy decisions regarding control strategies and resources.
- Increase detection of respiratory suspects by implementing non-medical screening for TB suspects in general health facilities, particularly in outpatients of large hospitals. Study the real prevalence of adults with persistent cough in outpatients and use the number examined by microscopy and proportion of smear-positive as key indicators of case detection
- Analyze the reasons for the stabilization of reporting and mortality, including by state and by health provider, and concentrate advocacy, training, supervision, and monitoring on the states and jurisdictions with higher burden and poorest operational results.
- Request support from WHO to establish new TB incidence and trend estimates

- Disseminate and implement revised guidelines rapidly and convert them into practical work instructions. Implement second-line drug reserve stocks at state level to ensure available supply in the management of MDR-TB.
- Select and develop standard protocols and promote implementation of key operational research in all states for action (such as the proportion of respiratory suspects and the time from suspicion to treatment).
- Compare the achievements and impacts by state/district, disseminate the results widely and quickly, including through workshops so that state TB programs can exchange experience and compare results. Improve coordination with the insurance systems (IMMS, ISSTE, PEMEX) and improve detection and reporting of suspects by insurance and hospitals.

Annex A. Scope of work

Date of agreement: May 21, 2012
Duration of agreement: June 15 – September 7, 2012
Total number of allowable days: up to 25 days

Background

Since 2000, USAID/Mexico and the National TB Program have worked in partnership to improve TB control in Mexico through a strategic objective agreement (SOAG) from 2000-2010, and in collaboration with multiple technical partners, including Project Concern International (PCI) and PATH. Activities undertaken post-SOAG have focused on specific components of the DOTS/Stop TB Strategy and partners have used a variety of innovative approaches, including public/private mix and advocacy, communication and social mobilization, as well as support for implementing programmatic management of MDR-TB and activities to address TB/diabetes co-morbidity. As the US government phases out funding for health activities throughout the Latin American region, documenting accomplishments of support mechanisms such as the SOAG between USAID/Mexico and the National TB Program and subsequent USAID-funded TB activities is a critical step. Under the terms of this activity, Dr. Luelmo will provide support for a final evaluation of USAID-supported TB control activities in Mexico. The USAID COTR is Elizabeth Pleuss. The specific purpose of the evaluation is to:

- Update findings and recommendations from the preliminary final evaluation of activities funded through the 10 year strategic objective agreement (undertaken in 2009).
- Document USAID's legacy in the area of TB control and assess the sustainability of USAID investments in TB. Specifically, assess the extent to which USAID funded activities will be continued by the National TB Program and sustainable in the absence of USAID funds and technical assistance from implementing partners
- Identify priority activities at risk of not being continued after the phase out of USAID support and recommend options for ensuring sustainability

Specific tasks:

- Provide to PATH all information necessary to obtain travel clearance from USAID
- Review background documents, including 2009 evaluation report, partner work plans and summary annual reports. These documents will be provided by PATH
- Participate in a two week mission to Mexico between July 20 and August 20, 2012. This will include meetings in Mexico City with the National TB Program leadership team, as well as interviews with representatives of implementing partners, such as PATH and Project.
- Present a summary of findings to USAID/Mexico and the National TB Program leadership team prior to departure from Mexico.
- Draft the final written report in English, including a summary of findings and recommendations
- Complete a short trip report upon returning from Mexico (PATH will provide the standard template)

Deliverables

- Completed written evaluation in English, with a summary of findings and recommendations, electronic copies of presentations made to USAID/Mexico and NTP and trip report.

Annex B. Main contacts

Institution	Person	Position
USAID Mexico	Miriam Ramirez Santos	Participant Training Specialist
	Nancy Alvey	Health Advisor
	Jose Luis B. Mota Villanueva	Senior Project Development Specialist
NTP	Martin Castellanos Joya	Director of Mycobacterial Diseases, CENAPRECE, SALUD
	Martha Angelica Garcia Aviles	Deputy Director, Mycobacterial Diseases
	Lucina Gutierrez Cogco	Logistics and support distribution, NTP
	Jenny Berman	Communication officer
	Adela Reyes Herrera	ACSM Coordinator
InDRE	Jose Alberto Diaz Quiñonez	Deputy Director General
	Lucia Hernandez Rivas	Director Services and Technical Support
	Susana Balandrano Campos	Responsible officer, TB laboratory network
State TB control programs	Christin Tapia	Coordinator Mycobacterial Diseases, Sonora
	Claudia Amador	Coordinator Mycobacterial Diseases, Hidalgo
	Manuel Sandoval Diaz	Coordinator Mycobacterial Diseases, Jalisco
	Jorge Alpuche	Coordinator Myc. Diseases, Quintana Roo
	Alejandro Pulido	Coordinator Mycobacterial Diseases, Ensenada, Baja California
	Omar Vivero Islas	Coordinator Myc. Diseases, Guerrero
	Gerardo Paredes Romero	Coordinator of Health Services, Jalisco
	Luz Celeste Leos	Coord. Myc. Tlaquepaque, Region XII, Jalisco
	Federico Cisneros	Coordinator Myc. Diseases, San Luis Potosi
PCI	Blanca Lomeli	Executive Director
	Eva Moya	ACSM specialist
Puentes de Esperanza	Kathleen Moser (by phone)	Director TB and Refugee Branch, San Diego County, HHS Agency, California
	Rafael Laniado-Laborin	Puentes de Esperanza, Tijuana
PAHO/WHO	Tamara Mancero Bucheli	Advisor, Health Surveillance & Dis. Prevention
	Ivonne Oregel Juarez	Ex-responsible officer for USAID support
PATH	Jose Antonio Martinez Gonzalez	Consultant
	Ivonne Orejel	Consultant
	Holly Greb	Program Associate, Global HIV/TB Program
TRCTA/KNCV	Netty Kamp	Senior Advisor TB Control/ACSM
TBCTA/MSH	Pedro Guillermo Suarez (phone)	Global TB Technical Leader

Annex C. Political map of Mexico and priority states

Border States: Baja California, Sonora, Chihuahua, Coahuila, Nuevo Leon and Tamaulipas

High burden/high migration States: Chiapas, Oaxaca, Jalisco, Veracruz, Michoacán, Guerrero and Zacatecas

Annex D. Reported cases by state in 2000, 2005, and 2011*

STATE	POP. 2010 (x 1000)**	NEW TB CASES			RATE PER 100 000		
		2000	2005	2011	2000	2005	2011
Aguascalientes	1185	112	102	86	11.6	9.5	7.3
Baja California	*3155*	*1044*	*1516*	*1793*	*43.7*	*53.7*	*53.7*
Baja California Sur	637	91	125	166	20.8	24.5	28.0
Campeche	822	98	115	141	13.8	15.2	17.3
Coahuila	*275*	*447*	*502*	*480*	*19.1*	*20.0*	*17.9*
Colima	651	147	128	162	27.9	22.5	26.3
Chiapas	*4797*	*1106*	*1006*	*1081*	*27.5*	*23.3*	*23.5*
Chihuahua	*3406*	*543*	*492*	*757*	*17.8*	*15.1*	*21.9*
Distrito Federal	8851	949	770	805	10.9	8.7	9.1
Durango	1633	363	215	224	24.6	14.1	14.4
Guanajuato	5486	314	305	398	6.6	6.2	7.8
Guerrero	*3389*	*1178*	*1195*	*1226*	*37.7*	*37.9*	*39.2*
Hidalgo	2665	331	246	259	14.5	10.4	10.6
Jalisco	*7351*	*941*	*778*	*894*	*14.7*	*11.5*	*12.6*
Mexico	15176	1206	814	743	9.4	5.8	4.9
Michoacan	*4351*	*441*	*335*	*357*	*10.9*	*8.3*	*9.1*
Morelos	1777	270	224	188	17.5	13.8	11.1
Nayarit	1085	289	261	293	30.8	27.2	30.1
Nuevo Leon	*4653*	*1140*	*983*	*1194*	*29.3*	*23.3*	*26.2*
Oaxaca	*3802*	*889*	*727*	*699*	*25.3*	*20.5*	*19.7*
Puebla	5780	569	491	490	11.2	9.1	8.5
Queretaro	1828	219	210	206	15.2	13.1	11.6
Quintana Roo	1326	144	126	251	15.9	11.1	17.8
San Luis Potosi	2586	389	369	376	16.6	15.2	15.0
Sinaloa	2768	678	739	796	26.2	28.1	29.9
Sonora	*2662*	*521*	*821*	*822*	*23.0*	*34.0*	*32.2*
Tabasco	2239	507	446	559	26.3	22.2	27.0
Tamaulipas	*3269*	*1113*	*1120*	*1153*	*39.6*	*36.9*	*35.5*
Tlaxcala	1170	44	38	51	4.5	3.5	4.,4
Veracruz	*7643*	*2110*	*2026*	*1990*	*30.0*	*28.1*	*27.2*
Yucatan	1956	166	159	237	9.8	8.7	12.0
Zacatecas	1491	75	93	109	5.4	6.7	7.9
National % Variation in period	112337	18434	17477 -5.2	18986 +8.6	18.7	16.8	17.4
13 Priority States % Variation in period		5359	6132 +14.4	7255 +18.3			

Sum of other States		13075	11345	11731			

* Data from CENAPRECE, rates based on population projections from CONAPO

** Census 2000 data from INEGI

Annex E. Interview questions

1. USAID/Mexico

- Persons interviewed, position
- Mission objectives
- How much to delve on the NTP past and current operations
- How much analysis of the epidemiological situation (note inconsistencies in estimates)
- How much on performance of contractors (difficult without field observation).
- How was and is the coordination/collaboration with the NTP?
- How were the projects coordinated by USAID / Mexico? Was there a long term focal point or several? With experience on TB control? Working closely with the NTP?
- What is the USAID staff view of the project? Were the objectives achieved? Was there progress?
- Were there changes in project goals, objectives, funding or methodology during the decade? How were they decided? Was there input from the NTP?
- How does USAID interpret the stabilization of reported incidence in the last five years?
- What is planned as follow up for the project? Is any external TA planned for the future (by USAID or other international partners, such as US/CDC, WHO, IUATLD, etc)
- Would this report be useful for these organizations? For the NTP? For other USAID projects?

2. Partner organizations

- Institution
- Interviewed person, position
- Period of collaboration (years)
- Main activities
- Geographical area
- Coordination with local NGOs
- Main achievements
- Impact on TB control (operational, epidemiological)
- What will be sustainable?
- Areas for improvement

3. National authorities (NTP, State, Jurisdiction)

- Institution
- Person(s) interviewed, position
- Collaborating partners financed by USAID
- Period of collaboration (years)
- Main activities, geographical area
- Coordination with the PNT, administrative level
- Main contributions, achievements
- Main problems identified
- Reasons for the stabilization of the reported incidence
- What will be sustainable?
- Other institutions providing technical assistance
- Areas requiring improvement in the technical assistance

- Priorities of the TB program for the future, local and external resources

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